



Eye Disorders and Vision Defects

Advanced Biomedical Science

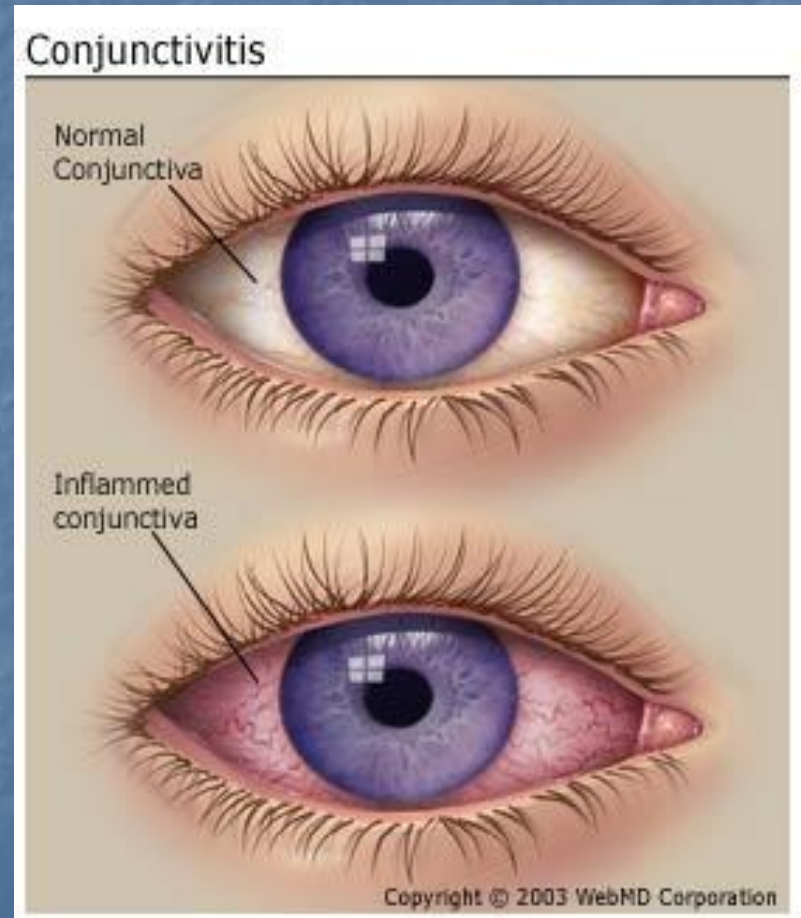
Lecture Outline by: James Dauray

Lecture Modified by: Mr. Stephen Chitraroff

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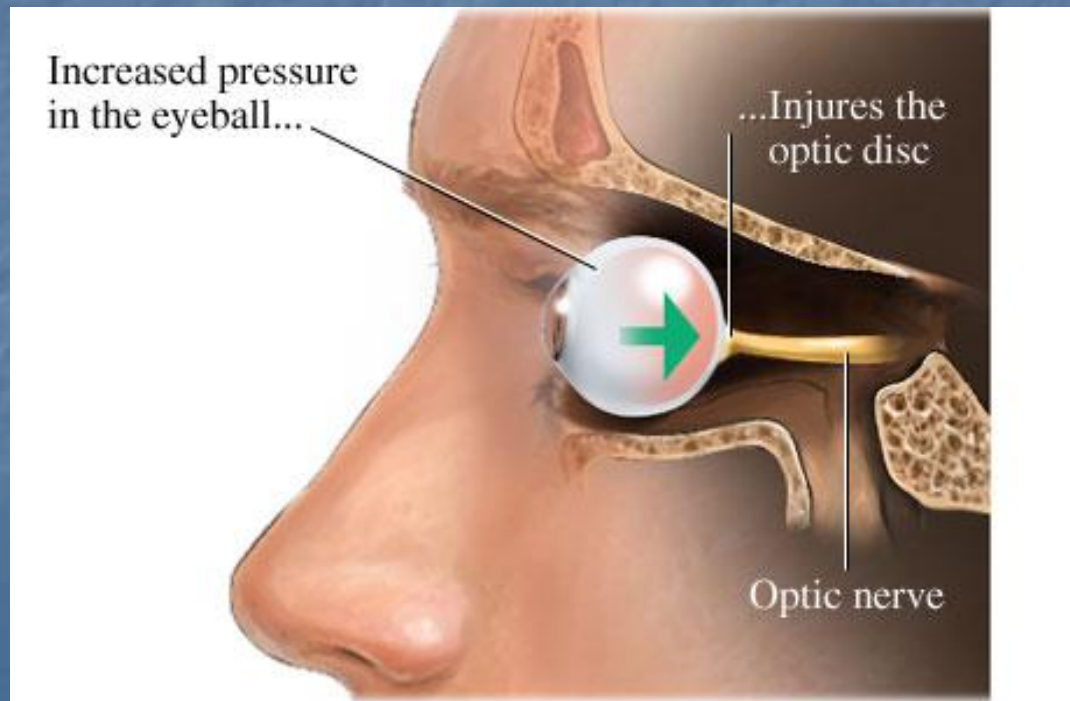
Conjunctivitis (Pink eye)

- A viral or bacterial infection of the conjunctiva (outer membrane) of the eye)
- Spread by touching your eyes without washing your hands or sharing washcloths



