



CORE

Public Health Functions for BC

**Model Core Program Paper:
Reproductive Health
and Prevention of
Disabilities**

BC Health Authorities

BC Ministry of Healthy Living and Sport

February 2009

This Model Core Program Paper was prepared by a working group consisting of representatives of the BC Ministry of Healthy Living and Sport and BC's health authorities.

This paper is based upon a review of evidence and best practice, and as such may include practices that are not currently implemented throughout the public health system in BC. This is to be expected, as the purpose of the Core Public Health Functions process—consistent with the quality improvement approach widely adopted in private and public sector organizations across Canada—is to put in place a performance improvement process to move the public health system in BC towards evidence-based best practice. Where warranted, health authorities will develop public performance improvement plans with feasible performance targets and will develop and implement performance improvement strategies that move them towards best practice in the program component areas identified in this Model Program Paper.

This Model Program Paper should be read in conjunction with the accompanying review of evidence and best practice.

Model Core Program Paper approved by:

Core Functions Steering Committee (February 2009)

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EXECUTIVE SUMMARY

This paper identifies the core elements that should be provided by British Columbia health authorities to support reproductive health and the prevention of disabilities (congenital and genetic disabilities). It is intended, as part of the BC Core Functions in Public Health, to reflect evidence-based practice and support continuous performance improvement.

A Working Group of representatives from the Ministry of Healthy Living and Sport, Provincial Health Services Authority and the health authorities, worked together in the development of this paper. The Working Group agreed that the overall goal of the program on reproductive health and disability prevention is to enhance the health of women and men during their childbearing years as well as the health of women during pregnancy, birthing and the postpartum period (up to one week following birth), and to minimize adverse mother, newborn and family outcomes. The specific objectives are to:

- Enhance protective factors linked to improved reproductive outcomes for girls and boys, and women and men of childbearing age.
- Prevent and/or reduce risk factors for pregnant women and their babies.
- Reduce pre-term births, low birth weights and congenital defects and disabilities.
- Increase the rate of births with healthy birth weights.

Key principles and overarching strategies include collaboration, partnerships and integration of initiatives across a wide range of health programs and health care providers, as well as with schools, social service agencies, and other community organizations to strengthen programs and ensure consistent services across sectors; a women-focused perspective within a family context that takes into account the social and cultural context of women's experience, the important role and support of fathers and family members; a determinants of health approach that examines the interaction between gender and social, economic and environmental influences on reproductive protective and risk factors for both women and men; as well as the importance of responding to the needs of diverse cultural groups.

The major program components for reproductive health and disability prevention are:

- Leadership and Strategic Planning – Development of a comprehensive, multi-sectoral strategy, including policies, regional priorities and partnerships to enhance programs for reproductive health and prevention of disabilities, based on regional and community needs assessment.
- Health Promotion – Advocacy for healthy public policies, development of enhanced public education and social marketing, as well as strengthened community development and community capacity building.
- Delivery of Prevention Programs – Direct delivery of a range of universal and targeted public health programs along with collaborative services delivered by health care partners and community organizations, including:

- Preconception/Interconception Programs – Programs for women and men at different stages of their childbearing years to increase protective factors and reduce risk factors, taking into account the determinants of reproductive health, and population groups that will benefit from programs to enhance nutrition, healthy weights, healthy relationships, healthy lifestyles, oral health, mental health, healthy sexuality, use of contraceptives, planned pregnancy, and normal birth.
- Prenatal Programs
 - Support and promote with maternity care providers, universal approaches to identify, assess and/or screen all pregnant women for key risk factors (i.e., sexually transmitted infections [STIs] and other infectious diseases, tobacco use, alcohol and other problematic substance use, intimate partner violence and abuse, depression, diabetes, inadequate diet, periodontal health, etc.);
 - Provide outreach and counselling (and referrals as necessary) for women with STIs and other infectious diseases;
 - Provide education and counselling for vulnerable and low income women which empowers them to:
 - Enhance nutrition and appropriate weight gain;
 - Manage chronic diseases (e.g. diabetes).
 - Prevent and/or reduce intimate partner violence and abuse, stress factors, psychosocial problems, depression, unhealthy environments, and other risk factors. Refer to health partners as necessary.
 - Provide universal education opportunities for all women covering:
 - The importance of using folic acid and multivitamin supplementation (including reducing barriers to accessing supplements for low-income women) and a balanced nutritious diet;
 - Education on breastfeeding benefits and practices for all pregnant women;
 - Promotion of normal birth;
 - Prenatal education as deemed appropriate, taking into account the characteristics and needs of women, and communities (and considering evidence, outcomes, resources and long-term priorities).

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- Provide information and referral to abortion services as appropriate;
 - Educate women regarding occupational risks and options as necessary;
 - Support and encourage prenatal education and appropriate care for incarcerated women and those experiencing substance withdrawal and other conditions that cause vulnerability.
- Postpartum Programs
 - Proactively support breastfeeding along with unrestricted feeding and mother-baby contact;
 - Promote and support infant screening by health care providers, as follows:
 - Newborn screening for a full range of disorders and defects;
 - Universal developmental screening as appropriate (see Core Program Paper on Healthy Infant and Child Development).
 - Identify maternal risk factors by building trust and providing brief support, counselling and referral as necessary, related to:
 - Alcohol and problematic substance use;
 - Intimate partner violence and abuse.
 - Coordinate early intervention, education and follow-up with parents of pre-term and low birth weight infants, and / or disabling conditions, including clinic-based and / or home visits to positively influence growth and development and to ameliorate affects of disabilities as much as possible;
 - Provide educational postpartum programs:
 - Targeted programs for low income and vulnerable women including home visits and group sessions to provide education on parenting skills, infant care, injury/accident prevention, nutrition education, healthy weights, diabetes prevention, and other health issues such as planned pregnancies;
 - Universal educational programs including home visits and/or groups sessions in selected communities, as deemed appropriate (considering the evidence, outcomes, resources and long-term priorities).
- Aboriginal Program Delivery – Work with Aboriginal individuals and communities, within the context of the Transformative Change Accord: First Nations Health Plan, to provide culturally appropriate health care that respects

traditional values and relationships and supports community-directed programs for Aboriginal people (Smylie, 2001).

- Surveillance, Monitoring and Program Evaluation – Identify trends, needs and priorities, and evaluate program success in optimizing maternal and infant outcomes.

1.0 OVERVIEW/SETTING THE CONTEXT

As demonstrated in recent Canadian reports, public health needs to be better structured and resourced, in order to improve the health of the population. The Framework for Core Functions in Public Health is a component of that renewal in British Columbia. It defines and describes the core public health activities of a comprehensive public health system. This policy framework was accepted in 2005 by the then-Ministry of Health and the health authorities.

Implementation of core functions will establish a performance improvement process for public health, developed in collaboration between the Ministry of Healthy Living and Sport, the health authorities and the public health field. This process will result in greater consistency of public health services across the province, increased capacity and quality of public health services and improved health of the population. To ensure collaboration and feasibility of implementation, the oversight of the development of the performance improvement process is managed by a Provincial Steering Committee, with membership representing all health authorities and the ministry.

What are core programs? They are long-term programs representing public health services that health authorities provide in a renewed and modern public health system. Core programs are organized to improve health; they can be assessed ultimately in terms of improved health and well-being and/or reductions in disease, disability and injury. In total, 21 programs have been identified as “core programs,” of which the program on reproductive health and prevention of disabilities is but one.

In a “model core program paper,” each program will have clear goals, measurable objectives and an evidentiary base that shows it can improve people’s health. Programs will be supported through the identification of best practices and national and international benchmarks (where such benchmarks exist). Each paper will be informed by an evidence paper, other key documents related to the program area and by key expert input obtained through a working group with representatives from each health authority and the Ministry of Healthy Living and Sport.

The Provincial Steering Committee has indicated that an approved model core program paper constitutes a model of good practice, while recognizing it will need to be modified to meet local context and needs. While health authorities must deliver all core programs, how each is provided is the responsibility of the health authority, as are the performance improvement targets they set for themselves.

It is envisioned that the performance improvement process will be implemented over several years. During that time the process will contribute to and benefit from related initiatives in public health infrastructure, health information and surveillance systems, workforce competence assessment and development and research and evaluation at the regional, provincial and national levels.

1.1 An Introduction to This Paper

This model core program paper is one element in an overall public health performance improvement strategy. It builds on previous work from a number of sources.

In March 2005, the then-Ministry of Health released a document entitled *A Framework for Core Functions in Public Health*. This document was prepared in consultation with representatives of health authorities and experts in the field of public health. It identifies the core programs that must be provided by health authorities, and the public health strategies that can be used to implement these core programs. It provides an overall framework for the development of this document.

The evidence reviews that have informed this paper include:

- *Reproductive Health: Evidence Review* (2008), by A. Kelly, for the Ministry of Health, Population Health and Wellness.
- *Prevention of Disabilities (Congenital & Genetic): Evidence Review* (2007), by A. Kelly, for the Ministry of Health, Population Health and Wellness.

A Working Group on Reproductive Health and Disability Prevention was formed in 2008, of experts from the Ministry of Healthy Living and Sport, Provincial Health Services Authority and the health authorities. The group provided guidance and direction in the development of the model core public health program paper during meetings in January, April and October 2008, as well as through telephone and e-mail discussions.

1.2 Introduction to Reproductive Health and Disability Prevention

In the development of a core public health program on reproductive health and disability prevention, there must be clarity on the level of reproductive health and the extent of disabilities in BC.

1.2.1 Key Considerations

Infant mortality has been declining in BC, similar to the rest of Canada: the rate declined from 8.4 deaths/1,000 births in 1987, to 5.3 deaths/1,000 births in 2004 (the 2005 infant mortality rate in BC was 4.5 deaths/1,000 births). The overall decline is attributed to increased access in neonatal intensive care. As well, increased screening has resulted in a higher detection rate of congenital anomalies and an associated increase in abortions (Lui et al., 2002).

Indicators suggest a steady rise in the level of maternal and newborn acuity, including higher rates of multiple births, preterm babies, caesarean births, and low birth weight babies (BC Specialized Perinatal Services Committee, 2005). Preterm births in Canada increased between 1981 and 2004 from 6.4 preterm births per 100 births, to 8.2 per 100 (2004/05). The BC 2005/06 preterm birth rate was 9.7 births per 100. The increase has been attributed to increased use of obstetric interventions, and the increased rate of multiple births (BC Perinatal Health Program, 2008; Blondel et al., 2002). Preterm infants are at increased risk of death, short- and long-term pulmonary morbidity, ophthalmologic morbidity, neurologic morbidity and delayed psychomotor development (McCormick, 1985).

In 2005/2006, the caesarean birth rate in BC reached 30.4 per cent, higher than the Canadian rate of 26.3 per cent and surpassing every other province and territory in Canada (BC Perinatal Database Registry, 2007). Caesarean births are associated with complications, including a five-fold increase in persistent breathing problems in newborns, as well as extended hospital stays for mothers (University of British Columbia, 2006).

Teen pregnancy and birth rates have been declining over the past decades. There has been a steady decline in the age-specific (age 15–19) teen pregnancy and birth rates in BC. The teen pregnancy rate has decreased from approximately 44/1,000 in 1997 to 24/1,000 in 2006.¹ The teen birth rate has decreased from approximately 17/1,000 in 1997 to 10/1,000 in 2006; this decline has been seen in other western countries as well.²

Similarly, the teen birth rate has decreased for Status Indians; however, this population has a significantly higher rate of teenage mothers compared to other BC residents. In 2004, the percentage of teen mothers in the Status Indian population was 16.3 per cent, compared to 2.4 per cent for other BC residents (Provincial Health Officer, 2007).

Teen births have been associated with outcomes such as low birth weight and preterm delivery. For example preterm birth rates among teenaged mothers in BC in 2006/2007 were 10.1 per cent, compared to 8.1 per cent in non-teenaged mothers. Also, the prevalence of smoking in pregnancy was 34 per cent in teenage mothers compared to 9.8 per cent in non-teenage mothers (2006/2007) (BC Perinatal Database Registry, 2007).

In 2005/2006, there were 15,331 abortion services performed in BC. Service statistics alone are insufficient to assess accessibility. The abortion rate provides a partial measure of unintended pregnancy as well as the result of screening for congenital anomalies.

