November 2019

IMMUNIZATION RESOURCES FOR UNDERGRADUATE NURSING (IRUN)

Curriculum Framework:

A Guide to Integrating Content in Prelicensure Nursing Practice

Centers for Disease Control and Prevention
National Center for Immunization and Respiratory Diseases

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Nichole Bobo, MSN, RN
National Association of School Nurses (NASN)

Beverly Bowers, PhD, APRN-CNS, ANEF
University of Oklahoma College of Nursing

Susan Brasher, PhD, CPNP
Emory University School of Nursing

Sheryl Buckner, PhD, RN, ANEF
University of Oklahoma College of Nursing

Agnes Burkhard, PhD, RN, APHN-BC
Association of Community Health Nursing Educators (ACHNE)

Ann Marie Felauer, MSN, RN, CPNP-AC/PC
University of Maryland School of Nursing

Ann Hoffman, DNP, RN
University of Maryland School of Nursing

Stacie Hunsaker, RN, MSN, CEN, CPEN, CNE
Brigham Young University

Versie Johnson–Mallard, PhD, ARNP, FAAN, FAANP
National League for Nursing (NLN)

Barbara Joyce, PhD, CNS, RN
Association of Community Health Nursing Educators (ACHNE)

Janelle Macintosh, PhD, RN
American Nurses Association (ANA)

Diane Mancino, EdD, RN, CAE, FAAN
National Student Nurses' Association (NSNA)

Diane McNaughton, PhD, PHNA-BC
Rush University

Susan Odom, PhD, RN, CCRN, FRE
National Council of State Boards of Nursing (NCSBN)

Mary Paterson, PhD, MSN
Professor Emeritus, The Catholic University of America
School of Nursing

Gaye Ray, FNP-C, MS, RN, PH-C
Brigham Young University

Claire Smith
2015 NSNA Student Representative, University of Maryland

Amy Spangler, RN, MS, CPNP
Lourdes University

Joan M Stanley, PhD, RN, CRNP, FAAN, FAANP
American Association of Colleges of Nursing (AACN)

Joshua Steward, RN
2015 NSNA Student Representative, Community College of Baltimore County

Susan Swider, PhD, PHNA-BC, FAAN
Rush University

Sarah Woodmansee
2018 Student Representative, Emory University School of Nursing

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Katy Bidwell, MPH (2014–2018)
Association for Prevention Teaching and Research (APTR)

Ruth Gallego, RN, MPH, CHES
American Association of Colleges of Nursing (AACN)

Jennifer Hamborsky, MPH, MCHES
Centers for Disease Control and Prevention (CDC)

Allison Jacobs, MPH
American Association of Colleges of Nursing (AACN)

Allison Lewis, BS
Association for Prevention Teaching and Research (APTR)

Donna Page, MPH, MCHES
Association for Prevention Teaching and Research (APTR)

Raymond Strikas, MD, MPH, FACP, FIDSA
Centers for Disease Control and Prevention (CDC)

JoEllen Wolicki, BSN, RN
Centers for Disease Control and Prevention (CDC)

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IMMUNIZATION RESOURCES FOR UNDERGRADUATE NURSING (IRUN)

CONTENTS

IMMUNIZATION RESOURCES FOR UNDERGRADUATE NURSING (IRUN)

Framework

Background

The Immunization Resources for Undergraduate Nursing (IRUN) framework was developed through a collaboration of the National Center for Immunization and Respiratory Diseases (NCIRD) in the Centers for Disease Control and Prevention (CDC) and the Association for Prevention Teaching and Research (APTR). In 2015, APTR convened a group of experts with diverse nursing perspectives. Its members include undergraduate nursing educators, national nursing practice and education association members, and nursing students. Together, they work to offer recommendations on how to increase immunization content in undergraduate nursing curricula and ensure a future nursing workforce that supports the Healthy People 2020 initiative's immunization objectives (www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases).

The IRUN framework was adapted from ***Public Health Agency of Canada's*** "Immunization Competencies for Health Professionals." In addition, the following resources were used in its development:

- Teaching Immunization Practices for Nurses (TIP) (American Nurses Association [ANA], Association of Teachers of Preventive Medicine [ATPM], and CDC)
- Nursing Initiative Promoting Immunization Training (NIP-IT) (University of Oklahoma College of Nursing and CDC)
- Competencies of Immunization Technical Workforce (Global Immunization Division, CDC)

Purpose

The purpose of the IRUN framework is to:

- Provide guidance for faculty on integrating immunization content into a curriculum, with a focus on entry-level learning for the undergraduate nursing student;
- Ensure access to and consistency of current information for faculty and students; and
- Prioritize information and content to be included in curricula.

Nursing faculty members are encouraged to assess their existing curricula and incorporate appropriate elements of this framework. The framework consists of 12 topic areas with corresponding learning objectives and suggested resources. The framework objectives are meant to be comprehensive. Faculty members can present the subject matter in any manner they find suitable. The framework does not provide instructions for teaching immunization in an academic setting. It serves solely as a guide to foundational topics identified by our group of experts, CDC, and APTR.

Framework Topics

1. Public Health Perspective
2. Immunization Strategies
3. Immune System/Immunology
4. Vaccine-Preventable Diseases
5. Types of Vaccines
6. Immunization Schedules
7. Communications
8. Legal/Ethical Issues
9. Vaccine Storage and Handling
10. Vaccine Administration
11. Documentation
12. Vaccine Safety

Public Health Perspective

Objectives

a. Explain how immunization practice relates to the three levels of disease prevention (i.e., primary, secondary, and tertiary).

b. Describe the impact of immunization on vaccine-preventable disease incidence.

c. Recognize the nurse's professional responsibility for keeping her/his own immunizations up to date.

d. Describe the purpose of the Vaccines for Children (VFC) program.

e. Discuss how the Advisory Committee on Immunization Practices (ACIP) develops immunization recommendations *(also see Topic 6–Immunization Schedules)*.

f. Describe the role of your state and/or local immunization program.

g. Describe the nursing roles related to public health: advocate, care coordinator, educator, school health care provider, state immunization coalition member, leader, and lifelong learner.

Resources

Web Pages

CDC Global Health–Infographic: The Global Impact of Vaccines in Reducing Vaccine-Preventable Disease Morbidity and Mortality www.cdc.gov/globalhealth/infographics/global_impact_of_vaccines.htm

CDC Vaccines and Immunizations

- Advisory Committee on Immunization Practices www.cdc.gov/vaccines/acip/about.html
- Awardee Immunization Websites www.cdc.gov/vaccines/imz-managers/awardee-imz-websites.html
- Recommended Vaccines for Healthcare Workers www.cdc.gov/vaccines/adults/rec-vac/hcw.html
- Vaccines for Children (VFC) Program www.cdc.gov/vaccines/programs/vfc/index.html

Healthy People 2020–Immunization and Infectious Diseases
www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases

Journal Articles

CDC. Immunization of Health-Care Personnel: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep*. 2011;60(RR-07):1–45.

CDC. Impact of vaccines universally recommended for children—United States, 1990–1998. *MMWR*. 1999;48:243–248.

Owen L, Morgan A, Fischer A, Ellis S, Hoy A, Kelly MP. The cost-effectiveness of public health interventions. *Journal of Public Health*. 2011;34(1):37–45.

Whitney CG, Zhuo F, Singleton J, Schuchat A. Benefits from immunization during the Vaccines For Children program era–United States, 1994–2013. *MMWR*. 2014;63:352–355.

Learning Modules

CDC *You Call the Shots*–Vaccines for Children Program modulewww.cdc.gov/vaccines/ed/youcalltheshots.html

Nursing Initiative Promoting Immunization Training (NIP-IT)

Module 1: Vaccine-Preventable Diseases–Historical Timeline of Infectious Diseases nip-it.org/vaccine_preventable_diseases.asp

Module 2: Vaccine Recommendations–Vaccine Development nip-it.org/vaccine_recommendations.asp

A group of smiling, healthy adults of various ages.

Books

Kaiser KL, Rector C. Maternal-Child Health: Working with Perinatal Infant, Toddler, and Preschool Clients. In: Allender J, Rector C, Warner K, eds. *Community and Public Health Nursing: Promoting the Public's Health*, 8th ed. Philadelphia, PA: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2013:656–698.

Marshall G. Introduction to Vaccinology. In: Marshall G. *The Vaccine Handbook: A Practical Guide for Clinicians*, 5th ed. West Islip, NY: Professional Communications, Inc.; 2015:9–47.

Marshall G. Vaccine Infrastructure in the United States. In: Marshall G. *The Vaccine Handbook: A Practical Guide for Clinicians*, 5th ed. West Islip, NY: Professional Communications, Inc.; 2015:48–79.

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Smith-Sayer K. Communicable Disease Control. In: Allender J, Rector C, Warner K, eds. *Community and Public Health Nursing: Promoting the Public's Health*, 8th ed. Philadelphia, PA: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2013:246–284.

Immunization Strategies

Health care personnel meeting to discuss immunization strategies.

