Development of priority health equity indicators for British Columbia: Executive summary

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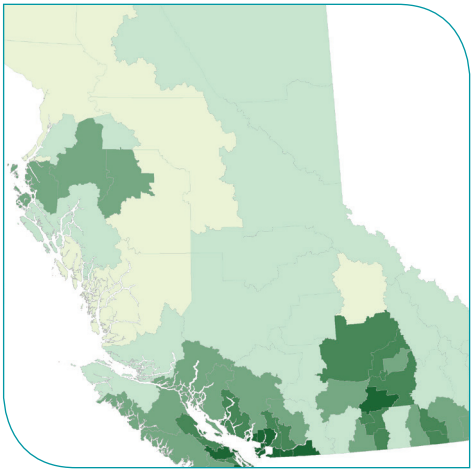

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Executive summary

British Columbia (B.C.) is one of the healthiest provinces in Canada, ranking the highest among all the provinces and territories on several population health indicators. B.C.'s life expectancy at birth increased by almost two-and-a-half years during the past decade and we are one of the healthiest jurisdictions in the world to have hosted the Winter Olympics and Paralympics.[1]

Although British Columbians are doing well overall, there is considerable evidence that health varies across the province according to geography, demographics, and socioeconomic status. In 2008, the Health Officers Council of BC (HOCBC) released a report, *Health inequities in BC*, that depicted the state of various health inequities across the B.C. population.[2] Confirming patterns found in other developed countries, the report showed that health in B.C. tends to be unevenly distributed along a socioeconomic gradient. The HOCBC's follow-up report in 2013[3] demonstrated that this gap is widening, and that health inequities are increasing.

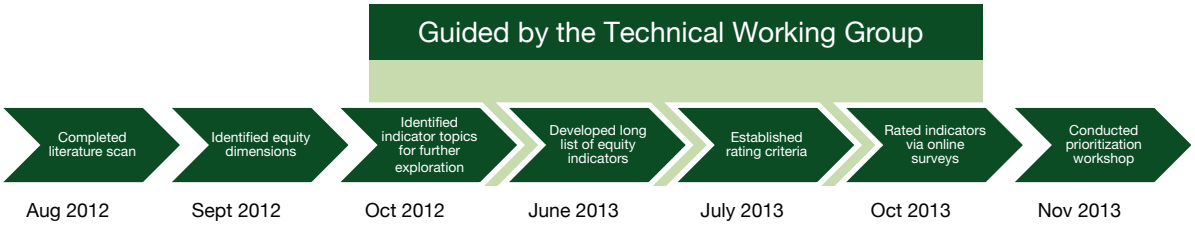
The PHSA Population and Public Health Program (PPH) has worked in partnership with agencies and organizations within and outside of PHSA over the past several years on health promotion and chronic disease prevention strategies aimed at reducing health inequities. In 2011, PPH released a report, *Towards reducing health inequities: A health system approach to chronic disease prevention*, that focused on actions the health system can take to reduce health inequities.[4] The report recommended several actions that could promote the design and delivery of a health care system that would not exacerbate or increase health inequities.[5] One of the report's recommendations was to:

> *Develop health equity targets and plans in consultation with communities and community members and actively monitor and measure their impact on health inequities by: building on current initiatives to utilize health equity assessment tools to coordinate the design, implementation and evaluation of ongoing and future policies, programs and services.*[6]

Before engaging community partners in any process of setting targets, indicators need to be developed. A priority for PPH was to begin with the indicators available and used by the health system. Therefore, PPH worked in collaboration with health sector partners to develop a prioritized set of health equity indicators for use in B.C. as a step towards setting targets and creating future action on equity. The purpose of this report is to document the history, process, outputs, and outcomes of the project during 2012-13 and 2013-14. We hope our experience may help inform others conducting similar processes.

