

## NATIONAL SURVEILLANCE OF ARTHRITIS IN CANADA:

### Updates from the Canadian Chronic Disease Surveillance System

Public Health Agency of Canada, Ottawa, ON

February 27, 2020 • CANRAD Network meeting • Victoria, BC

PROTECTING AND EMPOWERING CANADIANS  
TO IMPROVE THEIR HEALTH



### What will we discuss?

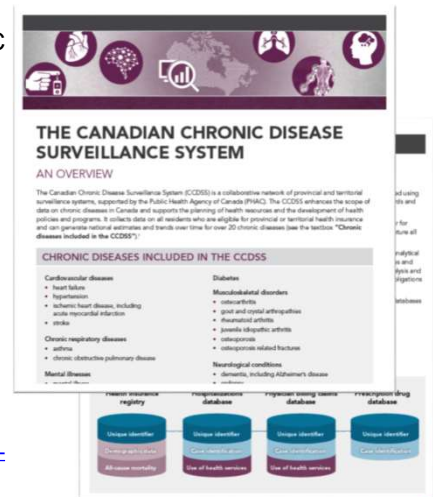
1. Overview of the CCDSS
2. Overview of CCDSS Arthritis Data
  - a. Prevalences & Incidences
  - b. Trends Over Time, Geographical Data and Age Distribution using the CCDSS Data Tool
3. Validation of Arthritis Case Definitions - Update
4. Dissemination Plan
  - a. Fact Sheets
  - b. Data Blogs and Social Media Campaign
  - c. Landing Page Update
5. Next Steps



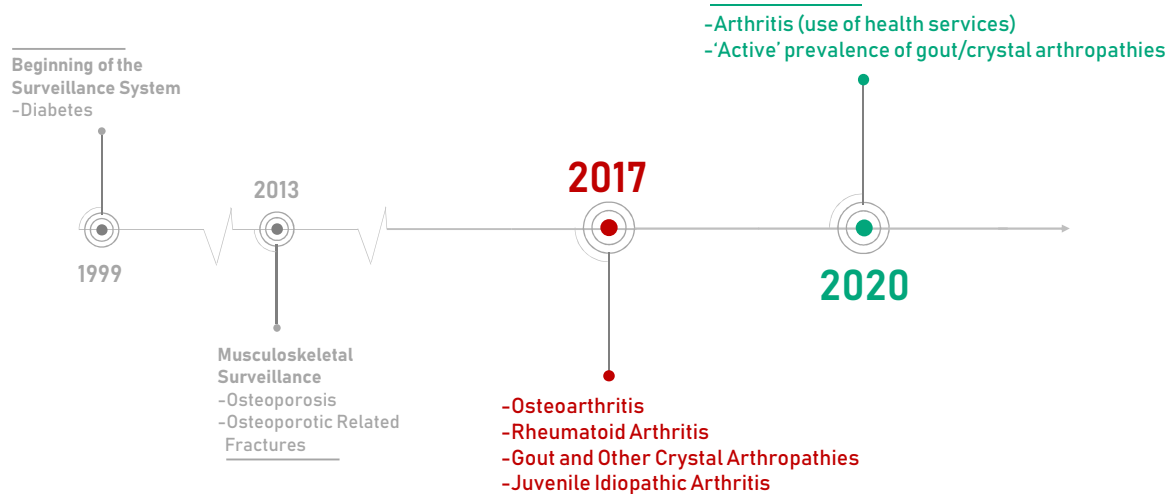
# 1. Overview of the CCDSS

## Quick Reminder - What is the Canadian Chronic Disease Surveillance System (CCDSS)?

- A collaborative network of P/T surveillance systems supported by PHAC to track chronic diseases and the related burden to the health care system.
- It identifies chronic disease cases from P/T administrative health databases including physician billing claims and hospital discharge abstract records, linked to P/T health insurance registries.
- Case definitions are applied to these linked databases and data are then aggregated at the P/T level before being submitted to PHAC for reporting.
- CCDSS Overview – See the fact sheet:
  - <https://www.canada.ca/en/public-health/services/publications/canadian-chronic-disease-surveillance-system-factsheet.html>



## Arthritis Surveillance in Canada via the CCDSS by Start Year



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## What does the CCDSS provide?

