

14. *Vision & Hearing*



Goal:

Improve the visual and hearing health of Alaskans through prevention, early detection, treatment, and rehabilitation.

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Health Goal for the Year 2010: Improve the vision and hearing of Alaskans through prevention, early detection, treatment, and rehabilitation.					
	Indicator	Alaska Data Source	U.S. Baseline	Alaska Baseline	Alaska Target Year 2010
Vision					
1	Increase the proportion of people over 50 years who have had an eye exam in the previous three years.	Special Survey	Developmental (NHIS)	Developmental	
2	Increase the proportion of preschool children aged 5 years and under who receive vision screening.	Public Health Nursing; Early Periodic Screen Diagnosis and Treatment; Division of Medical Assistance, RPMS	Developmental (NHIS)	Developmental	
3	Reduce eye injuries resulting in hospitalization.	Trauma Registry	N/A	20 injuries per year (1994-1998)	18
4	Reduce occupational eye injuries (rate per 10,000 full-time workers).	DOL	6.6 (1998)	11 (1998)	6
Hearing					
5	Increase the proportion of newborns who are screened for hearing loss by age 1 month.	Maternal Child and Family Health	Developmental (EHDI)	42% (2000)	90%
6	Increase the use of protection devices to prevent noise-induced hearing loss.	Special Survey	Developmental (NHANES)	Developmental	

NHIS - National Health Interview Survey

RPMS - Resource Patient Management System

DOL - Alaska Department of Labor

EHDI - State-based Early Hearing Detection and Intervention Program Network, CDC

NHANES - National Health and Nutrition Examination Survey

Introduction

Vision and hearing provide the cues for conducting the basic activities of daily life. Either or both of these senses may be impaired or lost because of heredity, aging, injury, or disease. Many of the causes of vision and hearing loss can be prevented or treated.

Rehabilitative services are crucial in enabling people with sensory impairments to live independent and productive lives. Assistive technologies can provide access to reading material, computers, telephones, and other components of daily life. Rehabilitation and assistive services are covered in *Chapter 25: Disability and Secondary Conditions*.

The Infant Learning Program provides services to visually or hearing-impaired children under age three. Special education services may be available from age three to 22. Alaska Vocational Rehabilitation serves older children and adults whose ability to work is impaired.

VISION

Overview

Vision is an essential part of everyday life for people of all ages. Vision affects development, learning, communicating, working, health, and quality of life. When low vision is defined broadly as visual problems that affect the performance and enjoyment of everyday activities, almost 14 million people in the United States are estimated to have low vision. More than two-thirds of visually impaired adults are over 65 years of age.

Leading causes of visual impairment are diabetic retinopathy, cataract, glaucoma, and age-related macular degeneration (AMD). Myopia, or nearsightedness, is a common condition in which images of distant objects are focused in front of, instead of on, the retina. Myopia occurs in approximately 25 percent of the United States population and is frequently diagnosed in school-aged children.

Many infants and young children are at risk for vision problems because of heredity, prenatal, or perinatal factors. Early identification is important to prevent or reverse visual and developmental problems.

Blindness and visual impairment from many eye diseases and disorders can be reduced with early detection and treatment. Most eye diseases, however, lack symptoms until vision is lost. Early intervention through regular examinations is crucial to maintain adequate vision. Health education programs should include information on the benefits of vision screening and eye exams.

There is no consensus on the optimal frequency of eye examinations in healthy, asymptomatic adults, or on the frequency of glaucoma testing on low-risk individuals. The incidence of many eye diseases increases with age, and the American Optometric Association recommends annual eye examinations for adults 61 and older.

Issues and Trends in Alaska

The United States Census Bureau estimates that of those Alaskans 16 and older about 10,000 are visually impaired and another 1,300 are severely visually impaired.

