AMERICAN ACADEMY OF FAMILY PHYSICIANS

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Recommended Curriculum Guidelines for Family Medicine Residents

Conditions of the Eye

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

Introduction

This Curriculum Guideline defines a recommended training strategy for family medicine residents. Attitudes, behaviors, 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 family medicine curriculum must include structured experience in several specified areas. Much of the resident's knowledge will be gained by caring for ambulatory patients who visit the family medicine center, although additional experience gained in various other settings (e.g., an inpatient setting, a patient's home, a long-term care facility, the emergency department, the community) is critical for well-rounded residency training. The residents should be able to develop a skillset and apply their skills appropriately to all patient care settings.

Structured didactic lectures, conferences, journal clubs, and workshops must be included in the curriculum to supplement experiential learning, with an emphasis on outcomes-oriented, evidence-based studies that delineate common diseases affecting patients of all ages. Patient-centered care, and targeted techniques of health promotion and disease prevention are hallmarks of family medicine and should be integrated in all settings. Appropriate referral patterns, transitions of care, and the 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.

Please note that the term "manage" occurs frequently in AAFP Curriculum Guidelines.

“Manage” is used in a broad sense to indicate that the family physician takes responsibility for ensuring that optimal, complete care is provided to the patient. This does not necessarily mean that all aspects of care need to be directly delivered personally by the family physician. Management may include appropriate referral to other health care providers, including other specialists, for evaluation and treatment.

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 help patients and their family members adjust to acute or chronic illnesses that may significantly affect daily life and family function. Ocular dysfunction presents unique challenges to patients. Family medicine residents must learn to maximize visual function through the control of environmental factors, the management of disease, and preventive care. Deterioration of function can be minimized through initiation of appropriate treatment, including rapid referral when necessary. The family medicine resident must also learn when social and/or psychological intervention or referral to vision rehabilitation services is appropriate for patients who have ocular dysfunction.

Competencies

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

- Demonstrate the ability to perform basic vision screening and examination, as well as an understanding of eye anatomy and physiology; common causes and treatment of acute and chronic visual loss; and indications for screening examinations in the general population and in patients who have systemic disease (Medical Knowledge, Patient Care, Practice-based Learning)
- Demonstrate an understanding of the impact of ocular illness and dysfunction on patients, their families, and society (Patient Care, Professionalism)
- Demonstrate an understanding of the ophthalmic consultant’s role, including the different responsibilities of ophthalmologists, optometrists, and opticians (Professionalism, Systems-based Practice)
- Recognize his or her own practice limitations and seek consultation with other health care providers when necessary to provide optimal patient care (Professionalism, Systems-based Practice, Interpersonal and Communication Skills)

Attitudes and Behaviors

The resident should demonstrate attitudes and behaviors that encompass:

- A supportive and compassionate approach to the care of patients who have ocular disease, especially in cases of deteriorating vision
- Recognition of the effects of loss of visual function and the benefits of referral to multidisciplinary vision rehabilitation
- Understanding of the importance of support systems in the health of patients who have ocular disease

Knowledge

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

1. Normal anatomy, physiology, and aging of the eye and ocular function (see also AAFP Curriculum Guideline No. 264 – Care of Older Adults)

2. Psychological and adaptive needs of patients who have chronic ocular deterioration

3. Effects of drugs and toxins on ocular function and disease

4. Effects of ocular drugs on systemic function

5. Ocular manifestations and complications of systemic diseases

6. Understanding of ocular disability in elderly patients and the importance of regular assessment and maintenance of functional capacity (see also AAFP Curriculum Guideline No. 264 – Care of Older Adults)

7. Prevention, management, and referral of sports-related eye injuries

8. Guidelines for appropriate intervals for vision evaluation, from birth to senescence

9. Initial diagnosis, management, and appropriate referral criteria for eye problems
    a. Refractive errors
        i. Ametropia (myopia, hyperopia, astigmatism)
        ii. Anisometropia
        iii. Astigmatism
        iv. Presbyopia
        v. Refractive surgery
        vi. Amblyopia
    b. Lid and lacrimal system
        i. Trauma: contusion, abrasion, avulsion, laceration
        ii. Infection: blepharitis, meibomitis, herpes simplex virus, herpes zoster virus, molluscum, pediculosis

