

Practicum Abstracts 2024

Degree: MPH-45

Field of Study: Clinical Effectiveness

Project Title	Project Summary or Abstract
Molecular ontogeny in AML is prognostic and predictive in patients treated with Hypomethylating agents plus venetoclax	The clinical impact of molecular ontogeny in acute myeloid leukemia (AML) was defined in patients treated with intensive chemotherapy. In a cohort of 314 newly diagnosed AML patients, we evaluated whether molecular ontogeny is predictive of outcomes in patients treated with hypomethylating agents (HMA) plus venetoclax (VEN). In secondary ontogeny (n=115), median overall survival (OS)(14.1 vs. 6.9 months, P=0.0054), composite Complete response (cCR 61% vs. 18%, P
A Cross-Sectional Study Examining the Association of Discrimination and Violence with Suicidality Among Transgender Women in Rio de Janeiro, Brazil	<p>Background: In Brazil, transgender women (TGW) experience a disproportionate burden of social and health challenges, particularly in the realm of mental health, which is intensified by discrimination and violence. This study aimed to evaluate the association of discrimination and violence with suicidality among TGW.</p> <p>Methods: Cross-sectional analysis of baseline data from the Transcendendo cohort, enrolling TGW aged > 18 years in Rio de Janeiro, Brazil. Lifetime discrimination was assessed through an eight-item scale reflecting potential discriminatory experiences related to transgender identity (score range: 0–8). Lifetime physical (y / n) and sexual assault (y / n) were also assessed, alongside other sociodemographic, psychosocial, and HIV-related variables. Suicidality, categorized into three levels (no ideation, ideation only, and attempt), was analyzed through an ordinal regression model.</p> <p>Results: Among 662 participants included, the median age was 31 years, with most identified as Black/Parda, having secondary education, and earning > 1.90 USD / day. In the multivariable model, discrimination (aOR = 1.21, 95% CI: 1.11-1.32, p < 0.001) and sexual assault (aOR = 1.60; 95% CI: 1.17-2.19, p = 0.003) were significantly associated with higher odds of suicidality. Conversely, body self-satisfaction, positive self-rated health quality, HIV status, and age were associated with lower odds of suicidality.</p> <p>Conclusions: This study revealed the significant associations of both discrimination and sexual assault with increased suicidality among Brazilian TGW, underscoring the imperative to implement anti-discriminatory policies and develop health services tailored to the needs of this community. The lower odds of suicidality among TGW reporting positive body self-satisfaction highlight the importance of health care services and gender-affirming care in mitigating suicidality risks among TGW.</p>
Equitable Utilization of High-Volume Surgeons in Otolaryngology-Head and	<p>Objective:</p> <p>There are known disparities in access to high volume surgeons (HVS) nationally. We aimed to determine if patient demographic/socioeconomic characteristics and</p>

