

INFANTSEE AWARENESS AMONG MICHIGAN PEDIATRICIANS

by

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May 2012

APPROVED:

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## ABSTRACT

*Background:* The American Optometric Association, partnered with the Vision Care Institute of Johnson & Johnson Vision Care, has a public health program entitled InfantSEE in which participating optometrists provide one comprehensive eye assessment for infants within the first year of life free of charge, regardless of the family's income status. This program's purpose is early detection of ocular conditions that could lead to developmental issues and also to reassure parents of their child's visual development. *Methods:* The purpose of this research study was to assess the knowledge of the InfantSEE program among Michigan pediatricians. A survey was sent to every pediatrician office location in the state of Michigan asking questions pertaining to their awareness and referral rate to the InfantSEE program. The study also served to increase awareness of the program through an official website listing. *Results:* The data collected was analyzed along with a comparison of the InfantSEE provider locations and awareness of the program among pediatricians in certain areas of Michigan. Thirteen percent of the pediatricians that responded were previously aware of the InfantSEE program. Of those aware, only 36% would make a referral for the InfantSEE program. *Conclusions:* Although InfantSEE has grown in popularity since its introduction in 2005, there is a need for increased promotion and education of the program among the pediatric medical population.

## ACKNOWLEDGEMENTS

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## INTRODUCTION

The public health program entitled InfantSEE, first initiated in June 2005, through the American Optometric Association (AOA) and partnered with The Vision Care Institute of Johnson & Johnson Vision Care, Inc. provides an option for a comprehensive ocular assessment for all infants at no cost.<sup>1,2</sup> Former United States President Jimmy Carter served as honorary national chair and spokesman. Other organizations, such as the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB) have addressed the prevalence of uncorrected refractive error and ocular disease issues in their Vision 2020 project, which increased awareness of the importance of initiation of early vision screenings.<sup>3</sup> In 2004, the US Preventative Services Task Force (USPSTF) recommended screening for children less than 5 years old to detect uncorrected refractive error and prevent amblyopia and strabismus.<sup>4</sup> InfantSEE is an attempt to address these concerns.

Participating InfantSEE optometrists agree to provide one comprehensive eye assessment for infants younger than 1 year of age free of charge, regardless of the family's income status. In order to become an InfantSEE provider, the optometrist must be a member of AOA and complete an application form available online. Currently, 332 InfantSEE providers practice in Michigan with over 7,000 optometrists participating nationwide.<sup>1</sup> The main purpose of InfantSEE is early detection of potential problems that could lead to developmental issues and also to reassure parents of their child's visual development. Within the first year and a half of existence, nearly 100,000 InfantSEE assessments had been performed.<sup>2</sup>

Most ocular experts agree that the most critical visual development period is 6-12 months of age.<sup>1</sup> One in every ten children has a vision problem that goes undiagnosed.<sup>1</sup> Significant refractive error of myopia, hyperopia, or astigmatism affects one in thirty-three children and, if left uncorrected, can cause amblyopia, which is the leading cause of vision loss in children.<sup>1</sup> Strabismus, which is estimated to occur in 2-5% of the population, can also be an amblyogenic factor.<sup>5</sup> More severe ocular disease, such as retinopathy of premature and retinoblastoma, may exist in pediatric patients. Early detection is important for proper treatment, and the main purpose of InfantSEE is to detect these conditions at a young age so that the diagnosis will not be as detrimental to the patient's vision and overall health.

Infant eye examinations by optometrists or eye health specialists should be a standard aspect of baby wellness routine care. Although pediatricians may provide a basic screening in their offices, the tests often lack in thoroughness compared to the comprehensive eye assessment an optometrist can provide. A major role in optometry is to convey and stress the importance of early detection of childhood ocular issues. Vision disorders are the most common condition that hinders young students, and many of these conditions may be preventable if detected and treated at an early age. Critical development of the visual system occurs within the first year of life. For example, by age 3-4 months, the binocular neurons responsible for disparity and stereopsis sensitivity are developed.<sup>6</sup> An InfantSEE assessment can detect any abnormalities in the projected steps of visual development.

