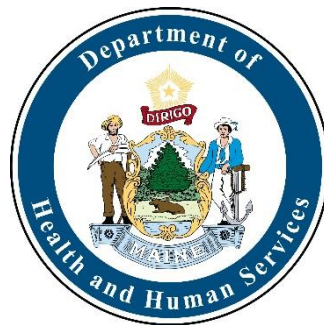


Combination Vaccines & Invalid Doses

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Learning Objectives

1. Benefits of combination vaccines
2. Fewer shots, but same protection
3. Common combination vaccines for children
4. Why is this vaccine showing up Not Valid
5. Subpotent
6. Vaccination errors

Benefits for children

- Fewer shots
- Less pain and discomfort
- On-time protection

Benefits for Parents

- Fewer visits to doctor
- Less hassle and cost with fewer visits.
- Less time off from work or family activity

Fewer Shots Same Protection

In order to reduce the number of shots a child receives in a doctor's visit; some vaccines are offered as combination vaccines. A combination vaccine is two or more different vaccines that have been combined into a single shot.

Combination vaccines have been in use in the United States since the mid-1940s. Examples of combination vaccines are: [DTap](#) (diphtheria-tetanus-pertussis), trivalent IPV (three strains of inactivated polio vaccine), [MMR](#) (measles-mumps-rubella).

Common Combination Vaccines for Children

Vaccine Name	Combines	Protection from
Pediarix	DTaP + Hep B + IPV	5 diseases (Diphtheria, tetanus, pertussis, hepatitis B, and polio)
Pentacel	DTaP + IPV + Hib	5 diseases (Diphtheria, tetanus, pertussis, polio, and Hib (<i>Haemophilus influenzae</i> type b))
Kinrix Quadracel	DTaP + IPV	4 diseases (Diphtheria, tetanus, pertussis, and polio)
Vaxelis	DTaP + IPV + Hib + HepB	6 diseases (Diphtheria, tetanus, pertussis, polio, hepatitis B, and Hib (<i>Haemophilus influenzae</i> type b))
ProQuad	MMR + varicella (chickenpox)	4 diseases (measles, mumps, rubella, and varicella)

Available Combination Vaccines

DTaP-IPV (Kinrix)

Ages: 4 years through 6 years

Use for: DTaP dose #5

IPV dose #4

Do NOT use for DTaP doses 1 through 4 OR IPV doses 1 through 3

Route: Intramuscular (IM) injection

DTaP-IPV-HepB (Pediatrix)

Ages: 6 weeks through 6 years

Use for: DTaP and IPV: Doses #1, #2, and/or #3

HepB: Any dose in the series

Do NOT use for HepB birth dose

Route: Intramuscular (IM) injection

Available Combination Vaccines

DTaP-IPV-Hib (Pentacel)

Ages: 6 weeks through 4 years

Use for: DTaP and IPV: Doses #1, #2,
#3, and/or #4
Hib: Any dose in the series

Route: Intramuscular (IM) injection

**Reconstitute Hib powder ONLY with
manufacturer-supplied DTaP-IPV liquid diluent**

**Use immediately after reconstitution
Do NOT administer DTaP-IPV w/o Hib**

DTaP-IPV-HepB-Hib (Vaxelis)

Ages: 6 weeks through 4 years

Use for: DTaP and IPV: Doses #1, #2, and/or
#3

Hep B: Any dose in the series
(Do NOT use for HepB birth dose)

Hib: Any dose in the series

Route: Intramuscular (IM) injection

Available Combination Vaccines

DTaP-IPV (Quadracel)

Ages: 4 years through 6 years

Use for: DTaP dose #5

IPV dose #4 or #5

Do NOT use for DTaP doses 1 through 4 OR IPV doses 1 through 3

Route: Intramuscular (IM) injection

MMRV (ProQuad)

Ages: 12 months through 12 years

Use for: Any dose in the series

Route: Subcutaneous (subcut) injection

Reconstitute MMRV powder ONLY with manufacturer-supplied sterile water diluent

Beyond Use Time: Discard reconstituted vaccine if not used within 30 minutes.