The development of health equity indicators is technically challenging, and requires epidemiological and population health expertise to: define the indicators; determine data sources; and develop and agree on methodology. To facilitate the indicator selection process, PPH formed a Technical Working Group (TWG) with representatives from various departments at the Ministry of Health and regional health authorities. Over a two-year period, PPH led activities with the TWG and other key stakeholders that included: 1) developing and documenting the exploration of technical questions; 2) creating, administering and collating online surveys; 3) organizing and facilitating meetings, discussion groups and workshops (including creating support materials); and 4) presenting sample data analysis strategies and results for feedback. Active stakeholder participation combined with strong and flexible leadership, solid project management and robust technical expertise, were the greatest strengths of our process. Figure 1 displays a timeline of key project activities.

Figure 1. Development of priority health equity indicators for B.C.: Project accomplishments 2012-13



In collaboration with key stakeholders, PPH achieved the following outputs and deliverables during the course of this project:

- **Equity indicator framework** – Adapted from the Canadian Institute for Health Information (CIHI) indicator framework[7], the PPH equity indicator framework is comprised of three tiers of indicators (i.e., Health status and outcomes, Non-medical determinants of health and Health system performance), with 'equity' incorporated as a cross-cutting dimension.
- **Literature scan** - A literature scan describing work completed by other jurisdictions towards health equity indicators (i.e., indicator identification, indicator frameworks, selection criteria and prioritization methodology).
- **Equity dimensions** – A set of cross-cutting demographic, geographic and socio-economic equity dimensions for stratifying the indicator data.
- **Definitions and descriptions of health equity indicators** – Two-page descriptions for each of the 87 indicators on the initial list. Descriptions include: indicator definition, data source, method of calculation, relevance of the indicator to measuring equity, and why the indicator was recommended.
- **Indicator selection criteria** – A comprehensive list of criteria for selecting health equity indicators during the indicator rating and prioritization process.
- **Online surveys** – Various questionnaires used to build consensus during indicator prioritization.
- **List of health equity indicators** – A prioritized list of 52 health equity indicators, achieved by consensus. These indicators may be useful for many relevant stakeholders in B.C. to inform analyses and decision-making related to health equity.

Conclusion

This report provides a list of prioritized health equity indicators for use in B.C. Data collection and analysis for these indicators is out of scope for this report, although the work is currently underway and will be reported separately at a later date. Data access for the indicators as well as the equity dimensions is an ongoing challenge that will influence which indicators can be reported in a given time frame.

This project provided various learnings that will inform our data acquisition and analysis efforts going forward, and may be helpful for any jurisdictions aiming to establish and report on heath equity indicators. Based on PPH's experience, we suggest:

Project structure, support, & stakeholder engagement

1. Establishing a project team characterized by strong leadership as well as solid project management and robust technical expertise. A flexible team with capacity to adapt as project vision and structure evolve will support stakeholder engagement, and lead to effective achievement of project outcomes.

Data acquisition & analysis

2. Exploring access to as many relevant and acceptable data sources as possible, to address the issue of a lack of reliable socio-economic data.

3. Reviewing the results of the data analysis to differentiate between inequity and inequality, given that inequity is the primary area of interest.

4. Analyzing health equity indicators every five years to assess and monitor health equity impact on B.C. populations in the medium- and long-term.

Data reporting & utilization

5. Collating and packaging the results of health equity indicators data analysis into an accessible and user-friendly format.

6. Encouraging the use of health equity indicators as part of a population health approach by policy makers, decision-makers and strategists rather than considering them in a local clinical setting or individual patient's context.

Sustainability

7. Establishing multi-sectoral partnerships between custodians of the respective data sources to ensure a sustainable health equity surveillance system. Given its provincial mandate, PHSA could play a coordinating role for this activity in B.C.

Indicator development & evaluation

8. Exploring an equity-focused assessment of several indicator topics. To align with the priorities of the Ministry of Health's *Promote, Protect, Prevent: Our Health Begins Here - BC's Guiding Framework for Public Health*[8] as well as the recommendations of the prioritization workshop participants, PPH proposes child health, seniors' health, Aboriginal health, women's health, injury prevention, and mental health and substance use to be considered for focused sets of health equity indicators beyond the priority suite of health equity indicators.

9. Establishing an ongoing evaluation process, with the intention of potentially refreshing the set of prioritized health equity indicators in several years' time.

Prioritized list of 52 health equity indicators for measuring healthy equity in B.C.

