CLINICAL OUTCOMES AND HEALTH SYSTEM COSTS ASSOCIATED WITH LEUKEMIA AND LYMPHOMA IN ONTARIO: A POPULATION-BASED OBSERVATIONAL STUDY

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Knowledge gap

- Approximately 17,700 Canadian diagnosed with leukemia/lymphoma in 2019 (43% in Ontario)
- Survival for blood cancers has increased more than any other cancer over the past 20-year period
- Lack of information on current standard of care for leukemia or lymphoma (L/L) in Ontario
- Recent economic evaluation (CAR T-cell therapy) used SCHOLAR-1 trial and ZUMA-1 trial
- Evidence Building Program for cancer drugs focusses on the use of real-world data
- Opportunity to utilize the extensive inventory of ICES data repository

Objectives

1. Estimate the incidence of leukemia and the incidence of lymphoma in Ontario;
2. Describe the patterns of care and clinical outcomes of patients with leukemia and lymphoma, stratified by patient characteristics;
3. Estimate the overall health system costs of leukemia and lymphoma care from a health care payer's perspective;
4. Estimate the attributable all-cause mortality and net health system costs of leukemia and lymphoma care.

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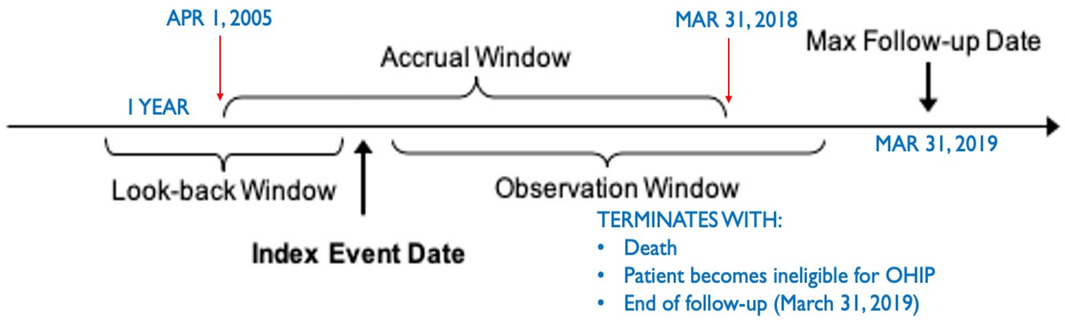
Methodology

STUDY POPULATION

- Cases: Individuals diagnosed with L/L between April 1, 2005 and March 31, 2018
- Primary cancer
- Identified from Ontario Cancer Registry using ICD-O codes
- Exclusions apply
- Controls: Randomly selected from the Registered Persons Database

STUDY TIMEFRAME DEFINITIONS



PROPOSED ANALYSES

OBJECTIVE 1: Estimate the incidence of leukemia and the incidence of lymphoma in Ontario

- Incidence rate calculations
  - Numerator: # new cases of L/L in the specified time period
  - Denominator: # of OHIP eligible individuals in Ontario during that period
  - Standardized by age and sex

OBJECTIVE 2: Describe the patterns of care and clinical outcomes of patients with L/L, stratified by patient characteristics

- Kaplan-Meier curves to describe time-to-event outcomes (all-cause mortality).
- Survival analysis:
  - Cohort method – For cases with complete follow-up data after cancer diagnosis
  - Period method – For cases in which long-term follow-up data is yet to be established.
  - Combination facilitates better estimates of time trends using data from cancer registries (Brenner et al., 2003)

OBJECTIVE 3: Estimate the overall health care costs associated with L/L care from a health care payer's perspective

Patient-Level Case Costing Methodology (Wodchis et al., 2013) - @getcost macro (ICES)

- Evaluation of costs from three viewpoints:
  - Annual aggregate health system costs
  - Phase-specific costs (4 phases)
  - Lifetime cost-per-patient

OBJECTIVE 4: Estimate the attributable all-cause mortality and net health system costs of L/L care

- Methods to adjust for the systematic differences between cases and controls and confounding:
- Propensity-score methods (1:1 matching)
- Matching variables – demographic and clinical variables (@getacg macro)
- Inverse probability of treatment weighting methods
- Residual confounding