

Glaucoma

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Dr. Walsworth earned a medical degree at Wayne State University School of Medicine, Detroit, Michigan. He completed his family medicine residency at Oakwood Hospital & Medical Center, Dearborn, Michigan, and an Office of Medical Education Research and Development (OMERAD) Primary Care Faculty Development Fellowship at MSU. During more than 20 years as a family physician, he has gained experience in private practice, residency teaching practice, and academic practice. In his current role, Dr. Walsworth manages MSU's Family Health Center; cares for a wide range of patients; teaches medical students, residents, and peers; and studies the determinants of provider resilience and burnout. He serves on the board of directors for the Michigan Academy of Family Physicians.



Learning Objectives

1. Determine how to implement current screening recommendations for glaucoma in their practice.
2. Determine when diagnostic findings indicate that patients should be referred to an ophthalmologist or optometrist for evaluation for glaucoma.
3. Monitor patients receiving medical treatment for open angle glaucoma for side effects and conditions that may affect treatment.
4. Initiate therapy to lower intraocular pressure in patients with acute angle-closure glaucoma until they can be seen by an ophthalmologist.



Audience Engagement System

The image displays three screenshots of the Audience Engagement System app.
Step 1: Dashboard shows a home screen with a navigation bar at the top and a grid of icons for various features like 'My Profile', 'My CME', 'My Schedule', 'My Reports', 'My Settings', and 'My Help'.
Step 2: CME Events shows a list of upcoming events. The selected event is 'CME001 Acute Coronary Syndromes: Broken Hearts and Spare Parts' on 9/15/15 at 8:00 AM.
Step 3: CME Report / Evaluation shows a report for the selected event, including details like 'Location: Room 2146B', 'Date: Wednesday, Sep 15 8:15 AM', and 'Duration: 1 hour'. It also includes a section for 'Audience Engagement System' and 'CME Report / Evaluation' with a list of learning objectives.





Personal photograph taken by David F Walworth, on 1/2/16

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AES POLL QUESTION

Glaucoma rarely causes blindness in America

- a) True
- b) False

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Glaucoma: Overview

- Second most common cause of legal blindness in America
- Usually asymptomatic until loss of peripheral vision with > 40% loss of optic nerve fibers
- Progressive optic neuropathy +/- increased ocular pressure

2003. Distelhorst, J & Hughes, G. Open-Angle Glaucoma. Am Fam Physician, 2003 May 1; 67(9):1937-1944. Downloaded on 1/19/14 from <http://www.aafp.org/afp/2003/0501/1937.html>

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Glaucoma Classification

- Primary Glaucoma
 - Open Angle
 - Narrow Angle
- Secondary Glaucoma

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Glaucoma Epidemiology

- Open angle is most common type (89%)
- 14% of those over 80 years
- Rare under age 40
- Half of those with glaucoma have not been diagnosed (or treated)
- Odds Ratio increases 1.6 – 2.2 every decade of life

2017. Moses. Open Angle Glaucoma. FP Notebook. Last updated 7/31/2016. Posted 6/20/2017. Downloaded on 7/2/17 from <http://www.fpnotebook.com/Eye/Glaucoma/OpnAnglGlcm.htm>

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Open Angle Glaucoma Prevalence by Age and Race

- Age 40-49 years
 - Black 1.3-1.4%
 - Hispanic 0.5-1.3%
 - Caucasian 0.20.5%
- Age > 80 years
 - Black 11.3-23.2%
 - Hispanic 12.6-21.8%
 - Caucasian 1.9-11.4%

2017. Moses. Open Angle Glaucoma. FP Notebook. Last updated 7/31/2016. Posted 6/20/2017. Downloaded on 7/2/17 from <http://www.fpnotebook.com/Eye/Glaucoma/OpnAnglGlcm.htm>

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Open Angle Glaucoma Relative Risk

- Black – 3.5-4 fold increase over Caucasians
- Hispanic – 2 fold increase over other Caucasians
- Sibling – 3.7-16 fold increase
- Child or parent – 1.1-2.2 fold increase
- Diabetes Mellitus – 1.4-1.5 fold increase

2017. Moses. Open Angle Glaucoma. FP Notebook. Last updated 7/31/2016. Posted 6/20/2017. Downloaded on 7/2/17 from <http://www.fpnotebook.com/Eye/Glaucoma/OgnAnglGlcM.htm>.