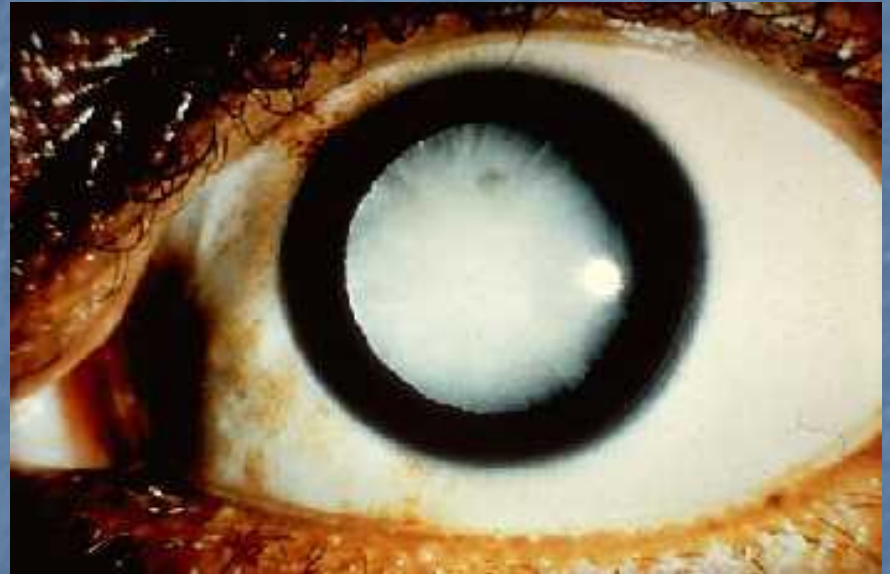
Glaucoma

- Excessive production of fluid within the eye puts pressure on the optic nerve.
- Usually occurs during old age
- Treated with drugs or surgery



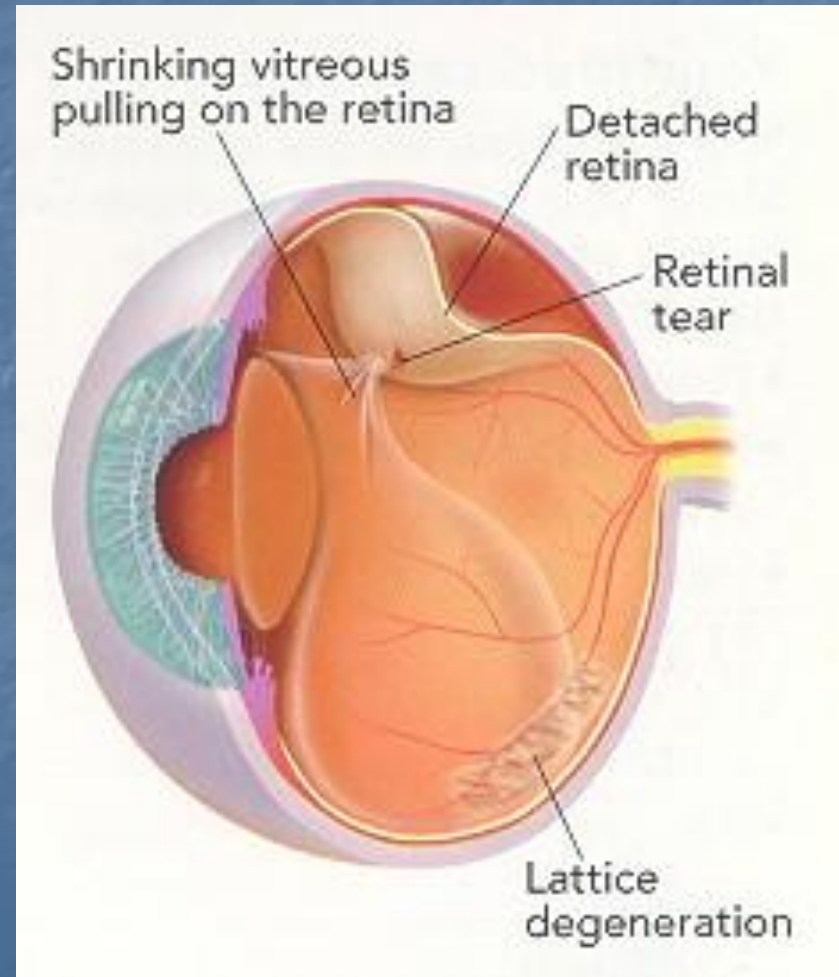
Cataracts

- The lens of the eye becomes cloudy.
- Causes gradual blurring and loss of vision.
- Caused by old age.
- Treated by surgical removal of the lens.



Detached retina

- The retina (inner layer) can become partially detached.
- Results in vision loss.
- Caused by a blow to the head or old age.
- Can be repaired with laser surgery



Pathology of the Eyelids

- **Blepharoptosis** = drooping of upper eyelid.
- **Ectropion** = eversion of the edge of the eyelid.
- **Entropion** = inversion of the edge of the eyelid.
- **Hordoleum** (Stye) = infection of any of the eye glands.
- **Chalazion** (internal Hordoleum) = swelling caused by blockage of the sebaceous glands (oil producing).