1.2.2 Rates of Developmental and Physical Disability

Approximately 3.5 per cent of the population under 15 years of age has a disability, and 1.4 per cent of these are severe (2002). A summary of disability rates in BC that are related to congenital and genetic defects are:

- 23 children per 1,000 (under 15 years of age) have disabilities such as visual impairments/blindness, epilepsy, mental disability, developmental delays, cerebral palsy, autism, etc. (2002).³
- 9 births per 1,000 are estimated to have fetal alcohol spectrum disorder (FASD) and 3.5 per 1,000 to have fetal alcohol syndrome (FAS).⁴ In Aboriginal communities in Canada, the prevalence of FASD has been estimated as high as 180 cases per 1,000 children (First

¹ BC Vital Statistics Agency, Population Data (2006) – *Live Births and Stillbirths*, and from BC Ministry of Health Information Systems Inpatient Programs (abortive outcomes). BC STATS.

² BC Vital Statistics Agency, Population Data (2006). *Live Births*. BC STATS.

³ The BC Health Status Registry Report, produced by BC Vital Statistics Agency, provides data based on voluntary reporting of conditions by health care agencies and providers.

⁴ Estimated by the Provincial Health Services Authority (2008).

Nations Centre, 2005). FASD occurs across all populations: it encompasses a range of disabilities including brain damage, vision and hearing problems, slow growth, birth defects, lifelong learning difficulties and problems in memory, reasoning and judgment.

- 4 children per 1,000 (under 15 years of age) have inherited or chromosomal disorders such as haemophilia, metabolism disorders, cystic fibrosis, muscular dystrophy, etc. (2002).⁵
- 0.5 per cent of births per 1,000 had congenital anomalies. The most common are musculoskeletal deformities, followed by anomalies of the heart (Canadian Congenital Anomalies Registry, 1997–1999).

1.2.3 Risk Factors for Low Birth Weights, Birth Defects and Disabilities

Many causes of congenital defects are unknown; however, some are caused by an interaction between genetic and non-genetic factors, as seen with Down's syndrome, which becomes more common as maternal age increases (Kalter & Warkany, 1983); maternal infections such as rubella; maternal illnesses such as diabetes; environmental substances such as mercury; teratogenic agents taken by the mother (prescription/non-prescription drugs or chemicals); and nutritional deficiencies such as a lack of folate (Al-Yaman, Bryant, & Sargeant, 2002).

Other risk factors for preterm births and the related risks associated with low birth weight are: maternal malnutrition; maternal obesity; extremes in maternal ages including young teens and older women; low socio-economic status; some occupational factors (e.g., heavy physical work, exposure to chemicals and minerals, etc.); periodontal disease; multiple births; intimate partner violence; chronic stress; and infectious diseases such as HIV infection (Ministry of Health [MOH], Population Health and Wellness [PHW], 2007) and chlamydia.

In addition, a number of lifestyle and behaviour risk factors can have a significant impact on birth outcomes:

- Maternal and paternal smoking during pregnancy is a risk factor for spontaneous abortion, intrauterine growth restriction, low birth weight, preterm birth and sudden infant death syndrome (US Department of Health and Human Services, 2001).
- Alcohol consumption by women places them at risk for adverse perinatal and fetal outcomes. All current Canadian professional standards of practice state there is no known safe level of alcohol consumption during pregnancy (Public Health Agency of Canada, n.d.).
- The use of alcohol and illicit drugs is also associated with risky sexual behaviour including sex with multiple partners, sex with known injection drug users, elevated hepatitis C and sexually transmitted infection (STI) transmission (Bachmann et al., 2000).

Key risk factors for Aboriginal women include:

⁵ The BC Health Status Registry Report, produced by BC Vital Statistics Agency, provide data based on voluntary reporting of conditions by health care agencies and providers.

- High rates of smoking (Smylie et al., 2001) and alcohol consumption (MOH, PHW, 2007).
- 5.3 times more diabetes than non-Aboriginal women (Smylie et al., 2001).
- High rates of chlamydia (7 times higher than the national rate) and syphilis (one-third of cases in BC are Aboriginal women) (BC Centre for Disease Control, 2005).
- Higher rates of violence (3 times higher than for non-Aboriginal women) (Statistics Canada, 2006).
- Lower socio-economic status (Statistics Canada, 2006).
- Canadian First Nation women also report significant barriers to accessing prenatal care (an important factor in improving birth outcomes) including lack of continuity, communication difficulties, transportation problems, and prejudice on the part of the provider (Sokolowski, 1995).

1.2.4 Men's Reproductive Health

The focus on men's reproductive health was influenced by the 1994 Cairo Action Plan to promote gender equality and equity, empower women, and improve family health in society. Changing and improving the way in which men are involved in reproductive health is intended to positively impact women's, men's and children's health.

The majority of health promotion and health protection research on men's reproductive health relates to factors that influence the risk of infertility and sub-fertility in men. These include: injury to reproductive organs; sexually transmitted infections; smoking; alcohol use; overweight and obesity; paternal age; exposure to environmental toxins; and pathology such as genetic and congenital abnormalities, infection, and multi-systemic diseases.

1.2.5 Context

This paper does not specifically include treatment, labour and intrapartum care, or screening outside the scope of public health: however, it does include health promotion as well as primordial, primary and early secondary prevention that may be either "population-wide" or "targeted" to vulnerable individuals or groups. It is recognized that there is some overlap with primary care, which "has a long history of preventive care as part of the role of family physicians" (Canadian Task Force on Periodic Health Examination, 1994), and that it is increasingly necessary for public health to collaborate and coordinate its efforts with all maternity care providers across the continuum of care, including physicians, nurse practitioners, midwives and obstetricians/gynecologists.

About 30 per cent of family physicians and general practitioners provide maternity care in BC. The attrition rate for physicians is high and there is mal-distribution of practitioners between rural and urban areas resulting in rural and remote women facing particular challenges accessing perinatal care (College of Family Physicians of Canada, 2001). In 2006/2007, midwives attended 5.8 per cent of births in BC (BC Perinatal Database Registry, 2007). Collaborative care models

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have been recommended and supported in BC and across the country to support flexibility and collaboration to optimize the use of a wide range of specialized resources (BC Perinatal Database Registry, 2007).

2.0 SCOPE AND AUTHORITY FOR THE REPRODUCTIVE HEALTH AND DISABILITY PREVENTION PROGRAM

In order to implement the program for reproductive health and disability prevention, there must be clarity on the roles and responsibilities of the Ministry of Healthy Living and Sport, the Provincial Health Services Authority (PHSA), the health authorities, and other ministries and levels of government.

2.1 National/International Roles and Responsibilities

Health Canada's role is to foster good health by promoting health and protecting Canadians from harmful products, practices and diseases. In the area of reproductive health, it conducts reviews and approves the safety and efficacy of therapeutic products related to reproductive health and technologies, ranging from drugs and devices for contraception and infertility to the development of standards and legislation on reproductive technologies. Health Canada also provides and/or funds the development of health promotion resources on sexual and reproductive health including a national healthy pregnancy campaign, media literacy training on adolescent sexuality education, school curricula on healthy relationships, and sexual health information for youth.

Health Canada established the Centres of Excellence for Women's Health to conduct policy-oriented research to increase knowledge and understanding of women's health, including reproductive health.

Health Canada's First Nations and Inuit Health (FNIH) has traditionally provided health services directly to First Nations people on reserve, and is now working to enhance community control of health services in Aboriginal communities. With the signing of the Transformative Change Accord, the Leadership Council representing the First Nations of British Columbia, the Province of British Columbia and the federal government have agreed to a shared commitment to action on closing health, social and economic gaps between First Nations and other British Columbians. A Tripartite First Nations Health Plan commits the three parties to taking action in enhancing health among Aboriginal people in such areas as mental health, substance use, chronic disease and injury. The success of these initiatives will require, in part, ongoing collaboration among various levels of government.

The Canadian Perinatal Surveillance System (CPSS) is part of Health Canada's initiative to strengthen national health surveillance capacity. The CPSS is an ongoing health surveillance program delivered through the Maternal and Infant Health Section in the Public Health Agency of Canada (PHAC). It contributes to improved health for pregnant women, mothers and infants in Canada by providing timely relevant information about trends and patterns in health status and the factors that influence health status. Components include: data collection, expert analysis and interpretation, and response (communication of information for action).

PHAC also provides the Canada Prenatal Nutrition Program (CPNP), a funding program for community groups to develop or enhance programs for vulnerable pregnant women. Through a community development approach, the CPNP aims to reduce the incidence of unhealthy birth weights, improve the health of both infant and mother and encourage breastfeeding. In addition,

the federal Canada Revenue Agency addresses income disparities through policies that assist low-income families.

The Breastfeeding Committee for Canada (BCC) has been designated as the national authority for the Baby-Friendly Initiative in Canada. The BCC sets the Canadian indicators for agencies in achieving the WHO/UNICEF Ten Steps for the Baby-Friendly Initiatives.

2.2 Provincial Roles and Responsibilities

2.2.1 Ministry of Healthy Living and Sport Roles and Responsibilities

The mandate of the Ministry of Healthy Living and Sport is to

- Promote health and prevent disease, disability and injury.
- Protect people from harm.
- Facilitate quality opportunities to increase physical activity, participation and excellence in sport.
- Support the health, independence and continuing contributions of women and older people.

In its stewardship role, the Ministry of Healthy Living and Sport provides leadership, strategic policy direction, legislation and monitoring for public health and sports programs to support the delivery of appropriate and effective public health services in the province. The ministry has a role in addressing health inequalities, with a specific focus on the development of policies and programs to close the gap in Aboriginal health status. The Ministry works with the health authorities to provide accountability to government and the public for public health service outcomes.

Specifically in the area of reproductive health and disability prevention, the Ministry of Healthy Living and Sport is responsible for providing overall stewardship of public health services, strategic policies and legislation as follows:

- Advising the Minister on reproductive health and disability prevention policies and legislation.
- Consulting and collaborating with health authorities, clinical and academic partners in the development of plans and strategies to outline provincial priorities and establish policy, best practices, and service frameworks on reproductive health and prevention of disabilities.
- Facilitating collaborative partnerships with other provincial ministries and agencies, the federal government, and federal/provincial forums on reproductive health and prevention of disabilities.
- Providing leadership in provincial policy development and long-term planning for reproductive health and prevention of disabilities through a continuum of services and supports.

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- Developing, through a collaborative approach, an Aboriginal Perinatal Health Plan with components related to reproductive health and prevention of disabilities.
- Supporting research on prevalence and estimated costs of reproductive health and prevention of disabilities and interventions.
- Supporting knowledge exchange through BC Women’s Hospital and Health Centre, BC Centre of Excellence for Women’s Health, BC Perinatal Health Program, and BC Reproductive Mental Health Program.

2.2.2 Other Provincial Ministries Roles and Responsibilities

The Ministry of Healthy Living and Sport has a unique relationship with the Ministry of Health Services as they are the primary linkage to the regional health authorities and are responsible for service delivery of public health programs. The role and functions of the Ministry of Health Services are predominantly focused on: leadership for the delivery of health services and programs; funding and accountability for regional health authorities; ensuring long-term sustainability of the health care system; improved patient care; leadership, direction and support to health care service delivery partners; setting province-wide goals, standards and expectations for health care service delivery by health authorities; and management of the Medical Services Plan, Pharmacare, Ambulance Services, and BC HealthGuide self care program.

Other key partners within government are:

- Ministry of Children and Family Development – Supports teen mothers, adoption services, child and youth mental health, FASD intervention and support, and support for special needs children at home and in day care.
- Ministry of Education – Coordinates delivery of the curriculum to enhance knowledge, skills and attitudes necessary for healthy living and healthy relationships.
- Ministry of Community Development, Ministry of Housing and Social Development, and WorkSafe BC – Provide a range of programs that also contribute to reproductive health.

2.2.3 Provincial Health Services Authority Roles and Responsibilities

The Provincial Health Services Authority (PHSA) is responsible for ensuring that high-quality specialized services and programs are coordinated and delivered within the regional health authorities. PHSA operates eight provincial agencies including: BC Mental Health and Addiction Services, BC Children’s Hospital, BC Women’s Hospital & Health Centre, BC Centre for Disease Control, BC Cancer Agency, BC Renal Agency, BC Transplant and Cardiac Services BC.

One of PHSA’s four key strategic directions is population and public health. A steering committee consisting of representation from all PHSA agencies and programs oversees population and public health activity across PHSA. Due to the provincial scope of PHSA’s mandate, a dual role for PHSA is emerging: improvements aimed at streamlining population and public health activities within PHSA agencies and programs, as well as potential provincial

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coordination in areas such as surveillance, consistent messaging, expert advice, and supporting development of healthy public policy.

Key drivers for shaping PHSA's role in core programs are the needs of the regional health authorities, the Ministry of Healthy Living and Sport and the Ministry of Health Services. As PHSA's role evolves, the opportunity arises to develop mechanisms to convene and coordinate provincial dialogue; facilitate the identification of common needs and joint problem-solving; collaborate with and support regional and provincial partners to meet common needs; and jointly identify available resources for common initiatives.

