Dalla Lana School of Public Health

Fall 2025 – MPH Epidemiology Practicum Abstracts

M. H.
Public Health Agency of Canada – Outbreak Management Division

I completed my second MPH practicum placement as a Student Outbreak Investigator with the Outbreak Management Division in the Centre for Foodborne, Enteric, and Zoonotic Diseases at PHAC. As part of the Analytics, Improvement, and Development team, my primary responsibility was to support an ongoing Salmonella investigation by completing case interviews and collecting food and travel exposure data to be used in a case control study. In this role, I ran R scripts to randomly select new cases for the study, monitored newly reported cases, communicated with provinces and territories weekly to report new cases and request available case information, and performed data entry of case information into an internal dashboard. Additionally, I supported the creation of monthly epidemiological updates summarizing the investigation that were sent to partners and stakeholders.

Beyond my primary responsibilities, I also completed ad hoc analyses in R to support the goals of the team. One involved a food frequency analysis to identify exposures of interest in a subcluster of cases from the larger Salmonella cluster we were monitoring. Another analysis included identifying which cases selected for the case control study were lost to follow up to see if they differed systematically from cases who completed re-interviews with PHAC. Once the case control study enrollment period ended, I also worked on R code to produce individual provincial summaries to communicate results of the investigation.

In addition to these analyses, I was able to sit in on various OICC calls for ongoing outbreak investigations and gain hands on experience for what communicating during an outbreak looks like at the federal level. Overall, this practicum gave me an opportunity to utilize my epidemiological skill set in an applied setting and contribute to a team committed to public health impact.

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J. L.
BlueDot Inc.

This practicum was completed with within the Epidemic Intelligence division and focused on applied infectious disease surveillance and epidemic intelligence. The placement provided hands-on experience using event-based and indicator-based surveillance data to support timely risk assessment, alerting, and knowledge translation for global infectious disease events.

During the practicum, I participated in daily surveillance workflows that involved monitoring official and unofficial data sources, including government reports, media articles, surveillance dashboards, and peer-reviewed and grey literature. A core responsibility was conducting structured rapid risk assessments following established BlueDot protocols to evaluate whether observed disease events were routine or unusual based on location, timing, pathogen characteristics, and potential public health impact. When events were deemed significant, I synthesized evidence across multiple sources to draft client-facing notifiable event alerts, translating complex and evolving epidemiologic information into concise, actionable summaries for non-technical stakeholders.

The practicum also emphasized critical appraisal of data quality, uncertainty, and analytic limitations. I routinely assessed the reliability, timeliness, and completeness of available information and documented assumptions and gaps in written products. In addition, I collaborated closely with epidemiologists, data scientists, engineers, and product teams to review assessments, verify information, and integrate diverse perspectives prior to dissemination.

This experience reinforced core MPH Epidemiology competencies in surveillance systems, epidemiologic methods, data appraisal, risk communication, and interdisciplinary collaboration. By bridging academic training with real-time, decision-oriented public health intelligence, the practicum strengthened my skills in applied epidemiology and clarified my interest in infectious disease surveillance, epidemic intelligence, and public health decision support.

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J. U.
BlueDot Inc. – Epidemiology

During my fall practicum at BlueDot, my primary responsibilities included leading the production of two series of influenza-like illness (ILI) reports and developing automated data analysis pipelines to support report creation. The ILI reports consisted of a biweekly global report on up-to-date ILI trends distributed to multiple clients, as well as country-focused reports emphasizing recent ILI trends in a client's country and selected key comparator countries.

For report production, I led four global ILI reports and three country-focused reports, while also supporting the development of other report types. Because this practicum coincided with the period when many Northern Hemisphere countries were entering their seasonal epidemic phase, my analytical focus was on identifying early signals of epidemic growth in influenza and RSV. I conducted indicator-based surveillance (IBS) analyses primarily in R using the company's APIs and selected external data sources, and I also used these systems to extract and assess up-to-date news articles for event-based surveillance (EBS). In parallel, I performed critical appraisals of recently published articles for inclusion in reports, which contributed to the development of a broad range of epidemiological competencies.

In addition, I developed multiple automation functions to replace workflows that had previously been performed manually, thereby reducing processing time while improving reproducibility and efficiency. These functions were designed to automate data wrangling and subsequent analyses or visualizations, while allowing users to flexibly control key parameters. Several of these functions were successfully integrated into the team's standard operating procedures (SOPs) and shared with other team members. Towards the end of the practicum, I also took responsibility for incorporating an advanced statistical inference pipeline into the existing workflow, a contribution with the potential to further enhance the team's analytical capacity.

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F.Z.
Health Canada – National Biomonitoring Section

Background: Per- and polyfluoroalkyl substances (PFAS) are persistent environmental chemicals with widespread exposure in the general population. Their potential implications for child growth and development warrant investigation. While PFAS concentrations among Canadian adults have been described, nationally representative data focused on children remains limited.

Methods: We conducted a cross-sectional analysis of the Canadian Health Measures Survey (CHMS) cycles 2 (2009-2011), 5 (2016-2017), and 6 (2018-2019) to characterize plasma concentrations of five
PFAS: PFOA, PFOS, PFHxS, PFNA, PFDA among children aged 3-19 years. Analyses were stratified by age group (3-5, 6-11, and 12-19 years) and by sex for 12-19-year-olds. Survey-weighted geometric means (GM) and detection frequencies were computed. For selected predictors, least-squared GM and ANOVA p-values were calculated to explore univariable associations with PFAS concentrations while adjusting for survey cycle.

Results: Detection frequencies exceeded 95% for PFOA, PFOS, PFHxS, and PFNA across most age groups and cycles; however, PFDA detection was
lower (~70%) among 12-19-year-olds in cycle 2. Excluding PFDA, there is a notable decline in GM concentrations observed between cycle 2 and cycles 5-6. Sex-stratified analyses indicated higher PFAS concentrations in males than females (12-19-year-olds) for most compounds. Exploratory analyses (ANOVA p-values) identified geographic region, specifically residing in Atlantic provinces, as a statistically significant predictor of PFOA concentrations in children aged 3-5 and male adolescents ages 12-19.

Conclusions: PFAS exposure among Canadian children and adolescents, varies by age, sex, region, and time period. The observed temporal declines in plasma concentrations likely reflect changes in PFAS production, use, and regulation. These results reflect the work of national biomonitoring to reduce PFAS burden in adolescent populations; and underscores the importance of identifying adolescent populations disproportionately exposed to PFAS.