

SURVEILLANCE AND EPIDEMIOLOGY DIVISION CENTRE FOR CHRONIC DISEASE PREVENTION



THE ENGINE FOR PREVENTION

STRATEGIC PLAN 2016-2019



Public Health
Agency of Canada

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EXECUTIVE SUMMARY

Surveillance is one of the core functions of the Public Health Agency of Canada (PHAC). Towards ensuring its continued relevance, surveillance areas across PHAC are being encouraged to modernize and better integrate. In SED, this has translated into comprehensive efforts to enhance reporting on chronic disease and injury as well as associated upstream determinants including social, behavioural and environmental factors.

While we are reinvigorating our business practices within this context, our SED mandate to conduct high quality surveillance remains critical—**to obtain and produce quality data and translate it into timely, relevant and accessible information to enable public health action.**

Our 2016–2019 Strategic Plan, *The Engine For Prevention*, is built upon the following four cross-cutting, foundational goals to achieve this ultimate objective.

To elaborate on how we will achieve these goals, we will be guided by a number of priorities, which then become operational areas for action.

These four goals and priorities are:



1. Strengthening Collaboration and Coordination –

Working to align and strengthen planning and reporting efforts to inform policy and program action and better reach targeted audiences.

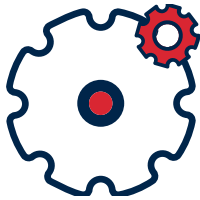
- 1.1 Redefine our Audience Interactions
- 1.2 Enable Policy and Program Action through Proactive Engagement
- 1.3 Coordinate SED Planning and Reporting



2. Increasing Relevance and Responsiveness –

Positioning ourselves to more nimbly address emerging trends, priorities and gaps.

- 2.1 Identify and Respond to Emerging Trends and Issues
- 2.2 Improve Science Prioritisation and Planning
- 2.3 Integrate a Comprehensive Approach to Surveillance



3. Mining Emerging and Non-Traditional Data Sources –

Tapping into new, innovative data sources through the exploration of new data collection systems and leveraging existing ones.

- 3.1 Leverage Existing Data Sources
- 3.2 Explore New Data Sources and Assess their Utility
- 3.3 Expand Use of Geographic Information Systems (GIS)



4. Innovating Data Sharing –

Maximizing data availability and accessibility through systematic modernization.

- 4.1 Improve Data Governance, Access and Integrity
 - 4.2 Modernise Current Data Sharing Practices
 - 4.3 Explore Innovative Data Solutions
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PART I: SETTING THE STAGE

INTRODUCTION

The development of this plan has been shaped by foundational documents which include the *Centre for Chronic Disease Prevention (CCDP) Strategic Plan 2016-19: Improving Health Outcomes – A Paradigm Shift*, *PHAC Surveillance Strategic Plans* and the *PHAC’s Strategic Horizons 2013-2018*. These plans challenge us to further develop our surveillance infrastructure, build stronger collaborations and bring a culture of innovation to our work.

This 2016–19 SED Strategic Plan aims to meet these challenges and build on our core surveillance work. It nudges us to explore new partnerships, to leverage our data and to build capacity for surveillance of upstream determinants of health. It also pushes us to discover new channels to disseminate our information and new tools to provide timely and relevant snapshots of our data.

With a focus on shared priorities and joint ownership, our new organizational matrix structure is geared to maximize our ability to achieve our four cross-cutting goals. This structure promotes program and staff intersections by pooling expertise and resources to maximise efficiency while respecting work balance and workplace wellness.

OUR VISION

To be the national leading source of information on perinatal health, injury, chronic diseases and associated behavioural and environmental determinants in Canada.

OUR MANDATE

To conduct high quality surveillance — through obtaining and producing quality data and translating it into timely, relevant and accessible information to enable public health action.

OUR PILLARS

Four core pillars guide us in all activities we undertake. These pillars are the basis of how we conduct our business:

Leadership

Producing evidence which will guide and provide direction to health promotion and disease prevention, policy and program development.

Precision

Ensuring the application of scientific rigour to our work and making our findings available through targeted dissemination.

Innovation

Seeking out and developing new ideas to enhance and complement existing practices.

Partnership

Engaging and collaborating with multiple partners to leverage national and international expertise.





PART II: OUR CURRENT CONTEXT

THE HEALTH OF CANADIANS — TRENDS AND KEY ISSUES

Canadians are now living longer and healthier than ever before. In the last several decades, major gains have been achieved in perinatal health, injury and chronic disease prevention and control. Overall mortality rates and life expectancy have improved considerably, largely due to the major decline in cardiovascular diseases (CVD).ⁱ In addition, the mental health of Canadians is also strong with 8 out of 10 Canadians reporting being happy every day or almost every day.ⁱⁱ

In terms of **perinatal health**, Canada's outcomes are generally very good:

- Maternal mortality rate has remained low in the last two decades fluctuating from a high of 11.9 deaths per 100,000 deliveries in 2001/02-2002/03 to a low of 5.1 2011/12-2012/13.^{iii, iv}
- Cigarette smoking has been steadily decreasing among pregnant women in the last two decades.^v
- The infant mortality rate has been slightly decreasing since 2000 reaching 4.8 deaths per 1000 live births in 2012.^{vi}
- There has been a significant decline in neural tube defects, a major grouping of congenital anomalies, following the introduction of folic acid-fortified flour in Canadian market in the late 1990s.^{vii}
- Mortality from childhood cancer continues to decline: 83% of children will survive at least 5 years after diagnosis, compared with 71% in the late 1980s. As childhood cancer survival increases so does the overall burden and need for follow up associated with the late effects of treatment.^{viii}

