

Visual Conditions and Functional Vision: Early Intervention Issues

Visual Conditions in Infants and Toddlers

Brief Overview of Childhood Visual Disorders

Hatton, D.D. (2003). *Brief overview of childhood visual disorders*. Chapel Hill, NC: Early Intervention Training Center for Infants and Toddlers With Visual Impairments, FPG Child Development Institute, UNC-CH.

Conditions/Diagnosis	Cause	Functional Implications	Prognosis	Treatment
Albinism Lack of pigment in eye, skin, or both	Hereditary	Macula is affected and decreased visual acuity results (usually 20/200 to 20/70). Nystagmus, photophobia, refractive error. Visual fields may be affected and color vision is normal.	Stable	Visors; tinted glasses for outside activities; dim illumination
Amblyopia Lazy eye or decreased vision due to insufficient visual input	Failure to use eye, often due to muscle imbalance or to one eye having much better vision	Lowered visual acuity with no apparent disease of the eye. If not treated, can result in functional blindness in the affected eye.	Varies; early treatment critical	Orthoptics, optical, surgical, occlusion, penalization

Conditions/Diagnosis	Cause	Functional Implications	Prognosis	Treatment
Aniridia Partial or complete absence of iris	Genetic	Reduced visual acuity, photophobia, possible nystagmus, cataracts, displaced lens, underdeveloped retina. Secondary complication may be glaucoma.	In mild cases, cataracts may develop slowly; glaucoma and corneal opacities may develop in severe cases.	Lenses, optical aids, lower illumination, sunglasses
Cataracts (congenital) Opacity of lens	Result of intrauterine infection, drug use during pregnancy, malnutrition; hereditary	Reduced visual acuity, nystagmus, squint, photophobia.	Usually stable and favorable unless complications from surgery arise.	Surgery (as early as possible for severe cases); MUST have refractive lenses in order to accommodate; genetic counseling
Coloboma Failure of part(s) of the eye to form completely during fetal development	Hereditary Results from trauma during first trimester	Depends on part(s) of eye affected (usually iris, retina, lens, choroid). Reduced visual acuity, nystagmus, photophobia, field defects. Secondary complication: cataracts.	Fairly stable	Sunglasses, lenses, optical aids, genetic counseling
Cortical visual impairment Inability to see even though eye and optic nerve are intact	May result from brain damage, asphyxia, pre- and post-natal infections	Varies considerably and may improve over time.	Uncertain	Adaptive strategies such as avoiding over-stimulation, allowing response time, using colored objects

Conditions/Diagnosis	Cause	Functional Implications	Prognosis	Treatment
Glaucoma Congenital: increased intraocular pressure due to inadequate drainage	Hereditary damage to drainage structures; associated with ROP, cataracts, aniridia, etc.	Reduced visual acuity, field restrictions, photophobia, tearing, lens opacity, buphthalmos.	Uncertain; treatment is critical	Surgical or drug treatment to reduce intraocular pressure; close medical supervision critical; genetic counseling
Leber's congenital amaurosis Rod-cone dystrophy	Hereditary	Often accompanied by nystagmus, refractive error, reduction in visual acuity that varies from 20/80 to total blindness.	May be progressive	Lenses may be useful for some children; controlled illumination; genetic counseling
Nystagmus Rhythmic involuntary movement of one or both eyes	Loss of vision; uncertain	Reduced visual acuity, difficulty in maintaining fixation.	Usually stable	Lenses of various types, optical aids, prisms, surgery
Optic atrophy Degeneration of optic nerve	Head trauma, CNS disorders, shunt failure	Reduced visual acuity.	Stable, unless associated with persistent hydrocephalus	Optical aids may help

Conditions/Diagnosis	Cause	Functional Implications	Prognosis	Treatment
Optic nerve hypoplasia Atypical development of the optic nerve during fetal development	Suggested associated factors: maternal age, smoking, low birth weight	Varies but usually results in reduced visual acuity, visual field defects, associated with hypopituitarism	Stable	Medical work-up to rule out endocrine involvement is critical
Retinitis pigmentosa Progressive rod-cone dystrophy	Hereditary	Progressive vision loss Night blindness Loss of peripheral visual field	Poor	Optical aids, prisms, genetic counseling
Retinopathy of prematurity Disease of retina found usually in infants weighing less than 1251 grams	Multifactorial; associated factors: amount and level of oxygen; gestational age; birth weight; complications relating to prematurity	Varies considerably depending on stage; Stage 4 or 5 usually signifies severe visual loss. Secondary complications may include glaucoma, uveitis	Varies; children are at risk for high myopia, retinal detachment	Surgery; lenses; optical aids may be useful for some
Retinoblastoma Malignant ocular tumor	Hereditary, nonhereditary	Varies depending on size of tumor, treatment. Cataracts may result from treatment of tumors.	Varies	Radiation, chemotherapy, enucleation, genetic counseling

Terminology and Definitions

VISUAL ACUITY

Ability to form a clear, detailed image; sharpness of vision, ability to distinguish detail. A visual acuity of 20/20 is considered normal.

LEGAL BLINDNESS

A visual acuity of 20/200 or less in better eye with correction or a field of vision no greater than 20 degrees at widest diameter. Used to determine eligibility for certain services. (20/200 means that the person sees at 20 feet what the normal eye sees at 200 feet)

VISUALLY IMPAIRED

Refers to those who need special educational services/provisions as a result of visual impairment.

BLIND

Educationally, refers to those who have no vision or only light perception. Unable to learn via vision.

LOW VISION

Refers to those with severe visual impairment whose function can be increased through use of optical aids and environmental modifications. These students learn through vision.

Visual Conditions Module 06/04/04
S3 Handout K
EIVI-FPG Child Development Institute
UNC-CH