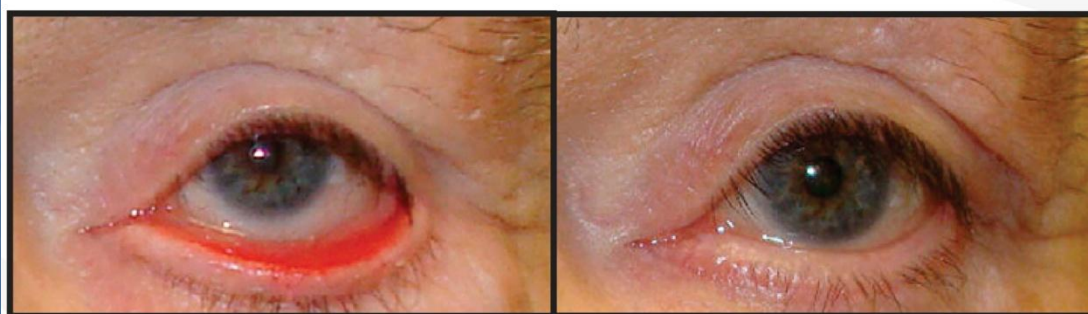
Blepharoptosis

- Drooping eyelid
- Caused by dysfunctional eye muscles.
- Correctable.



Ectropion (Eyelid Eversion)

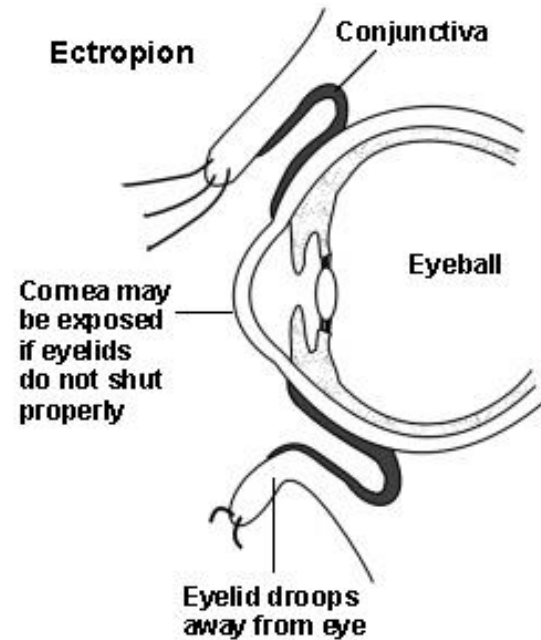
- Weakening of the tissue of the lower eyelid.
- Notable symptom of newborns exhibiting congenital Harlequin-type Ichthyosis
- Can be repaired surgically
- Affects certain purebreed dogs.



Patient before surgery Post-surgery

A patient with ectropion of the lower lid prior to and post surgery.

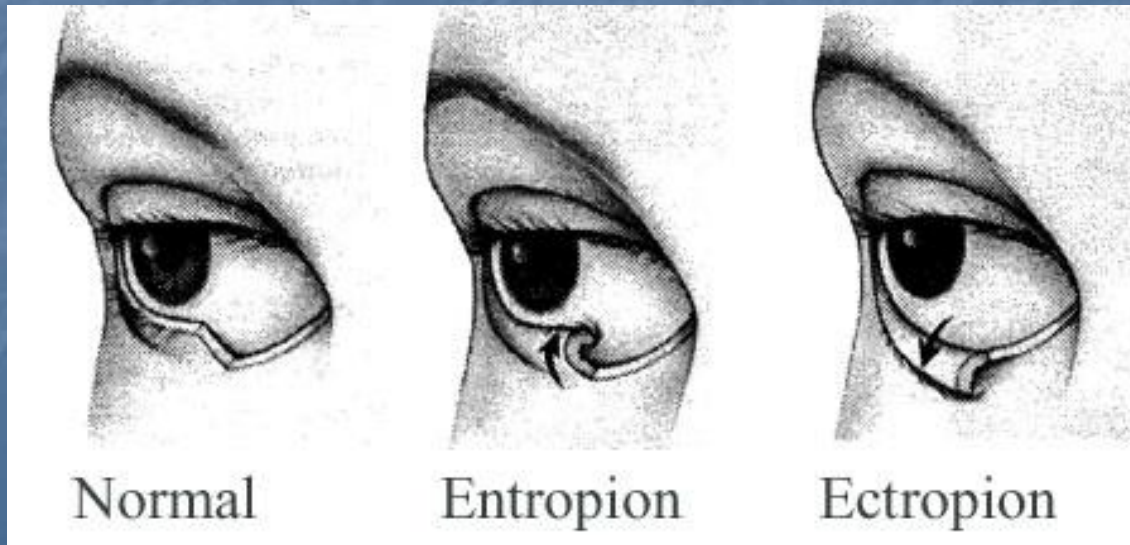
Ectropion (Eyelid Eversion)



