Recommended Curriculum Guidelines for Family Medicine Residents

Care of Infants and Children

This document was endorsed by the American Academy of Family Physicians (AAFP).

Introduction

This Curriculum Guideline defines a recommended training strategy for family medicine residents. Topic competencies, 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) 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 website. Current AAFP Curriculum Guidelines may be found online at 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 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 members and siblings have on an individual infant or child. It is the responsibility of the family physician to monitor the development of each child so that the child can reach his or her full potential, and to 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 examination (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 the development and clear understanding of an appropriate, acceptable diagnosis and treatment plan (Interpersonal and Communications Skills)
- Recognize his or her own practice limitations and seek consultation with other health care professionals 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 and treatment of acute and chronic illness
- Promotion of healthy lifestyles for children and families
- Awareness of unique vulnerabilities of infants and children that may require special attention, consultation, and/or referral
- 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 developing community programs to promote the health of children
• The importance of obtaining and utilizing information about school performance and learning disabilities in order to assist in the creation of a management plan

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. Bradycardia
      vii. Seizures
      viii. Hypoglycemia
      ix. Possible sepsis
      x. Developmental dysplasia of the hip
      xi. Birth-related injuries
      xii. Neonatal abstinence syndrome (in utero drug exposure)
      xiii. Anemia
      xiv. Rh factor and blood type incompatibility
      xv. Polycythemia
      xvi. Jaundice
      xvii. Premature and post-date gestations
      xviii. Congenital and neonatal infections
      xix. Maternal factors: infections (e.g., HIV, hepatitis); medical conditions (e.g., diabetes, hypertension)

2. Well newborn and child care
   a. Recommended schedule and content of examinations from birth to adolescence
b. Anticipatory guidance appropriate to age and developmental stage
   i. Circumcision
   ii. Feeding options and variations
   iii. Temperament and behavior
   iv. Colic
   v. Developmental stages and milestones
   vi. Developmental screening tests
   vii. Family and social relationships
   viii. Effective parenting
   ix. School readiness (including school failure, bullying, and peer pressure)
   x. Sleep problems
   xi. Physical activity and exercise
   xii. Use of over-the-counter (OTC) medications and complementary and alternative medicine (CAM)
   xiii. Drug usage (OTC, prescribed, or illicit) in lactation

c. Adolescent screening for risk-taking behaviors, sexual activity, and psychiatric disorders

d. Sexual development and Tanner staging
   i. Reproductive health maintenance and health promotion

3. Physical growth
   a. Feeding strategies
   b. Growth and caloric requirements
   c. Normal growth and variants, including dental development
   d. Failure to thrive
   e. Obesity

4. Prevention and screening
   a. Injury prevention
      i. Motorized vehicles
      ii. Unmotorized vehicles (e.g., bicycles, skates, skateboards)
      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 (e.g., lipids, tuberculosis [TB], other infectious diseases)
   v. Hypertension
   vi. Vision
   vii. Hearing
   viii. Other environmental health issues: actinic damage, media exposure, violence

5. 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 eating disorders
      ii. Elimination disorders
      iii. Somatic symptom disorder and related disorders
      iv. Sleep-wake disorders
      v. Obsessive-compulsive disorder and related disorders
      vi. Disruptive behavior, impulse control, and conduct disorders
      vii. Psychotic disorders
      viii. Neurodevelopmental disorders
         1). Intellectual developmental disorder
         2). Attention-deficit/hyperactivity disorder (ADHD)
         3). Tic disorders
         4). Learning disorders
         5). Autism spectrum disorder
   ix. Anxiety disorders
   x. Bipolar disorder and related disorders
   xi. Depressive disorders (including disruptive mood dysregulation disorder)
   xii. Gender dysphoria
   xiii. Trauma- and stressor-related disorders
   xiv. Psychiatric emergencies (including suicidality)

6. Social and ethical issues
   a. Adoption
   b. Divorce, separation, and death
   c. Impact of family violence and drug/alcohol abuse
   d. Child abuse
   e. Withholding and withdrawing life support
   f. Non-traditional families
7. Genetics
   a. Common chromosomal abnormalities
   b. Screening issues (including ethical, legal, and social implications)
   c. Appropriate referral for necessary genetic diagnosis and counseling

