**Réseau de recherche sur les données de santé du Canada**
**Health Data Research Network Canada**

## HEALTH DATA RESEARCH NETWORK CANADA AND COVID-19
### BRIEFING NOTE – APRIL 13, 2020

### ISSUE

The organizations that make up Health Data Research Network Canada (HDRN Canada) hold population-wide health data and have a role to play in accelerating, and increasing the quality of, COVID-19 analytics, predictive models and research studies.

### NEW DEVELOPMENTS AND STATUS AS OF APRIL 13, 2020

- Some HDRN Canada organizations have linkable COVID-19 test results data
  - Three (3) provinces (NL, AB, ON) have COVID-19 test result data integrated into their data platforms
  - BC is beginning to process COVID-related data access requests while integrating COVID-19 test results data into its data platform
  - Multiple other HDRN Canada organizations are in discussions about obtaining COVID-19 test result data

- HDRN Canada organizations are gathering information about COVID-related analytics applications, predictive models and research studies that use jurisdiction-wide or population-wide data (Table 1).
  - Thus far, 14 different types of COVID-related analytics/research have been identified, comprising more than 25 individual analyses/models/studies
  - One (1) study is led by CIHI and includes every province and territory
  - There are discussions to have three (3) analyses/models/studies that are currently led by a single province expanded to include additional provinces/territories; in several other cases, provinces are performing similar studies independently
  - In addition, there is one (1) data-driven application for operational decision making developed in NL that is being used or trialed at sites in two (2) other provinces (ON, BC)

This briefing note will be updated regularly. Additional information, including a link to register to receive future updates is at hdrn.ca/en/covid.

### HDRN CANADA AND COVID-19

The organizations that make up HDRN Canada create and manage population-wide health and health-related data infrastructure that is used by a network of hundreds of expert analysts and researchers across Canada.

If/when HDRN Canada organizations are able to link COVID-19 test results with existing data platforms, it will be possible to have more meaningful interpretation of COVID-19 data.  For example, in addition to counting/forecasting the number of COVID-19 cases, we will be able to draw upon decades of experience to add a layer of analyses/understanding related to health conditions, demographic factors and prior health system utilization.

HDRN Canada can also play a role in bringing together collaborators on COVID-19 analytics, predictive models and research studies so that they include multiple provinces and territories.

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**Health Data Research Network Canada**

Table 1: Examples of COVID-related Analytics, Predictive Models and Research Studies and the Jurisdiction/ Population-wide Data Being Used[1]

| | Type of Analysis/Model/Study | Main Data/Datasets | Jurisdiction(s) |
|---|---|---|---|
| 1 | Canada-wide health system capacity modelling (under development) | SEIR model as the foundation using multiple published and recent studies/analyses, CIHI DAD | All provinces contributing data to CIHI |
| 2 | Within province/territory COVID-19 predictive modelling | COVID-19 test results positive and negative, age, sex, location, hospital admissions, deaths | NL, ON[2] |
| 3 | Relationship between COVID-19 test results and outcomes for patients with comorbidities; **multiple studies are active/being initiated** including cardiovascular related diagnoses (e.g., HF, AMI, AFib, other arrhythmias, chronic IHD), chronic kidney disease and other conditions | COVID-19 test results, DAD, NACRS, physician and other practitioner billing, vital statistics, available Rx drug data | AB, ON |
| 4 | Investigating the potential association between medications and adverse COVID-19 outcomes; **multiple studies are active/being initiated** including studies of the effect of angiotensin converting enzyme inhibitors (ACE) inhibitors, angiotensin II receptor blockers (ARBs), statins, NSAIDS/anti-inflammatories | COVID-19 test results, DAD, NACRS, physician and other practitioner billing, vital statistics, available Rx drug data | AB, ON |
| 5 | Relationship between COVID-19 test results and health resource use (e.g., hospitalization, ICU admission) | COVID-19 test results, DAD, NACRS, physician and other practitioner billing, vital statistics, available Rx drug data | AB, ON |
| 6 | Analyses of who is being tested for COVID-19 terms of demographics, geography, comorbidities, live at home or in LTC, SES, and other factors | COVID-19 test results, DAD, NACRS, physician and other practitioner billing, vital statistics, available Rx drug data | ON |
| 7 | Study examining blood-type and association with coronavirus and SARS like illness | | ON |
| 8 | Study examining duration of viral shedding at confirmation of COVID infection | | ON |

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[1] The examples provided here do not constitute a complete list of all work in Canada. These are the analyses, predictive models and research studies that are known to HDRN Canada organizations as of the date of this briefing note, generally because they make use of population-wide health and health-related datasets held by HDRN Canada organizations. Please contact info@hdrn.ca if you would like to add to this list, or if your jurisdiction is interested in performing similar work or collaborating to expand the number of provinces/territories involved in an analysis/model/study

[2] It is likely that most other provinces and territories are also undertaking modeling that does not involve data held by HDRN Canada organizations

| | Type of Analysis/Model/Study | Main Data/Datasets | Jurisdiction(s) |
|---|---|---|---|
| 9 | Analyses of the effect of COVID-19 on elective procedures | DAD, NACRS, physician and other practitioner billing, vital statistics | ON |
| 10 | Analysis of the effect of COVID-19 on wait times (first study is on cardiac wait times) | DAD, NACRS, physician and other practitioner billing, vital statistics | ON |
| 11 | Using prior influenza work to assess utility of OLIS lab test results data for studying respiratory virus epidemiology | DAD, NACRS, physician and other practitioner billing, vital statistics, Rx drug data, OLIS data as possible complement or substitute for other respiratory virus laboratory data | ON |
| 12 | Prevalence of COVID-19 comorbidity risk factors by age group | DAD, NACRS, physician and other practitioner billing, vital statistics | ON |
| 13 | Analyses related to ICU capacity; **multiple studies are active/being initiated** including, ICU admissions, most common elective diagnoses/procedures resulting in ICU admission, # of ventilators) | DAD, NACRS, physician and other practitioner billing, vital statistics | NL, ON |
| 14 | Analyses related to hospital capacity (e.g., ED usage, hospitalizations, admissions from LTC, most common elective diagnoses/procedures resulting hospital admission) | DAD, NACRS, physician and other practitioner billing, vital statistics | ON |

