

EPIC® Immunization 2021 Update Children & Adolescents

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EPIC® is presented by:

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Georgia OB/Gyn Society

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Faculty Disclosure Information

- In accordance with ACCME* and ANCC-COA** Standards, all faculty members are required to disclose to the program audience any real or apparent conflict of interest to the content of their presentation.
- This presentation will include the most current ACIP recommendations for frequently used vaccines but is not a comprehensive review of all available vaccines.
- Some ACIP recommendations for the use of vaccines have not currently been approved by the FDA.
- Detailed information regarding all ACIP Recommendations is available at www.cdc.gov/vaccines/acip/recs/index.html

*Accreditation Council for Continuing Medical Education
**American Nurses Credentialing Center Commission on Accreditation

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Objectives

At the end of this presentation, you will be able to:

- Recall the role vaccines have played in preventing diseases
- Discuss the importance of vaccines for children, adolescents and adults
- Summarize the most recent CDC recommendations for storage and handling of vaccines
- List at least 2 reliable sources for immunization information

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Diphtheria, Tetanus and Pertussis Vaccines for Children, Adolescents, and Adults

ACIP Recommendations:

DTaP

- Administered at 2, 4, 6, 15-18 months and 4-6 years (Not given after age 6)

Tdap---can now be used any time Td is indicated

- Children and adolescents starting at 11 or 12 years of age
- Any adult who has not received a dose
- Routine decennial booster
- Tetanus prophylaxis for wound management
- Unvaccinated persons 7-18 yrs. of age
 - 3 doses of Td or Tdap given at appropriate intervals—see Catch-up Schedule*

2021 Childhood Schedule: Children 7-10 years of age who receive Tdap as part of the catch-up series should be given Tdap again at ages 11-12 years.*

No minimum interval between doses of Td and Tdap**

*<https://www.cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf> **<https://www.immunize.org/catg.d/p2055.pdf>

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Improving DTaP 4th Dose Coverage*

Prior research has identified the 4th dose of DTaP as one of the main contributors to non-completion of the primary series by age 2.

In years 2015-2016 Dose #3 coverage = 93.8%, but Dose #4 = 80.3%

Common Provider Challenges

- Provider confusion about when to administer the 4th dose
- When children are delayed in getting the 1st 3 doses, they may not be eligible to receive the 4th dose at the usual time (12-15 mos.)
- Failure of providers to administer all recommended doses at a visit
- Failure of providers to utilize reminder/recall functions of GRITS or their EMR

GRITS can be a valuable tool to help address all of these challenges.

*Human Vaccines & Immunotherapeutics <https://doi.org/10.1080/21645515.2019.1699357>

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ADMINISTER THE RIGHT VACCINE!

PRODUCT	COMPONENT(S)	USE FOR AGES	USE FOR DTaP DOSES	ROUTE
Daptacel (SP)	DTaP	6 wks. thru 6 yrs.	Doses 1 thru 5	IM
Infanrix (GSK)	DTaP	6 wks. thru 6 yrs.	Doses 1 thru 5	IM
Pediarix (GSK)	DTaP-HepB-IPV	6 wks. thru 6 yrs.	Doses 1 thru 3	IM
Pentacel (SP)	DTaP-IPV/Hib	6 wks. thru 4 yrs.	Doses 1 thru 4	IM
Kinrix (GSK)	DTaP-IPV	4 thru 6 yrs.	Dose 5	IM
Quadracel (SP)	DTaP-IPV	4 thru 6 yrs.	Dose 5	IM
Vaxelis (Merck & SP)	DTaP-IPV-Hib-Hep B	6 wks. thru 4 yrs.	Doses 1 thru 3	IM

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Haemophilus influenzae type b (Hib)

ACIP recommends:

3-4 doses of Hib (depending on brand)

- Dose 1 @ 2 months of age
- Dose 2 @ 4 months of age
- Dose 3 @ 6 months of age

(Not required if Pedvax Hib* is administered at 2 and 4 months of age)

- Booster dose @ 12 through 15 months of age

One dose of Hib for unimmunized persons 5 through 18 years who have asplenia, sickle cell disease or HIV infection.

One dose of Hib may be given to adults with immunocompromising conditions.

MMWR, February 28, 2014, Vol 63, #RR01



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Polio

ACIP Recommendation:*

Four dose series of IPV at : 2, 4, 6 through 18 months and 4 through 6 years of age.

- Minimum interval from dose 3 to dose 4 is six mos.
- Final dose at 4 years of age or older regardless of the number of previous doses
- Only trivalent OPV (tOPV) given before 4/1/2016 counts toward U.S. vaccination requirements***
- If documentation not available (for persons ≤18 yrs.,) give routine IPV series.
- Travelers---A booster dose may be recommended, depending on destination and traveler's history of polio vaccination. Go to: www.cdc.gov/vaccines/travel**

*MMWR, August 7, 2009, Vol 58, #30

**MMWR, July 11, 2014, Vol 63, # 27

***<https://wwwnc.cdc.gov/travel/news-announcements/polio-guidance-new-requirements>

***MMWR January 13, 2017 / 66(01):23-25



Source: World Health Organization

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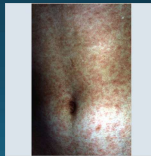
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MEASLES*

- Incubation period---8 to 14 days from exposure to onset of symptoms
- Symptoms: fever, cough, coryza, conjunctivitis, maculopapular rash and Koplik spots
- Complications: otitis media, pneumonia, croup, & diarrhea
- Acute encephalitis occurs in 1 out of 1,000 cases.
- Death occurs in 1 to 3 of every 1,000 cases.
- Subacute sclerosing panencephalitis (SSPE) is a progressive neurological disorder that is rare but always fatal. It usually occurs 7-10 years after measles infection.**
- Measles infection causes generalized immunosuppression that may make other infections more severe. ***

Measles Vaccine

- 95% of people develop serum measles antibody after one dose.
- 99% after 2 doses.
- 5% or less may lose protection after several years.