In relation to reproductive health and disability prevention, PHSA's activities include:

- BC Women's Hospital and Health Centre provides tertiary care for women and newborn infants as well as a number of specialized programs including: CARE (Comprehensive Abortion and Reproductive Education); a Reproductive Mental Health Program; Fir Square Care Unit (specialized care for substance-using pregnant women and substance-exposed babies); Aurora Centre (residential and day treatment for women recovering from substance dependence); Women Abuse Response Program (training, resources consultation and clinical support for health care providers); provincial training on best practices to support survivors of sexual assault; and training for health care professionals to strengthen counselling related to alcohol use in pregnancy (a component of the Ministry of Healthy Living and Sport's Healthy Choices in Pregnancy).
- The BC Perinatal Health Program provides leadership for perinatal health throughout the province including specialized perinatal services, through collaboration with health authorities and educational support for hospitals, health authorities, community agencies, academic institutions and private practitioners across BC. It works in collaboration with health authorities (hospitals and community agencies), academic institutions and private practitioners to effectively collect and link perinatal health care data and research to education and professional needs of care providers across BC.
- Child health and rehabilitation programs comprise: BC Children's Hospital, the province's major treatment, teaching and research facility for child health; Sunny Hill Health Centre for Children, which offers specialized services to children with disabilities, their families and communities throughout BC—these services encompass development and behaviour, neuro-motor disabilities, sensory impairment and transition planning and respite.
- BC Centre of Excellence for Women's Health provides gender-based research and analysis.

2.2.4 Other Provincial Ministries/Agencies Roles and Responsibilities

If necessary

2.3 Health Authorities Roles and Responsibilities

The role of health authorities is to identify and assess the health needs in the region, to deliver health services (excluding physician services and BC Pharmacare) to British Columbians in an efficient, appropriate, equitable and effective manner, and to monitor and evaluate the services which it provides. In the area of reproductive health and disability prevention, health authorities are responsible for:

- Leadership in regional program planning and development to enhance reproductive health and prevention of disabilities, based on regional needs and priorities.
- Health promotion, including advocacy for healthy public policies, provision of public education/awareness and social marketing, as well as community development and community capacity building.
- Delivery of prevention initiatives, including direct delivery of public health services along with collaborative programs delivered by health care partners:
 - Preconception Initiatives – A wide range of universal and targeted programs for women of childbearing years to increase protective factors and reduce risk factors, taking into account social, economic and environmental determinants of reproductive health.
 - Prenatal Initiatives – Provide support for screening of all pregnant women, including perinatal depression screening, education and counselling targeted to high-risk and low-income women, and education on nutritional supplements, healthy weights, alcohol and tobacco cessation, normal birth practices, promotion of breastfeeding, and other key protective factors for all pregnant women.
 - Postpartum Initiatives – Provide a range of education and counselling services, in particular to support breastfeeding for all mothers, enhance parenting and infant care skills for high-risk and low-income mothers, and assist mothers with preterm, low birth weight infants and/or disabling conditions.

2.4 Local Roles and Responsibilities

Local governments exert important influence on policy and bylaws in areas such as public and community health, housing, social services, community safety, recreational services and environmental health. Also, many community organizations provide services in these fields and offer important local access to health support for women in their childbearing years, pregnant women, mothers and their infants (e.g., Pregnancy Outreach Programs and the Canadian Prenatal Nutrition Program). The range of these local public health partners is discussed more fully in Section 4.1, as collaboration with local organizations and groups is a key component in delivering effective preventive services. In addition, there are private health care services, such as Doula care and lactation consultants, provided in many communities.

Also on a community level, it is important that Aboriginal groups have full involvement in the planning and delivery of programs provided to people on First Nations reserves as well as Aboriginal people in other communities. Capacity building and partnership with Aboriginal communities can strengthen and support the shift toward self-government of the health care system and facilitate the management, planning and delivery of services to Aboriginal people.

2.5 Legislation and Policy Direction

The overall legislative and policy direction for mental health promotion and mental disorders prevention is derived from:

- The following acts and regulations: *Health Act*; *Public Health Act*; *Infants Act*, *Workers Compensation Act* and Occupational Health and Safety Regulations.
- *Federal Assisted Human Reproduction Act*.
- BC Perinatal Health Program Guidelines.
- WHO/UNICEF Baby-Friendly Hospital Initiative.
- ActNowBC policies approved by the Ministry of Healthy Living and Sport.
- Provincial policy directional documents, specifically *Addressing Perinatal Depression: A Framework for BC's Health Authorities* (2006), and the *10-Year Fetal Alcohol Spectrum Disorder: Building on Strengths. A Provincial Plan for BC* (2008).
- *A Framework for Core Functions in Public Health* (March 2005).
- Specific policies/priorities that may be established by the health authority, the Ministry of Healthy Living and Sport or the provincial government.

3.0 GOALS AND OBJECTIVES

The goal of the program on reproductive health and disability prevention is to enhance the health of all women and men during their childbearing years as well as the health of women during pregnancy, birthing and the postpartum period (up to one-week following birth), and to minimize adverse mother, newborn and family outcomes. The specific objectives are to:

- Enhance protective factors linked to improved reproductive outcomes for girls and boys, and women and men of childbearing age.
- Prevent and/or reduce risk factors for pregnant women and their babies.
- Reduce preterm births, low birth weights and congenital defects and disabilities.
- Increase the rate of births with healthy birth weights.

4.0 PRINCIPLES/FUNDAMENTAL APPROACHES

Principles/fundamental approaches for a model health authority prevention program for reproductive health and disability prevention are:

- A women-focused perspective within a family context that respects the social and cultural context of women's experience as well as the role and support of fathers, partners and family members.
- A health-promoting prevention focus aimed at women and men during their childbearing years.
- Empowerment of women through provision of information on evidence-based practices to make informed decisions related to all aspects of reproductive health.
- Application of an equity lens and responsiveness to the needs and issues of vulnerable women, vulnerable families, women who are victims of violence, Aboriginal people, people who are immigrants and from diverse cultural groups, people with disabilities, and people who are gay, lesbian or transgendered.
- Multi-sectoral and multi-disciplinary collaboration by community, regional and provincial partners.
- Accessible, flexible and high quality services.
- A population health approach which takes into account social, economic and environmental determinants of health, including protective factors, risk factors, and vulnerable populations.
- Advocacy for integration of best practices by local and regional partners.
- A culture of evidence-based practice, surveillance and continuous quality improvement.

- Gender-sensitive research and evaluation to strengthen decision-making.

Some key principles/fundamental approaches considered by experts in the field to be essential to achieving progress and successful outcomes are described more fully in the following section.

4.1 Collaboration, Partnerships and Integration

Collaboration, partnership and integration of reproductive health promotion and disability prevention across a wide range of health programs and health professionals can ensure consistent seamless services, and build upon, supplement, expand and strengthen initiatives. Collaboration with the following partners is essential for successful delivery of reproductive health and disability prevention initiatives:

- All maternity care providers – Maternity care providers include primary care physicians, obstetricians/gynecologists, anaesthetists, midwives, nurse practitioners, nurses, neonatologists, pediatricians, doulas and other ancillary health care providers. In particular, collaborative care models (interdependent teams of caregivers from a variety of disciplines) can strengthen and optimize preventive messages including normal births.
- Core public health programs – Integrated planning and coordinated program delivery will be required with the following core programs:
 - Healthy infant and early childhood development.
 - Healthy living (healthy eating/weights, physical activity and tobacco cessation).
 - Prevention of harms associated with substance use (alcohol, tobacco and illicit drug use).
 - Prevention of violence and abuse.
 - Healthy communities (healthy municipalities, health care facilities, workplaces and schools).
 - Prevention and control of communicable diseases.
 - Mental health promotion and mental disorders prevention.
 - Prevention and control of chronic diseases.
 - Prevention of unintentional injuries.
 - Dental public health.
 - Air quality, water quality, and healthy community environments.
 - Food security.
- Community partners – Local organizations and agencies including: local governments, school systems, colleges and universities, family support services, family resource

programs, infant development programs, social services, breastfeeding support groups, friendship centres, planned parenthood groups, women's centres, transition houses, mental health agencies, recreation and sports programs, multicultural and immigrant agencies, Aboriginal groups, and community food committees. As well, workplaces and other social organizations are important in creating an environment that is supportive of reproductive health.

- Provincial ministries and agencies:
 - Ministry of Children and Family Development – Provides intervention services for children and youth with special needs, FASD interventions, mental health services for children and young people, support for teen mothers, care for newborns in the child protection program, and adoption services.
 - Ministry of Education – Provides school curricula on healthy relationships;
 - Health professionals in PHSA – Coordinate the provision of expert support and training in best practices, standards and guidelines.
 - The Ministry of Health Services – Provides leadership for key areas such as primary care and acute hospital care.

4.2 A Women-Centered Perspective Within a Family Context

The United Nations has noted that gender is one of the primary determinants of health as health policies and programs often perpetuate gender stereotypes and fail to consider disparities many women experience in their lives. Gender bias in the health care system may result in inadequate and/or inappropriate services for women, and may not fully take into account the lack of autonomy that women have regarding their health (United Nations, 1995). Health Canada has also recognized that imbalances in the health system have been detrimental to women's health and has taken steps to address this through use of gender-based analysis and a women's health strategy. The strategy recognizes that women's health is determined not only by their reproductive functions but also by biological characteristics that differ from those of men, and especially, by socially determined roles and relationships (Health Canada, 2000).

Similarly, the Provincial Women's Health Strategy notes the importance of women-centered care to address the barriers to access, respect women's diversity, and provide for their health needs in the social and cultural context of their experience (BC Women's Hospital & Health Centre & BC Centre of Excellence for Women's Health, 2004). The BC Maternity Care Enhancement Project recommends women-centered maternity care where the mother and her baby are placed at the centre of care, and services are planned and provided to meet their needs. It involves understanding women's preferences and needs with respect to care, and providing support and encouragement to increase the participation of women in decision-making (Ministry of Health Services, 2004).

At the same time, fathers, partners, family and peers play a major role and are a key support for reproductive health throughout the stages of preconception, pregnancy and motherhood. Effective services engage women and their families in the process of planning and delivering services, and provide education and encouragement for fathers and family members to adopt healthy lifestyles, to be involved in supporting women, and to participate in the care and upbringing of children (National Health Service, 2001).

Similarly, the National Multidisciplinary Collaborative Primary Maternity Care Project (MCP2) combines the needs of women and their families by defining the project as “collaborative women-centered practice” that respects the goals and values of women and their families (MCP2, n.d.).

4.3 A Population Health and Determinants of Health Approach

Determinants of health and related risk and protective factors within the geographic area need to be taken into account in developing meaningful needs assessment, priorities and program plans. At every stage of life, health is determined by complex interactions between biological, social and economic factors, the physical environment and individual health. As noted, gender plays a key role in determining health and related health services; however, the interaction between gender and other determinants of health also have a major influence on women’s health. These additional determinants can be broadly grouped as living and working conditions, individual capacities and coping skills, culture and social environment, and health services.

Determinants of reproductive health include:

- Socio-economic status (e.g., poverty, low income, low education level).
- Race and ethnicity.
- Occupational factors (e.g., exposure to toxic substances, heavy lifting etc.).
- Extremes in maternal age.
- Family structure.
- Environmental conditions (e.g., inadequate housing, living close to hazardous waste sites or smelters).

In addition, specific risk factors for complications during pregnancy and for adverse infant outcomes include:

- STIs, including chlamydia.
- Alcohol use.
- Tobacco use.
- Illicit drug use.
- Body mass index over 30.

- Diabetes.
- Malnutrition.
- Chronic stress.
- HIV infection.
- Intimate partner violence and abuse (violence against women is considered by many researchers to be at the core of many health problems, such as substance use).
- Previous caesarean births.
- A short and/or long interval between births.

Vulnerable populations are those with a greater-than-average risk of developing health problems by virtue of their marginalized socio-cultural status, their limited access to economic resources, or personal characteristics such as age and gender (Aday, 2001; deChesnay, 2005).

4.4 Responsiveness to Diverse Groups

4.4.1 Aboriginal People

Responsiveness to the needs and issues of Aboriginal people is a key consideration, as Aboriginal people have a high number of risk factors that can impact reproductive health (e.g., high rates of smoking and alcohol consumption, high rates of diabetes, and elevated hepatitis C, HIV and STI transmission). As well, additional health risks result from marginalization, stigmatization, the loss or devaluation of culture and lack of access to culturally appropriate health care services. Since no evidence was found for interventions specific to Aboriginal reproductive health, the Society of Obstetricians and Gynaecologists of Canada developed recommendations (with input from Aboriginal organizations) to specifically address the needs of Aboriginal people. The recommendations provide a resource for enhancing public health services to Aboriginal people by highlighting the importance of culturally appropriate services that recognize gaps and barriers, and the need to work proactively with Aboriginal individuals and communities to improve reproductive health outcomes.

