

BERKELEY RUDIMENTARY VISION TEST

Do not write on this page.

Photocopy only.

Patient ID	
Age	
Tested by	
Date	
Eye	
Causal Condition	

	RIGHT	LEFT
Previous VA		
Clin Record		
Referral letter		
Self report		
Other		

TESTING WITH BRVT

if NO	STE 25 M at 1m (Y/N)		
	If STE 25M seen at 1m THEN Test Letter Chart Acuity		
if NO	STE 25M at 4m (Y/N)		
	Letter Chart VA at 4m		
	Letter Chart VA at 1m		
if NO	STE 100M at 1m (Y/N)		
	100M STE @ 1m 2.0		
	63M STE @ 1m 1.8		
	40M STE @ 1m 1.6		
	25M STE @ 1m 1.4		
if NO	STE 100M at 25cm (Y/N)		
	100M STE @ 25 cm 2.6		
	63M STE @ 25 cm 2.4		
	40M STE @ 25 cm 2.2		
	25M STE @ 25 cm 2.0		
if NO	60mm GA @ 25 cm (Y/N)		
	200M GA @ 25 cm 2.9		
	125M GA @ 25 cm 2.7		
	80M GA @ 25 cm 2.5		
	50M GA @ 25 cm 2.3		
if NO	White Field Projection		
	Quad		
	Hemi		
	COMMENT		
if NO	Black White Discrimination		
	Black - White		
	COMMENT		
	Lght Perception		
	Light Perceived		
	RESULT		

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Letter Chart Visual Acuity and its limitations

Clinical measurement of visual acuity is usually made with charts of letters or other optotypes. In 1976, Bailey and Lovie introduced a set of principles for the design of visual acuity charts that caused size to become the only significant variable from one size level to the next. This requires a size progression by a constant ratio, the same number of letters at each size level, and the spacings between adjacent rows and adjacent letters should be proportional to letter size. Each size level should contain a mix of optotypes that are balanced for difficulty. With this chart design came the LogMAR scale for measuring visual acuity, and the system of assigning equal LogMAR points for every additional letter read correctly. Such "LogMAR" chart designs are now widely used, and the ETDRS letter chart has become accepted as the gold standard for visual acuity measurement. The ETDRS chart uses the set of 10 Sloan Letters as its optotype, but there are many other LogMAR charts that use other optotypes (e.g., Tumbling E's, Landolt Rings, numbers and pictures).

The recommended viewing distance for the ETDRS chart is 4 meters, but other charts use other test distances such as 6 m, 3 m, 20 ft and 10 ft. The patient's task is to read each row in sequence beginning with the largest size at the top, and progressing to the smaller sizes until the letters can no longer be correctly identified. The patient should be able to at least read across the top row of the chart, and also be unable to read the row with the smallest print at the bottom of the chart. Then, the patient's visual acuity limit lies within the measurement range of the chart.

There is, however, a limit to the poorest visual acuity that can be measured with a LogMAR chart. At 1 meter, the 40 M letter size subtends 200 minarc (3.3°) and the angular width of the row is 30°. The visual acuity for this angular size is LogMAR = 1.6, (VAR = 20, 1/40, 6/240, 20/800, 0.025) For visual acuity levels beyond the limit of the letter chart, the common practice is for clinicians to categorize vision according to whether the patient can count fingers (CF) or detect hand motion (HM), but there are no recognized or standard procedures for doing this.

The **Berkeley Rudimentary Vision Test (BRVT)** was developed to enable efficient and easy measurement of visual acuity beyond the limits of the letter chart. It becomes necessary to make the test task simpler than the letter chart task and, in order to achieve very large angular sizes, very close viewing distances may be required. In the interests of simplicity and flexibility of use, the BRVT has 3 card-pairs. Each card-pair consists of two 25 cm square hinged cards, so each card-pair has 4 target surfaces.

SINGLE TUMBLING E CARD-PAIR: used at viewing distances of either 1 meter or 25 cm.