There is room for improvement, for instance:

- The rates of maternal diabetes have increased in the last decade due likely to the increasing age of pregnant women and the increase in their weight and body mass index.^{ix}
- Preterm birth, a major cause of infant mortality and morbidity, continues to be an issue of perinatal health significance.
- While national surveillance of developmental disorders is still being established, there is concern about the potential for increasing incidence of conditions such as Autism Spectrum Disorder given the trends observed in other countries.^x

Despite the major decline in chronic disease mortality, the **burden of chronic disease** is increasing.^{xi} This is due to many reasons such as the persistently high or increasing rate of some **risk factors**, the ageing of the population and the improvement in disease management and treatment which result in people living longer with their conditions. Chronic disease is also posing unparalleled demands on our health care system and general productivity and currently accounts

for about two-thirds of direct health-care expenditures in Canada.^{xii}

- More than 1 in 5 Canadian adults (20 years old +) live with at least one of the following chronic diseases – CVD, chronic respiratory diseases (CRD), diabetes or cancer.^{xiii}
- A select number of preventable behaviours including smoking, physical inactivity, unhealthy diet, and harmful use of alcohol are driving this public health challenge – with 4 out of 5 Canadian adults having at least one of those modifiable risk factors.^{xiv}
- The high obesity rate is of particular concern and may reverse the gain in overall population health due to the decline in smoking rates.
- One in three Canadians (about 9.1 million people) will experience a mental illness at some point in their lives and suicide is the second leading cause of death for youth and young adults (10 to 29).^{xv, xvi}
- In recent years, more focus has been given to child maltreatment because of its serious health impacts across the lifespan; a third of adults in Canada report having experienced physical abuse, sexual abuse or exposure to intimate partner violence before the age of 16.^{xvii}

Injuries are the leading cause of death among Canadians aged 1-44 years and the 4th leading cause of death among Canadians of all ages.^{xviii} Overall, injuries (unintentional and intentional) also pose staggering costs accounting for an estimated \$16 billion dollars each year in direct health care costs.^{xix}

- Road fatality rates have consistently decreased, as have falls-related mortality in the last 3 decades.
- In spite of these successes, there is more work to be done as concussions and self-harm are areas of growing concern for injury surveillance.

Overall, although trends show a major decrease in mortality in Canada, they also point to an increasing overall burden of chronic disease. While Canadians are living longer, it is important that they live longer in good health. Reversing this growing chronic disease burden while concurrently building on the gains we have made through health promotion, injury and disease prevention efforts of our Centre is critical to our mandate moving forward.

OUR CORE BUSINESS

Surveillance involves the tracking of a health outcome, event or determinant through the ongoing collection of data, analysis and interpretation of those data into surveillance information and the dissemination of the information to those who need it, in order to undertake necessary actions or responses.^{xx}

Our Division conducts surveillance on a wide range of health conditions and determinants (see **Table 1 - SED Surveillance Systems Snapshot**). Our work is conceptualized around a life course approach starting from perinatal health to the end of life associated with behavioural and environmental determinants.

Producing sound and trusted analysis and interpretation of national data from a public health lens is core to our work. We undertake this work as part of our key obligations under the *Department of Health Act* and *Public Health Agency of Canada Act*. We then translate and operationalize these obligations into our everyday practice under various authorities such as the *Integrated Strategy on Healthy Living and Chronic Disease*, the *Canadian Cancer Strategy*, the *Federal, Provincial and Territorial Framework for Action to Promote Healthy Weights* and the *Action Plan to Protect Human Health from Environmental Contaminants*. We also rely on guidance from the Public Health Network's *Blueprint for a Federated System for Public Health Surveillance in Canada: Vision and Action Plan* to provide insight on the federal/provincial/territorial collaboration and decision-making processes that guide our work.

ORGANIZATIONAL STRUCTURE

Since 2015, our Division is comprised of three functional content areas: Maternal, Child and Youth Health (MCYH), Adult Chronic Disease and Conditions (ACDC), and the Behaviours, Environments and Lifespan Team (BELT). We also have two supporting cross-cutting teams: Surveillance Systems and Data Management (SSDM) and Strategic Planning, Coordination and Management Services (SPCMS).

The primary, shared responsibilities of the three content teams are to design, develop and enhance surveillance programs and systems; conduct data analysis and interpretation; carry out knowledge translation; inform prevention and promotion activities; and, help build stakeholder surveillance capacity, engagement and collaboration. They undertake this work under three distinct mandates:



MCYH monitors and reports on maternal, child and youth health through a host of national surveillance systems from perinatal health to congenital anomalies and childhood cancer to developmental disorders.



ACDC conducts surveillance of key adult chronic disease areas to monitor their patterns, trends and impacts in the population and to identify new and emerging issues.



BELT is responsible for monitoring and reporting on modifiable behaviours and environments which impact health outcomes. Its work also includes injury, suicide and family violence surveillance.

Additionally, our Division has two horizontal teams that provide cross-cutting support.



SSDM works to standardize, coordinate and integrate data collection and sharing processes to ensure the accurate and timely acquisition, collection, and dissemination of the data contained in all of SED's national data sets of which we have custodial or shared responsibility.



SPMCS is responsible for policy coordination, publication planning, grants and contributions, operational planning and knowledge translation for the Division alongside the **Senior Director's Office (SDO)**. SPCMS is also responsible for the implementation and monitoring of this Strategic Plan.

The table below presents an overview of our Division's surveillance systems and programs broken down by key data sources, type and frequency of reporting cycle.

