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**Eye can see, can you?**

 Have you ever noticed how much your eye resembles a camera? No, well let me explain it to you. The camera as a whole is the entire eye, obviously since I just told you that, but the body of the camera is the sclera, or the white part of the eye. If you look at the lens of the camera, the area that protects it is like the cornea of the eye, which is a clear, dome-shaped part of the eye. Now, if you think of old cameras, there was a shutter that would close and open when you turn on the camera, which functions like the iris of the eye. The iris is a muscle that opens and closes based on how much light there is when looking at a particular place. The hole in the eye is called the pupil, which is the opening, or dark hole, that you see when looking at someone, like when you look down the cameras lens. Right behind the pupil is the lens of the eye, just like the camera, and it redirects the light to hit the back of the eye called the retina. The retina is like the memory card slot within a camera, it holds some of the most important parts of the eye that allow us to see. One part is the optic nerve, which connects to the brain, containing millions of nerve fibers, that transmit signals to the specific part of the brain, like the microchip within the camera. The microchip can also signify the macula, which is the central most part of the retina, and also is the part of the eye that is responsible for the central most parts of our vision2.

**Figure 1. Anatomy of a Normal Eye.** This figure shows the different areas of a normal eye and where they are located1.

 Now, why did I go into detail about the anatomy of the eye when you probably don’t care and are thinking that you’ll never use this information again. Well unfortunately, some of that information can be very important. There are certain eye diseases that affect these parts of the eye, damaging the vision, and possibly causing blindness if not taken care of properly. I’m only going to focus on three common and main eye diseases, such as glaucoma, macula degeneration, and diabetic retinopathy.

 Glaucoma is a disease that damages the optic nerve, causing someone’s peripheral vision, or their side vision, to be lost. How this happens is by the pressure within the eye increasing, causing damage on the optic nerve3. Macular degeneration is when the macula ends up gaining certain yellow spots on it. Those spots constrict those areas of oxygen, causing them to die and vision to be lost, mainly the central vision4. Diabetic retinopathy is when someone who is diabetic doesn’t take care of their blood sugar. This causes damage to the blood vessels within the eye to have damage, making them leak blood within the back of the eye. The damage to the blood vessels causes vision loss, anywhere in the vision, and is the leading cause of blindness is working people5.

 Well, there you have it, that’s all you need to know right? Sorry, there’s more to it than just those diseases. How do you think they find out whether you have these diseases? They can’t magically run a blood test like at the doctors office, they have to do other kinds of tests, those being tonometry, visual field, thickness tests, and fundus photography.

 Tonometry is just a big scary word for taking eye pressure. There are multiple different kinds of tests, but they all get the same thing, eye pressure. This test is important because it helps to detect glaucoma, since high eye pressure is a symptom of glaucoma6. A visual field test tests exactly what you think it tests, a visual field. What the patient does is sit in a machine that has a hole dug out of it, with a bunch of holes that contain lights. For the test, only one eye is done at a time, and they look at a fixated point the entire time. The lights end up flickering, one at a time, and while the patient is fixating at that one light, they click a button every time they see a light with their peripheral vision. This test also tests for glaucoma, it’s main purpose is to detect whether or not the patient has lost some of their side vision, a symptom of the disease7. Thickness tests are also exactly what they sound like, they test the thickness of certain parts of the eyes, specifically the macula and optic nerve. These tests also mainly test for glaucoma because it has been shown by other experiments that the thinner certain layers of the macula and optic nerve are, the more glaucoma there is within someone’s eye, or eyes8. The last test is fundus photography, or pictures that can be taken of the back of the eye. This camera is a good tool for detecting all the different diseases within this paper, glaucoma, macular degeneration, and diabetic retinopathy9.

 For the future with these tests, I feel that what researchers are mainly going to focus on is the perfection of the tests, and finding out what makes these diseases tick, since many of them have unknown origins. Why I think that the tests are going to only be perfected, and not find new ones, is because they are working perfectly well now. With the perfection of the tests, they could use them to detect diseases earlier, or even to detect different diseases with the same test.

Why would I tell you information about these tests and what kind of diseases they test for? Well, I wanted to inform you. Many people go to the eye doctor’s office and have no idea as to why doctors order certain tests, and these are just some of the tests that are performed on patients. I also wanted to inform you about the diseases as well, especially since many of them are inherited from family members.

Getting annual eye exams is very important, especially since you can’t obviously see what’s happening on the inside of them. Many times, what is happening in the eyes is also happening within the body, or shows a precursor of what could happen in the near future. Whether you get eye exams every year or simply every few years, following how many times the doctor want to see you is important, because they could help to detect a disease and prevent high amount of vision loss.

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