



EYECARE EDUCATION SERIES

Understanding Distance Visual Acuity

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WHAT IS VISUAL ACUITY:

Visual Acuity (VA) is a measurement of how well the patient is able to see with their **central vision only** (when spectacles are worn if they are needed). This is also called *Best Corrected Visual Acuity (BCVA)*.

Measuring the visual acuity is an assessment of the total visual system, all the way from the cornea at the front of the eye to the occipital cortex in the brain. It therefore relies upon many factors - such as a clear cornea, no cataract in the lens of the eye, healthy retina, intact optic nerve, etc.

Other measurements of vision can also be clinically useful:

- *Uncorrected Vision (Un)* - with no spectacles or contact lenses
- *Habitual Vision (Hab)* - wearing the patient's current prescription

Visual acuity can be measured for both distance and near vision, but Distance VA is the most common.

MEASUREMENT DISTANCE

Visual Acuity tells us how well the patient sees at a certain distance when compared to how well somebody with normal sight sees at that same distance.

For distance VA the standard measurement is at 20 feet or 6 metres (hence the terms 20/20 or 6/6). It can also be measured at other distances, like 10 feet or 3 metres, and converted.



IMPORTANCE OF VA:

We need to know VA so that we know whether the best possible vision has changed & whether the patient meets various legal standards, like for a driver's license, legal blindness, etc.

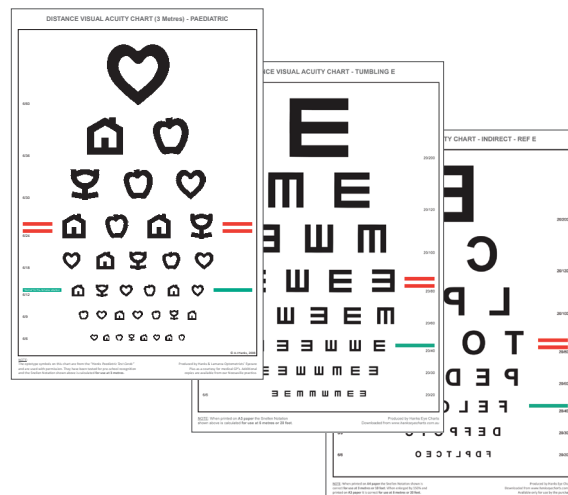
It is also important to know the VA in order understand what vision is expected for the particular patient. For example, when delivering new spectacles.

DIFFERENT VA CHARTS:

While a standard letter chart is the most common way of measuring visual acuity, other charts have also been developed.

Children's charts use familiar symbols calibrated for VA called *optotypes*. Another option is the "Tumbling E" chart, also called the "Illiterate E", or the "Landolt C".

Sometimes there is insufficient space for a distance VA measurement, so a mirror must be used - thus requiring a mirror reversed chart (*Indirect*) also to be used.



THE MEASUREMENT:

VA is usually measured with a Snellen Chart of standard letters, by asking the patient to read the smallest line they can.

Since this is usually the Best Corrected VA, the distance correction (spectacles or contact lenses) should be worn for the measurement. Always document the result as "Unaided" if a correction is prescribed but was not worn.



VA PROCEDURE:

- Place patient 3 or 6 metres (20 or 10 feet) from the chart - depending on the calibration of the chart being used
- Use adequate illumination
- Wearing latest distance correction
- Test each eye separately
- Use an occluder (over the spectacles if worn) to cover the eye not being tested
- If no occluder, use the patient's cupped hand (not their fingers or pressing on the eye)
- Ask the patient to read the smallest line they can, or ask them to read from the top until they start to make multiple errors
- Encourage the patient to keep going, to relax and to blink regularly
- Do not make comments, or allow companions to make comments or prompts, while the patient is reading the chart - "That's wrong" is not helpful
- The red or green colour bars on some charts can be useful when directing a patient to a particular line - "Please start by reading the line with two red bars"
- The last line read correctly is the one that is documented as the VA for that eye

THE RECORD OF VA:

Visual Acuity is recorded as a ratio (or fraction). eg: 20/30 or 6/9

- The first number is the distance at which the test was done (6 metres)
- The second number is the size of the letters that the patient could read (what normal sight would have seen at 9 metres).
- This ratio or fraction is called *Snellen notation*.
- A plus (+) or minus (-) means slightly better or worse than the line indicated. eg: 6/6+

INTERPRETATION OF VA:

6/6 means the patient could read at 6 metres what a normal person could read at 6 metres. So they have normal vision.

EXAMPLES

Do not try to remember these examples. It is better to understand what they mean so you can work out any possible result at the time:

- 6/9 means they could read at 6 metres what a normal person could read at 9 metres. So it had to be $1\frac{1}{2}$ times bigger than normal.
- 6/12 means they could read at 6 metres what a normal person could read at 12 metres. So it had to be 2 times bigger than normal. (This is the standard for a Drivers Licence in most countries).
- 6/30 means they could read at 6 metres what a normal person could read at 30 metres. So it had to be 5 times bigger than normal. (Not very good, so don't expect too much from the spectacles).
- 6/60 means they could read at 6 metres what a normal person could read at 60 metres. So it had to be 10 times bigger than normal. (This is one of the standards for a Blind Pension in most countries).

CANNOT MEASURE VA?

MOVE CLOSER

If the patient cannot see the top line of the chart, move them closer to the chart and try again. If they can now read the top line be sure to record the distance where this result was achieved.

COUNT FINGERS

If they still can't read the chart, ask the patient to count how many fingers you are holding up at 1 metre (3 feet). This is recorded as *Count Fingers* - for example *CF @1M*.

HAND MOVEMENTS

If they can't count your fingers, ask the patient when your hand is moving at 1 metre (3 feet). This is recorded as *Hand Movements* - for example *HM @1M*.

NO LIGHT PERCEPTION

Finally, if the patient is unable to perceive light with this eye it is recorded as *No Light Perception* - for example *NLP*.