

Evaluation of Data Quality for Population Health Surveillance

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Background: Health research, regulation and education depend on measures of health care process and outcomes to evaluate benefits, adverse events, costs, and interventions. A sub-study of COMPETE, a large study evaluating electronic medical records, evaluates data availability and quality for medication surveillance in individuals and populations.

Methods: The key components for high quality medication surveillance were determined. These include a) longitudinal individual health record, b) ability to link record across providers, c) standardization of key data domains such as diagnoses, medications and diagnostic tests, d) data fields include context (e.g., past vs. present, ruled out vs. ruled in), e) ability to aggregate across patients, providers, and regions, f) solid anonymization procedures. Two traditional sources (national pharmacy prescription database and provincial drug database) and one emerging data source (electronic medical record [EMR]) were compared for potential data availability and data quality.

Results: Both large prescription database (LPD) and EMR data scored very highly for availability (fields are present) and quality (fields contain usable data) of individual prescription details. LPD sources supply a much broader coverage of prescription utilization at a population level. Only EMR has the ability to track medication utilization over time; provide context in terms of reason for prescribing, non-pharmacologic and OTC therapies or previous medications tried; and document outcomes including adverse events and reasons for stopping. Furthermore, only EMR documents diagnoses and laboratory values. Quality of data varies by provider.

Conclusions: Health surveillance as illustrated by medication surveillance, is best achieved by EMRs. The main limitation is lack of EMR penetration in Canadian health care.