



IDENTIFICATION

Department	Position Title	
Health & Social Services	Data Systems Developer and Analyst	
Position Number	Community	Division/Region
49-5817	Yellowknife	Population Health / HQ

PURPOSE OF THE POSITION

The Data Systems Developer and Analyst is responsible for supporting data systems, tools, and data analytics needs specific to epidemiological surveillance within the Epidemiology and Surveillance Unit, working in close partnership on shared data infrastructure in Population Health, to provide accurate, timely and usable public health information to the Office of the Chief Public Health Officer and Federal/Provincial/Territorial stakeholders, such as the Public Health Agency of Canada.

SCOPE

Located in Yellowknife, the Data Systems Developer and Analyst (Analyst) reports to the Territorial Epidemiologist and provides support to the Epidemiology and Surveillance Unit (ESU) involved in the analysis and reporting of public health data to decision makers for evidence-based program and services for NWT residents. The position is appointed a Public Health Officer under the NWT *Public Health Act* and has a statutory duty to enforce this *Act* and accompanying regulations as delegated by the Chief Public Health Officer (CPHO).

The Analyst has primary responsibility for (1) directing and prioritizing data systems, tools, and processes needed to perform public health surveillance in the Population Health Division; and (2) data management, validation, quality assurance, and preparation for epidemiological analysis and reporting related to public health data and information found in registries, repositories, and information systems, including those defined under the Northwest Territories (NWT) *Public Health Act*. The position supports analysis, reporting and surveillance functions within the ESU that, in turn, provide evidence to clinical and program decision-makers to reduce the burden of mortality and morbidity in the population, and improve the effectiveness and efficiency of health programs.



The Analyst collaborates with technical staff in the Population Health Division, on the Population Health Data Repository and other shared data infrastructure, directing and prioritizing such collaborative work according to epidemiological surveillance and reporting needs. The position also liaises with the Department of Health and Social Services (DHSS) Information Services and Informatics and Health Technologies teams on infrastructure, security, and enterprise platform access falling outside the units' scope.

The incumbent supports ESU by analyzing health data systems, tools, and available health data sets to develop and implement technical solutions to optimize utilization of health data for epidemiological surveillance, analysis and reporting.

Working closely with the ESU staff, Information Services, public health data management and analytics specialists, communicable disease control specialists, as well as information systems specialists on the collection, validation, data entry and analysis of health/disease data, the incumbent also develops and sustains working relationships with DHSS's vital statistics specialists, Health and Social Services Authority (HSSA) staff, the Government of the Northwest Territories (GNWT) Bureau of Statistics and the Information and Health Technology division. Additionally, this role has linkages or reporting relationships with national health institutions with a mandate in information data repositories such as Health Canada, Public Health Agency of Canada, Statistics Canada and Canadian Institute for Health Information (CIHI).

RESPONSIBILITIES

1. Develop, implement, and maintain tools, applications, and systems to support epidemiology and surveillance activities and analysis.

- Work with members of the ESU team to define data tools, applications, systems, or infrastructure needs to support surveillance and reporting activities
- Design, build, and maintain data environments that meet DHSS governance, privacy, and security requirements
- Lead the full lifecycle development of internal applications used for public health epidemiological data entry, workflow management, and surveillance reporting, including design, testing, deployment, and ongoing maintenance.
- Use development tools to write, test, and document code, and administer version control and development environment infrastructure to support consistent and repeatable development practices
- Write supporting technical documentation and standard operating procedures for developed programs and processes and provide relevant training to epidemiology staff as needed
- Review data flows within the unit to ensure they are operating and provide any maintenance and adjustments
- Analyse information to determine, recommend, and contribute to plans for installation of a new systems or modification of existing systems



- Consult with stakeholders or other departments on project status, proposals, or technical issues, such as system design or maintenance, and confer with technical experts on the limitations or capabilities of data processing projects.

2. Strategically design, develop, test, and implement public health reporting solutions and data integrations to support the business needs of population health surveillance.

- Develop, implement, and automate business and reporting solutions for epidemiology and ensure their design, planning, and implementation needs are being met while ensuring consistency of output
- Design and implement integrations between external health data sources (e.g. federal, territorial) and unit data systems, including through the use of application programming interfaces (APIs) where applicable, to support surveillance data consolidation and reporting
- Maintain overall understanding of NWT-wide health information systems, data repositories and registries, their relationships to each other and associated protocols to provide data quality management, validation, reporting, quality improvements, and training support.
- Troubleshoot technical reporting issues and provides solutions, and recommendations for improvements
- Aid in compiling data during identified outbreaks of disease to ensure access to accurate data for outbreak reporting in a timely manner.
- Develop and maintain tools and processes supporting unit participation in national and international surveillance programs, including data submission and compliance with reporting requirements (e.g. programs administered by the Public Health Agency of Canada).

3. Lead data information collection and database design for analytic efforts by integrating and consolidating data sources ensuring data quality and accuracy.