Immunization Schedule with Combination Vaccines

EVERY FALL: FLU VACCINE⁶ for anyone 6 months and older

	2 MONTHS	4 MONTHS	6 MONTHS	12 MONTHS	15 MONTHS	18 MONTHS	4-6 YEARS		
PEDIARIX[®] PROQUAD[®] QUADRACEL[™] or KINRIX[®]	PEDIARIX[®] DTaP, IPV, HepB + PCV Rotavirus Hib	PEDIARIX[®] DTaP, IPV, HepB ¹ + PCV Rotavirus Hib	PEDIARIX[®] DTaP, IPV, HepB + PCV Rotavirus ² Hib ³	HepA MMR ⁴ Varicella ⁴ PCV ⁵ Hib ⁵	DTaP	HepA	QUADRACEL[™] or KINRIX^{®7} DTaP, IPV + PROQUAD[®] MMRV		
	PENTACEL^{®5} PROQUAD[®] QUADRACEL[™] or KINRIX[®]	PENTACEL[®] DTaP, IPV, Hib + PCV Rotavirus HepB	PENTACEL[®] DTaP, IPV, Hib + PCV Rotavirus HepB ¹	PENTACEL[®] DTaP, IPV, Hib + PCV Rotavirus ² HepB	HepA MMR ⁴ Varicella ⁴ PCV ⁵	PENTACEL[®] DTaP, IPV, Hib	HepA	QUADRACEL[™] or KINRIX^{®7} DTaP, IPV + PROQUAD[®] MMRV	
		VAXELIS^{™8} PROQUAD[®] QUADRACEL[™] or KINRIX[®]	VAXELIS[™] DTaP, IPV, Hib, HepB + PCV Rotavirus	VAXELIS[™] DTaP, IPV, Hib, HepB ¹ + PCV Rotavirus	VAXELIS[™] DTaP, IPV, Hib ² , HepB + PCV Rotavirus ²	HepA MMR ⁴ Varicella ⁴ PCV ⁵ Hib ⁵	DTaP	HepA	QUADRACEL[™] or KINRIX^{®7} DTaP, IPV + PROQUAD[®] MMRV

Make sure the vaccine you administer contains the antigens on the doctor's order. Keep it simple. Stick with the same product.

This is a suggested schedule for VFC providers ordering combination vaccines. For alternatives and details, consult the latest "Recommended Immunization Schedules for persons aged 0-18 years, United States." For more info, visit EZIZ.ORG

¹ A dose of Hepatitis B vaccine is not necessary at 4 months if doses are given at birth and 2 months but may be included as part of a combination vaccine.

² The six month dose is not needed if Rotarix[®] was used exclusively for both dose 1 and 2 of the rotavirus vaccine series.

³ This six month Hib dose is not indicated if PedvaxHIB[®] is used exclusively for the 2 and 4 month infant doses.

⁴ CDC recommends MMR + Varicella at 12-15 months. Providers can use their discretion whether to use MMRV, however.

⁵ Can be administered as late as 15 months. For more information, consult the Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2021.

⁶ Influenza vaccine is available in thimerosal-free options. See California Health and Safety Code § 124172.

⁷ Licensed by FDA for children 4 through 6 years with previous doses of INFANRIX[™] or PEDIARIX[™]. ACIP recommends that, whenever feasible, the same manufacturer's DTaP vaccines be used for each dose in the series; however, vaccination should not be deferred because the type of DTaP previously administered is unavailable or unknown. See www.cdc.gov/mmwr/preview/mmwrhtml/mm5739a4.htm.

⁸ Licensed by FDA for children 6 weeks through 4 years of age (prior to the 5th birthday).



Separate Vaccine and Combination Vaccines

Can we switch back and forth from separate vaccines at one visit to combination vaccines at another visit?

Switching between combination and single-antigen vaccines poses no problem as long as you maintain the recommended minimum intervals for all vaccines and the vaccines are licensed for the age of the patient.

For example, if a child is given separate DTaP, IPV, Hib, and HepB vaccines during her 2-month visit, you could we give her either DTaP-IPV/Hib (Pentacel) or DTaP-HepB-IPV (Pediarix) at her 4-month visit.

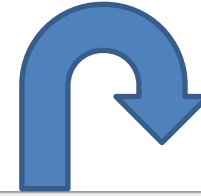
Combination Vaccines and Children Who Are Behind

Can combination vaccines be used with children who have fallen behind with their vaccinations? If so, what schedule should we follow?

Yes- Combination vaccines may used for children who have fallen behind. The minimum interval between doses is the greatest interval between any of the individual antigens.

