Summer 2021 Practicum Abstracts – MPH Epidemiology Students

R. R. E. N. E.

Dalla Lana School of Public Health - Centre for Vaccine-Preventable Diseases

My practicum consisted in conducting a scoping review on health actors' financing mechanisms for pneumococcal and rotavirus vaccines in Low-and-Middle-Income Countries (LMICs) and developing a proposal for a data analysis relating to immunizations in a low-and-middle-income country. The first month of my practicum consisted in developing a comprehensive search strategy that would consider all available and relevant scientific literature across seven peer-reviewed research databases as well as grey literature documents and web pages from twelve organizations. Select databases were searched using French keywords to obtain relevant articles in the French language.
This provided us with a total of over 4,000 articles to review and over 1,000 grey literature sources These retrieved articles were screened using titles & abstracts and articles were included for full-text review if they met the inclusion criteria. Research articles that reached the final stage of the review were then extracted for data according to an adapted implementation science framework: RE-AIM (Reach, Effectiveness Adoption, Implementation, Maintenance). These framework themes were seen to be useful for identifying how equitable and sustainable funding from health actors such as GAVI, the Vaccine Alliance, were being conceptualized and implemented. A secondary project was developing a proposal for a multi-level data analysis using 2019 Demographic Health Survey data from Sierra Leone, relevant to immunization coverage. The proposal outlined a brief overview of a quantitative data analysis plan of socioeconomic and demographic factors associated with one-dose and two-dose rotavirus vaccination rates.
The goal of this project is to expand previous work in African countries with a high burden of diarrheal disease investigating socioeconomic inequalities of vaccine coverage funded by Gavi. Understanding associations with exposures such as household wealth, urban vs. rural residence, home vs. hospital birth will prove useful in ensuring that pro-poor and pro-marginalized immunization programs are being implemented worldwide.

K. S. C.

Princess Margaret Cancer Centre - Geoffrey Liu Lab

My summer practicum was at the Geoffrey Liu Lab at Princess Margaret Cancer Centre. This is a multidisciplinary lab, primarily focused on improving cancer outcomes. I had the opportunity to contribute to the analysis for three projects. My main project looked at patterns of systemic treatment deferral in palliative mesothelioma patients. I developed descriptive statistics and visualizations to explore patterns. I was able to present interim results for this project at the lab meeting at the end of July. My secondary project was a landmark survival analysis of CO.17 and CO.20 trial patient toxicity subgroups generated via longitudinal machine learning methods. I performed a landmark survival analysis including multivariable Cox proportional hazards models. My third project was comparing metastasis data compiled from manual abstraction with data extracted by natural language processing. The analysis included frequencies and agreement. For all projects, I developed tables and figures and

shared my progress in meetings and written reports. The methods and results of these analyses will contribute to future manuscripts.
This was a valuable learning experience overall, both in terms of the skills I developed and the new appreciation I gained for clinical cancer epidemiology. I had the opportunity to contribute to several interesting projects and learn about topics I never would have otherwise been exposed to. I collaborated with my supervisors, medical students, research fellows, and Liu lab staff, all of whom contributed to my learning and professional development.

K. D. L.

BlueDot Inc.

I worked for the Toronto-based, software company BlueDot Inc. as an Epidemiology Intern as part of the Outbreak Sciences team in the Research and Analytics team. BlueDot Inc. provides global early warning technology using artificial and human intelligence designed to locate, track, contextualize the significance of infectious diseases around the world. During my Epidemiology Student Practicum, I was able to co-author seven major COVID-19 "Focus Reports" designed to deliver critical insights to its clients on pertinent infectious disease topics in the context of the COVID-19 pandemic. These topics included: Estimating COVID-19 Vaccine Hesitancy, COVID-19 in India and Surrounding Countries, COVID-19 Situation and Population Behaviour in the Southeast Asia Region, Polio in the context of COVID-19, Tokyo Summer Olympics 2020 (COVID-19 Epidemiological Summary and Risk of Infectious Disease Importation), Infectious Disease Landscape in Poland, and the Airborne Transmission of SARS-CoV-2. With each report, I was able to learn and collaborate with multidisciplinary teams to apply myself using a wide range of skillsets including, but not limited to academic writing, data collection, generating visuals from large datasets in infectious disease surveillance and population mobility data, creating conceptual graphics, coding graphs, scoping research questions, and assisting with generating maps. The contributions to Focus Reports achieved my learning objectives to interpret and manipulate quantitative data, translate knowledge and visualize data for diverse audiences, and generate original, analytical writing in the context of dynamic global health contexts.

