

BACKGROUND

360 million people globally with disabling hearing loss

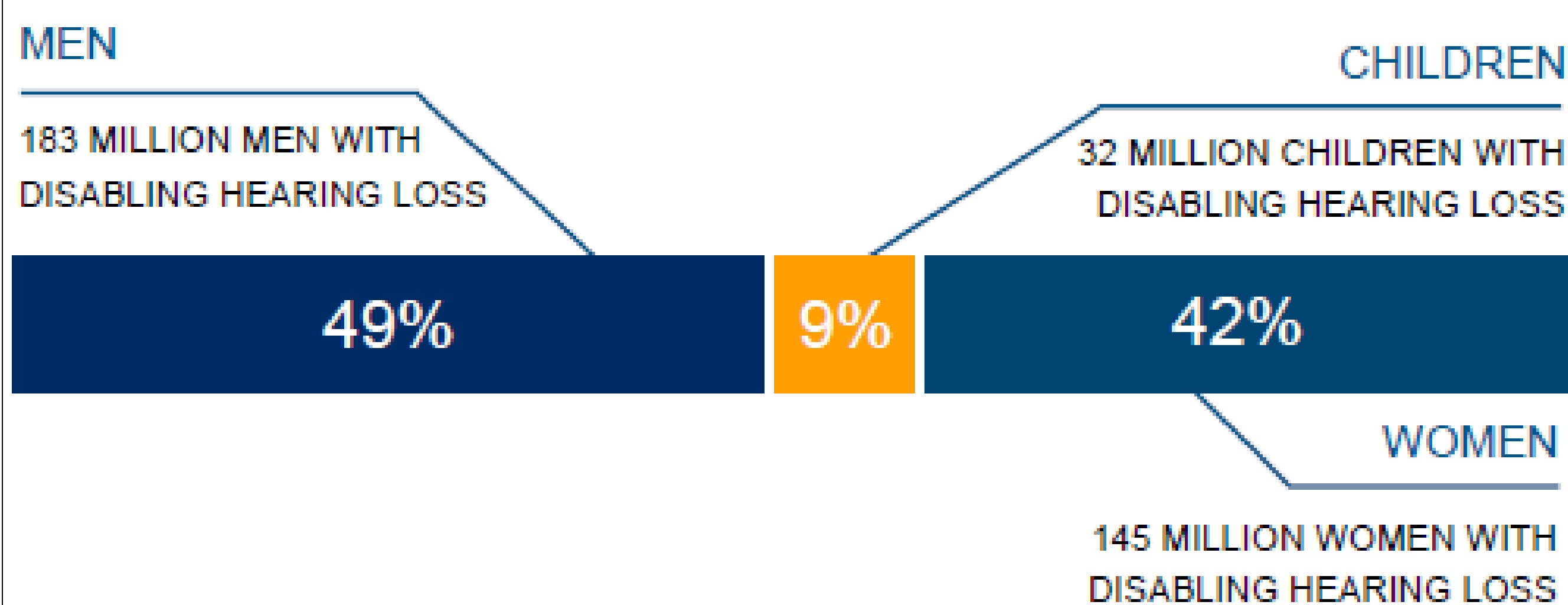


Figure 1: Prevalence of global hearing loss¹

Hearing loss can cause:

- Profound negative impact on neurocognitive development
- Reduced spoken language acquisition
- Social isolation
- Mental health disorders
- Poor academic performance
- Unemployment¹⁻⁵