For example, the minimum interval between the first and second doses of MMR is 4 weeks and the minimum interval between the first and second doses of varicella vaccine is **12 weeks**. When the two vaccines are combined in MMRV (ProQuad, Merck) the minimum interval between MMRV dose #1 and dose #2 is **12 weeks, which is the greatest of the minimum intervals of the two vaccines if given separately**

Vaccines Recommended By Selected Tracking Schedule



Select	Vaccine Group	Vaccine	Earliest Date	Recommended Date	Past Due Date
	DTP/aP	DTaP, NOS		Maximum Age Exceeded	
<input type="checkbox"/>	HepA	HepA, NOS	11/24/2012	11/24/2012	06/24/2013
	HepB	HepB, NOS		Complete	
	Hib	Hib, NOS		Maximum Age Exceeded	
<input type="checkbox"/>	HPV	HPV, NOS	11/24/2020	11/24/2022	12/24/2024
<input type="checkbox"/>	Influenza-seasnl	Flu NOS	11/24/2020	08/01/2022	11/24/2020
<input type="checkbox"/>	Meningo	MCV4, NOS	11/24/2021	11/24/2022	11/24/2024
<input type="checkbox"/>	MMR	MMR	11/24/2012	11/24/2012	03/24/2013
<input type="checkbox"/>	Polio	Polio-Inject	11/24/2015	11/24/2015	11/24/2018
<input type="checkbox"/>	Td/Tdap	Tdap	11/24/2018	11/24/2018	11/24/2018
<input type="checkbox"/>	Varicella	Varicella	11/24/2012	11/24/2012	03/24/2013

Add Selected

Recommended and Minimal Ages and Intervals Between Vaccine Doses

Appendix A

Recommended and minimum ages and intervals between vaccine doses^{(a),(b),(c),(d)}

Vaccine and dose number	Recommended age for this dose	Minimum age for this dose	Recommended interval to next dose	Minimum interval to next dose
DTaP-1 ^(*)	2 months	6 weeks	8 weeks	4 weeks
DTaP-2	4 months	10 weeks	8 weeks	4 weeks
DTaP-3	6 months	14 weeks	6-12 months ^(f)	6 months ^(f)
DTaP-4	15-18 months	15 months ^(f)	3 years	6 months
DTaP-5 ^(g)	4-6 years	4 years	—	—
HepA-1 ^(h)	12-23 months	12 months	6-18 months	6 months
HepA-2	≥18 months	18 months	—	—
HepB-1 ^(h)	Birth	Birth	4 weeks-4 months	4 weeks
HepB-2	1-2 months	4 weeks	8 weeks-17 months	8 weeks
HepB-3 ⁽ⁱ⁾	6-18 months	24 weeks	—	—
Hib-1 ^(j)	2 months	6 weeks	8 weeks	4 weeks
Hib-2	4 months	10 weeks	8 weeks	4 weeks
Hib-3 ^(k)	6 months	14 weeks	6-9 months	8 weeks
Hib-4	12-15 months	12 months	—	—
HPV-1 (Two-Dose Series) ^(l)	11-12 years	9 years	6 months	5 months
HPV-2	11-12 years (+6 months)	9 years +5 months ^(m)	—	—
HPV-1 ⁽ⁿ⁾ (Three-Dose Series)	11-12 years	9 years	1-2 months	4 weeks
HPV-2	11-12 years (+1-2 months)	9 years (+4 weeks)	4 months	12 weeks ^(o)
HPV-3 ⁽ⁿ⁾	11-12 years (+6 months)	9 years (+5 months)	—	—
Influenza, inactivated ^(p)	≥6 months	6 months ^(q)	4 weeks	4 weeks
IPV-1 ^(r)	2 months	6 weeks	8 weeks	4 weeks
IPV-2	4 months	10 weeks	8 weeks-14 months	4 weeks
IPV-3	6-18 months	14 weeks	3-5 years	6 months
IPV-4 ^(r)	4-6 years	4 years	—	—
LAIV ^(s)	2-49 years	2 years	4 weeks	4 weeks
MenACWY-1 ^(t)	11-12 years	2 months ^(u)	4-5 years	8 weeks
MenACWY-2	16 years	11 years (+ 8 weeks) ^(u)	—	—
MenB-1	Healthy adolescents: 16-23 years	16 years	Bexsero: 4 weeks Trumenba: 6 months ^(v)	Bexsero: 4 weeks Trumenba: 6 months ^(v)
MenB-1	Persons at increased risk: ≥10 years	10 years	Bexsero: 4 weeks Trumenba: 1-2 months ^(v)	Bexsero: 4 weeks Trumenba: 1 month
MenB-2	Healthy adolescents: 16-23 years (+1 month)	16 years (+1 month)	—	—
MenB-2	Persons at increased risk: ≥10 years (+1 month)	10 years (+1 month)	Bexsero: — Trumenba: 4-5 months ^(v)	Bexsero: — Trumenba: 4 months ^(v)
MenB-3 ^(w)	Persons at increased risk: ≥10 years (+6 months) ^(u)	10 years (+6 months) ^(u)	—	—

A

Why Is This Vaccine Showing Up Invalid?