<p>Neck surgery in an Integrated Healthcare System</p>	<p>primary care physician (PCP) utilization are associated with access to HVS within an integrated-healthcare-system, and to test the feasibility of assessing equitable utilization of HVS within an integrated-healthcare-system.</p> <p>Study Design: Cross-sectional study.</p> <p>Setting: Tertiary academic integrated-healthcare-system.</p> <p>Methods: We included patients age ≥ 18 who underwent complex otolaryngologic procedures between January 1, 2016 and December 31, 2019 in head and neck, otology, and rhinology. Patient sociodemographic characteristics and PCP use were extracted from system databases. Surgeon volume was calculated on a procedure-specific basis for cases within the system. HVS was defined as ≥ 5 cases/year (or ≥ 10 cases/year for sensitivity analyses). Bivariate and multivariable analyses were performed for each subspecialty.</p> <p>Results: 4278 patients were included. The majority underwent surgery with a HVS: 1208/1475 (82%) for head and neck; 843/882 (96%) for otology; 1795/1922 (93%) for rhinology. For head and neck and rhinology, on multivariable analysis with a ≥ 5 cases/year threshold, no statistically significant associations were found between patient characteristics and surgeon volume. For otology, interpreter requirement had decreased likelihood of surgery with a HVS (OR 0.16, 95% CI 0.04–0.58) and insurance type “other/uninsured/unknown” had increased likelihood (OR 5.13, 95% CI 1.34–19.65).</p> <p>Conclusion: Within a HV integrated-healthcare-system, most patients in otolaryngology underwent surgery with a HVS. There were minor statistical and no clinically significant differences in HVS utilization. Within-system disparities in utilization of HVS can be assessed with specific limitations.</p>
<p>The association between parental-reported child food allergy and family food insecurity in a nationally representative US sample</p>	<p>Objective To assess whether child food allergy is associated with family food insecurity, overall, and across different income levels.</p> <p>Methods We used the 2011-2018 National Health Interview Survey, a nationally representative cross-sectional survey. Our exposure was child food allergy, and our main outcome was odds of family food insecurity, which was calculated using multivariable logistic regression models adjusted for child demographics, family characteristics and survey year. We examined for effect modification by the ratio of family income to the poverty threshold using stratification and tests for statistical interaction.</p> <p>Results Among 83,287 children, 5,025 had food allergy and 18,933 experienced family food insecurity. Child food allergy was associated with a 1.39-fold (95% CI: 1.26, 1.53) increased odds of family food insecurity overall. Child food allergy was associated with a 1.46-fold (95% CI: 1.29, 1.66) increased odds of family food</p>

	<p>insecurity among children whose families lived below 200% of the federal poverty level, and a 1.26-fold (95% CI: 1.05, 1.51) increased odds of family food insecurity among children whose families lived at 200 to 399% of the federal poverty level, with no association among children whose families lived at or above 400% of the federal poverty level (P = .04 for interaction).</p> <p>Conclusion There is an association between child food allergy and family food insecurity, and this association is modified by the ratio of family income to the poverty threshold. Improved availability and subsidy of allergen-free foods in nutrition assistance programs and food pantries are urgently needed.</p>
<p>Endometriosis and mental health: a population-based cohort study</p>	<p>Background Endometriosis, a chronic gynecological disorder causing pain and reduced quality of life has well-documented physiological impacts, but its impact on mental health remains less well-defined. Our objective was to assess the association between endometriosis and the risk of mental health conditions within Ontario, Canada’s single-payer healthcare system.</p> <p>Methods In a population-based retrospective cohort study, 35,944 women aged 18-50 years diagnosed with endometriosis between January 1, 2010, and July 1, 2020 were matched 1:2 on age, sex, and geography to unexposed individuals. Endometriosis exposure was determined with medical or surgical diagnostic criteria. Individuals with a mental health diagnosis in the two years before study entry were excluded. The primary outcome was the first occurrence of any mental health condition after endometriosis diagnosis. Cox regression models generated hazard ratios (aHR) adjusted for baseline covariates.</p> <p>Results Over the study period, the incidence rate of mental health events was 105.3 per 1000 person-years (PY) in the endometriosis group and 66.5 per 1000 PY in the unexposed groups. Relative to the unexposed, the aHR for a mental health diagnosis was 1.28 (95% CI 1.24 – 1.33) in patients with medically diagnosed endometriosis and 1.33 (95% CI 1.16 – 1.52) in surgically diagnosed patients. The risk was highest in the first year after endometriosis diagnosis and declined thereafter.</p> <p>Conclusions Endometriosis is associated with an increased risk of mental health conditions. The elevated risk, particularly evident in the years immediately following the diagnosis, underscores the need for proactive mental health screening for those newly diagnosed with endometriosis.</p>
<p>Pioneering a Causal Inference Framework to compare the effectiveness of life-sustaining ICU</p>	<p>Background: Advances in cancer management have reduced mortality rates in patients with this diagnosis, leading to an increase in intensive care units (ICUs) admissions. However, the efficacy of life-sustaining therapies in critically ill cancer patients remains debatable. We explored the differences in treatment effects of life-sustaining therapies between critically ill septic patients with and without</p>

