A Review of Childhood Vision Screening Laws and Programs Across the United States

By Trevor Kindle, MD; and Terrence Spencer, MD

Abstract

Introduction: Many organizations recommend childhood vision screenings. Furthermore, 42 out of 50 states in the U.S. have laws requiring these examinations looking for multiple ocular abnormalities that can lead to amblyopia, which has the potential to result in lifelong visual impairment. Currently, South Dakota is not a state with similar aforementioned law. The purpose of this research was to examine vision screening laws and programs across America to potentially provide a framework from which South Dakota could adopt its own law.

Methods: This is a healthcare policy review of childhood vision screenings across the U.S. government websites and departments of education and/or health were contacted for information regarding laws and their processes of vision screenings. The University of South Dakota Sanford School of Medicine (USD SSOM) Pediatric Residency Program was queried on their current practice. The 14 largest school districts in South Dakota were questioned on their policies. Other current regular childhood health screenings in South Dakota were also investigated.

Results: Most states utilize the public school systems and school personnel in performing screenings. The USD SSOM Pediatric Residency Program routinely screens children at kindergarten physical exams. The majority of the largest school districts in South Dakota routinely screen their students using a variety of methods. There are a few other routine health screenings covered by insurance and Medicaid in South Dakota.

Conclusion: South Dakota does not have a law requiring childhood vision screenings. Despite this, many screenings are still performed in schools or in medical offices.

Introduction

The National Eye Institute notes a significant prevalence of myopia (nearsightedness), hyperopia (farsightedness), astigmatism (abnormal curvature of the cornea), and strabismus (eye muscle dysfunction) in the pediatric population.[1] If left untreated in a young individual, these eye conditions can increase the risk of amblyopia, which is decreased vision as a result of abnormal development. Amblyopia progresses early in a person's life and results in permanent visual impairment.[2] This life-long vision loss can hinder the ability of individuals to fulfill educational, professional, and societal duties. Additionally, individuals with vision loss are emotionally affected as well.[3]

Fortunately, early detection and treatment of refractive error and/or strabismus in children can reduce the risk of amblyopia.[4] In fact, both the American Academy of Pediatrics and the U.S. Preventative Services Task Force recommend vision screenings for all preschool-aged children.[2,5] Additionally, 42 out of 50 states in America have laws requiring childhood vision screenings.[6] However, South Dakota is one of those eight states without a requirement. This is particularly troubling as 11.9 percent of South Dakotan children were referred for advanced eye examinations based on abnormal screening results done in a controlled study.[7] As it stands currently without any law requiring childhood vision screenings, South Dakotan children could be at increased risk for

developing amblyopia when compared to their peers across the country.

Therefore, the goal of this research was to investigate the vision screening requirements in states around the country, examine funding for the screening tests, define what actual tests or screening tools are utilized, identify which individuals are granted permission to conduct the screenings, and research other health screening tests in South Dakota. Leaders in this state could then potentially use this information to propose legislation requiring childhood vision screenings in South Dakota.

Methods

This is a healthcare policy research study. Approval from the University of South Dakota Institutional Review Board was deemed unnecessary, as this research did not directly analyze patient information or demographics. Research began at the website for the American Association of Pediatric Ophthalmology and Strabismus (AAPOS). Then state government websites for departments of health or education were visited to find specific laws requiring vision screenings. Finally, state departments of health and/or education were contacted by email and asked to respond to a series of questions (if applicable):

1. What is the exact wording of the law mandating vision screenings?
2. Are there any specific testing tools/charts?
3. Who is qualified to give the exam to the child?
4. How are the screenings funded (local school districts, state general fund, special tax/funding, other money, etc.)?

Additionally, several entities in South Dakota were contacted to try to get a clearer picture of what is occurring in this state in terms of childhood vision screenings, including the University of South Dakota Sanford School of Medicine (USD SSOM) Pediatric Residency Program and the 14 largest school districts in the state. Lastly, the state of South Dakota Department of Health (SDDOH) was contacted to determine what other childhood health screening programs are mandated in South Dakota and how they are financed.