Source: Immunization Action Coalition

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Measles, Mumps, Rubella

Measles (M)



Source: American Academy of Pediatrics Red Book On Line Visual Library

Mumps (M)



Source: Creative Commons

Rubella (R)



© AAP

Congenital Rubella (R)



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MMR Vaccine*

ACIP recommends 2 doses of MMR:

- Dose 1 @ 12 through 15 months of age
- Dose 2 @ 4 through 6 years of age

Second dose can be given 28 days after first dose, if necessary.

Other Recommendations:**

- Travelers to foreign countries should be appropriately immunized with MMR prior to leaving U.S.
- Infants 6-12 mos. of age traveling abroad should receive 1 dose of MMR
- A 3rd MMR may be recommended in the instance of a public health-declared mumps outbreak.

Acceptable presumptive evidence of MMR immunity

- Documentation of age appropriate vaccination with MMR vaccine
- Laboratory evidence of immunity
- Laboratory confirmation of disease
- Birth before 1957---except for evidence of rubella immunity in women who could become pregnant

*MMWR, June 14, 2013, Vol 62, #RR-04

** MMWR, January 12, 2018, Vol 67(1):33-38

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Varicella* (Chickenpox)



ACIP recommends 2 doses of Varicella Vaccine

- Dose 1 @ 12 months through 15 months of age
- Dose 2 @ 4 through 6 years of age**
- Those 13 years of age or older without evidence of immunity should receive 2 doses separated by 4 to 8 weeks.

*MMWR, June 22, 2007, Vol 56, #RR-04

**Second dose can be administered at an earlier age, provided the interval between the first and second dose is at least 3 months.

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Pneumococcal Conjugate Vaccine (PCV13)*

Children

- All children 2 mos.- 4 yrs.
- Children age 5 with increased risk factors**
- Children ages 6 - 18 yrs. with immunocompromising conditions, asplenia, cochlear or organ transplants***

*MMWR, June 28, 2013, Vol 62, #25

**MMWR, December 10, 2010, Vol 59, #RR-11

***MMWR, June 28, 2013, Vol 62, #25

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Pneumococcal Polysaccharide Vaccine (PPSV23)*

Children ≥2 yrs. with:

- Underlying medical conditions
 - Sickle cell, asplenia, immunocompromising conditions
 - Should receive a 2nd dose 5 yrs. after first dose**
- Immunocompetent children with chronic illness
 - Heart or lung disease, diabetes, CSF leaks, cochlear implants

FDA Recommended Influenza Antigens for 2021-2022 Season in the U.S.

ALL Seasonal influenza vaccines for the 2021-22 season in the U.S. are expected to be Quadrivalent Vaccines (IIV4)

Composition (egg-based):

- Influenza A/Victoria/2570/2019 (H1N1)pdm09-like virus
- Influenza A/Cambodia/e0826360/2020 (H3N2)-like virus
- Influenza B/Washington/02/2019 (Victoria lineage)-like virus
- Influenza B/Phuket/3073/2013 (Yamagata lineage)-like virus

Composition (cell culture-based and recombinant vaccines)

- Same as egg-based with the following exception:
 - Influenza A/Wisconsin/588/2019 (H1N1)pdm09-like virus

ACIP recommends annual influenza vaccine for all persons 6 months of age and older who do not have contraindications.

SOURCE: MMWR CDC

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Influenza Vaccines for 2021-2022 Season (Inactivated)

Trade name (manufacturer)	Presentations	Age indication	µg HA (IIV4s and RIV4) or virus count (LAIV4) for each vaccine virus (per dose)	Mercury (from thimerosal, if present), µg/0.5 mL
IIV4 (standard-dose, egg-based vaccines)				
Afluria Quadrivalent (Seqirus)	0.25-mL PFS ¹	6 through 35 mos ¹	7.5 µg/0.25 mL	IM ¹ —
	0.5-mL PFS ¹	≥3 yrs ¹	15 µg/0.5 mL	IM ¹ —
	5.0-mL MDV ¹	≥6 mos ¹ (needle/syringe) 18 through 64 yrs (jet injector)	15 µg/0.5 mL	IM ¹ 24.5
Fluarix Quadrivalent (GlaxoSmithKline)	0.5-mL PFS	≥6 mos	15 µg/0.5 mL	IM ¹ —
FluLaval Quadrivalent (GlaxoSmithKline)	0.5-mL PFS	≥6 mos	15 µg/0.5 mL	IM ¹ —
Fluzone Quadrivalent (Sanofi Pasteur)	0.5-mL PFS**	≥6 mos**	15 µg/0.5 mL	IM ¹ —
	0.5-mL SDV**	≥6 mos**	15 µg/0.5 mL	IM ¹ —
	5.0-mL MDV**	≥6 mos**	15 µg/0.5 mL 7.5 µg/0.25 mL	IM ¹ 25
ccIIV4 (standard-dose, cell culture-based vaccine)				
Flucelex Quadrivalent (Seqirus)	0.5-mL PFS	≥2 yrs	15 µg/0.5 mL	IM ¹ —
	5.0-mL MDV	≥2 yrs	15 µg/0.5 mL	IM ¹ 25

SOURCE: CDC Influenza Vaccine Table

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Live, Attenuated Influenza Vaccine (LAIV4)*

FluMist® MedImmune (Nasal Spray)

- Licensed for healthy persons 2 through 49 years of age

LAIV4 MAY be used in the 2021-2022 season.