C. K.

UTSC – Department of Health and Society

Around 12% of reproductive-aged women in Canada have a physical, sensory and/or intellectual disability. In recent years, more of these women are becoming pregnant. However, women with disabilities face social and health disparities that place them at risk for adverse pregnancy outcomes, including low income, chronic physical and mental health conditions, and systemic barriers to accessing primary health care. Few studies have examined the collective impact of social and health disparities on the risks of adverse pregnancy outcomes in women with disabilities. The purpose of this study is to (1) use health administrative data to identify and describe clinically relevant subgroups of pregnant women with disabilities according to social, health and disability-related characteristics and (2) examine how these characteristics impact the risk of adverse maternal and newborn outcomes compared to control women without disabilities. Women between the ages of 15 to 49, with physical, sensory and/or

intellectual disabilities will be compared to women without disabilities on selected indicators of maternal and newborn health which are: gestational diabetes, gestational hypertension, preeclampsia/eclampsia, venous thromboembolism, preterm birth and small for gestational age. Social, health and disability-related characteristics of interest will be: neighbourhood income quintile, residential instability, material deprivation, rural residence, stable and unstable chronic medical conditions, mental illness, substance use disorders, continuity of primary care, disability subgroup, age at diagnosis and disability-related health care receipt. A latent class analysis will be performed to create meaningful groups within the population of women with disabilities with respect to these social health and disability-related characteristics, and modified Poisson regression will be used to estimate relative risks for adverse maternal and newborn outcomes according to each latent class, as compared to controls. It is hoped that the results of this study will contribute to the existing literature on the pregnancy-related health of women with disabilities and inform perinatal health care interventions for women with disabilities in Canada.

M. W.

Princess Margaret Cancer Centre

Introduction: Statins are a class of medications that are typically prescribed to lower cholesterol and have demonstrated anti-cancer properties, such as anti-inflammatory and immunomodulatory effects. A research group from the University of Michigan (Getz et al., 2021) recently published data that showed that statin may be associated with better overall (OS) and disease-specific survival outcomes among Head and Neck squamous cell carcinoma (HNSCC). A replication of this study's protocol was used to determine whether similar results could be observed using Princess Margaret Cancer Centre's HNSCC patient cohort.
Methods: Data from a cohort of HNSCC patients seen at Princess Margaret Cancer Centre since 2006 was collected through a baseline questionnaire completed at/around the time of diagnosis. Demographic and clinical characteristics comparing statin users and non-users were described using bivariate analyses. Kaplan Meier and Cox proportional hazard (CPH) models were constructed to determine the association between statin users and overall (OS), disease-specific (DSS), and time-to-progression (TTP) survival. Additionally, cumulative incidence curves and Fine-Grey competing risk regression (CRR) models were constructed for both DSS and PFS outcomes. Effect modification was evaluated using subgroup analyses, by stratifying the cohort based on their HPV status, HPV-associated disease site, and stage of disease. Statistical interaction between statin use and these subgroups was evaluated using a likelihood ratio test (LRT).
Results: Our cohort was composed of 2386 participants, of which 78% were male (n = 1867), and the average age at diagnosis was 62.8 years (standard deviation (SD) = 10.9). Statin use was reported by 462 patients in our cohort. CPH regression models (adjusted for age, BMI and the patients' Charlson Comorbidity Index (CCI) score), did not reveal any statistically significant association between statin use and survival outcomes: OS: Hazard Ratio (HR) = 0.97 [95% CI = 0.80 - 1.18]; DSS: 0.99 [0.74 - 1.31]; TTP: 1.12 (0.89 - 1.42]. Similarly, the results of the CRR models yielded statistically non-significant associations for statin use and HNSCC outcomes: DSS: 0.98 [0.74 - 1.30]; TTP: 1.12 [0.85 - 1.47]. Subgroup analyses did not reveal any statistically significant effect modification, however, a statistically significant interaction between statin and positive HPV status was found in the DSS and TTP subgroup

