

I SPY WITH MY LITTLE EYE



COMMON OPHTHALMIC DISORDERS AND NOVEL TREATMENTS

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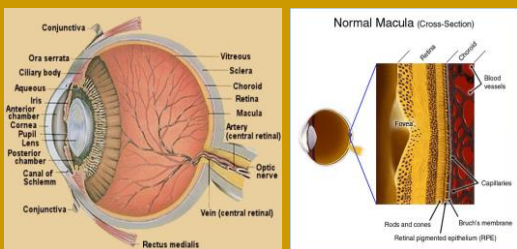
OBJECTIVES

- Describe the normal structure and functions of the eye, and identify structures which help protect the eye
- Identify the principles of providing basic eye care which should be taught to all patients with eye disorders
- Name five diagnostic tools commonly used to diagnose eye diseases
- Determine and identify common ophthalmic conditions in community pharmacy
- Identify novel treatments available for common ophthalmic conditions



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ANATOMY OF THE HUMAN EYE



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FUNCTIONS OF THE HUMAN EYE

- [HTTPS://WWW.YOUTUBE.COM/WATCH?V=BETDH-G8WFE](https://www.youtube.com/watch?v=BETDH-G8WFE)

Table 1. Questions to Ask During an Eye Care Consultation
• How long have you had the problem?
• Have you had this problem before?
• What is the pattern of occurrence of this problem?
• Has it gotten worse or better over time?
• Is there any pain?
• Is there any discharge?
• Is your vision affected?
• Do you know what the problem could be?
• Is there an obvious cause?
• Have you been using a computer for prolonged periods of time?

Source: Reference 1.

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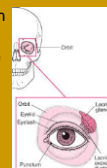
WHAT IS THE MOST COMPLEX ORGAN IN THE BODY?

- The human eye functions much like a digital camera
 - Light enters the eye through the cornea, the clear front surface of the eye, which acts like a camera lens.
- The iris works much like the diaphragm of a camera--controlling how much light reaches the back of the eye
 - It does this by automatically adjusting the size of the pupil
- The eye's crystalline lens sits just behind the pupil and acts like autofocus camera lens, focusing on close and approaching objects
- Focused by the cornea and the crystalline lens, the light makes its way to the retina
 - This is the light-sensitive lining in the back of the eye. Think of the retina as the electronic image sensor of a digital camera. Its job is to convert images into electronic signals and send them to the optic nerve
- The optic nerve then transmits these signals to the visual cortex of the brain which creates our sense of sight

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STRUCTURES THAT HELP PROTECT THE EYE

- The bony structures of the **orbit** (the bony cavity that contains the eyeball and its muscles, nerves, and blood vessels, as well as the structures that produce and drain tears) protrude beyond the surface of the eye
- The eyelashes are short, tough hairs that grow from the edge of the eyelid
 - The upper lashes are longer than the lower lashes and turn upward
 - The lower lashes turn downward
 - Eyelashes keep insects and foreign particles away from the eye by acting as a physical barrier and by causing the person to blink reflexively at sensation(s)



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STRUCTURES THAT HELP PROTECT THE EYE

- The upper and lower eyelids reflexively close quickly (blink) to form a mechanical barrier that protects the eye from foreign objects, wind, dust, insects, and very bright light
- On the moist back surface of the eyelid, the conjunctiva loops around to cover the front surface of the eyeball, right up to the edge of the cornea
- Tears consist of a salty fluid that continuously bathes the surface of the eye to keep it moist and transfers oxygen and nutrients to the cornea, which lacks the blood vessels that supply these substances to other tissues
- Tears also trap and sweep away small particles that enter the eye. Moreover, tears are rich in antibodies that help prevent infection. The eyelids and tears protect the eye while allowing clear access to light rays entering the eye.

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TEARS

- Pharmacists Beware:
 - https://www.youtube.com/watch?v=7wMqzF6_q9s

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BASIC EYE HYGIENE

GOOD LIGHTING (AVOID DARK AND BRIGHT LIGHTS)

REST EYES ON DISTANT OBJECT

DON'T RUB EYES

REPORT: EYE PAIN, PHOTOPHOBIA, VISION CHANGES, TEARING

DO NOT SHARE EYE MAKE UP

CLEAN EYE FROM INNER TO OUTER CANTHUS

VITAMINS A & B ARE IMPORTANT

WEAR CONTACTS APPROPRIATELY

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EYE HYGIENE, NATIONAL EYE INSTITUTE