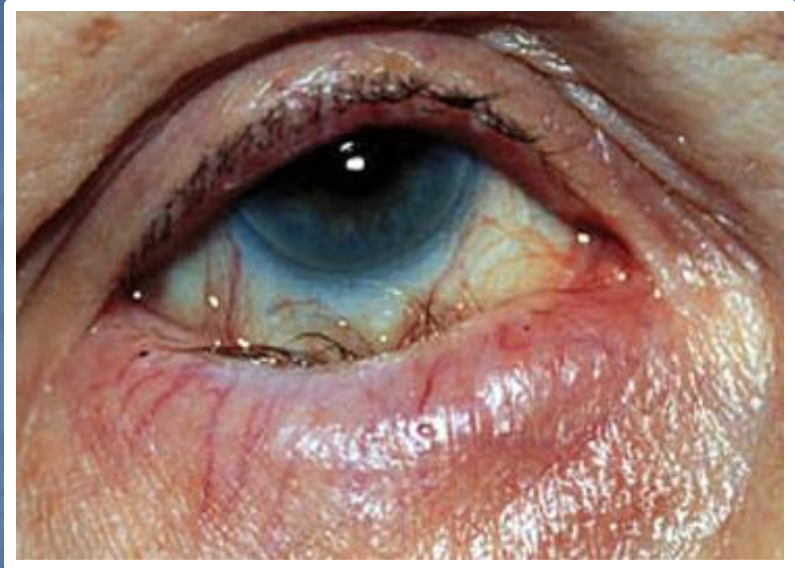
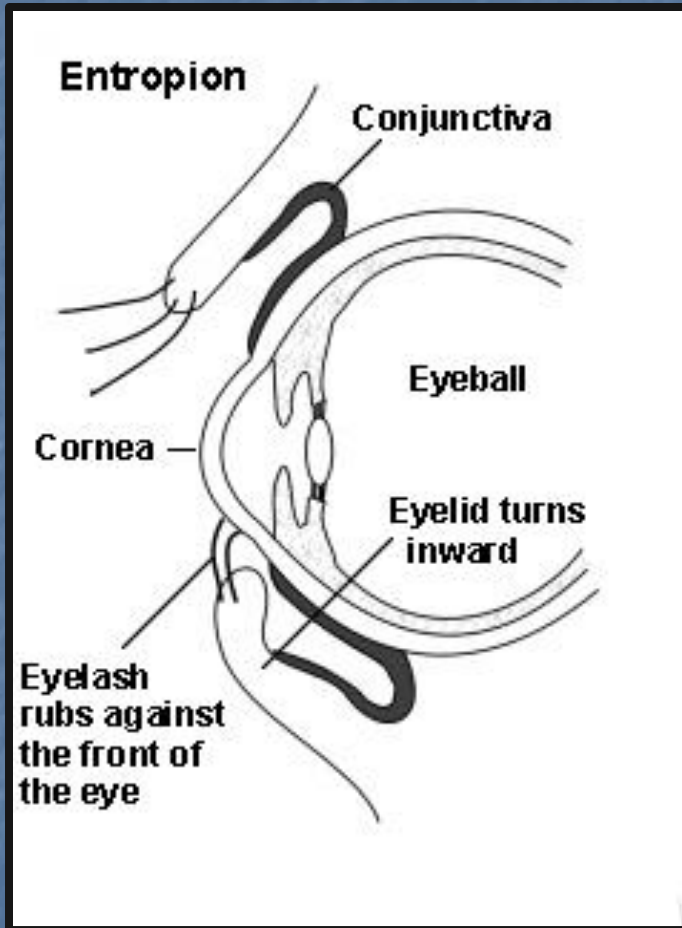
Ectropion

Entropion (Eyelid Inversion)

- Syndrome when the lower eyelid folds inward.
- Causes irritation as eyelashes constantly brush against the cornea.
- Entropion can also create secondary pain of the eye through scarring of the eyelid.



Entropion

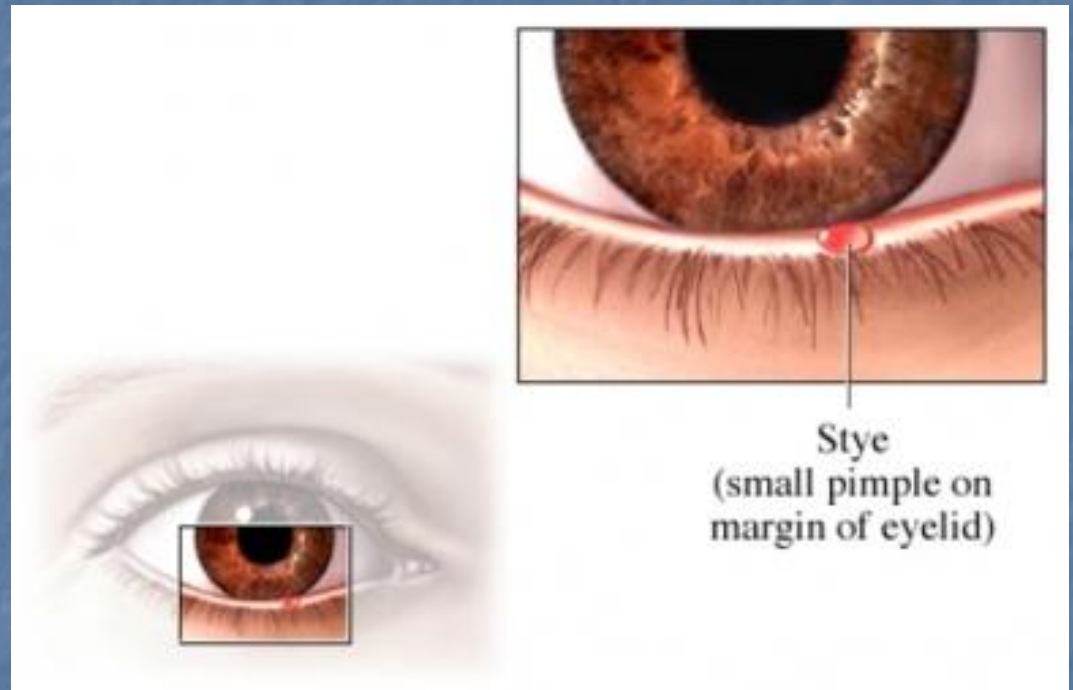


Hordoleum (Stye)

- Inflammation of the sebaceous gland of an eyelash.
- Eyelid becomes red and swollen.