4.4.2 Multicultural and Immigrant Groups

In multicultural Canada, individuals and groups from diverse cultures and races also face additional health risks similar to those experienced by Aboriginal people, resulting from conditions such as marginalization, loss or devaluation of language and culture and a lack of access to culturally appropriate health care services. Appropriate support services are required to address differing cultural practices, risk factors and needs that are unique to the many immigrant and refugee populations in the province. For example, a systematic review of 10 studies with more than 15,000 respondents from diverse racial groups in North America found a clear association between experiences of racism and psychological distress (Williams & Williams-Morris, 2000).

4.4.3 Lesbian, Gay and Transgendered People

Lesbian women may be more likely to lack social support, especially from their families of origin, and be exposed to additional stress due to discrimination. Lesbian women considering parenting face unique challenges in finding a health care provider, exploring options for conception, securing legal implications of same-sex parenthood and involvement of their partner. Lesbian co-parents may experience health care providers, friends and society that misunderstand, question, or ignore their role. The non-childbearing partners may also face stressors such as invisibility and lack of support, particularly from their work and social communities (McManus, Hunter, & Renn, 2006).

5.0 MAIN PROGRAM COMPONENTS AND SUPPORTING EVIDENCE

The major program components for reproductive health and disability prevention in regional health authorities are as follows:

- Leadership and Strategic Planning.
- Health Promotion.
- Delivery of Prevention Programs.
- Surveillance, Monitoring, and Program Evaluation.

Strategies for each main program component are described in the sections that follow.

5.1 Leadership and Strategic Planning

Health authorities need to play a leadership role in enhancing regional reproductive health and disability prevention. This should include:

- Coordinating the development and implementation of a long-term, comprehensive, multi-sectoral strategy that takes into account women's and men's reproductive health needs, the interaction of gender and the determinants of health, vulnerable populations, and existing strengths, protective factors and key risk factors.
- Establishing regional and community priorities through:
 - Consultation with health partners and women's health groups.
 - Analysis of the regional burden of illness related to reproductive complications and disabilities.
 - Identification of evidence-based strategies with the greatest potential for positive outcomes (e.g., based on consultation with the Ministry of Healthy Living and Sport and PHSA, emerging research, as well as information from online communities of practice, etc.).
 - Analysis of intervention costs.
- Collaborating in the design and promotion of programs for tobacco cessation, prevention of alcohol misuse and illicit drug use, prevention of sexual abuse and intimate partner violence and other relevant programs to enhance responsiveness to reproductive health needs and issues.
- Identifying key policies and strategies for reproductive health and disability prevention:
 - A structure to manage and deliver reproductive and disability prevention programs, including regional and local coordinating committees.
 - Collaboration, partnerships and integration across health authority programs, and with external partners, including communication processes.

- Community development and capacity building to educate, encourage and facilitate community-based planning, collaboration and partnerships with multiple sectors and multiple settings.
- Public education, awareness, and social marketing.
- Monitoring, surveillance and evaluation processes.

5.1.1 Supporting Evidence

The most promising interventions for some disabilities include long-term, multi-strategy, and system-wide interventions (MOH, PHW, 2007). Assessing regional and local needs to establish priorities is an important aspect of leadership and planning. Professional experts note the importance of prioritization, taking into account the burden of illness, costs and evidence on positive outcomes. Priorities may also be developed through consultation, a “population lens”, an “inequities lens”, and/or other group health assessment processes.

The Multidisciplinary Collaborative Primary Maternity Care Project (MCP2), developed by national health care organizations in Canada, highlights the importance of collaboration and encourages mutual respect for the contributions of all disciplines, shared values, goals and visions, and mechanisms for continuous communication among caregivers (MCP2, n.d.).

5.2 Health Promotion

Health promotion initiatives to address regional priorities and enhance reproductive health and disability prevention should include:

- Advocating for healthy public policies:
 - Advocate for evidence-based public policies and local bylaws targeted to women and men of childbearing years, to: reduce problematic alcohol, tobacco and substance use; increase access to healthy, affordable food sources; support breastfeeding through “Baby-Friendly” communities and hospitals.
 - Advise and encourage schools, workplaces, social services, recreation and sports groups, self-help groups, multicultural groups and other relevant organizations to adopt proven policies that reduce risk factors and enhance reproductive health and disability prevention.
 - Promote the development of, and compliance with, primary care guidelines.
 - Advocate to ensure access to appropriate reproductive services and supports (e.g., sexuality education for youth, subsidized folic acid and multivitamin supplementation for low-income women, subsidized contraceptives for low-income women and men, subsidized dental services for low-income pregnant women, safe housing and safe jobs for pregnant women, crisis services for pregnant women, etc.).

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- Increasing public education, awareness and social marketing through collaboration with health care and community partners to:
 - Provide information resources and tools (targeted to women, and to men, of various ages, literacy levels and diverse cultural groups including translation into key languages of the regional population) to increase awareness of the importance of enhancing preconception health, sexual and reproductive health, mental health, as well as the importance of prenatal health, normal birth, postpartum and infant health, including infant mental health. Include promotion of toll-free BC Nurseline, Pharmacy Line and Dial-a-Dietitian for information.
 - Target public education to address reproductive risk factors such as alcohol use, tobacco use, STIs, HIV/AIDS, and diabetes; promote protective factors such as physical activity, healthy eating, normal physiological birth; and enhance parenting skills and infant care.
 - Support the development and delivery of social marketing campaigns in partnership with other health authorities, the Ministry of Healthy Living and Sport, professional associations, or other interested groups and organizations, as one element of a comprehensive strategy.
- Facilitating community development and community capacity building:
 - In partnership with key stakeholders, including women’s health groups, community coalitions, community champions and health educators, assess needs, identify vulnerable populations, determine priorities and resources, and develop and implement community plans.
 - Facilitate and encourage coordination among maternity care providers (e.g., primary care physicians, midwives, obstetricians/gynecologists, nurse practitioners), public health professionals, schools, local governments, social services agencies, local media, workplaces and other relevant community organizations.
 - Provide information, data, best practices, technical advice, and other assistance to support communities in planning and developing health promotion and prevention strategies.
 - Support and assist Aboriginal communities and organizations in their development of reproductive health and disability prevention plans and programs that respond to the specific needs in their community.

NOTE: These activities should be implemented in conjunction with local initiatives for core programs on healthy communities, healthy living, preventing harms associated with substance use, prevention of violence and abuse, and other related programs, so that local initiatives are coordinated with, and integrated into, existing networks among community stakeholders.

5.2.1 Supporting Evidence

The World Health Organization's Ottawa Charter for Health Promotion (1986) provides a framework for ensuring effective health promotion through building healthy public policy, creating supportive environments, developing personal skills, strengthening community actions, and reorienting health services.

The advocacy role is well-accepted in public health: as described in A Framework for Core Functions in Public Health (Ministry of Health, 2005), public health leaders at the local level have a role on behalf of the public to provide advice to their communities on matters of public health, to report on the health of their communities, and to play a leadership role in initiatives that address the determinants of health in their communities.

Strengthening community action includes community development and community capacity building to enhance understanding and participation of key sectors in influencing reproductive health through healthy lifestyles and positive behaviours. It includes a set of knowledge, skills, participation, leadership and other resources needed by community groups to effectively address local issues and concerns (Ontario Prevention Clearinghouse, 2002). Interventions that are believed to maximize success include strategies that promote behaviour change, are specific and tailored to the community being targeted, involve the community in the development of the strategy, and dedicate sufficient resources to undertake a rigorous evaluation (BC Injury Research and Prevention Unit, 2006). Networking across settings is necessary to strengthen the integration of priorities and initiatives and to supplement and strengthen their overall impact. The literature suggests that the weight of evidence confirms that multi-component or comprehensive interventions have higher effectiveness and cost-effectiveness compared to those programs that focus on a single component (MOH, PHW, 2006).

5.3 Delivery of Prevention Programs

Health authorities directly deliver public health programs as well as facilitate and coordinate delivery through other partners. These programs should include an appropriate mix of universal and targeted programs to strengthen protective factors for women and men of childbearing ages, and should take into account social, economic and environmental determinants of reproductive health for vulnerable populations.

5.3.1 Preconception/Interconception Programs

The health needs and issues of school-aged girls and boys, youth, and women and men, as well as needs at different stages of the childbearing years both before and between pregnancies, require a range of programs, including.

- All women and men of childbearing age:
- Promote regular use of sexual and reproductive health services to enhance sexual health and reduce infertility.
- Provide education that will inform choices on contraception, including emergency contraception, pregnancy planning and pregnancy spacing.

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- Provide information on appropriate nutrition, physical activity, prevention of obesity and the importance of maintaining healthy weights and oral health.
- Promote awareness of the risks of alcohol use during pregnancy.
- Encourage use of folic acid and multivitamin supplementation for all preconception women; for low-income women, provide folic acid, multivitamin and nutritional supplements.
- Provide reproductive risk assessments, and follow-up as necessary, including:
 - Immunization.
 - Education and counselling on STIs and infectious diseases, and referrals as necessary.
 - Education on managing diabetes and other chronic diseases, including referrals to primary care providers as necessary.
 - Education and counselling for women with an adverse outcome in a previous pregnancy.
 - Educational counselling for women who had a caesarean section in a previous pregnancy.
 - Education, counselling, and referral as appropriate, on problematic substance use, intimate partner violence and abuse, depression and mental health issues.
 - Advocacy for vulnerable women to assist them in accessing necessary services.
 - Advocacy for the acceptance and inclusion of lesbian women and assistance in accessing supportive health care providers who are attentive to same-sex co-parents.
- School-aged children and youth:
 - Collaborate with schools and community agencies serving children and teenagers to enhance sex education, and counselling as necessary, on healthy sexuality, youth sexual development, contraceptive use, healthy relationships, planned pregnancies, normal birth, and family life education, in addition to the promotion of healthy living, mental health, healthy weights and the avoidance of alcohol misuse.
- Younger women and men (19–25 years of age):
 - Address risk behaviours through collaborative approaches with other public health programs and with post-secondary education institutions, to target and support the specific needs of young women and men in programs on sexuality education, tobacco cessation, prevention of harm associated with alcohol use

and other substances, prevention of violence and abuse, healthy weights, healthy living, etc.

- Provide brief interventions to reduce the risk of an alcohol-exposed pregnancy by focusing on both risk drinking and ineffective contraceptive use.
- Older women and men of childbearing age:
 - Provide educational resources and counselling as appropriate, on factors associated with pregnancy and birth for older women, including measures to minimize risks, with sensitivity to changing societal norms.

Supporting Evidence

Interventions for the preconception period are based on recommendations by the US Centers for Disease Control and Prevention (2006). Strategies to reduce alcohol use through screening and brief interventions have been shown to be effective at reducing alcohol-exposed pregnancies. School and family-based alcohol and tobacco prevention programs must be very sophisticated in terms of methods to be effective. Program characteristics and best practices that contribute to success are described in the evidence review on reproductive health (MOH, PHW, 2008).

The use of folic acid and multivitamin supplements preconception and during the first trimester, provides protection against neural tube defects, cardiovascular defects, limb defects, cleft palate, urinary tract anomalies and congenital hydrocephalus (Goh, Bollano, Einarson, & Koren, 2006). Promotion of healthy weights is also a key consideration, as maternal obesity is associated with an increased risk of complications during pregnancy, including gestational diabetes, complications at birth, caesarean births, preterm births, stillbirths and reduced initiation and duration of breastfeeding (Galtier-Dereure, Boegner, & Bringer, 2000).

Over the past decade, the United States has put policies in place regarding comprehensive family life education, youth development, and access to contraceptive care, which have resulted in delays in sexual debut, improved contraceptive use, and a reduction in teen pregnancies, abortions and births (Brindis, 2006). Similarly, the United Kingdom implemented country-wide strategies that reduced teen pregnancies through the use of media awareness campaigns, improved education on sex and relationships and access to sexual health services (Wilkinson et al., 2006).

Research indicates that only 48 per cent of men reported receiving sexual and reproductive health services annually, and that levels of unmet need for services among men engaging in sexual risk behaviours were substantial (32 to 63 per cent). Researchers concluded that men who have sex with women are not receiving adequate levels of sexual and reproductive health care, and the care they receive is neither comprehensive nor integrated (Kalmuss & Tatum, 2007).

