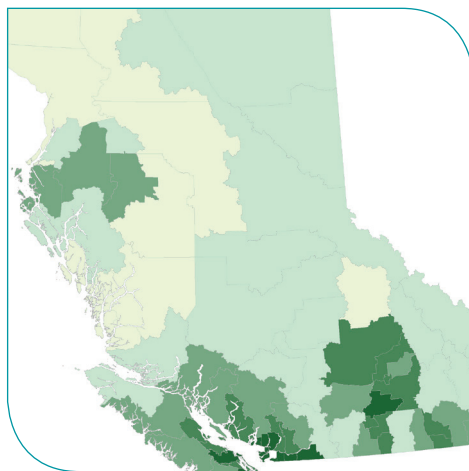


Development of priority health equity indicators for British Columbia: Process and outcome report

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Prepared for the Population and Public Health Program Provincial Health Services Authority (PHSA)

Lydia Drasic, Executive Director, British Columbia Centre for Disease Control (BCCDC) Operations and Chronic Disease Prevention, Provincial Health Services Authority

Authors

Dr. Drona Rasali, Director, Population Health Surveillance and Epidemiology, Population and Public Health, PHSA

Tannis Cheadle, Provincial Manager, Population and Public Health, PHSA

Rita Zhang, Epidemiologist, Population and Public Health, PHSA

Sarah Gustin, Knowledge Translation and Communications Manager, Population and Public Health, PHSA

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Sue Fuller-Blamey	Provincial Health Services Authority, Quality & Safety
Winnie Fan	Provincial Health Services Authority, Performance Measurement & Reporting
Dieter Ayers	Provincial Health Services Authority, Population & Public Health (until Mar, 2013)
Dr. Naveed Janjua	BC Centre for Disease Control
Dr. Robert Balshaw	BC Centre for Disease Control
Lily Lee	Perinatal Services BC
Brooke Kinniburgh	Perinatal Services BC
Dr. Sema Aydede	Provincial Health Services Authority, Research Administration
Dr. Sean Mark	First Nations Inuit Health Branch (until Nov, 2013)
Rahul Chhokar	Fraser Health
Dr. Victoria Lee	Fraser Health
Jennifer May-Hadford	Interior Health
Dr. Trevor Corneil	Interior Health
Dr. Murray Fyfe	Island Health
Melanie Rusch	Island Health
James Haggerstone	Northern Health
Dr. Jat Sandhu	Vancouver Coastal Health
Patricia Chung	Vancouver Coastal Health
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PHSA contact

This report can be found at: www.phsa.ca/populationhealth

For further information contact:

Provincial Health Services Authority
Population and Public Health Program
#700 - 1380 Burrard Street, Vancouver, B.C. V6Z 2H3
pph@phsa.ca

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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 2013³ demonstrated that this gap is widening, and that health inequities are increasing.

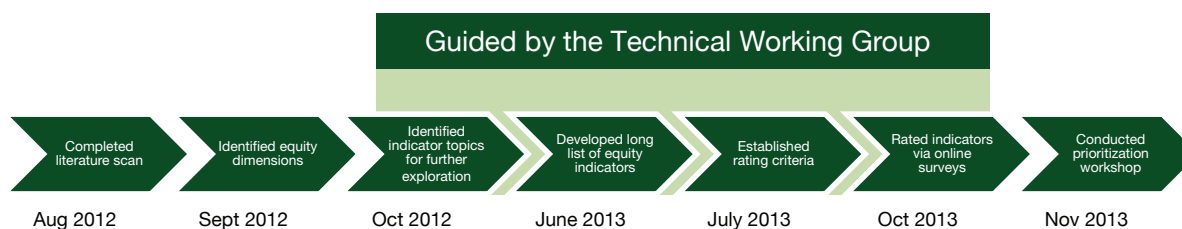
The PHSA Population and Public Health Program (PPH) has worked in partnership with agencies and organizations within and outside of PHSA over the past several years on health promotion and chronic disease prevention strategies aimed at reducing health inequities. In 2011, PPH released a report, *Towards 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 framework⁷, 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 health 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.

1.0 Introduction

Health equity has been described as a condition when all people can reach their full health potential and are not disadvantaged from attaining it because of their race, ethnicity, religion, gender, age, social class, socioeconomic status (SES), sexual orientation or other socially determined circumstances.⁹ Health inequities are generally reflected by consistent differences in the prevalence of chronic diseases (e.g., diabetes) among people from the highest and lowest income and education groups. In general, the lower a person's socioeconomic status, the greater their risk of developing chronic disease and the lower their chances of living a long, healthy life.

PHSA PPH adopted the definition of health equity initially proposed in a 2010 PHSA discussion paper: *“the distribution of health resources such that they are allocated proportionately to need as well as the provision of services that meet the values and cultural beliefs of distinct system users.”*¹⁰

Working in partnership with internal and external agencies and organizations, the Population and Public Health Program has been progressively advancing the health equity agenda at PHSA through a series of discussion papers, stakeholder engagement processes and reports. These efforts align PHSA with other leading national and international health care organizations striving to recognize and address inequities in the delivery of health services.

PHSA PPH seeks to promote health equity by improving the availability, accessibility, and appropriateness of health services. Improving health equity can benefit everyone, but is particularly important for British Columbians who do not have the same opportunities to be as healthy as others. Health equity surveillance at PPH aims to examine the health of British Columbians at the population level. This report describes the process and outcomes of a successful project that PPH undertook to develop a prioritized set of health equity indicators for use in B.C.

2.0 Background

Overall, British Columbians are among the healthiest people in Canada and the world. However, many reports show that health varies across the province according to geography, demographics, and socioeconomic status. The following reports inspired, informed, and set the foundation for this health equity indicators project.

The 2008 Health Officers Council of BC report *Health inequities in BC* showed British Columbians from more advantaged socioeconomic groups generally enjoy longer life expectancy and better health than British Columbians from less advantaged groups.¹¹ This report initiated a serious examination of health inequity within B.C.'s health care system. The Health Officers Council put forward policy options to address the social determinants of health and identified several areas for action within the health care system that included "building the case for and increasing the prioritization of health equity within system planning".

In 2011, PHSA produced a report, *Towards reducing health inequities: A health system approach to chronic disease prevention* (referred to hereafter as the *2011 RHI report*).¹² This report focused on actions the health system can take to reduce health inequities and made various recommendations to promote the design and delivery of a health care system that does not exacerbate or increase health inequities. One of these 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."*¹³

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. In 2012, PHSA launched the process of developing priority health equity indicators for B.C., working in collaboration with health sector partners.