- **Have a comprehensive dilated eye exam**, this is the only way to detect diseases in the early stages
- **Know your family's eye health history**
- **Eat right to protect your sight**, diets rich in fruits/vegetables, particularly dark leafy greens. Research has shown there are eye health benefits from eating fish high in omega-3 fatty acids, such as salmon, tuna, and halibut
- **Maintain a healthy weight**, being overweight or obese increases your risk of developing diabetes and other systemic conditions
- **Wear protective eyewear**
- **Quit smoking or never start**. Research has linked smoking to an increased risk of developing age-related macular degeneration, cataract, and optic nerve damage, all of which can lead to blindness
- **Give your eyes a rest**. Try the 20-20-20 rule: Every 20 minutes, look away about 20 feet in front of you for 20 seconds
- **Clean your hands and your contact lenses properly**, wash your hands and disinfect contact lenses as instructed and replace them as appropriate
- **Practice workplace eye safety**

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EXPECT 2 - 5 % OF ALL GENERAL CONSULTATIONS TO BE EYE RELATED

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EYE DISORDER STATISTICS

GENERAL PRACTICE

ASSESSMENT AND EVALUATION

- | | |
|---|--|
| <ul style="list-style-type: none"> • INFECTIVE CONJUNCTIVITIS 44% • ALLERGIC CONJUNCTIVITIS 15% • MEIBOMIAN CYST 8% • BLEPHARITIS 5% • CATARACT 4.8% • ABRASION/ FOREIGN BODY 3% • GLAUCOMA 2.3% • STYE 2% • MACULAR DISEASE 1.1% • UVEITIS 1.1% • No ABNORMALITY 1.8% • OTHER CONDITIONS 11.9% | <ul style="list-style-type: none"> • FOREIGN BODY 29% • CORNEAL ABRASION 15% • EYE INJURY/TRAUMA 15% • INFECTIVE CONJUNCTIVITIS 9% • ALLERGIC CONJUNCTIVITIS 3% • BLEPHARITIS 3% • OTHER CONDITIONS 26% |
|---|--|

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QUICK COUNSELING/BEST PRACTICES

- Spacing of eye drops and why
- Using an eye dropper/washer

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PHARMACY SCENARIOS

- WHAT DO YOU DO WHEN YOU SEE A PATIENT WITH NEW ONSET LOSS OF VISION IN ONE EYE THIS MORNING?
 - * REFERRAL, JOHNS HOPKINS UNIVERSITY IN BALTIMORE RESEARCHERS FOUND THAT MICRO VASCULAR CHANGES – TROUBLE IN THE SMALLER VESSELS OF THE EYES OR KIDNEYS – APPEARED TO BE LINKED TO THE PRESENCE OF ATRIAL FIBRILLATION
 - 6 OUT OF EVERY 1000 PEOPLE WITH NO MICRO VASCULAR DISEASE DEVELOPED A FIB
 - 9 OUT OF EVERY 1000 PEOPLE WITH MICRO-BLEEDS IN THE VESSELS OF THE RETINA
 - IT INCREASED TO MORE THAN 24 PER 1000 PEOPLE WHOM HAD VESSEL DAMAGE IN BOTH THE EYES AND KIDNEYS WENT ONTO DEVELOP AFIB (THE CONNECTION IS STILL UNCLEAR)

<https://www.health24.com/MEDICAL/EYE/News/Eyes-may-indicate-atrial-fibrillation-risk-20131119>

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PHARMACY SCENARIOS

- AN ELDERLY WOMAN PRESENTS WITH BLURRED VISION & NAUSEA/VOMITING? YOUR DIFFERENTIAL DX IS GASTROENTERITIS (STOMACH FLU) BUT COULD IT BE MORE?
 - * REFERRAL, THERE ARE 6 SERIOUS ILLNESSES THAT COULD CAUSE BLURRED VISION ACCORDING TO THE UTILIZATION REVIEW ACCREDITATION COMMITTEE OF SPECIALTY PHARMACIES
 - **Diabetes:** Diabetic retinopathy results in damaged blood vessels in the retina. Diabetic eye degeneration can cause blurred and/or spotty vision and can lead to blindness or macular degeneration
 - **Stroke:** Strokes impede blood flow in the brain and can cause blurry/double vision, loss of sight, dizziness, drooping facial muscles, confusion, balance problems, difficulty speaking, loss of feeling in one arm
 - **Multiple Sclerosis:** MS causes inflammation along the optic nerve that connects your eyes to the brain, which can lead to blurry sight, loss of color vision, and pain
 - **Brain tumor:** pressure to build inside the skull can cause blurred vision, drowsiness, headaches, seizures, nausea, and vomiting
 - **Migraine headaches:** can cause blurred vision, sensitivity to light, and spots can occur before and during migraine episodes
 - **Glaucoma:** Glaucoma puts an unhealthy amount of pressure on the eyes, and is known as a silent disease. The Glaucoma Research Foundation recommends that you have your eyes checked once every two to four years when under 40 years of age, every three to five years from age 40 to 54; at least every two years after age 55; and every year after age 65