models (p-value for interaction: 0.023 and 0.0354, respectively).
Conclusion: The replication cohort study did not reveal any statistically significant associations between statin use and HNSCC survival outcomes. Differences in data collection methods and statin use definition may have attributed to these results.

K. K.

Centre for Addiction and Mental Health - Institute for Mental Health Policy Research

Introduction: I completed my practicum at the Institute for Mental Health Policy Research (IMHPR) at the Centre for Addiction and Mental Health (CAMH), where they conduct research on alcohol consumption, alcohol-attributable harm, and alcohol policy to inform policy and public health decision making.
Objectives: My main objectives for the practicum experience were to improve my knowledge in epidemiological methods and quantitative analytical skills in a professional research setting.
Methods: With the support of my supervisors and research team, I led a policy analysis study to investigate the effects of alcohol control policies on sex- and stroke- specific mortality rates in Lithuania. I also had the opportunity to significantly contribute to the 2015-2019 PAHO Suicide Mortality in the Americas Regional Report and several other manuscripts for peer-review publications.
Results: The practicum experience greatly improved my study design and quantitative analytical skills in a supportive self-learning environment. I believe my experience trained me with the necessary foundational research skills to continue pursuing a research career within the field of alcohol and public health policy. For example, I learned to how to execute a Joinpoint regression analysis and interrupted time series analysis, presented my findings to a larger international group of researchers, and first-authored a manuscript to summarize my findings.
Conclusion: Overall, I had a very positive and rewarding practicum experience that greatly improved my quantitative analytical skills. I had the opportunity to lead a policy analysis study, first author a manuscript for peer-reviewed publication and contributed to additional deliverables that will make a real-world impact by informing policymakers on effective alcohol control policies.

D. R. S.

Hospital of Sick Children - Centre for Global Child Health

Background: The use of stunting prevalence to assess child height remains conceptually problematic due to the identification of a population subgroup that is affected by undernutrition, rather than being correctly interpreted as reflecting the entire population.
Objectives: We aimed to describe, assess, and compare a range of candidate linear growth metrics to complement the use of stunting based on the strength of association with key population-level indicators.
Methods: Height and age data to derive standardized linear growth of children under 5 years of age from 156 Demographic and Health Surveys (DHS) from 63 countries (2000 to 2020) were used to generate two types of linear growth metrics: estimates of descriptive statistics based on observed distributions (e.g., measures of locations such as the mean, stunting prevalence, etc.); and regression

model-derived estimates (e.g., predicted means at discrete ages or slopes of decline within a defined age range). Correlations between each candidate linear growth metric and stunting prevalence among children less than 5 years of age were compared using the absolute value of Spearman correlation coefficients. Absolute values of Spearman's rank correlations were used to compare pairwise associations between each linear growth metric and stunting with the population-level health indicators of under-five mortality, gross domestic product, and maternal education. Sensitivity analyses were completed on three survey year categories for each country: the most recent survey, a midpoint survey (closest survey to 2010), earliest survey.
Results: Predicted HAZ at 2y, GD slope 1mo-2y, Mean HAZ 2-5y, P25 HAZ 2-5y, stunting 2-5y reflect similar or better associations with population-level indicators as compared to stunting. HAZ slope 2-5y, HAD slope 2-5y and predicted HAZ at 0y performed poorly. Correlations between metrics and population indicators decreased in strength from the earliest to the most recent survey.
Conclusion: While stunting is associated relatively well with population-level indicators, several metrics perform as well if not better than stunting. These metrics may have conceptual advantages which are worth further investigation.