DOB

11/24/2011

Immunization Record					
Vaccine Group	Date Admin	Series	Vaccine [Trade Name]	Dose	Owned?
DTP/aP	01/06/2012	1 of 4	DTaP,5 pertussis antigens [DAPTACEL ®]	Full	
	02/03/2012	2 of 4	DTaP,5 pertussis antigens [DAPTACEL ®]	Full	
	03/01/2012	3 of 4	DTaP,5 pertussis antigens [DAPTACEL ®]	Full	
	08/25/2012	NOT VALID	DTaP,5 pertussis antigens [DAPTACEL ®]	Full	
HepB	11/25/2011	1 of 3	HepB-Peds [Recombivax Peds ®]	Full	
	01/06/2012	2 of 3	HepB-Peds [Recombivax Peds ®]	Full	
	05/26/2012	3 of 3	HepB-Peds [Recombivax Peds ®]	Full	
Hib	01/06/2012	1 of 4	Hib-PRP-T [ActHib ®]	Full	
	02/03/2012	2 of 4	Hib-PRP-T [ActHib ®]	Full	
	05/26/2012	3 of 4	Hib-PRP-T [ActHib ®]	Full	
	08/25/2012	NOT VALID	Hib-PRP-T [ActHib ®]	Full	
Influenza-seasnl	11/18/2015	1 of 1	Flu quadrivalent injectable pfree [FluLaval Quad PF 0.5mL ®]	Full	
MMR	08/25/2012	NOT VALID	MMR [MMR II ®]	Full	
Polio	01/06/2012	1 of 4	Polio-Inject [IPOL ®]	Full	
	02/03/2012	2 of 4	Polio-Inject [IPOL ®]	Full	
	03/01/2012	3 of 4	Polio-Inject [IPOL ®]	Full	
	05/25/2012	NOT VALID	Polio-Inject [IPOL ®]	Full	

Why Is This Vaccine Showing Up Invalid?

Immunization Record

Vaccine Group	Date Admin	Series	Vaccine [Trade Name]	Dose	Owned?	Reaction	Hist?	Edit
DTP/aP	01/06/2012	1 of 4	DTaP,5 pertussis antigens [DAPTACEL ®]	Full				
	02/03/2012	2 of 4	DTaP,5 pertussis antigens [DAPTACEL ®]	Full				
	03/01/2012	3 of 4	DTaP,5 pertussis antigens [DAPTACEL ®]	Full				
	08/25/2012	NOT VALID	DTaP,5 pertussis antigens [DAPTACEL ®]	Full				

Explanation of Status

Dose was given before the earliest acceptable date.
Dose was given too soon after the previous dose.

Series: DTaP {Vaccine Group: DTP/aP}

Dose	Min Age	Min Rec Age	Min Overdue Age	Min Valid Interval	Min Interval Between	Rec Interval Between	Overdue Interval Between	Max Age
1	42 D	2 M	3 M					7 Y
2	70 D	4 M	5 M		28 D	56 D	3 M	7 Y
3	98 D	6 M	7 M		28 D	56 D	3 M	7 Y
4	12 M	15 M	19 M	4 M	6 M	6 M	7 M	7 Y
5	4 Y	4 Y	6 Y		6 M	6 M	7 M	7 Y

Why Is The Vaccine Invalid?

- **The vaccine was given too early**
- **Minimal interval not met**

The dose is **not** considered valid and **must** be repeated. The repeat dose should be spaced after the invalid dose by the recommended minimum interval. In these cases, providers should be prepared to reassure parents that the extra dose of vaccine is not harmful for their child.

Why Is The Vaccine Invalid?

**Trade-name vaccine is not acceptable for this dose in the series.
 Pentacel should not be used for any dose in the primary series for children age 5 years or older.**

Explanation of Status

Trade-named vaccine is not acceptable for this dose in the series.
 Dose was not given within the min/max age range for the Vaccine/Tradename combination.
 The patient's age and vaccination history allowed for certain doses in the series to be skipped; however, the skip did not occur due to other validation issues.