<p>therapies in cancer patients with sepsis</p>	<p>cancer.</p> <p>Methods: Adults with a principal cancer diagnosis from 2008-2019, admitted to the ICU for sepsis, were extracted from two publicly accessible ICU. Using an XGBoost model, we estimated the likelihood of receiving mechanical ventilation (MV) or vasopressors (VP) during ICU admission. Additionally, targeted maximum likelihood estimation (TMLE) models estimated the average treatment effects of these treatments on in-hospital mortality and 28-hospital free days.</p> <p>Results: 58,988 adult septic patients met inclusion criteria, of which 6,335 had a cancer diagnosis. In-hospital mortality was notably higher for cancer patients (30.3%) compared with non-cancer patients (14.5%). Overall, cancer patients had a lower adjusted odds of receiving MV (aOR [95% CI], 0.95 [0.90, 0.99]). Analyses for VP yielded similar results, particularly for hematologic patients compared with non-cancer patients (0.90 [0.84, 0.94]). Neither MV nor VP improved in-hospital mortality across any patient subgroup; both interventions reduced 28-hospital free days.</p> <p>Conclusion: This study utilizes contemporary, nationwide ICU data to establish a causal relationship between life-sustaining therapies and mortality for patients with cancer. Our findings do not demonstrate any survival benefit for invasive therapies, underscoring the need for a more granular analysis to identify subgroups who might benefit from these interventions.</p>
<p>Genomic Medicine in the Neonatal Intensive Care Unit</p>	<p>Many genetic disorders are recognized or suspected in the neonatal period, particularly in infants in the neonatal intensive care unit (NICU). Identifying the precise diagnosis through genetic testing may lead to improved clinical care and outcomes. Exome or genome sequencing (ES/GS) has emerged in the last decade as a powerful tool for genetic diagnosis, though prior studies of its diagnostic or clinical utility have been limited due to confounding and bias and outcomes measures of limited clinical significance. Thus, the optimal timing and patient population in which to use ES/GS in the NICU remains unclear.</p> <p>I am conducting an analysis of retrospective data collected over the past ten years in our level IV NICU using multivariate modeling and instrumental variable approaches in order to address the confounding and bias present in prior studies. The statistical approach and preliminary results from our institution will lead to a multi-center pooled analysis that will ideally inform an optimal approach to genetic diagnosis in the NICU.</p>
<p>The Effect of Frailty on Mortality Over 65</p>	<p>Background: With a growing population over the age of 65, trauma is increasingly relevant for older patients. Frailty is a common condition in those over 65, with frailty estimates ranging from 15-39%. A gap in the literature about the effect of frailty on mortality exists, which this research aims to fill.</p> <p>Methods: This retrospective cohort study utilized Medicare claims data of all patients who experienced trauma from 2014-2015. Frailty was calculated using the claims-based frailty index (CFI). Regression models were formed to estimate the effect of frailty levels on 30-day, 180-day and 1 year mortality; length of stay (LOS); ICU LOS and inpatient days in the year following injury.</p>

