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KEY HIGHLIGHTS FROM:

Suicide: Risk Factors and Prevention

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A PHAC INNOVATION STRATEGY
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Canada

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PHAC Innovation Strategy Key Highlights Reports

The Innovation Strategy of the Public Health Agency of Canada has a clear objective to foster knowledge development and exchange on evidence-based public health interventions. As part of this focus, several research papers have been funded by PHAC to inform the Innovation Strategy program. A suite of knowledge products has been created from these research papers to convey key highlights and findings to Canadian public health practitioners and decision-makers.

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KEY MESSAGES*

Note: Highlighted terms are defined in the Glossary provided at the end of this summary.

- During recent years, progress has been made in understanding the many diverse and overlapping factors involved in suicide.
- Most current models of suicidal behaviour describe distal risk factors, such as adversity in early life and impulsive-aggressive traits, which increase predisposition to suicide, and proximal risk factors, such as depressive psychopathology, substance abuse and lack of social support, which precipitate suicide crises.
- The single most important risk factor for suicide is psychopathology, specifically, major depression followed by alcohol and drug dependence. (1, 2)
- Effective suicide prevention strategies exist. They include education and awareness programs, methods of screening and treatment, restricting access to lethal means and responsible media coverage of suicide cases.
- Promising suicide prevention strategies include training gatekeepers from a variety of backgrounds including general practitioners.
- Published Canadian research on suicide experienced remarkable growth in the last decade. Canada's overall performance in terms of scientific impact compares favourably with that of other major countries active in this field.
- Canada should implement a national strategy for suicide prevention.

The role of public health

- Public health programs should:
  - Invest early in the life course and adopt a population-based approach that introduces suicide into policy and prevention methods.
  - Work in a variety of socioeconomic and cultural contexts and address various types and levels of social determinants.
  - Evaluate programs using a set of interconnected interventions methods and sites and study the costs and benefits of population-based suicide prevention strategies.

SUMMARY

Background and context

For many decades, Canada has recognized suicide and suicidal behaviour as major public health issues and there has been a long-standing debate regarding the development and adoption of a national strategy on suicide and its prevention.

A bill establishing a federal framework for suicide prevention (Bill C-300) has been introduced in the House of Commons. (3) *Bill C-300* is focused on establishing a strategy for informing and educating the public about risk and protective factors for suicide as well as promoting collaboration and knowledge transfer in research, interventions, decision-making, prevention and at the community level.

* These key messages are not intended to be a summary of findings, but rather lessons that readers can take from the research. A summary of findings follows.

Relevance

Suicide is a leading cause of death in young people and one of the ten leading causes of death in individuals of all ages. (4) Worldwide, more people die by suicide than by homicide and all wars combined. (5)

Although the absolute number of suicides is higher in Quebec and Ontario, suicide rates in the territories stand out dramatically in contrast. Nunavut has one of the highest suicide rates in the world for both males and females. (6)

Key components of the report

This report provides a summary of current knowledge regarding suicide risk factors and suicide prevention. It also reviews epidemiological data, recent scientific advances and evidence and provides recommendations for future action on the prevention of suicide.

Approach

The RQRS was asked by PHAC to produce a report on suicide risk factors and national and international suicide prevention programs as well as major trends in research and the production of new knowledge in the field. This work also included a bibliometric study which examined Canada's positioning on suicide research and mapped the country's main centers of excellence.

Lessons learned

Suicide is a complex phenomenon. The suicidal continuum is neither linear nor unidirectional and there are as many ways to understand the phenomenon of suicide as there are types of factors involved. There is still no universally accepted theoretical model of suicide.

Epidemiology: In 2007, in Canada, suicide was the tenth leading cause of death and accounted for fewer than 2% of deaths. (4) Total age-standardized mortality rates of suicide have been relatively stable over the last 10 years, but there have been important changes provincially. For example, some provinces such as Quebec have had a decrease in suicide rates. (6)

Although the absolute number of suicides is higher in Quebec and Ontario, suicide rates in the territories stand out dramatically in contrast. Worldwide, Nunavut has one of the highest suicide rates in the world (for both males and females). (6)

> *"The way we look at suicide in general, our scientific knowledge of the phenomenon and the methods we use have an influence at every level and phase of a suicidal individual's journal and lead to a population-based prevention strategy.*
>
> *However, every potential or actual cause of suicide and suicidal behaviour is neither unique or unambiguous nor necessary or sufficient. It is their overall dynamics throughout and at certain critical moments of life that determine the emergence and development of more or less severe suicidal conditions and affect the way society responds."*

Risk factors for suicide exist at the social/cultural, family/community, and individual level. Distal risk factors increase suicidal predisposition and include gender, family history of suicide (7-9) and a history of adversity. (1, 10, 11) Proximal risk factors include mental disorders, or a feeling of deep distress and/or real hardship. Distal factors act in combination with proximal risk factors and are also moderated by a variety of risk/protective factors such as age, gender, cultural and spiritual values, beliefs, etc.