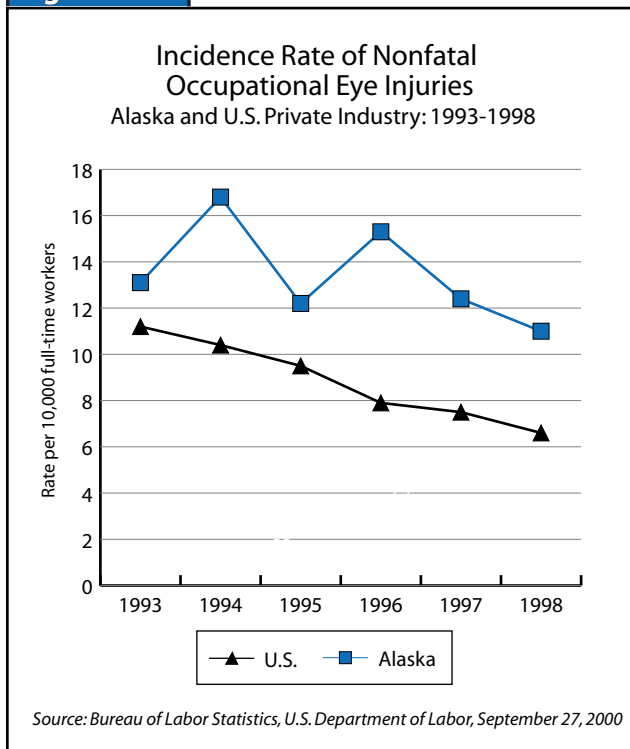
The Alaska Birth Defects Registry began collecting data on congenital eye anomalies in 1999. Six infants with birth defects involving vision were reported in that year, for a combined rate of 0.6 per 1,000 live births.

The incidence of diabetes is increasing in Alaska, and diabetic retinopathy is the leading cause of blindness among adults. An estimated 20 to 60 Alaskans lose their vision annually to diabetes. In a 1999 survey of 500 Alaskans with diabetes, 12 percent reported retinopathy and 8 percent had laser surgery for diabetic eye disease.

Tight control of blood sugar and early identification and treatment of retinopathy can preserve vision. An annual eye exam is essential for diabetics. In 1993, however, only 63 percent of Alaskans with diabetes reported a dilated eye examination within the past year. Chapter 23 on Diabetes addresses plans to increase the number of Alaskans with diabetes who receive an annual eye exam.

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Figure 14-1



Eye injuries are another cause of impaired vision. The Alaska Trauma Registry reports that 15 people with eye injuries were hospitalized in 1998. Occupational injuries to the eye occur at a higher rate in Alaska than the United States as a whole (Figure 14-1).

Current Strategies and Resources

The American Academy of Pediatrics recommends eye examination of infants at all encounters and vision screening beginning at three years of age. In Alaska, the Early and Periodic Screening, Diagnosis, and Treatment (EDSDT) program requires eye and vision examinations at each scheduled examination. There is no central database of the results of these screenings. The Head Start Program also provides vision screening for eligible children.

Alaska schools require vision screening at entry and provide periodic screenings. Most schools do not have nurses, and volunteers with limited training often perform screenings. The Department of Education and Early Development does not collect data on school vision screening or the results of follow-up on students identified with vision impairments.

Community photo screening, a simple process to identify eye disease, was offered to Alaskan preschoolers in 1998 and 1999 through the Alaska Blind Child Discovery Project in collaboration with civic organizations, health corporations, Headstart and Public Health Nursing. Volunteers conducted Polaroid photo screening on 3,930 children between one and four years of age and identified 300 children with amblyopia or other significant eye disease. The project found that it was feasible to conduct large-scale screenings with trained volunteers even in remote areas. Routine photo screening of pre-schoolers, however, has not yet been proposed by any professional organization.

HEARING

An estimated 28 million people in the United States are deaf or hard of hearing. Deafness or hearing impairment may be caused by genetic factors, noise, trauma, medications, and viral or bacterial infection.