Indicators	By variables
Prevalence (counts and proportions)	Sex
Incidence (counts and rates)	Age groups (5-year)
All-cause mortality (counts, rates with/without disease/condition & rate ratios)	Provinces/Territories (YT missing; NL excluded from RA estimates; and NB from JIA estimates)
	Fiscal years 2007/08 to 2015/16 - OA, RA & gout/crystal arthropathies 2000/01 to 2013/14 - JIA

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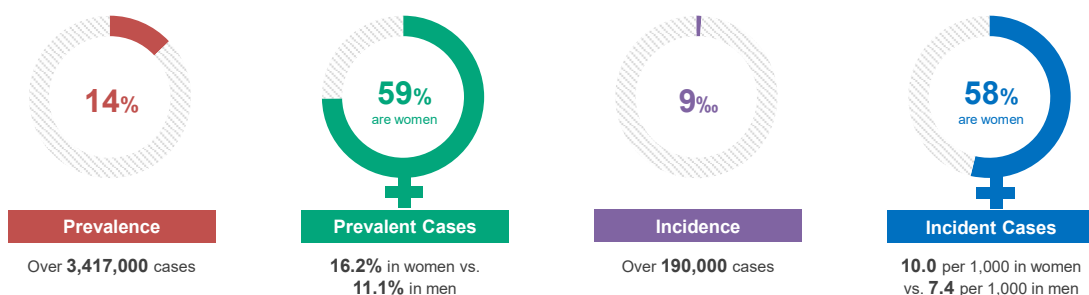
## What are the strengths and limitations of CCDSS data?



Strengths	Limitations
Case definitions informed by validation studies	Does not capture all eligible cases
Close to complete population coverage	Potential to carry forward false positives with lifetime prevalence case definitions
Incidence and time trends	
Medically/clinically diagnosed conditions	
Potential for data linkage with other data sources (e.g. EMR and Statistics Canada's surveys)	

## 2. Overview of CCDSS Arthritis Data

## Osteoarthritis in Canadians aged 20+ — CCDSS 2015-2016



### Case Definition

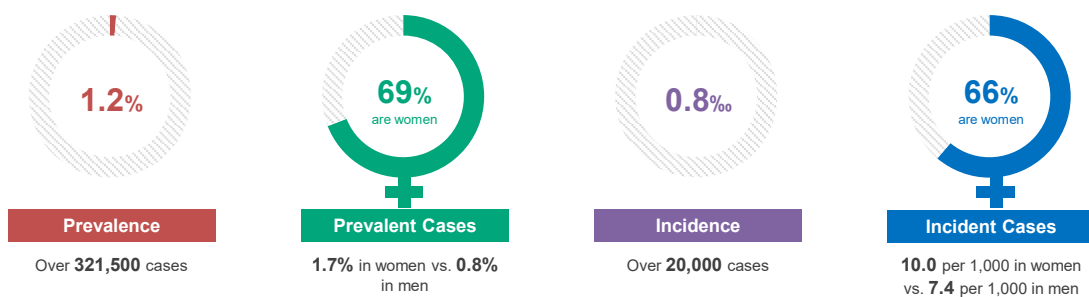
If 20+ years old **AND** 1+ hospital records **OR** 2+ physician claims (1+ day apart) in 5 years

Note: Incident cases of diagnosed OA - first year, afterward they are prevalent cases until death

Source: Public Health Agency of Canada, CCDSS data excluding YT, SK and AB — May 2018

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## Rheumatoid Arthritis in Canadians aged 20+ — CCDSS 2015-2016