The Health Officers Council of BC updated the *Health inequities in BC* report in 2013 and found evidence that health inequity in B.C. is increasing.¹⁴ The 2013 report concluded that the gap in life expectancy between local health areas with the highest socioeconomic status and those with the lowest SES had widened dramatically over a four year period (2002-06 to 2006-10). According to the report, life expectancy increased by over 14 months in the top 20% highest income regions, while average life expectancy in B.C. increased by only six months.

In March 2013, B.C.'s provincial government released *Promote, Protect, Prevent: Our Health Begins Here - BC's Guiding Framework for Public Health*¹⁵ that focuses on supporting better health for all British Columbians while promoting improved health equity across all population groups. This document highlights how vulnerability, especially early in life, is associated with poorer health outcomes such as shorter life expectancy or more years living with disabling health problems. The Guiding Framework asserts that to effectively promote health equity and reduce health disparities, approaches targeted to the most disadvantaged groups are not enough. Health promotion strategies need to be designed for everyone (universal) but with added scale or intensity for those experiencing short-term or long-term vulnerability. To

support this approach, public health needs to play a critical and ongoing role in ensuring that protective and risk factors, and vulnerable populations are identified. Public health should be using this information to design interventions, to inform decision-makers, both within and beyond the health system, and to support efforts to address the underlying causes of the disparities.¹⁶

2.1 Purpose of the project

The purpose of this project was to identify a prioritized suite of health equity indicators that are important for the B.C. health system.* These indicators are intended to support stakeholders' efforts in improving, monitoring, and measuring health equity work across B.C. and can improve provincial surveillance consistency and comparability.

In partnership with the B.C. Ministry of Health and regional health authorities, PHSA PPH initiated the development of these indicators in 2012. Intended to be a non-mandatory (i.e., optional) suite, any end user can choose indicators that fit with their strategic priorities, and may also choose to include additional indicators for use in their jurisdictions/organizations if desired.

2.2 Scope & purpose of the report

This report documents the process and outcomes of the work led by PPH during 2012-13 and 2013-14 towards developing a set of prioritized health equity indicators for use in B.C.

This report includes the final list of prioritized indicators, indicator definitions, and data sources as well as learnings from the prioritization process. Data acquisition and analysis of the indicators is currently underway and will lead to a data report to be released at a later date on selected indicators for which data are currently available.

* The B.C. health system refers to the Ministry of Health and health authorities.

3.0 Project process

3.1 Health equity indicators literature scan

PHSA PPH released the *Promoting health equity – choosing appropriate indicators: Literature scan*¹⁷ in 2012. The purpose of the scan was to provide the background and framework required to support decision-making in the health equity indicators project.

The literature scan summarized criteria used in developing and prioritizing health indicators by other organizations and jurisdictions (e.g., National Collaborating Centre for Determinants of Health, Statistics Canada, B.C.'s Office of the Provincial Health Officer).¹⁸ The scan explored various health equity indicators currently in use, beginning with national indicators, such as those published by CIHI.¹⁹ The scan also looked at indicators by province, and provided a short review of each indicator's scope and implications. The scan briefly summarized particularly successful or prominent measures used nationally and internationally, as well as the indicators that are currently being used in B.C.

With regard to the gaps and challenges in developing a list of priority health equity indicators, the literature scan identified the limitations of data sources, both for specific groups (e.g., Aboriginal peoples), and quality of data as a whole (e.g., Canada Census data, with the long-form census no longer being mandatory).

3.1.1 Health equity indicator frameworks

A key aim of the literature scan was to describe different health indicator frameworks and disparity indices that have been used in various contexts. These included worldwide frameworks (e.g., from the World Health Organization)²⁰ as well as models for specific population groups (e.g., from the National Collaborative Centre for Aboriginal Health).²¹

For this health equity indicators prioritization project, PPH was interested in assessing which of the seven health indicator frameworks summarized in the literature scan were most appropriate for use in B.C. We considered how each framework groups indicators, the equity stratifications included, and the context in which the framework was developed or used to identify some key insights for B.C.:

- The main purpose of the OECD framework is to allow comparison between countries; its focus is not on health equity comparisons within a country.
- The New Zealand Health Strategy places a large emphasis on the health outcomes for Maori and Pacific Islanders, as ethnic identity forms a large basis of health inequality within the country.
- The POWER Study in Ontario focuses specifically on differences in health outcomes due to sex (biological differences) and gender (societal influences).
- The Integrated Life Course and Social Determinants Model of Aboriginal Health was developed through the lens of Aboriginal status as it pertains to health outcomes.

The frameworks developed by the Canadian Institute of Health Information,²² the World Health Organization,²³ and the Marmot Review²⁴ were identified as more relevant for adaptation and use in B.C.

3.1.2 Decisions taken

Ultimately, the CIHI Indicator Framework was identified as the most appropriate framework for B.C. (Appendix 1). The framework incorporates equity as a cross-cutting dimension across all indicators, reflecting the recommendations put forward by PHSA's 2011 *RHI report*.


The CIHI framework clusters indicators into four tiers:

1. Health status and outcome (e.g., health conditions)
2. Health system performance (e.g., accessibility)
3. Non-medical determinants of health (e.g., living and working conditions)
4. Community and health system characteristics (e.g., resources)

PPH adapted the CIHI framework as a way to organize health equity indicators under consideration during the prioritization process for this project (Figure 2). This modified version of the CIHI model included only the first three tiers, as the “Community and health system characteristics” tier was deemed less relevant to this project.

Figure 2: Three-tier indicator framework adapted from CIHI to guide the PHSA project

Health status and outcomes			
These indicators are measured in a variety of ways, including well-being, health conditions, disability or death.			
Well-being	Health conditions	Human function	Death
Health system performance			
These indicators measure various aspects of the quality and performance of health care system.			
Acceptability	Accessibility	Appropriateness	Competence
Continuity	Effectiveness	Efficiency	Safety
Non-medical determinants of health			
These indicators of non-medical determinants of health include behavioural and environmental risk factors.			
Health behaviours	Living and working conditions	Personal resources	Environmental factors



3.2 Exploratory workshop

To begin engaging provincial stakeholders in B.C.'s health equity indicator identification and prioritization process, PPH facilitated an exploratory workshop in fall 2012.

Prior to the workshop, PPH developed an online rating survey to help potential participants start thinking about the importance of possible indicators (Appendix 2). The survey included indicator topics[†] that were believed to be most relevant to this project's purpose and the context in B.C. These indicator topics included the selected ones from the CIHI framework as well as several from the St. Michael's Hospital Indicators list that focused on equity in hospital care (e.g., accessibility of language services, cultural concordance between patients and staff).²⁵

The pre-workshop online survey asked participants to rate each of 53 indicator topics on a scale of importance from one (not important at all) to five (very important) based on two criteria:

1. Does this indicator address an important health issue?
2. Is it an issue that is amenable to change through the health system?