Tier 1: Health status and outcomes			
Tier 1 themes	**Indicators (Total 27)**	**Definition**	**Data source**
Cancer	Incidence of lung cancer	Age-standardized incidence rate of lung cancer.	BC Cancer Registry
	Incidence of breast cancer	Age-standardized incidence rate of breast cancer.	BC Cancer Registry
	Incidence of colorectal cancer	Age-standardized incidence rate of colorectal cancer.	BC Cancer registry
Life expectancy	Life expectancy at birth	Number of years a person would be expected to live, starting from birth, on the basis of the mortality statistics for a given observation period.	BC Stats, BC Vital Statistics Registry
	Health-adjusted life expectancy	Average number of years a person would be expected to live in healthy state.	BC Stats, BC Vital Statistics Registry, Canadian Community Health Survey
	Life expectancy at 65 years	Number of years a person would be expected to live, at age 65, on the basis of the mortality statistics for a given observation period.	BC Stats, BC Vital Statistics Registry
Mortality	Preventable premature mortality rate	Age-standardized premature mortality rate due to preventable causes.	BC Vital Statistics Registry
	Infant mortality rate	Mortality rate of infants who die in the first year of life, per 1,000 live births.	BC Vital Statistics Registry
	Mortality rate from cardiovascular disease	Age-standardized rate of death from cardiovascular diseases, including ischemic heart diseases, cerebrovascular diseases, and all other circulatory diseases.	BC Vital Statistics Registry
	Mortality rate from unintentional injuries	Age-standardized mortality rate for unintentional injuries.	BC Vital Statistics Registry
	Mortality rate from suicide	Age-standardized rate of deaths from suicide.	BC Vital Statistics Registry
Chronic diseases (excluding cancer)	Prevalence of heart disease	The percentage of population aged 12 and older with self-reported heart disease.	Canadian Community Health Survey
	Incidence of diabetes	Age standardized incidence rate of diabetes mellitus.	BC Ministry of Health

Tier 1: Health status and outcomes			
Tier 1 themes	**Indicators (Total 27)**	**Definition**	**Data source**
Birth weight	Low birth weight rate	Live births less than 2,500g, expressed as a percentage of all live births with known birth weight.	BC Perinatal Data Registry
	Small for gestational age rate	Total number of singleton live births with weights below the 10th percentile of birth weights for their gestational age and sex, expressed as a percentage of all live singleton births with gestational ages from 22 to 43 weeks with known birth weight.	BC Perinatal Data Registry
	Large for gestational age rate	Total number of singleton live births with weights more than 90th percentile of birth weights for their gestational age and sex, expressed as a percentage of all live singleton births with gestational ages from 22 to 43 weeks with known birth weight.	BC Perinatal Data Registry
Chronic health conditions	Prevalence of adult obesity	The percentage of adults aged 18 and older that are obese (BMI*≥30.0) according to self-reported height and weight.	Canadian Community Health Survey
Chronic health conditions in children/ youth	Prevalence of adolescent overweight and obesity	The percentage of adolescents, aged 12-17 that are overweight or obese according to the age-and-sex-specific BMI cut-off points as defined by Cole et al using self-reported height and weight.	Canadian Community Health Survey
Injury and disability	Hospitalization rate due to injury	Age-standardized rate for injury hospitalization.	Discharge Abstract Database, BC Ministry of Health
Perceived health	Perceived health	The percentage of population aged 12 and older with self-reported perceived health status as very good or excellent.	Canadian Community Health Survey
Mental health	Perceived mental health	The percentage of population aged 12 and older with self-reported perceived mental health status as very good or excellent.	Canadian Community Health Survey
	Prevalence of mood/anxiety disorder	The percentage of population aged 12 and older with self-reported mood/anxiety disorder.	Canadian Community Health Survey
	Sub-indicator: Prevalence of depression	The percentage of population that have depression.	BC Ministry of Health
	Hospitalization rate for mental illness	Age-standardized acute care hospitalization rate for mental illness**.	Discharge Abstract Database, BC Ministry of Health
School connectedness for children/youth	School connectedness	The percentage of students who exhibit school connectedness, based on McCreary Centre School Connectedness scale.	BC Adolescent Health Survey