### Case Definition

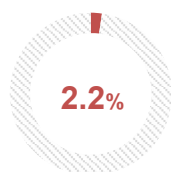
If 16+ years old **AND** 1+ hospital records **OR** 2+ physician claims (≥ 8 weeks apart) in 2 years

Note: Incident cases of diagnosed OA - first year, afterward they are prevalent cases until death

Source: Public Health Agency of Canada, CCDSS data excluding YT, SK and AB — May 2018

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## Gout & Crystal Arthropathies in Canadians aged 20+ — CCDSS 2015-2016



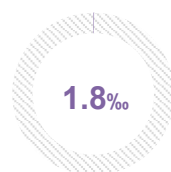
### Prevalence

Over **557,500** cases



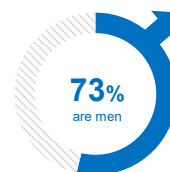
### Prevalent Cases

**1.0%** in women vs. **3.4%** in men



### Incidence

Over **44,500** cases



### Incident Cases

**1.0** per 1,000 in women vs. **2.7** per 1,000 in men

### Case Definition

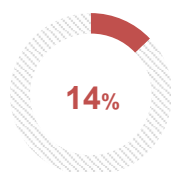
If 20+ years old **AND** 1+ hospital records **OR** 2+ physician claims (1+ day apart) in 5 years

Note: Incident cases of diagnosed gout/crystal arthropathies - first year, afterward they are prevalent cases until death

Source: Public Health Agency of Canada, CCDSS data excluding YT, SK and AB — May 2018

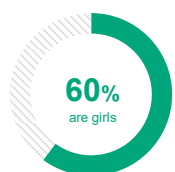
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## Juvenile Idiopathic Arthritis in Canadians aged 0-15 — CCDSS 2013-2014



### Prevalence

Over **5,600** cases



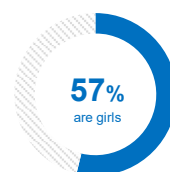
### Prevalent Cases

**0.11%** in girls vs. **0.07%** in boys



### Incidence

Over **900** cases



### Incident Cases

**0.17** per 1,000 in girls vs. **0.12** per 1,000 in boys

### Case Definition

If 0-15 years old **AND** 1+ hospital records **OR** 2+ physician claims ( $\geq 8$  weeks apart) in 2 years

Note: Incident cases of diagnosed gout/crystal arthropathies - first year, afterward they are prevalent cases until death

Source: Public Health Agency of Canada, CCDSS data excluding YT, SK and AB — 2015

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## How to obtain more detailed data? The CCDSS Data Tool

### Data Tools

The Data Tools help users visualize public health data through simple drop-down menus. Users can access geographic comparisons, trends, age distributions, and disaggregated data layered by socioeconomic and sociodemographic variables.

Search the Data Tools:  Search Sort search results by:



#### Cancer in Young People in Canada Data Tool

The Cancer in Young People in Canada (CYP-C) Data Tool provides pan-Canadian surveillance data on children and youth with cancer to inform research and planning for cancer control efforts. The CYP-C surveillance system operates through a collaboration between the Public Health Agency of Canada, the Canadian Partnership Against Cancer, and the C17 Council, a network of all seventeen children's cancer hospitals across the country.

[View](#)



#### Canadian Chronic Disease Surveillance System (CCDSS)

The Canadian Chronic Disease Surveillance System (CCDSS) Data Tool is a collaborative network of provincial and territorial surveillance systems supported by the Public Health Agency of Canada (PHAC). Each provincial/territorial system aggregates administrative data with which PHAC monitors the prevalence and prevalence of chronic conditions in Canada.

[View](#)



#### Health Inequalities

The Health Inequalities Data Tool supports Canada's domestic and international commitments to measure and monitor health inequalities. The tool contains data on indicators of health outcomes and health determinants, stratified by a range of social and economic characteristics meaningful to health equity. It identifies where health inequalities exist across different groups at national and provincial/territorial levels, and the magnitude of inequalities.

