

Conclusions: Non-surgical treatment among T4 oropharyngeal cases has been increasing over time, which may increase follow-up care needs and long-term morbidity burden. Larger hospitals are more likely to perform surgery, probably corresponding to the availability of head/neck surgeons at these institutions. Patient characteristics were not associated with treatment approach indicating that hospital factors are more predictive of treatment.

P10. Disparities in Cancer Survival between Indigenous and Non-Indigenous Adults in Canada: Results from a Linkage of the Canadian Long Form Census to the Canadian Cancer Registry

Diana Withrow MSc, Loraine D. Marrett PhD, Michael Tjepkema, Diane Nishri, Jason Pole PhD. University of Toronto

Purpose: A lack of ethnic identifiers in Canadian cancer registries limits understanding of cancer burden in ethnic subgroups. We use a census-registry linkage to compare cancer survival of First Nations, Métis and non-Indigenous persons in Canada and to consider how differences in income and rurality impact disparities.

Methods: The cohort is composed of 1991 Canadian Long Form Census respondents, a 15% sample of the Canadian population on Census Day. Cohort members have been followed up for cancers and deaths from 1992 to 2009. We measured site-specific age-standardized 5-year relative survival using age-, sex-, ethnicity- and calendar time-specific life tables. Flexible parametric modeling was used to estimate the excess mortality rate ratio (EMRR) for First Nations (FN) and Métis compared to their non-Indigenous peers.

Results: Cancer survival was significantly poorer for FN than their non-Indigenous peers for 9 of the 15 cancers examined and EMRRs were ≥ 1 (higher excess mortality among FN) for all 15 sites. EMRRs ranged from 1.00 (95% CI: 0.68-1.47) for multiple myeloma to 2.39 (95% CI 1.63-3.50) for prostate cancer. After taking rurality and income into account, the association between FN ancestry and survival was significant for 7 of the initial 9 cancers. Among Métis, there was a consistent trend toward poorer survival for all 4 cancer sites examined, with the greatest disparity in prostate cancer. **Conclusions:** Indigenous people in Canada experience poorer survival than their non-Indigenous peers. These disparities can only be explained in part by difference in income and rurality.

Cardiovascular Diseases and Stroke

P11. Cardiovascular Disease Treatment Outcomes in Patients with Diabetes: Prediction Models Using Artificial Neural Networks and Logistic Regression

Alexander V. Sergeev MD, PhD, MPH, Gary R. Weckman PhD. Ohio University

Purpose: Diabetes mellitus (DM) is not only a major risk factor for coronary heart disease (CHD); it also worsens CHD prognosis. The study's purpose was to investigate comparative effectiveness of two major CHD treatment procedures - coronary artery bypass grafting (CABG) and percutaneous coronary intervention (PCI) - in a population of CHD patients with DM (CHD-DM), using an artificial intelligence tool - artificial neural networks (ANN) - and a traditional multivariable logistic regression (MLR).

Methods: We conducted a retrospective cohort study of post-procedure mortality after CABG and PCI in 141,891 CHD-DM patients (mean age 65.9 \pm 11.1 years, 64.9% males). The outcome of interest was post-procedure in-hospital death (binary variable). The ANN model was built to predict the risk of death and create decision trees for clinical decision support. Risk predictions from MLR were estimated using adjusted odds ratios (aOR).

Results: Post-CABG mortality was higher than post-PCI (aOR 1.472; 95% CI: 1.340-1.616; $p < 0.001$). Post-procedure mortality was associated with emergency room admission (aOR 1.895; 95% CI: 1.729-2.078; $p < 0.001$), older age (3.5% increase for each year; 95% CI: 3.0-4.0%; $p < 0.001$), and higher severity of co-existing conditions (13.7% increase for each point increase in modified Elixhauser-Walraven score; 95% CI: 13.0-14.4%; $p < 0.001$). C-statistics for the MLR (0.794) and ANN (0.790) were similar. However, the ANN model, but not MLR, allowed creating decision trees for user-friendly flowchart-based clinical decision support systems.