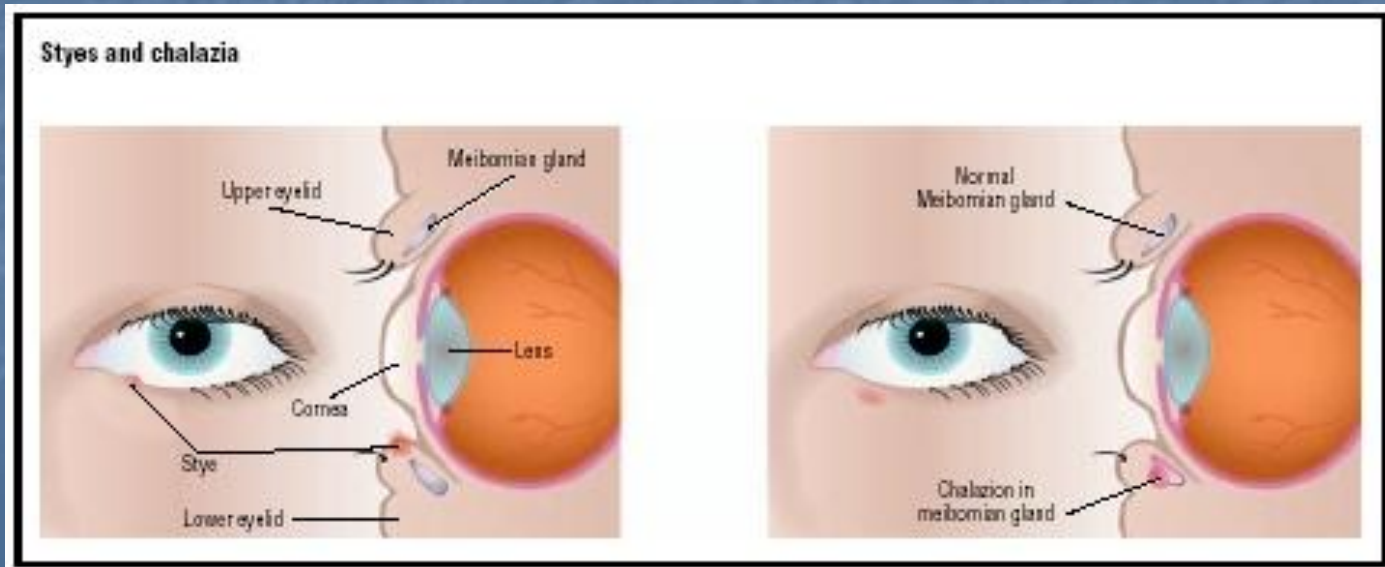


Hordoleum (Sty)

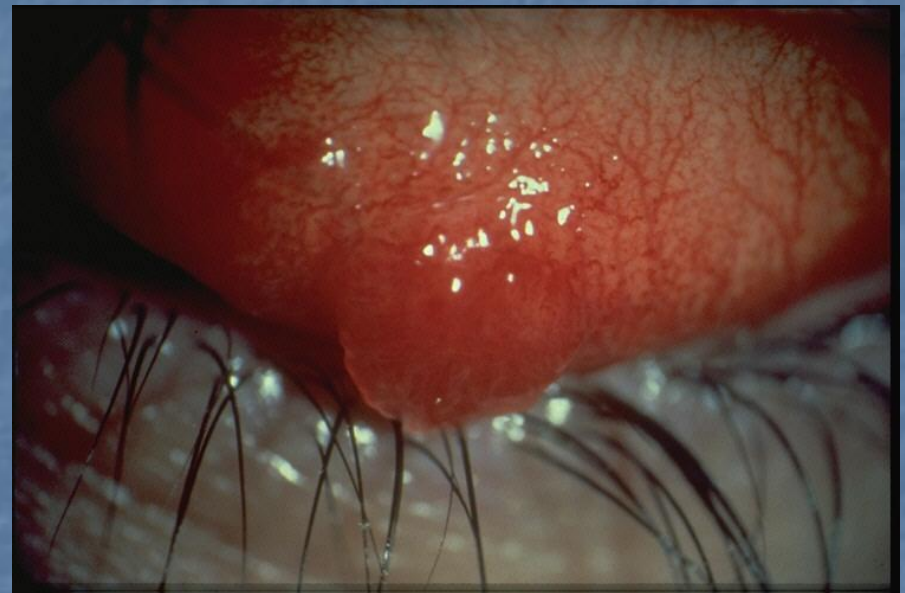
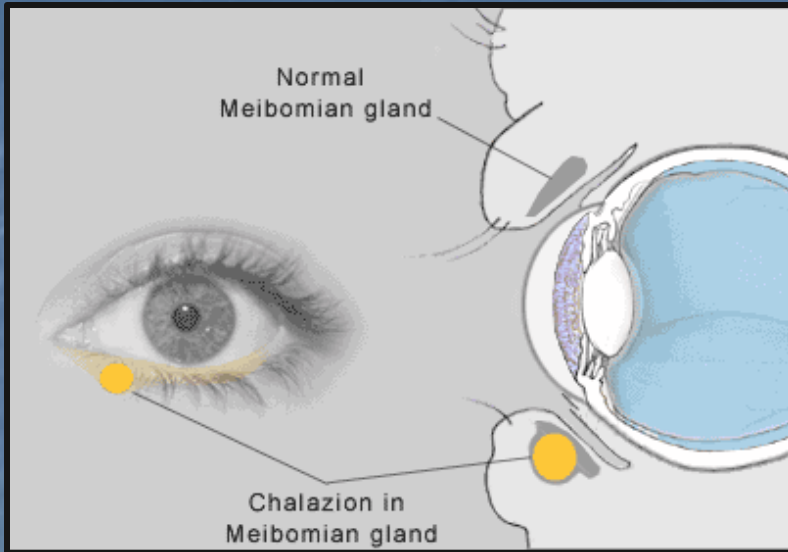