Objectives

a. Identify barriers to immunization (e.g., clients, providers, and systems).

b. List evidence-based strategies to increase vaccination coverage, such as those cited in the Guide to Community Preventive Services, Standards for Adult Immunization Practice, and Standards for Childhood Immunization Practice.

c. Describe immunization quality improvement strategies for providers.

d. Explain the benefits of an immunization information system (IIS) *(also see Topic 11– Documentation)*.

e. Describe how a health care facility's policies can integrate immunization-related activities with other health care services and/or interventions.

f. Develop a teaching plan on the immunization needs of a client and/or a population.

g. Describe nursing roles related to immunization strategies: advocate, authority figure, communicator, care coordinator, records manager, educator, and lifelong learner.

Resources

Web Pages

American Academy of Pediatrics (AAP)–Office Strategies for Improving Immunization Rates
www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunization/Pages/office-strategies.aspx

American College of Obstetricians and Gynecologists (ACOG)–Immunization Implementation Strategies for Obstetrician-Gynecologists www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Immunization-Infectious-Disease-and-Public-Health-Preparedness-Expert-Work-Group/Immunization-Implementation-Strategies-for-Obstetrician-Gynecologistse

CDC Vaccines and Immunizations

- IQIP www.cdc.gov/vaccines/programs/iqip/at-a-glance.html
- For Parents of Preteens and Teens (7 through 18 Years Old) www.cdc.gov/vaccines/hcp/conversations/prevent-diseases/provider-resources-factsheets-teens.html
- Immunization Information Systems (IIS) www.cdc.gov/vaccines/programs/iis/about.html
- Reminder Systems and Strategies for Increasing Childhood Vaccination Rates www.cdc.gov/vaccines/recs/reminder-sys.htm
- Standards for Adult Immunization Practice www.cdc.gov/vaccines/hcp/adults/for-practice/standards/index.html
- Strategies for Increasing Adult Vaccination Rates www.cdc.gov/vaccines/hcp/adults/for-practice/increasing-vacc-rates.html

National Vaccine Advisory Committee (NVAC)–The Standards for Pediatric Immunization Practice www.hhs.gov/nvpo/nvac/reports-and-recommendations/the-standards-for-pediatric-immunization-practice/index.html

Public Health Foundation (PHF)–Highlights from Immunization Strategies: Using the Evidence and What Works to Improve Practice www.phf.org/phfpulse/pages/highlights_from_immunization_strategies_using_the_evidence_and_what_works_to_improve_practice.aspx

Handouts

CDC Vaccines and Immunizations website–Improving Vaccination Coverage Fact Sheet www.cdc.gov/vaccines/imz-managers/laws/downloads/Improving-Vax-Coverage-Factsheet.pdf

Immunization Action Coalition (IAC) website

- 10 Steps to Implementing Standing Orders for Immunization in Your Practice Setting www.immunize.org/catg.d/p3067.pdf
- Using Standing Orders for Administering Vaccines: What You Should Know www.immunize.org/catg.d/p3066.pdf

The Guide to Community Preventive Services website–What Works: Increasing Appropriate Vaccination www.thecommunityguide.org/sites/default/files/assets/What-Works-Vaccines-factsheet-and-insert.pdf

Learning Modules

CDC *Epidemiology and Prevention of Vaccine-Preventable Diseases* (Pink Book) webinar series–Immunization Strategies www.cdc.gov/vaccines/ed/webinar-epv/index.html

Nursing Initiative Promoting Immunization Training (NIP-IT) Module 4: Nursing Roles nip-it.org/nursing_roles.asp

Video

CDC YouTube Channel–Standards for Adult Immunization Practice www.youtube.com/watch?v=hWsX2vu3PQU

A nurse checking a patient's immunization history on a computer/tablet.

Books

CDC. Immunization Strategies for Healthcare Practices and Providers. In: Hamborsky J, Kroger A, Wolfe S, eds. *Epidemiology and Prevention of Vaccine-Preventable Diseases*, 13th ed. Washington, DC: Public Health Foundation; 2015:33–46. www.cdc.gov/vaccines/pubs/pinkbook/strat.html#.

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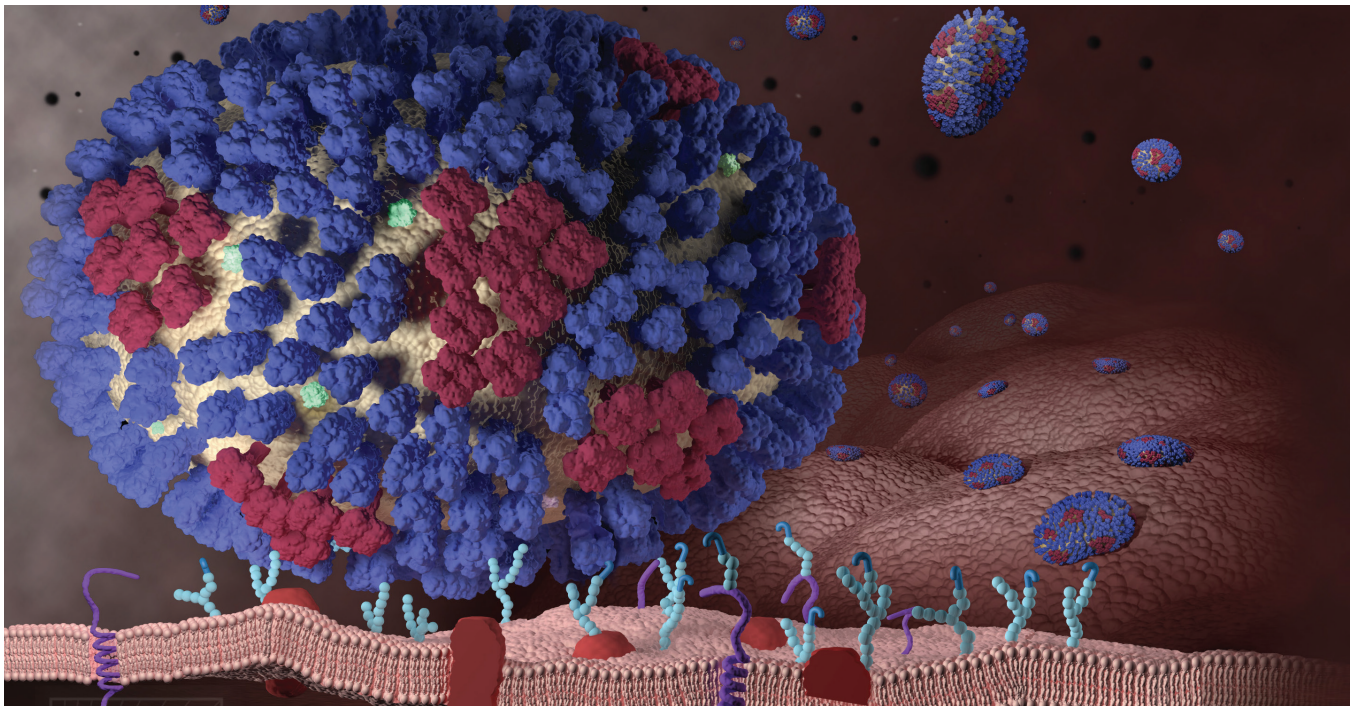
Marshall G. Vaccine Practice. In: Marshall G. *The Vaccine Handbook: A Practical Guide for Clinicians*, 5th ed. West Islip, NY: Professional Communications, Inc.; 2015:101–128.

Massachusetts Department of Public Health. *Flu Vaccine for Everyone! A Guide to Reaching and Engaging Diverse Communities*. Boston, MA: Massachusetts Department of Public Health; 2011. www.massclearinghouse.ehs.state.ma.us/PROG-CLAS/CL5401.html.

Smith-Sayer K. Communicable Disease Control. In: Allender J, Rector C, Warner K, eds. *Community and Public Health Nursing: Promoting the Public's Health*, 8th ed. Philadelphia, PA: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2013:246–284.



A graphic of an influenza virus, demonstrating its surface proteins, hemagglutinin and neuraminidase

Immune System/Immunology

Objectives

a. Define the word "antigen."
b. Define the word "antibody."
c. Identify types of immunity.
d. Differentiate between active immunity and passive immunity.
e. Compare immunity from immunization with immunity from wild-type infection.
f. List factors that affect the immune response to vaccines.
g. Describe community (herd) immunity.
h. Describe nursing roles related to the immune system/immunology: advocate, educator, and lifelong learner.

Resources

Learning Modules

CDC *Epidemiology and Prevention of Vaccine-Preventable Diseases* (Pink Book) webinar series–Principles of Vaccination www.cdc.gov/vaccines/ed/webinar-epv/index.html

CDC *You Call the Shots*–Module 1: Understanding the Basics: General Recommendations on Immunization www.cdc.gov/vaccines/ed/youcalltheshots.html

Nursing Initiative Promoting Immunization Training (NIP-IT) Module 1: Vaccine-Preventable Diseases–Principles of Immunity nip-it.org/vaccine_preventable_diseases.asp

Videos

Khan Academy–Types of Immune Responses www.khanacademy.org/science/health-and-medicine/human-anatomy-and-physiology/introduction-to-immunology/v/types-of-immune-responses-innate-and-adaptive-humoral-vs-cell-mediated.

