

# Vision and hearing screening in school settings: Reducing barriers to children's achievement

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## THE ALARM BELLS

Periodic vision and hearing screening is recognized as an integral part of preventive paediatric health care (1). Adverse effects on educational and social development are obvious consequences of poor visual and hearing acuity. The Canadian Association of Optometrists (2) states that at least one in six children has a vision problem that makes it difficult to learn and read. Although systematic reviews of the literature (3) revealed that no robust trials have been published to enable the benefits of school vision screening to be measured, individual randomized, longitudinal studies (4-6) have reported that early screening is associated with a decrease in the prevalence of amblyopia and improved acuity by up to 70%. The American Academy of Ophthalmology and the American Academy of Pediatrics (4) recommend visual assessment from birth and at all routine health supervisory visits. The Canadian Paediatric Society (7) recommends visual acuity testing with an age-appropriate tool after three years of age whenever routine health examinations are conducted or complaints occur.

Similarly, hearing loss in infants and children has been linked with lifelong deficits in speech and language acquisition, poor academic performance, personal-social maladjustments and emotional difficulties. The prevalence of hearing loss among newborns and infants is estimated to be 1.5 to six per 1000 live births (8). In Ontario, since the introduction of the Universal Newborn Hearing Screening Program in 2002, most children born with congenital hearing loss are identified during the newborn period. However, some congenital hearing loss may not become evident until later in childhood. Hearing loss can also be acquired beyond the newborn period for various reasons including infectious diseases (such as meningitis and otitis media), trauma, damaging noise levels and ototoxic drugs. Moreover, the program misses children who are new immigrants to Canada. The need for hearing screening in children may be even higher in other parts of Canada, where newborn hearing screening remains nonexistent. The American Academy of Pediatrics (9) recommends periodic objective hearing screening for newborns and at various ages between four and 18 years.

Despite recommendations from professional organizations, currently, there is no known provincial routine vision and hearing screening program for school-age children in Canada. In Toronto, Ontario (the largest city in Canada), such services are not accessible for many of the children, especially those from communities with the highest needs. Furthermore, once medical issues are identified as a result of the screening, there are often multiple barriers to children being able to receive follow-up attention. These barriers include a lack of medical insurance coverage, lack of accessible transportation,

inability for parents to take time off from work, and lack of family financial resources to follow interventions prescribed by health care providers (eg, filling prescriptions for glasses or hearing aids).

## THE GIFT OF SIGHT AND SOUND PROGRAM

In view of these issues, the Toronto Foundation for Student Success (TFSS) – a registered nonprofit organization created to ensure that all students fully benefit from their educational experience – launched a program in 2007 called The Gift of Sight and Sound. The program was started in response to concerns expressed by principals, teachers and parents from the Toronto District School Board (TDSB). With financial support from Sprott Asset Management LP (Toronto) and in-kind support from Walmart Canada and the Canadian Hearing Society, the Gift of Sight and Sound Program screened nearly 10,000 students for vision and hearing problems in the early grades within the Toronto Model Schools for Inner Cities Program (areas selected with the highest proportions of students living in poverty). The Gift of Sight and Sound Program brings health care professionals from the Canadian Hearing Society, as well as doctors from other countries who are seeking accreditation in Canada, into schools to assess the hearing and vision needs of children. Furthermore, children also receive free hearing assistance devices, Walmart Canada optometrist services and glasses free of charge, and additional referrals when necessary.

Because the aim of this project was to provide needed services to vulnerable children rather than to scientifically establish prevalence rates of problems, screening, referral and follow-up were not initially performed in a systematic and formal way. Therefore, the TFSS approached the Division of Social Paediatrics, Department of Paediatrics and the Community Health Systems Resource Group at The Hospital for Sick Children (Toronto, Ontario), the Department of Pediatrics at St Michael's Health Centre (Toronto), and Toronto Public Health to determine what the data could tell us about the real need; and to collaborate to develop a sustainable model that will address these serious needs of vulnerable students in the future.