Table 1 – SED Surveillance Systems Snapshot

Maternal Child and Youth Health					
System / Program	Primary Data Sources	Data Ownership	Data Housing	Type of Data	Data Cycle
Canadian Perinatal Surveillance System (CPSS)	Hospital Data	CIHI	DCAP	Case Level	Annual (2 year delay)
	Vital Statistics	SC	DCAP	Case Level	Annual (3 year delay)
The Canadian Congenital Anomalies Surveillance System (CCASS)	Hospital Data	CIHI	DCAP	Case Level	Annual (2 year delay)
The Canadian Paediatric Surveillance Program (CPSP)	Canadian Paediatric Society (CPS)	CPS	CPS	Case Level	Monthly
The National Autism Spectrum Disorder Surveillance System (NASS)	Administrative data from P/Ts	P/Ts	SED (National Level)	Mix	Annual
Cancer in Children and Youth	Cancer in Young People (CYP-C)	Pediatric oncology centres	SED	Case Level	Annual

Behaviours, Environments and Lifespan Team

System / Program	Primary Data Sources	Data Ownership	Data Housing	Type of Data	Data Cycle
Physical Activity, Sleep and Sedentary Behaviour (PASS)	Canadian Community Health Survey (CCHS)	SC	DCAP	Case Level	Annual
Obesity	CCHS	SC	DCAP	Case Level	Annual or Biannual
	Canadian Health Measures Survey (CHMS)	SC	DCAP	Case Level	Annual or Biannual
Positive Mental Health	CCHS	SC	DCAP	Case Level	Annual
Family Violence	Canadian Incidence Study (CIS)	SED	SED	Case Level	Every 5 years
	GSS-Victimization	SC	SC	Case Level	Every 5 years
Suicide	Vital Statistics	SC	DCAP	Case Level	Annual
	Cnd Coroners and Medical Examinars Database	SC	DCAP	Case Level	Annual
Injury	Cnd Hospitals Injury Reporting and Prevention Program (CHIRPP)	SED	SED	Case Level	Daily (on-going)
	Hospital Data	CIHI	DCAP	Case Level	Daily (on-going)
	Vital Statistics	SC	DCAP	Case Level	Annual (3 year delay)

Adult Chronic Disease and Conditions

System / Program	Primary Data Sources	Data Ownership	Data Housing	Type of Data	Data Cycle
Chronic diseases* (diabetes, cardiovascular diseases, chronic respiratory diseases, musculoskeletal disorders, mental illness and neurological conditions)	Canadian Chronic Disease Surveillance System (CCDSS)	SED	SED	Aggregated Level	Annual (3 year delay)
	CCHS	SC	DCAP	Case Level	Annual and bi-annual
	CHMS	SC	DCAP	Case Level	Annual and bi-annual
	Survey on Living with Chronic Conditions in Canada (SLCDC)	SC	DCAP	Case Level	As required
Cancer surveillance	Canadian Cancer Registry	SC	SED	Case Level	Annual (3 year delay)
Breast cancer screening	National Breast Cancer Screening Database	PTs/SED	SED	Case Level	Annual

Abbreviations: Canadian Institute for Health Information (CIHI), Statistics Canada (SC), Data Access Program (DCAP)

* Cardiovascular diseases include ischemic heart disease (IHD), acute myocardial infarction (AMI), heart failure, stroke, hypertension; chronic respiratory diseases include chronic obstructive pulmonary disease (COPD), asthma; musculoskeletal disorders (MSK) include arthritis, osteoporosis and related fractures and joint conditions; mental illness includes overall mental illness, schizophrenia and delusional disorders, mood and anxiety disorders; neurological conditions include multiple sclerosis, Parkinsonism, Alzheimer's disease and other dementias, and epilepsy.

DISSEMINATION PLATFORMS

Timely and relevant data dissemination is a critical function of SED. Ensuring our targeted audiences have access to our data and associated information products will help us enable public health action. SED's **Chronic Disease Infobase (Infobase)** is foundational to our ongoing effort to maximize data dissemination and utilization.

The Infobase website includes a series of Internet based tools to help visualize, analyze, interpret and disseminate data on behavioural and environmental indicators as well as chronic disease and injury across the lifecourse. The tools embedded within Infobase include Data Cubes, Indicator Frameworks and the Data Lab.

- Data Cubes allow cross tabulations of data available to SED and the creation of tables and graphs as outputs.

- Indicator Frameworks and Quick Stats provide up-to-date core indicators and trends. Indicator Frameworks include the Chronic Disease and Injury Indicator Framework (CDIIF), the Perinatal Health Indicators Framework (PHIF), and the Positive Mental Health Surveillance Indicator Framework (PMHSIF).
- The Data Lab provides access to data visualizations and updates on upcoming/ planned publications.

In conjunction with Infobase, we enhance information and knowledge transfer through the use of complementary platforms including social media (Twitter, Facebook, Canada.ca), stakeholder engagement and internal/external knowledge transfer (including presentations, conferences, webinars, working groups and advisory committees, peer reviewed journal articles, infographics and fact sheets).

Strengthening Collaboration and Coordination



Increasing Relevance and Responsiveness

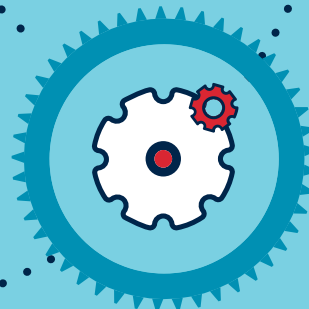


SED MANDATE:

To obtain and produce quality data and translate it into timely, relevant and accessible information to enable public health action.