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PHARMACY SCENARIOS

- A PATIENT COMES TO THE PHARMACY COMPLAINING ABOUT SEEING FLOATERS, HALOES, AND FLASHES OF LIGHT. WHAT IS YOUR RECOMMENDATION?
 - * REFERRAL NEEDED, THIS COULD BE AN EARLY SIGN OF RETINAL TEAR OR DETACHMENT OR SOMETHING MORE SEVERE.
 - You should seek urgent advice about floaters and flashes if they are very marked or sudden in onset, associated with pain, or changes in your vision, of if both floaters and flashes are occurring together
 - You should always seek advice if you develop persistent haloes
 - You should seek advice for any new symptoms, even if less severe than this, if you have previously lost the sight in one of your eyes, so that your new symptoms affect your only functioning eye.

FLASHES, FLOATERS AND HALOES
AUTHORED BY en.10011.com, REVIEWED BY Dr.Ashish.Bhosale | LAST EDITED 31 JUL 2018 | CERTIFIED BY The.Information.Sty.Agency

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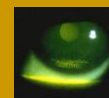
REAL PATIENT SCENARIOS

- A patient is asking how often her daughter should get an eye exam?
 - The correct answer is: one to two years.
- A patient asked me what increases a child's chances for having eye problems, her daughter is 4 yrs old and she is worried?
 - The correct answer: Premature birth, crossed eyes, a family hx of eye disease, etc.
- A patient in the eye care aisle asked, what is the reason for getting my eyes dilated at the eye doctor aside from the extra charge?
 - The correct answer is: to allow for a better view of the interior of your eyes.
- An indication of strabismus was written in the sig.
 - The correct answer is: this is the technical term for crossed/turned eyes.
- If you pass a vision screening, a comprehensive eye exam is unnecessary.
 - The correct answer is: false. Screenings can identify people who are at risk for vision problems. Screenings can miss serious vision or eye health problems.
- People over age 60 should have their eyes examined at least:
 - The correct answer is: every year. As you get older, risk for eye disease increases
- My son has a learning disorder and not doing well in school, should I get him tested for ADHD, etc?
 - The correct answer is: children who have trouble seeing or interpreting what they see often have trouble with their schoolwork. It might work getting an eye exam to rule this out first.

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DIAGNOSTIC TOOLS

- SNELLEN CHART
- OPHTHALMOSCOPE
- FLUORESCIN
- PEN-TORCH WITH COBALT FILTER
- PIN HOLE



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VISION SAMPLES

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READY FOR SOME EYE SCENARIOS ?



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SCENARIO 1

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THIS 42 YR OLD PATIENT PRESENTS WITH A 2 DAY HISTORY OF GRITTY, RED LEFT EYE WHICH HAS BECOME STICKY OVER THE LAST 24 HRS. HIS RIGHT EYE DOESN'T FEEL RIGHT TODAY AS WELL. HIS VISION IS NORMAL.



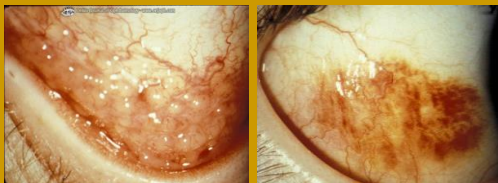
- WHAT IS THE MOST LIKELY DIAGNOSIS?
 - A) BLEPHARITIS
 - B) HERPES ZOSTER OPTICUS
 - C) RETINAL DETACHMENT
 - D) STYE
 - E) VIRAL CONJUNCTIVITIS

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WHAT ARE THE CLINICAL FEATURES?

What did we see?

Similar Conditions



FOLLICULAR CHANGES

HEMORRHAGIC CHANGES

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**HOW WOULD YOU TREAT
THIS PATIENT?**

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SCENARIO 2

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THIS 19 YEAR OLD STUDENT IS COMPLAINING OF IRRITATION OF THE EYE LIDS. IT HAS BECOME MUCH WORSE RECENTLY WHILE STUDYING FOR EXAMS



- WHAT IS THE MOST LIKELY DIAGNOSIS?
- A) BLEPHARITIS
- B) HERPES ZOSTER OPTICUS
- C) RETINAL DETACHMENT
- D) STYE
- E) VIRAL CONJUNCTIVITIS

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WHAT ARE THE CLINICAL FEATURES?