The initial survey aimed to establish consensus among respondents and inform workshop discussion. The threshold for consensus was set as 70% or more of respondents rating the indicator topics as 'important' or 'very important'. This threshold was not based on any scientific criteria, but rather as an initial assessment to determine whether or not the indicator topic should be explored further. The indicator topics that achieved at least 70% consensus remained on the list and were set aside until the workshop. Those indicator topics that 50-69% of respondents rated as 'important' or 'very important' were discussed at the workshop, voted on anonymously, and kept for further consideration. Indicator topics that achieved ratings of 'important' or 'very important' among fewer than 50% of respondents in the initial survey were eliminated from further consideration.

The workshop was attended by 47 participants, including representatives from all six health authorities, the Ministry of Health and Health Canada First Nations & Inuit Health Branch, spanning the fields of: quality & patient safety; decision support & performance measurement; population & public health; oncology; mental health & addictions; surveillance; and injury research & prevention.

Following the pre-workshop survey and an anonymous vote at the workshop, participants identified 27 indicator topics that merited further exploration. Workshop participants recommended the establishment of a working group to guide further indicator exploration.

3.3 Technical working group & discussion groups

As recommended by the Exploratory Workshop, PPH established a Technical Working Group (TWG) shortly after the workshop. The TWG consisted of representatives from various departments, teams and organizations within the ministry and health authorities (e.g., quality, risk management, decision support, population & public health, among others). Please refer to the Acknowledgements on page i for a full list of TWG members.

[†] An indicator thematic "topic" (e.g., diabetes) may contain several indicators (e.g., the self-reported prevalence of diabetes, the diagnosed prevalence of diabetes, the incidence of diabetes, etc.).

The purpose of the TWG was to flesh out the list of 27 indicator topics, and then to establish and conduct the indicator prioritization process. Following prioritization of the health equity indicators, the intended role of the TWG was to provide ongoing guidance for the production, analysis, and presentation of data.

As the process evolved, the TWG decided to establish two discussion groups to work through various issues and challenges that arose related to definitions and data analysis: 1) the rural/remote discussion group, and 2) the standardized model discussion group.

Rural/remote discussion group

The purpose of the rural/remote discussion group was to decide on the definition of a rural or remote community to use during this project. The discussion group decided that breaking down the population into categories of urban or rural was not descriptive enough for this project, given that there are many ways of defining rural, with no universally accepted answer.

The main issue that arose was that applying different definitions of 'rural' in B.C. will lead to different results. For example, according to the postal code definition, Whistler, Bowen Island, Gibsons and Lions Bay are considered 'rural'. According to Statistics Canada's Metropolitan Influenced Zones (MIZ), many of these same communities (e.g., Bowen Island & Lions Bay) are considered 'urban' – which may be more reasonable.

The preferred, proposed solution was to adapt what is already being used for physician remuneration in B.C., called the Community Rating System (CRS).[‡] PPH adapted this classification system and pared it down from five categories to three:[§]

1. **Urban communities**
2. **Rural communities** – CRS Group A (e.g., 100 Mile House, Bella Coola, Cranbrook, Fort St. John)
3. **Very rural/remote communities** – CRS Groups B, C, and D (e.g., Big White, Saturna Island, Gabriola Island, Squamish, Sooke)

Standardized model discussion group

Members of the second discussion group were representatives with biostatistics expertise. The group aimed to determine how to analyze and present the data for indicators based on the Canadian Community Health Survey (CCHS). The group decided that each indicator would be individually analyzed with all equity dimensions thought to be relevant.

The group decided on a method whereby each indicator would be subjected to a regression model, along with the five equity dimensions available from the CCHS – age, sex, education, income, visible minority – plus whatever definition of rural/remote is decided upon. Variables would then be added or removed in stepwise manner for each indicator, according to what would make the analysis of that indicator more meaningful. Both the univariate analysis (indicator vs. individual equity dimensions) and multi-variable analysis (indicator in model with all appropriate equity dimensions to control the effects of one another)

[‡] See <http://www.rcbc.ca/rural-physicians/rsa-communities>

[§] Names for these three categories are placeholders only, as they have not been officially named.

would be reported. In addition, the discussion group agreed that maps showing HSDA-level odds ratios would be useful.

3.4 Equity dimensions

Building on the equity dimensions from the literature scan and the exploratory workshop, consultation with stakeholders identified specific vulnerable populations that were added to the list. The TWG ultimately identified sixteen cross-cutting equity dimensions as important for use in B.C.

Table 1: Cross-cutting equity dimensions

Equity dimension theme	Cross-cutting equity dimension	Brief definition or description (all definitions refer to B.C. population)
Sociodemographic characteristics	Age	Refers to the age of a person at last birthday (or relative to a specified, well-defined reference date).
	Sex	Refers to whether the person was classified as male or female (either through self-identification or recording by Statistics Canada).
	Sexual orientation	Refers to persons with self-identified sexual orientation including heterosexual, lesbian, gay, bisexual, transgender, or questioning.
	Ethnicity	Refers to the ethnic or cultural group (single plus multiple responses) of a person.
	Aboriginal status	Aboriginal population refers to those persons who self-reported identifying with at least one Aboriginal group, i.e. North American Indian, Métis or Inuit and/or those who reported being a treaty Indian or a Registered Indian as defined by the Indian Act of Canada and/or who were members of an Indian Band or First Nation.
	Immigrant status	A landed immigrant is defined as a person who is not a Canadian citizen by birth, but to whom Canadian immigration authorities have granted the right to live in Canada permanently.
	Education	Level of schooling attained, generally refers to the population aged 15 or older so as to include only those persons likely to have reached 9th grade.
	Employment	Labor force consists of people currently employed and people who are unemployed but were available to start work in the week prior to enumeration and looked for work in the past four weeks.
	Income	Income quintile is a method used to measure the average household income of residents by aggregating household income to the dissemination area (DA) derived from Census data, ranking them from poorest to wealthiest, and then grouping them into five income quintiles (1 being poorest and 5 being wealthiest), each with about 20% of the population.