Innovating Data Sharing



Mining Emerging and Non-Traditional Data Sources

Goal 1

STRENGTHENING COLLABORATION AND COORDINATION



To maximize our ability to influence public health outcomes, we need to better coordinate our efforts and collaborate with internal and external colleagues and stakeholders. We will begin by defining our target audiences more clearly through detailed analysis of our intended audiences. This will help ensure our relevance and that our products not only get to our intended audiences, but reach them in a way that ultimately instills lasting uptake to prevent disease and positively influence behaviour. The quality and breadth of our reach is directly related to our impact on health outcomes.

Alongside that initiative, we will be working to strengthen the structure of our engagement with policy, program and surveillance counterparts in PHAC. We will also place an increased emphasis on performance measurement, operational planning and reporting of our work and of our surveillance products. These measures will help ensure that surveillance proactively informs the policy and program actions and storylines for our Branch.

1.1 REDEFINE OUR AUDIENCE INTERACTIONS

Knowing our audiences, as defined by their traits and information-consumption practices, will facilitate interaction and meaningful reach. While we will be more clearly targeting the audiences we want to reach, it is important to note that we cannot be everything to everyone and that this exercise is not an attempt to do so. We must research, assess and engage with a variety of different audiences to know where our information will have the most impact, fill the greatest gaps, and generate concrete actions.

As a first step, we will produce an *Audience Segmentation and Needs Assessment Framework* in 2016 that identifies our core audiences, and their needs, to better define, tailor and target our publication planning process and corresponding knowledge products. We will also revisit this analysis on an ongoing basis to continually refine our approach.

As a Division, we will explore opportunities to continually evolve towards more active audience engagement strategies to best tailor our dissemination strategies to our identified audiences and maximise use and utility of our data and information products. The use of social listening techniques, which entails knowing which web-based platforms potential information users interact with, will help us target our activities to best meet users' needs. Centre-level best-practices on social-listening will support that learning so that results can be used as a line of evidence on needs, level of awareness, access and use of our information.

1.2 ENABLE POLICY AND PROGRAM ACTION THROUGH PROACTIVE ENGAGEMENT

Although we have several informal mechanisms in place with which to consult our internal policy and program counterparts, we will evolve towards a more structured process to ensure they are systematically engaged, including on operational planning, to ensure alignment of objectives and priorities. We will also focus on improving our collaboration with our colleagues divisionally. Solidifying our efforts in these two areas will help strengthen internal knowledge, prevent duplication and facilitate external consultation by creating a more informed and coordinated internal voice.

In 2016-17, we will re-launch the *Emerging Issues Forum* in a new format to help us identify synergies in different areas and help us sustain and grow connections to policy, program and related

surveillance areas. Enhanced use of the *Emerging Issues Forum* will ensure we build connections with chronic disease prevention and health promotion policy and program counterparts to optimize action.

While the CDiIF is our legacy resource for data information sharing both internally and externally, on the burden of chronic diseases and associated determinants across Canada, its uptake by the Health Promotion and Chronic Disease Prevention Branch (Branch) needs to be maximized and overall dissemination needs to be carried out to ensure it is meeting the needs of all its audiences.

A Divisional CDiIF Steering Committee has been established to coordinate and broaden governance to enable a more structured consensus on decisions related to content. It will also facilitate ongoing and consistent reporting of key indicators for chronic disease prevention within the Division, the Branch and beyond. To ensure the CDiIF remains relevant to its users, we will initiate an annual consultation across the Branch to solicit input from functional areas on data gaps and needs to optimally position the tool to enable policy and program action.

1.3 COORDINATE SED PLANNING AND REPORTING

We are streamlining processes around operational and publications planning, reporting, grants and contributions, internal communications and administrative management. Improved planning can increase efficiency, freeing up time for core activities and enabling better support to decision-making.

To achieve efficiencies in the planning and reporting tasks of all program areas across the Division, SPCMS will work with the SDO to develop and implement an over-arching, multi-year operational planning process through cross-divisional engagement. Doing so will help us to better anticipate, triage and manage risk. A key part of this work will be to prioritize our areas of work and related deliverables to balance focus on our core business with the development and implementation of new endeavours. Building on the multi-year planning cycle, as part of this process, we will also create and follow a systematic prioritization process to assess ideas on new initiatives or scaling back those underway.

The operational planning process will also be linked to publications planning to ensure complementarity between the functions. To further conceptualize and manage the publications processes, we will also continue to build information infrastructure using a digital Kumu platform that is flexible and collaborative. As part of this new approach, we will put greater focus on the marketing and the tailored dissemination of our data and information products.

SED will apply audience-specific, robust publishing best-practices, such as Search Engine Optimization, mobile first design, and incentive-based information consumption.

Goal 2

INCREASING RELEVANCE AND RESPONSIVENESS



Emerging chronic disease, injury and maternal and child/youth health issues arise regularly and are associated with a number of factors, such as increased prevalence in some risk factors (e.g. obesity, sedentary behaviours), a change in the population (e.g. ageing population) or the environment (e.g. built environment). Additionally, new factors related to a number of chronic diseases are emerging (e.g. the impact of sleep and the microbiome^{xxi}). To continue to be at the forefront of health promotion and chronic disease and injury prevention in Canada, it is essential that we be able to identify and report on emerging issues, trends and concepts in a timely manner.

In recent years, we have increasingly expanded our approach to address a broader range of issues that impact health outcomes. While disease-specific surveillance remains core to our work, we are increasing our focus on improving our understanding of the social, behavioural and environmental determinants of health that intersect and accumulate to influence health outcomes over the lifecourse.