	<p>Results: The cohort was reduced to 497 patients due to computing power issues to allow for initial analysis. Median CFI was 0.23 (pre-frail) and median age was 76. Using the non-frail group as the reference group, adjusted odds-ratios (95%CI, p-value) for 30-day mortality were 0.83 (0.36-1.96, 0.657) for the pre-frail group, 0.86 (0.36-2.09, 0.727) for the mild frailty group and 2.39 (0.87-6.77, 0.094) for the moderate-severe frailty group. The adjusted analysis estimated LOS in days, n (95%CI, p-value), as: 26.0 (11.8-40.2), 30.0 (28.7-39.2, 0.139), 31.8 (32.2-43.0, 0.037) and 30.4 (28.3-41.2, 0.182) for non-frail, pre-frail, mild frailty and moderate-severe frailty respectively.</p> <p>Conclusions: This underpowered study did not detect a significant difference in mortality or quality of life markers by frailty level; however, the results indicate that increasing frailty is associated with increased mortality and inpatient hospital days.</p>
<p>Higher fasting glucose is associated with poorer survival in subjects having ischemia with non-obstructive coronary arteries status without known DM</p>	<p>Background: Subjects who have ischemia with non-obstructive coronary arteries (INOCA) experience angina pectoris with evidence of myocardial ischemia but no coronary stenosis. Few studies have investigated factors associated with its survival, especially with insulin resistance.</p> <p>Methods: In this study, subjects with angina pectoris, without known diabetes mellitus (DM) and with noninvasive tests showing myocardial ischemia were admitted for coronary angiography (CAG). Those whose CAG did not reveal stenosis and agreed to receive an oral glucose tolerance test (OGTT) 2 weeks after hospital discharge were enrolled for analysis. All-cause mortality was recorded, serving as the outcome of the study.</p> <p>Results: A total of 587 subjects with INOCA, without known DM, and with OGTT data were analyzed. After the OGTT and HbA1c tests, 14.7% were newly diagnosed with DM and 59.8% had pre-DM. The median duration of follow-up was 7.03 years. Thirty-nine subjects died during the follow-up period. The incidence rate for mortality was 9.9 /1000 person-year. In univariate analyzes, those who died were older and had a higher fasting glucose (101±17 vs. 94±13 mg/dl, p=0.003), lower estimated glomerular filtration rate (eGFR) (66 ± 22 vs 85 ± 24 ml/min/1.73 m2, p < 0.001). In the Cox survival regression analysis, higher eGFR (hazard ratio 0.979, p = 0.020) was protective, while higher fasting glucose (hazard ratio 1.022, p = 0.016) was related to all-cause mortality for INOCA.</p> <p>Conclusions: For subjects with INOCA but without known DM, a higher eGFR is protective, while older age and higher fasting glucose were significantly associated with worse mortality.</p>
<p>Risk of cholangiocarcinoma after endoscopic retrograde cholangiopancreatography with sphincterotomy: a population based retrospective study</p>	<p>Endoscopic sphincterotomy (ES) is routinely used to facilitate biliary interventions for both malignant and non-malignant processes during endoscopic retrograde cholangiopancreatography (ERCP). Studies examining ERCP with ES and its association with bile duct malignancy have been conflicting. We aimed to examine the potential association of ES with bile duct malignancies in a large North American population. We performed a retrospective population-based study utilizing administrative health data from the Province of Manitoba between 1984 and 2018. Patient ≥18 years of age undergoing ERCP were included and cross-referenced with the Manitoba Cancer Registry and Manitoba Health registration records. Incidence cancers of the extra and intra-hepatic bile duct were extracted,</p>

	<p>and comparisons made between ERCP only and ERCP with ES. The ERCP cohort was matched 1:5 to cholecystectomy controls to address confounding by indication of gallstone disease. Proportional hazard regression analysis was performed adjusting for age, sex, year of ERCP, cirrhosis, hepatitis B and C, diabetes mellitus and inflammatory bowel disease. We found that ES increased the risk of developing bile duct cancers as compared to ERCP without ES, and that this association held true after accounting for confounding by indication (gallstone disease).</p>
<p>Effectiveness of Intraoperative Nerve Monitoring in Reducing Rates of Recurrent Laryngeal Nerve Injury in Aerodigestive & Cardiovascular Pediatric Surgery</p>	<p>We conduct the first large-scale single-center investigation of intraoperative nerve monitoring (IONM) in children undergoing at-risk surgery to decrease recurrent laryngeal nerve injury and vocal fold movement impairment (VFMI). IONM significantly reduces VFMI rates, especially in children with pre-existing injury, emphasizing its importance in pediatric cervico-thoracic procedures.</p>
<p>Pancreatic Cancer Screening for At-risk Individuals (Pancreas Scan Study): A Prospective Multi-Center Study</p>	<p>Guidelines endorse pancreatic cancer screening in genetically susceptible individuals. We conducted a prospective, multicenter study to determine yield, harms, incidence of pancreatic lesions and their association against genetic and family risk factors during screening.</p> <p>All high-risk individuals undergoing pancreatic cancer screening at 5 centers in the US from 2020 to 2024 were prospectively enrolled. Pancreas pathology was designated as low-risk (fatty pancreas or chronic pancreatitis-like changes), intermediate-risk (neuroendocrine tumor (NET) < 2cm or branch duct IPMN), or high-risk (High-grade PanIN/dysplasia, main duct IPMN, NET > 2 cm, or pancreatic cancer). Harms from screening included adverse events during screening test. Annual screening was performed using EUS and or MRI.</p> <p>392 patients undergoing pancreatic cancer screening with EUS and or MRCP were enrolled. Mean age was 62 years, 72% were female and 83.4% were White. Most common pathogenic variants in screened patients were BRCA 1/2 (62.7%), ATM (12.9%), Lynch syndrome (7.7%), and FAMMM (3.9%). Low-risk pathology was noted in 28.3% patients. Medium-risk pathology was noted in 38.5% patients. High-risk pathology was noted in 5 patients (1.2%), 3 of them with pancreas cancer at early or resectable stages and the rest in stage IV pancreatic cancer. BRCA 2 genetic pathogenic variant (OR= 2.01, CI: 0.78 - 1.73, p= 0.70) did not show significant association with medium-risk pancreatic lesions. No adverse events were seen.</p> <p>Pancreatic cancer screening detected high-risk lesions with lower frequency that previously reported. No harms from screening were noted. Patients with genetic pathogenic variants did not show significant odds of developing medium-risk pancreatic lesions.</p>
<p>Cost Analysis of a Medical School Based Simulation Program in Rural Rwanda: Five</p>	<p>The University of Global Health Equity (UGHE) launched a medical school in 2019, and from the start intentionally integrated simulation based education throughout their 6.5 year curriculum. This project examined the total and unit costs of launching and sustaining UGHE’s simulation program five years in, while looking at</p>