8. Chronic and preventive care for specific populations
   a. Children with special needs or developmental delays
   b. Cancer survivors
   c. Premature infants
   d. Children in foster care

9. Diagnosis, management, and appropriate referral of medical problems in infants and children
   a. Allergic/immunologic
      i. Asthma
      ii. Atopy and eczema
      iii. Allergic rhinitis
      iv. Anaphylaxis
      v. Immunodeficiency
   b. Inflammatory
      i. Arthritides including juvenile idiopathic arthritis (formerly juvenile rheumatoid arthritis)
      ii. Vasculitis syndromes
         1). Kawasaki disease
         2). Henoch-Schönlein purpura
         3). Wegener granulomatosis
      iii. Rheumatic fever
      iv. Systemic lupus erythematosus (SLE)
      v. Juvenile dermatomyositis
   c. Renal and urologic
      i. Glomerulonephritis
      ii. Hematuria and proteinuria
      iii. Urinary tract infections, including pyelonephritis
      iv. Vaginitis
      v. Vescicoureteral reflux
      vi. Hypospadias, urethral prolapse, labial adhesions
      vii. Enuresis
      viii. Undescended testis
      ix. Hydrocele
      x. Phimosis and foreskin adhesions
      xi. Nephrolithiasis
      xii. Electrolyte and acid-base imbalance (mild)
d. Endocrine/metabolic and nutritional problems
   i. Thyroid disorders
   ii. Diabetes (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
   vii. Dyslipidemia (familial or acquired)
   viii. Adrenal disorders

e. Neurologic problems
   i. Seizure disorders (including non-epileptic seizures)
   ii. Headache
   iii. Syncope
   iv. Psychomotor delay and cerebral palsy
   v. Tics and movement disorders
   vi. Altered mental status
   vii. Ataxia
   viii. Stroke
   ix. Traumatic brain injury, including concussion
   x. Macrocephaly and microcephaly

f. Common skin problems
   i. Atopic, contact, and other dermatitides
   ii. Psoriasis
   iii. Viral and other exanthems
   iv. Verruca vulgaris
   v. Nevi
   vi. Bites and stings
   vii. Bacterial and fungal infections
   viii. Parasites (lice, scabies, and bed bugs)
   ix. Diaper rash
   x. Acne
   xi. Urticaria
   xii. Erythema multiforme
   xiii. Burns
   xiv. Hair loss
   xv. Normal newborn and childhood variants
g. Musculoskeletal problems
   i. Clubfoot
   ii. Pes planus and pes cavus
   iii. Developmental dysplasia of the hip
   iv. Genu valgum and genu varum
   v. Rotational problems and gait abnormalities
      1). In- and out-toeing
      2). Metatarsus adductus
      3). Medial tibial torsion
      4). Femoral anteversion
   vi. Scoliosis (idiopathic or acquired)
   vii. Aseptic necrosis of the femoral head (Legg-Calvé-Perthes disease)
   viii. Slipped capital femoral epiphysis
   ix. Nursemaid’s elbow
   x. Other common sprains, dislocations, and fractures
   xi. Back pain
   xii. Growing pain
   xiii. Limping differential by age group
   xiv. Apophysitis (Osgood-Schlatter disease and Sever disease)
   xv. Preparticipation physical evaluation
   xvi. Sports injury rehabilitation concepts

h. Gastrointestinal problems
   i. Gastroenteritis (viral, bacterial, and parasitic)
   ii. Dysphagia
   iii. Chronic diarrhea
   iv. Constipation and encopresis
   v. Hepatitis
   vi. Gastroesophageal reflux
   vii. Ulcer
   viii. Food intolerance and malabsorption, protein-calorie malnutrition
   ix. Pyloric stenosis
   x. Intussusception
   xi. Volvulus
   xii. Meckel diverticulum
   xiii. Recurrent and chronic abdominal pain
   xiv. Hernia
   xv. Inflammatory bowel disease (Crohn disease, ulcerative colitis)
   xvi. Irritable bowel syndrome
   xvii. Celiac disease
   xviii. Appendicitis
   xix. Pancreatitis
   xx. Cholecystitis
   xxi. Bilious emesis
   xxii. Hematemesis
   xxiii. Hematochezia
   xxiv. Jaundice in the non-neonate
i. Cardiovascular problems
   i. Congenital heart disease and valvular disease
   ii. Acquired heart disease
   iii. Evaluation of heart murmurs
   iv. Chest pain
   v. Hypertension
   vi. Syncope
   vii. Innocent and pathologic murmurs