2.1 IDENTIFY AND RESPOND TO EMERGING TRENDS AND ISSUES

While we have a number of ad-hoc mechanisms in place to identify emerging issues, we need to develop more formalized, systematic processes to better track trends. We will do this through scaling up the CDIIIF, piloting syndromic methods of surveillance and by generating projections on key chronic diseases. These activities draw on our successes both with e-CHIRPP's syndromic surveillance pilot and the recent monograph of cancer projections to 2032. As well, to further enhance relevance and response, focus will be placed on mobilizing targeted and real-time knowledge transfer and show-casing new evidence on chronic disease through innovative dissemination platforms.

Furthermore, our long-standing partnership with the Canadian Paediatric Society has allowed us to ramp up our surveillance of microcephaly in the wake of the Zika virus outbreak affecting a large number of countries in the Americas. This near real-time surveillance will be conducted through the CPSP.

2.2 IMPROVE SCIENCE PRIORITISATION AND PLANNING

Research is one of the primary mechanisms available to us to address gaps and investigate issues requiring further attention. We conduct considerable research in the Division, but activities at times go beyond core program business requirements. Given the time and staff investment required to execute these activities, we need to be more strategic on where we are allocating our resources focusing both internally and externally. This will ensure that we not only focus on priorities, but also that we respect workload balance and workplace wellness for our team.

Moving forward, we will develop a medium-term (2-4 years) research/science plan to respond to core data gaps from current priorities and address emerging issues. This process will also be aligned with the *Branch Science Plan* and our publication planning process. It will enable us to more systematically determine, on the front end, the research we plan to undertake, ensure it remains aligned with data gaps and is in accordance with current priorities and departmental mandates.



2.3 INTEGRATE A COMPREHENSIVE APPROACH TO SURVEILLANCE

Close monitoring of the relationship between critical life periods (e.g. pregnancy, early life, adolescence) and health in terms of interactions of modifiable behaviours and environmental factors and specific disease processes over time is fundamental to understanding disease development and potential for prevention. We have been collaborating with Statistics Canada on a new Children and Youth Health Survey (to be piloted in late 2016). As part of that collaboration, we have worked to ensure the inclusion of a perinatal module to allow a better understanding of this critical life stage and its impacts of child, youth and adult health. Similarly our work on family violence will support the evidence linking these adverse childhood events to lifelong health impacts in the Canadian context.

It is well recognized that certain population groups face a disproportionate burden of ill health. Understanding the differences in health between all population groups over time is fundamental to the development of programs, services and policies that can potentially narrow disparities.

Using existing tools such as the CDIIF, the PHIF and the Health Inequality Data Cubes (set to be launched in 2016/17) we will also enhance our health inequalities reporting. This will include the analysis and interpretation of key determinants

of health in relation to perinatal health, injury and chronic diseases. This will be done in collaboration with our Branch colleagues in the Social Determinants and Science Integration Directorate.

In terms of environmental determinants, we will also continue conducting analyses to explore potential associations between environmental factors (e.g. air pollution, environmental contaminants) and key health conditions monitored by the Division including congenital anomalies and Autism Spectrum Disorder.

Although we will continue to produce disease, condition and injury specific reports, in order to broaden our reach, we will also develop surveillance products on cross-cutting theme issues. This will build on our *How Healthy are Canadians Report* which assessed risk factor and disease trends over time to describe overall improvements and areas of concern. This report is set to be released in 2016.

Along this line, we will develop cross-cutting, theme-based surveillance products. The first in this series will be focussed on seniors' health, providing a comprehensive view of the impacts on the ageing of the Canadian population and provide critical information to our policy and program colleagues.

Our unique position requires us to be nimble and adaptive in an ever changing environment.

Goal 3

MINING EMERGING AND NON-TRADITIONAL DATA SOURCES



There are numerous challenges with traditional surveillance data sources, such as administrative health data and surveys, which limit further knowledge advancement in surveillance. For example, behavioural risk factors and socio-economic information may be missing. Response rates to telephone-based health surveys have decreased in recent years increasing the risk of bias as well as rising overall costs.

Furthermore, administrative health data can only track people who have health problems (negative health), and it lacks information about health determinants and positive health. Therefore, innovative non-traditional data sources are needed.^{xxii} There is a strong opportunity for us to tap into new data sources through leveraging existing data, exploring new data collection systems, sources and expanding on the current innovative practice such as geo-coding to provide more robust information to our defined audiences.

3.1 LEVERAGE EXISTING DATA SOURCES

To enhance our analysis and reporting, we will accelerate our efforts to identify existing, complementary data opportunities outside our Division in a more systematic manner. This will involve exploring existing monitoring systems from other areas within PHAC, other federal departments and those from external partners. The chronic disease economic project is an example of this type of work.

To advance this priority, we will explore non-traditional data sources of administrative education and social services data as well as administrative health data. This feasibility work is already underway in BELT (family violence) and MCYH (autism) and we will seek to expand on

these successes to broaden our evidence base in other content areas. The far reaching influence of the impact of family violence is increasingly identified as a major risk factor for developing chronic diseases including heart disease and cancer, in addition to its relationship to mental illness and substance abuse. To build on this evidence base, we will conduct a feasibility study on the use of administrative data to supplement and improve child maltreatment surveillance led by the Canadian Incidence Study of Reported Child Abuse and Neglect. This will involve supporting the development of a pan-northern core set of indicators of child maltreatment in collaboration with the three territories.



3.2 EXPLORE NEW DATA SOURCES AND ASSESS THEIR UTILITY

Our Division is building a surveillance infrastructure that includes innovative non-traditional data sources. We will undertake a comprehensive environmental scan of new and emerging data sources on disease, condition, and injury areas as appropriate (e.g. built environment and social media data) to determine new available sources and tools we could potentially leverage.