K. R. M.

Public Health Agency of Canada - Domestic Vector-borne Diseases Team

The Public Health Agency of Canada (PHAC) is part of the federal government's health portfolio. The agency aims to benefit the health of Canadians in a number of ways. One of these ways is aiming to respond to and prepare for emergencies. Additionally, the agency focuses on the control and prevention of infectious and chronic diseases. The Centre for Food-borne, Environmental, and Zoonotic Infectious Diseases aims to analyze and report on the risk and impact of infectious disease, both domestically and internationally, that is spread to humans through food, the environment, and animals. The Domestic Vector-borne Diseases Technical Team is split in two, mainly studying mosquito-borne and tick-borne domestic infectious diseases. Through my work on this team, I sought to offer assistance on the tick-borne portion of the team. I did this by examining data that had been extracted from the Lyme Disease Enhanced Surveillance (LDES) system, which is a national surveillance system contributed to by provincial health authorities. My goals for this practicum project were: to expand my knowledge on zoonotic infectious diseases, primarily those that are tick-borne; to learn about the underlying epidemiology for infectious diseases of this nature and how to measure this; and to understand how to best frame analytic results in order to best communicate these results to the public. My role was to act as the primary epidemiologist on this project. I explored the data set, created an appropriate data analysis plan, assessed the variations in risk that certain factors have on Lyme disease in Canadians, and interpret and summarize these results. Throughout this practicum, I had the opportunity to collaborate with other teams in the agency, shadow meetings held with external partners and stakeholders, and contribute to weekly event bulletins that aimed to highlight infectious disease events.

B. P.

Public Health Agency of Canada

The goal of the placement with the Public Health Agency of Canada's Substance-Related Harms Division, with the Cannabis, Alcohol, and Vaping (CAVE) team, is to lead and support projects related to substance consumption during COVID-19. The main objectives identified in collaboration with my team lead and former team manager includes learning the research process in the government context, gaining knowledge and providing support on knowledge translation products, reviewing literature on trends and patterns in alcohol/cannabis use during COVID-19, as well as managing and authoring a research project that will be disseminated as an At-A-Glance article for the HPCDP journal. Outside of managing a research project, other placement activities included supporting quality assurance of opioid and stimulant surveillance data, supporting various related research projects, supporting team responses to urgent information requests for policy and government, training and professional development, and supporting the development of a surveillance strategy for alcohol, cannabis and vaping across Canada. My primary focus throughout the placement was to conceptualize, plan, complete analyses and author a research article on changes in alcohol and cannabis consumption in individuals living with children during COVID-19. This involved regular discussions with my team lead, colleagues and internal stakeholders (i.e. policy, related substance use teams) to realize a gap in knowledge and appropriate deliverables to address the gap. This project involved authoring an article, completing and analyzing appropriate statistics and frequent review by colleagues. This placement was an opportunity to learn SAS, gain experience analyzing a national survey dataset, collaborating on epidemiological research, and supporting surveillance development.

R. B.

University Health Network - The Acquired Brain Injury (ABI) Research Lab

The Acquired Brain Injury (ABI) Research Lab led by Dr. Angela Colantonio, conducts population-based epidemiological studies, addressing research such as health service utilization, injury prevention and rehabilitation, health inequities in vulnerable populations, intimate partner violence and traumatic brain injury (TBI), and work-related TBI. Dr. Colantonio holds a Canadian Tier 1 Research Chair in TBI in Underserved Populations and thus the lab seeks to utilize intersectional approaches to understand and advance the identification, care, and rehabilitation of TBI in underserved populations, specifically persons who interact with the justice/legal system, experience homelessness and/or intimate partner violence. As a summer research trainee, I sought to (a) advance professional, research and methodological skills in the field of epidemiology, and rehabilitation science; (b) increase my understanding of the scientific literature on TBI in underserved populations; (c) increase capacity in qualitative and quantitative analysis and interpretation of findings; and (d) utilize and advance scholarly writing skills to prepare manuscripts and knowledge transfer materials. My role entailed conducting a scoping review on rehabilitation for individuals who experience homelessness and TBI. I was responsible for leading tasks such as identifying and critically analyzing relevant literature using a comprehensive and structured database search strategy; collating, summarizing, and analyzing data from relevant studies; and drafting knowledge transfer materials including a manuscript and poster presentation. Additionally, I worked on quantitative data analysis plan using a cross-sectional survey dataset. For this task, I conceptualized my own research question on TBI and suicide ideation, completed a literature search on the topic and formulated methods to analyze the data to answer the question. I completed preliminary analyses including descriptive statistics of the sample and logistic regression analysis.

