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Comparing two asthma diagnoses using a prospective cohort of young children

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Introduction

Asthma is the most common chronic illness of childhood and places a large burden on the health care system. Asthma prevalence is commonly measured in national surveys by questionnaire. In Ontario, the Ontario Asthma Surveillance Information System (OASIS) developed a validated health claims diagnosis algorithm using health administrative data.

Objectives and Approach

The primary objective of this study was to measure the agreement between the health claims diagnosis algorithm (OASIS diagnosis algorithm) and questionnaire diagnosis (TARGet Kids! diagnosis) of asthma in children younger than 6 years of age. Secondary objectives were to identify concordant and discordant pairs, and to identify factors associated with disagreement.

A comparison study including 3368 children participating in the TARGet Kids! practice based research network between 2008 and 2013 in Toronto, Canada. OASIS diagnosis algorithm and TARGet Kids! diagnosis asthma cases were compared using kappa statistic, sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV).

Results

Prevalence of asthma was estimated to be 15% by the OASIS diagnosis algorithm and 7% by TARGet Kids! diagnosis. The Kappa statistic was 0.47 (95% CI: 0.42 – 0.51), sensitivity 82%, specificity 90%, PPV 38% and NPV 98% for OASIS diagnosis algorithm using TARGet Kids! diagnosis as the criterion standard. There were 3011 concordant pairs (2820 true negatives and 191 true positives) and 357 discordant pairs (315 false positives and 42 false negatives). Statistically significant factors associated with false positives included: male sex, higher zBMI and history of allergy. No statistically significant factors associated with false negatives were identified.

Conclusion/Implications

OASIS diagnosis algorithm had high sensitivity, specificity, and NPV but low PPV relative to TARGet Kids! diagnosis of asthma. Although, the OASIS diagnosis may identify more asthma cases in young children, its diagnostic properties are similar in older children and it may be a useful tool for longitudinal asthma surveillance.

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