SAWA UNIVERSITY

LECTURE TITLE

جامعة ساوة

كلية التقنيات الصحية والطبية

قسم تقنيات البصريات

المرحلة الرابعة

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رقم المحاضر 2

VISUAL ACUITY (V.A)

To measuring the clarity of vision or the ability of the visual system to resolve detail. A patient's visual acuity depends on the accuracy of the retinal focus, the integrity of the eye's neural elements, and the interpretive faculty of the brain. V.A should be done on all cooperative patients as the first procedure following the case history.

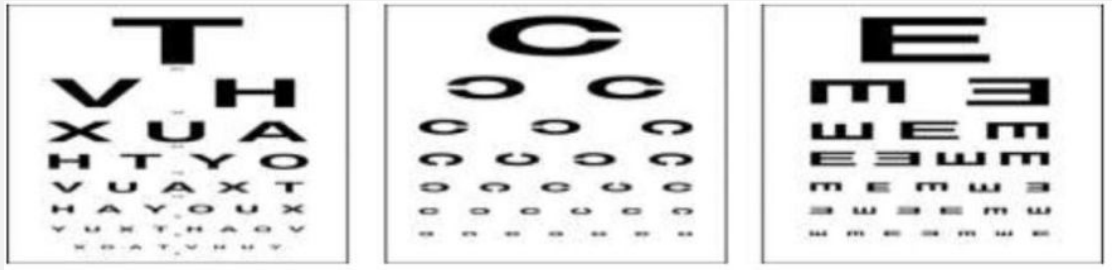
Visual acuity, measured includes:

¨ For **right (OD)** eye, **left (OS)** eye separately. Then for **both**
(OU) eyes

¨ **Distance** visual acuity (**DVA**) & **Near** visual acuity (**NVA**)

¨ **with (c.c)** & w**ithout (s.c)** the patient's spectacle

· **Chart:** Visual acuity is often measured according to the size of letters viewed on:
a Snellen chart or the Landolt Cs or Tumbling E.



In some countries, acuity is expressed as a vulgar fraction, and in some as a decimal number.

Fraction meter (6meters) (British system)	Fraction feet (20feet) (American system)	Decimal
6\60	20\200	0.1
6\48	20\160	0.125
6\38	20\125	0.16
6\30	20\100	0.2
6\24	20\80	0.25
6\15	20\50	0.4
6\12	20\40	0.5
6\9	20\30	0.7
6\6	20\20	1.0

what fraction visual acuity mean? And what decimal mean?

Visual acuity fraction describes the smallest size of letter the patient can identify correctly.

As fraction: *numerator\ denominator*

Numerator:

Is the examination distance, Standard distance (6meters or 20 feet)

Denominator:

is the distance where the normal person can see this letter size at it.

6\60 mean: patient see at 6 meters what the normal person can see it at 60meters

Decimal: *is the vulgar fraction values, ex: 6\60= 0.1*

Set-up:

¨ Use room light for distance visual acuity and bright light for near visual acuity

¨ The patient must look directly (head straight). ¨ The acuity should be measured without correction first ¨ Measure the patient's visual acuity with correction.

Procedure:

Distance Visual acuity:

1. Choose the proper chart for test distance visual acuity and put it at 6 meter from the patient. Be sure the chart is at the same level with the patient eyes (to have central vision, straight head)

* if you have 3 m distance only can use mirror with chart to convert the 3 m to 6 meters