Contraindications to LAIV:

- Children 2-4 yrs. of age with a diagnosis of asthma
- Persons receiving aspirin-containing medications – potential risk for Reye syndrome
- Persons who are immunocompromised, by medication or disease, have a CSF leak or cochlear implant, or asplenia
- Close contacts and caregivers of severely immunosuppressed persons
- Persons who have received influenza antiviral medications within the previous days (dependent on antiviral)
- Persons with a severe allergic reaction to any component of the vaccine or to a previous dose of any influenza vaccine (exception for allergy to egg)
- Pregnancy

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SOURCE: MMWR CDC

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Co-administration

- Inactivated influenza vaccines (IIV4s) may be administered simultaneously or sequentially with other inactivated vaccines or live vaccines. Injectable vaccines that are given concomitantly should be administered at separate anatomic sites.
- LAIV4 can be administered simultaneously with other live or inactivated vaccines. However, if two live vaccines are not given simultaneously, then after administration of one live vaccine (such as LAIV4), at least 4 weeks should pass before another live vaccine is administered.
- Guidance concerning administration of COVID-19 vaccines with other vaccines indicates that these vaccines may be given with other vaccines, including influenza vaccines.
- No data are yet available concerning coadministration of U.S.-authorized COVID-19 vaccines and influenza vaccines.
- Providers should be aware of the potential for increased reactogenicity with coadministration and should consult the CDC guidance as more information becomes available. (This is more likely with the adjuvanted or high dose IIV4s which are recommended in persons 65 years and older.)

SOURCE: MMWR CDC

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Hepatitis A Vaccine for Children*

ACIP recommends 2 doses of hepatitis A vaccine for:

- All children 12 through 23 months of age (Separate the 2 doses by 6 to 18 months)
- Any child or adolescent 2 through 18 years, not previously vaccinated
- All persons >1 year of age living with HIV, with kidney, heart, liver or lung disease, or with diabetes
- All persons ≥ 12 mos. of age for post exposure prophylaxis (PEP)**
- Infants 6-11 mos. traveling outside the U.S. when protection against HAV is recommended

*MMWR, May 19, 2006, Vol 55, #RR-07 **MMWR, Nov. 2, 2018, Vol. 67, No. 43

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Hepatitis B*

Hepatitis B is an infectious liver disease caused by the hepatitis virus (HBV) that can lead to cirrhosis, liver cancer, and premature death.

Transmission:

- Percutaneous or mucosal exposure to infected blood or body fluids (e.g. skin puncture, sexual contact, contaminated surfaces)
- Vertical transmission from a HBsAg-positive mother to her newborn at birth
- Infected infants have 90% risk of developing chronic infection if not given HepB vaccine and HBIG at birth**

ACIP Hepatitis B vaccine recommendations:

- Administer hepatitis B vaccine to all newborns within 24 hours of birth, using single antigen vaccine; Dose 2 at 1-2 mos. of age and Dose 3 at 6-18 mos. of age
- All children and adolescents less than 19 years of age who did not complete the series as an infant

*Recommended Immunization Schedule for Persons Age 0 Through 18 Years, United States, 2017
 *MMWR, December 23, 2005, Vol 54, #RR16, Vol 60 ** <https://www.cdc.gov/hepatitis/hbv/bfaq.htm>

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Hepatitis B-Exposed Infants and Children*

Postexposure Prophylaxis (PEP)

- Administer hepatitis B immune globulin (HBIG) AND hepatitis B vaccine within 12 hours of birth
- HBIG can be administered up to 7 days after birth if the mother's hepatitis B surface antigen (HBsAg) lab result is unavailable at delivery

Vaccination Schedule

- Single antigen vaccine (e.g. Engerix-B, Recombivax HB)
 - HBIG and Hep B vaccine Dose #1 at birth; Dose #2 at 1-2 months; Dose #3 at 6 months of age
- Combination vaccine (e.g., Pediarix)
 - HBIG and single antigen vaccine for Dose 1
 - Combination vaccine for Doses 2,3,4
 - Dose #2 at 2 months; Dose #3 at 4 months; Dose #4 at 6 months of age
- For infants weighing <2000 grams (4.4 lbs.), the birth dose should not be counted as part of the vaccine series; 3 additional doses of vaccine (for a total of 4 doses) should be given beginning at 1 month of age

*Prevention of Hepatitis B Virus Infection in the United States: Recommendations of the Advisory Committee on Immunization Practices. MMWR Recommendations and Reports 2018;67(No. RR-1):1–31.

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Meningococcal Disease (caused by *N. meningitidis*)*

- Usually presents as meningitis, bacteremia or both
 - Transmitted through direct contact with respiratory tract secretions from pts. and asymptomatic carriers
 - Nasopharyngeal carriage rate is highest in adolescents and young adults
- Disease Incidence
 - Highest in infants <1 year
 - Next highest in children >1 year
 - Then adolescents and young adults 16-20 years of age
- Meningitis Disease caused by serogroups B and C
 - During 2015-2018 serogroup B caused 42%
 - Serogroup C caused 26% in this same period
- About 5% of all U.S. cases of meningococcal disease are outbreak-related

*<https://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm>

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Signs and Symptoms of Meningococcal Disease

- Symptoms of meningitis
 - Sudden onset of fever
 - Headache
 - Stiff neck
 - Photophobia
 - Nausea and vomiting
- Risk factors
 - Prior viral infection
 - Household crowding
 - Smoking
 - Greatest risk is for unvaccinated college freshmen in dorms
 - Military recruits
- Symptoms of meningococcemia
 - All of the above are possible
 - Cold hand and feet
 - Pruritic rash



*<https://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm>

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Meningococcal Conjugate Vaccine (MCV4)*

(Men A,C,Y, W)

Menactra™ licensed for 9 mos. through 55 years
Menveo® licensed for ages 2 mos. through 55 years
MenQuadfi® licensed for ages ≥ 2 yrs. of age

ACIP recommends:

- Dose 1---age 11-12 years preferred
- Booster dose---age 16 years
- Minimum interval between doses---8 weeks
- If 1st dose is received ≥16 years of age, a 2nd dose is not needed
- College students ≤21 years of age need 1 dose of MCV4 ≤5 years before enrollment.

