

## 'Clinical skills, How to ...' article on "Assessing vision

Marsden J (2016) How to assess vision. Nursing Standard.

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### Conflict of interest:

None declared

### *Rationale*

Vision is one of the key senses which allow people to make sense of their world. An objective assessment of vision is important in many settings, as a baseline before examination and treatment in the emergency department, to assess change in the ophthalmic outpatient department or to assess deviation from what might be felt to be 'normal' in many other settings both acute and community. In children, assessment of vision at an early stage is crucial in order to pick up issues which might impact on vision and visual development and optimise lifelong vision. Untreatable loss of vision is not an inevitable consequence of ageing so timely and repeated assessment of vision can lead to falls reduction, injury prevention and the optimisation of independence.

### **Preparation and equipment**

If formal vision testing is to be undertaken;

- Private space of an adequate size
- A Snellen or other chart for measuring distance vision, of the appropriate size for the space
- The person's distance correction if worn
- The person's reading correction if reading visual acuity is to be measured

### **Procedure**

Vision is more than just central visual acuity (VA) and, as with every person encountered by the nurse, the procedure begins the moment the nurse sees the person.

How does the person move in their surroundings? Are they hesitant? Do they locate where the nurse is by moving their head or are they using other senses such as hearing to locate where a voice is coming from. Do they use their hands or arms to feel where they are as they move?

These are all visual clues to the nurse that vision may not be good.

Noticing behaviour is even more important in children and those with communication or perception difficulties. Does the child, for example, seem interested in their surroundings. Do they make eye contact or respond to a silent smile? Do they hold their head in an abnormal position when they are looking at something? Do the eyes appear to fix steadily, or do they 'wobble'

Assessing vision more formally

Formal measures of vision assess the minimum amount of high contrast detail that can be detected by the eye. Charts have maximum contrast of white letters or shapes on a black background, to have the maximum contrast.

The Snellen chart which is often used in clinical practice uses letters which subtend an angle of 5 minutes of arc, or  $1/12$  of 1 degree; an amount which the normal eye should be able to see clearly.

The Snellen chart has letters of decreasing size and the visual acuity is recorded as the lowest line that the patient can read. It is expressed as a fraction with the testing distance on the top and the size of the target seen on the bottom.

Letters are commonly understood but charts are available using pictures, numbers or shapes to achieve similar outcomes in different circumstances.

Normally, distance visual acuity is measured at 6 metres, using a standard Snellen chart. Vision is therefore recorded as 6/the line read

Charts are available for shorter distances, and the top number will then change e.g. 3/line read for a 3 metre chart

1. Each eye should be tested separately, with the 'bad' eye first (this ensures that letters will not be remembered between testing the eye with better vision, and the eye with worse).
2. The eyes should be tested with any correction that the person uses for **distance** as this is a distance visual acuity test
3. The other eye should be covered and the person's hand is a good tool, as long as the palm is used and no pressure is applied to the eye which will distort vision when the hand is removed and can be dangerous in some circumstances. A card or occluder can also be used. An occluder should be cleaned between patients
4. The person should be asked to read from the top of the chart, down as far as they can. The nurse can encourage the person to try to read further, or attempt letters
5. It must be stressed that this is not a 'test; or exam that has to be passed
6. Incomplete lines can be added to the last complete line. e.g. 6/12+3, indicating that the patient read the '12' line at 6 metres and gained three of the letters on the '9' line.
7. If the person cannot read the largest (top) letter at 6 metres, move him/her closer, 1 metre at a time, until the top letter can be seen – the visual acuity will then be recorded as 5/60 or 4/60, etc.

A more recent development in vision testing is the LogMAR chart which has the same number of letters on each row, giving a similar visual challenge to the person at each level. It is normally read at 4 metres and the process is similar, testing one eye at a time.

- The notation for this chart, at its simplest, is a count of all the letters read, on full rows or part and the recording of that number

If the person cannot read the letters at the distance tested, i.e., using a Snellen chart, the person cannot read the top number at 1m;

1. Hold up your fingers at varying distances of less than 1 metre and check whether the person can count them. This is recorded as counting fingers (CF) Your fingers need to be against a contrasting background as this test is testing the eye's ability to resolve 2 areas of complete contrast.
2. If the person cannot count fingers, wave your hand (just your hand) and check if he/she can see this. This is recorded as hand movements (HM). Again, think about the contrast of your hand movement against its background.
3. If the patient cannot see hand movements, shine a torch toward the eye and ask if they can see the light. If they can, record 'perception of light' or PL. If they cannot, record 'no perception of light' or NPL.

### Reading vision

- Reading vision can be tested using a near vision test book. If this is not available, newspaper body text is felt to be N8.

### Colour vision

- Colour vision can change due to exposure to drugs or chemicals, or optic nerve damage and is often tested in occupational settings.
- The most often used colour testing system is the Ishihara Colour Plate system which tests for red/green colour deficiencies
- It consists of a set of coloured, standardised plates and the person, using one eye at a time, works through all plates, identifying the figure or pattern on them. It is rarely used outside specialist settings.

### Act on what you find

Depending on the setting, you may need to act on your findings. In the ED or outpatient department, the patient is going to see a clinician so this is not necessary.

In other settings you must consider whether what you find is normal and whether it is normal for the person who's vision you are testing. You must then decide, based on what you have found, who to pass on this information to.

Optometrists are the obvious first place for further, more rigorous examination, and in some cases you may need to facilitate this. Sudden change in visual acuity or appearance of the eyes should be referred to optometry or ophthalmology urgently.

<insert photo of Snellen chart>

<insert photo of logMAR chart>

<insert photo of Ishihara plate>

### Evidence base

If asked, many people would feel that vision is the sense that they would most mind losing. Optimising vision, noticing changes in vision and making sure that people of all ages get appropriate care and treatment of visual problems should be integral to all areas of nursing practice. Early discovery of children's vision problems can help with visual development (Bremond-Gignac et al 2011 Le Geyt 2012). The provision of simple solutions such as refractive correction such as spectacles, can make the world an entirely different place for children and optimise their learning and progress. Falls are a leading cause of mortality among the elderly worldwide and reduced vision is a significant contributor to falls (Reed-Jones et al 2014) Reduced vision is not an inevitable consequence of ageing and early detection can lead to straightforward solutions. Assessing vision, as has been described here does not just mean the formal assessment of vision, although that is straightforward on the whole (Marsden 2007, Marsden, Stevens and Ebri 2014, Ansons 2016,) but the assessment of the consequences of reduced vision such as behaviour change in those who are unable to highlight that change to carers. Vision changes throughout life so the assessment of vision should be an ongoing rather than one off process, but should be an integral part of formal, or informal physical assessment.

## **Literature**

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## **Useful resources**

Visual impairment; [www.rnib.org.uk](http://www.rnib.org.uk)

Testing Colour Vision <https://www.aop.org.uk/advice-and-support/clinical/clinical-governance/testing-colour-vision>

NHS Choices, Eye tests for Children <http://www.nhs.uk/Conditions/eye-tests-for-children/Pages/Introduction.aspx>

NHS Choices. Why are eye tests important

<http://www.nhs.uk/chq/pages/2554.aspx?categoryid=68&subcategoryid=157>