Unrecognized hearing loss in the first three years of life may impair the development of language. Congenital hearing loss occurs in 2 or 3 children per 1,000 live births. Early identification of hearing impairments is crucial in preventing language delay. Hearing aids or cochlear implants may improve hearing. Other children may learn sign as their primary language during the most crucial period for language development.

Hearing screening should begin in the newborn nursery. The National Institutes of Health and the American Academy of Pediatrics have recommended universal newborn hearing screening. By 2,000, 32 states had legislation mandating newborn hearing screening.

Noise-induced hearing loss is common in the United States and is the most common occupational disease. Data indicate that people are losing their hearing earlier in life and that men in the 35 to 65 year old age group are the most severely affected.

Presbycusis, the loss of hearing associated with aging, affects about one third of adults over 65. Only one fourth of the adults who could benefit from a hearing aid actually use one. As the population ages and lives longer, hearing impairment becomes a more widespread and significant cause of disability. There are no current recommendations for routine hearing screening in asymptomatic adults. Providers are advised to

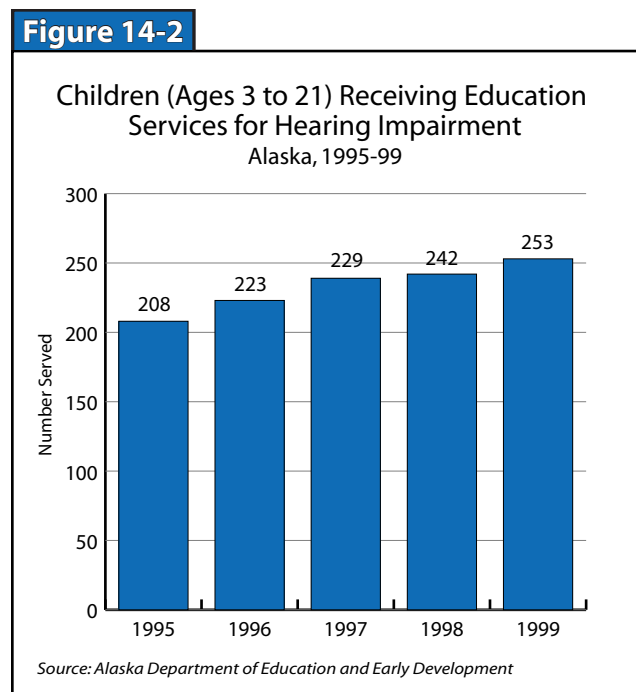
ask elderly clients about symptoms of hearing loss and test hearing as indicated.

Issues and Trends in Alaska

Four hospitals in Alaska now perform routine hearing screening of newborns. Forty-six percent of the babies born in Alaska in 2000 were screened. With approximately 10,000 births annually, 20 to 30 infants would be expected to have congenital hearing impairments.

In 1999, the Alaska Infant Learning Program provided audiology, speech, or language services to 41 children under age four. Ten of those children had significant and progressive hearing loss.

Hearing is crucial for language development and success in school. Alaska schools require hearing screening at entry and periodically throughout the child's school career. Some schools have professional school nurses. Many schools have no school nurses and must rely on different skill levels of providers who perform screenings. Public Health Nurses also perform hearing screenings during EPSDT screenings. Over 200 children a year receive special educational services due to hearing impairment (Figure 14-2).



Historically, otitis media has been a significant problem in many rural areas of the state. Otitis media often occurs in repeated bouts, causing periods of hearing loss that can affect children during the critical time for language and speech acquisition. It is important to re-

duce antibiotic use in the treatment of otitis media, as the widespread use of antibiotics contributes to the development of resistant strains of *Streptococcus pneumoniae* and other bacterial organisms.

