



AMERICAN ACADEMY OF  
FAMILY PHYSICIANS

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Recommended Curriculum Guidelines for Family Medicine Residents

# Care of Infants and Children

*This document was endorsed by the American Academy of Family Physicians (AAFP), the Academic Pediatric Association (APA), the Association of Departments of Family Medicine (ADFM), the Association of Family Medicine Residency Directors (AFMRD) and the Society of Teachers of Family Medicine (STFM), and was developed in cooperation with the STFM Group on Oral Health and the Family Medicine Residency of Idaho.*

## Introduction

This Curriculum Guideline defines a recommended training strategy for family medicine residents. Attitudes, knowledge and skills that are critical to family medicine should be attained through longitudinal experience that promotes educational competencies defined by the Accreditation Council for Graduate Medical Education (ACGME) <http://www.acgme.org>. The curriculum must include structured experience in several specified areas. Most of the resident's knowledge will be gained by caring for ambulatory patients who visit the family medicine center. Structured didactic lectures, conferences, journal clubs and workshops must be included in the curriculum with an emphasis on outcomes-oriented, evidence-based studies that delineate common and chronic diseases affecting patients of all ages. Targeted techniques of health promotion and disease prevention are hallmarks of family medicine. Appropriate referral patterns and provision of cost-effective care should also be part of the curriculum.

Program requirements specific to family medicine residencies may be found on the ACGME Web site. Current AAFP Curriculum Guidelines may be found online at <http://www.aafp.org/cg>. These guidelines are periodically updated and endorsed by the AAFP and, in many instances, other specialty societies as indicated on each guideline.

Each residency program is responsible for its own curriculum. ***This guideline provides a useful strategy to help residency programs form their curricula for educating family physicians.***

## **Preamble**

Family physicians must develop knowledge and skills appropriate to manage the medical, physical, social and emotional problems in patients of all ages, including infants and children. Family physicians have a unique opportunity to treat all members of the family and to appreciate the influence that family and siblings have on an individual infant or child. It is the responsibility of the family physician to monitor the development of each child, help realize his or her full potential, and improve the health of children and families in the community in a proactive and responsive manner.

## **Competencies**

At the completion of residency training, a family medicine resident should:

- Demonstrate the ability to take an age-appropriate history and perform a physical exam. (Patient Care, Medical Knowledge)
- Synthesize an appropriate diagnosis and treatment plan for common pediatric conditions in both the outpatient and inpatient settings. (Patient Care, Medical Knowledge)
- Demonstrate the ability to communicate effectively with the patient, as well as the patient's family and caregivers, to ensure that the diagnosis and the treatment plan are clearly understood. (Interpersonal and Communications Skills)
- Recognize his or her own practice limitations and seek consultation with other health care providers and resources when necessary to provide optimal patient care. (Professionalism, Systems-based Practice)

## **Attitudes**

The resident should demonstrate attitudes that encompass:

- Empathic concern for the health of the child in the context of the family.
- The importance of continuity and access to care for prevention of illness.
- Promotion of healthy lifestyles in children and families.
- An awareness of the unique vulnerabilities of infants and children that may require special attention, consultation and/or referral.
- An awareness of social, cultural and environmental factors that impact the health and well-being of infants and children.
- The importance of educating the public about environmental factors that can adversely affect children and about development of community programs to promote the health of children.
- The importance of obtaining information about school performance and learning disabilities.