WGBH television–Immunity and Vaccines Explained. NOVA. September 5, 2014. www.pbs.org/wgbh/nova/body/immunity-and-vaccines.html

PBS YouTube Channel–Immunity and Vaccines Explained www.youtube.com/watch?v=lXMc15dA-vw

Books

American Academy of Pediatrics. Active and Passive Immunization. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2018 Report of the Committee on Infectious Diseases*, 31st ed. Itasca, IL: American Academy of Pediatrics; 2018:1–111.

CDC. Principles of Vaccination. In: Hamborsky J, Kroger A, Wolfe S, eds. *Epidemiology and Prevention of Vaccine-Preventable Diseases*, 13 ed. Washington, DC: Public Health Foundation; 2015:1–8. www.cdc.gov/vaccines/pubs/pinkbook/prinvac.html.

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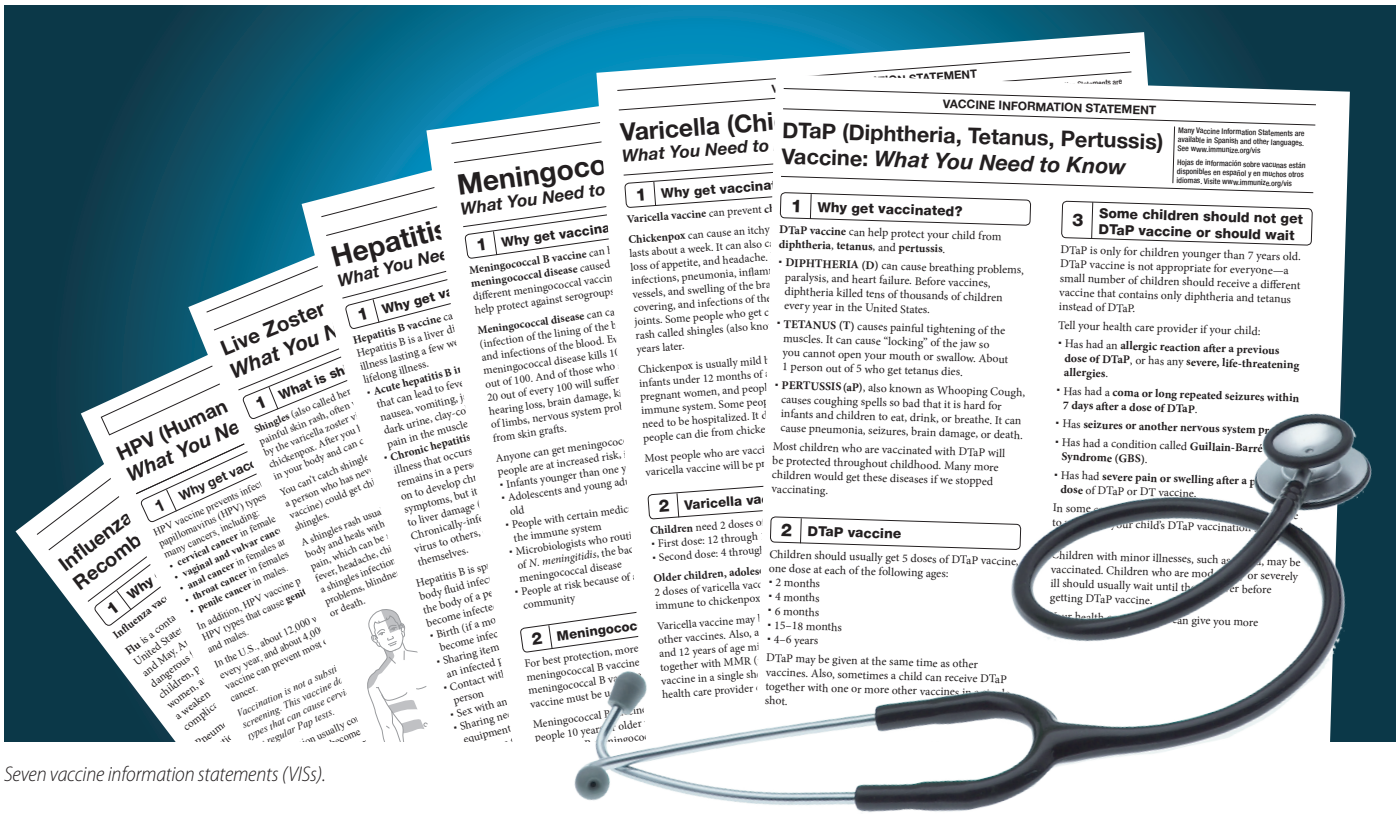

Seven vaccine information statements (VISs).

Vaccine-Preventable Diseases

Objectives

a. Identify vaccine-preventable diseases for which vaccines are included in the ACIP Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger.

b. Identify vaccine-preventable diseases for which vaccines are included in the ACIP Recommended Immunization Schedule for Adults Aged 19 Years or Older.

c. Identify the diseases prevented by travel vaccines.

d. Describe the etiologic agent, pathogenesis, signs and symptoms, appropriate infection control and prevention (e.g., standard, droplet, contact, and airborne precaution), and epidemiology of vaccine-preventable diseases.

e. Explain the nurse's role in vaccine-preventable disease surveillance.

f. Describe nursing roles related to vaccine-preventable diseases: advocate, educator, lifelong learner, and reporter.

Resources

Web Pages

CDC Travelers' Health

— Travel Vaccine Requirements and Recommendations wwwnc.cdc.gov/travel/destinations/list

— Yellow Book home page wwwnc.cdc.gov/travel/page/yellowbook-home

CDC Vaccines and Immunizations

- Recommended Immunization Schedule for Adults Aged 19 Years or Older
  www.cdc.gov/vaccines/schedules/hcp/adult.html
- Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger
  www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html

Every Child by Two (ECBT)–vaccinateyourfamily.org www.vaccinateyourfamily.org/vaccines-diseases/

Immunization Action Coalition (IAC)–A Photo Collection of Vaccine-Preventable Diseases
www.immunize.org/photos/

Voices for Vaccines–Vaccines www.voicesforvaccines.org/vaccines/

Learning Modules

CDC *Epidemiology and Prevention of Vaccine-Preventable Diseases* (Pink Book) webinar series–(specific vaccine-preventable diseases) www.cdc.gov/vaccines/ed/webinar-epv/index.html

CDC *You Call the Shots*–various modules www.cdc.gov/vaccines/ed/youcalltheshots.html

Nursing Initiative Promoting Immunization Training (NIP-IT) Module 1: Vaccine-Preventable Diseases–Childhood and Adult nip-it.org/vaccine_preventable_diseases.asp

Books

American Academy of Pediatrics. Summaries of Infectious Diseases. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2018 Report of the Committee on Infectious Diseases*, 31st ed. Itasca, IL: American Academy of Pediatrics; 2018:205–901.

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CDC. *Manual for the Surveillance of Vaccine-Preventable Diseases* (Chapters 1–23). Atlanta, GA: Centers for Disease Control and Prevention; 2008. www.cdc.gov/vaccines/pubs/surv-manual/index.htm.

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Types of Vaccines

Objectives

a. Identify types of vaccines (i.e., live, nonlive).

b. Compare types of vaccines by how they are derived.

c. Compare types of vaccines by how they produce immunity.

d. Discuss implications of the different types of vaccines (e.g., contraindications, precautions, risks, and use in special populations).

e. Identify common vaccine components that may be present in a given vaccine product (e.g., adjuvants, preservatives, stabilizers, and antibiotics).

f. Identify common public concerns about vaccine components such as formaldehyde, aluminum, and thimerosal.

g. Describe the nursing roles related to types of vaccines: communicator, educator, lifelong learner, and screener/assessor.

Resources

Web Pages

CDC Vaccines and Immunizations–Ingredients of Vaccines www.cdc.gov/vaccines/vac-gen/additives.htm

Children's Hospital of Philadelphia–Vaccine Education Center: Vaccine Ingredients
www.chop.edu/centers-programs/vaccine-education-center/vaccine-ingredients

Food and Drug Administration (FDA)–Common Ingredients in U.S. Licensed Vaccines
www.fda.gov/BiologicsBloodVaccines/SafetyAvailability/VaccineSafety/ucm187810.htm

A syringe with needle withdrawing vaccine from a vial.

Handout

CDC Vaccines and Immunizations website–Understanding How Vaccines Work
www.cdc.gov/vaccines/hcp/conversations/downloads/vacsafe-understand-color-office.pdf

Learning Modules

CDC *Epidemiology and Prevention of Vaccine-Preventable Diseases* (Pink Book) webinar series–Principles of Vaccination www.cdc.gov/vaccines/ed/webinar-epv/index.html

CDC *You Call the Shots*–Module 1: Understanding the Basics: General Recommendations on Immunization (Types of Vaccines) www.cdc.gov/vaccines/ed/youcalltheshots.html

Nursing Initiative Promoting Immunization Training (NIP-IT) Module 2: Vaccine Recommendations–Types of Vaccines nip-it.org/vaccine_recommendations.asp

Books

American Academy of Pediatrics. Active and Passive Immunization. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2018 Report of the Committee on Infectious Diseases*, 31st ed. Itasca, IL: American Academy of Pediatrics; 2018:1–111.