Many Alaskans have permanent, irreversible hearing loss caused by noise or trauma. Alaskans have many occupations and lifestyles with injurious noise levels. Chainsaws, small aircraft, outboards, snow machines, guns, and all-terrain vehicles are common sources of high-decibel sound. Noise-induced hearing loss can be the result of a traumatic, sudden level of impulse noise, such as an explosion, that can leave an individual immediately and permanently deafened, continuing exposure to high levels of sound in the workplace or in recreational settings, or years of exposure causing subtle, progressive damage. Noise-induced hearing loss is related to noise level, proximity to the harmful sound, duration of exposure, and individual susceptibility. Many of these causes can be controlled through education and prevention.

Current Strategies and Resources

In April 2000, the Alaska Division of Public Health, Section of Maternal Child and Family Health was awarded a 4-year grant to develop and implement a Universal Newborn Hearing Screening Program. The project calls for developing and supporting a system to ensure that newborns are screened for hearing loss prior to discharge from the hospital. Infants who are referred from screening receive appropriate audiological evaluation and follow-up, and infants with a confirmed hearing loss receive early intervention and other needed resources.

Legislation introduced in March 2001 would mandate newborn hearing screening in all hospital nurseries. The bill sets a goal of screening 90 percent of Alaska newborns by January 2003.

Public education can promote hearing health and behavior to reduce noise-induced hearing loss, which is a fully preventable condition. Public Health Nursing has high quality, comprehensive guidelines for hearing history, screening, and referral process for all children. Education about the behavioral aspect of noise induced hearing loss is standard anticipatory guidance and could be promoted as standard practice for all child health providers.

Otitis media continues to be an issue, especially among rural Alaska Native children. The Alaska Fed-

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eral Health Care Access Network Telemedicine Project for videotoscopy screening in underserved areas of the state will help to ensure that children with otitis are treated appropriately. Use of the video-otoscope may also decrease the unnecessary use of antibiotics to treat otitis.

Data Issues and Needs

Public Health Nursing records and the RPMS database could potentially provide estimates of the number and proportion of children screened for vision and hearing problems and referred for further evaluation. School districts could track and report the results of school screenings.

As the proportion of newborns receiving hearing screening increases, more data will become available on the prevalence of congenital hearing loss.

Little information is available on eye examinations in older adults. Special surveys and RPMS records could provide some data on the incidence and prevalence of glaucoma, age-related macular degeneration, and cataracts.

Special surveys and observational studies could provide baseline data on the use of hearing protection in specific settings, such as snowmachine or chain-saw use.

Related Focus Areas

A variety of objectives in other *Healthy Alaskans* chapters are linked to the objectives in *Vision and Hearing*.

- *Occupational Safety and Health*
- *Diabetes*
- *Disability*

Occupational eye injuries and noise-induced hearing loss are significant concerns in the workplace and are indicators in the *Occupational Safety and Health* chapter. *Diabetes* is linked to *Vision and Hearing* since people with diabetes often develop diabetic retinopathy. In *Diabetes*, an important indicator is annual dilated eye examinations to screen for retinopathy. Prevention of blindness and deafness decreases the number of people living with these disabilities, linking to the *Disability and Secondary Conditions* chapter.

Endnotes

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² Alaska Department of Health and Social Services, Alaska Division of Public Health, Section of Epidemiology. *Alaska Diabetes Control Program: State of Alaska Diabetes Control Plan*. November 1999.

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References and Sources

Alaska

Alaska Optometric Physician Association

www.ako.org/story.dbm?sid=feature

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Intervention Program

www.infanthearing.org/states/alaska.html

DHSS: Maternal, Child, & Family Health
Special Needs Service Unit

www.hss.state.ak.us/dph/mcfh/programs/SNSU.htm

Special Education Service Agency

www.sesa.org/index.html

National

Operation Bright Star

www.afva.com/

The Early Hearing Detection and
Intervention Program

www.cdc.gov/nceh/cddh/ehdi/ddscreen.htm

Vision Problems in the U.S.

National Eye Institute

www.nei.nih.gov/eyedata/index.htm

Healthy Vision 2010

www.healthyvision2010.org/

Chapter Notes

