

National Diabetes Surveillance: The Challenge of Differentiating Type 1 and Type 2 Diabetes

PAM J TALBOT, JENNIFER I PAYNE, MARGARET J DUNBAR, ZLATKO KARLOVIC
Diabetes Care Program of Nova Scotia, Halifax, NS*

PURPOSE: The current Canadian Chronic Disease Surveillance System (CCDSS) methodology for estimating diabetes cannot distinguish between type 1 and type 2 diabetes. To develop classification algorithms for diabetes type, the Diabetes Care Program of Nova Scotia (DCPNS) linked its population-based Registry with the CCDSS.

METHODS: Individual-level linkage of the DCPNS Registry with the CCDSS yielded a cohort of N=123,815 diabetes cases (living or now deceased) as of March 2010 (CCDSS: N=112,264; DCPNS Registry: N=77,286).

RESULTS: N=65,735 cases were common to both sources. Overall, 4% of cases had type 1; however, this % varied by age at diagnosis (< 10 years: 99%; ≥40 years: < 1%). A 12-rule algorithm based on CCDSS data classified type 1 cases with sensitivity = 65.8%, specificity = 99.6%, positive and negative predictive value = 87.2% and 98.6%, and Kappa = 0.74. A 7-rule algorithm based on clinical data (DCPNS Registry), including diabetes treatment, classified type 1 cases with sensitivity = 93.7%, specificity = 99.7%, positive and negative predictive value = 92.1% and 99.6%, and Kappa = 0.93.

CONCLUSIONS: Both algorithms performed well for high-level surveillance; however, variability in the distribution of diabetes type by age highlights the need for population-based registries when true counts of cases by type are critical for policy/resource planning (e.g., funding pump programs) or the prediction of complication development/progression. The CCDSS Algorithm may be improved by expanded use of current administrative data (e.g., comorbidity and health service utilisation before diagnosis) or by using pharmaceutical data within the context of diagnosis.

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