

A. Functional implications of diseases causing visual impairment

I. Categories of vision loss

Vision loss can be categorized into 3 types as mentioned below:

- a) Overall blurred vision
- b) Central field loss
- c) Peripheral field loss

We shall discuss each of them in detail.

a) Overall Blurred Vision

It affects an individual's ability to perceive sharpness of detail due to an alteration in the clarity of the refractive structures (Fig.1b).



Fig.1a. Scene as perceived by a normally sighted person



Fig.1b. Overall blurred vision

(i) Ocular conditions resulting in overall blurred vision

1. Keratoconus
2. Microcornea
3. Corneal degeneration
4. Failed corneal graft
5. Dislocated lens
6. Congenital and Traumatic cataract
7. Aniridia
8. Albinism (Fig. 2)
9. Diabetic Retinopathy
10. Corneal Scar
11. Vitreous Hemorrhage
12. Nystagmus

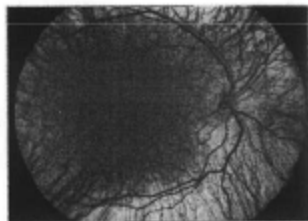


Fig.2 Albinotic fundus

(ii) Functional implications and Behavioral manifestations

FUNCTIONAL IMPLICATIONS	BEHAVIORAL MANIFESTATIONS
1. Loss of visual acuity or sharpness of details	<ul style="list-style-type: none">a) Difficulty in reading and writingb) Difficulty in recognizing details like facial features and facial expressionsc) Difficulty in reading road signsd) Difficulty in orientation and mobilitye) Difficulty in drivingf) Difficulty in groomingg) Difficulty in using computersh) Difficulty in signing
2. Impaired contrast sensitivity	<ul style="list-style-type: none">a) Bumping into objects like door frames or furnitureb) Seeing time in watchc) Identifying coin, currencyd) Difficulty in mobilitye) Difficulty in walking down stepsf) Difficulty in driving and mobility in dim lit areag) Difficulty in reading poor contrast materials
3. Poor night vision	<ul style="list-style-type: none">a) Inability to drive at nightb) Difficulty in finding way in dark places
4. Double vision	<ul style="list-style-type: none">a) Inability to concentrate while reading
5. Sensitivity to light and glare	<ul style="list-style-type: none">a) Avoiding sunb) Discomfort with car lights
6. Image distortion	<ul style="list-style-type: none">a) Difficulty in reading

b) Central Field Loss

It affects the ability to perceive objects or people in the direct line of vision (Figs. 3b& c).



Fig. 3a. Scene as perceived by a normally sighted person



Fig. 3b. Central relative scotoma



Fig. 3c. Central absolute scotoma

(ii) Ocular conditions resulting in Central Field loss

1. Age-related macular degeneration (Fig. 4)
2. Best's Disease
3. Stargardt's macular dystrophy
4. Macular Hole
5. Macular coloboma.
6. Myopic Retinopathy
7. Inflammation –chorioretinitis of macula
8. Heredomacular degeneration

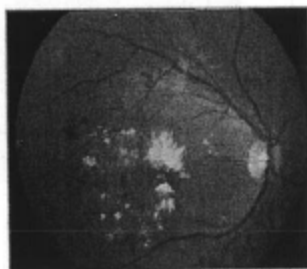


Fig.4: Age-related macular degeneration

(ii) Functional implications and Behavioral manifestations

FUNCTIONAL IMPLICATIONS	BEHAVIORAL MANIFESTATIONS
1. Partial perceptions of people and object that could be caused by scotomas	a) Not talking directly to people b) Unusual head position c) Lack of eye contact d) Diminishing ability to recognize people in front of them
2. Inability to discriminate fine details	a) Difficulty in reading
3. Poor colour vision	a) Inability to identify the color of the Object b) Uncoordinated clothing c) Difficulty in sorting fruits and vegetables d) Inability to identify medicines e) Difficulty in identifying food in plate
4. Impaired Contrast sensitivity	a) Bumping into objects b) Seeing time in watch c) Coin identification d) Difficulty in mobility e) Seeing curbs and negotiating stairs
5. Glare	a) Avoiding sun b) Difficulty with car lights

c) Peripheral Field Loss

It affects the ability to perceive people or objects to the sides. Vision is partially obstructed or non-existence in the affected field. Peripheral field loss can also result in blurred images in the visual field or blind spot (Fig. 5b).



Fig. 5a. Scene as perceived by a normally Sighted person



Fig. 5b: Peripheral field loss

(i) Ocular conditions resulting in peripheral field loss

1. Retinitis pigmentosa
2. Glaucoma (Fig. 6)
3. Leber's congenital amaurosis
4. Optic atrophy
5. Intracranial lesions
6. Lasered diabetic retinopathy
7. Retinopathy of prematurity

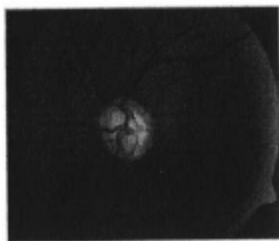


Fig. 6. Glaucomatous optic atrophy

ii) Functional implications and Behavioral manifestations

FUNCTIONAL IMPLICATIONS	BEHAVIORAL MANIFESTATION
1. Inability to perceive people or objects off to the side	<ul style="list-style-type: none">a) Unusual head movementsb) Difficulty in readingc) Uncertainty in mobilityd) Inability to find lost objects
2. Partial blurred vision	<ul style="list-style-type: none">a) Difficulty in reading and writingb) Difficulty in recognizing details like facial features and facial expressionsc) Difficulty in reading road signsd) Difficulty in orientation and mobilitye) Difficulty in drivingf) Difficulty in groomingg) Difficulty in using computersh) Difficulty in signing
3. Slow light and dark adaptation	<ul style="list-style-type: none">a) Difficulty in mobility from light to dark or from dark to light
4. Impaired contrast sensitivity	<ul style="list-style-type: none">a) Bumping into objects like door frames or furnitureb) Seeing time in watchc) Identifying coin, currencyd) Difficulty in mobility
5. Decreased night vision	<ul style="list-style-type: none">a) Inability to drive at nightb) Difficulty in finding way in dark places

B. Management of different categories of vision loss

Low vision rehabilitation (LVR) services can be provided by trained personnel such as any or all of the following:

- Optometrist
- Ophthalmologist
- Low vision therapist

Services can be provided in a variety of settings that could include any of the following:

- Hospitals
- Vision Rehabilitation Organizations
- Private optometry and ophthalmology practices
- Educational institutes

I. Management of diseases leading to Overall Blurred Vision

Management includes the following steps:

- Refraction
- Providing Magnification
- Glare control
- Increase contrast
- Rehabilitation services
- Surgery: Penetrating Keratoplasty, Cataract extraction etc.

a) **Refraction:** An accurate refraction is one of the most important component of LV rehabilitation (LVR) services.

b) **Magnification:** It can be provided by means of LVDs.

As discussed in earlier parts of this manual, LVDs can be grouped into 3 types:

- Optical devices
- Non-optical devices
- Electronic devices