Equity dimension theme	Cross-cutting equity dimension	Brief definition or description (all definitions refer to B.C. population)
Sociodemographic characteristics (continued)	Persons below low-income cut off (LICO) vs. persons above LICO	Low income cut-offs (LICOs) are established to convey the income level at which a family may be in strained circumstances because it has to spend a greater proportion of its income on necessities than the average family of similar size. Specifically, the threshold is defined as the income below which a family is likely to spend 20 percentage points more of its income on food, shelter and clothing than the average family. There are separate cut-offs for seven sizes of family and for five community sizes.
	Homelessness	Homelessness describes the situation of an individual or family without stable, permanent, appropriate housing, or the immediate prospect, means and ability of acquiring it.
Geographic characteristics	Rural vs. urban residence	The Community Rating System used for primary care planning in B.C. will be adopted where each community is categorized into the urban category or one of four rural groups (A, B, C, and D). Rural groups B, C, and D will be pooled into one category to increase the sample size and power of stratified analysis.
Specific vulnerable populations	Persons living with chronic illness(es)	Persons who have been diagnosed by a health professional with one or more of the following conditions: asthma (12 years of age and over), diabetes (20 years of age and over) or Chronic Obstructive Pulmonary Disease (35 years of age and over).
	Refugees	Refugees are people within or outside Canada who fear persecution and going back to their home country.
	Children from families with parent(s) living with co-occurring mental illness and substance abuse disorders	Children from families with parent(s) living with co-occurring mental illness and substance abuse disorders.
Neighborhood deprivation	Neighborhood deprivation indices	There are a number of area-based socioeconomic indices that are developed to characterize the socioeconomic conditions (material and/or social deprivation) of an area/neighborhood when it is not possible to obtain the socioeconomic status of individuals. In Canada, common indices include Can-Marg, INSPQ's Pampalon Index, Neighborhood income, SEFI, VANDIX, etc.

The TWG recognized that data availability varies for each cross-cutting dimension. Where data availability or data linkage and sample size allow, each cross-cutting dimension would be examined to the lowest granularity possible for priority equity indicators using methods such as stratification and/or multi-variable logistic regression analysis.

3.5 Test indicators & pilot projects

To support the development of the set of priority health equity indicators, we needed to explore processes for generating and reporting on data related to the indicators. As a result, PHSA PPH supported pilot projects in Interior Health Authority and Island Health Authority. The purpose of the pilots was to test PPH's process for generating indicator data to the lowest geographic level possible, and for sending the data to the health authorities for use. Testing this process allowed PPH to identify:

- Issues/limitations of the data and data access
- What information PHSA should provide (and in what format) for the indicators
- What support PHSA can provide to the health authorities once the data is passed on
- The least resource-intensive way of obtaining necessary data
- The time and resources required to generate, manipulate, contextualize, and present the data

Thirteen indicators were identified for pilot testing (Appendix 3). Key findings and recommendations from the pilots include:

1. Data collection was difficult due to: lack of access to data necessary for a fine level of geographic resolution; and lack of information on the cross-cutting equity dimensions in some cases. The identification of these issues led to researching other data sources for future use. More work also needs to be done with the health authorities to determine exactly how data will be used at provincial, regional and local levels, in order to inform which data to use and where to retrieve them from.
2. Regional health authorities (HAs) vary in their capacity to analyze data. As a result, PPH retrieved and analyzed the data before sending to HAs, who then collated and presented the results. This process ensured consistency in data analysis and worked well overall, although collaboration did slow down schedules for analysis and increased resource utilization. Going forward, it will be important to identify a streamlined process for collaboration between PPH and the HAs.

See Appendix 4 for more detail regarding pilot test results.

3.6 Consolidated list of indicators

Seeking to generate a list of all possible indicators for the prioritization process, PPH considered all indicator topics, including those that were previously dropped after the exploratory workshop. These indicators were re-introduced to ensure comprehensiveness and align with *Promote, Protect, Prevent: Our Health Begins Here - BC's Guiding Framework for Public Health* and the report on *Indicators of Health Inequalities* by the Pan-Canadian Public Health Network.²⁶ The team further identified gaps in the original indicator topic list and added new indicators to generate a consolidated list of 87 possible indicators for consideration.

3.7 Definitions & descriptions of indicators

PPH developed a two-page description for each of the 87 indicators under consideration to provide context and to support the prioritization and decision-making process. Each summary included: indicator definition; data source; method of calculation; relevance of the indicator to measuring equity; and why the indicator was recommended.

The two-page descriptions cite their respective information sources, which include prior knowledge, expert consultations, as well as peer reviewed and grey literature. To improve the summaries' relevancy and specificity to B.C.'s unique context, information and data from B.C. were preferred over information from other jurisdictions and provincial government programs or websites relevant to the indicators were referenced where applicable. The "why the indicator was recommended" section justified the potential utility of the indicator in assessing health inequity in B.C. by describing the broader population health, economic and socio-cultural implications. Each indicator was linked to existing programs and services in the province where possible.

See Appendix 5 for a sample of the two-page indicator descriptions.

3.8 Indicator selection criteria

A comprehensive list of criteria for selecting health equity indicators was compiled from five documents summarized in the literature scan,²⁷ including those recommended by the World Health Organization and several other governmental and academic institutions. For each criterion, guiding statements were included to explain how that criterion would be fulfilled.

The list with the corresponding statements was then distributed to members of the TWG, and feedback was received and addressed (Appendix 6). The final list of eight criteria was:

1. Comparable
2. Actionable
3. Relevant
4. Based on scientific criteria (accurate, valid, reliable)
5. Ethical
6. Sustainable
7. Understandable
8. Available

The eighth criterion (Available) was ultimately kept aside from the rest of the list before the criteria were applied. While the TWG agreed that this criterion was very important in developing a suite of health equity indicators, there were issues around the access to data for several indicators that limited its use. Many TWG members were concerned they would not have enough information to apply this criterion. Moreover, if an indicator scored highly on all other criteria but data to measure it was not available, there was no capacity within this project to develop the data infrastructure necessary for reporting. The TWG thereby decided that only the first seven criteria would be used in the indicator prioritization process.

3.9 Review of methods for applying the criteria

The TWG considered three main methods for applying the criteria to the health equity indicators: voting[¶], the Delphi Process^{**}, and the ‘weighted criteria’ or ‘rating method’, of which the last was ultimately chosen as the preferred approach.

The rating method involves each group member scoring an indicator according to how much it fulfills each criterion on a scale of zero to three. Rating can be done in two ways. In the first option, all criteria are considered equal. An indicator will have a score for each criterion, which are then totalled to obtain a final score. In the second option, each criterion is assigned a “weight” prior to scoring according to its perceived importance. For example, if “feasible” is considered a very important criterion, it will be assigned a weight of three, whereas if “understandable” is considered less important, it is given a weight of one or two. The indicators are then scored based on each criterion, just as before; but prior to summation of the scores, the score for an individual criterion is multiplied by its weighting score. These products are then added to generate a total score. This allows the group to place more importance on some criteria than others; however it does require more resources to decide on weighting scores.

The TWG also discussed whether “elimination thresholds” should be applied to the criteria in the rating method, as another option. In this situation, some or all of the criteria would have an elimination threshold whereby if a certain number of people rate the indicator as a ‘zero’, the indicator is automatically eliminated, regardless of its final score.

The TWG agreed that the rating method would provide the most efficient and effective method of prioritizing the indicators, as it takes advantage of group interaction while minimizing the time required of group members. The TWG felt that all of the remaining criteria were equally important in prioritizing indicators, and therefore weighting the criteria was unnecessary. The group also decided against using elimination thresholds.