Effective July 1, 2021, for the 2021-2022 school year, a meningococcal conjugate (MCV4/MenACWY) booster will be required for all high school students entering the 11th grade and who are 16 years of age or older.**

Persons aged ≥56 years who are recommended meningococcal vaccination because they are at increased risk for meningococcal disease should receive MenACWY conjugate vaccine.

*MMWR, March 22, 2013, Vol 62, #RR02

**<https://dph.georgia.gov/immunization-section>

<https://dph.georgia.gov/public-health-regulations/regulationsrule-making>

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Serogroup B Meningococcal Vaccine

Bexsero® licensed for ages 10 through 25 years (2 dose)
Trumenba® licensed for ages 10 through 25 years (2 or 3 dose)

ACIP recommends serogroup B meningococcal vaccine for*:

- Persons with persistent complement component deficiencies
- Persons with anatomic or functional asplenia
- Persons receiving complement inhibitor
- Microbiologists routinely exposed to isolates of *Neisseria meningitidis*
- Persons considered at greater risk because of a serogroup B meningococcal disease outbreak**
- The 2 vaccine products are not interchangeable.

Based on shared clinical decision making:

A Men B vaccine series may be administered to adolescents and young adults 16 through 23 years of age to provide short-term protection against most strains of Men B. Preferred age is 16-18 years.

*<https://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm>

* <https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/mening.html>

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Serogroup B Meningococcal Vaccine Administration

Bexsero® licensed for ages 10 through 25 years (2 dose)
Trumenba® licensed for ages 10 through 25 years (2 dose or 3 dose)

MenB-FHbp (Trumenba®)

- **2 dose schedule** – administered at 0, 6 months
- Given to healthy adolescents who are not at increased risk for meningococcal disease
- **3 dose schedule** – administered at 0, 1-2, 6 months
- Given to persons at increased risk for meningococcal disease and for use during serogroup B outbreaks

MenB-4C (Bexsero®)

- 2 dose schedule – 0, 1-2 months

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Rotavirus Vaccines

RotaTeq® (Merck) and Rotarix® (GSK)*

- RotaTeq®: 3 doses; ages 2, 4, 6 months
- Rotarix®: 2 doses; ages 2 and 4 months

ACIP recommendation:

- 2-3 doses depending on brand
- Administer either vaccine as directed below:
 - Minimum age for first dose: 6 weeks
 - Maximum age for first dose: 14 weeks 6 days
 - Minimum interval between doses: 4 weeks
 - Maximum age for last dose: 8 months 0 days
- If any dose is Rotateq®, 3 doses are required
- Use RotaTeq® if allergy to latex

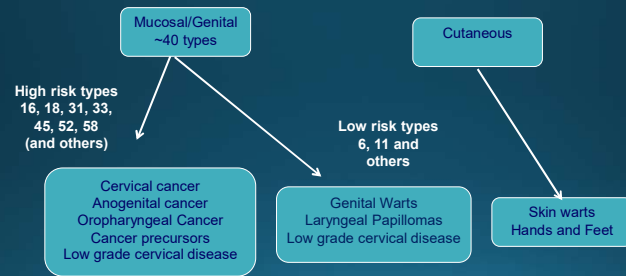
*MMWR, February 6, 2009, Vol 58, #RR-02

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Types of Human Papilloma Virus (HPV)*

(More Than 200 Types Identified)



*Epidemiology and Prevention of Vaccine Preventable Diseases 13th Edition, 2015

*Red Book – AAP 2018 Report of the Committee on Infectious Diseases

* MMWR, August 29, 2014, RR Vol. 63, No. 5

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HPV Vaccine*

Gardasil 9® (9vHPV) HPV types 6, 11, 16, 18, 31, 33, 45, 52, 58

ACIP recommends HPV vaccine starting at age 11 or 12 years for:

- All males and females through 26 years of age
- Catch-up vaccination for persons through age 26 who are not adequately vaccinated

Gardasil 9 is now also licensed for all persons 9 through 45 yrs. of age**

- Use the 3-dose schedule for persons 15-45 years of age
- Based on shared clinical decision making, the series may be given to persons ages 27-45.

*https://www.merck.com/product/usa/pi_circulars/g/gardasil_9/gardasil_9_pi.pdf

* MMWR, August 29, 2014, RR Vol. 63, No. 5

**MMWR, August 16, 2019, Vol 68, No. 32

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ACIP Recommendations and Schedule*

2 Dose Schedule:

HPV vaccine initiated between 9-14 years can be given in two doses: 0, 6-12 months.
(If the 2nd dose is administered at least 5 months after 1st dose, it can be counted).

3 Dose Schedule:

HPV vaccine initiated after the 15th birthday or certain immunocompromising conditions should be vaccinated with the 3 dose schedule: 0, 1-2, 6 months

Dose 2 should be given at least 1 to 2 months after first dose (1 month minimum); Dose 3 should be given at least 6 months after the first dose (minimum of 3 months between dose 2 and 3)

*MMWR, December 16, 2016, Vol 65, No. 49

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Reasons to Immunize Against HPV at age 11-12 Years*

- Higher antibody level attained when given to pre-teens rather than to older adolescents or women
- At this age, more likely to be administered before onset of sexual activity
- HPV can be transmitted by other skin-to-skin contact, not just sexual intercourse
- There is no link between vaccine and riskier sexual behavior
- Even those who abstain from sex until marriage can be infected by their marital partner
- Individuals need to complete the series for full protection
- This is an anti-cancer vaccine, and.....

Over 90% of HPV cancers are preventable through HPV vaccination.

Bottom line: NOT receiving a healthcare provider's recommendation for HPV vaccine was one of the main reasons parents reported for not vaccinating their adolescent children.**

*Presented by Anne Schuchat, MD, RADM US Public Health Service, Asst. Surgeon General, Director NCIRD at Immunize Georgia Conference, Atlanta, GA, 9-11-14
Increasing HPV Vaccination Rates Among Adolescents: Challenges and Opportunities. PolicyLab: The Children's Hospital of Philadelphia, 2016.