CDC. Hamborsky J, Kroger A, Wolfe S, eds. *Epidemiology and Prevention of Vaccine-Preventable Diseases*, 13th ed. (Chapters 7–22). www.cdc.gov/vaccines/pubs/pinkbook/index.html.

CDC. Principles of Vaccination. In: Hamborsky J, Kroger A, Wolfe, S, eds. *Epidemiology and Prevention of Vaccine-Preventable Diseases*, 13th ed. Washington DC: Public Health Foundation, 2015:1–9. www.cdc.gov/vaccines/pubs/pinkbook/prinvac.html.

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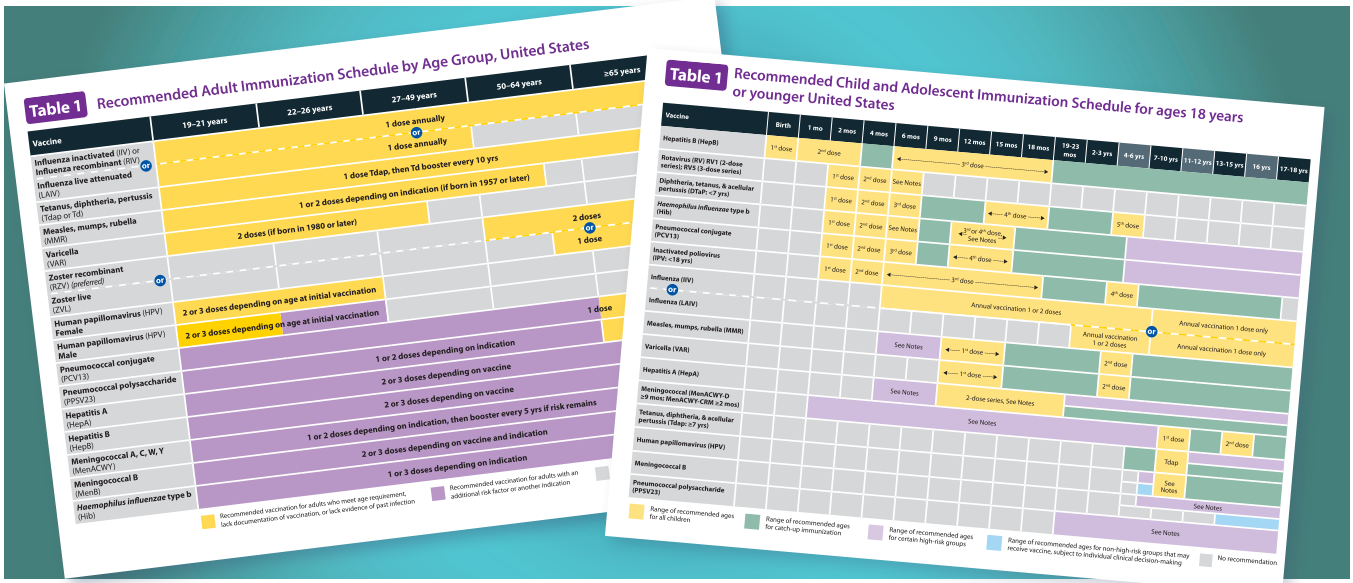
Immunization Schedules



Images of the adult, and child and adolescent, United States immunization schedules.

Objectives

a. Recognize the role of the Advisory Committee on Immunization Practices (ACIP) and other organizations (i.e., the American Academy of Pediatrics [AAP], the American Academy of Family Physicians [AAFP], the American College of Obstetricians and Gynecologists [ACOG], the American College of Physicians [ACP], and the American College of Nurse-Midwives [ACNM]) in the development of immunization schedules *(also see Topic 1–Public Health Perspective)*.

b. Identify the routinely recommended vaccines for children and adolescents aged birth through 18 years using the Recommended Child and Adolescent Immunization Schedule for Ages 18 Years or Younger, the Catch-Up Immunization Schedule for Persons Aged 4 Months through 18 years Who Started Late or Who are More than 1 Month Behind, and Figure 3 of the immunization schedule, which shows vaccines that might be indicated for children and adolescents aged 18 years or younger based on medical indications.

c. Identify the routinely recommended vaccines for persons aged 19 years of age and older using the Recommended Immunization Schedule for Adults Aged 19 Years or Older by Age Group and the Recommended Immunization Schedule for Adults Aged 19 Years or Older by Medical Condition and Other Indications.

d. Identify the routinely recommended vaccines for travelers.

e. Identify contraindications and precautions by vaccine.

f. Identify conditions commonly misperceived as contraindications to vaccination.

g. Use the current immunization schedule to determine what vaccines are needed based on individual factors (e.g., age, risk factors, and health status).

h. Use the current immunization schedule to determine what vaccines are needed for persons who have received vaccines outside the United States.

i. Discuss the importance of appropriate spacing and timing of vaccine doses.

j. Discuss the benefits of simultaneous administration.

k. Locate resources relevant to current vaccine recommendations.

l. Describe the nursing roles related to the immunization schedule: advocate, communicator, care coordinator, educator, lifelong learner, and screener/assessor.

Resources

Web Pages

CDC Immigration and Refugee Health–Vaccination Technical Instructions for Vaccination for Civil Surgeons
www.cdc.gov/immigrantrefugeehealth/exams/ti/civil/vaccination-civil-technical-instructions.html

CDC Travelers' Health

- Travel Vaccine Requirements and Recommendations wwwnc.cdc.gov/travel/destinations/list
- Yellow Book home page wwwnc.cdc.gov/travel/page/yellowbook-home-2014

CDC Vaccines and Immunizations

- ACIP Vaccine Recommendations
  www.cdc.gov/vaccines/hcp/acip-recs/index.html
- Conditions Commonly Misperceived as Contraindications to Vaccination
  www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html

CDC Vaccines and Immunizations

- General Best Practice Guidelines for Immunization www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html
- Guidelines for Vaccinating Pregnant Women www.cdc.gov/vaccines/pregnancy/hcp/guidelines.html
- Recommended Immunization Schedule for Adults Aged 19 Years or Older
  www.cdc.gov/vaccines/schedules/hcp/adult.html
- Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger
  www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html

Handouts

Immunization Action Coalition (IAC) website

- Screening Checklist for Contraindications to Vaccines for Children and Teens www.immunize.org/catg.d/p4060.pdf
- Screening Checklist for Contraindications to Vaccines for Adults www.immunize.org/catg.d/p4065.pdf
- Summary of Recommendations for Adult Immunization (Age 19 Years and Older)
  www.immunize.org/catg.d/p2011.pdf
- Summary of Recommendations for Child/Teen Immunization (Age Birth through 18 Years)
  www.immunize.org/catg.d/p2010.pdf

Journal Articles

CDC. Immunization of Health-Care Personnel: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm* Rep. 2011;60(RR-07):1-45.

Rubin LG, Levin MJ, Ljungman P, Davies EG, Avery R, Tomblyn M, Bousvaros A, Dhanireddy S, Sung L, Keyserling H, Kang I. 2013 IDSA clinical practice guideline for vaccination of the immunocompromised host. *Clinical Infectious Diseases*. 2013;58(3):44–100.

Learning Modules

CDC *Epidemiology and Prevention of Vaccine-Preventable Diseases* (Pink Book) webinar series–General Recommendations: Part 1 www.cdc.gov/vaccines/ed/webinar-epv/index.html

CDC *You Call the Shots*–various modules www.cdc.gov/vaccines/ed/youcalltheshots.html

Nursing Initiative Promoting Immunization Training (NIP-IT) Module 2: Vaccine Recommendations–Vaccine Development nip-it.org/vaccine_recommendations.asp

Books

American Academy of Pediatrics. Active and Passive Immunization. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2018 Report of the Committee on Infectious Diseases*, 31st ed. Itasca, IL: American Academy of Pediatrics; 2018:1–111.

CDC. General Recommendations on Immunization. In: Hamborsky J, Kroger A, Wolfe S, eds. *Epidemiology and Prevention of Vaccine-Preventable Diseases*, 13th edition. Washington, DC: Public Health Foundation; 2015:9–32. www.cdc.gov/vaccines/pubs/pinkbook/genrec.html.

Fraser, D. Health Problems of Infants. In: Hockenberry MJ, Wilson D, Rodgers CC, eds. *Wong's Essentials of Pediatric Nursing*, 9th ed. St. Louis, MO: Elsevier Health Sciences; 2012:228–307.

Lewis SL. Altered Immune Responses and Transplantation. In: Lewis SL, Dirksen SR, Heitkemper MM, Bucher L. *Medical-Surgical Nursing: Assessment and Management of Clinical Problems*, 9th ed. St. Louis, MO: Elsevier Mosby; 2014:203–225.

Marshall G. General Recommendations. In: Marshall G. *The Vaccine Handbook: A Practical Guide for Clinicians*, 5th ed. West Islip, NY: Professional Communications, Inc.; 2015:129–144.