Series: Polio {Vaccine Group: Polio}

Dose	Min Age	Min Rec Age	Min Overdue Age	Min Valid Interval	Min Interval Between	Rec Interval Between	Overdue Interval Between	Max Age
1	42 D	2 M	3 M		28 D			
2	70 D	4 M	5 M		28 D	2 M	3 M	
3	98 D	6 M	19 M		28 D	2 M	9 M	
4		4 Y	7 Y		6 M	6 M	7 M	
5	4 Y	4 Y	7 Y		6 M	6 M	7 M	

Why Is The Vaccine Invalid?

Using a vaccine that is not appropriate for age level

Does not need to be repeated if the minimal interval was met.

Keep in mind that that vaccine is not license for that age and is considered off- label and is not recommended.

You should take measures to prevent this error in the future.

You should explain this error to the parents and assure them that the dose will cause no harm.

It may be counted as valid.

Invalid – Live Vaccine

Immunization Record

Vaccine Group	Date Admin	Series	Vaccine [Trade Name]	Dose	Owned?	Reaction	Hist?
DTP/aP	10/19/2007	1 of 4	DTaP,5 pertussis antigens [DAPTACEL ®]	Full			
	03/24/2008	2 of 4	DTaP,5 pertussis antigens [DAPTACEL ®]	Full			
	10/08/2008	3 of 4	DTaP,5 pertussis antigens [DAPTACEL ®]	Full			
	12/11/2008	NOT VALID	DTaP,5 pertussis antigens [DAPTACEL ®]	Full			
MMR	10/08/2012	1 of 2	MMR [MMR II ®]	Full			
Varicella	10/23/2012	NOT VALID	Varicella [Varivax ®]	Full			

Vaccines Recommended by Selected Tracking Schedule

Explanation of Status

Dose was given before the earliest acceptable date.

Vaccine group Varicella has a minimum interval conflict with a dose from vaccine group Mumps.

Vaccine group Varicella has a minimum interval conflict with a dose from vaccine group Measles.

Vaccine group Varicella has a minimum interval conflict with a dose from vaccine group Rubella.


Series: Varicella late start 13Y {Vaccine Group: Varicella}

Dose	Min Age	Min Rec Age	Min Overdue Age	Min Valid Interval	Min Interval Between	Rec Interval Between	Overdue Interval Between	Max Age
1	13 Y	13 Y	13 Y		28 D			60 Y
2					28 D	28 D	2 M	

Subpotent


Improperly Stored Vaccine Administered:

Contact the manufacturer for information on the stability of the vaccine. If the manufacturer does not have data to support the stability of the vaccine, repeat the dose immediately using a new vial that has been properly stored and handled, and is not past the expiration date.

Immunization Record								
Vaccine Group	Date Admin	Series	Vaccine [Trade Name]	Dose	Owned?	Reaction	Hist?	Edit
HPV	05/10/2023	SUBPOTENT?	HPV9 [Gardasil 9 ®]	Full				



Subpotent

Vaccine Group	Date Admin	Series	Vaccine [Trade Name]	Dose	Owned?	Reaction	Hist?	Edit
HPV	05/10/2023	1 of 2	HPV9 [Gardasil 9 ®]	Full				



Edit Immunization

Vaccine Group: HPV Save

Vaccine Display Name: HPV9 Cancel

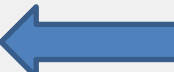
Trade Name: Gardasil 9 Delete


Vaccine Lot Number: 01215

Funding Source: PUBLIC

Dose Size: 0.5 ml

Dosage From Inventory: Full

Subpotent Dose: 

Date Provided: 

Vaccine Eligibility: V02 - VFC Eligible - Medicaid/MaineCare - Under 19

Check: Subpotent Dose box

The Dose should be repeated as soon as possible.

Vaccine Administration Errors

Common vaccine administration errors include:

- Doses administered too early (e.g., before the minimum age or interval)
- Wrong vaccine (e.g., Tdap instead of DTaP)
- Wrong dosage (e.g., pediatric formulation of hepatitis B vaccine administered to an adult)
- Wrong route (e.g., MMR given by IM injection)
- Vaccine administered outside the approved age range
- Expired vaccine or diluent administered
- Improperly stored vaccine administered
- Vaccine administered to a patient with a contraindication
- Wrong diluent used to reconstitute the vaccine or only the diluent was administered

Reporting an Adverse Event

- Health care providers are required by law to report certain adverse events, and encouraged to report other events, following vaccination to the Vaccine Adverse Event Reporting System (VAERS). Details on reporting adverse events after vaccination can be found at <https://vaers.hhs.gov>.

