I'd Love To Read The Chart: Where is It?

Visual Acuity Testing

The reason that most patients go to the eye doctor has usually got to do with their vision. People ***don't*** go to their doctor because their vision is ok… they go because their vision is not as good as they **"want"** it to be or as they **"think"** it used to be.

Vision testing can be a difficult task because a major part of the test relies on the patient's:

* cooperation
* subjectivity
* objectivity
* GOALS

Navigating and understanding what vision testing is all about, will then allow us to get the best possible visual acuity result for the patient.
Vision gives us so many clues to the patient's *overall health* that missing the "clues" may cause your doctor to miss a diagnosis that has nothing to do with their vision !

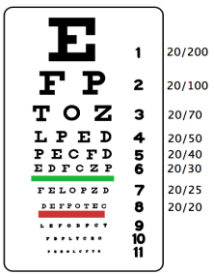
Herman Snellen

Died 18 Jan 1908 (born 19 Feb 1834) Dutch ophthalmologist whose Snellen Chart imprinted with lines of black letters is used for testing visual acuity. Test types were invented in 1843 by Heinrich Kuechler (1811-1873) and were improved by the Vienna oculist Eduard Jaeger Ritter von Jaxtthal (1818-1884) in 1854. Shortly after this Snellen invented his chart of square shaped letters. (www.todayinscience.com)

Understand Your Test First!

What does the "E" chart mean?

The traditional Snellen chart has (11) lines of block letters. The "letters", or in some cases symbols, are known as **optotypes.**

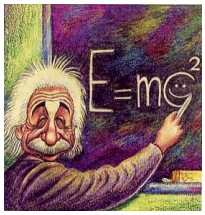


Fun Fact

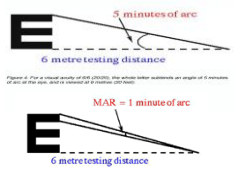
The traditional Snellen Chart only uses :

C, D, E, F, L, N, O, P, T, Z

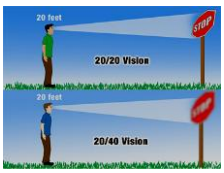
But…these are not just ordinary letters. They are *geometrically* designed so that the thickness of each letter line equals the thickness of the white space between the lines. And in the case of letters like "C" or "G", the space between the top and bottom of the letter is 5 times the width of the line.



Standard vision was defined as the ability to see a letter when it *subtended* 5 minutes of arc. In order for this to happen, the person must be able to discriminate a spatial visual pattern separated by a visual angle of one *minute of arc* (1/60th of a degree).



At the standard distance of 20 feet, **the letters for normal vision subtend an angle of five minutes of arc, and the thickness of the lines and the spaces between the lines subtend a minute of arc**. If you have normal vision (20/20), your eye will have no problem seeing these shapes and angles.



What Does 20/20 Mean?

20 = Numerator (what distance patient was tested at)

20 = Denominator (what a "normal" person should see at *that* distance)

20 The patient needs to stand at 20 feet

100 to see what a normal person can see at 100 feet

Outside of the USA, the numerator is often "6" – meaning normal would read 6/6.

So… What If They Can't See The Big E ?

Walk the chart towards them, and record the distance…ex: 12/200.
IF a patient is CF @ 10 ft they can see the big E!
IF they *can't* see the chart at 1-2 ft, then do **"count fingers" (CF)**

Count Fingers:
Designed to be performed at 1-2 feet….**NOT** 10 feet away.
** Look at the fingers. If you turn them sideways… they look like an "E" !

Hand Motion:
Move hand slowly, with fingers together, in front of face. IF you "wave" at the patient, they feel the breeze and will tell you they see the hand moving.

Follows Light

Light Perception

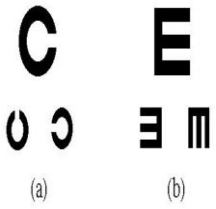
Light Projection

NLP

This Is All Fine And Good If They Know Their Letters - What If They Don't ?

Tumbling E's
Created in 1976 this chart uses a single optotype, a stylized letter E, in various orientations. This was invented to use with people unfamiliar with the alphabet. This is the next best test after the Snellen E.

Landolt C (also known as Landolt ring):
Orientated with rings that have a gap in them, so they look like the letter C. Gap is positioned to the left, right, top and bottom, and then at a 45°angle between them. The object is to determine where the gap is located.



Allen Cards

Performed at **30 feet**. Vision is recorded at the greatest vision the child can see the figures. Ex: 15/30.
Children from 2 – 3 yrs can identify from 12 to ft. Ages 3- 4 yrs can identify from 15 – 20 ft. Adults can differentiate from 30 ft.
A difference of 5 ft between eyes may indicate a visual problem.