Tier 1: Health status and outcomes			
Tier 1 themes	**Indicators (Total 27)**	**Definition**	**Data source**
Violence and abuse in children/ youth	Prevalence of physical and/or sexual abuse or mistreatment	The percentage of B.C. students who had been physically and/or sexually abused.	BC Adolescent Health Survey
	Prevalence of discrimination	The percentage of B.C. students who experienced discrimination based on race/ skin color, physical appearance, sexual orientation, gender/sex, a disability, (family) income, age, or being seen as different.	BC Adolescent Health Survey

* Body mass index. It is calculated as (weight in kilograms)/(height in metres)^2

** Includes sub-categries: affective disorders, anxiety disorders and substance-related disorders.

TIER 2: Health system performance			
Tier 2 themes	**Indicators (Total 10)**	**Definition**	**Data source**
Child immunization	Percent of 7-year olds with up-to-date immunization	The percentage of seven-year olds with up-to-date immunization for D/T/aP/ IPV, measles, mumps, rubella, varicella, meningococcal C and hepatitis B.	iPHIS, PARIS, BC MoE***
Service utilization	Cervical cancer screening rate	The proportion of women aged 30-69, excluding those having had a hysterectomy, who have been screened for cervical cancer in the past three years.	BC Cancer Agency
	Colorectal cancer screening rate	Proportion of people aged 50-74 who had a colorectal cancer screening test in the previous two years.	BC Cancer Agency
	Screening mammography rate	The proportion of women aged 50-69 who have had a screening mammogram in the past two years.	BC Cancer Agency
	A1C test uptake among diabetics	Percentage of people with diabetes that receive two or more A1C (HbA1c) tests per year.	BC Ministry of Health
Hospitalization	Hospitalization rate of ambulatory care sensitive conditions (ACSC****)	Age-standardized acute care hospitalization rate for conditions where appropriate ambulatory care may prevent or reduce the need for admission to hospital.	Discharge Abstract Database, BC Ministry of Health

TIER 2: Health system performance			
Tier 2 themes	**Indicators (Total 10)**	**Definition**	**Data source**
Service outcome	30-day acute myocardial infarction in-hospital mortality	The risk-adjusted rate of all-cause in-hospital death occurring within 30 days of first admission to an acute care hospital with a diagnosis of acute myocardial infarction.	Discharge Abstract Database, BC Ministry of Health
	Pneumonia re-admission rate	Hospital re-admission***** rate for pneumonia i.e. risk adjusted rate of unplanned re-admission following admission for pneumonia.	Discharge Abstract Database, BC Ministry of Health
	Pressure ulcer****** rate among elderly patients	The rate of in-hospital pressure ulcers per 1,000 discharges among elderly patients.	Discharge Abstract Database, BC Ministry of Health
Access to service	Access to general practitioner (GP)	The percentage of population aged 12 and older with self-reported regular medical doctor.	Canadian Community Health Survey

*** Integrated Public Health Information system (iPHIS); Primary Access Regional Information System (PARIS); Ministry of Education (MoE) enrollment data.

**** ACSC includes grand mal status and other epileptic convulsions, chronic obstructive pulmonary disease, asthma, heart failure and pulmonary edema, hypertension, angina, and diabetes.

***** A case is counted as a re-admission if it is for a relevant diagnosis or procedure and occurs within 28 days after the index episode of case. An episode of care refers to all con tenuous acute care hospitalizations including transfers.

****** Pressure ulcers, also known as bed sores, pressure sores, or decubitus ulcers, are wounds caused by unrelieved pressure on the skin.