Overall, I am very grateful for the opportunity to work with an interdisciplinary and supportive team at the ABI Research Lab. The work that I have completed and will be continuing to work on will contribute to an evidence-based foundation for integrating rehabilitation for TBI for individuals experiencing homelessness and considerations for existing clinical and practice guidelines.

R. R.

Sinai Health System - Infectious Disease Epidemiology

***Project description*:** Sinai Health System is currently conducting a study to evaluate the epidemiology of COVID-19 in teachers and education workers in elementary and secondary schools in Ontario. Within this study, the project I am working on involves investigating the psychological impact that infectious disease specific stressors have on teachers working during the COVID-19 pandemic. This area of research is of importance because teachers delivering curriculum in-person amidst the pandemic have had close and extended contact with students, parents, and coworkers, putting them at risk of contracting COVID-19 due to their work situation.

Key activities: As a practicum student at Mount Sinai, I completed a 16-week placement in the Infectious Disease Research Unit working under Dr. Brenda Coleman. In this position I had the opportunity to conduct a literature review, formulate a research question, write a statistical analysis plan, clean data, conduct a logistic regression analysis in STATA and produce a poster. I have just begun the process of drafting a manuscript and will be continuing my work with Mount Sinai into the school year to finish my project.

Lessons learned: During my placement I learned an extensive amount about the process of conducting research and writing a paper. This process has required me to critically appraise research, think analytically, work in collaboration with a team, and keep organized. I also learned more about logistic regression analysis, and how to employ basic commands within a statistical software I had not previously used, STATA. Increasing my knowledge on biostatistical concepts during my placement taught me the importance of self-teaching and aiming to continually learn.

K. M.

SickKids Centre - Global Child Health

Objectives: Analyze Nigerian administrative health data from the DHIS2 platform to inform the World Bank Global Financing Facility (GFF) investment case for Nigeria's Ministry of Health, by assessing data quality and progress made in reproductive, maternal, newborn, child, and adolescent health and nutrition (RMNCAH+N) indicators.

Methods: Monthly data for 2018, 2019, and 2020 were downloaded from DHIS2 at the federal and state levels for reporting rates and RMNCAH+N indicators of interest. Data were merged into a single dataset, and the number of outliers (Z-score>3 SD) and missing values were tabulated for each variable in each state and year. Select indicator pairs were used to produce annual, federal level reported ratios that

were compared against expected ratios from the 2018 Demographic Health Survey (DHS) to analyze data quality. Scatterplots plotting annual state-level counts for these pairs against each other were also produced for each year. Monthly adjusted coverage values for 40 indicators of interest are also being calculated and plotted to depict changes over time within each state.

Outcomes: The quality of data appears to be inconsistent. Large differences (>15) were observed between the reported and expected ratios of Antenatal Care Visit 1 (ANC1) vs. Pentavalent Vaccine Dose 1 (Penta1) and Delivery by Skilled Birth Attendant (SBA) vs. Bacillus Calmette-Guérin (BCG) vaccination in 2018, 2019, and 2020, and for ANC1 vs. Intermittent Preventive Treatment of malaria in Pregnancy Dose 1 (IPT1p) in 2018 and 2020. The 2019 difference was small (<5) indicating good quality of internal consistency. The scatterplots demonstrated internal consistency. States reporting low values for one variable in a pair often reported low values for the other, and those reporting high values for one variable in a pair often reported high values for the other. The SBA vs. BCG vaccination plots demonstrated the most variability from this trend.