Chalazion (internal Hordoleum)

- Caused by obstruction of the oil glands in the upper or lower eyelid.
- Painless nodules, NOT styes.
- Affects internal eyelid on conjunctiva.
- Heals within 2 months after treatment.



Chalazion



Vision Defects

- **Presbyopia** – Eye lenses lose their elasticity, making it difficult to focus on objects.
- **Astigmatism** – Irregular curvature of the lens or cornea, causing blurred vision.
- **Strabismus (Cross-eyes)** – Caused by lack of coordination of eye muscles.

Vision Defects

- **Hyperopia** (farsightedness) is caused by an eyeball that is slightly shorter than normal.
- **Myopia** (shortsightedness) is due to an eyeball that is slightly longer than normal.
- **Colorblindness** – A genetic condition where a person is missing some cones and cannot see certain colors as well as others.

Vision Tests

Distance Vision Test

- Used to test visual acuity and diagnose far and near-sightedness.
- Results are recorded as Snellen Fractions. Normal vision (20/20) is what the average eye can see at a distance of 20 feet from the right and left eyes.
- If a patient sees 20/200, the smallest letter that they can see at 20 feet could be seen by a normal eye at 200 feet.

Distance Visual Acuity Test (E Game)

(Read in good light at 10 feet.)

Line 1
20/200



Line 2
20/100



Line 3
20/40



Line 4
20/20

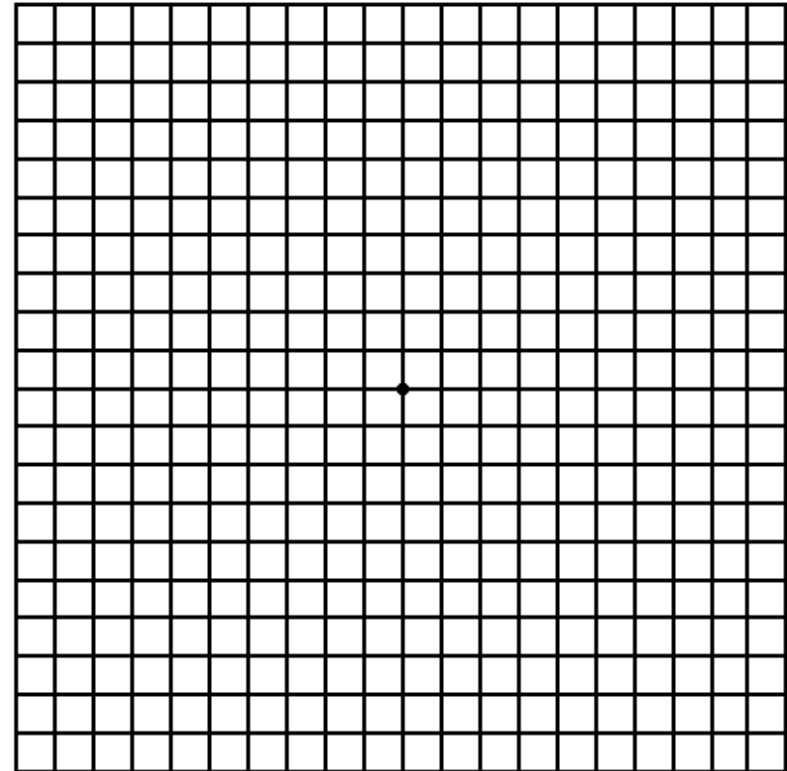


100 Millimeter Calibration Bar
(If not 100 mm, see text of visual acuity page.)

Amsler Grid

- Used to detect vision distortions or blind spots.
- Focus on the dot in the center of the grid. Note whether any lines appear distorted or missing.