Results*

Iowa

Iowa Code 280.7A mandates that all children be screened for visual difficulties by the age of 7.[31] Furthermore, Iowa Administrative Code 641—52.1(135) discusses that all children in kindergarten and 3rd grade receive vision screenings.[32] Screenings can be fulfilled utilizing a comprehensive eye exam by an ophthalmologist or optometrist. Additionally, screening in children less than 6 years old can be done using a variety of tools including LEA symbols, HOTV charts, iScreen cameras, or autorefractors. If children are over 6, a Sloan chart, HOTV chart, LEA number chart, or Snellen chart are also acceptable. Typically a school nurse is trained and certified and can perform the screenings. There is an Iowa Child Vision Screening Program website that discusses many of the aspects of the screening process. There are specific statewide programs dedicated to childhood vision. Iowa KidSight is a collaboration between the Lions Clubs of Iowa and the Department of Ophthalmology at the University of Iowa to detect and treat visual impairments in young children, and similarly, Prevent Blindness Iowa offers training and certification in adult and children vision screenings.[33]

Minnesota

Minnesota Statute 121A.17 mandates that school boards must provide a health screening for 3 and 4 year olds, and this exam includes a vision screening.[48] All students entering kindergarten or 1st grade in public schools must have this exam done prior to starting. Screeners use the HOTV or LEA symbol chart in testing visual acuity.[49] School districts are reimbursed for every student they screen.[50]

Montana

Montana does not have a specific law requiring vision screening for children. However, the Department of Public Health and Human Services does make a recommendation that school-aged children be screened for vision difficulties.[56] School districts throughout the state have individual policies for screening processes if applicable.

Nebraska

Nebraska Statute 79-248 requires students to undergo vision screening annually from pre-kindergarten to 4th grade, and then students are tested once again in 7th and 10th grade.[57] Nurses, physicians, advanced practice professionals, or optometrists can complete these school screenings. Furthermore, Nebraska Statute 79-214 requires that a physician, physician assistant, nurse practitioner, or optometrist must complete a full examination of the student's eyes at least once prior to starting school.[57] Visual acuity is tested in addition to looking for signs of

amblyopia, strabismus, and overall eye health in the extensive exam. Parents or guardians are responsible for the cost of this general eye exam.

North Dakota

North Dakota does not have a specific law requiring vision screening for children. However, a section on vision screenings is included in the Health Guidelines for North Dakota Schools.[61] Furthermore, the North Dakota Optometric Association has created forms for school nurses to fill out when conducting screenings, and it includes information on testing near vision, distance vision, color vision, stereopsis, muscle coordination, accommodation, and general eye health.[62]

Wyoming

Wyoming Rules and Regulations Education General Chapter 6 Section 19 specifies that school districts provide support services to students including visual acuity and color vision screening.[96] While there isn't a whole lot of additional information available, there is a Wyoming Vision Collaborative, which is funded through the Wyoming Department of Health, that trains screeners, increases the number of children screened, seeks for a more uniform screening process across the state, and raises public awareness.[97]

South Dakota

The USD SSOM Pediatric Residency Program was contacted, and the program director and chief resident supplied information. Pediatric patients at the resident clinic undergo routine visual acuity screenings at pre-kindergarten visits, typically around age 4 or 5. Vision screenings are also part of sports physical exams if they haven't seen an ophthalmologist or optometrist in the last year. Screenings are also done if parents or health care providers have concerns. If vision screenings are failed at any point, patients are referred to eye care specialists for further evaluation. If there is additional clinical concern, a referral to a pediatric ophthalmologist may be warranted. The residents also encourage parents to utilize InfantSEE. This is a program in which volunteer optometrists throughout South Dakota perform comprehensive eye exams and vision assessments on children in their first year of life at no cost to the parent or guardian.