[View](#)



#### Congenital Anomalies in Canada

The Congenital Anomalies data tool, developed by the Canadian Congenital Anomalies Surveillance System (CCASS), presents prevalence rates, temporal trends and certain factors associated with congenital anomalies in Canada, using data from the Discharge Abstract Database of the Canadian Institute for Health Information. This tool contains data on 35 selected congenital anomalies from 2005 to 2014, using a follow-up period of one year after birth.

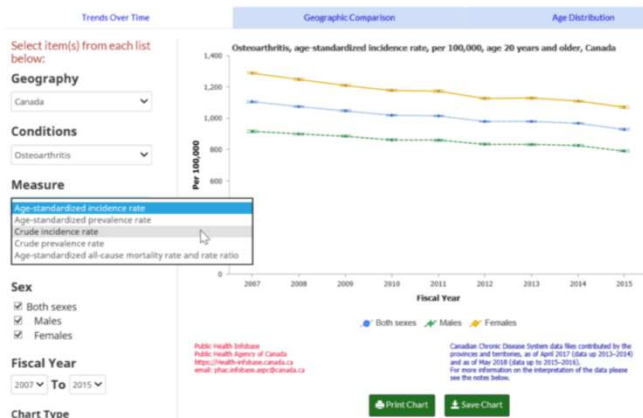
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[health-infobase.canada.ca](http://health-infobase.canada.ca)

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## CCDSS Data Tool – Trends Over Time