AMSLER GRID

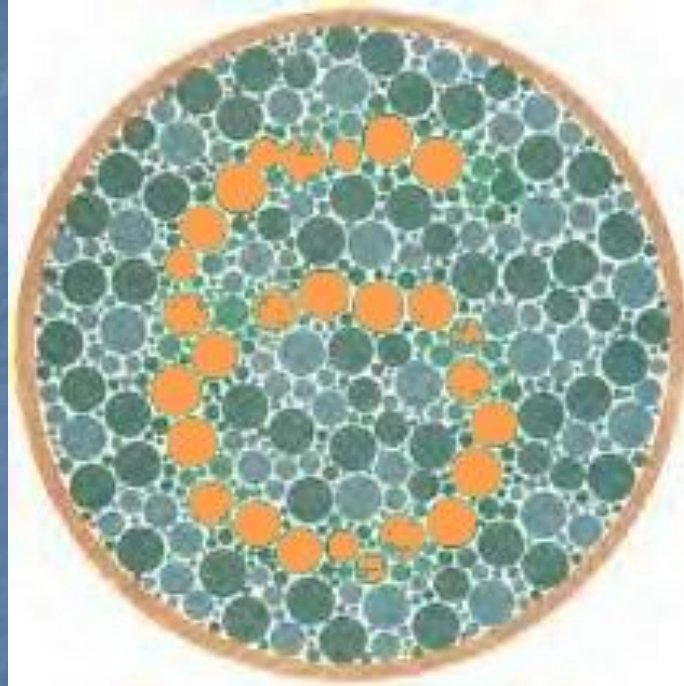


1. Test vision with one eye at a time, and use normal glasses for reading.
2. Hold chart at normal reading distance.
3. Stare at central dot and look for distortion or blind spots in the grid.

Colorblindness Test

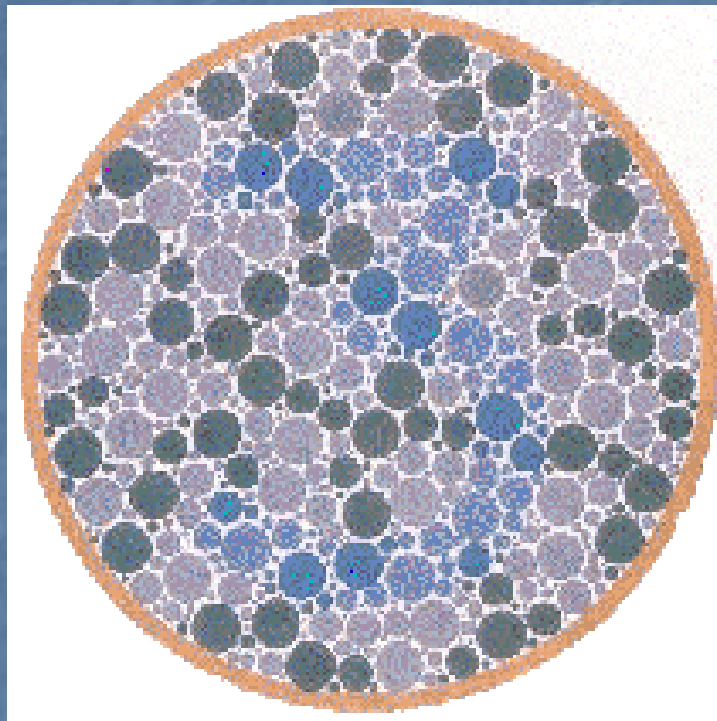
- Examine the design and see if a number appears. If the patient cannot see the number, colorblindness may be present.
- Each pattern tests different types of colors.
- Don't take any notes on this next part.