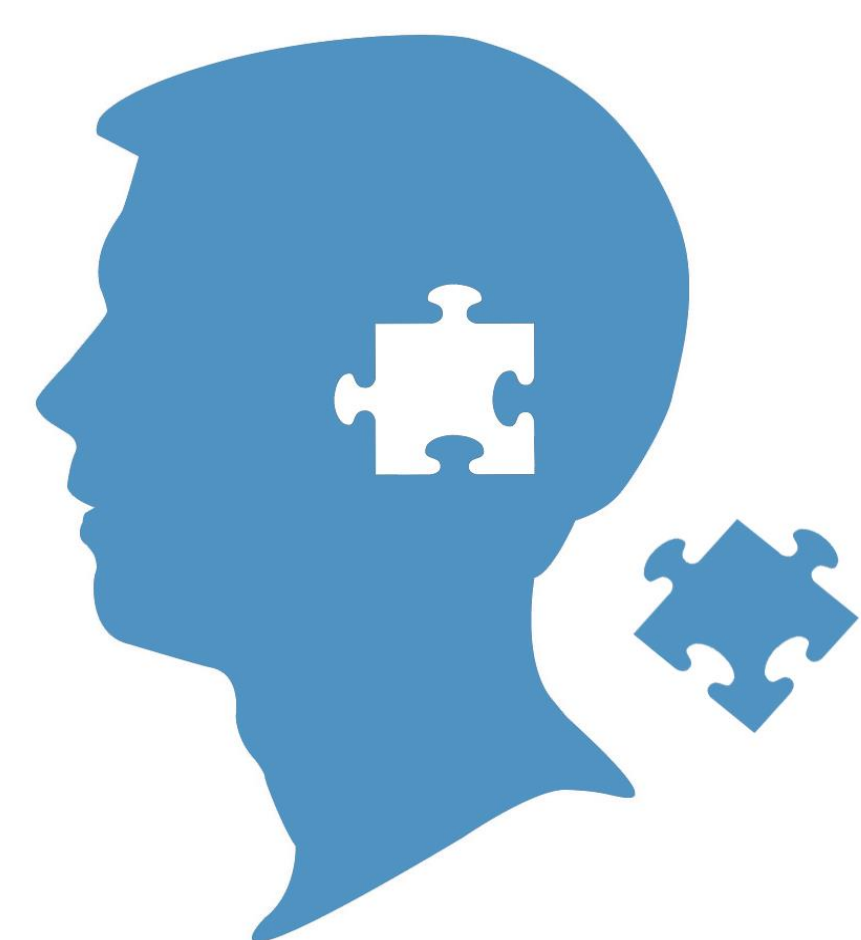


Figure 2: Negative outcomes of hearing loss

Early identification and treatment can prevent poor outcomes.

However, in Canada, hearing screening is limited to newborns, which will not detect children with delayed-onset, acquired, or progressive hearing loss.

The solution: medical students screen children for hearing loss using a tablet audiometry system.