Marshall G. Vaccination in Special Circumstances. In: Marshall G. *The Vaccine Handbook: A Practical Guide for Clinicians*, 5th ed. West Islip, NY: Professional Communications, Inc.; 2015:145–181.

Marshall G. Vaccine Practice. In: Marshall G. *The Vaccine Handbook: A Practical Guide for Clinicians*, 5th ed. West Islip, NY: Professional Communications, Inc.; 2015:101–128.

Ricci SS. Nursing Management During Pregnancy. In: Ricci SS. *Essentials of Maternity, Newborn, and Women's Health Nursing*, 4th ed. Philadelphia, PA: Wolters Kluwer/Lippincott Williams & Wilkins; 2017:362–418.

Ricci SS. Nursing Management During Postpartum Period. In: Ricci SS. *Essentials of Maternity, Newborn, and Women's Health Nursing*, 4th ed. Philadelphia, PA: Wolters Kluwer/Lippincott Williams & Wilkins; 2017:521–560.

Smith-Sayer K. Communicable Disease Control. In: Allender J, Rector C, Warner K, eds. *Community and Public Health Nursing: Promoting the Public's Health*, 8th ed. Philadelphia, PA: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2013:246–284.

Communications

A nurse giving a "high-five" to a young child.

Objectives

a. Assess the patient/caregiver's literacy level and apply appropriate communication methods/materials.

b. Locate evidence-based information and resources for communicating with parents and patients about vaccines.

c. Recommend credible sources of vaccine information.

d. Recognize the patient's attitudes and beliefs about immunization that may lead to religious or philosophical exemption from immunization.

e. Recognize how nurses' personal attitudes and beliefs affect communication about immunization.

f. Communicate clear, concise messages about the risks of vaccine-preventable diseases and the risks and benefits of vaccination using resources such as vaccine information statements (VISs).

g. Describe the requirements for the use of VISs.

h. Describe the nursing roles related to communication: risk manager, communicator, educator, advocate, records manager, and lifelong learner.

Resources

Web Pages

American Academy of Pediatrics (AAP)–healthychildren.org
www.healthychildren.org/English/safety-prevention/immunizations/Pages/default.aspx

American Nurses Association (ANA) Immunize–Patient Education
www.nursingworld.org/practice-policy/work-environment/health-safety/immunize/patient-education/

CDC Vaccines and Immunizations

- For Parents of Preteens and Teens (7 through 18 Years Old) www.cdc.gov/vaccines/hcp/conversations/prevent-diseases/provider-resources-factsheets-teens.html
- Healthcare Providers/Professionals www.cdc.gov/vaccines/hcp.htm
- Instructions for Using VISs www.cdc.gov/vaccines/hcp/vis/about/required-use-instructions.html
- Making the Vaccine Decision www.cdc.gov/vaccines/parents/vaccine-decision/index.html
- Patient Education www.cdc.gov/vaccines/ed/patient-ed.html
- Provider Resources for Vaccine Conversations with Parents www.cdc.gov/vaccines/hcp/conversations/conv-materials.html

Children's Hospital of Philadelphia (CHOP)–Vaccine Education Center www.chop.edu/centers-programs/vaccine-education-center

Families Fighting Flu (FFF) www.familiesfightingflu.org/

Parents of Kids with Infectious Diseases (Pkids) Online–Immunizations www.pkids.org/immunizations.html

Voices for Vaccines–Tools www.voicesforvaccines.org/tools/

Handouts

CDC Vaccines and Immunizations website–Talking with Parents about Vaccines for Infants: Strategies for Health Care Professionals www.cdc.gov/vaccines/hcp/patient-ed/conversations/downloads/talk-infants-color-office.pdf

Immunization Action Coalition (IAC) website–Reliable Sources of Immunization Information
www.immunize.org/catg.d/p4012.pdf

Journal Articles

Dempsey AF, Pyrzanowski J, Lockhart S, Campagna E, Barnard J, O'Leary ST. Parents' perceptions of provider communication regarding adolescent vaccines. *Human vaccines & immunotherapeutics*. 2016;12(6):1469–1475.

Edwards KM, Hackell JM, Committee on Infectious Diseases, Committee on Practice and Ambulatory Medicine. Countering vaccine hesitancy. *Pediatrics*. 2016:e20162146.

Kempe A, O'Leary ST, Kennedy A, Crane LA, Allison MA, Beaty BL, Hurley LP, Brtnikova M, Jimenez-Zambrano A, Stokley S. Physician response to parental requests to spread out the recommended vaccine schedule. *Pediatrics*. 2015:peds–2014.

Smith MJ, Marshall GS. Navigating parental vaccine hesitancy. *Pediatric annals*. 2010;39(8):476–482.

Videos

CDC Vaccines and Immunizations website–#HowIRecommend Vaccination Video Series www.cdc.gov/vaccines/howirecommend/index.html

Learning Modules

Nursing Initiative Promoting Immunization Training (NIP-IT)

Module 3: Vaccine Concerns nip-it.org/vaccine_concerns.asp

Module 4: Nursing Roles–Nurse Role as Communicator nip-it.org/nursing_roles.asp

Books

American Academy of Pediatrics. Active and Passive Immunization. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2018 Report of the Committee on Infectious Diseases*, 31st ed. Itasca, IL: American Academy of Pediatrics; 2018:1–111.

Marshall G. Addressing Concerns about Vaccines. In: Marshall G. *The Vaccine Handbook: A Practical Guide for Clinicians*, 5th ed. West Islip, NY: Professional Communications, Inc.; 2015:182–232.

Marshall G. Standards, Principles, and Regulations. In: Marshall G. *The Vaccine Handbook: A Practical Guide for Clinicians*, 5th ed. West Islip, NY: Professional Communications, Inc.; 2015:80–100.

Ricci SS. Nursing Management of the Newborn. In: Ricci SS. *Essentials of Maternity, Newborn, and Women's Health Nursing*, 4th ed. Philadelphia, PA: Wolters Kluwer/Lippincott Williams & Wilkins; 2017:585–644.

Smith-Sayer K. Communicable Disease Control. In: Allender J, Rector C, Warner K, eds. *Community and Public Health Nursing: Promoting the Public's Health*, 8th ed. Philadelphia, PA: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2013:246–284.

Smiling young child in mother's arms.

Health care personnel reviewing documents.

Legal/Ethical Issues

Objectives

a. Describe how ethical principles apply to immunization, including the individual's rights to confidentiality and privacy, informed consent, and informed refusal. (Ethical principles include beneficence, nonmaleficence, respect for autonomy, fairness, truthfulness, and justice).

b. Differentiate between federal and state laws related to immunization practice and required activities such as administration, recordkeeping, and reimbursement.

c. Identify your state's immunization requirements, including those for child care settings, schools, colleges and universities, and health care settings.

d. Identify your state's immunization requirements for health care personnel.

e. Describe the three types of vaccine exemptions (medical, religious, and philosophical).

f. Identify the nurse's own professional scope of practice as it relates to immunization (jurisdiction or board of nursing, accountability, delegation, organization, practice setting, etc.).

g. Discuss fiscal implications (barriers and facilitators) related to immunization access.

h. Describe nursing roles related to legal/ethical issues: advocate, leader, and lifelong learner.

Resources

Web Pages

American College of Obstetricians and Gynecologists (ACOG)–Ethical Issues with Vaccination for the Obstetrician-Gynecologist www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Ethics/Ethical-Issues-With-Vaccination-for-the-Obstetrician-Gynecologist

CDC Vaccines and Immunizations

- Awardee Immunization Websites www.cdc.gov/vaccines/imz-managers/awardee-imz-websites.html
- Requirements and Laws www.cdc.gov/vaccines/imz-managers/laws/index.html
- SchoolVaxView: School Vaccination Requirements and Exemptions www2.cdc.gov/nip/schoolsurv/schImmRqmt.asp
- Standards for Adult Immunization Practice www.cdc.gov/vaccines/hcp/adults/for-practice/standards/index.html
- State Immunization Laws for Healthcare Workers and Patients www2.cdc.gov/vaccines/statevaccsApp/default.asp
- State School and Childcare Vaccination Laws www.cdc.gov/phlp/publications/topic/vaccinations.html

National Vaccine Advisory Committee (NVAC)–The Standards for Pediatric Immunization Practice www.hhs.gov/nvpo/nvac/reports-and-recommendations/the-standards-for-pediatric-immunization-practice/index.html

Learning Modules

Nursing Initiative Promoting Immunization Training (NIP-IT)

Module 3: Vaccine Concerns–Legal Concerns about Vaccination and Ethical Issues in Immunization
nip-it.org/vaccine_concerns.asp

Module 4: Nursing Roles–Nurse Professional Responsibility to Keep Current with Immunizations
nip-it.org/nursing_roles.asp

Video

CDC YouTube Channel–Standards for Adult Immunization Practice www.youtube.com/watch?v=hWsX2vu3PQU

Book

Marshall G. Standards, Principles, and Regulations. In: Marshall G. *The Vaccine Handbook:* A *Practical Guide for Clinicians*, 5th ed. West Islip, NY: Professional Communications, Inc.; 2015:80–100.

Multiple vials of vaccines.