S. M.

Health Canada - Office of Environmental Health

To work toward the Public health approach to chemicals management in Canada delineated by the Chemicals Management Plan, Health Canada's Office of Environmental Health aims to enrich the traditional chemical risk assessment methods by moving from a chemical-by-chemical and chemical grouping approach to include a more holistic approach based on multiple determinants of health, where 1 or more of those determinants is chemical exposure. By addressing the real-world context (for example, complexities of multiple exposures to multiple stressors, not just chemical stressors, throughout the life course), a public health lens would aim to establish links between the risk of disease or early markers of adverse effects and chemicals management actions, and further to allow early screening for unanticipated exposure effects and other environmental (including social) and genetic factors relating to adverse health outcomes.
As a part of the Office of Environmental Health, I was first asked to do an internal scan for any similar work being done at the federal level and possibilities of partnership. I was then asked to do a literature scan for the epidemiological evidence supporting links between various chemicals (cadmium, lead, arsenic, mercury) and cardiovascular disease. I also used the JBI critical appraisal checklist for systematic reviews to appraise the studies I have pulled information from in my literature scan. Lastly, I created Adverse Outcome Pathways (AOPs) for Cadmium and Arsenic, which are biological mechanistic diagrams that start with sources of exposure on top, go on to illustrate the downstream biological effects of these chemicals, and the cardiovascular disease outcomes that result. This work is to inform a novel method of chemical risk assessment (called Environmental Public Health Approach to chemicals) that my team wants to introduce to Canada. Lastly, I delineated the new advantages that this approach would bring over traditional toxicology risk assessment methods. The goal is to do a proof-of-concept case study soon focusing on these chemicals and cardiovascular disease using existing Canadian cohort data.

Y. C. W.

Dalla Lana School of Public Health

I completed a 16-week practicum at the Dalla Lana School of Public Health with Dr. Jennifer Brooks and her breast cancer research team. My project is to explore the incidence trends of contralateral breast cancer (CBC) and contralateral prophylactic mastectomies (CPM) from 2009-2017, using multiple provincial administrative sources from Ontario Health and Cancer Care Ontario (CCO). I worked with large population datasets and conducted all quantitative analysis using SAS. We identified 64,779 women diagnosed with primary unilateral breast cancer with ≥ 12 months follow-up over the study period. The subjects were then linked to CIHI-DAD and RPDB to include surgical, socioeconomical, and geographical data. Incidence rates (per 1,000 person-months) and incidence proportions (%) were calculated and plotted. Overall, we observed a decrease in contralateral breast cancer incidence from 2009-2017 and an increase in the number of contralateral phylactic mastectomies over the same period, which is consistent with previous findings in Canada and the US. The reasons behind the rising rates of CPM despite lower CBC rates and its unproven benefits on long-term survival remained unclear. This is the first study that reports the incidences of CBC in Ontario, Canada. The results suggest a gap of evidence-to-practice and efforts should be made to reduce inappropriate CPM usage. I have earned valuable experience in research methods, quantitative analysis, and manuscript writing through the practicum which will enhance my competencies in epidemiology research.

N. M. G.

Dalla Lana School of Public Health

Background: The goal of this investigation was to compare breast cancer stage at diagnosis for women who screened compliantly and non-compliantly within the guidelines of the average risk screening for the Ontario Breast Screening Program (OBSP), and those who never screened with OBSP. How certain demographic variables associate with being a compliant screener, non-compliant screener, or non-screener was also investigated.

Methods: Ontario women, aged 50-74, diagnosed with breast cancer between 2010-2017 made up the cohort for this study. Women were subdivided into compliant, non-compliant, or non-screeners. Two multinomial logistic regression models were run to determine the association of screening behaviour and tumour stage at diagnosis, and to determine if age, community size, income, and having had prior non-breast cancers were associated with screening behaviours.

Results: The odds of being diagnosed with stage 2, 3, or 4 breast cancers were significantly greater, while the odds of being diagnosed with a ductal carcinoma in-situ (DCIS) were significantly smaller for non-screeners compared to compliant screeners. When comparing non-compliant to compliant screeners, there was no clear trend of the odds of cancer stage at diagnosis.