### Canadian Chronic Disease Surveillance System (CCDSS)

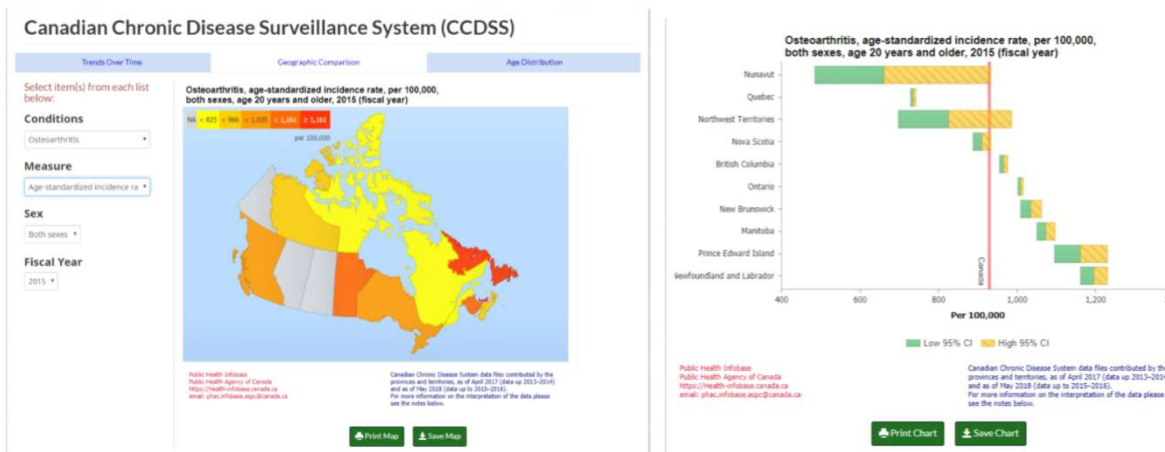


### Canadian Chronic Disease Surveillance System (CCDSS)

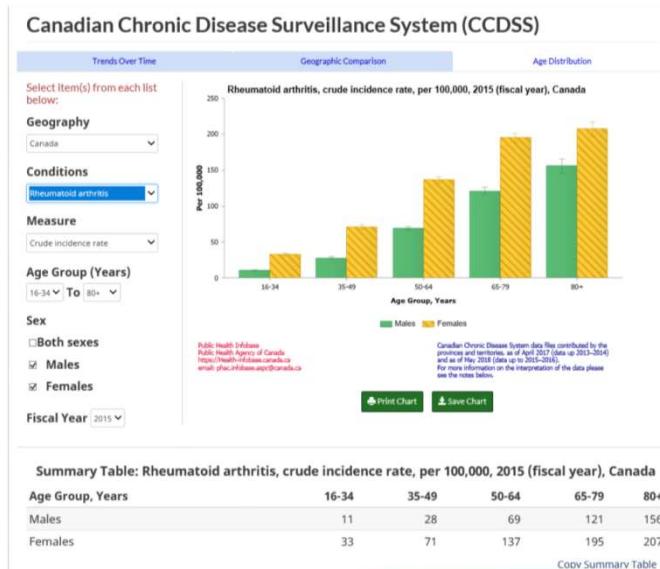


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## CCDSS Data Tool – Geographical Data



## CCDSS Data Tool – Age Distribution





### 3. Validation Arthritis Case Definitions - Update

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#### Update on the Validation Work of Arthritis Case Definitions

Disease (Age)	Case Definition Validated	Province (Year/Author)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	Kappa (Gold standard)	Notes regarding case definition implemented by PHAC
Arthritis (20+) – annual use of health services	1H or 1P in 1Y (MRDx or 1 <sup>st</sup> diagnostic field)							Not validated.
Osteoarthritis (20+)	1H or 2P (at least 1 day apart) in 5Y (H – all diagnostic fields; P – 1 <sup>st</sup> diagnostic field)							Initially informed by results from BC validation study. <sup>5</sup>
								Validation performed by ICES in 2019, report is under review.
Rheumatoid arthritis (20+)	1H or 2P (> 8 weeks apart) in 2Y with no exclusions (H – all diagnostic fields; P – 1 <sup>st</sup> diagnostic field)	Ontario (Widdifield et al., 2014 <sup>6</sup> )	83.0	99.0	52.0	100.0	NR (primary care EMR abstracted charts)	Data collected on 16+. Modified version of Lacaille et al.'s exclusion criterion <sup>7</sup> implemented.
Gout/crystal arthropathies (20+)	Lifetime case definition: 1H or 2P (at least 1 day apart) in 5Y (H – all diagnostic fields; P – 1 <sup>st</sup> diagnostic field) Active case definition: Once qualified as a case, 1H or 1P in 5Y							Not validated but informed by results from US study. <sup>8</sup>
Juvenile Idiopathic arthritis excluding cases with seronegative enthesopathy and arthropathy (SEA) syndrome (≤15)	1H or 2P (> 8 weeks apart) in 2Y (H – all diagnostic fields; P – 1 <sup>st</sup> diagnostic field)	Manitoba (Shiff et al., 2017 <sup>9</sup> )	89.2	86.3	90.6	88.0	NR (population-based pediatric rheumatology clinical database)	ICD-9 code 721.x (ON only) and ICD-10 codes M07.0–M07.3 (all P/Ts) also included.

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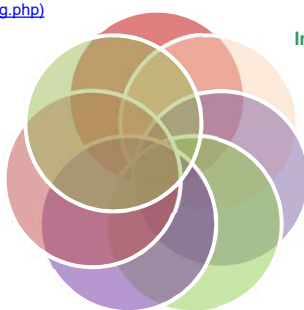
## 4. Dissemination Plan

### What are PHAC's dissemination methods (external)?

**Chronic Disease Update –  
Mailing List**  
([phac-aspc.gc.ca/cd-mc/maillist-eng.php](http://phac-aspc.gc.ca/cd-mc/maillist-eng.php))

**Webinars** hosted by CHNET

**Reports, Factsheets,  
Peer-reviewed Papers**  
(HPDCP Journal and other  
scientific journals)  
& **Poster/Oral  
Presentations**