iii. Inflammation: chalazion, hordeolum, contact dermatitis, blepharochalasis
iv. Congenital anomaly: epicanthus, coloboma, ankyloblepharon
v. Tumors
    1). Benign: nevus, seborrheic keratosis, hemangioma, port-wine stain, xanthelasma
    2). Malignant: basal cell carcinoma, squamous cell carcinoma, actinic keratosis, sebaceous cell carcinoma, keratoacanthoma, malignant melanoma, metastatic tumor
    3). Systemic diseases: neurofibromatosis, sarcoidosis, amyloidosis
vi. Eyelid malpositions: ptosis, floppy eyelid syndrome
vii. Lid margin: ectropion, entropion, trichiasis
viii. Bell palsy
ix. Blepharospasm
x. Lacrimal gland: nasolacrimal duct obstruction, dacryocystitis, nasolacrimal gland obstruction, dacryoadenitis, lacrimal gland tumor

c. Conjunctiva
    i. Trauma: foreign body, lacerations, subconjunctival hemorrhage
    ii. Inflammation: chemosis, follicles, papillae, phlyctenule
    iii. Conjunctivitis
        1). Infectious (bacterial, viral including herpes simplex and herpes zoster, molluscum, chlamydia)
        2). Allergic: perennial, giant papillary conjunctivitis, toxic
        3). Degenerations: amyloidosis, concretions, pinguecula, pterygium
        4). Stevens-Johnson syndrome
        5). Tumors
        6). Others: superior limbic conjunctivitis, ophthalmia neonatorum, subconjunctival hemorrhage
    iv. Dry eye disease

d. Sclera
    i. Episcleritis
    ii. Scleritis
    iii. Sclera discolorations (scleral icterus, ectasia)
    iv. Sclera perforation

e. Cornea
    i. Trauma: abrasion, laceration, burn (chemical and thermal), foreign body, globe perforation
    ii. Infectious: keratitis and corneal ulcers (bacterial, viral [including herpes zoster], fungal, parasitic)
    iii. Degeneration
    iv. Contact lens-related problems: abrasion, corneal hypoxia, keratitis, neovascularization, corneal warpage, giant papillary conjunctivitis, superior limbic keratoconjunctivitis, poor fit
    v. Ectasia: keratoconus, keratoglobus
    vi. Congenital anomaly: dermoid, megalocornea, microcornea
    vii. Dystrophy

viii. Deposits: calcium, copper, drugs, metals

f. Anterior chamber
   i. Angle-closure glaucoma: primary and secondary
   ii. Hyphema
   iii. Hypopyon
   iv. Anterior uveitis

g. Iris and pupil
   i. Trauma: sphincter tear, iritis, iridodialysis
   ii. Heterochromia: heterochromia iridis, heterochromia iridum
   iii. Congenital abnormalities: aniridia, coloboma
   iv. Tumors: cysts, nevus, nodules, malignant melanoma, metastatic tumors
   v. Anisocoria
   vi. Argyll Robertson pupil
   vii. Adie pupil
   viii. Horner syndrome
   ix. Leukocoria

h. Lens
   i. Congenital anomaly: coloboma, lenticonus, lentiglobus, microspherophakia, congenital cataract
   ii. Acquired cataract
   iii. Aphakia
   iv. Pseudophakia
   v. Dislocated lens

i. Vitreous
   i. Vitreous hemorrhage
   ii. Posterior vitreous detachment

j. Retina and choroid
   i. Trauma: choroidal rupture, commotio retinae, traumatic retinal breaks, hemorrhage
   ii. Central and branch retinal artery occlusion
   iii. Central and branch retinal vein occlusion
   iv. Retinopathy of prematurity
   v. Diabetic retinopathy
   vi. Hypertensive retinopathy
   vii. Age-related macular degeneration: nonexudative (dry) and exudative (wet)
   viii. Myopic degeneration
   ix. Cystoid macular edema
   x. Macular hole
   xi. Toxic maculopathies: drugs
   xii. Retinal detachment: rhegmatogenous, serous, and tractional
   xiii. Choroidal detachment
   xiv. Posterior uveitis
      1). Infectious: Candida, cysticercosis, cytomegalovirus, HIV, histoplasmosis, rubella, syphilis, toxoplasmosis, toxocariasis, tuberculosis

2). Others: inflammatory and hereditary
xv. Retinitis pigmentosa
xvi. Tumors: benign and malignant, including malignant melanoma, retinoblastoma, lymphoma, and choroidal metastasis

k. Optic nerve
   i. Papilledema
   ii. Idiopathic intracranial hypertension
   iii. Optic neuritis
   iv. Optic neuropathy: ischemic, traumatic, hereditary, toxic, and others
   v. Congenital anomalies: coloboma, tilted disc, optic nerve drusen
   vi. Tumors
   vii. Glaucoma: primary and secondary open-angle glaucoma
   viii. Normal tension glaucoma

l. Orbit
   i. Trauma: blunt and penetrating trauma, including orbital fracture
   ii. Infectious: preseptal cellulitis, orbital cellulitis
   iii. Inflammation: thyroid-related ophthalmopathy
   iv. Congenital: microphthalmos, nanophthalmos, craniofacial disorders
   v. Tumors (benign and malignant): dermoid cyst, rhabdomyosarcoma, neuroblastoma, leukemia, meningioma, metastatic tumors
   vi. Atrophia bulbi

m. Extraocular muscles and cranial nerves
   i. Strabismus: horizontal (esotropia and exotropia), vertical
   ii. Nystagmus: congenital acquired and physiologic
   iii. III, IV, VI cranial nerve palsy
   iv. Myasthenia gravis