## THE REAL NEED

In six of the selected schools, rather than screening children selected by teachers, the program screened every student during 2008/2009. This 'universal screening' subsample yielded clearer estimates of the extent of vision and hearing problems. Among all students screened, approximately one in four were identified with potential vision problems, and one in seven with potential hearing problems. A significant proportion of those referred for further medical assessment were lost to follow-up, raising concerns

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regarding parents' compliance with the recommendations. Barriers identified through personal communication with families, in addition to those already mentioned, included a lack of confidence in navigating the health care system due to cultural and language barriers, especially in new immigrants. For example, one family refused to go to the follow-up appointment at the Canadian Hearing Society during their first year in Canada. On multiple occasions the school administrators, community support worker and settlement worker used an interpreter to discuss the family's concerns. Initially, the family did not believe that further intervention was needed because they were afraid to access services where they might be charged for the service or device provided. They were also concerned about additional appointments leading to additional costs and transportation issues. The following year, with the help of everyone involved, the child, at 12 years of age, was diagnosed with hearing loss and received a free hearing device. Unfortunately, many families, for various reasons, are not open to such conversations or assistance following the screenings.

In light of the high rates of loss to follow-up, in 2009/2010, the Gift of Sight and Sound Program began to offer a school-based optometry clinic for all children referred to an optometrist, as well as a school-based dispensing clinic for dispensing glasses that were prescribed. With this new process, the program was able to track outcomes for more than 90% of the children referred for further vision assessment. Preliminary data showed that four in every five students who attended the optometry clinics needed and received glasses.

However, no similar follow-up process is available in the program for students referred for further audiometric assessment because of challenges in organizing school-based otolaryngology clinics staffed with physicians licensed to practice in Ontario. Nevertheless, experience from the six schools that received 'universal screening' in 2008/2009 showed that, of the 29 students who did receive audiometric assessment, six had significant hearing loss and one required medical attention to have tubes inserted.

### ONGOING EFFORTS AND FUTURE DIRECTIONS

To date, the experiences from the Gift of Sight and Sound Program have shown that a significant number of our most vulnerable students may have undetected vision and hearing problems that require further medical attention, in addition to their other barriers to succeeding in school. These problems must be overcome to help children become as successful as possible.

The TDSB Student Vision and Hearing Screening Working Group was initially formed in 2009. With interest from the field, the group soon evolved into the Model Schools Paediatric Health Initiative Working Group, which involves multiple partner organizations (eg, TFSS, TDSB, Toronto Model Schools for Inner Cities Program, Toronto Public Health, and the Ontario College of Family Physicians), general paediatricians, specialists, researchers and social paediatrics experts. The working group proposed that health care services, including follow-up for routine hearing and vision screening, should be provided directly in the schools to meet students' needs and eliminate several access barriers faced by families in priority communities. Constructive discussion of the

findings of The Gift of Sight and Sound Program and solutions to issues identified are currently underway with local and provincial leaders in Public Health. Collaboration among the local and provincial governments and the private sector may be necessary to sustain such a program.

Additional studies tracking the prevalence rates of vision and hearing problems, screening, referral and follow-up need to be completed in a more systematic and formal way. These studies will give clearer estimates of the true prevalence of hearing and vision problems and, more importantly, accurate follow-up rates to assure that children are accessing necessary medical treatments. Also, focus groups of families with children referred for further vision and hearing assessment will help identify barriers to follow-up so that appropriate recommendations can be made regarding how to overcome these barriers. Finally, other models for providing school-based clinics, including a 'full-service schools' agenda, also need to be piloted and researched to determine the best school-based health care model for meeting the needs of children and improving their pathways to success.

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**ORGANIZATIONS AND PROGRAMS INVOLVED:** Canadian Hearing Society; Department of Pediatrics, St Michael's Health Centre; Model Schools Paediatric Health Initiative Working Group (Formerly TDSB Student Vision and Hearing Screening Working Group); Ontario College of Family Physicians; Division of Social Paediatrics, Department of Paediatrics, The Hospital for Sick Children; Spratt Asset Management; The Community Health Systems Resource Group, The Hospital for Sick Children; The Gift of Sight and Sound Program; TDSB; TFSS; TDSB Model Schools for Inner Cities Program; Toronto Public Health; and Walmart Canada.

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