**Public Health Infobase:**  
([infobase.phac-aspc.gc.ca/index-en.html](http://infobase.phac-aspc.gc.ca/index-en.html))  
**CCDSS Data Cubes,  
Canadian Chronic Disease  
Indicators, Infographics & Data  
Blogs**

**Social media**  
Twitter ([@PHAC\\_GC](https://twitter.com/PHAC_GC)), LinkedIn  
& Facebook

**Open Data**  
([open.canada.ca/en/open-data](http://open.canada.ca/en/open-data))

**Canada.ca**  
([canada.ca/en/public-health.html](http://canada.ca/en/public-health.html))  
& **Partner Websites**

## Arthritis Fact Sheets

- 4 Fact Sheets on Arthritis in both French and English
  - Osteoarthritis
  - Rheumatoid Arthritis
  - Gout and Other Crystal Arthropathies
  - Juvenile Idiopathic Arthritis
- First knowledge products for Arthritis using CCDSS
- Will be released altogether during **Spring 2020**
  - Will be re-promoted during Arthritis Awareness Month in Canada – September 2020
- Will be available through the **Data Visualization** section of the **Data Lab** tool on the **Public Health Info Base**
  - <https://health-infobase.canada.ca>
  - <https://health-infobase.canada.ca/datalab/visualize.htm>



## Public Health Infobase – Data Lab for knowledge products

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### Public Health Infobase

Welcome to the Public Health Infobase. This website offers a selection of easy to use tools for accessing and viewing public health data. By using various search options on key topics or by selecting criteria through drop down menus, the Infobase enables users to view data from different data sources in various formats. The users can interact with data visualizations or view infographics and charts to gain insight on chronic diseases, mental health, risk and protective factors and associated determinants of health. The Infobase tools are grouped under three main areas – data tools, indicators, and data lab – described below.

Search Public Health Infobase:  Enter keyword(s) here  Sort search results by:

#### Data Tools

The Data Tools help users visualize public health data through simple drop-down menus. Users can access geographic comparisons, trends, age distributions, and disaggregated data layered by socioeconomic and sociodemographic variables.

#### Indicators

The Indicator Frameworks are pan-Canadian resources that provide measures of chronic diseases, mental health, risk and protective factors and associated determinants. Combined with the Data Tools platform, each measure within a Framework can be visualized.

#### Data Lab

In the Data Lab you will find a new way of discovering public health data; you will get the inside scoop on upcoming publications, and you will find the story in the numbers through a rounded collection of public health infographics, infobites, and other data visualizations.



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#### Data Blog

The Data Blog is a new way of discovering public health data and getting the inside scoop on upcoming publications.

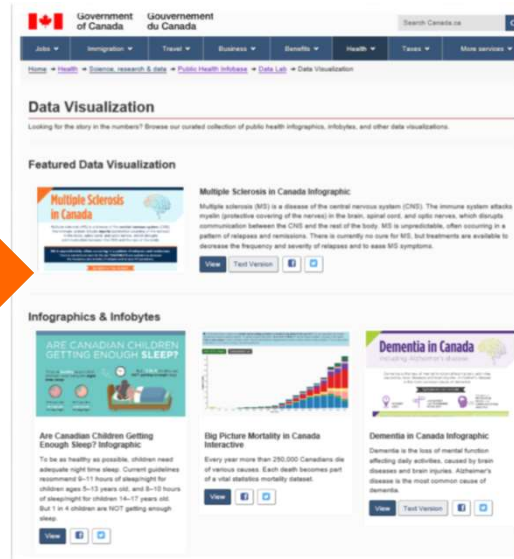
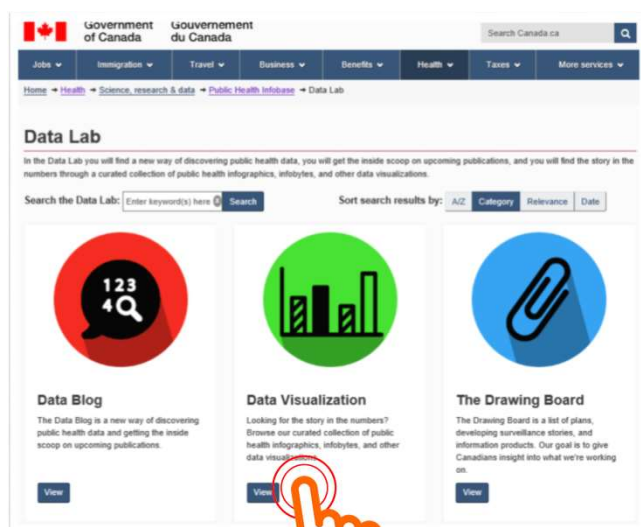
#### Data Visualization