5.3.2 Prenatal Programs

Coordinated care with maternity care providers (i.e., family physicians, midwives, obstetricians, nurse practitioners, nurses, nutritionists, and other health care professionals) should include:

- Supporting and promoting screening of pregnant women (using informed consent and an opt-out screening approach) by maternity care providers at the first prenatal visit, as follows:

Universal Screening

- Screening and related follow-up counselling/treatment, for genetic disorders, STIs (including hepatitis B, HIV, asymptomatic bacteriuria, syphilis, and gonorrhea), as well as hepatitis C and chlamydia (urine) screening for high-risk women and related partner screening as appropriate, as well as STI re-screening at appropriate intervals for women with ongoing risk factors.
- Identify, assess and/or screen for additional risk factors (based on a validated risk assessment tool):
 - Tobacco use.
 - Depression (incorporating use of a depression screening tool).
 - Alcohol and problematic substance use (trust-building, brief intervention counselling and referral as necessary).
 - Intimate partner violence and abuse (trust-building, brief intervention counselling, support and referral as necessary).
 - Diabetes and inappropriate diet.
 - Nutrition inadequacy, periodontal disease, low income and related socio-economic factors that increase vulnerability.
 - Screen/test for Down's syndrome, neural tube defects and structural anomalies.

Targeted Screening

- Where indicated, screen for autoimmune disorders, thyroid function, and for population groups at higher risk for certain disorders.
- Providing education and support for pregnant women as follows:

Universal Education

- The importance of using folic acid and multivitamin supplementation (addressing barriers to access for low-income women as possible), along with a balanced, nutritious diet.
- Education on breastfeeding benefits and practices.
- Educate women regarding occupational risks and options as necessary (e.g., job reassignments or medically prescribed leave for work that is physical demanding or involves exposure to contaminants).

- Prenatal education as deemed appropriate, taking into account the characteristics and needs of communities (and considering evidence, outcomes, resources and long-term priorities).

Targeted Education and Counselling

- Education and counselling for vulnerable and low income women through individual/group sessions or home visits, to supplement the follow-up provided by primary maternity care providers, including:
 - Advice on managing chronic diseases such as diabetes.
 - Individualized support to address depression and provide referrals to treatment as necessary.
 - Counselling and support as necessary to support/assist women and empower them in preventing or reducing intimate partner violence and abuse, tobacco use, alcohol use, poor nutrition, food insecurity, stress factors, psychosocial problems, unhealthy environments and other risk factors. Refer to health partners as necessary.

NOTE: coordination and collaboration with the core programs on prevention of violence and abuse, prevention of harms from substance use, mental health promotion and prevention of mental disorders, and healthy living is essential to strengthen programs and ensure effective delivery.

- Providing information and referral to abortion services as appropriate.
- Referring pregnant women with periodontal disease to dental treatment services (addressing barriers to access for low-income women as possible).
- Supporting and encouraging prenatal education and appropriate care for incarcerated women, particularly for those experiencing substance withdrawal and other vulnerable conditions.

5.3.3 Postpartum and Newborn Health Programs

Universal Programs

- Proactively support breastfeeding, by peers or professionals, along with unrestricted feeding and mother-baby contact, as well as breastfeeding counselling by maternity care providers;
- Promote and support infant screening, as follows:
 - Newborn screening for a full range of disorders and defects using standardized tools/tests (including hearing screening).
 - Universal developmental screening as appropriate (see also the model core program paper on healthy infant and child development).

- Screen new mothers for potential health and safety risk factors, including identification of:
 - Additional maternal risk factors by building trust and providing brief support, counselling and referral as necessary, related to alcohol and problematic substance use; and intimate partner violence and abuse.
 - Women with postpartum depression (although screening is not normally provided in the timeframe this model core program covers, it is noted here to highlight its importance).
- Provide educational programs in selected communities, as deemed appropriate (considering the evidence, outcomes, resources and long-term priorities).

Targeted Programs

- Assess at-risk women for specific social, economic and environmental risk factors using a validated risk assessment tool.
- Coordinate early intervention, education and follow-up with parents of pre-term and low birth weight infants, and/or disabling conditions, including clinic-based and/or home visits to positively influence growth and development and to ameliorate the affects of disabilities as much as possible.
- Provide postpartum programs for low income and vulnerable women, including home visits and group sessions, to provide education on parenting skills, infant care, injury/accident prevention, nutrition education, healthy weights, diabetes prevention, planned pregnancies and other health issues.
- Provide individualized support to women with perinatal depression and related support for infant mental health, and referral to treatment as necessary.

5.3.4 Aboriginal Program Delivery

To enhance reproductive health for Aboriginal women, it is important that health care providers recognize the need to provide health services as close to home as possible; appreciate holistic definitions of health as defined by Aboriginal people; base relationships on mutual respect; work with Aboriginal individuals and communities to provide culturally appropriate health care; respect traditional medicines and spiritual beliefs, and work to integrate traditional and western medicines; and support the creation of community-directed health programs and services for Aboriginal people (Smylie et al., 2001). Researchers stress the importance of integrating Aboriginal beliefs and values into perinatal services (Buharski, Brockman, & Lambert, 1999).

Supporting Evidence

An opt-out (rather than an opt-in) approach to the issue of informed consent for STI screening has been shown to result in higher rates of testing in the province and territories that have used

this approach (Stringer et al., 2001). It is also recommended by the US Institute of Medicine (1999), and the American College of Obstetrics and Gynecology (Branson et al., 2006).

A number of guidelines from professional associations provide clinical practice on appropriate screening, preventive interventions and treatment for risk factors for mothers and their babies (these include BC Perinatal Health Program⁶ and Society of Obstetricians and Gynaecologists of Canada⁷). With respect to intimate partner violence, studies have reported that women will disclose abuse when: a trusting relationship exists with her care provider, specific abuse questions are asked by the care provider, and when the woman needs the help of the provider (Lutz, 2005). Studies on a number of prenatal programs, such as Colorado's Prenatal Plus program (Ricketts, Murray, & Schwalberg, 2005) and the Healthy Families program in New York (Scholl, Hediger, & Belsky, 1994) have shown the value of care coordination, nutrition, counselling, and home visits to reduce low birth weight.

Evidence suggests that prenatal education only improves outcomes for babies of adolescents and/or low-income women (Gagnon, 2000). The evidence on universal prenatal education programs is inconclusive (Gagnon, 2000). As well, postpartum support programs were found to benefit low-income and high-risk populations, but resulted in no differences in outcome for low-risk women (Shaw et al., 2006). This is a somewhat controversial issue as many professionals in the field find that universal programs enhance the knowledge, confidence and social networks of new mothers: they also point out that countries such as Sweden, which have universal postpartum programs, have a low rate of infant mortality. As a result, universal programs are included in suggested strategies, at least in the short-term, while strategies are prioritized and long-term plans are developed. It is also proposed, in Section 5.4, that research be conducted to evaluate outcomes in this area.

Many different educational programs and interventions during both the prenatal period and postpartum stay in the hospital can increase breastfeeding initiation and duration. Studies indicate that the separation of mother and baby or the imposition of structure on breastfeeding frequency reduces the success of breastfeeding (MOH, PHW, 2008).

Postpartum interventions that have demonstrated improved outcomes for low birth weight infants include intensive postnatal home visits (Achenbach et al., 1990), home visits combined with center-based educational interventions (McCormick et al., 1993), and a public health nursing early intervention program for adolescent mothers (Koniak-Griffin et al., 2000).

5.4 Surveillance, Monitoring and Program Evaluation

Health authorities need to clarify the trends in reproductive health and disabilities and to assess the program's success in optimizing maternal, infant and family outcomes. This requires:

⁶ Guidelines can be found at the BC Perinatal Health Program website at <http://www.bcphp.ca/List%20of%20Guidelines.htm>.

⁷ Guidelines can be found at the Society of Obstetricians and Gynaecologists of Canada website at http://www.sogc.org/guidelines/index_e.asp.

- Establishing a system-wide information system and encouraging health care and community partners/service providers to collaborate in consistent statistical data collection, data sharing and data management processes.
- Analyzing and interpreting data (using a range of data including provincial sources and provincial trend analysis of regional data) to identify local and regional trends, major issues, key risk factors, and high-risk groups and populations to support effective planning and decision-making.
- Participating in research and evaluation of the effectiveness of specific strategies, including universal prenatal and postnatal programs (in cooperation with Ministry of Healthy Living and Sport, other health authorities and academic researchers).
- Establishing program evaluation frameworks and conducting evaluations of new initiatives.

5.4.1 Supporting Evidence

“It is recognized that although the performance of public health, and prevention programs in particular, is difficult to measure, it is nonetheless likely that we will be able to manage—and improve—core functions in public health if we can measure performance” (Ministry of Health, 2005). A prevention information system capable of telling us how well we are doing is necessary for this purpose. As well, the public has a right to expect that the public health sector, along with the rest of the health care system, is paying attention to the quality and effectiveness of the interventions it undertakes, and is working to improve that quality (Ministry of Health, 2005).

6.0 BEST PRACTICES

Often, there is no one “best practice” that is agreed upon; rather, there are practices that may have been successful in other settings and should be considered by health authorities. The terms “promising practices” or “better practices” are often preferred to reflect the evolving and developmental nature of performance improvement.

The two evidence reviews prepared to support the development of this core program paper provide a thorough discussion of best practices in the field. They provide detailed information on a comprehensive set of reproductive health and disability prevention issues that have been studied by researchers, and can provide further guidance and advice on effective practices.

- *Reproductive Health: Evidence Review* (2008), by A. Kelly, for the Ministry of Health, Population Health and Wellness.
- *Prevention of Disabilities (Congenital & Genetic): Evidence Review* (2007), by A. Kelly, for the Ministry of Health, Population Health and Wellness.

Rather than attempt to summarize the wide-ranging research and evolving analysis in this field, the additional following sources, many of which are highlighted in the above evidence reviews, illustrate the range of sources that provide best practice recommendations:

- The Multidisciplinary Collaborative Primary Maternity Care Project (MCP2), a partnership of relevant national health care associations, funded by Health Canada, developed recommendations for guidelines on the development of collaborative models, and a set of knowledge transfer modules to change practice patterns, in order to enhance collaborative practices. It also prepared a research paper to support harmonization of standards among partners (MCP2, n.d.).
- The BC Perinatal Health Program has prepared guidelines on perinatal care, newborns, obstetrics, reproductive mental health, and substance use. Guidelines are available online at <http://www.bcphp.ca/List%20of%20Guidelines.htm>.
- The Society of Obstetricians and Gynaecologists of Canada guidelines, available online at http://www.sogc.org/guidelines/index_e.asp.
- The Canadian Neonatal Network at <http://www.canadianneonatalnetwork.org/>.
- *Recommendations to Improve Preconception Health and Health Care – United States* (Centers for Disease Control and Prevention [CDC], 2006).
- The National Center on Birth Defects and Developmental Disabilities, at the CDC, has high quality information on preventing birth defects (<http://www.cdc.gov/ncbddd/index.html>).
- *Best Practices: Fetal Alcohol Syndrome/Fetal Alcohol Effects and the Effects of Other Substance Use During Pregnancy* (Health Canada, 2001).
- *Canadian Fetal Alcohol Spectrum Consensus Report* (Fetal Alcohol Spectrum Disorder Advisory Group, 2008).

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- *Fetal Alcohol Spectrum Disorders* (CDC, n.d.).
- The National Organization for Rare Disorders is a federation of more than 140 non-profit voluntary groups servicing people with rare disorders and disabilities. It has a searchable database on research studies (<http://www.rarediseases.org/>).

7.0 INDICATORS, BENCHMARKS AND PERFORMANCE TARGETS

7.1 Introduction

It is important to define what one means by the terms *indicators*, *benchmarks*, and *performance targets*. An indicator is a summary measure (usually quantifiable) that denotes or reflects, directly or indirectly, variations and trends in, this case, reproductive health and disability prevention. Indicators are more than outcome measures: they constitute an important reflection of some aspect of a given program or service, and their value is that they drive decision and action. Indicators need to be standard so that they can be compared across different organizational entities such as health regions. Benchmarks are reflective of “best” practices. They represent performance that health authorities should strive to achieve. Benchmarks are determined by: reviewing the literature; reviewing the best practice experience in other jurisdictions; or by determining “consensus” opinion of leading experts and practitioners in the field. Performance targets are locally determined targets that represent a realistic and achievable improvement in performance for a local health authority.

This section presents a number of key indicators or performance measures for a program on reproductive health and prevention of disabilities. Suggested benchmarks can apply across the province, while other benchmarks may need to be modified to account for key variables such as geographic size, or population density of the health authority.