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Open Angle Glaucoma Other Risk Factors

- Severe myopia
- Eye trauma
- Uveitis
- Corticosteroids (especially intra- and periocular)

2017. Moses. Open Angle Glaucoma. FP Notebook. Last updated 7/31/2016. Posted 6/20/2017. Downloaded on 7/2/17 from <http://www.fpnotebook.com/Eye/Glaucoma/OgnAnglGlcM.htm>.

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Narrow Angle Glaucoma Risk Factors

- Increasing age
- Hyperopia
- Family history of glaucoma
- Angle closure glaucoma in the other eye
- Pupillary dilation
- Shallow anterior chamber
- Females (2.4 RR)

2017. Moses. Narrow Angle Glaucoma. FP Notebook. Last updated 4/18/2016. Posted 6/20/2017. Downloaded on 7/2/17 from <http://www.fpnotebook.com/Eye/Glaucoma/CpnAnglGlcM.htm>.

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Glaucoma: Screening

- Routine screening of intraocular pressure is not recommended (SORT C)
- Population screening is not recommended (USPSTF I recommendation)
- Consider screening for those with risk factors
- Fundus photography
 - Dilated
 - Non-dilated
- Refer those identified or at risk for Ophthalmologic evaluation

2003. Distelhorst, J & Hughes, G. Open-Angle Glaucoma. Am Fam Physician, 2003 May 1; 67(9):1937-1944. Downloaded on 1/19/14 from <http://www.aafp.org/afp/2003/0501/p1937.html>

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AES POLL QUESTION

Population screening of all patients should include measurement of intraocular pressure

- a) True
- b) False

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Open Angle Glaucoma: Treatment

- Decrease aqueous production
 - β -blocker drops
 - Nonspecific vs Relatively specific
 - Carbonic anhydrase inhibitor drops
- Decrease aqueous production +/- increase outflow
 - α -agonist drops
- Lifestyle modification
 - Aerobic exercise

2003. Distelhorst, J & Hughes, G. Open-Angle Glaucoma. Am Fam Physician, 2003 May 1; 67(9):1937-1944. Downloaded on 1/19/14 from <http://www.aafp.org/afp/2003/0501/p1937.html>

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Open Angle Glaucoma: Treatment

- Increase aqueous outflow
 - Prostaglandin analog drops
 - Parasympathomimetic drops
 - Sympathomimetic drops
- Surgical management
 - Stent placement
 - Laser trabeculoplasty
 - Surgical trabeculoplasty

2003. Distelhorst, J & Hughes, G. Open-Angle Glaucoma. Am Fam Physician, 2003 May 1; 67(9):1937-1944. Downloaded on 1/19/14 from <http://www.aafp.org/afp/2003/0501/p1937.html>

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Open Angle Glaucoma Treatment Side Effects

- First Line
 - Prostaglandin Analogues
 - Iritis
 - Macular edema
 - β -blockers
 - Bronchospasm
 - Blunt hypoglycemia
 - Bradycardia
 - Hypotension
- Prostaglandin Analogues
 - Lantanoprost, Travoprost, Brimatoprost, Tafuloprost, Unoprostone
- β -blockers
 - Betaxolol, Carteolol, Levobunolol, Metipranolol, Timolol

2003. Distelhorst, J & Hughes, G. Open-Angle Glaucoma. Am Fam Physician, 2003 May 1; 67(9):1937-1944. Downloaded on 1/19/14 from <http://www.aafp.org/afp/2003/0501/p1937.html>

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Open Angle Glaucoma Treatment Side Effects

- Second Line
 - Parasympathomimetics
 - Heart block
 - Pulmonary edema
 - Hypotension
 - Urinary frequency
- Intraocular cholinergics
 - Pilocarpine, Carbachol

2003. Distelhorst, J & Hughes, G. Open-Angle Glaucoma. Am Fam Physician, 2003 May 1; 67(9):1937-1944. Downloaded on 1/19/14 from <http://www.aafp.org/afp/2003/0501/p1937.html>

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Open Angle Glaucoma Treatment Side Effects