This has 4 Single Tumbling E's as the test targets. The STE letter sizes are 100M and 25M on the outsides, and 63M and 40M on the insides. The patient identifies the direction in which the legs of the E are pointing. (up, down, right, left)
At 1 meter, the STE visual acuity levels are STE LogMAR = 2.0, 1.8, 1.6 and 1.4
(VAR = 0 to 30, 6/600 to 6/150, 20/2000 to 20/500, or 0.01 to 0.04)
At 25 cm, the STE visual acuity levels are STE LogMAR=2.6, 2.4, 2.2 and 2.0
(VAR = -30 to 0, 6/2400 to 6/600, 20/8000 to 20/2000, or 0.0025 to 0.01)

GRATING ACUITY CARD-PAIR: used only at a viewing distance of 25 cm.

This has 4 gratings as the test targets. The size of the stripes are 200M and 50M (60 & 15 mm) on the outsides, and 125M and 80 M (38 & 24 mm) on the insides. The patient identifies the orientation of the stripes. (horizontal or vertical)
At 25 cm, the Grating Acuity levels are GA LogMAR=2.9, 2.7, 2.5 and 2.3
(VAR = -45 to -15, 6/4800 to 6/1200, 20/16000 to 20/4000, 0.00125 to 0.005, or 0.038 to 0.15 cpd)

BASIC VISION CARD-PAIR: used only at a viewing distance of 25 cm.

Black White Discrimination (BWD)
 When folded one way, one of the card surfaces is all black, and the reverse side is all white. This tests whether the patient can discriminate an all-black from an all-white field of this angular size (53° square)
White Field Projection (WFP)
 When folded the other way, one card face is half-black and half-white, and the other card face is black with one white quadrant. This tests whether the patient can identify the direction or location of the white field as being to the left, right, top or bottom for the 26° wide hemi-field, or the 26° square quad-field.



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PROCEDURES

Should the visual acuity be measured with a letter chart?

Use the Single Tumbling E Card-Pair, and present the 25 M STE at a viewing distance of 1 meter.
If the 25 M STE CAN be correctly identified at 1 m, then Letter Chart Visual Acuity measurement should be attempted.
 The letter chart could be presented with a viewing distance of 1 meter, or at a longer distance (e.g., 4 meters).
 Typically, the longer test distance be the standard distance used by the clinician when testing with letter charts.

Should vision be measured with the BRVT?

If the 25 M STE CANNOT be correctly identified at 1 meter, then the BRVT series of tests should be employed.

Single Tumbling E Card-Pair, presented at a viewing distance of 1 meter.

If the 100M STE CAN be correctly identified at 1 meter, then visual acuity measurement is completed with the STE at 1 m.
The visual acuity levels are STE LogMAR = 2.0, 1.8, 1.6 and 1.4
If the 100M STE CANNOT be correctly identified at a viewing distance of 1 meter, then the viewing distance should be shortened to 25 cm. (This corresponds to the width of the cards.)

Single Tumbling E Card-Pair, presented at a viewing distance of 25 cm.

If the 100M STE CAN be correctly identified at 25 cm, visual acuity measurement is completed with the STE at 25 cm.
The visual acuity levels are STE LogMAR = 2.6, 2.4, 2.2 and 2.0
If the 100M STE CANNOT be correctly identified at a viewing distance of 25 cm, then a simpler test target is required, and now the Grating Acuity Card-Pair is presented, at a viewing distance of 25 cm.

Grating Acuity Card-Pair, presented at a viewing distance of 25 cm.

If the 200M GA target (60 mm stripes) CAN be correctly identified at 25 cm, visual acuity measurement is completed with the GA targets at 25 cm.
The visual acuity levels are GA LogMAR = 2.9, 2.7, 2.5 and 2.3
If the 200M GA target CANNOT be correctly identified at a viewing distance of 25 cm, then measurement of visual resolution is abandoned, and the Basic Vision Card Pair is used at a viewing distance of 25 cm.

Basic Vision Card-Pair, presented at a viewing distance of 25 cm.

If the Black White Discrimination Task (BWD) CAN be successfully completed, then the White Field Projection (WFP) task should be presented at 25 cm.
With this card-pair, vision may be categorized as WFP or BWD
If the Black White Discrimination Task (BWD) CANNOT be successfully completed then, Light Perception should be tested.