One can develop indicators related to the inputs, activities, outputs and outcomes (immediate, intermediate or final) of each of the respective components of the program. Thus, it is not necessary to only have outcome-related indicators and benchmarks. Furthermore, indicators need to be understood within a broader context. For example, a low per-capita cost for a specific program could reflect on the efficiency and effectiveness of a given program, or reflect a program that is under-resourced. It is recognized that reproductive health and disability prevention programs are multi-faceted, and that it may be difficult to link interventions with direct health outcomes, particularly as initiatives involve multiple factors and multiple sectors, which all play a role in determining outcomes. In general, it is best to consider a number of indicators, taken together, before formulating a view on the performance in this area. Indicators and benchmarks work best as flags to indicate a variance from accepted norms and standards. Further investigation is usually required to determine the causes of any given variance from such norms or standards.

A health authority could establish its performance targets by assessing its current (and perhaps historical) level of performance, and then, based on consideration of local factors, determine a realistic performance target. This performance target would be consistent with the goal of performance improvement but would be achievable within a reasonable period of time. Initially, health authorities will set performance targets for a number of indicators. However, over time, and particularly if consistent data collection methods and definitions are applied, it would be realistic for health authorities to share information related to their targets and then develop a consensus approach to determine provincial benchmarks for these indicators. In other words, locally developed performance targets, over time, could lead to development of provincial benchmarks.

7.2 Indicators for the Program on Reproductive Health and Disability Prevention

The indicators considered the most significant in determining overall performance of strategies for reproductive health and prevention of disabilities are included in Appendix 4, following the Logic Model (Appendix 3).

Health authorities will determine which indicators they consider the most important for their purposes and will focus their efforts on measuring these over time. It is understood that some of the indicators may not be under the control or influence of health authorities, but they can, nevertheless, provide important information to assess trends and patterns.

Those indicators that can be influenced through the work of the health authorities provide a basis for ongoing performance review and evaluation. In many cases, baseline data will need to be established to provide a basis for comparative analysis in future years. Benchmarks will be determined over time between the Ministry of Healthy Living and Sport and the health authorities. In addition, health authorities may wish to establish local or regional benchmarks and performance targets.

8.0 EXTERNAL CAPACITY AND SUPPORT REQUIREMENTS

8.1 Key Success Factors/System Strategies

The previous sections outlined the main components and best practices that health authorities could include in enhancing reproductive health and disability prevention programs. Successful implementation of effective strategies will also depend on having in place key system strategies, including:

- Strong support from the Board and management of the health authorities, from the Ministry of Healthy Living and Sport, and from the other key players in the region, such as women's health groups, the school board, social service agencies and local governments.
- Allocation, by the health authorities, of sufficient resources to deliver high quality programs.
- Well-trained and competent staff with the necessary policies and equipment to carry out their work efficiently.
- An information system that provides staff with appropriate support, and provides management with the information it needs to drive good policy and practice decisions.
- High quality and competent management of the reproductive health and disability prevention program, including monitoring of performance measures.
- Clear mechanisms of reporting and accountability to the health authority and external bodies.

8.2 Information Management for the Program on Reproductive Health and Disability Prevention

It will be important for health authorities to review their existing information and monitoring systems with respect to their ability to measure and monitor performance indicators. This should include:

- Establishing new policies and procedures for some activities to ensure that necessary data is gathered.
- Facilitating the process of recording and monitoring data.
- Establishing baseline levels for new data sets as a foundation to compare and assess trends and differences over time.

Health authorities will also need to consider the impact of program monitoring and evaluation on their staffing resources. Expertise will be needed in the fields of program monitoring, program analysis and program evaluation to ensure effective implementation and assessment of the core functions improvement process.

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GLOSSARY

Birth Weight

Birth weight refers to the first weight of the fetus or newborn obtained after birth, expressed in grams. Low birth weight (LBW) is defined as less than 2,500 grams. Very low birth weight (VLBW) is less than 1,500 grams (excludes newborns with weight between 0–300 grams) (BC Perinatal Database Registry, 2007). High birth weight (HBW) is more than 4,000 grams.

Birth Defect

Also described by the term “congenital”, a birth defect is a structural, metabolic or functional abnormality that is present at birth—it may be detected before birth, during the infant’s first year of life or even later in life. It results in physical and mental disability or is fatal. There are more than 4,000 known birth defects, which may be caused by genetic or environmental factors (MOH, PHW, 2007).

Breastfeeding

Exclusive breastfeeding is defined as no food or liquid other than breast milk, not even water, given to the infant from birth by the mother, health care provider or family member/supporter, with the exception of undiluted drops of syrups consisting of vitamin or mineral supplements or medicines (BCC adapted from WHO/UNICEF, 2004) (BC Perinatal Database Registry, 2007).

Exclusive breastfeeding is recommended by the World Health Organization (WHO) for the first 6 months after birth. It is further recommended that breastfeeding continue for at least 12 months, and thereafter for as long as mutually desired.

Care Provider for Delivery

The health care provider who assumes responsibility for and provides care during the delivery of the infant. The categories are: OB/GYN (obstetricians and obstetrical residents); family physicians (general practitioners, family practice residents); midwives (BC registered midwives and midwife trainees); nurses; and others (surgeons, family members, ambulance attendants, medical student interns) (BC Perinatal Database Registry, 2007).

Caesarean Section Method of Delivery

A delivery involving the surgical incision of the abdomen and uterine walls. Emergent caesarean section delivery is the term used when there is a threat to maternal or fetal health; the patient may or may not be in labour at the time of an emergent caesarean section (BC Perinatal Database Registry, 2007).

Congenital

Describes a condition, such as a defect, which is present at birth. It is acquired during development in utero rather than genetically.

Developmental Disabilities

Developmental disabilities are defined as childhood conditions that require additional educational, medical/health and social/environmental support beyond that required by children in general, to enhance or improve their health, development, quality of life, and community integration (MHLS definition).

Disabilities

The definition for disabilities varies. The categories of disability used by the BC Health Status Registry are based on a group of conditions by their presumed cause. The Participation and Activity Limitation Survey (PALS) uses the WHO's framework of disability, provided by the International Classification of Functioning (ICF). This framework defines disability as the relationship between body structures and functions, daily activities and social participation, while recognizing the role of environmental factors. For the purposes of PALS, persons with disabilities are those who reported difficulties with daily living activities, or who indicated that a physical or mental condition or health problem reduced the kind or amount of activities they could do. The respondents' answers to the disability questions represent their perception of the situation and are therefore subjective (MOH, PHW, 2007).

Fetal Alcohol Spectrum Disorders (FASD)

Fetal alcohol spectrum disorder (FASD) is the term used to describe the problems and disorders resulting from alcohol use during pregnancy. These can include brain damage, vision and hearing problems, slow growth, and birth defects such as heart problems or bones that are not properly formed. Brain damage associated with FASD can involve lifelong problems with attention, memory, reasoning and judgment. People with FASD are also at high risk of secondary disabilities such as mental health concerns, disrupted schooling, and addictions (HealthLink BC, 2008).

Genetic Diseases

Diseases that are caused by genetic mutations present during embryo or fetal development, although they may be observed later in life. The mutations may be inherited from parent's genome or they may be acquired in utero (MOH, PHW, 2007).

Home Birth

Birth that occurred at home and mother was not admitted to an inpatient facility within 24 hours of the birth. The primary care provider was a BC-registered midwife (MOH, PHW < 2007).

Intrapartum

The period between the onset of the first stage of labour and the delivery of the placenta.

Maternal Smoking

When there is documentation that the patient smoked during the current pregnancy, even if she quit during the pregnancy, she is categorized as a smoker in BC (BC Perinatal Database Registry, 2007).

Perinatal

Perinatal pertains to the period from the time of conception to one year after birth (Ministry of Healthy Living and Sport definition).

Preterm Birth

Live birth after 20 or before 37 completed weeks of gestation (BC Perinatal Database Registry, 2007).

Special Needs

Children and youth between birth and 19 years of age who require additional educational, medical/health and social/environmental support, beyond that required by children in general, to enhance or improve their health, development, quality of life and community integration (Ministry of Children and Family Development, n.d.).

APPENDIX 1: THE EVIDENCE BASE FOR A MODEL CORE PROGRAM FOR REPRODUCTIVE HEALTH

**Taken from: *Reproductive Health: Evidence Review (2008)*, by A. Kelly, for the Ministry of Health,
Population Health and Wellness.**

The following table summarize the strategies in this review that have the best quality of evidence.

Subject	Outcome	Intervention
Chapter 3: Fertility and Contraception		
Preconception/ Interconception Health	Reduction in infertility	Smoking cessation Reduction in percentage of trans fats in diet.
	Prevention of unwanted pregnancies	Access to contraception and abortion
	Reduction in neural tube defects and other congenital anomalies	Preconception screening of women seeking family planning for risk conditions Preconception folate supplements Fortification of food with folic acid Enhanced diabetic control and education.
Chapter 4: Infectious Diseases		
<i>Chlamydia trachomatis</i>	Reduction in pelvic inflammatory disease and infertility.	Screening for chlamydia for women under 25 in high risk situations Partner screening Expedited partner therapy
HIV/AIDS	Prevention of transmission of HIV to fetus.	HIV screening offered on an opt out basis at the first prenatal visit
	Strep B	The <i>Canadian Guidelines on Sexually Transmitted Infections</i> recommends screening and treatment at 12-16 weeks in high risk pregnancies (i.e., previous preterm labour/delivery or premature rupture of the membranes).
Chapter 5: Teen Pregnancy		
	Reduction in teen pregnancy	Access to contraception Multi-strategy country-wide strategies that include access to contraception, education, public awareness and education regarding sexual behaviour.
Chapter 6: Healthy Lifestyle		
	Reduction in smoking in pregnancy and alcohol consumption during pregnancy leads to reduction in fetal mortality, preterm birth and reduction in low birth weight.	High-quality family or school based programs targeted at adolescents Screening and brief interventions for smoking and alcohol consumption in primary care. Smoking cessation Quitlines
	Fewer complications during pregnancy and labour such as gestational diabetes and hypertension and therefore lower risk of preterm birth, caesarean delivery.	Weight gain during pregnancy within the guidelines of the Institute of Medicine
Chapter 7: Maternal Age and Health Status		
	Reduction in congenital anomalies Perinatal complications	Preconception care for diabetic women Lifestyle interventions and/or metformin to prevent diabetes in pre-diabetic people Diabetic management in pregnancy including dietary advice, blood glucose monitoring and insulin monitoring
	Lower blood pressure Lower risk of preeclampsia	Calcium supplement
Postpartum mental health	Reduction in Edinburgh Postnatal Depression Scale scores	Screening, support, interventions and home visitation by nurses for high risk women.

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Subject	Outcome	Intervention
Chapter 8: Prenatal Care		
	Lower risk of congenital anomalies	Folic acid containing multivitamin in the preconception period and first trimester period
	Improved fetal growth and birth outcomes.	A balanced supplement of energy and protein
	Reduction of the risk of preterm birth, infants small for gestational age and stillbirths	Avoiding shift work, lifting loads and job psychological demands
Chapter 9: Other Conditions that Increase Vulnerability for Adverse Outcomes		
	Improved quality of care	Adoption of best practices for women experiencing violence or abuse.
	Improved reproductive health outcomes	Provision of prenatal care to imprisoned women
	Possible reduction in preterm births	Provision of adequate prenatal leave for working women Limits to physical burdens in the workplace for pregnant women.
Chapter 10: Aboriginal Women		
▪		Adoption of best practices for providing care to Aboriginal women and women experiencing violence or abuse bases on the Guidelines by the SOGC.
Chapter 11: Newborn and Postnatal Services		
Breastfeeding	Improved childhood immunity and development Reduction in infant mortality Reduction in childhood obesity Postpartum weight loss	Support for breastfeeding in the postnatal hospital stay Breastfeeding counselling in primary care Media programs Unrestricted feeding, baby to mother contact and skin to skin contact from birth onwards. Avoiding supplementary formula Preventing discharge packs in the hospital
Chapter 12: Use of the Internet and Technology		
	Improved mental health	Computerized cognitive behaviour therapy
	Reduced alcohol consumption	Bibliotherapy
	A wide variety of health outcomes.	Phone contact
	Weight loss	Behaviour therapy + Internet support

APPENDIX 2: THE EVIDENCE BASE FOR A MODEL CORE PROGRAM FOR PREVENTION OF DISABILITIES

Taken from: *Prevention of Disabilities (Congenital & Genetic): Evidence Review (2007)*, by A. Kelly, for the Ministry of Health, Population Health and Wellness.

The following table provides a summary of the domains and evidence reviewed in this paper. The evidence is divided into two categories:

- α** Evidence is based on meta-analysis, systematic review and/or one or more randomized controlled trials.
- β** Recommendation is based on expert opinion, non-randomized studies or program evaluations.