3.10 Online surveys for rating indicators

PPH developed a series of online surveys (Appendix 7) which were sent to key stakeholders who were identified to have valuable expertise and input to contribute to the development of the suite of health equity indicators. Some of these individuals were the ones who were invited to participate in the initial survey and all-day workshop in August and September 2012 respectively, or those who might have become involved later through the TWG or individual meetings that were arranged to guide this work. In total, indicator rankings were informed by 90 responses to the online surveys.

Given the long list of potential indicators, we decided to prioritize the indicators in stages. As the first step in the prioritization process, PPH created online surveys to enable stakeholders to apply the criteria and rating system to the smallest tier of indicators (i.e. the 15 “Health system performance” indicators in tier 2). Respondents were asked to rate each indicator on a three-point scale for each of the seven criteria.

¶ The voting method involves each member of a group voting yes or no to each indicator in turn. All those receiving a majority yes vote are included in the final list. While this method is the least resource-intensive, it was felt that this method may be too simplistic, and does not take advantage of group interaction among the members of the TWG.

** The Delphi method is a highly structured group communication process, regarding matters for which incomplete knowledge is available. It involves developing a survey or questionnaire, which is completed by all members of an expert panel. The questionnaire can be administered online, by email or in person. The results of this survey are then compiled, and feedback on the results is given to the panel members. The panel members then retake the survey after seeing the results of the previous survey.

The survey was estimated to take approximately twenty minutes to complete and stakeholders were provided with a personal URL link to access. Because participants had unique links, the system was able to save their responses and allow for completion a bit at a time if unable to finish in one sitting. Along with the link to the survey, stakeholders were also sent the seven criteria with corresponding statements and the two-pagers of indicator definitions and descriptions. Stakeholders were asked to read the provided materials prior to starting the survey to be as informed as possible.

For each indicator-criterion combination, an average score was calculated by dividing the sum of the scores for that pair by the number of respondents who provided a rating score for that pair. For each indicator, we summed the seven criterion-specific scores to achieve an overall score.

We tallied the results of the first survey on Tier 2 indicators (Figure 3), and ranked the indicators based on total scores. Overall, eight indicators from five topic areas (child immunization rates, cancer screening, ACSC hospitalization rate, 30-day AMI in-hospital mortality rate, and hospital re-admission rate) scored above the average total score in this tier.

After the initial survey was conducted and analyzed, the TWG discussed the rating process and results, and used the learnings to refine the process. Following that discussion, additional surveys were sent for the remaining “Health status and outcome” (Tier 1) and “Non-medical determinants of health” (Tier 3) indicators. As the TWG recommended, we changed the rating scale from a three-point to a five-point scale for these later surveys.

Online survey results revealed a wide range of total scores for the “Health status and outcome” (Tier 1) indicators (Figure 4). A total of 26 indicators scored higher than the overall average score for this tier, and 21 scored lower than the average. The incidence of lung cancer ranked highest among all proposed indicators, and the prevalence of physical fight^{††} ranked the lowest.

Online survey results for the “Non-medical determinants of health” (Tier 3) indicators showed that the total scores were closer in value (Figure 5). Thirteen indicators scored higher than the overall average score for this tier, and 12 scored lower than the average. Specifically, smoking-related indicators were generally ranked high, while workplace stress ranked low.

Overall, the results of all three online rating surveys provided valuable information about the relative importance of the consolidated list of 87 indicators within the three-tiered framework. These rankings subsequently informed a full-day provincial workshop for indicator prioritization.

†† “Prevalence of physical fight” is defined as the percentage of BC students who had been involved in a physical fight in the previous year.

