Ontario Agency for Health Protection and Promotion

Position Title: Applied Mathematical Modeler
Code: AMM-01
Reports to: Director, Surveillance & Epidemiology

Organization Summary

The Ontario Agency for Health Protection & Promotion (OAHPP) is a centre for specialized research and knowledge in public health, focusing in the areas of infectious disease, infection control and prevention, health promotion, chronic disease and injury prevention, and environmental health. It provides technical and scientific assistance, rapid on-site field support, as needed, specialized communication and training, as well as standards input and practical tools for implementing best practices.

The Agency was created by the Ontario Government as a result of its commitment to Operation Health Protection, through the Health System Improvements Act (Bill 171). As Ontario's first ever provincial Agency for Health Protection and Promotion, the Agency brings academic, clinical, and government experts together to create a centre of public health excellence in the province.

Position Summary

The Applied Mathematical Modeler (AMM) supports the Surveillance and Epidemiology team, and liaises with other Agency pillars, in three principal areas: (1) through development of models and simulations that help to guide and optimize Agency surveillance, planning, and disease control activities based on best available data; (2) by serving a liaison function, linking Agency activities to those of other public health stakeholders and university-based modelers and mathematical epidemiologists; and (3) by working to increase the availability and utilization of modeling and simulation as tools for disease prevention and control in Ontario, via team building, knowledge translation, and mentorship activities. As with all Agency personnel, the AMM may be called on to perform such tasks both in relation to long-term disease control policy, and in the service of short-term outbreak control activities.

Reporting Relationship & Span of Control

The Applied Mathematical Modeler reports to the Director of Surveillance and Epidemiology and is a member of the Surveillance and Epidemiology team. In the matrix formation of the Agency, members of the team also report for specific projects to project leaders in other areas. The AMM will be involved in projects with internal and external partners.

Key Responsibilities

In conjunction with teammates from the Surveillance and Epidemiology program, the AMM will:

- Identify priority areas in public health surveillance, preparedness, and response in Ontario that would benefit from evaluation through modeling and simulation;
- Identify and obtain data necessary to create such priority models;
- Work on modeling efforts that can be completed in house with available resources;
- Identify and develop the infrastructure (e.g., identify software needs) and networks (e.g., with academic partners) necessary to bring to fruition modeling efforts that are not initially achievable with available OAHPP resources;
- Assemble a documentary record of modeling-related practices and resources at the OAHPP;
- Create model-based projections and reports, and develop flexible, transparent, and adaptable models that can be easily updated in the face of evolving priorities and patterns of disease occurrence. These models and their outputs will be used to optimize decision-making processes for the Agency and its stakeholders in the face of uncertainty;
- Serve as a subject matter expert and resource within the Agency, and as a liaison between the OAHPP and modelers from partner agencies (including Public Health Agency of Canada, Statistics Canada, the British Columbia Centre for Disease Control, and the Institut Nationale de la Sante Publique de Quebec);
- Engage in knowledge translation activities, including presentation of findings, initiatives, and relevant Agency activities at meetings and conferences, including national and international scientific meetings, and build and maintain a network of external partners at Ontario research and educational institutions;
- Engage in improving the understanding of mathematical modeling as a tool to support public health decision making, through both formal and informal internal teaching and mentorship activities.

Knowledge and Skills

- Broad theoretical and practical knowledge in the area of mathematical epidemiology and mathematical modeling of infectious diseases in humans;
- Knowledge in the areas of public health preparedness, pandemic planning, and disaster response modeling; modeling of zoonotic diseases under a “One Health” framework (including foodborne illnesses); modeling of healthcare associated infections; modeling of vaccination strategies; infectious diseases related to global travel and migration; and sexually transmitted and bloodborne infectious diseases;
- Sufficient knowledge to bridge the gap between communicable disease and chronic diseases (e.g., to model links between infectious and neoplastic diseases) is highly desirable, as is a strong grounding in health economic evaluation of public health programs;

- Strong understanding of contemporary issues in communicable disease control, and a strong history of productivity as a mathematical modeler of infectious diseases of relevance to human health is required;
- Skills suitable for modeling using different approaches (e.g., compartmental models, network-based models, individual-based simulation) and have a high level of skill with widely available modeling software (e.g., AnyLogic, Matlab, Berkeley-Madonna, etc.) and/or a high level of expertise with primary programming (e.g., in C/C+, Java, etc.);
- Exceptional analytical and report-writing skills, excellent written and oral communication skills,
- Ability to work in a self-directed fashion with limited supervision;
- Strong attention to detail and excellent time-management skills;
- Comfortable with working in a "matrix" work structure, with a work culture of collegiality, creativity, and interdisciplinary.

Education and Experience

- Doctoral-level degree from an accredited college or university, in a relevant field which may include (but not limited to) epidemiology, ecology, biostatistics, veterinary sciences, mathematics or physics, economics, or health policy.
- Extensive practical experience in the creation and analysis of mathematical epidemiology models and mathematical models of infectious diseases in humans, and the integration of modeling outputs into policy briefs, scientific papers and reports, and communications with stakeholders and the general public;
- Proven track-record of publications in the peer-reviewed biomedical literature, authorship of reports or chapters, or development of models that have been used to inform disease control policies and strategies in jurisdictional public health authorities;
- Prior experience in a jurisdictional public health authority is desirable.

Your cover letter and resume must clearly indicate how you meet the qualifications and competencies.

E-mail your resume referencing AMM-01 to careers@oahpp.ca. For more information about the Agency visit our website at www.oahpp.ca

Thank you for your interest in this position, however, only qualified candidates will be contacted for an interview. Please continue to view our website for new career opportunities with the ***Ontario Agency for Health Protection and Promotion***.