Early environment and suicide. Traumatic experiences during early childhood can increase lifelong suicide risk likely by altering the activity of genes, such as those involved in stress response systems. For example, studies have shown that there is a relationship between suicide and a history of severe sexual and physical abuse in childhood.

Scientific advances have lead to a better understanding of the neurobiological factors related to suicide. However we are far from being able to identify genes or genomic sequences that may directly or indirectly increase suicidal behaviours. (12)

Neurotransmitter system alterations and stress-response system hyperactivity are thought to underlie suicidal behaviour and have been a strong focus of therapeutic approaches to suicidal behavior.

Clinical advances. The single most important predictor of suicide is psychopathology, e.g., the presence of a mental illness in the individual over the last six months of life. Major depression is the most significant mental illness in this regard, followed by alcohol and drug related disorders. (1, 2)

Access to services: Although many people who commit suicide have had some contact with health service providers in the year preceding death, most individuals do not have any contact with services and are likely to fall between the cracks of the treatment system. (13)

Health promotion and suicide prevention

- Effective suicide prevention strategies exist. Most efforts focus on five main action areas:
  - Education and awareness programs for the general public and health professionals;
  - Methods of screening high risk individuals;
  - Treatment of psychiatric disorders associated with suicide;
  - Restricting access to lethal means (e.g., guns and certain drugs); and
  - Responsible media coverage of suicide cases. (14-18)
- There is strong evidence that these are effective suicide prevention strategies:
  - Training gatekeepers from different professional backgrounds, including general practitioners (19-21);
  - Treating psychiatric disorders associated with suicide, especially treating severe depression with anti-depressants (21); and
  - Restricting access to means of suicide. (22)
- There is promising evidence that these may be effective suicide prevention strategies:
  - Awareness campaigns targeting the general public or specific at-risk groups such as school-aged youth;
  - Routine screening of people at risk; and
  - Development of guidelines and principles to provide guidance for the media (including web media) about proper coverage of suicide. (19)

Challenges to be addressed

- Remedial programs are needed to train primary care health professionals when an expert is not available locally.
- Education programs that target primary care physicians should include instructions on the use of antidepressants.

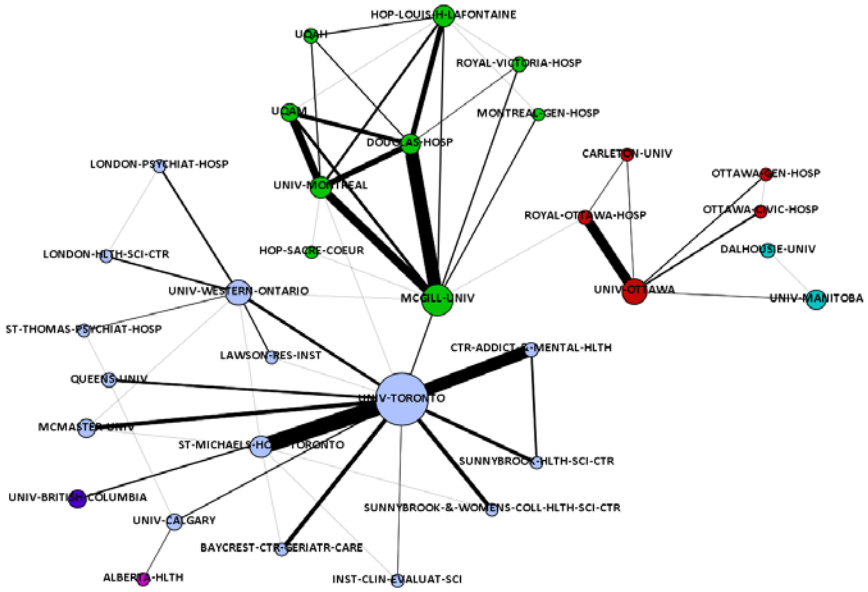
- The actual effects of training primary care health professionals on suicide rate must be measured in the different Canadian regions.
- More study is needed on the benefits of pharmacotherapy as an effective suicide prevention strategy in children and adolescents diagnosed with depression.
- Training potential gatekeepers should produce intermediate results, such as referral rates and psychiatric treatment.
- When restricting access to means of suicide, priority should be given to the methods commonly used in each region and the possible substitution of alternative methods requires constant monitoring.
- The cost-effectiveness of screening general populations vs. at-risk populations has yet to be measured.
- Essential elements of post-suicide attempt interventions are yet to be identified.
- Proper media coverage strategies and media reporting regulations regarding suicide cases should be implemented and rigorously assessed.