Domain	What is Known	Evidence of Prevention Interventions Found for This Review
Prevention of Congenital Anomalies		
<ul style="list-style-type: none"> ▪ Prevention of conception: Genealogy/Family History 	Some diseases and congenital anomalies are inherited.	<ul style="list-style-type: none"> α Evidence-based guidelines for genetic screening and counselling for people with a higher risk of congenital anomalies have been published (e.g., Ashkenazi Jews). β A large online program for people to track the genealogy of their family with respect to disease is currently under evaluation in the United States.
<ul style="list-style-type: none"> ▪ Pre-conception programs 		<ul style="list-style-type: none"> α Pre-conception programs can prevent birth defects and low birth weight through targeting smoking cessation, pregnancy intervals, folic acid supplementation and interventions with women with diabetes to improve control of blood sugar levels.
<ul style="list-style-type: none"> ▪ Folic acid intake 	<ul style="list-style-type: none"> α Taking folic acid at the time of conception reduces the risk of neural tube defects. α Folic acid intake may be less than recommended at the time of conception. α The uptake of folic acid supplementation is at best 50 per cent of women of childbearing age. α Women with less education and other social and economic challenges are less likely to use folic acid supplements. α While fortification of wheat products has increased folic acid consumption, it appears that folic acid supplementation is still necessary to reach the recommended daily dose to prevent neural tube defects. 	<ul style="list-style-type: none"> α Pre-conception visits, including education about folic acid, can improve uptake of folic acid. α Public awareness programs can increase uptake of folic acid.
<ul style="list-style-type: none"> ▪ Early detection and pregnancy termination through prenatal screening 	<ul style="list-style-type: none"> α Maternal serum screening (MSS) and ultrasound can detect some congenital anomalies. α A large proportion of women are choosing termination following positive screening tests. α Disparities may exist in accessing MSS and termination with respect to education and culture. 	<ul style="list-style-type: none"> α Routine ultrasound and Maternal Serum Screening can reduce the number of births with congenital anomalies in the presence of access to elective termination.
<ul style="list-style-type: none"> ▪ Management of diabetes 	<ul style="list-style-type: none"> α Women with diabetes are at increased risk for congenital anomalies. 	<ul style="list-style-type: none"> α Improving glycemic control of diabetic women during pregnancy can reduce birth defects.
<ul style="list-style-type: none"> ▪ Prevention of complications due to BMI > 30 	<ul style="list-style-type: none"> α There are increased risks of congenital anomalies for women with BMI > 30. 	No clinical trials were found that tracked birth outcomes following weight management programs.

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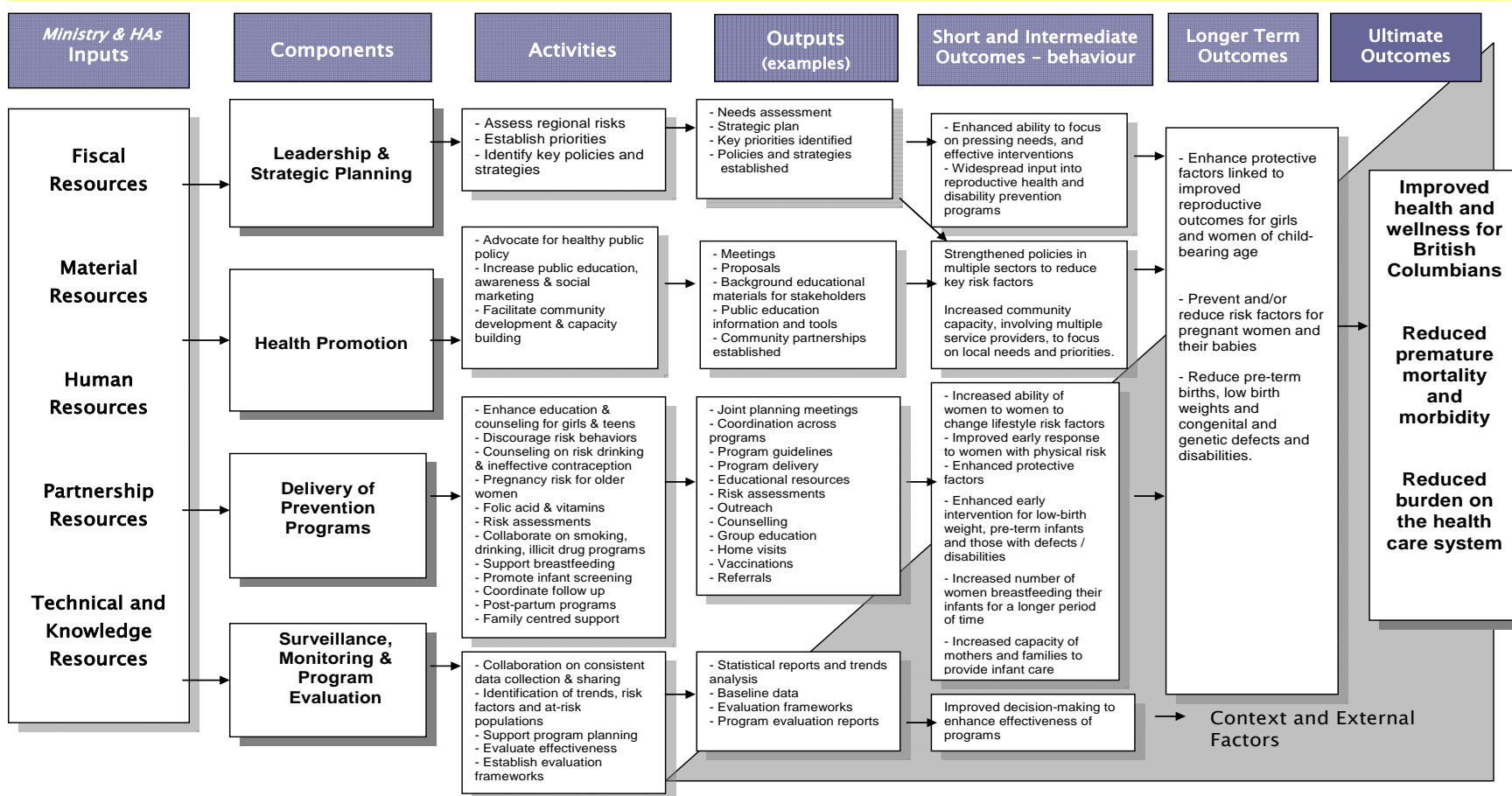
Domain	What is Known	Evidence of Prevention Interventions Found for This Review
<ul style="list-style-type: none"> Exposure to Environmental risks 	<ul style="list-style-type: none"> There is evidence of increased risk of congenital anomalies and low birth weight for babies born to women exposed to higher than normal levels of some environmental contaminants. 	<ul style="list-style-type: none"> Attention to the level of contaminants by monitoring water, air, industrial and waste sites, and occupational exposure is warranted. Pesticide exposure in agricultural communities, and in agricultural workers and their families, merits monitoring.
Prevention of Disabilities		
<ul style="list-style-type: none"> Reducing transmission of infectious diseases to fetus/newborn 	<ul style="list-style-type: none"> HIV, rubella, hepatitis B, chicken pox, herpes and syphilis can be transmitted to the fetus and can result in mental retardation and other disabilities. 	<ul style="list-style-type: none"> Immunization reduces transmission of infections to the fetus. Routine Screening for HIV, hepatitis B, syphilis, rubella and asymptomatic bacteriuria decreases transmission to the infant. Selective serotesting for chicken pox for unexposed women is cost-effective. Treatment of pregnant women with antiretrovirals reduces HIV transmission and reduces prematurity and low birth weight.
<ul style="list-style-type: none"> Reducing risks of low birth weight due to smoking 	<ul style="list-style-type: none"> Smoking is a major factor in low birth weight. Low birth weight babies have a higher rate of disabilities. 	<ul style="list-style-type: none"> Smoking cessation programs can be effective in reducing the incidence of low birth weight.
<ul style="list-style-type: none"> Reducing risks for preterm birth 	<ul style="list-style-type: none"> Babies born prematurely have a higher incidence of disabilities. 	<ul style="list-style-type: none"> Periodontal therapy has not been proven to decrease the risk of preterm birth, but more research may be able to show some effect. Corticosteroids are the only proven intervention to prevent preterm birth.
<ul style="list-style-type: none"> Occupational factors 		<ul style="list-style-type: none"> A policy of maternity leave benefits can reduce the incidence of preterm births especially with women who stand for long periods of time at work.
<ul style="list-style-type: none"> Reducing exposure to alcohol 	<ul style="list-style-type: none"> Fetal Alcohol Spectrum Disorders (FASD) are preventable. Alcohol consumption, especially binge drinking is the principal risk factor for FASD. The threshold for risk of FASD seems to increase with the dose of alcohol. Moderate alcohol consumption is widespread in women of childbearing age. There is a small percentage of women who drink alcohol at levels that puts their fetus at risk for FAS. Long-term outcomes of babies with FAS are poor. 	<p>Population Level</p> <ul style="list-style-type: none"> Limiting the availability of alcohol can reduce use of alcohol. Warning labels and posters can decrease the use of alcohol. School and community programs can reduce substance use. <p>Primary Care</p> <ul style="list-style-type: none"> The “Strengthening Families Program” offers promise in prevention of alcohol abuse. A long-term comprehensive system-wide program can reduce the incidence of FAS. Alcohol dependence assessment instruments can detect high-risk drinkers. Brief interventions can reduce substance use.
Early Detection of Disabilities and Early Intervention		
<ul style="list-style-type: none"> Newborn screening 	<ul style="list-style-type: none"> A number of disabling conditions can be detected at birth. Early detection can improve later outcomes. Treatments are known and available for some conditions (e.g., PKU). 	<ul style="list-style-type: none"> 27 conditions have been recommended for newborn screening, while only 4 are screened in BC. These additional 23 screening tests could lead to earlier detection and treatment of some rare genetic conditions.
<ul style="list-style-type: none"> Developmental and behavioural screening and follow-up 		<ul style="list-style-type: none"> A program of developmental screening in primary care can increase the number of children screened. Early detection of some disabilities may improve later functioning.

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Domain	What is Known	Evidence of Prevention Interventions Found for This Review
<ul style="list-style-type: none"> ▪ Developmental and behavioural screening and follow-up of very low birth weight babies 	<ul style="list-style-type: none"> β Systematic follow-up of low birth weight and preterm infants may improve later functioning by early detection and intervention of developmental delays. 	<ul style="list-style-type: none"> β Adoption of proposed standards for follow-up of very low birth weight infants may improve outcomes, but monitoring of the outcomes of screening and follow-up programs is needed.
<ul style="list-style-type: none"> ▪ Early detection of autism 	<ul style="list-style-type: none"> α Early detection of autism improves functioning. 	<ul style="list-style-type: none"> α Standardized screening tools are available for use by parents or health professionals and are effective in detecting autism.
<ul style="list-style-type: none"> ▪ Early intervention programs 	<ul style="list-style-type: none"> α Home visiting by a nurse has shown to have little or no effect on children’s development. 	<ul style="list-style-type: none"> α Validated screening tools for use by parents to screen for developmental delays are effective at case finding. α Early childhood education improves outcomes, especially in academic achievement for disadvantaged children as well as those at low risk. α Early intervention programs by parents have been show to improve outcomes of low birth weight children.

APPENDIX 3: REPRODUCTIVE HEALTH AND PREVENTION OF DISABILITIES LOGIC MODEL

Goal: To enhance the health of all women and men during their childbearing years as well as the health of women during pregnancy, birthing and the postpartum period (up to one-week following birth), and to minimize adverse mother, newborn and family outcomes.



Note: Draft document – December 15, 2008.

APPENDIX 4: INDICATORS ON REPRODUCTIVE HEALTH

These indicators are as of December 15, 2008.