Light Perception.

With a penlight, or similar, held close to the eye, can the presence or absence of the light be correctly identified?
Vision may be classified as Light Perception or No Light Perception LP or NLP

VISUAL ACUITY CONVERSION TABLE

LogMAR	VAR	SNELLEN			Decimal	Letter Chart		Single Tumbling E's		Gratings	Basic Vision	Light
		20/..	6/...	4/..		4 meters	1 meter	1 meter	25 cm	25 cm	25 cm	Perception
-0.3	115	10	3	2.0	2.0	LC VA						
-0.2	110	12.5	3.8	2.5	1.6	LC VA						
-0.1	105	16	4.8	3.2	1.3	LC VA						
0.0	100	20	6	4.0	1.0	LC VA						
0.1	95	25	7.5	5.0	0.80	LC VA						
0.2	90	32	9.5	6.3	0.63	LC VA						
0.3	85	40	12	8.0	0.50	LC VA	LC VA					
0.4	80	50	15	10	0.40	LC VA	LC VA					
0.5	75	63	19	12.5	0.32	LC VA	LC VA					
0.6	70	80	24	16	0.25	LC VA	LC VA					
0.7	65	100	30	20	0.20	LC VA	LC VA					
0.8	60	125	38	25	0.16	LC VA	LC VA					
0.9	55	160	48	32	0.125	LC VA	LC VA					
1.0	50	200	60	40	0.100	LC VA	LC VA					
1.1	45	250	75	50	0.080		LC VA					
1.2	40	320	95	63	0.063		LC VA					
1.3	35	400	120	80	0.050		LC VA					
1.4	30	500	150	100	0.040		LC VA	STE VA				
1.5	25	630	190	125	0.032		LC VA	STE VA				
1.6	20	800	240	160	0.025		LC VA	STE VA				
1.7	15	1000	300	200	0.020			STE VA				
1.8	10	1250	380	250	0.016			STE VA				
1.9	5	1600	480	320	0.0125			STE VA				
2.0	0	2000	600	400	0.010			STE VA	STE VA			
2.1	-5	2500	750	500	0.008							
2.2	-10	3200	950	630	0.0063				STE VA			
2.3	-15	4000	1200	800	0.005					GA		
2.4	-20	5000	1500	1000	0.004				STE VA			
2.5	-25	6300	1900	1250	0.0032					GA		
2.6	-30	8000	2400	1600	0.0025				STE VA			
2.7	-35	10000	3000	2000	0.002					GA		
2.8	-40	12500	3800	2500	0.0016						GA	
2.9	-45	16000	4800	3200	0.00125						GA	
3.0	-50	20000	6000	4000	0.001							
3.1	-55											
3.2	-60										WFP	
3.3	-65											
3.4	-70											
3.5	-75										BWD	
3.6	-80											
3.7	-85											
3.8	-90											
3.9	-95											
4.0	-100											LP NLP

Distances to Diopters	
cm	D
100	1.00
80	1.25
63	1.60
50	2.00
40	2.50
32	3.25
25	4.00
20	5.00
16	6.25
12.5	8.00
10	10.00
8	12.50
6.3	16.00
5	20.00
4	25.00
3.2	32.00
2.5	40.00
2	50.00

MAR = Minimum Angle of Resolution:

By convention, it is taken to be one fifth of the height of the optotype, and expressed in minutes of arc.

For 20/20, MAR = 1 minarc : For 20/200, MAR = 10 minarc :

LogMAR = Log₁₀(MAR) For 20/20, LogMAR = 0.0 : For 20/200, LogMAR = 1.0 :

VAR = 100 - 50xLogMAR : For 20/20, VAR = 100 : For 20/200, VAR = 50 :

VAR is a convenient transform of the LogMAR scale. It is one point per letter on "LogMAR" charts

Decimal notation is the reciprocal of the Snellen fraction. For 20/20, Decimal = 1.0 : For 20/200, Decimal = 0.10 :