Suicide Research in Canada

This paper includes an Appendix which provides the results of a bibliometric positioning study on suicide research in Canada. This study concluded that:

- Published Canadian research on suicide experienced remarkable growth in the last decade (2001 – 2010).
- Canada's overall performance in terms of scientific impact compared favourably with that of other major countries active in this field. In fact, between 2006 and 2010, Canada ranked third in terms of production volume of publications on suicide (behind the US and the UK).
- As highlighted in Figure 1, three major centers and their affiliates produced scientific knowledge on suicide: the University of Toronto in conjunction with the University of Western Ontario; McGill University (primarily the Douglas Institute Research Centre); and the University of Ottawa.

Figure 1: Networks of Canadian institutions that co-publish articles on suicide, 1980 - 2010



Source: Observatoire des sciences et des technologies (Thomson Reuters Web of Science) – CBD Updated in January 2012.

Recommendations for public health practice and policy

- Invest early in the life course. For example, develop interventions that focus on distal factors such as decreasing exposure to adversity early on in life. This could include school-based interventions designed to regulate impulsivity or programs that improve parenting skills.
- Articulate current knowledge about suicide from a population standpoint and introduce it into policy and prevention methods that work in a variety of socioeconomic and cultural contexts.
- Develop a set of interconnected intervention methods and sites each with the capacity to educate various populations, support at-risk communities and/or cohorts and provide proper treatment for individuals who are affected.

> *"Properly defining the nature of an intervention will make it easier to establish accurate and reliable indicators and produce an even more rigorous assessment of its effectiveness, its cost-benefit ratio, and the like. For example, gun control, which at first glance is not directly related to suicide, can have remarkable effects on changing suicide rates.*

- Implement a national strategy for suicide prevention based on the success factors of provincial, federal and international initiatives. This strategy should include intensive and methodical research, knowledge transfer, consultation and collaboration.
- Study the costs and benefits of population-based suicide prevention strategies and develop assessment tools that can generate evidence-based data.
- Provide clear, concise reports on best practices relating to data collection and transfer of knowledge for stakeholders, partners and decision-makers involved in designing and implementing public policies about suicide.
- Highlight various types and levels of social determinants when addressing the phenomenon of suicide from the broader (societal), intermediate (family and immediate social network, and at-risk subgroups) or more specific (individual) perspective.
- Develop and implement suicide prevention interventions which are:
    - Multimodal;
    - Evidence-based;
    - Based on current empirical and theoretical knowledge of suicide risk factors;
    - Implemented or tested in cohorts or population bases large enough for the results to be generalized;
    - Validated in various socioeconomic and cultural contexts; and
    - Include a results assessment.

GLOSSARY

Depressive psychopathology:	-	Mental illness characterized by sustained depressed mood and/or lack of motivation, together with a number of other symptoms, including sleep and appetite disturbances, decreased energy levels, inability to concentrate, inappropriate ideas of guilt and suicidal thoughts.
Distal risk factors:	-	A distal risk factor is a factor that confers vulnerability for a given outcome. They are called "distal" because they act distally in time, i.e., their influence on the outcome began earlier than the influence exerted by proximal risk factors. Distal risk factors for suicide include significant genetic and epigenetic factors, a history of adversity in early life, such as sexual and/or physical abuse in childhood, development of impulsive-aggressive traits and high rates of anxiety.
Genomic sequences:	-	The genome comprises the entirety of an organism's hereditary information. It includes all DNA sequences, comprising genes, non-coding sequences, as well as all regulatory mechanisms. The term *genomic sequences* refers to the DNA code.
Neurotransmitter system:	-	Neurotransmitters are molecules that act as messengers and help neurons communicate with each other. Several classes of neurotransmitters exist and these regulate diverse populations of neurons.
Pharmacotherapy:	-	The treatment of disease through the administration of drugs.
Proximal risk factors:	-	A proximal risk factor acts as a trigger or precipitant of the outcome. Major proximal risk factors for suicide include depressive psychopathology (see definition above) and despair, substance abuse and lack of social support.
Psychopathology:	-	A general term referring to mental illness.

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