Broad Surveillance

No.	Indicator	Rationale for Indicator	Type	Data Source	Source
1	Newborn health: neonatal mortality rate		Outcome (Surveillance)	Health Canada (2000): Vital Statistics, Hospitalization data (DAD, CIHI, Med-Echo, CCASS), National Health Surveys (NPHS, NLSCY), StatsCan census data Canadian Vital Statistics Database, Statistics Canada World Health Report/The State of the World's Children (2005). British Columbia Perinatal Database http://www.bcphp.ca/Perinatal%20Database%20Registry.htm	Perinatal Health Indicators for Canada: A Resource Manual (2000) Health Canada: Canadian Perinatal Surveillance System. http://www.phac-aspc.gc.ca/rhs-ssg/phic-ispc/pdf/indperie.pdf CIHI/StatsCan: Health indicators 2000. http://www.statcan.ca/english/freepub/82-221-XIE/defin.htm CDC Reproductive Health Indicators 2007. http://www.cdc.gov/reproductivehealth/GISAtlas/Indicators.htm WHO (2005): Child Health and Development Indicators. http://www.searo.who.int/en/Section13/Section37/Section2027.htm
2	Birth weight as compared to gestational age.	Low birth weight is a key determinant of infant survival, health, and development. Low birth weight infants are at a greater risk of having a disability and for diseases such as cerebral palsy, visual problems, learning disabilities and respiratory problems.	Outcome (Surveillance)	Canadian Vital Statistics Database, Statistics Canada and l'Institut de la statistique du Quebec (supplementary file). World Health Report/The State of the World's Children (2005). British Columbia Perinatal Database http://www.bcphp.ca/Perinatal%20Database%20Registry.htm	CIHI/StatsCan: Health indicators 2000. http://www.statcan.ca/english/freepub/82-221-XIE/defin.htm CDC Reproductive Health Indicators 2007. http://www.cdc.gov/reproductivehealth/GISAtlas/Indicators.htm WHO (2005): Child Health and Development Indicators. http://www.searo.who.int/en/Section13/Section37/Section2027.htm
3	Maternal mortality rate	Maternal mortality has been considered a key public health issue for many decades. Comparisons of MMRs over time and between countries provide a "report card" indicating trends and differences in the general level of health of a population, the adequacy of medical care on a population level, as well as the economic and social status of women within the population. The MMR and other pregnancy risk statistics are important indicators of obstetric care and women's health and societal status in general.	Outcome (Surveillance)	Health Canada (2000): Vital Statistics, Hospitalization data (DAD, CIHI, Med-Echo, CCASS), National Health Surveys (NPHS, NLSCY), StatsCan census data	WHO (2006): Reproductive Health Indicators: guidelines for their generation, interpretation and analysis for global monitoring. http://www.searo.who.int/LinkFiles/Publications_RHIs.pdf Perinatal Health Indicators for Canada: A Resource Manual (2000) Health Canada: Canadian Perinatal Surveillance System. http://www.phac-aspc.gc.ca/rhs-ssg/phic-ispc/pdf/indperie.pdf CDC Reproductive Health Indicators 2007. http://www.cdc.gov/reproductivehealth/GISAtlas/Indicators.htm

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No.	Indicator	Rationale for Indicator	Type	Data Source	Source
4	Perinatal mortality rate	Measures the outcome of pregnancy in terms of the infant. Perinatal mortality is associated with poor maternal health. It provides useful insight into the quality of intrapartum and immediate postnatal care and may be used as a good proxy measure of the quality of those services.	Outcome (Surveillance)	WHO 2006: vital registration system, notification systems, hospital data – annual British Columbia Perinatal Database http://www.bcphp.ca/Perinatal%20Database%20Registry.htm	http://www.searo.who.int/LinkFiles/Publications_RHIs.pdf
5	Incidence of congenital and birth anomalies, including birth defects or disabilities an infant may possess.	Congenital anomalies, particularly major congenital anomalies, are one of the leading causes of fetal and infant death and long-term morbidity. Surveillance of congenital anomalies can help detect new teratogens and evaluate interventions aimed at reducing the burden of congenital anomalies.	Outcome (Surveillance)	Health Canada (2000): Vital Statistics, Hospitalization data (DAD, CIHI, Med-Echo, CCASS), National Health Surveys (NPHS, NLSCY), StatsCan census data British Columbia Vital Statistics Agency http://www.vs.gov.bc.ca	Perinatal Health Indicators for Canada: A Resource Manual (2000) Health Canada: Canadian Perinatal Surveillance System. http://www.phac-aspc.gc.ca/rhs-ssg/phic-ispc/pdf/indperie.pdf
6	Number of women who gave birth and number of babies born in region, by health unit region, and the proportion of women who gave birth in the region, by age group	Provides data on where women are giving birth outside of their region. Indicator for adolescent pregnancies (preterm and/or low birth weight, perinatal mortality, anemia) and advanced age pregnancies (increased risk for miscarriage, chromosomal abnormalities, hypertension, stillbirth) in ON.	Outcome (Surveillance)	PPESO, Niday British Columbia Vital Statistics Agency http://www.vs.gov.bc.ca/ British Columbia Perinatal Database http://www.bcphp.ca/Perinatal%20Database%20Registry.htm	PPESO Annual Perinatal Statistical Report 2007-8. http://www.ppeso.on.ca/site/ppeso/NIDAY_Perinatal_Database_p484.html
7	Indications for caesarean section births and caesarean section rate	Determination of what constitutes an “appropriate” rate of caesarean delivery is complex and varies according to several characteristics of the childbearing population. Although it is known that perinatal mortality rates have decreased and the safety of this method of delivery for the mother has improved, the very rapid and pronounced increase in caesarean section rates has led to speculation that the balance between the risks to the mother and the benefits to the infant has shifted too far. Moreover, rates of caesarean delivery often differ, sometimes greatly, by place and among health care providers, raising concerns that many caesarean sections may be unnecessary – that is, not in the interests of either mother or child.	Outcome (Surveillance)	PPESO, Niday British Columbia Perinatal Database http://www.bcphp.ca/Perinatal%20Database%20Registry.htm	PPESO Annual Perinatal Statistical Report 2007-8. http://www.ppeso.on.ca/site/ppeso/NIDAY_Perinatal_Database_p484.html
8	Preterm birth rate	Preterm birth is the most important determinant of perinatal and infant mortality, and preterm birth prevention is considered the most important perinatal challenge facing industrialized countries.	Outcome	Health Canada (2000): Vital Statistics, Hospitalization data (DAD, CIHI, Med-Echo, CCASS), National Health Surveys (NPHS, NLSCY), StatsCan census data British Columbia Perinatal Database http://www.bcphp.ca/Perinatal%20Database%20Registry.htm	Perinatal Health Indicators for Canada: A Resource Manual (2000) Health Canada: Canadian Perinatal Surveillance System. http://www.phac-aspc.gc.ca/rhs-ssg/phic-ispc/pdf/indperie.pdf

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Local Outcomes

No.	Indicator	Rationale for Indicator	Type	Data Source	Source
1	Contraceptive prevalence (access)	This indicator is useful for measuring utilization of contraceptive methods. It is also relevant at all levels of the health system to assess the coverage of contraceptive services, which allows the quality of service to be assessed to some extent. Preferences for methods and sources can be tracked and related to continuation and contraceptive failure rates.	Outcome	WHO 2006.	WHO (2006): Reproductive Health Indicators: guidelines for their generation, interpretation and analysis for global monitoring. http://www.searo.who.int/LinkFiles/Publications_RHIs.pdf
2	Prevalence of prenatal smoking	Cigarette smoking during pregnancy can have adverse health effects on the mother, fetus and child. Monitoring the rate of prenatal smoking is important for the development and evaluation of smoking prevention and cessation programs.	Outcome	Health Canada (2000): Vital Statistics, Hospitalization data (DAD, CIHI, Med-Echo, CCASS), National Health Surveys (NPHS, NLSCY), StatsCan census data British Columbia Perinatal Database http://www.bcphp.ca/Perinatal%20Database%20Registry.htm	Perinatal Health Indicators for Canada: A Resource Manual (2000) Health Canada: Canadian Perinatal Surveillance System. http://www.phac-aspc.gc.ca/rhs-ssg/phic-ispc/pdf/indperie.pdf CDC Reproductive Health Indicators 2007. http://www.cdc.gov/reproductivehealth/GISAtlas/Indicators.htm
3	Prevalence of prenatal alcohol consumption	Alcohol consumption during pregnancy can have adverse health effects on the mother, fetus and child. Owing to the preventable nature of these adverse health effects and the significant burden they impose on individuals and society, prenatal alcohol consumption is an important public health issue.	Outcome	Health Canada (2000): Vital Statistics, Hospitalization data (DAD, CIHI, Med-Echo, CCASS), National Health Surveys (NPHS, NLSCY), StatsCan census data	Perinatal Health Indicators for Canada: A Resource Manual (2000) Health Canada: Canadian Perinatal Surveillance System. http://www.phac-aspc.gc.ca/rhs-ssg/phic-ispc/pdf/indperie.pdf
4	Proportion of mothers with a weight gain rate that is: low, normal or high		PARK	Health Canada (2000): Vital Statistics, Hospitalization data (DAD, CIHI, Med-Echo, CCASS), National Health Surveys (NPHS, NLSCY), StatsCan census data	Perinatal Health Indicators for Canada: A Resource Manual (2000) Health Canada: Canadian Perinatal Surveillance System. http://www.phac-aspc.gc.ca/rhs-ssg/phic-ispc/pdf/indperie.pdf
5	Proportion of mothers with pre-pregnancy BMI that is: Low Normal High		Outcome	Health Canada (2000): Vital Statistics, Hospitalization data (DAD, CIHI, Med-Echo, CCASS), National Health Surveys (NPHS, NLSCY), StatsCan census data British Columbia Perinatal Database http://www.bcphp.ca/Perinatal%20Database%20Registry.htm	Perinatal Health Indicators for Canada: A Resource Manual (2000) Health Canada: Canadian Perinatal Surveillance System. http://www.phac-aspc.gc.ca/rhs-ssg/phic-ispc/pdf/indperie.pdf BC Perinatal Database Registry Annual Report 2007
6	Prevalence of exposure to environmental tobacco smoke during pregnancy		Outcome	Health Canada (2000): Vital Statistics, Hospitalization data (DAD, CIHI, Med-Echo, CCASS), National Health Surveys (NPHS, NLSCY), StatsCan census data British Columbia Perinatal Database http://www.bcphp.ca/Perinatal%20Database%20Registry.htm	Perinatal Health Indicators for Canada: A Resource Manual (2000) Health Canada: Canadian Perinatal Surveillance System. http://www.phac-aspc.gc.ca/rhs-ssg/phic-ispc/pdf/indperie.pdf
7	Proportion of pregnant women reporting physical abuse		Outcome	Health Canada (2000): Vital Statistics, Hospitalization data (DAD, CIHI, Med-Echo, CCASS), National Health Surveys (NPHS, NLSCY), StatsCan census data	Perinatal Health Indicators for Canada: A Resource Manual (2000) Health Canada: Canadian Perinatal Surveillance System. http://www.phac-aspc.gc.ca/rhs-ssg/phic-ispc/pdf/indperie.pdf

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No.	Indicator	Rationale for Indicator	Type	Data Source	Source
8	Prevalence of folic acid use in periconceptional period		Outcome	Health Canada (2000): Vital Statistics, Hospitalization data (DAD, CIHI, Med-Echo, CCASS), National Health Surveys (NPHS, NLSCY), StatsCan census data	Perinatal Health Indicators for Canada: A Resource Manual (2000) Health Canada: Canadian Perinatal Surveillance System. http://www.phac-aspc.gc.ca/rhs-ssg/phic-ispc/pdf/indperie.pdf
9	Prevalence of perinatal depression		Outcome	Health Canada (2000): Vital Statistics, Hospitalization data (DAD, CIHI, Med-Echo, CCASS), National Health Surveys (NPHS, NLSCY), StatsCan census data	Perinatal Health Indicators for Canada: A Resource Manual (2000) Health Canada: Canadian Perinatal Surveillance System. http://www.phac-aspc.gc.ca/rhs-ssg/phic-ispc/pdf/indperie.pdf Perinatal Depression: a Framework for BC Health Authority
10	Percentage of women counselled on use of alcohol in pregnancy.			British Columbia Perinatal Database http://www.bcphp.ca/Perinatal%20Database%20Registry.htm I-PHIS?	
11	Women with pre-existing health problems by health problems (diabetes, hepatitis, HIV/Aids, chlamydia, etc.)	Pre-existing maternal health problems can influence morbidity and mortality for both mother and infant.	Outcome	Niday Perinatal Database http://www.childhealthnetwork.com/chn/PerinatalDatabaseProject.php	Fourth Annual Statistical Report: Niday Perinatal database fo GTA. 2006-7. https://www.nidaydatabase.com/info/pdf/Niday_Annual_Report_Final.pdf
12	Gestational diabetes rate			British Columbia Perinatal Database http://www.bcphp.ca/Perinatal%20Database%20Registry.htm	
13	Prevalence of substance abuse and illicit drug use during pregnancy			Health Canada (2000): Vital Statistics, Hospitalization data (DAD, CIHI, Med-Echo, CCASS), National Health Surveys (NPHS, NLSCY), StatsCan census data	Perinatal Health Indicators for Canada: A Resource Manual (2000) Health Canada: Canadian Perinatal Surveillance System. http://www.phac-aspc.gc.ca/rhs-ssg/phic-ispc/pdf/indperie.pdf