Additional Resources and Applications from the Canadian Institute for Health Information (CIHI)

In addition to the analyses/models/studies noted in Table 1, CIHI is leading multiple pan-Canadian COVID-related activities, including exploring opportunities for access to near real-time hospital utilization data—aggregate and record level.  The best resource for all CIHI-led work is https://www.cihi.ca/en/covid-19-resources; links to select key resources are/will be included below.

- WHO approved ICD codes for use in Canada:
  - (February 24, 2020) ICD-10-CA Coding Direction for Confirmed COVID-19 Cases
  - (March 26, 2020) ICD-10-CA Coding Direction for Suspected COVID-19 Cases
  - (April 2, 2020) Capturing COVID-19 Diagnoses in the NRS
  - (April 2, 2020) Capturing COVID-19 Diagnoses Using interRAI Assessments in Long-Term Care, Home Care and Inpatient Mental Health
  - CIHI communicated this coding direction to coders in Canada on February 24, 2020.
- Daily summary of national and PT policy interventions to provide context and meaning to testing, case incidence and other data. Includes comparable information for 28 key policies and interventions across federal, provincial and territorial governments. The scan covers case finding and management, social distancing, health sector policies and travel restrictions and selected economic measures.  (available: April)
- Rapid analysis of at-risk populations in long term care and home care, resulting in a decision support algorithm for care providers, to support more immediate health system planning (Fact Sheets available within one week)

- A series of new data tables and analyses to monitor and analyze health system activity over time, demonstrating the baseline capacity and the subsequent the impact of COVID-19, sourcing multiple CIHI datasets (e.g., acute, ED, LTC, home care, physician billing, drugs). Specific products and release dates TBD.
- Update to CIHI case grouping methodologies with COVID codes and looking at Population Grouper for forecasting (available: tentative end of April)

Additional Resources and Applications from the Newfoundland and Labrador Centre for Health Information (NLCHI)

- COVID-19 Public Health Surveillance Application –designed for public health nurses to have a clinical documentation system to track suspected and confirmed cases of the virus. Built using VB.Net with an SQL Server Database, has already been shared with other provinces. Data capture includes COVID test results plus functionality for documenting contact tracing, travel exposure, risk factors, outcomes, symptoms, etc. **NLCHI developed the application and has shared it with sites in ON (one site), BC (two sites trialing)**
- Employee Management Application - designed to assist Regional Health Authorities in managing employee exposure and or symptoms of the virus. Data capture includes COVID test results, employee demographics and work relationships, date absent and date of potential return, OHS call backs to employees, self-isolation or self-quarantine dates, and additional notes
- COVID Case Tracker – real time available only to authorized personnel. Functionality for documenting COVID test results, contact tracing, travel exposure, risk factors, outcomes, symptoms.
- Swab Test Referral Application - designed to allow clinical telephone triage of patients into scheduling workflow for appointment booking. It is being used by both public health and occupational health in NL.
- Negative Test Online Portal for Patients - secure website where patients can log in to see their negative test results (positive results are not currently available).
- Personal Protective Equipment (PPE) Dashboard (New supply chain data developed in response to COVID-19). Captures N95, sanitizer, glove, mask, gowns and other info.
- PPE Electronic Ordering Form
- Virtual Care Telehealth Electronic Account Request Form – expedites the account request/approval/creation process for physicians wanting to use NL Virtual Care Telehealth program.
- Virtual Care In Home Appointment Application - developed to allow physicians to easily schedule in home appointments with patients using the provincial telehealth technology platform.

## BACKGROUND – ABOUT HDRN CANADA

HDRN Canada was created to make national, provincial and territorial health data accessible under strong governance so that data can be used for public benefit while privacy is protected.  The more sites, provinces and territories that contribute health data to a study or analysis, the more we can learn about what is working well and what needs to change in our health systems.

Under HDRN Canada, national, provincial and territorial organizations which hold health and health-related data for the entire population have come together to make it easier for researchers, analysts and policy makers to use data from multiple provinces and territories for benchmarking, research, health system planning and innovation (Figure 1).  Many HDRN Canada organizations, have been responsible stewards of health and health-related



Figure 1: Some of the organization working together under HDRN Canada

data for decades. Individual HDRN Canada organizations have developed policies and practices to ensure the privacy of health data. For example, details like people's names, addresses and health card numbers are all removed or converted to confidential codes before vetted analysts and researchers are allowed to access data, and all HDRN Canada organizations have strict rules that all data users must follow.

In January 2020, HDRN Canada incorporated and launched the Data Access Support Hub (DASH) which has information about 380+ health and health-related datasets from across Canada to-date.  HDRN Canada is setting up processes so that research studies can be performed through "distributed analysis." This is a proven way of doing data-intensive research that HDRN Canada will help spread and increase across Canada.  Distributed analysis means that researchers send out their queries in the form of "code" which are applied to data held in multiple locations rather than requiring that the data "travel" to the location where the researcher is.

HDRN Canada activities are guided by the advice and values of patients and members of the public. The first major initiative of HDRN Canada is the SPOR Canadian Data Platform funded under Canada's Strategy for Patient-Oriented Research (SPOR).