**http://www.immunize.org/askexperts/experts_hpv.asp

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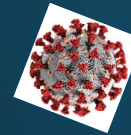
Strategies to Avoid Missed Opportunities*

- Provider Prompts
 - Automatic pop-up alerts through your EHR system
 - These can sometimes be pre-installed and then customized in your office
- Family-friendly office hours
 - Occasional evening or Saturday hours
 - "No-appointment-required" if needing immunizations only
- Immunization Champion in your practice
 - Manage vaccine supply and schedule periodic updates
 - Any member of the staff could fill this role
- Include all recommended vaccines at each visit
- Schedule periodic team meetings with all personnel to:
 - Improve patient flow
 - Improve quality of care
 - Discuss problems within the framework of the practice

*<https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/office-strategies.aspx> 33

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SARS-CoV-2 virus (COVID-19 disease)*



SARS-CoV-2, the virus that causes COVID-19 disease affects the respiratory system primarily, but other organ systems may also be impacted

Transmission is through droplet and respiratory spread but may also include indirect contact with contaminated objects

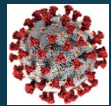
Access current data on COVID-19 cases and deaths in Georgia** and nationally***

**[Georgia data](#) **[Georgia data \(2\)](#)

***[National data](#)

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SARS-CoV-2 virus (COVID-19 disease) in children and adolescents

Children can be infected with the virus that causes COVID-19, can get sick from COVID-19, and can spread the virus that causes COVID-19 to others. Children, like adults, who have COVID-19 but have no symptoms ("asymptomatic") can still spread the virus to others.

(8/30/21) Over 4.8 million children have tested positive for COVID-19 since the onset of the pandemic.

Children represent 14.8% of total cumulated cases. Among states reporting, children were 0.00%-0.24% of all COVID-19 deaths.

Access current pediatric data on COVID-19 cases, hospitalizations and deaths at [AAP's site](#).
For data on cases in Georgia, visit [Georgia data](#) and [Georgia data \(2\)](#)

[National data](#)

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COVID-19 disease

Symptoms can be mild to severe and can develop 2-14 days after exposure

Fever or chills

Cough

Shortness of breath

Fatigue

Myalgia

Headache

Loss of taste or smell

Sore throat

GI symptoms (nausea, vomiting, diarrhea)

Source: [CDC](#)

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COVID-19 VACCINE OVERVIEW

(6/2/21) Subject to change as other vaccines are authorized

	Pfizer-BioNTech	Moderna	Janssen
Vaccine Type	mRNA	mRNA	Non-replicating Human adenovirus 26 vector
EUA granted	Yes	Yes	Yes
# of doses	2	2	1
Storage	Ultracold Freezer/Freezer/Refrigerator	Freezer/Refrigerator	Refrigerator

SOURCE: CDC Moderna

SOURCE: CDC Pfizer

SOURCE: CDC Janssen

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Summary Document for Interim Clinical Considerations for use of COVID-19 vaccines currently authorized in the United States

	Pfizer-BioNTech	Moderna	Janssen
Vaccine type	mRNA	mRNA	Non-replicating adenovirus type 26 vector
Authorized age groups	>12 years	>18 years	>18 years
Dose	300 µg	100 µg	5x10 ¹¹ viral particles
Dose volume	0.3 mL	0.5 mL	0.5 mL
Number of doses in series	2 ^a	2 ^a	1
Interval between doses	3 weeks (21 days)	4 weeks (28 days)	N/A

All currently authorized COVID-19 vaccines

Interchangeability of vaccines

- Vaccines are not interchangeable. However, in exceptional situations, such as a contraindication to a second dose of mRNA vaccine, consideration may be given to the following:
 - COVID-19 vaccine and other vaccines may be administered on the same day as well as any interval without respect to timing. When deciding whether to administer COVID-19 vaccine and other vaccines, providers should consider whether the patient is likely to be at risk of developing harmful or unanticipated reactions from risk of vaccine-preventable diseases (e.g., during an outbreak), and the interchangeability of the vaccines.
 - COVID-19 vaccine can be given orally to people with prior SARS-CoV-2 infection.
 - Other vaccine-related information has been received from the vaccine doses and doses have been used for them to discontinue isolation.
 - Can receive any FDA-authorized vaccine but should be informed of risk of breakthrough with breakthrough symptoms (TTS) after receipt of second Johnson & Johnson COVID-19 vaccine and the possibility of other COVID-19 vaccine options.
- Defers vaccination for at least 90 days.
- Persons in community or independent settings should defer vaccination until quarantine period has ended.
- Residence or patients in long-term settings may be vaccinated if they do not have contraindications with COVID-19.
- 9 weeks (63 days) of illness, offer an mRNA vaccine, after 90 days vaccinate with any FDA-authorized COVID-19 vaccine.
- May receive COVID-19 vaccine.
- Can receive any FDA-authorized COVID-19 vaccine.
 - 1 dose second COVID-19 vaccine, currently no recommendation for an additional dose, or
 - 2 doses after mRNA COVID-19 vaccine, consider an additional dose at least 18 days after completion of the primary 2-dose series.

CDC: Interim Clinical Guidance for Providers

SOURCE: CDC

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FAQS*

What is mRNA?

Messenger RNA---found in all living cells; teaches cells to make a protein to help trigger an immune response. Cannot alter our DNA.

How do we know the vaccines are safe?

All vaccines must undergo extensive safety testing, which is reviewed by the FDA before the vaccine is licensed for widespread use.

Can a person receive the vaccine if they are taking antibiotics?

Yes, there is no interaction between the two.

Can you get the disease from the vaccine?

No, but it may take a few weeks for the body to develop immunity so if exposed during that period of time, the person could become infected.

Should someone who has had COVID-19 disease get the vaccine?

Yes, the CDC recommends this.

Will persons be required to show proof of vaccination at work or school?

