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The Canadian Urban Environmental Health Research Consortium (CANUE): a national data linkage initiative

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Introduction

Health and environmental exposure databases are generally siloed in different research institutions across Canada and integrating them for environmental health research is a considerable challenge. Facilitating the linkage of these databases is essential to provide new analytical opportunities and help create efficiencies for research on environmental determinants of health.

Objectives and Approach

CANUE is a Canadian Institutes of Health Research-funded platform for supporting environmental health research. CANUE collates and generates standardized environmental data on air and noise pollution, land use, green/natural spaces, climate change/extreme weather, and socioeconomic conditions for every postal code in Canada and makes them freely available to researchers. Systems and procedures are being developed by CANUE to facilitate the sharing and integration of these extensive geospatial exposures with existing observational cohorts and administrative health databases across Canada. This linkage will enable investigators to test hypotheses on the interdependent associations of environmental features with health impacts or benefits.

Results

CANUE now hosts a dozen national exposure databases and related metadata files, and actively adds new regional and national datasets. Streamlined processes for data sharing have been developed to facilitate easy merging with health data. Substantial consultation has also taken place with a wide range of health data holders to establish appropriate processes for receiving and managing environmental data, with particular focus on addressing challenges presented by differing ethics, consent and confidentiality requirements. These processes help accelerate the research process by making analysis-ready data available to investigators, create opportunities to study how multiple environmental factors are linked to a wide range of

health outcomes, and generally increase the use of health and population databases for environmental health research.

Conclusion/Implications

The CANUE collaborative model illustrates how the production of policy-relevant evidence can be advanced through better coordination among environmental health researchers and linkage with health databases. CANUE is improving the scientific potential and cost-effectiveness of research in environmental epidemiology through streamlining linkage and access to standardized exposure datasets.