## Knowledge

In the appropriate setting, the resident should demonstrate the ability to apply knowledge of:

1. Fetal and neonatal period
  - a. Risk factors determined by gestational age assessment
  - b. Effects of labor and delivery on the infant
  - c. Adaptations to extrauterine life
  - d. Newborn metabolic screening
  - e. Diagnosis and role-appropriate management of:
    - i. Meconium-stained amniotic fluid
    - ii. Perinatal asphyxia
    - iii. Respiratory distress
    - iv. Cyanosis
    - v. Apnea
    - vi. Seizures
    - vii. Hypoglycemia
    - viii. Evaluations of possible sepsis
    - ix. Developmental dysplasia of the hip
    - x. Birth-related injuries
    - xi. Neonatal abstinence syndrome (in utero drug exposure)
    - xii. Anemia
    - xiii. Rh factor and blood type incompatibility
    - xiv. Polycythemia
    - xv. Jaundice
    - xvi. Premature and post-date gestations
    - xvii. Maternal infections (Human immunodeficiency virus, hepatitis, etc.)
2. Well newborn and child care
  - a. Recommended schedule and content for examinations from birth to adolescence
  - b. Colic
  - c. Anticipatory guidance appropriate to age and developmental stage
    - i. Circumcision
    - ii. Feeding options and variations
    - iii. Temperament and behavior
    - iv. Developmental stages and milestones
    - v. Developmental screening tests
    - vi. Family and social relationships
    - vii. Effective parenting
    - viii. School readiness
    - ix. Sleep problems
  - d. Adolescent screening for risk-taking behaviors, sexual activity, and depression
  - e. Sexual development and Tanner staging

3. Physical growth
  - a. Feeding
  - b. Growth and caloric requirements
  - c. Normal growth and variants, including dental development
  - d. Failure to thrive
4. Prevention and screening
  - a. Injury prevention
    - i. Motorized vehicles
    - ii. Unmotorized vehicles (e.g., bicycles, skates, skateboards, etc.)
    - iii. Drowning
    - iv. Choking and asphyxiation
    - v. Poisoning and toxin exposures
    - vi. Firearms
    - vii. Falls
    - viii. Burns and fire safety
  - b. Child abuse
  - c. Immunization
  - d. Screening
    - i. Anemia
    - ii. Lead
    - iii. Fluoride
    - iv. High-risk children (lipids, TB, other infectious diseases)
    - v. Hypertension
    - vi. Vision
    - vii. Hearing
    - viii. Other environmental health hazards
5. Sudden infant death syndrome (SIDS)
6. Psychological disorders
  - a. Recognize families with high risk for parent-child interaction problems, dysfunction or psychiatric problems
  - b. Evaluation, treatment and referral for:
    - i. Feeding and elimination problems
    - ii. Eating disorders
    - iii. Somatic and sleep disorders
    - iv. Obsessive-compulsive disorders
    - v. Mood disorders (including depression and anxiety)
    - vi. Hyperactive, impulsive and inattentive behaviors
    - vii. Conduct disorders
    - viii. Psychotic disorders
    - ix. Suicidality

7. Social and ethical issues
  - a. Adoption
  - b. Divorce, separation and death
  - c. Impact of family violence, drug and alcohol abuse
  - d. Child abuse
  - e. Withholding and withdrawing life support
  - f. Nontraditional families
8. Genetics
  - a. Screening issues
  - b. Appropriate referral for necessary genetic diagnosis and counseling
9. Developmental disabilities
  - a. Developmental delays
  - b. Learning disorders
  - c. Chronic and preventative care for children who have special needs
10. Medical problems of infants and children: recognition, management and appropriate referral
  - a. Allergic
    - i. Asthma
    - ii. Atopy and eczema
    - iii. Allergic rhinitis
    - iv. Anaphyaxis
  - b. Inflammatory
    - i. Juvenile idiopathic arthritis (formerly juvenile rheumatoid arthritis)
    - ii. Vasculitis syndromes
    - iii. Kawasaki disease
    - iv. Henoch-Schönlein purpura
    - v. Rheumatic fever
  - c. Renal and urologic
    - i. Glomerulonephritis
    - ii. Hematuria and proteinuria
    - iii. Urinary tract infections, including pyelonephritis
    - iv. Vesicoureteral reflux
    - v. Hypospadias, urethral prolapse, fused labia
    - vi. Enuresis
    - vii. Undescended testis
    - viii. Hydrocele
    - ix. Phimosi and foreskin adhesions
  - d. Endocrine/metabolic and nutritional problems
    - i. Thyroid disorders
    - ii. Diabetes mellitus, type 1 and type 2