Some employers may require this.



*<https://www.nfid.org/infectious-diseases/frequently-asked-questions-about-covid-19-vaccines/>

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KEYS TO PREVENTION



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Patient and Health Care Provider Resources

Reporting Serious Adverse Events
and Vaccine Administration Errors



- VAERS---<https://vaers.hhs.gov/>
- VSD---<https://www.cdc.gov/vaccinesafety/ensuringsafety/monitoring/vsd/index.html>
- V-safe---<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/vsafe.html>

Vaccine Package Inserts

- Pfizer---<https://www.fda.gov/media/144413/download> (for providers)
- Moderna---<https://www.fda.gov/media/144637/download> (for providers)

Emergency Use Authorization (EUA)

- Pfizer---<https://www.fda.gov/media/144414/download> (for vaccine recipients and caregivers)
- <https://www.fda.gov/media/144413/download> (for providers)
- Moderna---<https://www.fda.gov/media/144638/download> (for vaccine recipients and caregivers)
- <https://www.fda.gov/media/144637/download> (for providers)

CDC resources for healthcare providers and vaccine recipients---<https://www.cdc.gov/vaccines/>

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Critical Elements for Immunization Services



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Recommended Healthcare Personnel Vaccinations

- Hepatitis B (exposure risk) check immunity
- Influenza (annual)
- Measles, Mumps, Rubella (MMR)
- Varicella (Chickenpox)
- Tetanus, Diphtheria, Pertussis (Tdap)
- Meningococcal (recommended for microbiologists who are routinely exposed to isolates of *N. meningitidis*).
- COVID-19 vaccine

Are **YOU** up to date?

Healthcare Personnel Vaccination Recommendations¹

VACCINES AND RECOMMENDATIONS IN BRIEF

Hepatitis B. If previously unvaccinated, give a 3-dose Hepatitis B (3-dose HepB) vaccine to all HCP who perform tasks that may involve exposure to blood or body fluids, exposure to other potentially infectious materials (OPIM), or contact with mucous membranes and/or non-intact skin. For HCP who perform tasks that may involve exposure to blood or body fluids, exposure to other potentially infectious materials (OPIM), or contact with mucous membranes and/or non-intact skin, the 3-dose HepB vaccine should be given as soon as possible, but no later than 180 days after the first dose. For HCP who perform tasks that may involve exposure to blood or body fluids, exposure to other potentially infectious materials (OPIM), or contact with mucous membranes and/or non-intact skin, the 3-dose HepB vaccine should be given as soon as possible, but no later than 180 days after the first dose. For HCP who perform tasks that may involve exposure to blood or body fluids, exposure to other potentially infectious materials (OPIM), or contact with mucous membranes and/or non-intact skin, the 3-dose HepB vaccine should be given as soon as possible, but no later than 180 days after the first dose.

Influenza. Give a 1-dose of influenza vaccine annually. Inactivated influenza vaccine is preferred. Live attenuated influenza vaccine (LAIV) is given intranasally.

MMR. For HCP who are not vaccinated, give 2 doses of MMR, 4 weeks apart. For HCP who have not received 1st dose previously and to pregnant HCP with each pregnancy (see below). Give 1st dose of MMR every 10 years thereafter. Give 1st dose of MMR every 10 years thereafter.

Varicella (chickenpox). For HCP who have no serologic proof of immunity, either by a blood test or by documentation of a history of varicella or chickenpox (including by medical records), give 2 doses of varicella vaccine, 4 weeks apart. Give 1st dose.

Tetanus, diphtheria, pertussis. Give 1 dose of Tdap as soon as feasible to all HCP who have not received 1st dose previously and to pregnant HCP with each pregnancy (see below). Give 1st dose of Tdap every 10 years thereafter. Give 1st dose of Tdap every 10 years thereafter.

Meningococcal. Give both MenACWY and MenB to microbiologists who are routinely exposed to isolates of *N. meningitidis*, including in the laboratory (test and blood agar), and those who have contact with patients (test and blood agar). Give both MenACWY and MenB every 5 years.

COVID-19. Give COVID-19 vaccine as soon as possible, but no later than 180 days after the first dose. For HCP who perform tasks that may involve exposure to blood or body fluids, exposure to other potentially infectious materials (OPIM), or contact with mucous membranes and/or non-intact skin, the 3-dose HepB vaccine should be given as soon as possible, but no later than 180 days after the first dose.

Footnotes:

¹For the full guidance, please refer to the complete recommendations for healthcare personnel vaccination available at <https://www.cdc.gov/vaccines/imz/downloads/2019-08-14-hcp-vaccine-recommendations-2019.pdf>.

IMMUNIZATION ACTION CAUTION

Sanofi, Minnesota: 800-645-0089; www.immunize.org; www.cdc.gov/vaccines/imz/downloads/2019-08-14-hcp-vaccine-recommendations-2019.pdf

Available at www.immunize.org, PH2017

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2021 Childhood and Adolescent Immunization Schedules*

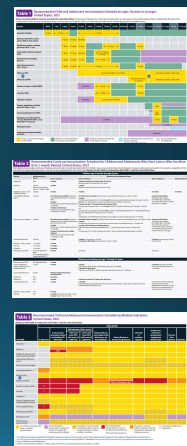
- Recommended Schedule for Children Ages 0-18 Years
- Catch-up Schedule
- Vaccines that might be indicated for children and adolescents aged 18 years or younger based on medical indications