Several ocular disorders exist that can produce lifelong disabilities if not preventatively treated early in childhood. For example, amblyopia, a reduction in vision in an eye due to no apparent cause, is thought to be less problematic later in life if it is detected early in childhood and treated appropriately. Amblyopic people are three times more likely to experience vision impairment in their better seeing eye than non-amblyopes.<sup>7</sup> Also, adult amblyopes have job limitations due to acuity and binocularity requirements of certain professions.<sup>7</sup> Not only are their job choices narrowed, but their income is overall lower as well. A report by the U.S. Census Bureau showed that people with non-severe visual disabilities have salaries 12% lower than those without visual disabilities, while individuals with severe visual disabilities earn approximately half of what is earned by people without disabilities.<sup>8</sup>

Certain retinal diseases can also cause lifelong vision and quality of life impairment if not diagnosed early. Retinopathy of prematurity, which occurs secondary to premature birth, can cause tractional retinal detachments and ultimately lead to complete blindness if not diagnosed and managed in a timely manner.<sup>7</sup> Though rare, a retinoblastoma tumor may lead to complete loss of the eye and, in extreme cases, even death of the child if not diagnosed and managed promptly. All of these possible permanent disabilities can be minimized, and possibly even prevented, with early detection.

Early detection of developmental disorders can also be a purpose of the InfantSEE program. An InfantSEE assessment evaluates visual acuity, fixation, ocular motility, eye alignment, refractive status, and overall health of the eye. Visual acuity is generally

assessed with preferential looking methods. Children with autism spectrum disorder (ASD), for example, tend to have inverted preferential looking patterns, described as opposite reactions compared to the visual expectations of a neurotypical child.<sup>9</sup> Three main visual characteristics of ASD children are eye contact avoidance, gaze following aversion, and disinterest in facial expressions; and these subtle signs of ASD may be detected at ages younger than 12 months.<sup>9</sup> Despite ASD not being a conventional vision disorder, optometrists can record their findings appropriately and give the proper guidance and referral to the parents for possible early ASD intervention services, if warranted.

Over recent years, there have been ongoing arguments among the medical ophthalmologic community, optometric physicians, health advocates, and various organizations over the necessity and cost effectiveness of vision screenings prior to preschool age. InfantSEE serves as an answer to these debates. The current study attempts to investigate the awareness of the program's existence and popularity of referrals for comprehensive InfantSEE vision evaluations among the pediatric physician population in Michigan.

## METHODS

The overall goal of this research project was to analyze the knowledge of the InfantSEE program among Michigan pediatricians. During the research period, approximately 2200 pediatricians currently practiced in the state of Michigan and about 332 optometrists in

Michigan participated in the AOA's InfantSEE program.<sup>10,11</sup> Research showed pediatric clinics to be located in 349 cities in Michigan. The directory used listed the name of each pediatrician along with an address of the practice location in each city.<sup>11</sup> Subspecialties of the pediatricians were not typically noted.

To test the awareness of the InfantSEE program among Michigan pediatricians, one survey was sent to each practice address in each city. Commonly, multiple pediatricians practice together at a given location. In these instances, only one survey was sent to that particular location and addressed to a randomly selected health professional currently practicing at that location. An assumption was made that if more than one pediatrician was in a particular practice, their ideas are similar and their knowledge of programs, such as InfantSEE, was shared among each other. With these criteria, a total of 520 surveys, one to each group practice location, were planned to be mailed.

The collection of data remained unbiased in this study due to the fact that all known Michigan locations with pediatricians were targeted. Included with each study was an agreement of consent (Appendix A) describing the research along with a business reply envelope for the survey. The survey consisted of 4 questions regarding referral information and knowledge of InfantSEE (Appendix B). After successfully mailing the surveys in January 2011, a deadline of three weeks was created in order to receive the completed surveys prior to analysis. Based on recent statistical analysis of response rates to mailed surveys among physicians, a predicted return rate of approximately 54% was

expected.<sup>12</sup> The official InfantSEE website address was provided at the end of the survey to further promote awareness and educate the subjects completing the survey.

Analysis of the data collected consisted of percentages of pediatricians that were aware of the InfantSEE program and if they made referrals to optometrists who participated in this program or another professional. A comparison of the awareness of pediatricians' locations, by county, was analyzed in relation to proximity of the Michigan College of Optometry.