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
   x. Croup
   xi. Epistaxis
   xii. Bacterial tracheitis
   xiii. Snoring
   xiv. Obstructive sleep apnea
   xv. Apparent life-threatening events (ALTEs), blue spells
   xvi. Sudden infant death syndrome (SIDS)

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 (dacryocystitis)
   iv. Decreased visual acuity
   v. Conjunctivitis
   vi. Other causes of red eye
   vii. Congenital cataracts
   viii. Coloboma
   ix. Hordeolum and chalazion
   x. Periorbital and orbital cellulitis
m. Mouth problems
   i. Cleft lip and palate, including feeding strategies
   ii. Dental caries and abscess
   iii. Tooth eruption (normal and abnormal variants)
   iv. Aphthous stomatitis
   v. Common infections (e.g., thrush, cold sores, herpangina)
   vi. Ankyloglossia
   vii. Developmental oral lesions (e.g., geographic tongue)

n. Other serious infections
   i. Fever in children younger than 90 days old
   ii. Fever without source in children 90 days to 3 years old
   iii. Fever of unknown origin
   iv. Sepsis
   v. Meningitis and encephalitis
   vi. Invasive streptococcal and staphylococcal disease
   vii. Osteomyelitis and septic arthritis
   viii. HIV

o. Lymphatic problems
   i. Reactive lymphadenopathy
   ii. Cervical adenitis

p. Childhood malignancies
   i. Lymphoma
   ii. Neuroblastoma
   iii. Wilms tumor
   iv. Leukemia
   v. Retinoblastoma
   vi. Central nervous system (CNS) tumors

q. 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 appropriately obtain informed consent and to independently perform (while maintaining universal precautions and/or sterile technique) or appropriately refer:

1. Accurate Apgar score assignment

2. Resuscitation of newborns, infants, and children
3. Age-appropriate history and physical examination (including preparticipation physical examination) with use of growth charts (e.g., Ballard)

4. Performance of developmental surveillance, as well as administration and interpretation of developmental screening tests (e.g., Modified Checklist for Autism in Toddlers [M-CHAT], Childhood Autism Rating Scale [CARS])

5. Psychosocial/behavioral questionnaire administration and interpretation (e.g., Conners and Vanderbilt for ADHD; Pediatric Symptom Checklist [PSC] for cognitive, emotional, and behavioral problems)

6. Appropriate history and physical examination for physical or sexual abuse

7. Hearing and vision screening test interpretation

8. Pneumatic otoscopy and tympanograms (including interpretation)

9. Bladder catheterization

10. Vascular access (emergency and elective) and blood sampling

11. Subcutaneous and intramuscular injections

12. Lumbar puncture

13. Calculation of maintenance and replacement fluid (including blood components) and electrolyte requirements

14. Interpretation of radiologic or other diagnostic studies (e.g., spirometry, electrocardiogram [EKG])

15. Coordination of patient care and specialty services, when required

16. Management of acute diagnosis/diagnoses in the presence of comorbid conditions

17. Intraosseous line placement

18. Conscious sedation

19. Local and regional anesthesia

20. Laceration repair (suture, tissue adhesive, skin staples)

21. Splinting and casting

22. Reduction of simple dislocations

23. Circumcision
24. Nail removal (fingernail or toenail)
25. Incision and drainage of superficial abscess
26. Biopsy or destruction of skin lesion
27. Fluorescein and Wood light examination of eye
28. Cerumen removal
29. Frenotomy (i.e., tongue-tie snipping) for true ankyloglossia in the newborn
30. Management of foreign body in skin or body orifice

**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 treatment of their patients. Each family medicine resident’s panel of patients should include a significant number of pediatric patients.