10. Appropriate indications for special procedures in ophthalmology and ophthalmoradiology
    a. Corneal topography
    b. Ocular ultrasound
    c. Optical coherence tomography
    d. Fluorescein angiography
    e. Visual field testing
    f. Magnetic resonance imaging (MRI) and computed tomography (CT) of the eye

11. Indications, contraindications, limitations, and follow-up care of elective eye procedures, including the spectrum of refractive surgery, cosmetic surgery, and cataract surgery

12. Prevention of eye injury and vision loss

Skills

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

1. Evaluation
    a. Perform specific procedures and interpret results
        i. Tests of visual acuity
        ii. Test for ocular motility: cover test, cover-uncover test, alternate cover test, and corneal light reflex test
        iii. Flashlight examination
        iv. Slit-lamp examination
        v. Tonometry
        vi. Confrontation field testing and Amsler grid testing
        vii. Color vision testing with Ishihara pseudoisochromatic plates
        viii. Fluorescein staining of the cornea
        ix. Ophthalmoscopy
    b. Perform physical examination in patients of all ages, with emphasis on understanding normal neurologic and motor responses, as well as appearance
    c. Localize the problem and generate a differential diagnosis and management plan (including the “red eye”)
    d. Formulate a rational plan for investigation and management, including assessment of severity and the need for immediate expert assistance (including true ocular emergencies)
2. Management
    a. Formulate a plan for management, investigation, and acquisition of expert advice, with an awareness of the potential risks, costs, and value of the information that can be obtained
    b. Recognize and manage the prevalent and treatable diseases listed in the Knowledge section of this guideline, with consultation as appropriate
    c. Manage and coordinate psychosocial and family issues, including long-term care of debilitating ocular conditions, necessary environmental adaptation, and use of community resources
    d. Manage appropriate medications
    e. Use appropriate diagnostic tests and medications
        i. Mydriatics
        ii. Topical anesthetics
        iii. Corticosteroids
        iv. Antibiotics
        v. Glaucoma agents

Implementation

Implementation of this core curriculum is best achieved within the capabilities of the individual residency program and at the discretion of the residency director. Family medicine residents should have the opportunity to provide direct patient care under supervision, with emphasis on common treatable problems, prevention of deterioration, and ocular emergencies. Some portion of this training should be attained in the ophthalmology outpatient setting. Family medicine residents planning to provide care in communities where consultation resources are not readily available may need additional training with the assistance of a specialist.

Resources

American Academy of Ophthalmology. *Basic Ophthalmology: Essentials for Medical Students.* 10th ed. San Francisco, Calif.: American Academy of Ophthalmology; 2016.

Bagheri N, Wajda B, Calvo C, Durrani A, eds. *The Wills Eye Manual: Office and Emergency Room Diagnosis and Treatment of Eye Disease*. 7th ed. Philadelphia, Pa.: Lippincott Williams & Wilkins; 2016.

Bowling B. *Kanski's Clinical Ophthalmology: A Systematic Approach*. 8th ed. Atlanta, Ga.: Saunders; 2016.

Iroku-Malize T, Kirsch SD. *Eye Conditions in Older Adults*. FP Essent. 2016;445:1-44.

Kaiser PK, Friedman NJ, Pineda R II. *The Massachusetts Eye and Ear Infirmary Illustrated Manual of Ophthalmology*. 4th ed. Atlanta, Ga.: Saunders; 2014.

Palay DA, Krachmer JH. *Primary Care Ophthalmology*. 2nd ed. Maryland Heights, Mo.: Mosby; 2005.

Trobe JD. *Physician's Guide to Eye Care*. 4th ed. San Francisco, Calif.: American Academy of Ophthalmology; 2012.

Website Resources

American Family Physician (*AFP*) by Topic: Eye and Vision Disorders. (Multiple articles) www.aafp.org/afp/topicModules/viewTopicModule.htm?topicModuleId=66

American Academy of Ophthalmology. www.aao.org

American Academy of Ophthalmology. EyeSmart. www.aao.org/eye-health

National Institutes of Health National Eye Institute (NEI). www.nei.nih.gov

University of Michigan, Kellogg Eye Center. Eyes Have It.
http://kellogg.umich.edu/theeyeshaveit/index.html

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