We will assess the validity and usefulness of newly identified potential data sources and determine where they could be integrated to augment our existing practice. This process would include internal and external collaborations to cross-validate data. Where robust data is identified, we will explore the feasibility of using these sources to further broaden our surveillance efforts.

We will also enhance the use of our G&C program, the *Enhanced Surveillance for Chronic Disease Program (ESCDP)*, and strategically allocate its \$2.7M in annual funding, to strengthen the focus on addressing existing data gaps and expand into non-traditional data sources and methodologies. To seek potential projects in these areas, we will also take a more proactive approach in identifying potential partners that are aligned with our evolving data needs and gaps.

3.3 EXPAND USE OF GEOGRAPHIC INFORMATION SYSTEMS (GIS)

GIS offers a unique opportunity in surveillance to identify, analyze, and understand patterns and relationships. We are currently mapping the occurrence of thyroid cancer to allow us to visualise and compare rates based on geographic areas. To build on this promising practice, we will expand this work for the mapping and analysis of other types of cancers.

We will also scale up our efforts to explore how potential associations between positive mental health and physical activity and proximity to community parks through the use of the Canadian Community Health Survey (CCHS) and GIS data. Once this feasibility study is completed, we will explore how best to measure the walkability of various geospatial locations. We are also starting to explore the use of social media to capture and analyze trends in suicide-related texts, information not previously open to analysis. As a stepwise implementation process, this type of work will expand into other priority areas as our practices are established through routine use.

Through partnerships and research, SED data gaps will be filled by addressing accuracy, enhancing existing data and exploring new data sources and methodologies.

Goal 4

INNOVATING DATA SHARING



To provide quality and relevant public health information in a timely manner, it is incumbent on us to explore new ways to innovate data access and use, both internally and externally. As this presents a considerable task, requiring time and perseverance, we will undertake a staged approach to implementation focussing on early wins and brokering key national and international partnerships with proven leaders. Building on global momentum in this area, we will focus on internal data governance and data quality monitoring, and explore new ways to share and disseminate our data and data products.

4.1 IMPROVE DATA GOVERNANCE, DATA ACCESS AND INTEGRITY

To fulfill our core surveillance function we need to continually support development and refinement of our surveillance infrastructure including processes, procedures, and partnership approaches, both internally and externally. This will be achieved through the standardization, coordination, and integration of data collection.

To optimize timeliness of data collection, analysis and use, we will seek to integrate and build from best practice internal governance models. As a starting point, we will explore the feasibility of implementing the governance model used to support the CCDSS into our other surveillance program areas. This model is structured to mitigate issues relating to privacy and confidentiality of data since the individual-level data are housed at the P/T level.

Multiple MOAs are required to access data from P/Ts and hospitals. Establishing and renewing these agreements is time consuming and labour intensive. To optimize timelines of the data collected in partnership with P/Ts and related organizations, we will explore new ways of streamlining and standardizing the MOA process across surveillance program areas.

Conducting regular assessments of our surveillance systems is imperative to maintain relevance and ensure data integrity. To better integrate this assessment process, we will prioritise our participation and follow-through on existing, regular assessments of surveillance system performance conducted by

PHAC's Data Coordination Access Program (DCAP) to critically assess our surveillance systems and use these results to inform continuous improvement.

To support expedient assessment of data quality issues, we will strengthen matrix-based collaborations internally through regularly convening the internal SED Surveillance Operations Team to share technical decisions and ensure common/similar approaches across the systems. We will also build on the current efforts of the CCDSS and develop innovative data visualization tools. New data visualization tools will also be shared with P/Ts so that they can be used. These tools would provide us with results stemming from regular monitoring of the data quality enabling us to inform users in a more timely fashion of any discrepancies and irregularities identified in the data source potentially caused by differences amongst the P/Ts, data collection mechanisms, etc. This summary would flag issues and further help identify remediation mechanisms to address this issue and continue collecting quality data.

4.2 MODERNIZE CURRENT DATA SHARING PRACTICES

To enhance data sharing and strengthen our focus on data accessibility and usage, we will explore best practices in open data. Open data is one of the key underlying pillars of open government consistent with *Canada's Action Plan on Open Government (2012-14 and 2014-16)* and PHAC's *Open Data Action Plan for Surveillance Data Holdings (2014)* which aim to increase transparency and engagement.



We will conduct an environmental scan of best practices in open data globally and assess their applicability to our context. We will also pilot identified best practices in open data, in collaboration with content areas, and assess outcomes for potential scale-up before broader implementation.

A key aspect of our current practice of data sharing and promoting improved visualization and dissemination of our data is to house our data on Infobase where users can access and manipulate what is available according to their needs. To continue to strengthen Infobase, in collaboration with users of this tool, we will evaluate our current public facing platforms to better define and address the needs of primary data users in terms of their preferred types of data, methods of interaction, output forms, and information architectures. This feedback will inform the development of an action plan in FY 2016-17 for modernizing Infobase.

