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Use of Large Data Sets in Evaluating Program Outcome in Pediatric Hearing Loss

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Introduction

Permanent hearing loss (PHL) in childhood can profoundly impact development, with high economic costs to children and society. Hearing technology and service delivery advances, including universal newborn hearing screening implemented in Ontario in 2002 as part of the Infant Hearing Program (IHP), aim to improve outcomes of children with PHL.

Objectives and Approach

We examined the impact of IHP screening on age of identification of PHL, and compared healthcare utilization in children with and without PHL, in the Census Metropolitan Area of Ottawa. Children with PHL, identified from a database at the Children's Hospital of Eastern Ontario, were linked to health administrative data housed at the Institute for Clinical Evaluative Sciences. Five residents of Ottawa acted as non-PHL controls for each PHL case. A regression discontinuity design (RDD) was used to investigate differences in age of identification pre- and post-IHP implementation. Poisson regression will compare healthcare utilization among children with and without PHL.

Results

591 children with PHL, and 2,955 children without PHL (controls), were included in the study.. For children with PHL, age at diagnosis of PHL was associated with IHP implementation, with age declining more rapidly in the post-IHP period compared to the pre-IHP period (β(IHP*Time) -2.09, P=0.004). Gender, rurality and neighbourhood income did not confound the association between age at diagnosis over time and IHP implementation. Preliminary analyses demonstrated the number of outpatient, inpatient, and emergency department visits were significantly higher for children with PHL compared to children without PHL over two years post-diagnosis (P

Conclusion/Implications

IHP implementation resulted in earlier identificationof PHL in children, allowing earlier access to audiologic and habilitative services. However, children with PHL used the health system more often and in different ways from those without PHL. These results can support improvements in service delivery for children with PHL.

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