## RESULTS

According to the official InfantSEE website, 332 practicing optometrists are InfantSEE participants within all of Michigan's counties. Of the 520 total pediatrician addresses listed in the directory, 6 unidentified locations throughout Michigan were erroneously left out of the mailing, creating a final mailing of 514 surveys. There were 83 anonymous surveys returned, for an overall response rate of 16% from the selected pediatricians. The possibility exists that staff members of the pediatrician's office completed the survey, not the doctors themselves. The responses to each survey question were then analyzed collectively to gain more insight into the awareness of and referral to the InfantSEE program.

Thirty-three out of a total of 83 Michigan counties were represented by the responses (Table 1, Figure 1). Thirteen percent of the responding participant pediatricians had

previous awareness of AOA’s InfantSEE program. Of those aware of the program prior to this study, 36% would recommend InfantSEE to parents of an infant while 64% would not recommend the program. About 3% of those respondents without previous knowledge of InfantSEE would consider recommending the program to the parents of their infant patients.

County	Number	County	Number
Allegan	1	Manistee	1
Bay	2	Midland	1
Calhoun	1	Monroe	3
Clinton	1	Muskegon	2
Delta	1	Oakland	10
Genesee	1	Osceola	1
Grand Traverse	1	Otsego	1
Hillsdale	1	Ottawa	1
Houghton	1	Saginaw	2
Huron	1	Sanilac	1
Ingham	1	St. Clair	2
Iron	1	St. Joseph	1
Isabella	1	Van Buren	1
Kalamazoo	3	Washtenaw	6
Kent	9	Wayne	8
Livingston	2	Wexford	1
Macomb	7		
<b>TOTAL</b>			<b>77</b>
Did not include county information	4		
Answered with “multiple counties”	2		

**Table 1. Representation by County of InfantSEE Awareness Survey Among Michigan Pediatricians.** A total of 33 counties were represented. Oakland County had the highest response rate from pediatricians for the study.