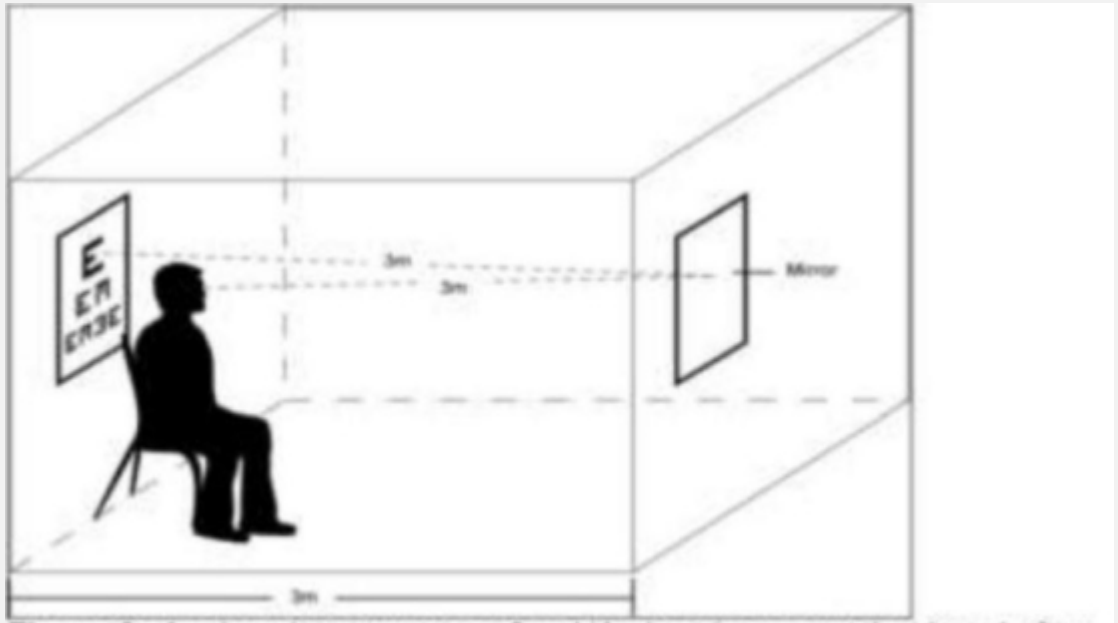


Figure 2: *A mirror lets you use a 6 m VA chart in a room that is only 3 m long. The person looking in the mirror will see the chart as if it is 6 m away (3 m + 3 m = 6 m).*

2. Instruct the patient to cover his left eye. (let patient use his palm without press at the eye or use occluder).
3. Instruct the patient to read the smallest line of letters he can. (Stop the patient when more than half the letters on line have been missed.)
4. if patient can't see the largest letter at 6 meters:
i. Have the patient walk toward the chart until he can just make out the largest letter (or move the chart close to patient until he see the largest letter). Note the distance at which this occurs.
If the patient cannot see the biggest letters at 1meter distance, initiate the following test sequence:

If the patient cannot see the biggest letters at 1meter distance, initiate the following test sequence:

a) Counting fingers **(CF)**: at a distance of approximately 1 meter. Ask the patient to tell you how many fingers you are holding up. Increase the distance from the patient until his responses are no longer accurate. Move back toward the patient until he can reliable report the number of fingers presented.

b) Hand motion **(HM)**: using a moving hand as the target, ask the patient if he can see the hand moving.

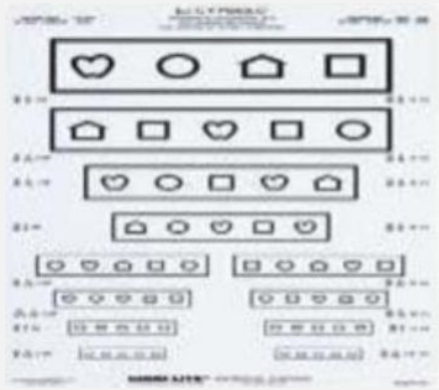
c) Light perception **(LP)**: direct a pinlight at the patient and ask if he can see the light.

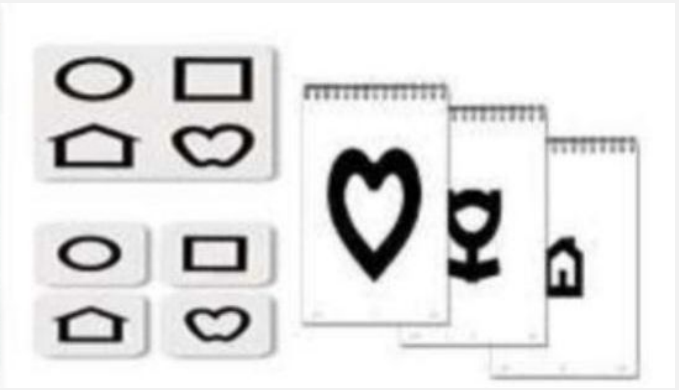
e) Blindness or **No L.P:** if the patient can't see light record.

7. Test the near visual acuity. The light source should be either above or slightly behind the patient.

Special cases (visual acuity of children)

The newborn's visual acuity is approximately 21/411, developing to 20/20 well after the age of six years in most children. For test use a special chart for children like ***(lea chart)*** *or* ***(symbol chart)***





Note: we can use the examination with children more than 3 years if he was smart

1. Standing 2 to 3 ft from the patient in good light, holdup one of the isolated Lea symbols.
2. Ask the child to name the picture he sees, noting what word he uses for each symbol. Note that there is no "right" or "wrong" name for apicture ; for example, the child may call the square "square," "box," or something else. The purpose of this step is to ensure that the child uses a different word for each symbol and to identify the word the child will use when he correctly identifies the symbol.
2. Expose cards until you have gone through the full set of four symbols.
3. Repeat the exposure of each symbol, but now ask the child to point to the picture on the square sheet containing large versions of the four symbols that is the same as the one you are holding up.
5. Once the child is responding appropriately, proceed to screening or to VA measurement.

Visual acuity in infant:

The measurement of visual acuity in infants, pre-verbal children and special populations (for instance, handicapped individuals) is not always possible with a letter chart. For these populations, specialized testing is necessary. As a basic examination step, one must check whether visual stimuli can be fixed, centered and followed