- Utilize data analytical skills and knowledge of NWT health care data to support the analyses of administrative and clinical data
- Design, build, and maintain database structures and schemas that support data integrity, access user controls, and integration with reporting systems
- Manage and organize various data inputs to ESU including reportable and notifiable diseases, tests, immunizations, and other data from a variety of data sources and systems
- Determine appropriate data collection, storage, and management practice improvements that can enhance data usage and support surveillance requirements
- Lead process improvements and recommend system changes to enhance overall quality of the data
- Review and clean data sets as needed in preparation for analysis, and provide guidance and review of data collection methods and analysis



- Lead routine data refresh and update activities
 - Ensure epidemiology users are trained and supported in the epidemiology data environment
- 4. Map and document current operational, administrative, and technical requirements for population health surveillance data and reporting functions.**
- Develop, coordinate, and implement relationships with working groups and /or subject matter experts within the HSS system and inter-agency as appropriate to properly map and document business processes.
 - Map data and reporting processes, technical processes, identify procedural, efficiency and accuracy issues, conduct privacy impact assessments and make recommendations for improvement in a clear and easily communicated format.
 - Document and maintain data quality assurance and auditing practices that meet territorial, national, and international standards.
 - Create and maintain system concept maps, data flow diagrams, and technical architecture documentation to support transparency and knowledge transfer
- 5. Support and recommend data and system improvements and serve as a key technical resource to support epidemiology processes and creation of quality reports and other epidemiology products.**
- Maintain comprehensive documentation of unit data systems, architecture, and operational procedures to support organizational knowledge transfer and business continuity
 - Provide business continuity support by training other staff for coverage of information system, registries, and repositories maintenance and reporting functions
 - Stay current on changes to data collection and management requirements.
 - Liaise with others in Population Health, DHSS and other GNWT technical staff to coordinate on shared infrastructure, integration projects, and cross-departmental data initiatives, and to provide and receive feedback on system and software performance
 - Participate in initiatives for improvements to data capture, quality assurance and public health programming, including but not limited to forms, software and technical requirements of information systems.
 - Provide technical briefings and strategic input to unit and divisional leadership and cross-departmental working groups on data system priorities, risks, and modernization opportunities

WORKING CONDITIONS

Physical Demands

No unusual demands.



Environmental Conditions

No unusual conditions.

Sensory Demands

No unusual demands.

Mental Demands

No unusual demands.

KNOWLEDGE, SKILLS AND ABILITIES

- Knowledge of health information systems, databases, and data processing.
- Knowledge of the *Public Health Act* and regulations, and other relevant legislation including the *Health Information Act*.
- Knowledge of and/or the ability to acquire knowledge of northern health care systems and structure and Indigenous cultures as they relate to health and social service issues.
- Knowledge and ability to use version control systems and development tools to manage, track, and reproduce changes to code and analytical scripts.
- Knowledge of relational database design principles, including schema development, data integrity, user access controls, and integration with reporting and analytical systems
- Knowledge of server and application infrastructure administration, including the configuration and maintenance of multi-component data environments to meet security, performance, and operational requirements.
- Knowledge of data pipeline and integration design, including the extraction, transformation, and loading of data from multiple source systems — including through the use of APIs and connections to external or legacy systems.
- Knowledge of application and data security principles, including appropriate segmentation of data environments, access control, and secure handling of sensitive health information
- Skilled in the integration of health information systems where linkages occur with patient information and the public health continuum of care (i.e., medical terminology, International Classification of Diseases, cancer registries, congenital anomalies, communicable and non-communicable diseases, and conditions).
- Skills in programming and scripting languages for data analytics, application development, and automation (e.g. SQL, Python, R, C#, or equivalent).
- Critical thinking and problem-solving skills.
- Organization and time management skills with the ability to work within tight deadlines.
- Data visualization skills with a variety of applications (MS Office, Power BI, R, Python).
- Negotiating skills to ensure any changes to business processes are acceptable across NWT.
- Communication and presentation skills and the ability to work with stakeholders at all levels of the health care system.



- Skills in problem solving related to business process issues that create data integrity issues.
- Ability to interpret and communicate data findings with strong verbal and written visual communication skills.
- Ability to apply knowledge relating to the complexity and interdependencies of the source systems and the business processes regarding data collection.
- Ability to diagnose and resolve technical issues across all components of a data system, from the underlying database through to the end-user application or reporting output
- Ability to analyze reports to interpret data quality issues.
- Ability to work with and maintain highly confidential material with a medical ethics lens.
- Ability to commit to actively upholding and consistently practicing personal diversity, inclusion and cultural awareness, as well as safety and sensitivity approaches in the workplace.

Typically, the above qualifications would be attained by:

A degree in a computer science or in an information management discipline and three (3) years of relevant experience working in data systems development and quality improvement.

Equivalent combinations of education and experience will be considered.

ADDITIONAL REQUIREMENTS

Position Security

- ☐ No criminal records check required
- ☒ Position of Trust – criminal records check required
- ☐ Highly sensitive position – requires verification of identity and a criminal records check

French language (check one if applicable)

- ☐ French required (must identify required level below)

Level required for this Designated Position is:

ORAL EXPRESSION AND COMPREHENSION

Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐

READING COMPREHENSION:

Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐

WRITING SKILLS:

Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐

- ☐ French preferred

Indigenous language: Select language

- ☐ Required
- ☐ Preferred