Changes

- Clarification of the charts
- Additional information in the Notes section

**READ THE FOOTNOTES TO
ACCESS SPECIFIC VACCINE
ADMINISTRATION DETAILS!**

<https://www.cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf>



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COVID-19 Vaccine Administration Errors and Deviations		
A vaccine administration error is any preventable event that may cause or lead to inappropriate use of vaccine or patient harm. This table provides resources for preventing and reporting COVID-19 vaccine administration errors, as well as actions to take after an error has occurred. For completeness, it includes additional scenarios that deviate from CDC recommendations for vaccine intervals but are not considered administration errors.		
<p>For all vaccine administration errors:</p> <ul style="list-style-type: none"> Inform the recipient of the vaccine administration error. Consult with the state immunization program and/or immunization information system (IIS) to determine how the dose should be entered into the IIS, both as an administered dose and to account for inventory. <p>Providers are required to report all COVID-19 vaccine administration errors—even those not associated with an adverse event—to UNICIS.</p> <ul style="list-style-type: none"> Determine how the error occurred and implement strategies to prevent it from happening again. 		
Vaccine	Type	Interim recommendation
All currently authorized vaccines (Pfizer-BioNTech, Moderna, and Janssen COVID-19 vaccine) ingredients	Sterility	<ul style="list-style-type: none"> Inject into site, not other than the anatomical site (injected site or anatomical site) (injected site) Inject into site, not other than the anatomical site (injected site)
	Age	<ul style="list-style-type: none"> Unauthorized age group
	Dosage	<ul style="list-style-type: none"> Higher than authorized dose volume administered Lower than authorized dose volume administered (e.g., diluted out, equipment failure, incorrect syringe used)
	Storage and handling	<ul style="list-style-type: none"> Dose administered after improper storage and handling as temperature exposure more than allowed time after first use (permitted) Dose administered past the expiration/beyond use date

• **SOURCE: CDC**

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Updated Vaccine Storage and Handling Recommendations*

- Use stand-alone refrigerator and stand-alone freezer units. If combined, use only refrigerator part.
- Do not store any vaccine in a dormitory-style or bar-style combined refrigerator/freezer unit.
- Use a bio-safe glycol-encased probe or a similar temperature buffered probe
- Probes should be calibrated every 1-2 yrs. or according to manufacturers' guidelines
- Use digital data loggers.
- Do not store ANYTHING ELSE in refrigerator.
- Review vaccine expiration dates and rotate vaccine stock weekly.



*Vaccine Storage and Handling Toolkit, January, 2020

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Maintaining Appropriate Vaccine Storage & Handling*

- Assign a primary and alternate vaccine coordinator.
- Store all vaccines as recommended by manufacturer and IN ORIGINAL PACKAGING, WITH THE LID CLOSED.
- Monitor and record temperatures of refrigerator and freezer twice daily.
- Correct ranges: refrigerator 36° F to 46° F; freezer -58° F to +5° F
- Maintain temperature log records for 3 years.
- Take immediate action for all out-of-range temps.
- Implement a vaccine emergency system.
- If it is necessary to transport vaccine, do NOT use dry ice. See Vaccine Storage and Handling Toolkit, Section 6 for Transport System Recommendations.
- For COVID-19 vaccine, see specific vaccine guidelines.

*Vaccine Storage and Handling Toolkit, January 2020

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Improper Immunization Administration Practices with Any Vaccine*

- DO NOT re-use needles or syringes, due to the possibility of:
- Transmission of blood-borne viruses (HCV, HBV, HIV)
 - Referral of providers to licensing boards for disciplinary action
 - Malpractice suits filed by patients

Never use partial doses from 2 or more vials to obtain a dose of vaccine.**

Per OSHA and the CDC, you MAY use the same needle to withdraw a diluent, inject this into a lyophilized vaccine vial, and then administer to a patient, providing the needle or syringe has not otherwise been contaminated.**

*CDC, NCEIZ, DHQP. Injection Safety Information for Providers: www.cdc.gov/injectionsafety/providers.html

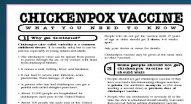
**<http://www.immunize.org/askexperts/administering-vaccines.asp>

**Vaccine Storage and Handling Toolkit, January, 2020

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Always Document...

- Accept only written documentation of prior immunizations
- Provide VIS prior to administration of vaccine
- After vaccine administration, document:
 - ✓ Publication date of VIS & date VIS given
 - ✓ Date, site, route, antigen(s), manufacturer, lot #
 - ✓ Person administering vaccine, practice name and address
 - ✓ Vaccine refusals with a signed "Refusal to Vaccinate Form"—see Online Resources slide for link to this form
 - ✓ GA law does not require signed consent for immunizations



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A 'Birth to Death' Immunization Registry

- Providers administering vaccines in Georgia must provide appropriate information to GRITS.
- GRITS personnel can work with your EHR/EMR vendor to create an interface between your system and GRITS.
- Use GRITS to generate reminders on medical records and/or notify patients when vaccines are needed.
- Assess your immunization rates using GRITS to improve patient care, HEDIS scores, and identify problem areas.

Call the GRITS Training Coordinator (404) 463-0807 or e-mail : <https://dph.georgia.gov/georgia-immunization-registry-grits>

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Exemptions From School/Day Care Requirements

Medical Exemption O.C.G.A. §20-2-771(d)

- Used when a physical disability or medical condition contraindicates a particular vaccine.
- Requires an annual review.
- The medical exemption is documented in GRITS.

Religious Exemption O.C.G.A. §20-2-771(e)

- Parent or guardian must be directed to <http://dph.georgia.gov/immunization-section> to obtain an Affidavit of Religious Objection to Immunization form.
- This form must be signed and notarized and provided to the school.
- Must be kept on file at school/facility in lieu of an immunization certificate.
- Affidavit does not expire.

Georgia does NOT have a philosophical exemption.

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Monitoring Vaccine Safety



• VAERS—Vaccine Adverse Event Reporting System

Option 1 - Report Online to VAERS (Preferred)

Submit a VAERS report online. The report must be completed online and submitted in one sitting and cannot be saved and returned to at a later time. Your information will be erased if you are inactive for 20 minutes; you will receive a warning after 15 minutes.

Option 2 - Report using a Writable PDF Form

Download the Writable PDF Form to a computer. Complete the VAERS report offline if you do not have time to complete it all at once. Return to this page to upload the completed Writable PDF form by clicking here.