Lea & HOTV Test

Excellent for children or individuals who do not know their alphabet, but can identify simple images.
Can be performed at near (16") or distance (10 feet).
Recommended for ages 18 months and upwards.

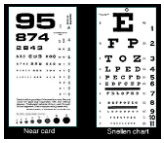
Which One Do I Use ?

LeaTest and HOTV tests provide similar results for 4 and 5 year old children but it is more reliable to use the Lea symbols with 3 year olds

Near Vision Testing

* Always one eye at a time
- 14 -16"
- Use enhanced room light
- If wear bifocal – make sure they are using it
- Let patient hold the reading material

* Bifocals dictate distance !



Helpful Hints

Children (and moms) don't like their children to be "touched" by strangers.
Let the child occlude their own eye or get mom to help you while you "observe"

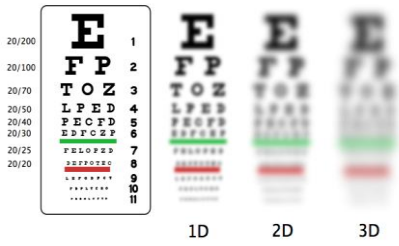
Helpful Hints

No Squinting !
When you squint, you create an artificial pin hole affect and might see better then you actually do !

Pinhole

Pinhole focuses all the light to the macula/fovea area and gives your "potential" best corrected vision. It's a "cheat" ☺
Anyone 20/40 or worse should have a pinhole.
If improves: refractive issue
IF no improvement: eye issue

What Your Patient Might Be Seeing



eyehealth20.blogspot.com

Helpful Hints

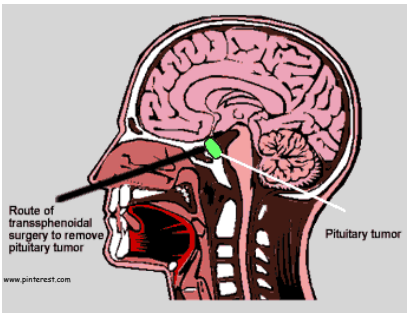
My Vision Suddenly Went Bad !

Now…back to the beginning…

On slide # 4 we said that there are many clues to a patient's overall health through his vision. How can this be ??

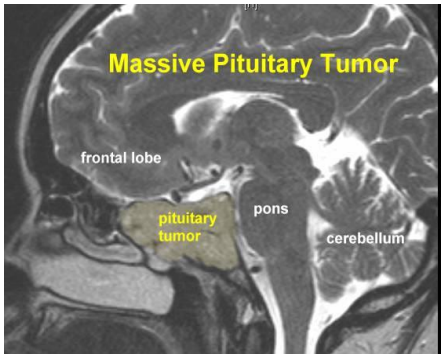
Let's take a tour of some systemic "vision" problems….

Pituitary Tumor



How They Might See

clinicalcases.org



brentdanley.com

Right Homonymous Hemianopsia (Occipital Stroke)

(L) occipital lobe infarct

Diabetic Floaters

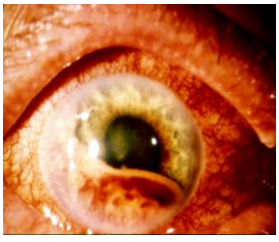
www.londoneyehospital.com

Choroidal Melanoma

Originates in the eye but can spread to other parts of the body (liver). Eye may need to be enucleated to prevent spread of cancer.
Usually found on routine eye exam with no patient complaints !

Metastatic Breast Cancer

www.eyecancer.com



www.eyecancer.com

Metastatic Lung Cancer

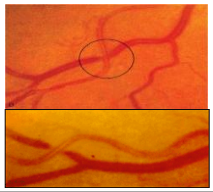
The eye can be a site for metastatic lung cancer in men. Patients c/o of blurry vision.

Quinine Poisoning

Elderly patients with a history of leg cramps take quinine. IF they take too much of this, they may experience A tunneling affect. maybe they are taking their other meds for diabetes and high blood pressure wrong as well!

Hypertensive Retinopathy

Patient had painless decrease in vision when presented for routine eye exam.



www.ipohecho.com.my

arteriovenous crossing

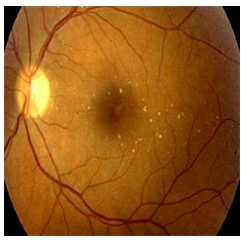
www.cram.com

Hallucinations

Nothing sounds strange to you when a patient tells you they see people looking in their bedroom window – until you find out their bedroom is on the 8th floor of a high rise ! Formed hallucinations can be an indicator of parietal or temporal lobe tumors !

Drugs

Patient c/o of slight blur spots in vision from time to time. This patient was a banker as well as an IV drug user. The "dealer" used talc mixed into the drugs to "cut it" (poor quality drugs)



Leukemia

How a bike accident led to leukemia in a 25 year old otherwise healthy male.