- 93.4% sensitivity
- 94.5% specificity
- Negative predictive value: 98.1%⁶

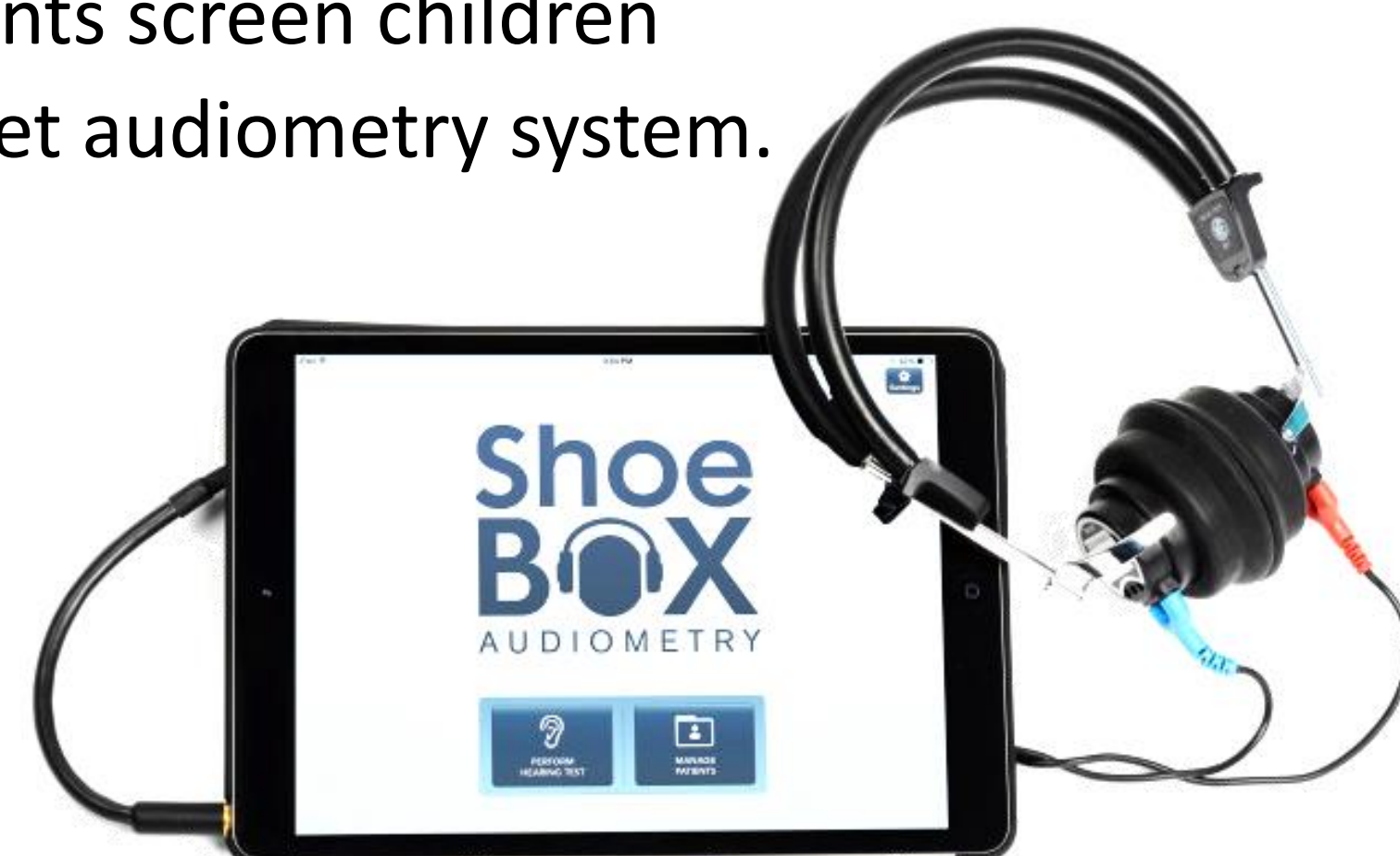


Figure 3: Shoebox audiometry⁷

OBJECTIVES

Determine the incidence of pediatric hearing impairment in Ottawa.

Validate the iHear program as an effective and inexpensive method to detect hearing impairment.

METHODS

The iHear program consists of:

- 1) Screen children in schools
- 2) Children with a positive screen are retested by an audiologist
- 3) If hearing loss is detected, they are referred for medical follow-up with a pediatric otolaryngologist.

Audiometric and demographic data is collected with each screening.

Figure 4: iHear team of medical students in Saskatoon, Ottawa, Montreal and Halifax.



RESULTS – iHEAR OTTAWA

iHear Ottawa: almost 700 children screened with 10 referred to ENT

- Year 1: 251 children tested with 13 positive screens. Of those, 5 have been referred to ENT.
- Year 2: 215 children tested with 26 positive screens. Of those, 5 have been referred to ENT.
- Year 3: 231 children screened so far with 34 positive screens.