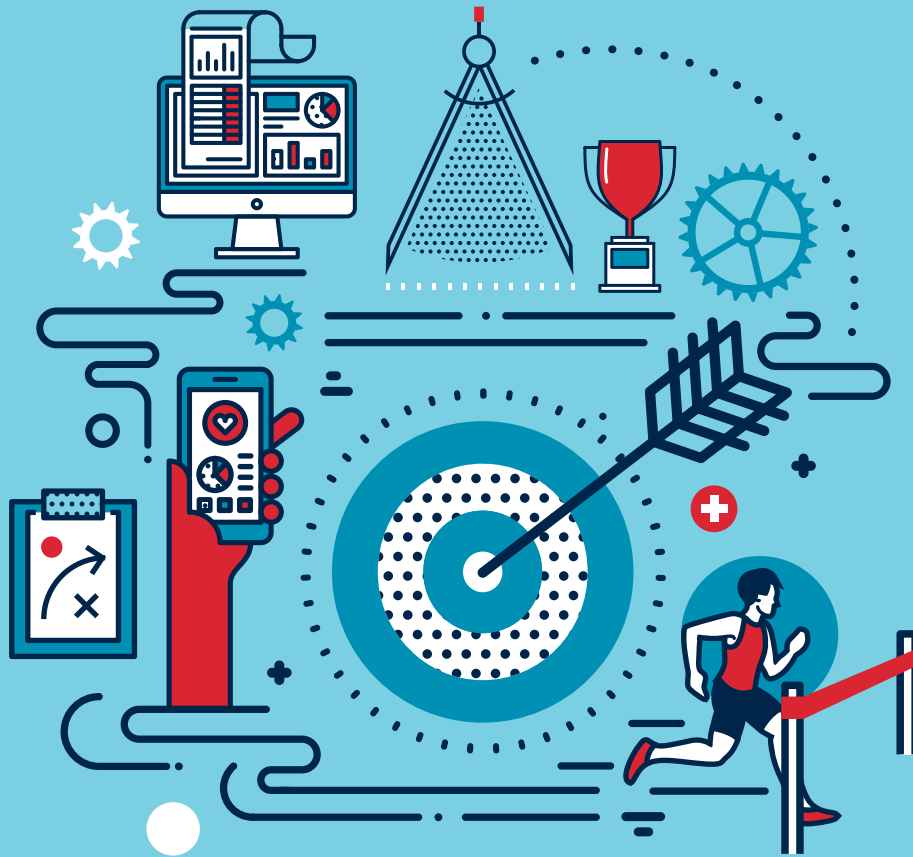
While the above focuses on our external audiences, we also need to continue improving our ways of sharing data internally. This involves minimizing data lag, targeting data analyses and aligning it with our priorities, and enhancing data utility. This will help us share data and data products with our internal partners faster and in more user-friendly ways. A key initial step in this regard will involve broadening current efforts to develop indicator dashboards across the Division.

4.3 EXPLORE INNOVATIVE DATA SOLUTIONS

Incentive prize designs (i.e., Data Challenges) are a proven mechanism to develop innovative solutions quickly and efficiently that would not be otherwise possible from within and through traditional levers. Data Challenges are used to develop innovative solutions, products or achieve outcomes based on identified targets.

To strengthen our lead national role as data repository and catalyst, we will broaden our partnership scope and build capacity through undertaking national and international Data Challenges to strengthen our work in areas such as emerging non-traditional data sources. To undertake this work, we will engage partners with demonstrated success in open data access and the testing of innovative and effective ways of using health data in order to inform the modernization of our data access. This will include supporting Divisional participation and leadership at the annual US Health Datapalooza Event and building towards a future International Data Challenge Project — to seek new ideas, methods or products to answer big data challenges for SED. We will also continue to support the development of internal ideas, providing ongoing platforms and resources to do so.

Actionable data requires modern access and new data sharing models for SED.



PART IV: IMPLEMENTATION

This section outlines in detail the concrete actions we will undertake to achieve the goals and priorities of our Strategic Plan highlighting the appropriate lead(s) from across SED. A detailed, **Evergreen Implementation Tracker** is included and will be reviewed on an annual basis. The Implementation Tracker provides the level of granularity on the specific projects, leads and deliverables to meet the goals in this Strategic Plan.

PERFORMANCE MEASUREMENT

Performance measurement is critical to our success, and we will work closely with our Centre’s Program Performance Team to build our performance story and ensure we meet the ultimate and cross-cutting goals established in the Strategic Plan. The performance measurement applied to surveillance will focus on process measures (*Did we do what we said we would do?*), target groups (*Did we reach and engage key audiences as planned?*), and outcomes (*Did we achieve our goals?*).

Our work to redefine our audiences most effectively (Goal 1) goes hand in hand with developing a Measurement Framework. Performance data generated will be used to inform and refine our

longer-term planning. To build this approach, we will design a SED Measurement Framework using analytics to assess our output of surveillance information and associated knowledge products. Analytics include data on our products—web data (i.e. downloads, page-views), dissemination methods, audiences targeted and reached. The Measurement Framework will define key objectives, expected results and success to examine the impact of our surveillance products, focusing on a continuum of **awareness, access** and **use**.

Measuring our performance and tracking the implementation of activities to meet our cross-cutting goals will ensure that we are striving as a Division to achieve our mandate — **to obtain and produce quality data and translate it into timely, relevant and accessible information to enable public health action.**

SED Strategic Plan 2016–2019: Implementation Tracker

Overall:

Measuring Performance

Goal & Priority	Implementation Activities (Lead)
1.1 Performance Measurement Planning	<ul style="list-style-type: none"> Building a SED Analytics Framework to Measure Performance (Executive Office, SPCMS)

Goal 1:

Strengthening Collaboration and Coordination

Goal & Priority	Implementation Activities (Lead)
1.1 Redefine our Audience Interactions	<ul style="list-style-type: none"> Develop an Audience Segmentation and Needs Assessment Framework to better inform Divisional publication planning (SPCMS)
1.2 Enable Policy and Program Action through Proactive Engagement	<ul style="list-style-type: none"> Conduct annual Branch consultation on data needs/gaps/challenges (SPCMS, SDO) Re-launch the Emerging Issues Forum (SDO, SPCMS) Strengthen CDIF governance (SDO) Explore multi-sectoral collaborations to further surveillance/research on the built environment (BELT) Strengthen collaboration and engagement within the Branch and with other federal departments (ALL)
1.3 Coordinate SED Planning and Reporting	<ul style="list-style-type: none"> Develop an overarching multi-year operational planning process (SPCMS, SDO) Implement and refine annual publication process (SPCMS)