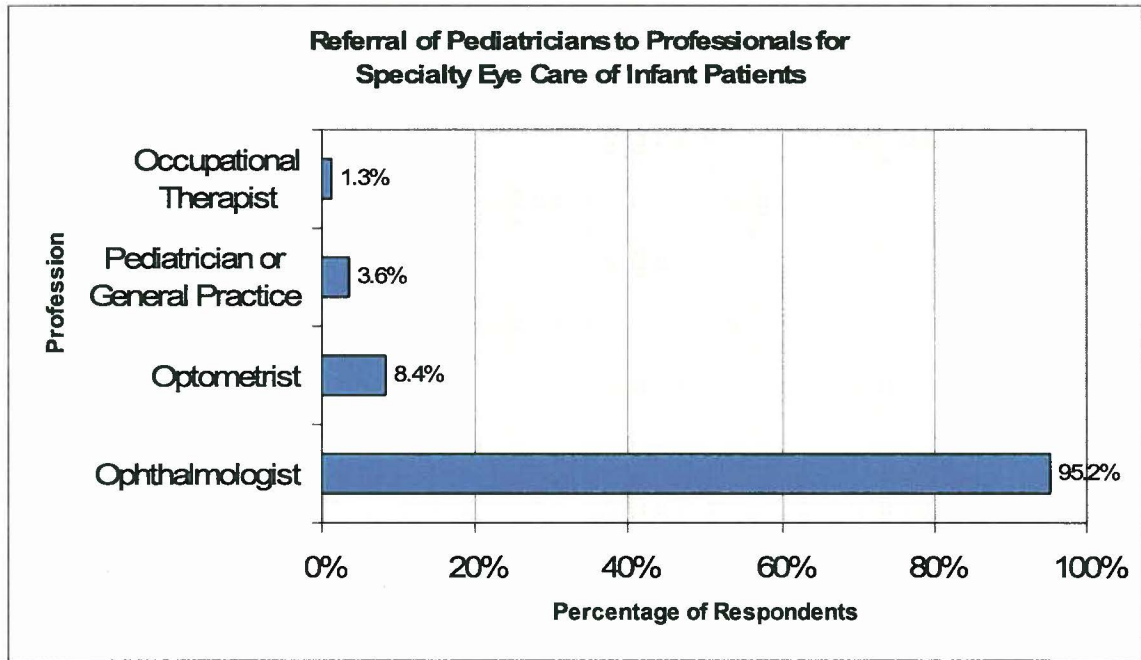


**Figure 1. Representation by Michigan County of Participating Pediatricians Aware of InfantSEE.** Highlighted areas within the map highlight the counties in which completed surveys were received from pediatricians previously aware of InfantSEE. Wayne County had three pediatricians that were aware whereas all other highlighted counties had one respondent.

If a pediatric doctor observed a need for specialty eye care for a patient, he or she was most likely to refer to an ophthalmologist (95.2%), followed by an optometrist (8.4%), pediatrician or general practice (3.6%), and occupational therapist (1.2%), respectively



(Figure 2). Some responses included multiple answers, providing justification of the percentage total.



**Figure 2. Referral of Responding Pediatricians to Professionals for Specialty Eye Care of Their Infant Patients.** The vast majority of pediatricians refer to an ophthalmologist, followed by an optometrist. Less than 5% of responding doctors make referrals to another pediatrician or occupational therapist for specialty eye care.

## DISCUSSION

All counties with pediatricians who responded that they were aware of the InfantSEE program were in the southern half of Michigan's Lower Peninsula, including Hillsdale, Kent, Midland, Muskegon, Oakland, Sanilac, Van Buren, and Wayne Counties (Figure

1). The Michigan College of Optometry at Ferris State University is located in Mecosta County. Students and faculty are knowledgeable and actively supportive of such programs as InfantSEE. No data demonstrated, however, support the prediction that Mecosta county pediatricians, when compared to other locations, were more aware or had a greater implementation of the InfantSEE program due to their proximity to the optometry school. On the other hand, of the responding pediatricians in Kent County, a county located near Mecosta County in western Michigan, 11.1% had previous knowledge of InfantSEE. According to the InfantSEE provider directory, there are approximately 330 optometrists throughout Michigan registered to participate in InfantSEE assessments. This combined data suggest that not only does the medical community need to become more aware of the InfantSEE program and its benefits, but participating optometrists need to contribute to this proper referral network.

One question posed in the survey served to analyze exactly to which professional a pediatrician would make a referral should concern of ocular health or development be an issue. In these instances, the majority (94.2%) of pediatricians would refer to an ophthalmologist for eye examination. Just over 8% of pediatricians would make the recommendation of an optometrist. Another specialty pediatrician or general practice and occupational therapy received less than 5% of the referrals from the responding pediatricians. One argument for the increased referral to ophthalmology over optometry is that ophthalmologists attended a medical school, just as pediatricians, prior to specialization into the eye care field, while optometrists attend a 4-year optometry

program prior to practice. A sense of respect and loyalty between ophthalmology and pediatrics likely influences this increased referral rate. Another reason the referral rate may lean towards ophthalmologists is that most infant ocular conditions detected by pediatricians are more likely going to be medical or surgical in nature. Optometrists, on the other hand, have the knowledge and ability to detect other ocular issues that may not be as easily noticed by a pediatrician, such as refractive error and binocular vision conditions.

Over recent years, there has been an ongoing debate over eye screenings and required eye examinations for children prior to attending school. Public health programs, such as InfantSEE, often add to this argument. Optometry has a more intensive background of binocular vision and places a strong emphasis on its development and enhancement when compared to the general medical field and ophthalmology. The effectiveness of screenings, even with photoscreening technology, has been argued to be just as effective at diagnosing visual disorders compared to mandatory comprehensive preschool eye examinations, which is a relatively new requirement in Kentucky. While there has been an increase in the number of children wearing corrective spectacles (14%) in Kentucky, an argument based on evidence-studies suggests that this percentage exceeds the prevalence of clinically significant refractive error in this age group.<sup>13</sup> A possible implication of this statistic may be that recent evidence-based studies previously underestimated the prevalence or need for corrective spectacles. Now that the examinations are mandatory, more clinically significant cases are being detected, accurately diagnosed, and treated. Because InfantSEE assesses infants 1 year of age and

less, an age much younger than preschool children, at no charge to the family, significant health concerns regarding the ocular and visual systems can be detected and treated earlier, thereby reducing the concern of costly mandatory preschool ocular examinations.