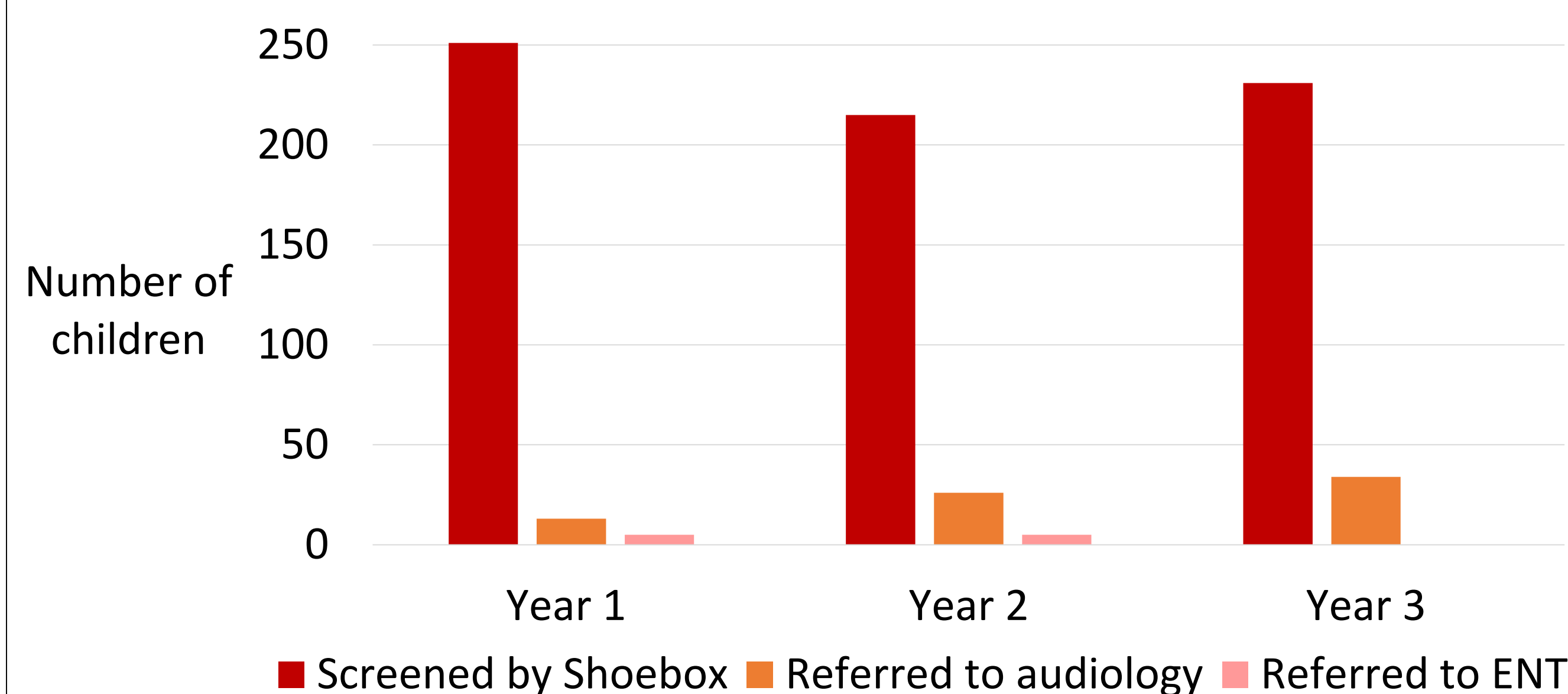


Figure 5: Number of children screened, referred to audiology and ENT in Ottawa.

RESULTS – iHEAR CANADA

iHear Montreal: 70 children screened with 10 referred to audiology.

iHear Saskatoon: 20 children screened with repeated testing needed.

iHear Dalhousie: have not begun school visits yet.

CONCLUSION

The iHear program can be run at any medical school and benefits the following groups:

- Children with undiagnosed hearing loss
- Medical students
- The health care system
- Remote communities
- Pediatric research



Figure 6: Child in Iqaluit, Nunavut undergoing hearing testing during a one-week visit by a team of medical staff from CHEO Department of Otolaryngology.

Program challenges include the initial cost of equipment and applications to ethics and school boards required. However, Shoebox costs a fraction of that of standard audiometry, and once the program is established, there are no ongoing costs.

It is anticipated that iHear will expand to all Canadian medical schools within the next 5 years in order to provide access to hearing testing and facilitate timely intervention for children in need.

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