

Humphrey Visual Field

Visual field tests assess the potential presence of blind spots (scotomas), which could indicate eye diseases. A blind spot in the field of vision can be linked to a variety of specific eye diseases, depending on the size and shape of the scotoma.

Many eye and brain disorders can cause peripheral vision problems and visual field abnormalities.

For example, optic nerve damage caused by Glaucoma creates a very specific visual field defect. Other eye problems associated with blind spots and other visual field defects include optic nerve damage (optic neuropathy) from disease or damage to the light-sensitive inner lining of the eye (retina).

Brain abnormalities such as those caused by strokes or tumors can affect the visual field. In fact, the location of the stroke or tumor in the brain can frequently be determined by the size, shape and site of the visual field defect.

Types of Visual Field Tests

Confrontation visual field testing typically is used as a screening visual field test. One eye is covered, while the other eye fixates on a target object, such as the doctor's open eye, while the doctor stands or sits directly in front of you. You then are asked to describe what you see on the far edges or periphery of your field of view.

As an example, your eye doctor may hold up different numbers of fingers within your peripheral field of view and ask how many can be seen while you continue to fixate on the doctor's eye.

If an eye disease is suspected, you may need to undergo more comprehensive, formal types of visual field testing to evaluate the quality of your central and peripheral vision. Numerous tests for measuring visual field loss exist, and can include:

A patient undergoes visual field testing with a Humphrey Field Analyzer (HFA), which uses automated perimetry to measure responses to visual stimuli appearing in central and side vision.

- **Automated Perimetry.** Various forms of automated perimetry tests measure your responses to the presence of objects in different areas of your field of view.

While your head is held still, usually with a chin rest inside a large bowl-like instrument, you stare at a source of light straight ahead. Random lights of different intensities are flashed in your peripheral field of vision.

You then press a button or use other means to indicate your response when you perceive the computer-generated light suddenly appearing in your field of view.

If you can't see objects in an appropriate portion of your field of view, then you may have a blind spot indicating vision loss.

- **Frequency Doubling Perimetry.** Frequency doubling is based on an optical illusion produced with vertical bars of contrasting colors (usually black and white) appearing on a screen. These bars appear to double in number when they alternately flicker at higher frequencies, a phenomenon thought to be due to the unique response of specific light-sensitive cells photoreceptors in the retina.

Inability to see vertical bars at certain frequencies could indicate optic nerve or other types of eye damage with accompanying loss of vision in certain areas of the visual field.

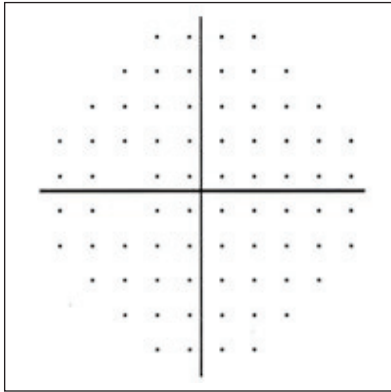


Figure 1-10. Normal Humphrey visual field test. This is a side vision test which is performed to diagnosis glaucoma. There are no dense black spots indicating vision loss.

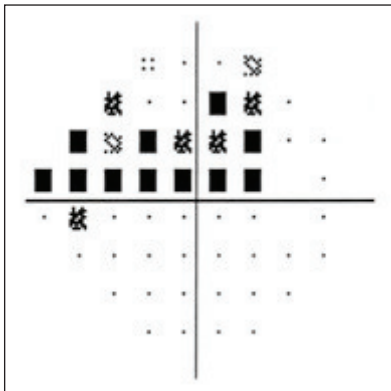


Figure 1-11. Superior arcuate visual field loss from glaucoma – as tested by Humphrey visual field device. The black areas represent abnormal blind spots corresponding to areas of vision loss.

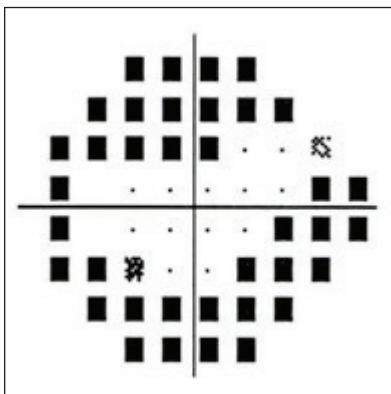


Figure 1-12. Superior and inferior visual field loss from glaucoma causing tunnel vision. Despite the peripheral vision loss, central vision is still intact and the vision may be 20/20.

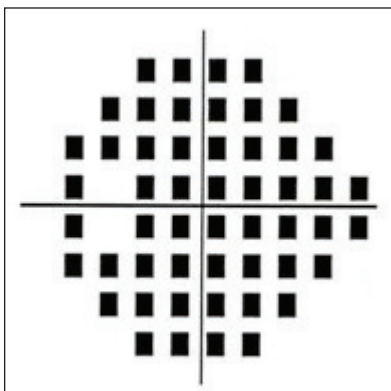


Figure 1-13. End stage glaucoma with dense superior and inferior visual field defects – as tested by Humphrey visual field device. Central vision is now gone and there is severe visual impairment.



Figure 1-14. Visual field testing with a Humphrey Field Analyzer device shown here is a standard method for monitoring glaucoma.

The visual field test determines the extent of peripheral vision loss.