The 14 largest public school districts in South Dakota were contacted to determine vision screening policies and procedures. Sioux Falls, the largest school district in South Dakota, conducts vision screenings at early childhood evaluations and in 1st, 3rd, and 5th grade. In the neighboring Harrisburg School District, Licensed Practical Nursing students from Southeast Technical Institute have performed vision screenings in the past, but the district is examining other possibilities at this time. If there is a concern from a parent or teacher in Harrisburg, a basic visual acuity assessment is performed using a Snellen chart. On the other side of the state in Rapid City, the second largest school district in the state utilizes the Northern Plains Eye Foundation Western South Dakota Lions Children's Vision Screening Initiative, which administers free vision screenings to pre-kindergarten, kindergarten, 1st, 3rd, and 5th grade students using a Welch Allyn Spot Vision Screener (SPOT). The Lions Club in Aberdeen also utilizes a SPOT screener to screen kindergarten, 1st, 3rd, 5th, and 7th grade students in the school district. Similarly in the Mitchell School District, the Lions Club uses the same machine to conduct screenings for all elementary students and as requested for older students. Once again, in the Meade School District (Sturgis), children in kindergarten, 3rd grade, and 5th grade are screened using a Welch Allyn Spot Vision Screener. Huron School District also uses an automated screener for all students K-8 and then as needed in high school. The Brandon Valley School District performs vision screenings for early childhood, junior kindergarten, kindergarten, 2nd, and 4th grade students. In the Pierre School District, all middle school students in grades 6-8 are screened. Students in the Watertown School District and Yankton School district are also screened. In all cases, referrals for additional vision evaluation are made as necessary. Brookings and Spearfish did not return requests for vision screening information.

***This section reports only on those states that border South Dakota. Please see the supplemental information for a table comprising childhood vision screening information for the remainder of states. Individual states are presented in alphabetical order, and as such, reference numbering is as if all states were presented in alphabetical order within the body of this paper.**

Discussion

In summary, 42 of 50 states in the U.S. require some sort of childhood vision screening by law. The vast majority of states utilize schools to perform vision screenings free of charge to children and their families. While the exact charts and tools vary from state to state, the Snellen chart, Tumbling E chart, and LEA symbol chart remain popular. Distance acuity is virtually always tested, and near acuity, color vision, and stereovision are also tested by some states.

Here in South Dakota, vision screenings are done at most public schools, as evidenced by a brief survey of the 14 largest school districts in the state. These districts encompass approximately 57 percent of the state's enrolled K-12 students, so one can surmise that the majority of school-aged children in the state are indeed being screened.[98] However, the processes at the schools are certainly different. Furthermore, it is possible that the largest school districts are the only ones with available resources to perform vision screenings. Additional research in this area could include surveying all approximately 150 school districts in South Dakota to determine exactly what percentage of children are not being screened.

Some states require vision screenings as part of general health inspections that must be performed by medical professionals, seemingly outside of the school setting. The USD SSOM Pediatric Residency Program routinely screens its pediatric patients at age 4 or 5. The residents also encourage the program InfantSEE, in which infants can obtain a free eye exam and vision assessment by optometrists in their first year of life. Future research in this area could include surveying all pediatricians and family practice physicians in South Dakota to determine their practices in terms of routine vision screenings in the clinic setting.

In South Dakota, all newborns undergo metabolic/enzymatic screenings as required by law, and these tests are paid for by Medicaid or insurance.[99] Similarly, newborns in South Dakota also often undergo hearing screening before leaving the hospital as well. Law does not require this screening, but the SDDOH recommends it.[100] In this state, Medicaid and private insurances typically will pay for the newborn hearing screening. Interestingly, many of the laws requiring vision screenings in this country also require hearing screenings in the same section of statute.

To some families, insurance coverage and cost may be significant factors in contemplating additional vision evaluation, and recently there have been changes in national healthcare policy. In short, the Affordable Care Act (ACA) allows parents or guardians to sign up for coverage that includes comprehensive eye exams and correction devices (glasses or contacts), and furthermore, the ACA includes coverage for visual acuity screening at general well-child checks.[101] In some ways, the ACA has made it easier for children to receive complete eye care. Of course there are arguments that the ACA has many flaws including increased insurance premiums, but that is a different discussion all together.

The financial implications of amblyopia are also an important consideration but were not discussed in this particular study.

Some of the laws that states have requiring childhood vision screenings date back to the mid-1900s. In the last few years, technology such as handheld photoscreeners have made the screening process easier, quicker, and potentially more reproducible.[7] Already in this state, public schools are taking advantage of newer technology to help perform vision screenings.

In closing, it is quite possible and probable that South Dakota would benefit from introducing legislation requiring vision screenings in the pediatric population. It appears the most logical option would be to utilize schools in helping implement this new requirement; the results of the paper show that this is currently occurring in most other states, and furthermore, many schools in South Dakota are already doing this.