Vaccine Storage and Handling

Objectives

a. Describe vaccine storage and handling best practices, including training, equipment, and inventory management.

b. Identify common storage and handling errors and appropriate actions to address these errors.

c. Locate current vaccine storage and handling resources.

d. Describe vaccine storage and handling recommendations for off-site or satellite facilities.

e. Develop plans that include standard operating procedures (SOPs) for routine and emergency vaccine storage and handling.

f. Determine the time a vaccine (and diluent, if applicable) expires when using a single-dose vial, a multidose vial, and a manufacturer-filled syringe.

g. Determine when a vaccine will expire according to a beyond use date (BUD).

h. Describe proper vaccine disposal procedures based on state and environmental agency regulations.

i. Locate resources relevant to current vaccine recommendations.

j. Describe nursing roles and responsibilities related to storage and handling: ensuring appropriate storage and handling, maintaining vaccine integrity, and monitoring and overseeing vaccine storage and handling, as well as records manager and lifelong learner.

Resources

Web Pages

American Academy of Pediatrics (AAP)–Immunization: Vaccine Storage and Handling
www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/Vaccine-Storage-and-Handling.aspx

CDC Vaccines and Immunizations

- Resources on Proper Vaccine Storage and Handling www.cdc.gov/vaccines/recs/storage/default.htm
- Vaccine Storage and Handling Toolkit www.cdc.gov/vaccines/hcp/admin/storage/toolkit/

Food and Drug Administration (FDA)–Vaccines Licensed for Use in the United States
www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm093833.htm

Immunization Action Coalition (IAC)

- Ask the Experts: Storage and Handling www.immunize.org/askexperts/storage-handling.asp
- Clinic Resources: Storage and Handling www.immunize.org/clinic/storage-handling.asp

Learning Modules

CDC *Epidemiology and Prevention of Vaccine-Preventable Diseases* (Pink Book) webinar series–Vaccine Storage and Handling and Administration www.cdc.gov/vaccines/ed/webinar-epv/index.html

CDC *You Call the Shots*–Vaccine Storage and Handling module www.cdc.gov/vaccines/ed/youcalltheshots.html

EZIZ website–Storage and Handling Lessons eziz.org/eziz-training/

Nursing Initiative Promoting Immunization Training (NIP-IT) Module 5: Vaccine Administration–Safe Vaccine Storage
nip-it.org/vaccine_administration.asp

Videos

CDC YouTube Channel

- Keys to Storing and Handling Your Vaccine Supply www.youtube.com/watch?v=VCzO8Zod8DI
- Storage and Handling Best Practices: Hawaii www.youtube.com/watch?v=WkOkMyE8R9g
- Influenza Update 2019–2020 www.youtube.com/watch?v=l7ywQeRD0YE

Books

American Academy of Pediatrics. Active and Passive Immunization. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2018 Report of the Committee on Infectious Diseases*, 31st ed. Itasca, IL: American Academy of Pediatrics; 2018:1–111.

CDC. Vaccine Storage and Handling. In: Hamborsky J, Kroger A, Wolfe S, eds. *Epidemiology and Prevention of Vaccine-Preventable Diseases*, 13th ed. Washington, DC: Public Health Foundation; 2015:63–77. www.cdc.gov/vaccines/pubs/pinkbook/vac-storage.html.

Marshall G. Vaccine Practice. In: Marshall G. *The Vaccine Handbook: A Practical Guide for Clinicians*, 5th ed. West Islip, NY: Professional Communications, Inc.; 2015:101–128.

Vaccine Administration

Child holding immunization record.

Objectives

a. Review the Rights of Medication Administration adapted for vaccines (www.cdc.gov/vaccines/pubs/pinkbook/downloads/vac-admin.pdf).
b. Describe the steps for proper vaccine administration.
c. Describe how to prepare a vaccine in a single-dose vial.
d. Describe how to prepare a vaccine in a multidose vial.
e. Describe how to prepare a vaccine in a manufacturer-filled syringe.
f. Describe proper vaccine reconstitution using the diluent supplied with the vaccine.
g. Identify the recommended sites for intramuscular, subcutaneous, intranasal, and oral vaccine administration.
h. Identify age-appropriate sites for administration of vaccine.
i. Identify age-appropriate needle lengths and gauges for administration of vaccine.
j. Describe proper administration of vaccines via the intramuscular, subcutaneous, intranasal, and oral routes.
k. Describe age-appropriate patient positioning when administering vaccines.
l. Describe strategies to prevent syncope (specifically among adolescents).
m. Describe techniques to reduce procedural pain associated with vaccination.
n. Describe best practices to prevent vaccine administration errors.
o. Locate resources on current vaccine administration practice.
p. Discuss the role of mass administration of vaccines (during a public health emergency or an influenza vaccination clinic).
q. Describe nursing roles and responsibilities related to administration: vaccine administration or supervision of vaccine administration, educator, care coordinator, records manager, and lifelong learner.

Resources

Web Pages

American Academy of Pediatrics (AAP)–Immunization: Vaccine Administration
www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunization/Pages/vaccine-admin.aspx

CDC Injection Safety–Information for Providers www.cdc.gov/injectionsafety/providers.html

CDC Vaccines and Immunizations

- General Best Practice Guidelines for Immunization www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html
- Vaccine Administration www.cdc.gov/vaccines/hcp/admin/admin-protocols.html
- Vaccine Administration videos and e-Learn www2.cdc.gov/vaccines/ed/vaxadmin/va/ce.asp
- Vaccine Storage and Handling Toolkit www.cdc.gov/vaccines/hcp/admin/storage/toolkit/

Immunization Action Coalition (IAC)

- Ask the Experts: Administering Vaccines www.immunize.org/askexperts/administering-vaccines.asp
- Clinic Resources: Administering Vaccines www.immunize.org/handouts/administering-vaccines.asp

Institute for Safe Medication Practices (ISMP)–Recommendations for Practitioners to Prevent Vaccine Errors, Part 2: Analysis of ISMP Vaccine Errors Reporting Program (VERP) www.ismp.org/newsletters/acutecare/showarticle.aspx?id=104

Handout

CDC Vaccines and Immunizations website

- Intramuscular Influenza (Flu) Vaccination Infographic www.cdc.gov/vaccines/hcp/infographics/you-call-the-shots-intramuscular-flu-vaccination.html
- (Shingrix) Shingles Vaccine Fact Sheet for Healthcare Providers www.cdc.gov/shingles/fact-sheets/shingles-factsheet-hcp.html
- Recommended and Minimum Ages and Intervals Between Vaccine Doses www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/a/age-interval-table.pdf

Journal Articles

Hibbs BF, Miller ER, Shimabukuro T. Notes from the field: rotavirus vaccine administration errors—United States, 2006–2013. *MMWR Morb Mortal Wkly Rep*. 2014;63(4):81.

Su JR, Miller ER, Duffy J, Baer BM, Cano MV. Notes from the field: administration error involving a meningococcal conjugate vaccine—United States, March 1, 2010–September 22, 2015. *MMWR Morb Mortal Wkly Rep*. 2016;65:161–162.

Taylor L, Greeley R, Dinitz-Sklar J, Mazur N, Swanson J, Wolicki J, Perz J, Tan C, Montana B. Notes from the field: injection safety and vaccine administration errors at an employee influenza vaccination clinic—New Jersey, 2015. *MMWR Morb Mortal Wkly Rep.* 2015;64(49):1363–1364.

Learning Modules

CDC *Epidemiology and Prevention of Vaccine-Preventable Diseases* (Pink Book) webinar series–Vaccine Storage and Handling and Administration www.cdc.gov/vaccines/ed/webinar-epv/index.html

EZIZ website–Vaccine Administration Lessons eziz.org/eziz-training/

Nursing Initiative Promoting Immunization Training (NIP-IT) Module 5: Vaccine Administration
nip-it.org/vaccine_administration.asp

Videos

CDC YouTube Channel

- Assemble a Manufacturer-Filled Syringe www.youtube.com/watch?v=b22fcpRtMiE
- Beyond Use Date (BUD) www.youtube.com/watch?v=w6bw1N_iMu8
- Comfort and Restraint Techniques www.youtube.com/watch?v=r1dGpTCgerE
- Documentation of Vaccinations After Administration www.youtube.com/watch?v=xlyqUgKGFPk
- Expiration Date www.youtube.com/watch?v=R0ycn0-SWu4
- Intramuscular (IM) Injection: Sites www.youtube.com/watch?v=PqSuCPnPeYE
- Intramuscular (IM) Injection: Supplies (Children Birth Through 18 Years of Age) www.youtube.com/watch?v=SsCxnccrsKM
- Intramuscular Injection: Supplies (Adults 19 Years of Age and Older) www.youtube.com/watch?v=odQTVg7s3HA
- Live, Attenuated Influenza Vaccine (LAIV) www.youtube.com/watch?v=FUaptzVvRmU
- Multidose Vial www.youtube.com/watch?v=TDcFievcUVs
- Reconstitute Lyophilized Vaccine www.youtube.com/watch?v=oZAOqlk3TBA
- Rotarix (RV1) www.youtube.com/watch?v=u31xRtiITzk
- RotaTeq (RV5) www.youtube.com/watch?v=KD8PDYWnYtI
- Single-Dose Vial www.youtube.com/watch?v=aYpKmjFMZcg
- Subcutaneous (SC or Subcut) Injection: Administration www.youtube.com/watch?v=R5jd4SDEcsA
- Subcutaneous (SC or Subcut) Injection: Sites www.youtube.com/watch?v=ylhdvNZBWN0
- Subcutaneous (SC or Subcut) Injection: Supplies www.youtube.com/watch?v=oc2nC7Azbns

Books

American Academy of Pediatrics. Active and Passive Immunization. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2018 Report of the Committee on Infectious Diseases*, 31st ed. Itasca, IL: American Academy of Pediatrics; 2018:1–111.