Looking for the story in the numbers? Browse our curated collection of public health infographics, infobites, and other data visualizations.

#### The Drawing Board

The Drawing Board is a list of plans, developing surveillance stories, and information products. Our goal is to give Canadians insight into what we're working on.

## Public Health Infobase – Data Lab for knowledge products

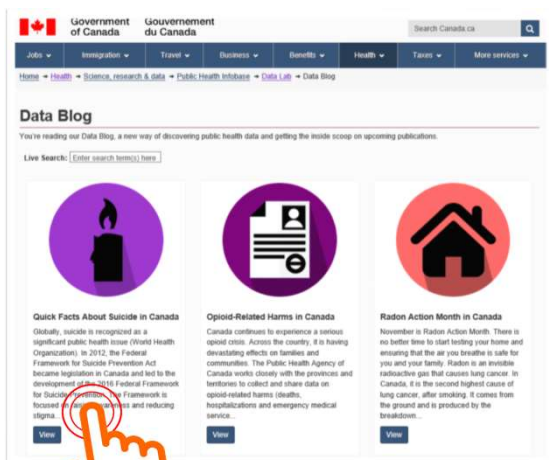


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## Data Blogs and Social Media Campaign – Under Development

- Data Blogs over September 2020 for the Arthritis Awareness Month

– <https://health-infobase.canada.ca/datalab/blog.html>



- Healthy Canadians and GovCanHealth use multiple social media to inform the Canadian population
- Best suitable platforms will be used by to give exposure to the knowledge products (fact sheets and data blogs)

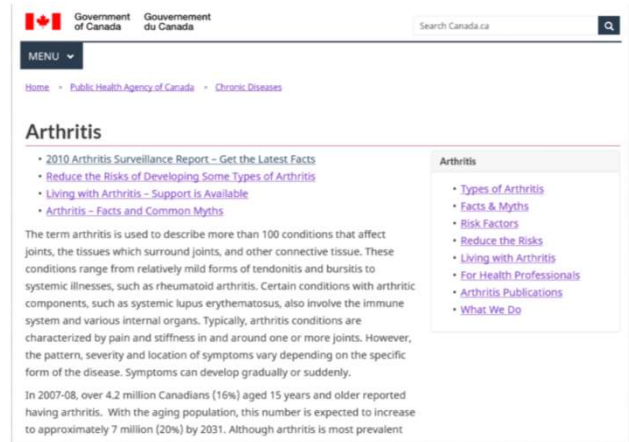


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## Canada.ca Arthritis Landing Page Update



- Planned to be deployed at the same time than the Arthritis Data Blogs in September 2020
- What will change?
  - Structure
  - Visual aspect
  - Update of data and information
  - Emphasis on the most recent knowledge products



## What's next?



- Continued national surveillance of arthritis
- Documenting the CCDSS methods pertaining to arthritis
- Revisit the case definitions when required based on new evidence (e.g. validation)
- Exploration of:
  - Projections
  - Multimorbidity
  - Economic cost

## Acknowledgments

- P/T Governments
- CCDSS Arthritis Working Group
- CCDSS Science Committee
- CCDSS Technical Working Group
- Public Health Agency of Canada Production Team



## Questions?

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