- iii. Obesity
- iv. Failure to thrive
- v. Abnormal growth patterns (short and tall stature)
- vi. Premature or delayed puberty, thelarche, and/or menarche
- e. Neurologic problems
  - i. Seizure disorders
  - ii. Headache
  - iii. Syncope
  - iv. Psychomotor delay and cerebral palsy
  - v. Tics and movement disorders
  - vi. Altered mental status
- f. Common skin problems
  - i. Atopic dermatitis
  - ii. Viral exanthema and enanthema
  - iii. Bites and stings
  - iv. Bacterial and fungal infections
  - v. Lice and scabies
  - vi. Diaper rash
  - vii. Acne
  - viii. Urticaria
  - ix. Erythema multiforme
  - x. Burns
- g. Musculoskeletal problems
  - i. Clubfoot
  - ii. Developmental dysplasia of the hip
  - iii. Rotational problems and gait abnormalities
    - 1). In- and out-toeing
    - 2). Metatarsus adductus
    - 3). Medial tibial torsion
    - 4). Femoral anteversion
  - iv. Scoliosis (idiopathic or acquired)
  - v. Aseptic necrosis of the femoral head (Legg-Calvé Perthes disease)
  - vi. Slipped capital femoral epiphysis
  - vii. Nursemaid's elbow
  - viii. Other common sprains, dislocations and fractures
  - ix. Limping
- h. Gastrointestinal problems
  - i. Gastroenteritis (viral, bacterial, and parasitic)
  - ii. Chronic diarrhea
  - iii. Constipation and encopresis
  - iv. Hepatitis
  - v. Gastroesophageal reflux
  - vi. Food intolerance and malabsorption
  - vii. Pyloric stenosis
  - viii. Intussusception
  - ix. Appendicitis and peritonitis
  - x. Recurrent and chronic abdominal pain
  - xi. Hernia

- xii. Inflammatory bowel disease (Crohn's, ulcerative colitis)
- xiii. Celiac disease
- xiv. Appendicitis
- xv. Pancreatitis
- xvi. Cholecystitis
- xvii. Appendicitis
- xviii. Biliary emesis
- xix. Hematemesis
- xx. Hematochezia
- xxi. Jaundice in the non-neonate
- i. Cardiovascular problems
  - i. Congenital heart disease and valvular disease
  - ii. Evaluation of heart murmurs
  - iii. Chest pain
  - iv. Hypertension
- j. Respiratory tract problems
  - i. Viral upper respiratory tract infections
  - ii. Reactive airway disease and asthma
  - iii. Cystic fibrosis
  - iv. Bronchiolitis
  - v. Foreign body aspiration
  - vi. Viral or bacterial pneumonia
  - vii. Pertussis
  - viii. Tonsillitis, pharyngitis, sinusitis
  - ix. Epiglottitis versus croup
  - x. Epistaxis
  - xi. Bacterial tracheitis
  - xii. Snoring
  - xiii. Obstructive sleep apnea
  - xiv. ALTE's (apparent life threatening events, blue spells)
- k. Ear problems
  - i. Otitis media (acute and with effusion)
  - ii. Otitis externa
  - iii. Hearing loss
  - iv. Wax and foreign body in ear canal
- l. Eye problems
  - i. Amblyopia
  - ii. Strabismus
  - iii. Lacrimal duct stenosis
  - iv. Decreased visual acuity
  - v. Conjunctivitis
  - vi. Other causes of red eye
  - vii. Congenital cataracts
  - viii. Dacryocystitis
  - ix. Coloboma
- m. Other serious infections
  - i. Fever in the child < 90 days old