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Goal 2:

Increasing Relevance and Responsiveness

Goal & Priority	Implementation Activities (Lead)
2.1 Identify and Respond to Emerging Trends and Issues	<ul style="list-style-type: none"> Maximise the use of current tools and input from Expert Advisory Committees and Working Groups to identify and investigate emerging trends and issues (ACDC, BELT, MCYH, SDO) Leverage partnerships and build on existing surveillance systems to respond to emerging issues (e.g., Zika virus & microcephaly, built and social environments) (ACDC, BELT, MCYH) Pilot syndromic methods for surveillance of adult chronic disease conditions and unintentional injuries (BELT, ACDC) Generate projections on key major chronic diseases using the CCDSS and on injuries using CHIRPP (ACDC, BELT) Leverage surveillance data to inform research (e.g., rising incidence rates of childhood cancer and autism) (MYCH, ACDC, BELT)
2.2 Improve Science Prioritization and Planning	<ul style="list-style-type: none"> Develop a medium-term SED Science Plan (SDO) Streamline Science approval process (SDO) Develop mechanism to stay informed of chronic disease related research led by Social Determinants and Science Integration Division (SDO, SPCMS)
2.3 Integrate a Comprehensive Approach to Surveillance	<ul style="list-style-type: none"> Ensure continuity of surveillance in conditions that begin in childhood (MCYH, ACDC) Implement data collection and reporting on Health Indicators Dashboard (BELT) Produce cross-cutting and lifecourse surveillance products (e.g., Trends reporting, Seniors and ageing reporting, Behaviour Atlas) (SDO, ACDC, BELT, MCYH) Increase reporting on health inequalities (ALL) Broaden efforts to implement indicators frameworks across the Division (MCYH, ACDC, BELT) Support efforts for surveillance of diabetes in indigenous populations (ACDC)

Goal 3:

Mining Emerging and Non-Traditional Data Sources

Goal & Priority	Implementation Activities (Lead)
3.1 Leverage Existing Data Sources	<ul style="list-style-type: none"> Increase use of available non-health data (e.g. education and social services data) for family violence, autism and other development disorders surveillance (BELT, MCYH) Enhance use of currently available data (e.g., CIHI, vital statistics) by linking maternal and newborn records for conducting in-depth data analysis relevant to maternal and infant health surveillance (MCYH) Apply data linkage of surveys to report on behaviours and environments impacting health outcomes at the individual, family, community and societal levels (BELT) Continue to add new chronic diseases and conditions to the CCDSS (ACDC)

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Goal 3:

Mining Emerging and Non-Traditional Data Sources

Goal & Priority	Implementation Activities (Lead)
3.2 Explore New Data Sources and Assess their Utility	<ul style="list-style-type: none"> Conduct an environmental scan of new and emerging data sources on disease, condition and injury areas as appropriate (SPCMS) Enhance congenital anomalies and developmental disorders surveillance systems by collaborating with P/Ts to obtain more timely and complete data (MCYH) Engage with Statistics Canada to promote/request that new Children's Survey include information on pregnancy, newborn and infant health to facilitate a life course approach to national health surveillance. (MCYH) Exploring the application of non-traditional data to assess the impacts of physical and mental health as well as physical and social environments on health outcomes including for suicide prevention and healthy living (BELT) Focus the Enhanced Surveillance for Chronic Disease Program in a more targeted, proactive manner to address surveillance gaps and expand into non-traditional data sources (SPCMS)
3.3 Expand Integration of Geographic Information Systems (GIS)	<ul style="list-style-type: none"> Increase use of GIS in cancer, maternal, infant, child and youth health surveillance (MCYH,ACDC) Explore the application of the use of GIS to report on mental and physical health outcomes (BELT) Explore how best to measure the walkability of various geospatial locations (BELT)

Goal 4:

Innovating Data Sharing

Goal & Priority	Implementation Activities (Lead)
4.1 Improve Data Governance, Access and Integrity	<ul style="list-style-type: none"> Streamline agreements with partners (P/Ts, hospitals etc) (SSDM, MYCH) Conduct regular evaluation of surveillance system performance (SSDM) Continue the CCDSS data improvement team (SSDM, ACDC) Establish Technical Operational Team to share technical decisions and ensure common/similar approaches across SED data systems (SSDM, SDO) Establish new governance framework for CYP-C (MCYH) Formally launch CYP-C External Data Access Program (MCYH) Implement CIS with improved governance, data access and integrity (BELT)
4.2 Modernise Current Data Sharing Practices	<ul style="list-style-type: none"> Modernize and improve user-friendliness of the Chronic Disease Infobase (SSDM) Conduct an environmental scan of best practices in open data and assess applicability (SPCMS) Continue implementation of SED requirements for PHAC's <i>Open Data Action Plan for Surveillance Data Holdings</i> (SSDM) Show-case latest evidence through innovative dissemination and visualisation platforms (ACDC, BELT, MCYH)
4.3 Explore Innovative Data Solutions	<ul style="list-style-type: none"> Organize national and international data challenge initiatives (SPCMS) Explore the application of big-data analytics in surveillance to inform trends and emerging issues with respect to modifiable behaviours and environments which impact health outcomes (BELT)



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