<p>Years in at the University of Global Health Equity</p>	<p>key activities, student feedback and initial lessons learned. The cost of program launch in 2019 was approximately \$235,000, primarily from specialized equipment purchases. Annual operating costs since opening have grown from approximately \$46,000 in AY20 to \$149,000 in AY24, and almost 75% of annual spending over the past three years has gone towards personnel. Program cost per student has decreased from approximately \$1,500 in AY20 to \$975 in AY24 and is projected to continue decreasing with increasing student enrollment. Limited review of student feedback shows students rating their simulation experiences highly across the duration of the program. Students felt that simulation based education particularly helped them with teamwork and communication, as well as recognition of emergencies and triaging sick versus not sick patients, while reflecting that cases in obstetrics, trauma and shock were the most salient. This analysis relies on a number of assumptions due to incomplete data sources that may slightly skew cost metrics, but it sets the stage for further examination of cost-based program outcomes in order to hone in on the program’s true value over time.</p>
<p>Procedural risk factors for deep and organ/space surgical site infection post-coronary artery bypass graft surgery.</p>	<p>Surgical site infections (SSI) cause significant morbidity post coronary artery bypass graft (CABG) surgery. We aim to assess the effect of procedural risk factors, including number and type of vessel grafts, and closure method, on post-CABG deep and organ/space SSI.</p> <p>This was a single-center retrospective cohort study of post-CABG surgery patients from January 2019 - December 2022 SSIs were identified during routine surveillance using National Healthcare Safety Network criteria. Patient and procedural data were abstracted from hospital and cardiac surgery databases. We performed univariate analyses to determine association of risk factors with SSI. A sub-analysis evaluated the risk of SSI in patients with two arterial grafts by type of artery used, specifically bilateral internal mammary (BIMA) graft versus single internal mammary artery plus radial graft (SIMA-R). A propensity score was used to find the adjusted effect of negative pressure wound therapy (NPWT) on odds of SSI.</p> <p>Of the 2050 included patients, 23 developed an SSI. In univariate analyses, diabetes mellitus (OR 5.6, p 0.001) and NPWT (OR 9.48, p 0.001) were associated with SSI. There was no significant association between SSI and the total number of arteries or combination of vessel grafts used. In the sub-analysis, none of the SIMA-R, versus 4 of the BIMA developed SSI (p=0.02). The adjusted odds of SSI with NPWT was 10.45 (3.62 – 30.16).</p> <p>Conclusion: NPWT was associated with SSI, and amongst patients who received two arterial grafts, there was a reduced SSI risk with SIMA-R approach. Future studies should verify these results in a larger cohort.</p>