CDC. Vaccine Administration. In: Hamborsky J, Kroger A, Wolfe S, eds. *Epidemiology and Prevention of Vaccine-Preventable Diseases*, 13th ed. Washington, DC: Public Health Foundation; 2015:79–105. www.cdc.gov/vaccines/pubs/pinkbook/vac-admin.html.

Fraser, D. Health Problems of Infants. In: Hockenberry MJ, Wilson D, Rodgers CC, eds. *Wong's Essentials of Pediatric Nursing*, 9th ed. St. Louis, MO: Elsevier Health Sciences; 2012:228–307.

Marshall G. General Recommendations. In: Marshall G. *The Vaccine Handbook: A Practical Guide for Clinicians*, 5th ed. West Islip, NY: Professional Communications, Inc.; 2015:129–144.

Marshall G. Vaccine Practice. In: Marshall G. *The Vaccine Handbook: A Practical Guide for Clinicians*, 5th ed. West Islip, NY: Professional Communications, Inc.; 2015:101–128.

Documentation

A nurse entering immunization data using a computer/tablet.

Objectives

a. Describe federal requirements for documentation related to the administration of vaccines.

b. Describe additional state and local requirements for documentation related to the administration of vaccines.

c. Describe best practices for documenting vaccine administration.

d. Describe best practices for documenting vaccine refusal.

e. Describe best practices for documenting vaccine contraindications and precautions.

f. Explain the benefits of using an immunization information system (IIS) *(also see Topic 2–Immunization Strategies)*.

g. Describe how to document an adverse event following vaccination (i.e., anaphylaxis).

h. Describe nursing roles and responsibilities related to documentation: vaccine administration or supervision of vaccine administration, advocate, records manager, educator, and lifelong learner.

Resources

Web Pages

American Academy of Pediatrics (AAP)–Immunization: Refusal to Vaccinate www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunization/Pages/refusal-to-vaccinate.aspx

CDC Vaccines and Immunizations

- About Immunization Information Systems www.cdc.gov/vaccines/programs/iis/about.html
- ACIP: Acronyms for Vaccines www.cdc.gov/vaccines/terms/vacc-abbrev.html
- Standards for Practice: Vaccine Documentation www.cdc.gov/vaccines/hcp/adults/for-practice/standards/documentation.html

EZIZ–Vaccine Administration job aids: Documentation eziz.org/resources/vaccine-admin-job-aids/

Immunization Action Coalition (IAC) –Clinic Resources: Documenting Vaccinations www.immunize.org/clinic/documenting-vaccination.asp

Handouts

American Academy of Pediatrics (AAP) website–Documenting Parental Refusal to Have Their Children Vaccinated www.aap.org/en-us/Documents/immunization_refusaltovaccinate.pdf

Immunization Action Coalition (IAC) website

- Screening Checklist for Contraindications to Vaccines for Adults www.immunize.org/catg.d/p4065.pdf
- Screening Checklist for Contraindications to Vaccines for Children and Teens www.immunize.org/catg.d/p4060.pdf

Learning Modules

CDC *Epidemiology and Prevention of Vaccine-Preventable Diseases* (Pink Book) webinar series–Vaccine Storage and Handling and Administration www.cdc.gov/vaccines/ed/webinar-epv/index.html

Nursing Initiative Promoting Immunization Training (NIP-IT) Module 5: Vaccine Administration: Vaccine Documentation Components nip-it.org/vaccine_administration.asp

Books

American Academy of Pediatrics. Active and Passive Immunization. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2018 Report of the Committee on Infectious Diseases*, 31st ed. Itasca, IL: American Academy of Pediatrics; 2018:1–111.

CDC. Vaccine Administration. In: Hamborsky J, Kroger A, Wolfe S, eds. *Epidemiology and Prevention of Vaccine-Preventable Diseases*, 13th ed. Washington, DC: Public Health Foundation; 2015:79–105. www.cdc.gov/vaccines/pubs/pinkbook/vac-admin.html.

Fraser, D. Health Problems of Infants. In: Hockenberry MJ, Wilson D, Rodgers CC, eds. *Wong's Essentials of Pediatric Nursing*, 9th ed. St. Louis, MO: Elsevier Health Sciences; 2012:228–307.

Ricci SS. Newborn Management of the Newborn. In: Ricci SS. *Essentials of Maternity, Newborn, and Women's Health Nursing*, 4th ed. Philadelphia, PA: Wolters Kluwer/Lippincott Williams & Wilkins; 2017:585–644.

Vaccine Safety

Vaccine vials just after filling in a manufacturing facility.

Objectives

a. Describe common adverse reactions by vaccine type.

b. Differentiate between an adverse reaction and an adverse event.

c. Develop a plan to manage an adverse event following vaccination.

d. Describe supplies and staff training needed to manage anaphylaxis.

e. Describe the National Vaccine Injury Compensation Program (NVICP).

f. Describe ongoing processes for vaccine postmarketing safety monitoring (e.g., Vaccine Adverse Event Reporting System [VAERS], Clinical Immunization Safety Assessment [CISA] Project, and Vaccine Safety Datalink [VSD]).

g. Describe who may report to VAERS, what is reported, and how the data are used (i.e., to monitor for signals of vaccine safety problems, which may lead to additional studies in VSD or elsewhere to assess causality).

h. Describe the process of phased clinical trials and FDA approval and licensure of vaccines in the U.S.

i. Describe a nurse's role in monitoring and ensuring vaccine safety.

j. Describe other nursing roles related to safety: records manager, reporter, and lifelong learner.

Resources

Web Pages

CDC Vaccine Safety

- Clinical Immunization Safety Assessment (CISA) Project www.cdc.gov/vaccinesafety/ensuringsafety/monitoring/cisa/index.html
- Reporting Adverse Events www.cdc.gov/vaccinesafety/hcproviders/reportingadverseevents.html
- Vaccine Safety Datalink (VSD) www.cdc.gov/vaccinesafety/ensuringsafety/monitoring/vsd/index.html
- Vaccine Safety www.cdc.gov/vaccinesafety/index.html

Health Resources and Services Administration (HRSA)–National Vaccine Injury Compensation Program (NVICP) www.hrsa.gov/vaccine-compensation/index.html

U.S. Health and Human Services (HHS)–Vaccine Adverse Event Reporting System (VAERS) https://vaers.hhs.gov/

Handouts

Immunization Action Coalition (IAC) website

- Medical Management of Vaccine Reactions in Adult Patients www.immunize.org/catg.d/p3082.pdf
- Medical Management of Vaccine Reactions in Children and Teens www.immunize.org/catg.d/p3082a.pdf

Learning Module

CDC *Epidemiology and Prevention of Vaccine-Preventable Diseases* (Pink Book) webinar series–General Recommendations, Part 2, and Vaccine Safety www.cdc.gov/vaccines/ed/webinar-epv/index.html

Books

American Academy of Pediatrics. Active and Passive Immunization. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2018 Report of the Committee on Infectious Diseases*, 31st ed. Itasca, IL: American Academy of Pediatrics; 2018:1–111.