What did we see?

Similar Conditions

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**HOW WOULD YOU TREAT
THIS CONDITION?**

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SCENARIO 3

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THIS 21 YEAR OLD PATIENT PRESENTED TO HIS PHARMACIST WITH A RED PAINFUL SWELLING OVER HIS EYE LID.



- WHAT IS THE MOST LIKELY DIAGNOSIS?
- A) BLEPHARITIS
- B) HERPES ZOSTER OPTICUS
- C) RETINAL DETACHMENT
- D) STYE
- E) VIRAL CONJUNCTIVITIS

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WHAT ARE THE CLINICAL FEATURES?

What did we see?

Similar Conditions

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HOW WOULD YOU TREAT THIS CONDITION?

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SCENARIO 4

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- WHAT IS THE MOST LIKELY DIAGNOSIS?
- A) BLEPHARITIS
- B) HERPES ZOSTER OPTICUS
- C) RETINAL DETACHMENT
- D) STYE
- E) VIRAL CONJUNCTIVITIS

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WHAT ARE THE CLINICAL FEATURES?

What did we see?

Similar Conditions

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HOW WOULD YOU TREAT THIS CONDITION?

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SCENARIO 5

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- WHAT IS THE MOST LIKELY DIAGNOSIS?
 - A) BLEPHARITIS
 - B) HERPES ZOSTER OPTICUS
 - C) RETINAL DETACHMENT
 - D) STYE
 - E) VIRAL CONJUNCTIVITIS

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WHAT ARE THE CLINICAL FEATURES?

What did we see?

Similar Conditions

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HOW WOULD YOU TREAT THIS CONDITION?

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NOVEL TREATMENTS

- Tecnis Symphony, extended depth of focus lens during cataract surgery provides new surface for both near and far sided vision difficulties
- Prokera clips a piece of amniotic membrane tissue in between two rings made out of a clear, flexible material to heal damaged surfaces
- Vector Thermal Pulsation technology, sends heat into the glands inside your lids. This combination of heat plus pressure massages any blockages and liquefies and clears the obstructions that are causing symptoms
- Nanoparticles can be adjusted to modify numerous properties such as mucoadhesion, biocompatibility and biodegradability, thus enhancing drug permeation

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NOVEL TREATMENTS

- Argon or Diode laser, the laser scars the retina so it bonds to the underlying tissue and prevents further retinal detachment
- iStent, shunt to relieve eye pressure instead of the customary eye drops to help with glaucoma
- TrueTear is a handheld stimulator that comes with daily disposable tips that are inserted into the nose. The device stimulates nerves in the nose to produce tears. The reaction is like what occurs when you cut into an onion.
- Serum tears, eye drops made from your own blood serum improved symptoms of ocular surface disease

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OTC NOVEL TREATMENTS

- *Soothe XP* emollient lubricant eye drops, contains mineral oils, seals in moisture, and protects against further irritation
- Lumify (brimonidine) which was first approved by the FDA in a higher dose as a prescription glaucoma drug called Alphagan, reduce eye redness by causing constriction of the blood vessels in the eye, decreasing both blood flow and oxygen getting to the eye's tissue



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LUMIFY VS VISINE

- Once a person stops using drops containing Visine (tetrahydrozoline), the blood vessels are no longer constricted
- As vessels open again, they can become even larger than before, as nutrients and oxygen return to the eye. The enlarged arteries pump more blood to make up for lost time, which can cause increased redness in the eye (rebound effect)
- The key difference in the way the two drugs work is that Visine targets a receptor in the eye's arteries, while Lumify acts on a receptor in the veins
- Bausch and Lomb claims, Lumify doesn't interrupt oxygen flow to the eye, reducing the risk of a rebound effect, but does contain benzalkonium chloride preservatives

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RX NOVEL TREATMENTS

- Lucentis
- Eylea
- Xiidra
- Rhopressa
- Vyulta

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SUMMARY

- Eye disorders are commonly seen, and pharmacists are at the front line.
- Novel ophthalmic treatments may be more relevant today than ever before.
- Pharmacists need to stay up to date to make appropriate recommendations.

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REFERENCES

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"DON'T TURN A BLIND EYE"

