



Published in final edited form as:

J AAPOS. 2006 October ; 10(5): 476–478.

Barriers to Follow-up Eye Care After Preschool Vision Screening in the Primary Care Setting: Findings From a Pilot Study

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Abstract

Timely follow-up after an abnormal preschool vision screening test is necessary for the prevention of amblyopia. A previous large community-based preschool vision screening program found that only approximately half of those children who were referred were documented to have received follow-up care.¹ No similar data are available regarding follow-up from the primary care setting. We present findings from a pilot study designed to identify barriers to follow-up care faced by families screened by pediatricians and family physicians. These data will be used in larger studies to measure rates of follow-up and to develop interventions to improve the detection of amblyopia and conditions associated with the development of amblyopia.

Methods

Design

We conducted telephone interviews with parents of preschool-aged (3–5 years) children who had an abnormal vision screening test in the primary care practice setting. The surveys were conducted 2 months after referral to allow sufficient time for the follow-up care to be completed. The survey instrument consisted of 18 questions related to whether follow-up occurred, treatment recommendations, barriers to follow-up, and subject demographics. The questions were open-ended but included prompts to help respondents consider the range of possible answers. An example of a question to elicit barriers to follow-up eye is presented in Table 1. Each survey took less than 10 minutes to complete. This study was approved by the University of Michigan and Duke University Institutional Review Boards.

Subject Selection

During the fall of 2004, we administered a survey to a randomly selected national cohort of primary care pediatricians and family physicians to describe preschool vision screening practices.^{2,3} We asked those primary care providers who reported that they routinely perform preschool vision screening and who were willing to allow us to contact them again ($n = 388$) to recruit subjects for this study. Overall, 88 physicians (62 of 258 pediatricians and 26 of 130 family physicians; participation rate 22.7%) agreed to enroll subjects.

Beginning in March 2005, participating physicians enrolled parents whose preschool-aged children had an abnormal vision screening test over the subsequent four-month period. To

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Supported by the National Eye Institute (K23-EY14023).

minimize the impact of study enrollment on receipt of follow-up care, parents were told only that the survey would be about how to improve child healthcare. The participating physicians received a small cash incentive and parents received a gift card to a local store at the completion of their participation.

Data Analysis

Initially, general frequency responses to all survey items were determined. After this, the Fisher's exact test of independence was used to test for association among selected categorical variables. $p < 0.05$ was considered significant. All analysis was performed with Stata 8.2 software (StataCorp, LP, College Station, TX).

Results

Sample

Parents of 62 preschool-aged children who had an abnormal vision screening test were enrolled by 19 primary care providers (17 pediatricians, 2 family physicians). Of these, 1 was ineligible for not speaking English and 3 moved or had their telephones disconnected. The survey response rate was 78% (45 completed of 58 eligible).⁴ Table 2 lists the demographic characteristics of the sample.

Follow-up Eye Care

Most, but not all parents ($n = 41$; 91.1%) knew that their child had an abnormal vision screening result, and among these families, most ($n = 31$; 75.6%) children received follow-up eye care. More children were evaluated by an ophthalmologist ($n = 20$; 64.5%) than an optometrist ($n = 7$; 22.6%), and a few parents were unsure what type of eye care specialist evaluated their child ($n = 4$; 12.9%).

Factors Associated With Follow-up Care

Table 2 lists the proportion of children who had follow-up care by each demographic characteristic. Those with family incomes greater than 200% of the federal poverty level⁵ and children who were non-Hispanic white were significantly more likely to receive follow-up. Before the screening, half of the parents (46.7%, $n = 21$) suspected that their children might have a problem with their vision. However, there was no statistically significant difference in the likelihood of receiving follow-up between those who suspected (81.0%) and those who did not suspect (52.2%) vision problems ($p = 0.12$).