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Glossary

Active immunity: protection against disease through antibodies produced by the body's own immune system

Adjuvant: an ingredient of a vaccine that helps create a stronger immune response in the patient's body

Adverse event: an untoward event that occurs after a vaccination that might be caused by the vaccine product or vaccination process. Adverse events include those with the following characteristics:

- vaccine-induced (caused by the intrinsic characteristic of the vaccine preparation and the individual response of the vaccinee): these events would not have occurred without vaccination (e.g., vaccine-associated paralytic poliomyelitis);
- vaccine-potentiated: the events would have occurred anyway but were precipitated by the vaccination (e.g., first febrile seizure in a predisposed child);
- programmatic error: the event was caused by technical errors in vaccine preparation, handling, or administration; and
- coincidental: the event was associated temporally with vaccination by chance or caused by underlying illness. Special studies are needed to determine whether an adverse event is a reaction to the vaccine or the result of another cause

Adult immunization schedule (vaccination schedule): a summary of vaccination recommendations that give health care providers information on recommended timelines, conditions, and other indications for administering vaccines to adults

Adverse reaction: an undesirable medical condition that has been demonstrated to be caused by a vaccine. Evidence for the causal relation is usually obtained through randomized clinical trials, controlled epidemiologic studies, isolation of the vaccine strain from the pathogenic site, or recurrence of the condition with repeated vaccination (i.e., rechallenge); synonyms include side effect and adverse effect

Airborne precautions: practices to prevent transmission of infectious agents that remain infectious over long distances when suspended in the air (e.g., rubeola virus [measles], varicella virus [chickenpox], and *M. tuberculosis*)

Anaphylaxis: a severe and sometimes fatal allergic reaction characterized by hives, itching, respiratory difficulty, and shock; this condition requires immediate medical attention

Antibiotic: a drug used to fight infections caused by bacteria

Antibody: a special protein made by the body in response to antigens (foreign substances such as bacteria or viruses). Antibodies bind with antigens on microorganisms to protect the body against infection

Antigen: a foreign substance (e.g., bacteria or viruses) in the body that is capable of causing disease. The presence of antigens in the body triggers an immune response, usually the production of antibodies

Attenuated: weakened; a type of live vaccine containing viruses or bacteria too weak to cause disease, but strong enough to cause the body to make antibodies

Best practices: practices that are accepted or prescribed as being correct or most effective

Beyond use date (BUD): the date or time after which a vaccine should not be administered, stored, or transported

Catch-up schedule: a schedule for persons whose vaccinations have been delayed

Child/Adolescent immunization schedule (vaccination schedule): a summary of vaccination recommendations that give health care providers information on recommended timelines, conditions, and other indications for administering vaccines to children and adolescents

Community (herd) immunity: situation in which a sufficient proportion of a population is immune to an infectious disease (through vaccination and/or prior illness) to make its spread from person to person unlikely. Even individuals not vaccinated (such as newborns and those with chronic illnesses) have some protection because the disease has little opportunity to spread within the community. Also known as herd immunity

Contact precautions: practices to prevent transmission of infectious agents which are spread by direct or indirect contact with the patient or the patient's environment

Contraindication: a condition that increases the likelihood of a serious adverse reaction to a vaccine for a patient with that condition. If the vaccine is given in the presence of that condition, the resulting adverse reaction could seriously harm the recipient

Droplet precautions: practices that are intended to prevent transmission of pathogens spread through close respiratory or mucous membrane contact with respiratory secretions

Etiologic agents: substances that cause disease in humans, including infectious organisms and toxins

Evidence-based information: proven and validated available research results, based on scientific results/evidence

Evidence-based strategies: available research results that assist in making decisions and designing programs and interventions

Fairness: the state of being free from bias or injustice

Healthy People: a science-based 10 year national plan providing nationwide objectives for improving the health of all Americans

Immune response: also known as an immune reaction; the body's response to an antigen; occurs when infection-fighting cells (e.g., lymphocytes) identify an antigen as foreign to the body and cause antibodies to form so that the infection-fighting cells can kill the antigen

Immune system: the complex system in the body responsible for fighting disease. Its primary function is to identify foreign substances in the body (bacteria, viruses, fungi, or parasites) and develop a defense against them. This defense is known as the immune response. It involves production of protein molecules called antibodies to eliminate foreign organisms that invade the body

Immunity: protection against a disease or an infection, usually associated with antibodies or certain cells in the blood that counteract microbes or toxin. Immunity can come from infection with a disease or from vaccination

Immunization: The process of being made immune or resistant to an infectious disease, typically by the administration of a vaccine. It implies that you've had an immune response

Immunization information system (IIS): confidential, population-based, computerized database that records all vaccine doses administered by participating providers to persons residing within a given geopolitical area. Also known as immunization registry

Immunization strategies: implementation of actions to ensure all people are vaccinated appropriatedly, to increase vaccination rates for vaccine-preventable diseases in the United States

Immunology: the science concerned with the various phenomena of immunity, induced sensitivity, and allergy

Informed refusal: refusal of a recommended medical treatment, such as vaccination, based on an understanding of the facts and implications of not following the recommended treatment

Intramuscular: into the muscle; abbreviated IM

Intranasal: into the nose; abbreviated NAS

Live vaccine: a vaccine in which live virus is weakened (attenuated) through chemical or physical processes to produce an immune response without causing the severe effects of the disease. Live vaccines currently licensed in the United States include measles-mumps-rubella, varicella, rotavirus, yellow fever, smallpox, and some formulations of influenza, shingles, and typhoid vaccines. Also known as an "attenuated vaccine"

Mass vaccine administration programs: the offering of vaccination to an entire population in a geographic area

Medical exemption from vaccination: allowed when a person has a medical condition that prevents them from safely receiving a vaccine

Multidose vial: a vial that contains more than one dose of vaccine. It usually contains a preservative to help prevent the growth of microorganisms and can be entered or punctured more than once

Nonmaleficence: the ethical principle of doing no harm, based on the Hippocratic maxim, first do no harm; an obligation not to inflict harm on others

Oral: by mouth; abbreviated PO

Passive immunity: protection against disease through antibodies produced by another human or animal. Passive immunity is effective, but protection diminishes with time (usually within several weeks or months)

Pathogenesis: the pathologic, physiologic, or biochemical mechanism resulting in the development of a disease or morbid process

Phase vaccine clinical trials: vaccine clinical trials are divided into 4 different phases. During Phase I, small groups of people receive the trial vaccine. In Phase II, the clinical study is expanded and vaccine is given to people who have characteristics (such as age and physical health) similar to those for whom the new vaccine is intended. In Phase III, the vaccine is given to thousands of people and tested for efficacy and safety. Many vaccines undergo Phase IV formal, ongoing studies after the vaccine is approved and licensed.

Philosophical exemption: exemption from vaccination laws for people who have personal or moral beliefs against vaccinations. Criteria for granting this exemption varies by state

Precaution: a condition in a recipient that *might increase* the chance or severity of a serious adverse reaction or that might compromise the ability of the vaccine to produce immunity. Injury could result, but the chance of this happening is less than with a contraindication. In general, vaccines are deferred when a precaution condition is present. However, situations may arise when the benefit of protection from the vaccine outweighs the risk of an adverse reaction, and a provider may decide to give the vaccine

Preservative: a compound that kills or prevents the growth of microorganisms, particularly bacteria and fungi; used in vaccines to prevent microbial growth in the event that the vaccine is accidentally contaminated, as might occur with repeated puncture of multidose vials

Primary prevention: intervening before health effects occur through a measure such as vaccination, altering risky behaviors (poor eating habits, tobacco use), and banning substances known to be associated with a disease or health condition

Public health: the science of protecting and improving the health of people and their communities

Public health surveillance: the ongoing, systematic collection, analysis, and interpretation of health-related data essential to planning, implementation, and evaluation of public health practice

Reconstitution: restoration by the addition of liquid to a powdered form of a vaccine or drug

Religious exemption: exemption from vaccination laws for people who object to vaccinations because of their religious beliefs. Criteria for granting this exemption varies by state

Secondary prevention: screening to identify diseases in the earliest stages, before the onset of signs and symptoms, through measures such as mammography and regular blood pressure testing

Single-dose or single-use vial: a vial of liquid medication intended for parenteral administration (injection or infusion) that is meant for use in a single patient for a single case/procedure/injection. Single-dose or single-use vials are labeled as such by the manufacturer and typically lack an antimicrobial preservative

Stabilizers: substances that help a vaccine remain unchanged when the vaccine is exposed to heat, light, acidity, or humidity

Standard precautions: use of personal protective equipment, such as gloves, masks, goggles, or gowns when performing tasks that may result in exposure to blood or other body fluids

Subcutaneous: into the fatty, connective tissue just beneath the skin (dermis); abbreviated Subcut

Syncope: fainting or a temporary loss of consciousness caused by decreased blood flow to the brain. Although fainting has a variety of possible causes, it is usually triggered by pain or anxiety. Sometimes people faint after vaccination. People who faint might fall and injure themselves if they are not sitting or lying down at the time that they lose consciousness. Sometimes when people faint, their muscles twitch and their bodies make jerking movements. This can sometimes be confused with a seizure but is not actually a seizure

Tertiary prevention: managing disease postdiagnosis to slow or stop disease progression through measures such as chemotherapy, rehabilitation, and screening for complications

Vaccine diluent: a liquid supplied by the vaccine manufacturer that is used to reconstitute lyophilized (freeze-dried) vaccine before administration

Vaccination coverage: a measure of the percentage of people in a sample or population who received a specific vaccine or vaccines. With some exceptions, these measures are generally estimates. Vaccination coverage can be measured by conducting surveys or by reviewing records (i.e., IIS data, kindergarten vaccination entry reports, or Centers for Medicare and Medicaid Services [CMS] reports)

Vaccination principles: the fundamental foundation for disease prevention through the act of vaccination based on five principles: immunity, active immunity, passive immunity, antigen, antibody

Vaccination: the use of vaccines to produce immunity to a disease. This usually entails administering antigenic material, or vaccine, by injection

Vaccine administration: the act of administering a vaccine or toxoid

Vaccine series: a vaccine that, in order to cause an immune response, must be given in multiple doses over a period of time

Vaccine-preventable disease incidence: the number of diseases preventable by vaccination per cases reported in a population during a certain period of time

Notes

Centers for Disease Control and Prevention
National Center for Immunization and Respiratory Diseases

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