In a recent study, the biggest barrier to follow-up care after a referral had been made following a failed vision screening in children was inadequate communication between the screening personnel and the family of the patient being referred.[102] Laws requiring screenings and referrals as necessary could potentially help eliminate this barrier. Indeed, it may be time for South Dakota to catch up with the rest of the country and require vision screenings to ensure young South Dakotans are given every chance for success in today's competitive and demanding world.

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REFERENCES

1. National Institute of Health. The Multi-Ethnic Pediatric Eye Disease and Baltimore Pediatric Eye Disease Studies. 2011.
2. American Academy of Pediatrics Committee on Practice and Ambulatory Medicine. Eye examination and vision screening in infants, children, and young adults. Pediatrics. 1996;98(1): 153-7.

Please note: Due to limited space, we are unable to list all references. You may contact South Dakota Medicine at 605.336.1965 for a complete listing.

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Supplemental Table 1. Childhood Vision Legislation and Requirements by State

State	Legislation identification	Timing	Place	Personnel	Tests used	Cost to patients	Reference number
Alabama	Code 19-29-1	Every child in public school	Schools	County health officer	Unspecified	Free	8
Alaska	Statue 14.30.127, 7 AAC 105 - 7 AAC 160	Each child entering public schools	Schools	Trained nurses and school personnel	Unspecified	Free	9-11
Arkansas	Code 6-18-1501	PK, 1st, 2nd, 4th, 6th, 8th grades	Schools	School nurses	Snellen	Free	12
Arizona	No specific law but strong recommendations with associated guidelines	-	-	-	-	-	13-15
California	Educational Code 49455, Code 49452	Upon enrollment in school and every 3 years until high school	-	School nurses, primary care providers, ophthalmologists, optometrists	-	-	16-17
Colorado	Statute 22-1-116	K, 1st, 2nd, 3rd, 5th, 7th, 9th grades	-	-	Sloan	-	18-19
Connecticut	Chapter 169, Section 10-214	K, 1st, 3rd, 4th, 5th grades	School	-	Snellen	-	20
Delaware	Code 14:815	K, 2nd, 4th, 7th, 9th, 10th grades; all students in special education	-	School nurse	-	-	21
Florida	Rule 64F-6.003, Statute 381.0056	K, 1st, 3rd, 6th grades	Schools	School nurses	-	-	22-24
Georgia	Code 20-2-770	1st grade	-	-	-	-	25-26
Hawaii	No specific law, but current effort underway to start screenings	-	-	-	-	-	27
Idaho	No specific law	-	-	-	-	-	-
Illinois	410 ILCS 205	All children >3 years entering school or licensed care facility; all K, 2nd, 8th graders; recommendation for additional grade testing	Schools or pre-schools	Certified personnel specifically trained for these screenings	-	Free	28-29
Indiana	Code 20-34-3-12	K or 1st grade, 3rd, 5th, 8th grades	Schools	-	Snellen, Sloan, HOTV, LEA	-	30
Kansas	Statute 72-5205	All students at least every 2 years	Schools	Determined by school	-	Free	34
Kentucky	704 KAR 4:020, Statute 156.160	Before enrolling in school	-	Optometrist or ophthalmologist	-	-	35-36
Louisiana	State Law 17:2112	1st graders	-	School nurse or other trained personnel	Not specified other than to include color vision	-	37-38