Figure 3: Tier 2 Health system performance indicator total scores with ranking

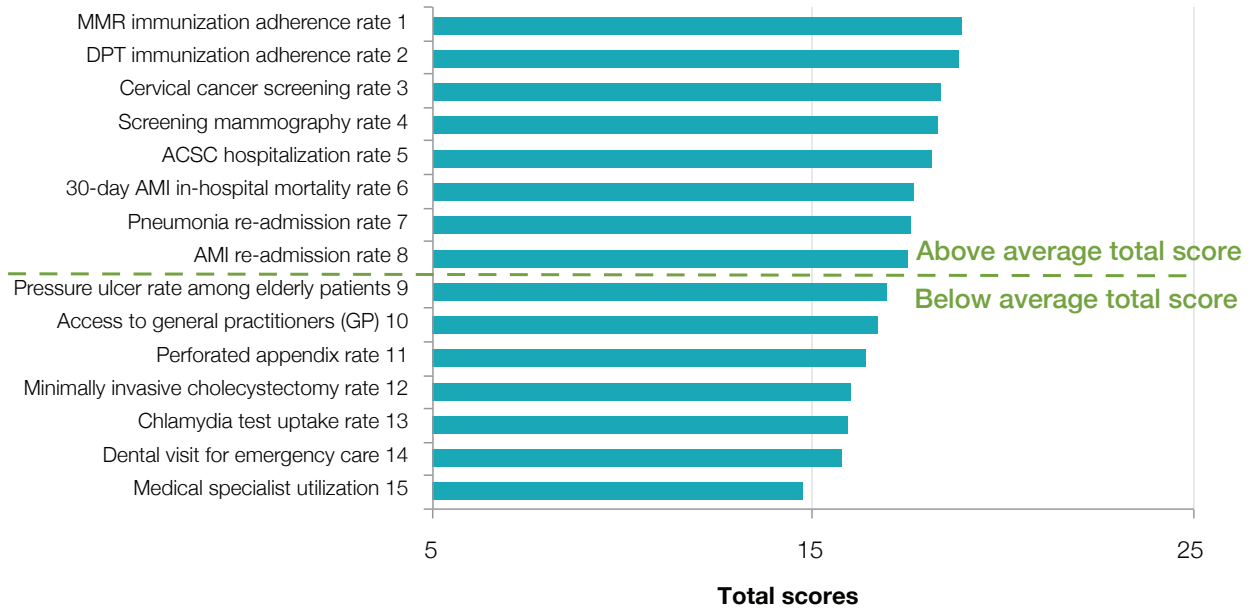


Figure 4: Tier 1 Health status and outcome indicator total scores with ranking

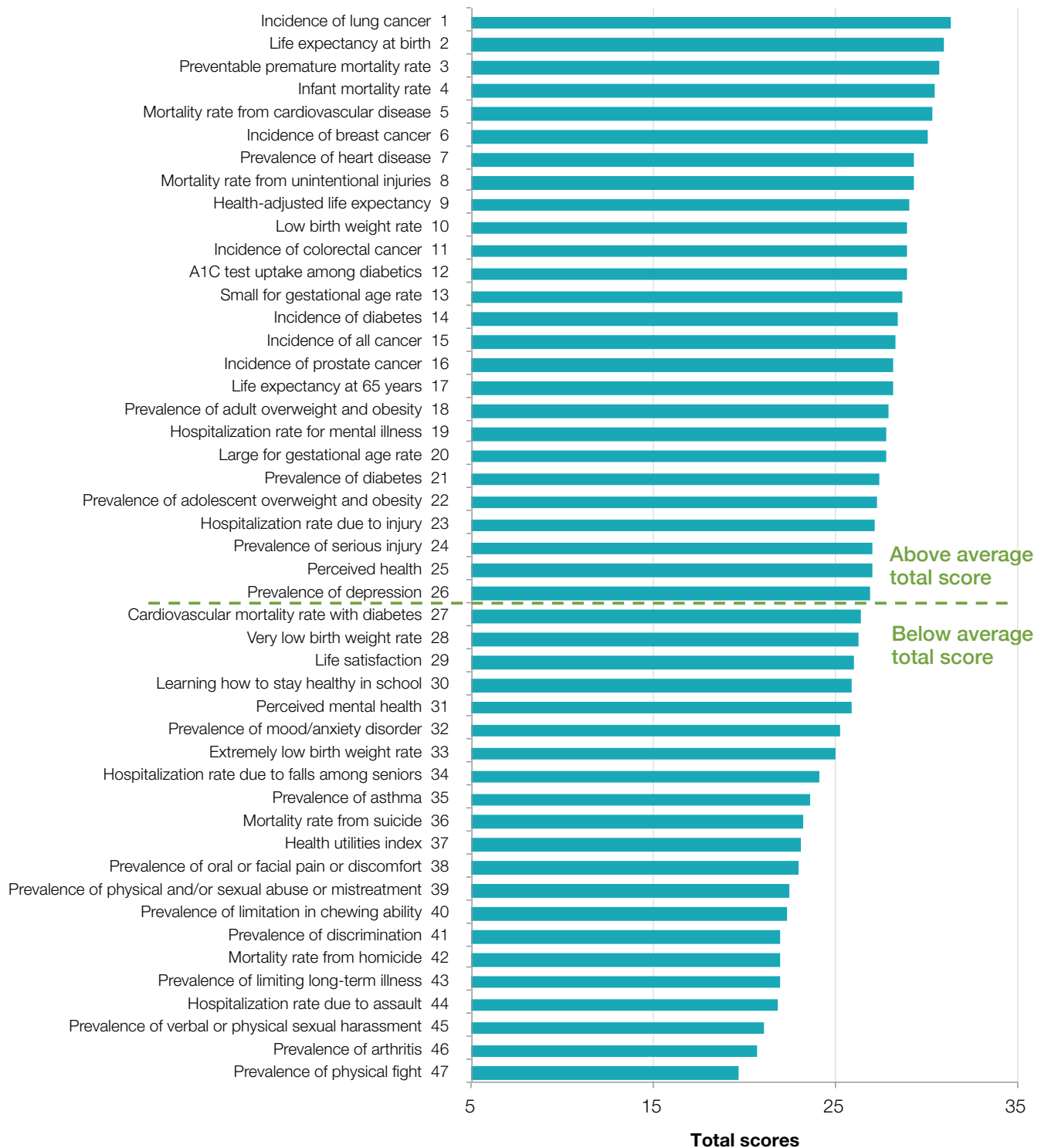
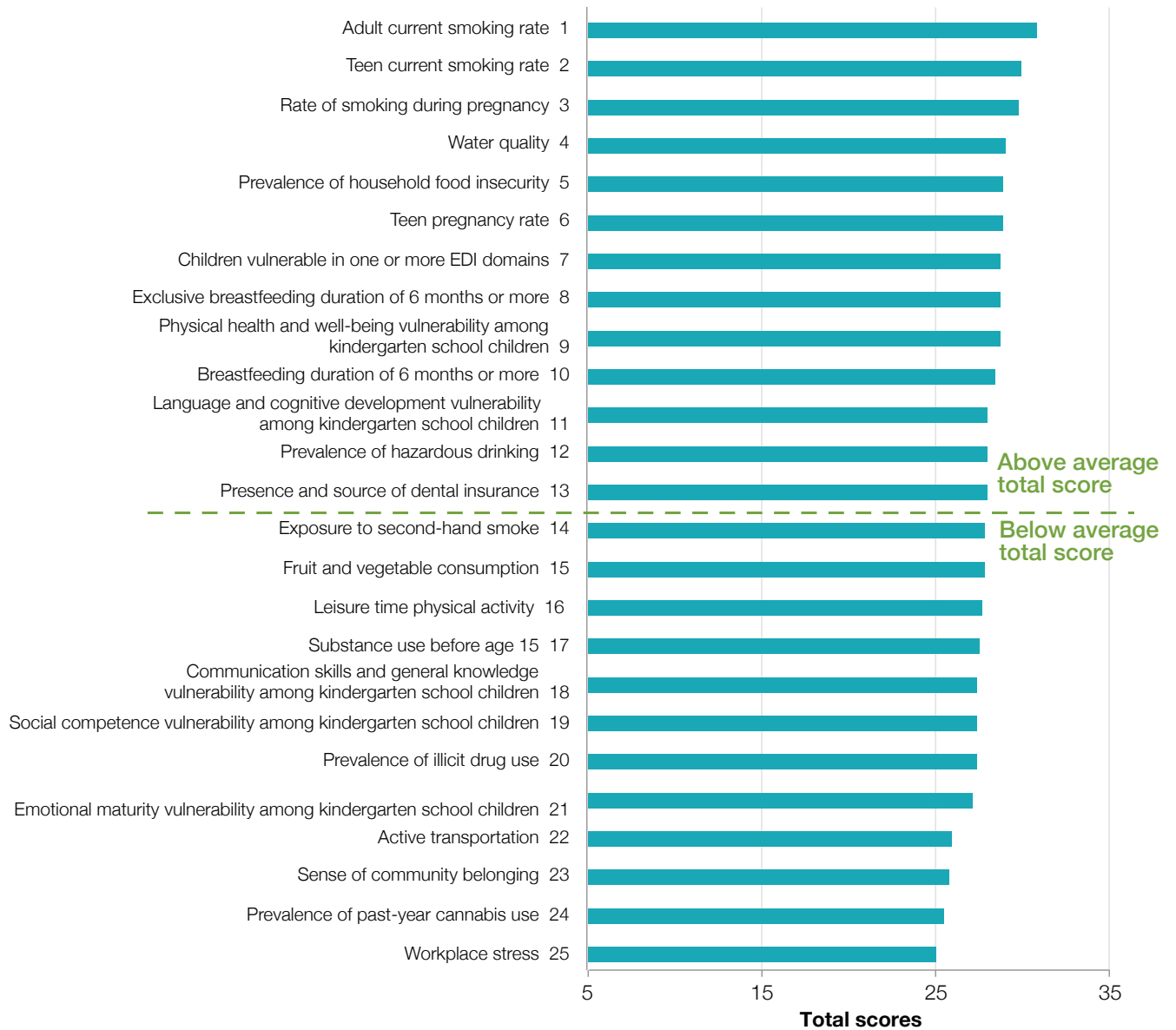


Figure 5: Tier 3 Non-medical determinants of health indicator total scores with ranking



3.11 Final workshop for indicator prioritization

3.11.1 Workshop purpose

The *Health equity indicators: Prioritization workshop* held on November 13, 2013 provided an opportunity for stakeholders to review the work completed to-date, and to reduce the consolidated list of 87 indicators to a more manageable set of prioritized health equity indicators. The PPH team was ideally aiming for a final list of approximately 50 indicators.