Reasons for Not Receiving Follow-Up Eye Care

Parents could report multiple reasons for why their children did not receive follow-up care. Among those who knew about the abnormal screen but did not receive follow-up care ($n = 10$), only one parent reported that they had scheduled and were awaiting an appointment for the follow-up care. Lack of insurance coverage for an eye examination was reported by four parents, 2 with private and 2 with public insurance coverage. Among these, 1 parent also reported that her child had "lazy eye" but the parent did not "notice a big problem" so the family's plan was to wait "until it gets worse and absolutely necessary."

Three parents reported that they did not know where to go for an eye examination or that there was no convenient place or time to go for the evaluation. One parent believed that the school did not require the examination before kindergarten, and another parent decided to wait until the child would be screened again, in kindergarten. One parent decided not to follow-up because she did not believe her child had a vision problem, and another parent reported that their child

had a normal evaluation by an eye care specialist prior to the abnormal vision screen by the primary care physician.

Outcomes of Follow-up Care

Among those children who received follow-up eye care, most (n = 20, 64.5%) reported a vision abnormality, including amblyopia (n = 8), isolated refractive error (n = 9), isolated strabismus (n = 1), and strabismus and refractive error without amblyopia (n = 1). One parent was unsure of the diagnosis.

No specific treatment was recommended for 2 of the children with refractive error and 1 with strabismus. Corrective lenses were prescribed for 17 children and patching for 4. Vision therapy was not recommended for any of the children. Only one child did not receive the recommended therapy, because the family decided to wait until the beginning of the school year. This child had a refractive error and had been prescribed corrective lenses.

Discussion

In this pilot study, most preschool-aged children received follow-up eye care within 2 months of screening. Barriers included lack of insurance coverage, inconvenience of follow-up, and lack of knowledge about the benefits of early intervention. Minority children and those with low family incomes also were less likely to have follow-up.

Limitations

The main limitation is the small sample size, which limits generalizability. We were surprised that most of the physicians who agreed to participate did not enroll subjects and that relatively few subjects were enrolled by those physicians who did so. Our study design did not allow us to determine whether or how the practicing physicians screened children or the number of children who had an abnormal screening result but were not enrolled in the study. Physicians who enrolled children may have had better systems for screening and referral than those who did not enroll children, which would lead to an overestimate of the true rate of follow-up.

Next Steps

This study provides important insight into why some children do not receive follow-up care after vision screening. We are developing interventions to overcome barriers identified in this study. We are also working with large practice-based research networks to more carefully measure rates of vision screening, referral, follow-up, and diagnosis and to assess interventions to improve the timeliness of amblyopia treatment and prevention.

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Table 1

Sample survey question related to barriers to screening.

There are many reasons why children don't see an eye specialist after vision screening. Please tell me whether the following were related to why [child's name] didn't see an eye specialist. Was it because...:

You didn't think [child's name] had a problem seeing?
The doctor didn't tell you which specialist to see?
There were no eye specialists close to where you live?
Your insurance wouldn't cover it?
You couldn't afford the cost of an appointment with an eye specialist?
There were no convenient appointments available with an eye specialist?
You'd have to miss work to take [child's name] to the specialist?
You didn't have transportation to get to an appointment?
Another reason?

Table 2

Demographic characteristics and the likelihood of receiving follow-up eye care.

Characteristic	Characteristic % (n)	Receipt of follow-up
Gender		<i>p</i> = 0.53
Male	48.9% (22)	63.6%
Female	51.1% (23)	73.9%
Race/ethnicity		<i>p</i> = 0.01
Non-Hispanic white	62.2% (17)	76.8%
Hispanic or non-white	37.8% (28)	52.9%
Family Income		<i>p</i> = 0.02
≤200% of the federal poverty level	51.1% (23)	52.2%
>200% of the federal poverty level	48.9% (22)	86.4%
Health Insurance Status		<i>p</i> = 0.17
Public	66.7% (30)	53.3%
Private	33.3% (15)	76.7%
Parent Education		<i>p</i> = 0.75
No college	42.2% (19)	73.7%
Any college	57.8% (26)	65.5%