Vaccine Administration Errors

Don't Be Guilty of These Preventable Errors in Vaccine Administration!

*Is your healthcare setting making any of these frequently reported errors in administering vaccines? Although some of these errors are much more serious than others, none of them should occur. Be sure those who administer vaccines are not making any of these **preventable** errors in vaccine administration.*

*Note: Information about **reporting** vaccine administration errors is found at the end of this article.*

ERROR: Not using a screening checklist to identify patients' contraindications and precautions to vaccination

How to Avoid This Error: Always use a reliable screening questionnaire to consistently avoid either 1) giving a vaccine to a patient for whom it is contraindicated (a serious, potentially life-threatening situation), or 2) missing opportunities to vaccinate because of false contraindications (which can also be life-threatening, as they can leave a patient exposed to a vaccine-preventable disease).

Helpful Resources: Use IAC's screening checklists, such as *Screening Checklist for Contraindications to Vaccines for Children and Teens* and *Screening Checklist for Contraindications to Vaccines for Adults* (both reviewed by CDC) available at www.immunize.org/handouts/screening-vaccines.asp. CDC's Vaccine Contraindications and Precautions web page: www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html.

For information on how to avoid or respond to errors in COVID-19 vaccine administration, see *COVID-19 Vaccine Administration Errors and Deviations* at www.cdc.gov/covid-19/downloads/covid19-vaccine-errors-deviations.pdf.

ERROR: Using the wrong diluent or administering the diluent only

How to Avoid This Error: Use careful labeling in your vaccine storage unit. Keep vaccines and their diluents together if storage requirements are the same. Check the vial and diluents labels 3 TIMES before reconstituting vaccine. Administering the diluent *only* is most likely to happen with the two vaccines that include antigen in their liquid component, Menveo and Pentacel.

What to do after such an error: Diluent errors could affect the potency of the vaccine antigen administered, or the patient might not get the full benefit of the vaccine if the diluent not given contains antigen. If the wrong diluent is used, the vaccine needs to be repeated (except in the case of mixing up the diluent between MMR, MMRV, varicella, and zoster vaccines which are all made by Merck and use the same sterile water diluent).

If an INACTIVATED vaccine is reconstituted with the wrong diluent and is administered, the dose is invalid and should be repeated ASAP. If a LIVE vaccine is reconstituted with the wrong diluent and is administered, the dose is invalid and if it can't be repeated on the same clinic day, it needs to be repeated no earlier than four weeks after the invalid dose. This spacing is due to the effects of generating a partial immune response that could suppress the live replication of subsequent doses, even of the same live virus vaccine.

RESOURCES

- Ask the experts: [Ask the Experts: Combination Vaccines \(immunize.org\)](https://immunize.org)
- Immunization Schedule with Combination Vaccines: <https://eziz.org/assets/docs/IMM-922.pdf>
- [Appendix A: Schedule and Recommendations: Recommended and minimum ages and intervals between vaccine doses \(cdc.gov\)](https://www.cdc.gov/vaccines/imz/downloads/Appendix-A-Schedule-and-Recommendations-Recommended-and-minimum-ages-and-intervals-between-vaccine-doses.pdf)
- [Vaccine Label Examples \(cdc.gov\)](https://www.cdc.gov/vaccines/imz/downloads/Vaccine-Label-Examples.pdf)
- [Don't Be Guilty of These Preventable Errors in Vaccine Administration! \(immunize.org\)](https://immunize.org)
- [Vaccine Administration Errors and Deviations | Mpox | Poxvirus | CDC](https://www.cdc.gov/vaccines/imz/downloads/Vaccine-Administration-Errors-and-Deviations-Mpox-Poxvirus-CDC.pdf)
- Maine Immunization –Webinars: [Information & Webinars for Providers | Immunization Program | Division of Disease Surveillance | MeCDC | Maine DHHS](https://www.mecdc.org)
- VAERS: <https://vaers.hhs.gov>.
- [Multiple Vaccinations at Once | Vaccine Safety | CDC](https://www.cdc.gov/vaccines/imz/downloads/Multiple-Vaccinations-at-Once-Vaccine-Safety-CDC.pdf)
- [ACIP Vaccine Recommendations and Schedules | CDC](https://www.cdc.gov/vaccines/imz/downloads/ACIP-Vaccine-Recommendations-and-Schedules-CDC.pdf)

Maine Immunization Program Contacts

Website: www.immunizeme.org

Maine Immunization Program Contact:

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