Colorblindness Test #1



Answer: Number 6

Colorblindness Test #2



Answer: Number 3

Colorblindness Test #3



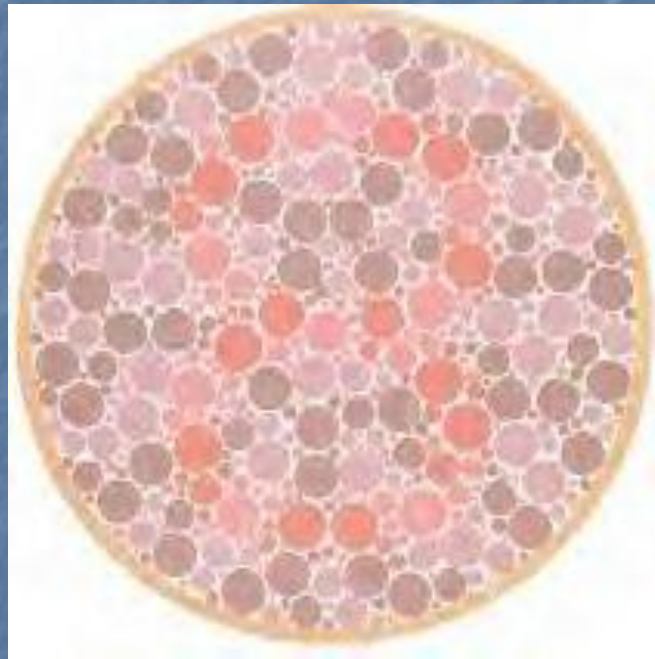
Answer: Number 5

Colorblindness Test #4



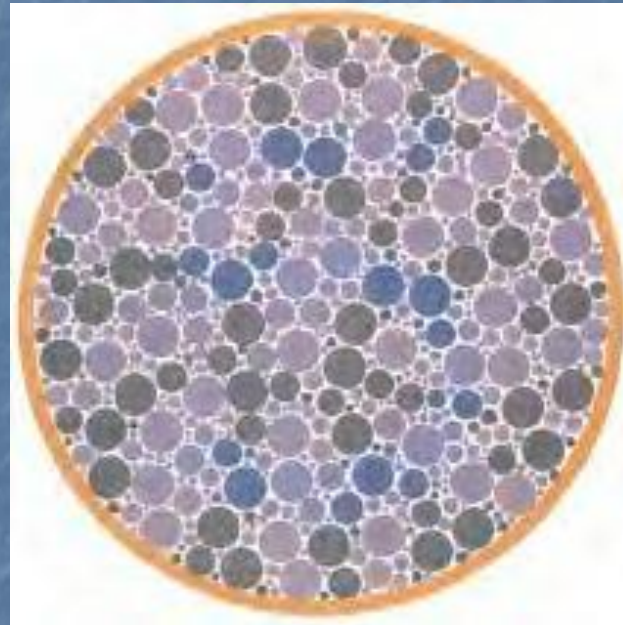
Answer: Number 9

Colorblindness Test #5



Answer: Number 8

Colorblindness Test #6



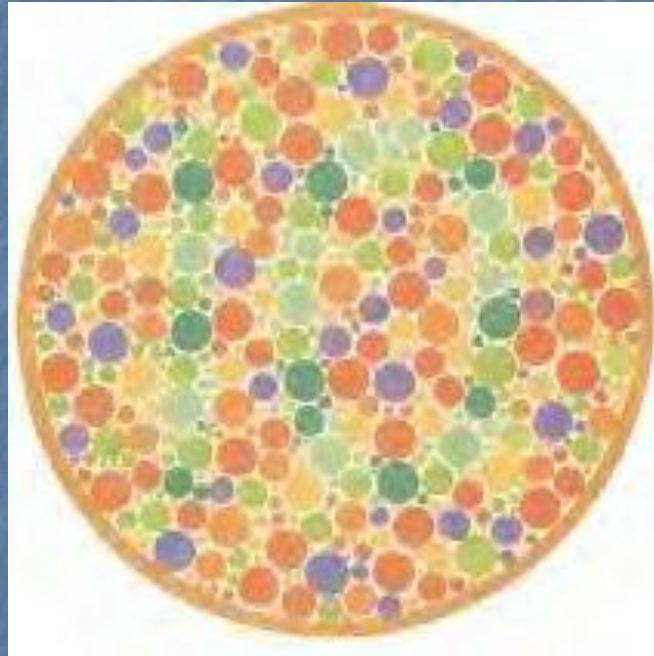
Answer: Number 5

Colorblindness Test #7



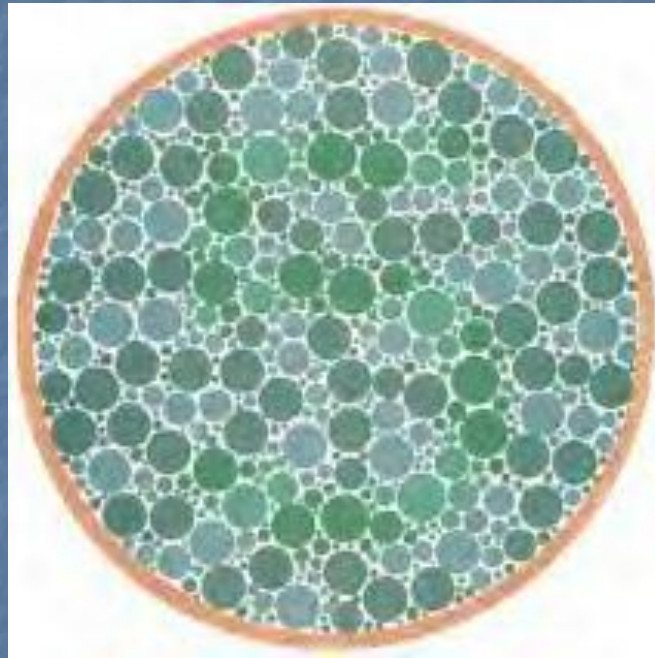
Answer: Number 9

Colorblindness Test #8



Answer: Number 10

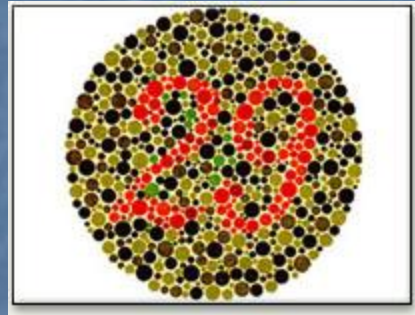
Colorblindness Test #9



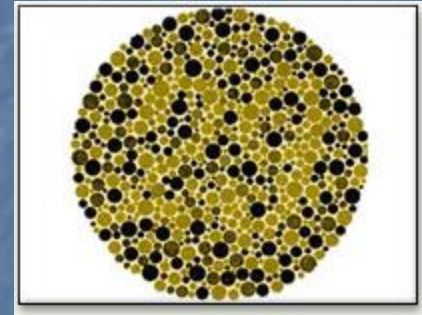
Answer: Number 5

How do things look if you are colorblind?

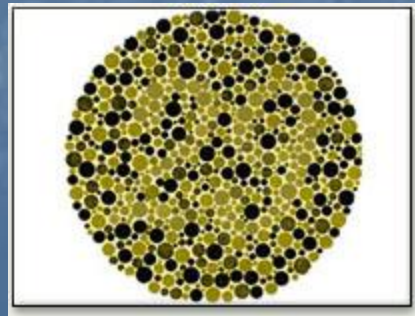
Normal Vision



Green-weakness



Red-weakness



Multiple Weaknesses



Cataracts Eye Surgery

Check it out!



- <http://youtu.be/n3mCQ9XpP2U>