**Resources**


**Website Resources**

Academic Pediatric Association. [www.ambpeds.org](http://www.ambpeds.org)

American Academy of Family Physicians. *FP Essentials.* (Monographs published monthly. Available by subscription to residency programs and residents.) [www.aafp.org/cme/subscriptions/fp-essentials/editions.html?contentpar_gridblock_5_twocolumn_0_left_listimage_start=3](http://www.aafp.org/cme/subscriptions/fp-essentials/editions.html?contentpar_gridblock_5_twocolumn_0_left_listimage_start=3)

American Academy of Pediatrics. [www.aap.org](http://www.aap.org)

Bright Futures. [www.brightfutures.org](http://www.brightfutures.org)

Centers for Disease Control and Prevention. [www.cdc.gov](http://www.cdc.gov)


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About USBC

The United States Breastfeeding Committee (USBC) is an independent nonprofit coalition of more than 40 nationally influential professional, educational, and governmental organizations. Representing over half a million concerned professionals and the families they serve, USBC and its member organizations share a common mission to improve the Nation’s health by working collaboratively to protect, promote, and support breastfeeding. For more information on USBC, visit www.usbreastfeeding.org.

Background

Breastfeeding is a basic and cost-effective measure that has a significant positive impact on short- and long-term health outcomes for individuals and populations. The greatest health impact is found with early initiation, exclusive breastfeeding for the first six months of life, and continued breastfeeding with appropriate complementary foods for the first year of life and beyond. Lack of breastfeeding is a significant risk to the public health of our nation and increases health care spending.

In order to establish and maintain breastfeeding, women need education and support from a knowledgeable health care community. Evidence-based knowledge, skills, and attitudes are lacking among health professionals in many disciplines. The volume of new information, advances in treatments and technologies, and health care system challenges, combined with the relative paucity of professional training in human lactation and breastfeeding, leave many providers without satisfactory answers for their patients.

Purpose

These core competencies in breastfeeding care and services were developed to provide health professionals with a guideline and framework to integrate evidence-based breastfeeding knowledge, skills, and attitudes into their standard health care delivery practices.

The United States Breastfeeding Committee recommends that all health professionals possess the core competencies identified in this document in order to integrate breastfeeding care effectively and responsibly into current practice and thus provide effective and comprehensive services to mothers, children, and families.

Effecting Change

Educators are in a unique position to lead the way by incorporating these core competencies into the undergraduate, graduate, and post-graduate curricula of health professionals. These core competencies provide a structure for educators to respond to the emerging necessity of educating all health care providers regarding breastfeeding and human lactation in the context of findings from the World Health Organization (WHO) and the Agency for Healthcare Research and Quality (AHRQ).

Maternal and child health (MCH) education and practice is based upon a life cycle framework that recognizes that there are pivotal periods in human development that present both risks and opportunities for improving health outcomes for individuals and populations. In particular,
USBC calls upon MCH leaders to emphasize the synergistic value of these breastfeeding core competences to the health of women, children, and families.

**Breastfeeding Core Competencies**

Competence in the following areas represents the *minimal* knowledge, skills, and attitudes necessary for health professionals from *all* disciplines to provide patient care that protects, promotes, and supports breastfeeding.

*At a minimum, every health professional should understand the role of lactation, human milk, and breastfeeding in:*

- The optimal feeding of infants and young children\(^3\)\(^{15}\)
- Enhancing health and reducing:
  - long-term morbidities in infants and young children\(^2\)\(^{15}\)
  - morbidities in women\(^15\)\(^{16}\)

*All health professionals should be able to facilitate the breastfeeding care process by:*

- Preparing families for realistic expectations
- Communicating pertinent information to the lactation care team\(^17\)
- Following up with the family, when appropriate, in a culturally competent manner after breastfeeding care and services have been provided\(^18\)

**USBC proposes to accomplish this by recommending that health professional organizations:**

- Understand and act upon the importance of protecting, promoting, and supporting breastfeeding as a public health priority\(^2\)\(^3\)\(^{16}\)\(^{19}\)\(^{20}\)
- Educate their practitioners to:
  - appreciate the limitations of their breastfeeding care expertise\(^17\)\(^{21}\)
  - know when and how to make a referral to a lactation care professional\(^17\)\(^{21}\)
- Regularly examine the care practices of their practitioners and establish core competencies related to breastfeeding care and services\(^20\)\(^{22}\)