- ii. Fever without source in children 90 days to 3 years old
- iii. Fever of unknown origin
- iv. Sepsis and sepsis syndromes
- v. Meningitis and encephalitis
- vi. Invasive streptococcal and staphylococcal disease
- vii. Osteomyelitis
- viii. Human immunodeficiency virus (HIV)
- n. Lymphatic problems
  - i. Reactive lymphadenopathy
  - ii. Cervical adenitis
- o. Childhood malignancies
  - i. Lymphoma
  - ii. Neuroblastoma
  - iii. Wilms' tumor
  - iv. Leukemia
- p. Hematologic Problems
  - i. Anemias
  - ii. Hemoglobinopathies, including thalassemia and sickle cell
  - iii. Thrombocytopenia
  - iv. Bleeding diathesis
  - v. Thrombophilias

## **Skills**

In the appropriate setting, the resident should demonstrate the ability to independently perform or appropriately refer:

1. Accurate Apgar score assignment
2. Resuscitation of newborns, infants and children
3. Age-appropriate history and physical examination, including use of growth charts, with proper documentation
4. Developmental screening tests administration and interpretation
5. Appropriate history and physical examination for physical or sexual abuse
6. Behavior questionnaires for parent or teacher assessment of attention/deficit problems (including interpretation)
7. Hearing and vision screening test interpretation
8. Pneumatic otoscopy and tympanograms (including interpretation)
9. Bladder catheterization
10. Vascular access (emergency and elective)

11. Lumbar puncture
12. Calculation of maintenance and replacement fluid and electrolyte requirements
13. Coordination of patient care and specialty services when required
14. Intraosseous line placement
15. Conscious sedation
16. Suture lacerations
17. Splint and cast
18. Circumcision
19. Nail removal (fingernail or toenail)
20. Incision and drainage of superficial abscess
21. Fluorescein and Wood's light exam of eye
22. Cerumen removal
23. Frenotomy (tongue-tie snipping) for true ankyloglossia in the newborn

## **Implementation**

This curriculum should be taught during both focused and longitudinal experiences throughout the residency program. Physicians who have demonstrated skills in caring for children should be available to act as role models to the residents and should be available to give support and advice to individual residents regarding the management of their own patients. Each family medicine resident's panel of patients should include a significant number of pediatric patients.

## **Resources**

Behrman RE, Kliegman RM, Jensen AB, eds. Nelson Textbook of Pediatrics. 18th ed. Philadelphia, Pa.: Saunders, 2007.

Behrman RE, Kliegman RM. Nelson Essentials of Pediatrics. 5th ed., Philadelphia, Pa.: Saunders, 2006.

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<http://www.academicpeds.org/education/pdfs/GFCOCforFamilyMedicineResidents.pdf>.

Updated February 22, 2011. Accessed August 10, 2011.

Gomella TL, Cunningham MD. *Neonatology: Management, Procedures, On-Call Problems, Diseases and Drugs*. 5th ed. New York, N.Y.: Lange, 2004.

## Web Sites

The American Academy of Pediatrics: <http://www.aap.org>

GeneralPediatrics.com: The General Pediatrician's View of the Internet:  
<http://generalpediatrics.com/>

Academic Pediatric Association: <http://www.ambpeds.org/>

National Institutes of Health: <http://www.nih.gov/>

Centers for Disease Control and Prevention: <http://www.cdc.gov/>

Also see other AAFP Curriculum Guidelines related to pediatric issues and conditions that affect infants and children:

- Health Promotion and Disease Prevention – Reprint No. 267
- Human Behavior and Mental Health – Reprint No. 270
- Conditions of the Skin – Reprint No. 271
- Conditions of the Nervous System – Reprint No. 272
- Allergy and Immunology – Reprint No. 274
- Rheumatic Conditions – Reprint No. 276
- Adolescent Health – Reprint No. 278
- Urgent and Emergent Care – Reprint No. 285
- Musculoskeletal and Sports Medicine – Reprint No. 265

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