- Adjuncts
 - Carbonic anhydrase inhibitors
 - Bronchospasm
 - α -agonists
 - Hypertension
 - Dry mouth
 - Sympathomimetics
 - Tachycardia
 - Hypertension
- Carbonic anhydrase inhibitors
 - Brinzolamide, Dorzolamide
- Intraocular α -agonists
 - Apraclonidine, Brimontidine
- Intraocular sympathomimetics
 - Dipivefrin, Propine

2003. Distelhorst, J & Hughes, G. Open-Angle Glaucoma. Am Fam Physician, 2003 May 1; 67(9):1937-1944. Downloaded on 1/19/14 from <http://www.aafp.org/afp/2003/0501/p1937.html>

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AES POLL QUESTION

β -blocker eye drops should be specifically avoided in those patients with both asthma and glaucoma

- a) True
- b) False

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Medications that Increase Intraocular Pressure

- Open Angle (Chronic)
 - Corticosteroids
- Closed Angle (Acute)
 - Topical anticholinergic or sympathomimetic dilating drops
 - Tricyclic antidepressants
 - Monoamine oxidase inhibitors
 - Antihistamines
 - Antiparkinsonian drugs
 - Antipsychotics
 - Antispasmodics
 - Sulfa containing drugs

2012. Rhee, D, et al. Drug-Induced Glaucoma. Medscape. Updated 2/15/12. Downloaded on 1/19/14 from <http://emedicine.medscape.com/article/1205298-overview>

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Acute Angle Closure Glaucoma

- Presentation
 - Acute
 - Severe pain
 - Blurred vision
 - Frontal headache
 - Halos around lights
 - Increased intraocular pressure
 - Red eye (conjunctiva)
- Exam
 - Mid-dilated, sluggish pupil
 - Corneas normal or hazy
 - Shallow anterior chambers

2007, Pokhrel, P & Loftus, S. Ocular Emergencies. Am Fam Physician, 2007 Sep 15; 76(9):829-836. Downloaded on 1/19/14 from <http://www.aafp.org/afp/2007/0915/p829.html#afp20070915p829-1-2>

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Acute Angle Closure Glaucoma

- Treatment
 - Lowering intraocular pressure
 - Acetazolamide 500 mg PO
 - One drop of each of the following one minute apart and repeated three times at 5 minute intervals
 - Timolol maleate 0.5%
 - Apraclonidine 1%
 - Pilocarpine 2%
- Immediate referral to Ophthalmology

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Practice Recommendations

- Lowering intraocular pressure in acute angle-closure glaucoma may save vision; laser iridotomy is the definitive treatment for acute angle-closure glaucoma (SORT C).

2007, Pokhrel, P & Loftus, S. Ocular Emergencies. Am Fam Physician, 2007 Sep 15; 76(9):829-836. Downloaded on 1/19/14 from <http://www.aafp.org/afp/2007/0915/p829.html#afp20070915p829-1-2>

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AES POLL QUESTION

A practice that uses a retinal photography system that requires eye dilation should be prepared to begin emergency treatment of acute angle closure glaucoma

- a) True
- b) False

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AES POLL QUESTION

A diabetic patient is screened for diabetic retinopathy by the retinal photography system in your office. The report from the reading center indicates significant optic nerve cupping without diabetic retinopathy. No ophthalmologic referral is needed.

- a) True
- b) False

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Quality Measures

- Predominantly for ophthalmology
 - MIPS
 - #12 – Primary Open Angle Glaucoma (POAG): Optic Nerve Evaluation
 - #141 – Primary Open Angle Glaucoma (POAG): Reduction of Intraocular Pressure by 15% OR Documentation of a Care Plan

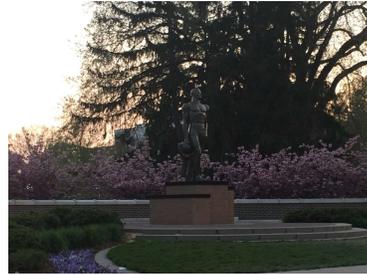
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Practice Recommendations

- Remind patients to see an eye care professional every 2 years, more frequently, if needed
- Have a protocol in place developed with a local ophthalmologist to treat/urgently refer acute angle closure glaucoma if dilating eyes in office

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Personal photograph taken by David T. Wainwright on 5/15/16

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Questions



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