**Knowledge**

*All health professionals should understand the:*

1.1 basic anatomy and physiology of the breast\(^8\)\(^{23}\)
1.2 role of breastfeeding and human milk in maintaining health and preventing disease\(^2\)\(^{15}\)
1.3 importance of exclusive breastfeeding, and its correlation with optimal health outcomes\(^15\)\(^{24}\)
1.4 impact of pregnancy, birth, and other health care practices on breastfeeding outcomes\(^19\)\(^{25}\)
1.5 role of behavioral, cultural, social, and environmental factors in infant feeding decisions and practices\(^26\)\(^{27}\)
1.6 potentially adverse outcomes for infants and mothers who do not breastfeed\(^28\)
1.7 potential problems associated with the use of human milk substitutes\(^29\)
1.8 few evidence-based contraindications to breastfeeding\(^30\)\(^{31}\)
1.9 indications for referral to lactation services\(^17\)
1.10 resources available to assist mothers seeking breastfeeding and lactation information or services
1.11 effects of marketing of human milk substitutes on the decision to breastfeed and the duration of breastfeeding

Skills
All health professionals should be able to:

2.1 practice in a manner that protects, promotes, and supports breastfeeding
2.2 gather breastfeeding history information sufficient to identify mothers and families who would benefit from specific breastfeeding support services
2.3 seek assistance from and refer to appropriate lactation specialists
2.4 safeguard privacy and confidentiality
2.5 effectively use new information technologies to obtain current evidence-based information about breastfeeding and human lactation

Attitudes
All health professionals should:

3.1 value breastfeeding as an important health promotion and disease prevention strategy
3.2 recognize and respect philosophical, cultural, and ethical perspectives influencing the use and delivery of breastfeeding care and services
3.3 respect the confidential nature of the provision of breastfeeding care and services
3.4 recognize the importance of delivering breastfeeding care and services that are free of commercial conflict of interest or personal bias
3.5 understand the importance of tailoring information and services to the family’s culture, knowledge, and language level
3.6 seek coordination and collaboration with interdisciplinary teams of health professionals
3.7 recognize the limitations of their own lactation knowledge and breastfeeding expertise
3.8 recognize when personal values and biases may affect or interfere with breastfeeding care and services provided to families
3.9 encourage workplace support for breastfeeding
3.10 support breastfeeding colleagues
3.11 support family-centered policies at federal, state, and local levels

All health professionals do not need to have the level of competence expected of those practitioners who care for childbearing women, infants, and young children. Health professionals who care for childbearing women, infants, and young children can be further divided into two groups:

1. Those that provide primary care are front-line practitioners who care for women of childbearing age and/or infants and young children.
2. Those that provide secondary care may be front-line practitioners or practitioners with enhanced knowledge and skills specifically referable to the use of human milk and breastfeeding.

Those health professionals who provide primary and secondary care for childbearing women, infants, and young children should be able to:

4.1 understand the evidence-based Ten Steps to Successful Breastfeeding
4.2 obtain an appropriate breastfeeding history
4.3 provide mothers with evidence-based breastfeeding information
4.4 use effective counseling skills
4.5 offer strategies to address problems and concerns in order to maintain breastfeeding
4.6 know how and when to integrate technology and equipment to support breastfeeding
4.7 collaborate and/or refer for complex breastfeeding situations
4.8 provide and encourage use of culturally appropriate education materials
4.9 share evidence-based knowledge and clinical skills with other health professionals
4.10 preserve breastfeeding under adverse conditions

In addition, those health professionals who provide secondary or more direct “hands-on” care for childbearing women, infants, and young children should also be able to:

5.1 assist in early initiation of breastfeeding
5.2 assess the lactating breast
5.3 perform an infant feeding observation
5.4 recognize normal and abnormal infant feeding patterns
5.5 develop and appropriately communicate a breastfeeding care plan

References


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