3.11.2 Workshop participants

The 30 workshop participants included representatives from the Ministry of Health, Vancouver Coastal Health, Island Health, Fraser Health, First Nations Health Authority and PHSA (including a diverse group from many PHSA agencies and services such as BC Centre for Disease Control, BC Cancer Agency, Child Health BC, BC Injury Research & Prevention Unit, Perinatal Services BC and Aboriginal Health). Participants came from the fields of: quality and patient safety, decision support and performance measurement, population and public health, oncology, mental health and addictions, and surveillance.

The workshop was only one piece of a much larger process that contributed to the development of the final list of prioritized indicators, in which a wider range of stakeholders (including representatives from various segments of all health authorities) participated through individual consultations and/or the multi-faceted survey process. Although some health authorities were not represented at the final prioritization workshop, all provincial stakeholders provided important and significant input throughout the indicator development process.

3.11.3 Workshop format

Prior to the workshop, PPH grouped the 87 indicators into 42 themes across the three tiers of the indicator framework (*Health status & outcome, Health system performance and Non-medical determinants of health*). The themes were a way to organize the indicators, and to assist with streamlining the list. As previously stated, the number of indicators needed to be reduced to a more manageable set of approximately 50.

Prior to and during the final workshop, PPH provided participants with two sets of tables to show the list of initial priority indicators and themes to “keep” in each tier based on high rankings by survey respondents, and the themes and indicators to “drop” based on low rankings (Appendix 8).

The workshop began with three context-setting presentations by the project team: 1) project and workshop objectives; 2) project processes and accomplishments to date; and 3) summary of the stakeholder rankings of the health equity indicators based on the series of online surveys.

Subsequently, a group discussion in World Café format was organized around three discussion tables, one for each tier of indicators. Participants were randomly divided into three groups, and skilled facilitators at each table led participants through a standard list of questions to help make decisions about which indicators should be prioritized. After approximately 30 minutes of discussion at the first table station, each

group moved to the next table to discuss a different tier. Each group of participants eventually provided feedback or asked questions on each of the three tiers, independent of the other two groups in rotation. Three sets of priority themes and indicators for each tier were then merged to identify areas of consensus and possible trade-offs. Participants were brought back for a plenary discussion of results and ultimately reached consensus on the final list of 52 prioritized indicators.

3.11.4 Workshop outcomes

1. A prioritized suite of health equity indicators for use in B.C.

- The small group and plenary discussions at the workshop resulted in a final suite of 52 prioritized indicators for measuring healthy equity across the province (Table 2).

2. Some suggestions for further indicator development

- Considering an indicator to address “medical specialist utilization”
- Identifying wellness indicators (fundamentally different from illness indicators)
- Considering an indicator to address the use of alternative/complementary medicines
- Considering prevalence of racism as an indicator (may be a focus area for future study since there is not enough data to analyze directly- see below)
- Identifying an indicator to assess oral health (e.g., “prevalence of oral or facial pain or discomfort”)

3. Identification of focus areas for future study

- After the total number of indicators was reduced from 87 to 52, it was suggested that there would still be other critical equity areas that have not been addressed by the priority suite of indicators. Additional important areas identified by participants for future consideration for a focus report include but are not limited to:
 - Identifying the relevance and availability of data on First Nations populations and other vulnerable populations (e.g., homeless people, those suffering from chronic illness and people with disabilities)
 - Reviewing data sources used for immigration status to understand whether the data captured is representative of immigrant populations

Table 2: 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* \geq 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-categories: 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 continuous 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 times 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).

3.11.5 Workshop evaluation feedback

In their final comments, workshop participants endorsed the value and importance of the prioritized indicators for promoting health equity. Participants emphasized the need to proactively communicate and engage all those who will benefit from the information as it becomes available and the data used to plan and deliver health care programs and services in B.C.

Over half of workshop participants completed an online evaluation survey about the event. All respondents (100%) “agreed” or “strongly agreed” that:

- the workshop materials and presentations provided important background of work completed to-date;
- the content was well organized and was informative and easy to follow;
- the workshop format was conducive to achieving the workshop goal;
- the workshop objectives were clearly stated and understood; and,
- the workshop was worthwhile to attend.

4.0 Considerations

4.1 Process issues

The initial project charter outlined all main components for successful completion of project objectives, although the project evolved and developed iteratively. Following the literature scan, PPH consulted regularly with the TWG to identify and refine project needs and activities. Informed by TWG inquiries and suggestions, PPH established groups or processes as required to support decision-making and keep the project moving ahead.

Stakeholders were engaged consistently throughout the project process (meeting nine times over an 18-month period). External TWG members worked with PPH project team early in the project to jointly agree on the equity dimensions, criteria for prioritization, and initial lists and descriptions of indicators. The TWG helped design and actively participated in the prioritization process, providing guidance and direction throughout, including suggestions for effective data presentation and utilization.

To encourage and support stakeholder engagement, PPH: 1) supported and documented the exploration of technical questions; 2) created, administered, and collated two online surveys; 3) organized and facilitated meetings, discussion groups, and workshops; 4) created and provided relevant support materials for those meetings, discussion groups, and workshops, and 5) presented sample data analysis strategies and results for feedback. The main assets for a project of this magnitude are clear leadership as well as strong project management and technical expertise. Flexible around project activities, the team's capacity to evolve as needs arose supported stakeholder engagement and led to successful project outcomes.

4.2 Outcome-related issues

Utilization of data

Early in the project, stakeholders asked how the data on the health equity indicators would be used. This issue was discussed thoroughly over many months, and continues to be explored. Potential end-users of the B.C. data have been identified as:

- Ministry of Health
- Health authorities (i.e., Fraser Health, Island Health, Interior Health, Northern Health, First Nations Health, PHSA, and Vancouver Coastal Health)
- Local governments and communities
- Non-governmental organizations (e.g., BC Healthy Living Alliance, BC Healthy Communities Society)
- Chronic disease-specific organizations (e.g., Heart & Stroke Foundation, Canadian Cancer Society-BC & Yukon chapter)
- Academics and researchers (e.g., University of BC, University of Victoria, Simon Fraser University).