If you need further assistance with reporting to VAERS, please email info@VAERS.org or call 1-800-822-7967.

- **FDA and Vaccine Data Link Safety Project**

- **VERP: VACCINE ERROR REPORTING SYSTEM**

- ✓ On line reporting at <http://verp.ismp.org/>
- ✓ Report even if no adverse events associated with incident
- ✓ Will help identify sources of errors to help develop prevention strategies

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Invalid Contraindications to Vaccine*

- Mild illness or injury
- Antibiotic therapy
- Disease exposure or convalescence
- Pregnancy or immunosuppression in household
- Family history of an adverse event to a vaccine
- Breastfeeding
- Prematurity
- Allergies to products not in vaccine
- Need for TB skin testing
- Need for multiple vaccines

*<https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html>

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Vaccine Risk Perception

Many parents of young children are not familiar with vaccine-preventable diseases and perceive the risks of vaccines outweigh the benefits

Concerns

- Immune system overload
- Children get too many shots at one visit
- Vaccines have side effects (adverse reactions)
- Immunity from the disease is better than immunity from a vaccine (ie. chicken pox)
- Vaccines cause autism

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Provider Strategies to Improve Vaccination Rates*

- **Strengthening vaccination recommendations**
 - Increased emphasis in the practice on training re: vaccine safety and efficacy for ALL employees having patient contact
 - Having OB doctors begin the promotion of vaccines with expectant mothers, for themselves and for their newborn
 - Be alert to avoid missed opportunities
 - Decrease acceptance of alternative schedules
- **Strengthening vaccine mandates**
 - Eliminating nonmedical exemptions
 - Increased enforcement of state mandates by schools and childcare facilities

*Children's Hospital of Philadelphia, Vaccine Update for Healthcare Providers, "News & Views: Addressing Vaccine Hesitancy," March 21, 2017

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Provider Strategies* (cont'd)

- **Attention to requirements of "informed refusal"*****
 - Explain basic facts/uses of proposed vaccine
 - Review risks of refusing the vaccine(s)
 - Discuss anticipated outcomes with and without vaccination
 - Parental/patient completion of Refusal to Vaccinate form each visit
- **Importance of documenting informed refusal to vaccinate****
 - Claims of failure to warn of consequences of failing to vaccinate have resulted in successful lawsuits
 - Documented informed refusal creates a record of interaction between parents/patients and providers

*Children's Hospital of Philadelphia, Vaccine Update for Healthcare Providers, "News & Views: Addressing Vaccine Hesitancy," March 21, 2017
 **AAP Publications, "Document informed refusal just as you would informed consent," James P. Scibilia, M.D. FAAP, October 30, 2018

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Vaccine Schedules Varying From ACIP/AAP/AAFP Recommendations

Alternate Schedules

- Dr. Bob's Selective Vaccine Schedule
- Dr. Bob's Alternative Vaccine Schedule
- Parent-derived schedules
- Parent/caretaker refusal of all vaccines

Concerns re: alternate schedules

- Alternate or delayed schedules have not been tested
- No studies to prove they are safer



If any of these Alternate Schedules are requested, the health care provider and staff must spend additional time educating the parent/caretaker about the appropriate use of vaccines.

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Anti-Vaccine Movement

- Promotes the idea that there is less evidence of disease today and immunizations are no longer needed
- Sends confusing & conflicting information
- Uses stories, personal statements, and books to play on the emotional side of concerned parents

Encourage parents/patients to:

- Get the facts
- Consider the source
- Discuss their concerns with you



Global Vaccine Awareness League



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Resources for Factual & Responsible Vaccine Information



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Stay Current!



- Sign up for listserv sites which provide timely information pertinent to your practice
www.immunize.org/resources/emailnews.asp

- AAP Newsletter
- CDC immunization websites (32 in all)
- CHOP Parents Pack Newsletter
- IAC Express, Needle Tips and Vaccinate Adults
- Websites specific to particular vaccines

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**YOU ARE ALL PART OF THE TEAM THAT CAN
MAKE SURE YOUR PATIENTS RECEIVE THE
IMMUNIZATIONS THEY NEED!**

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Online Resources*

Current Childhood and Adult Immunization Schedules –
www.cdc.gov/vaccines/schedules/index.html

Parent's Guide to Childhood Immunizations –
www.cdc.gov/vaccines/parents/tools/parents-guide/index.html

Order Information for Free CDC Immunization Materials for Providers and Patients – www.cdc.gov/pubs/CDCInfoOnDemand.aspx

Vaccine Labels to Organize a Storage Unit –
www.cdc.gov/vaccines/hcp/admin/storage/guide/vaccine-storage-labels.pdf

*Course Resource—Epidemiology & Prevention of Vaccine-Preventable Diseases—C296544-E

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Vaccine Information Statements (VISs) –
www.cdc.gov/vaccines/hcp/vis/current-vis.html

Refusal to Vaccinate Form –
https://www.aap.org/en-us/documents/immunization_refusaltovaccinate.pdf

Standing Orders (Explanation and Templates) –
www.immunize.org/standing-orders/

Ask the Experts – www.immunize.org/askexperts/

General Best Practice Guidelines for Immunization –
<https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html>

*Course Resource—Epidemiology & Prevention of Vaccine-Preventable Diseases—C296544-E

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Questions?

Contacts for more immunization information and resources!

National Center for Immunization and Respiratory Diseases, CDC

E-mail [▶ NIPInfo@cdc.gov](mailto:NIPInfo@cdc.gov)

Hotline 800.CDC.INFO

Website <http://www.cdc.gov/vaccines>

Georgia Immunization Program

E-mail DPH-Immunization@dph.ga.gov

Hotline 404-657-3158

Website <http://dph.georgia.gov/immunization-section>

Immunization Action Coalition

E-mail admin@immunize.org

Phone 651.647.9009

Website www.immunize.org

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