Conclusion: In CHD-DM patients, post-procedure in-hospital mortality after CABG is higher than after PCI. Modern ANN techniques are a useful addition to the traditional MLR modeling.

P12. Time-Varying Causal Effects of Bacteremia and Sepsis on 5-Year Risk of Cardiovascular Events

S. Reza Jafarzadeh DVM, MPVM, PhD, Benjamin S. Thomas MD, David K. Warren MD, MPH, Jeff Gill PhD, Victoria J. Fraser MD. Washington University School of Medicine

Purpose: To estimate the causal effects of bacteremia and sepsis episodes across multiple hospitalizations on the development of cardiovascular (CV) events, including stroke, transient ischemic attack and myocardial infarction (MI).

Methods: We conducted a longitudinal study of 47,009 patients ≥ 18 years old who had at least two hospitalizations at an academic, tertiary-care center in St. Louis, Missouri, from January 1, 2008 through December 31, 2012. 156,380 hospitalizations were studied. We used marginal structural models, estimated by inverse probability weighting (IPW) of bacteremia or sepsis and IPW of censoring, to estimate the marginal causal effects of bacteremia and sepsis on developing the first observed incident CV event during the study period.

Results: Bacteremia and sepsis occurred in 3,932 (8.4%) and 4,474 (9.5%) patients during 4,923 (3.1%) and 5,544 (3.5%) hospitalizations, respectively. CV events occurred in 414 (10.5%) and 538 (12.0%) patients with prior episodes of bacteremia or sepsis, respectively, compared to 3,087 (7.2%) and 2,963 (7.0%) patients without prior episodes of bacteremia or sepsis. The causal odds of experiencing a CV event was 2.57 (95% confidence interval [CI]: 2.23-2.97) fold higher in patients with prior instances of bacteremia and 4.07 (95% CI: 3.55-4.67) fold higher in patients with prior sepsis, compared to those without bacteremia or sepsis. Prior instances of septic shock resulted in a 7.44 (95% CI: 6.16-8.98) fold increase in the odds of MI.

Conclusions: Prior instances of bacteremia and sepsis substantially increase the 5-year risk of CV events.

P13. Is Receiving Post-Acute Care Associated with Subsequent Hospitalization Costs One Year After Stroke Among Medicare Beneficiaries?

Iman Martin PhD, MPH, MSc, Matthew Ritchey, Kimberly Lochner, Carla Shoff, Kadin Caines, Christopher Powers. Centers for Disease Control and Prevention

Purpose: The health and economic burden of ischemic stroke among Medicare beneficiaries is considerable. After hospitalization for ischemic stroke, patients frequently receive components of post-acute care (PAC), including treatment within long-term care (LTC), inpatient rehabilitation, or skilled nursing facilities, and/or via home health (HH) to maximize their recovery. We examined the relationship between PAC receipt after an initial ischemic stroke hospitalization (IISH) and subsequent hospitalization costs.

Methods: We analyzed Medicare Fee-For-Service data from beneficiaries aged ≥ 66 years who had an IISH during 2011 with no stroke history in the preceding year and survived one-year post-IISH discharge. We used two-part generalized linear modeling to associate receipt of any PAC, as well as by PAC component, with subsequent hospitalization costs incurred one-year post-IISH discharge, adjusting for socio-demographic, comorbidity, and enrollment factors.

Results: Data from 89,797 beneficiaries with IISHs were analyzed. After adjustment, any PAC receipt was associated with a 3.1% ($p < .001$) increase in subsequent hospitalization costs. The association varied by PAC component. Beneficiaries who received LTC had 2.1 ($p < .001$) times higher costs than those who did not; HH use was associated with a 1.1% cost decrease ($p < .001$).

Conclusions: While receipt of any PAC after an IISH was associated with increased hospitalization costs during the following year, most of this increase was associated with receiving care within higher acuity facilities (e.g., LTC). IPAC components should be included when assessing associations between PAC receipt and hospitalization costs. Examining utilization of PAC components, as well as associated contextual-level factors, may identify public health intervention opportunities.