Maine	Title 20-A 6451, Rule 05-071 Chapter 45 DOE	1st, 3rd, 5th, 7th, 9th grades	School	School nurse	HOTV, Tumbling E, LEA for younger; Sloan, Snellen for older; also test stereoacuity	Free	39-40
Maryland	Statute 7-404	First year of schooling, 1st, 8th, 9th grades	-	-	-	-	41
Massachusetts	105 CMR 200.400, MGL Chapter 71 Section 57	All students PK thru 5th grade, once in middle school, once in high school, any new student	Schools	School nurses	HOTV, LEA for younger, Snellen for older, stereoacuity as well	Free	42-44
Michigan	MCL 380.1177, Public Health Code Act 368 of 1978	Prior to starting school, 1st, 3rd, 5th, 7th, 9th graders	Schools or other designated areas	-	-	-	45-47
Missouri	Statutes 167.194, 167.195	Entering K or 1st grade, all 3rd graders	Schools or offices	Optometrist or ophthalmologist for initial otherwise school personnel	HOTV, Snellen, Sloan, Tumbling E, LEA; also stereoacuity	Free	51-53
Mississippi	Code 41-79-5	All K	-	School nurse	-	-	54-55
New Hampshire	No specific law but Off of School Health recommends eye exam by physician or school nurse	-	-	-	-	-	58
North Carolina	Statute 130A-440	All K	-	Personnel certified by state	-	-	59-60
Nevada	Statute 392.420	Twice in elementary school, once in middle school, once in high school	-	School nurses	-	-	63
New Mexico	Statutes 24-13-30 and 24-13-32	PK, K, 1st, 3rd grades	-	Certified personnel including school nurses	Snellen, HOTV, LEA; stereoacuity; photoscreeners also ok	-	64
New Jersey	NJAC 6A:16-2.2(k)	Every other year K-10th grade	-	Trained personnel including school nurses	-	-	65
New York	Education Law 905, NYC CR 136.3	K, 1st, 2nd, 3rd, 5th, 7th, 10th grades; NYC does PK, K, 1st, 3rd, 5th grades	Schools	Trained medical personnel or volunteers after appropriate training	No recommendations other than distance, near, stereoacuity	-	66-68
Ohio	Codes 3313.673 and 3313.69	K, 1st, 3rd, 5th, 7th, 9th grades	-	School nurses	LEA for younger, otherwise anything; color vision, stereoacuity	-	69-71

Oklahoma	Rule 310:531-5-2 and Statute 70 - 1210.284	K, 1st, 3rd grade	-	Lay individuals if trained	Snellen, HOTV, LEA, stereoacuity	-	72-74
Oregon	Rule 581-022-0705, Statute 336.211	Students <7 years old or entering school for first time	Schools	School nurse or specialist	-	-	75-76
Pennsylvania	School Code 1402, 28 PA Code Chapter 23.4	Annually	-	School nurse, teacher, technician	Snellen, Tumbling E, HOTV, LEA; photoscreener ok; near vision, color vision, stereoacuity	Free	77-79
Rhode Island	Law 16-21-14.1, Section 10 of Rules and Regulations for School Health	K, 1st, 5th, 7th, 9th grades	-	Licensed professional, school nurse	Snellen, Tumbling E, HOTV chart, picture test; near, color vision, stereoacuity	-	80
South Carolina	No specific law but Department of Health make recommendations for screening at 1st, 2nd, 3rd, 5th, 7th graders and once in high school	-	-	-	-	-	81
Tennessee	Code 49-6-5004	PK, K, 2nd, 4th, 6th, 8th grades	Schools	Trained personnel (nurses or volunteers)	Snellen, HOTV, LEA; photoscreeners ok	-	83
Texas	Health and Safety Code 36.001, Administrative Code 25.1.37.C	K, 1st, 3rd, 5th, 7th grade	-	Licensed personnel with expertise in vision abnormalities	Sloan, Tumbling E, HOTV; photoscreener ok	-	84-85
Utah	Codes 53A-11-201 and Code 53A-11-203	-	-	School nurses or other certified personnel	-	Free	86-87
Vermont	Law 16 VSA 1422	PK, K, 1st, 3rd, 5th, 7th, 9th, 12th grade	Schools or medical offices	Primary care provider or school nurses	Tumbling E or HOTV for younger, Snellen for older	Free	88-89
Virginia	Code 22.1-273, Code 22.1-270	3rd, 7th, 10th grade	Schools	Teachers, school nurses, volunteers	Snellen, Tumbling E, Allen Figures; photoscreeners; color vision	-	90
Washington	Code 28A.210.020, Code 246-760-060, Code 246-760-071	K, 1st, 2nd, 3rd, 5th, 7th grades	Schools	School nurses, principals, other employees, volunteers, ophthalmologists, optometrists	LEA, HOTV, Sloan; photoscreeners ok	Free	91-92
West Virginia	Code 18-5-17, State Board of Education 2525	New students, age 11-13 years	-	-	LEA, Snellen, Tumbling E; stereoacuity	-	93-94
Wisconsin	Statute 118.135	K	Schools	Optometrist or physician	General eye exam	Typically free	95

- = unspecified, not addressed, or unavailable