Versus compliant screeners, the odds of being non-compliant increase with age, while the odds of being a non-screener decrease with age. Those living in rural areas had lower odds of being non-screening and non-compliant screeners compared to compliant screeners. Those in the lowest income quintile had significantly larger odds of being non-screening compared to those in the highest or middle income quintiles.

Conclusions: Those that participate in the OBSP tend to have lower odds of being diagnosed with advanced stage breast cancer compared to those who do not screen. It was inconclusive as to whether screening compliantly or non-compliantly with OBSP guidelines influences cancer stage. Age, rurality, and income all associate with screening behaviours.

L. S. T.

St. Michael's Hospital - Options Lab

Background: Men who have sex with men have a disproportionately high burden of psychosocial conditions. Engagement in HIV PrEP care may provide opportunities to address syndemic (mutually reinforcing and coexisting) psychosocial conditions among users. We quantified the prevalence of syndemic burden among participants in the Ontario PrEP (ON-PrEP) Cohort Study.

Methods: Ontario adults using or initiating PrEP completed electronic questionnaires every 6 months for up to 2 years. We used validated screening tools to estimate the prevalence of depression (PHQ-9 score $\geq$5), harmful alcohol use (AUDIT-C $\geq$4), and problematic drug use (DUDIT $\geq$6). Questions related to childhood sexual abuse and partner physical violence were taken from the Childhood Trauma Questionnaire and Conflict Tactics Scale, respectively. We imputed missing values using the lowest possible scores for a given scale. We assessed the relationships between syndemic health conditions using bivariable logistic regression models and created a syndemic count variable to quantify syndemic burden.

Results: Among 630 participants, median age was 36.4 (IQR:29.9,45.0). Most identified as cisgender-male (93.7%), gay (87.9%), and white (67.6%). At baseline, 36.0%, 41.0%, 26.3%, 23.5% and 2.9% screened positive for depression, harmful alcohol use, problematic drug use, childhood sexual abuse, and intimate partner violence, respectively. These rates contrast with the clinical data collected at baseline, where only 17.8% and 3.7% of respondents (n=572) declared a diagnosed mental illness or drug/alcohol dependence, respectively. Most participants (70.3%) had ≥1syndemic condition and 40.6% had multiple. Syndemic burden remained stable over follow-up. Bivariate logistic regression analyses demonstrated positive associations between depression and drug use, depression and childhood trauma, harmful alcohol and drug use, and drug use and childhood trauma.

Conclusions: Syndemic burden among HIV PrEP users is substantial. Screening for psychosocial conditions during PrEP appointments may identify opportunities for mental health services/interventions.

M. P.

Ontario Tobacco Research Unit

For my Summer 2021 practicum, I worked at the Ontario Tobacco Research Unit (OTRU), which is a research unit within the Dallan Lana School of Public Health, on the Vaping Dependence Team. My

primary objectives for this practicum were to 1) improve my skills and confidence in data analysis using both STATA and R, 2) produce at least one quality manuscript that exemplifies my ongoing improvements in writing, and 3) contribute to the research team in a valuable way. In my role, I utilized survey data from an ongoing longitudinal survey that assessed vaping in youth and young adults aged 16-25 to design and perform statistical analysis via R and Stata and write manuscripts on the results. In total, I was the first author on four manuscripts and second author on one, which are currently being edited and prepared for submission for publication. My research covered a breadth of topics relating to vaping dependence, as I analyzed respiratory symptoms and milestones of vaping, validated a self-perceived measure of dependence, and built machine learning algorithms to predict and determine the most influential variables relating to ever-vaping and intending to quit vaping. I also participated in team meetings, both for the Vaping Dependence Team and for the OTRU Team as a whole, to discuss current work, provide input and feedback on upcoming surveys and studies, and brainstorm future projects. Through my practicum experience I have achieved a wealth of knowledge pertaining to vaping dependence that I hope to translate into my future work in mental health addiction studies.