The project team believes that potential end-users of the data may come from many branches of these organizations, including but not limited to the fields of: quality and patient safety; decision support and performance measurement; population and public health; and chronic disease and injury prevention.

Health equity indicators could also inform strategic policy and program planning for these organizations. Some potential uses of health indicator data at various levels include:

- Local level:
 - Identifying areas that require further investigation/action (e.g., where is the potential for the greatest impact?)
 - Identifying areas of greatest inequity (e.g., which indicators demonstrate the greatest inequities?)
 - Informing exploration and discussion to contextualize the results and identify causality (e.g., what are the causes of inequities?)
 - Comparing results across small geographies and with the provincial results to assess whether or not there is geographic disparity
 - Setting targets for improvement
- Provincial level:
 - Identifying whether or not there are provincial inequities across the equity dimensions for a particular indicator (e.g., are there certain populations in B.C. that have higher rates of diabetes?)
 - Identifying what requires further investigation to determine causality, to identify the most effective interventions, and to prioritize those interventions (e.g., where is/are our energy and resources best spent?)
 - Identifying potential provincial-level actions
 - Monitoring/evaluating decline or improvement over time for those indicators
 - Setting targets for improvement
- National and inter-provincial level:
 - Sharing experience regarding the development, prioritization and analysis of health equity indicators with national and interprovincial networks

Data limitations

Immediately following indicator prioritization, the team began exploring processes for acquiring the data from respective data custodians with the intention of stratifying the indicators by the equity dimensions. Data access for the indicators as well as the equity dimensions has been and will continue to be a challenge that will influence which indicators can be reported on.

5.0 Conclusion

The Ministry of Health's *Promote, Protect, Prevent: Our Health Begins Here - BC's Guiding Framework for Public Health* focuses on promoting improved health equity across all population groups. An emphasis on equity in such an important policy document signals a positive step in public health policy direction towards addressing the health gaps identified in the two Health Officers' Council of BC reports (2008, 2013) as well as PHSA's *Reducing health inequities* report (2011).

From its RHI report, PPH prioritized the recommendation to “develop health equity targets” and began work in 2012-13. Before targets could be established, the team first needed to select and test which indicators were most appropriate to measure. As a result, PHSA launched the project that is the subject of this report.

PPH organized and facilitated meetings, discussion groups, workshops and processes to support meaningful engagement of key stakeholders in this project. PPH also achieved the following deliverables during the course of this project:

- Literature scan completed and released
- Equity dimensions identified
- Definitions and descriptions of health equity indicators developed
- Indicator selection criteria identified and agreed
- Two online surveys developed and implemented
- Prioritization workshop structure and support materials developed

Project activities culminated in a final prioritization workshop that produced a prioritized suite of 52 health equity indicators for use in B.C., achieved by consensus.

5.1 Some lessons learned

This project provided various learnings that will inform our data acquisition and analysis efforts going forward, and may be helpful for any jurisdictions hoping to establish and report on health 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* as well as the recommendations of the prioritization workshop participants, PPH proposes focusing on: child health, seniors' health, Aboriginal health, women's health, injury prevention, and mental health and substance use.
9. Establishing an ongoing evaluation process, with the intention of potentially refreshing the suite of prioritized health equity indicators in several years' time.

6.0 Annotated appendices

To see the Appendices materials, visit www.phsa.ca/populationhealth.

APPENDIX 1: Canadian Institute for Health Information (CIHI) health indicator framework

The Canadian Institute for Health Information framework groups indicators into four tiers:

1. Health status and outcome (e.g., health conditions)
2. Health system performance (e.g., accessibility)
3. Non-medical determinants of health (e.g., living and working conditions)
4. Community and health system characteristics (e.g., resources)

A modified version of the CIHI framework was used as a way to group/organize the indicators in this project. This modified version included the first three tiers, but left out the fourth tier (i.e., community and health system characteristics).

APPENDIX 2: Online survey #1: Identifying initial indicator topics

In summer 2012, PPH developed an online rating survey to help stakeholders start thinking about what health equity indicators to include in the final suite. The survey included indicators that were believed to be most relevant to this project's purpose and the context in B.C. (i.e., selected indicators from the CIHI framework as well as several from St. Michael's Hospital).

In the survey, stakeholders were asked to rate each of 53 indicator topics on a scale of importance from 1 (not important at all) to 5 (very important) based on two criteria:

1. Does this indicator address an important health issue? and
2. Is it an issue that is amenable to change through the health system?

APPENDIX 3: Test indicators

Pilot projects in two health authorities were established to test PPH's process for generating indicator data to the lowest geographic level possible, and for sending the data to the health authorities for use. Four indicator topics (diabetes, smoking status, unintentional injuries and mental health) were chosen for testing purposes because they spanned several tiers of the indicator framework and included 13 indicators that had different data sources.

APPENDIX 4: Summary of health authority pilot projects

Pilot projects in two health authorities were established to test PPH's process for generating indicator data to the lowest geographic level possible, and for sending the data to the health authorities for use. Testing this process allowed PPH to identify issues related to the data and data access as well as the most effective and efficient role of the two parties involved in this collaborative process.

APPENDIX 5: Sample two-page indicator description

PPH developed two-page descriptions for each indicator in the consolidated list of 87. Sections included: indicator definition, data source, method of calculation, relevance of the indicator to measuring equity, and why the indicator was recommended. This appendix is a sample of one of the two-pagers, providing an example of what they looked like.

APPENDIX 6: Prioritization criteria

A comprehensive list of criteria for selecting health equity indicators was compiled from five documents summarized in the literature scan, including those recommended by the World Health Organization and several other governmental and academic institutions. Guiding statements for each criterion were included to explain how that criterion would be fulfilled.

APPENDIX 7: Online survey #2: Rating the indicators

To begin prioritizing the consolidated list of 87 indicators, stakeholders received three surveys (one for each of the three tiers of indicators in the project's indicator framework). Respondents were asked to rate each indicator according to how well it fulfilled each of the seven criteria. Each survey was estimated to require approximately 20 minutes to complete and stakeholders were provided with personal URL links to access the surveys. Stakeholders were also provided with the two-pagers for relevant indicators to inform their choices.

APPENDIX 8: “Keep-drop” tables of equity indicators discussed at the Nov 13, 2013 workshop

Prior to and during the final workshop, participants were provided with two sets of tables that showed the list of initial priority indicators and themes to be retained in each tier based on high rankings by survey respondents (“keep” tables), and the ‘dropped’ themes and indicators based on low rankings (“drop” tables). These tables formed the basis of discussion and decisions at the Nov 13, 2013 indicator prioritization workshop.

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