Tier 3: Non-medical determinants of health			
Tier 3 themes	**Indicators (Total 15)**	**Definition**	**Data source**
Tobacco smoking	Adult current smoking rate	The percentage of population aged 20 and older who reported being a current smoker (daily or occasional).	Canadian Community Health Survey
	Teen current smoking rate	The proportion of students in grades 7 through 12 who smoked cigarettes within the past 30 days.	BC Adolescent Health Survey
	Rate of smoking during pregnancy	The percentage of new mothers who report smoking during pregnancy.	Canadian Community Health Survey
Environmental/ social determinants	Number of boil water advisory days	To be developed	To be explored
Food insecurity	Prevalence of household food insecurity	The proportion of households that were moderately or severely food insecure in the past 12 months.	Canadian Community Health Survey
Teen pregnancy	Teen pregnancy rate	Rate of births (live an still) and therapeutic abortion among females aged 15-19.	BC Vital Statistics Registry

Tier 3: Non-medical determinants of health			
Tier 3 themes	**Indicators (Total 15)**	**Definition**	**Data source**
Early childhood development	Children vulnerable in one or more Early Development Instrument (EDI) domain[$]	Percentage of B.C. kindergarten school children (ages 5-6) who are vulnerable in one or more of the EDI domains.[$$]	EDI[$$$]
	Physical health and well-being vulnerability among kindergarten school children	Percentage of B.C. kindergarten school children (ages 5-6) who are vulnerable in the physical health and well-being development domain.[$$$$]	EDI
	Language and cognitive development vulnerability among kindergarten school children	Percentage of B.C. kindergarten school children (ages 5-6) who are vulnerable in the language and cognitive development domain.[+]	EDI
Breastfeeding practices	Exclusive breastfeeding duration of 6 months or more	The percentage of women aged 15 to 49 who gave birth in the previous five years who reported exclusive breastfeeding duration of six months or more to their last child.[++]	Canadian Community Health Survey
Alcohol consumption	Prevalence of hazardous drinking	The percentage of population aged 15 and older who reported being current drinkers and who reported drinking five or more drinks on at least one occasion per months in the past 12 months.	Canadian Community Health Survey
Dental insurance	Presence and source of dental insurance	The percentage of population aged 12 and older who reported that they have insurance of different sources that covers all or part of their dental expenses. Sources of dental insurance to be examined when possible.	Canadian Community Health Survey
Dietary practices	Fruit and vegetable consumption	The percentage of population aged 12 and older who reported consuming fruits and vegetables at least five times a day.[+++]	Canadian Community Health Survey
Physical activity	Leisure time physical activity	The percentage of population aged 12 and older with self-reported leisure time physical activity classified as active or moderately active.[++++]	Canadian Community Health Survey
Substance use	Substance use before age 15	Among students who use alcohol or cannabis, the percentage whom first use before the age of 15.	BC Adolescent Health Survey

$ Early Development Instrument (EDI assessments are conducted on all kindergarten school children (ages 5-6). Children who fall in the lowest 10th percentile for a given domain such as "physical health and wellbeing", and "language and cognitive development" are deemed "vulnerable" in that areas.

$$ The five EDI domains are: physical health and wellbeing; social competence; emotional maturity; language and cognitive development; communication skills and general knowledge.

$$$ The Early Development Instrument (EDI) is a questionnaire developed by Dr. Dan Offord and Dr. Magdalena Janus at the Offord Centre for Child Studies at McMaster University. It has 104 questions and measures five core areas of early child development that are known to be good predictors of adult health, education and social outcomes. The EDI is completed in February by kindergarten teachers from across BC for all children in their classes.

$$$$ This EDI domain includes assessments for fine and gross motor development, levels of energy, daily preparedness for school, washroom independence, and established handedness.

+ This EDI domain includes assessments for basic literacy, interest in literacy/numeracy and memory, advanced literacy, and basic numeracy.

++ "Exclusive breastfeeding" refers to an infant receiving only breast milk, without any additional liquid (even water) or solid food. Benchmark is current Health Canada recommendations for six months exclusive breastfeeding.

+++ Adequate fruit and vegetable consumption is examined in terms of the percentage of the population aged 12 or older who reported eating fruit and vegetables at least five time daily.

++++ Based on CCHS Physical Activities module consisting of a series of questions about participation in various types of leisure physical activities in the previous three months, as well as the frequency and duration of each activity. The interviewer enters the reporting unit (per day, week, month, year or never) and the number of times per reporting unit. Respondents are categorized into three physical activity levels according to energy expenditure (EE): active (EE of 3.0 kcal/kg/day or more); moderately active (EE 1.5-2.9 kcal/kg/day); inactive (EE less than 1.5 kcal/kg/day).

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