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

Each family medicine residency program is responsible for its own curriculum. The AAFP Commission on Education's Subcommittee on Graduate Curriculum has created this guide as an outline for curriculum development, and it should be tailored to the needs of the program.

Through a series of structured and/or longitudinal experiences, the curricula below will support the overall achievement of the core educational competencies defined by the Accreditation Council for Graduate Medical Education (ACGME) and provide guideposts to program requirements specific to family medicine. For updates and details, please refer to the ACGME website at www.acgme.org. 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.

Preamble

Family physicians serve as gatekeepers as they examine, diagnose, and treat patients with a wide array of ocular diseases. Family medicine residency programs should provide basic training in ophthalmology for residents so they can co-manage their patients with ophthalmologists.

Family medicine residents must learn to maximize visual function by controlling environmental factors, managing diseases, and preventive care. Deterioration of ocular function can be minimized by initiating 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 demonstrate proficiency in the following domains:

Patient Care

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

1. Demonstrate the ability to diagnose, implement, and/or coordinate initial management of common eye problems (PC1,2)
    a. Acute eye conditions: Obtain relevant history and perform eye and vision examination. Recognize common presentations of common acute eye conditions and generate differential diagnoses. Order and interpret appropriate laboratory and imaging test results necessary for diagnosis, management, and assessment of severity and the need for timely referral for expert assistance.
    b. Chronic eye conditions: Obtain relevant history and perform eye and vision examination. Recognize common presentations of chronic eye conditions and generate differential diagnoses. Order and interpret appropriate laboratory and imaging test results necessary for diagnosis and management.
    c. Recognize the potential impact of ocular disease on patients' quality of life and development of disability.
    d. Develop a team-based, patient-centered management plan that includes collaborative goals of care and engages the patient in developing the plan.

2. Demonstrate competence in performing the following procedures (PC5):

    - Corneal and conjunctival foreign body removal
        - Fundoscopy/Ophthalmoscopy
    - Fluorescein eye examination
        i. Tests for 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. Confrontation field testing and Amsler grid testing
    - Color vision testing with Ishihara pseudoisochromatic plates

3. Recognize the need for and arrange a screening for ocular complications of common systemic illnesses. Counsel patients about these complications and the importance of compliance with screening and disease control, like diabetic retinopathy, hypertensive retinopathy, connective tissue disease, and thyroid ophthalmopathy. (PC3)

4. Recognize the side effects of different medications on the eye, counsel patients on their appropriate use, and arrange appropriate screening when indicated. (PC3)

5. Recognize potential occupational hazards on the eye and initiate management of these conditions. Counsel and educate patients on appropriate workplace ocular protective and preventive measures. (PC3)

Medical Knowledge

Ocular disease is a common presentation in primary care offices. At the completion of residency, a family medicine resident should be able to:

- Maximize visual function through the control of environmental factors, the management of disease, and preventive care.

- Recognize when to provide an intervention with social determinants of health (SDoH), as well as refer patients with ocular diseases to vision rehabilitation services.

- Recognize the difference in presentation and prevalence of certain ocular diseases based on race and ethnicity and provide high-quality care to people of color and ethnic minorities.

- Recognize the common ocular diseases in newborn, pediatric, and elderly patients.

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 a 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. Toxic maculopathies: drugs
xi. Retinal detachment: rhegmatogenous, serous, and tractional
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, et al.
   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
    a. Manage appropriate medications
    b. Use appropriate diagnostic tests and medications
       i. Mydriatics
       ii. Topical anesthetics
       iii. Corticosteroids
       iv. Antibiotics
       v. Glaucoma agents

System-Based Practice

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

- Have knowledge of the available community resources and services available to their patients with ocular diseases, such as social workers, rehabilitation services, and inpatient and outpatient specialist services
- Identity routine, urgent, and emergent conditions of the eye and advocate for appropriate, timely referral to an ophthalmologist
- Be able to coordinate patient care across ambulatory, inpatient, and rehabilitation services
- Be able to recognize when SDoH are a barrier to patient care and arrange the appropriate required referrals to community services
- Be able to take into consideration patient insurance and payments when considering certain referrals and or prescriptions
- Be able to demonstrate an understanding of the ophthalmic consultant's role, including the different responsibilities of ophthalmologists, optometrists, and opticians

Practice-Based Learning

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

- Access, critically appraise, and apply the latest evidence-based medicine in ocular diseases to their current practice
- Identify gaps in care and aim to address them via feedback from performance data
- Self-reflect and analyze areas of weakness in medical knowledge and clinical care related to ocular diseases and seek to improve them with a self-directed learning plan

Professionalism

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

- Recognize their limits in knowledge and skills of their self and team and demonstrates appropriate help-seeking behaviors
- Develop a plan to address their knowledge and/or skills gaps
- Understand the importance of support systems in the health of patients who have

ocular diseases

Interpersonal Communication

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

- Build a therapeutic relationship with their patients and deliver medical information in a sensitive and compassionate manner to patients who have ocular diseases, especially in cases of deteriorating vision
- Use shared decision making to include patient values and preferences to make a personalized care plan
- Utilize recommendations from different members of the health care team to optimize patient care
- Document patient information in their health record to improve the quality of care and meet insurance requirements to address gaps in care

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 be able to provide direct patient care under supervision, emphasizing 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

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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.

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Website Resources

American Family Physician (*AFP*) by Topic: Eye and Vision Disorders. (Multiple articles) www.aafp.org/pubs/afp/topics/by-topic.eye-and-vision-disorders.html

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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