The risk of potentially damaging ocular conditions is relatively common finding. Statistics show that 1 in 10 children is at risk from an undiagnosed vision problem, 1 in 100 will have ocular disease, and 1 in 30 will be diagnosed as amblyopic.<sup>14</sup> Earlier assessments in life and appropriate management or treatment can potentially lead to a reduction of future visual problems. A study by the American Academy of Pediatric Ophthalmology and Strabismus (AAPOS) in 1999 showed that infant screenings reduced the likelihood by 17-times of having amblyopia by the age 8 years.<sup>15</sup>

Other programs have also recently been implemented in the country to increase pediatric eye care and stress the importance of early detection and treatment of ocular disorders. For example, “See by Three” in the southeastern United States, provides vision screening training and devices for pediatric and family physicians.<sup>16</sup> These types of public health programs should be working collaboratively with InfantSEE to increase awareness of childhood visual disorders and prevention.

## CONCLUSION

Based on results of this study, InfantSEE awareness among the pediatrician population in Michigan is low and referral rates for the program are even lower. In the near future, to further expand awareness of AOA’s InfantSEE program and to increase the referral rate

by pediatric physicians of their infant patients for comprehensive ocular assessments between the recommended age of 6-12 months, additional promotion and education of the program need to be implemented. Because the office staff of pediatricians is also actively involved in the education and care of the patient and family, it would be beneficial to inform these individuals, along with the physicians themselves, of the advantages of AOA's InfantSEE.

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APPENDIX A  
CONSENT AGREEMENT



#### Consent Agreement

The following is an optional survey mailed to pediatricians' offices in the state of Michigan. You indicate your voluntary agreement to participate by completing and returning this questionnaire. All results will be kept completely anonymous. Please do not include any identifying information on this survey or the return envelope. Your privacy will be protected to the maximum extent allowable by law. You may withdraw from participation in this survey at any time, and you may do so without penalty. The purpose of the research project is to assess the knowledge and raise awareness of the InfantSEE program among Michigan pediatricians. By participating in this survey, you will assist with educational research by optometry students and faculty at the Michigan College of Optometry at Ferris State University. This survey should take about two minutes to complete. It would be appreciated if they were sent back to us by **February 6, 2012**. If you have questions or concerns, please contact Karen Kehbein, O.D. at 231-591-2171 or karenkehbein@ferris.edu or the Ferris State University Human Subjects Research Chair, Dr. Connie Meinholdt, at connie\_meinholdt@ferris.edu.

Sincerely,

Karen Kehbein, O.D.

Pamela Reckow

Whitney White

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**APPENDIX B**  
**SURVEY SAMPLE**

### InfantSEE Awareness Among Michigan Pediatricians Survey

*Thank you for taking the time to complete this survey below. The information we gather will help us gain more knowledge of the awareness of the American Optometric Association's InfantSEE program among pediatricians in Michigan.*

- 1. Are you aware of the InfantSEE program that provides free comprehensive eye care examinations for all infants less than 1 year old?**

Please circle:                      Yes                                      No

- 2. Do you recommend an InfantSEE examination to parents of infant children?**

Please circle:                      Yes                                      No

- 3. If you were to notice a need for specialty eye care in an infant, to which profession would you most likely make a referral?**

Please circle all appropriate:    Optometrist  
    Ophthalmologist  
    Occupational therapist  
    Specialized pediatrician  
    Other \_\_\_\_\_

- 4. Please include the county in which you practice: \_\_\_\_\_**

If you would like more information about the AOA's InfantSEE program, please visit their official website at [www.infantsee.org](http://www.infantsee.org). Thank you again for your participation.

Please return this survey in the self-addressed stamped envelope by February 6, 2012 to:

Michigan College of Optometry  
Attn: Karen Kehbein MCO-231  
Ferris State University  
111 W. Knollview Dr  
Big Rapids, MI 49307-9963