The Complex Science of Suicide Prevention

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By “Veterans” I mean former military members living in life after release from service, regardless of type of military service. This presentation does not focus on the in-service phase of life.

This Seminar

• Prevalence of suicidal thoughts and behaviours in Canada’s military Veteran population.
• The evidence base for suicide prevention remains incomplete and complicated.
• Suicide prevention is in a pre-paradigm phase – many theories, none fully encompassing.
• Move beyond lists of risk and protective “factors” to integrative frameworks.
• Break downs silos between mental health, physical health and chronic pain.
• We need to listen to social scientists.
• Suicide as a population well-being problem: Deploying integrated well-being approaches to suicide prevention.
Suicide Prevention in Military Veterans

A challenging public health problem in all nations


Suicidality in Military Veterans

- Suicidal Ideation prevalent 3 times in CAF Regular Force Veterans released from service in 2012-15 than in the general population.
- Higher suicide mortality risk in CAF Veterans released from service during 1976-2012 compared to the general population:
  - Male Veterans: 1.4 times
  - Female Veterans: 1.8 times
  - Male Veterans compared to female Veterans: 3.5 times

Suicide Attempts in Ideation Deniers

US Army soldiers who denied lifetime suicidal ideation in a population survey:
• Followed for 45 months to identify administrative records of suicide attempts.
• 67% of attempts occurred among those who denied ideation in the survey.


The Measurement Challenges

1. Nomenclature:


2. How do we know that a suicide was prevented?
3. How do we know that someone died of suicide?
4. Unique ethical problems in doing suicide research.
Health Canada Suicide Task Force Report 1987:

“There are many unanswered questions about suicide, and a multitude of conflicting theories. The role of environmental influences and mental disorders, the existence and nature of predisposing genetic or biochemical factors, and the parallel issues of proper and productive treatment and prevention - the questions are complex. Suicide is an action; it is not an illness. Identifying the chain of causal and triggering factors, which may in any case be highly individual, and deriving from this an overall prevention and treatment strategy is perhaps one of the most vexing problems facing professionals in the health sciences.”

Well-Being

More than just psychological well-being
Well-Being Framework

Domains of Well-Being:
- Employment/Purposeful Activity
- Finances
- Health
- Life skills/Preparedness
- Social Integration
- Housing/Physical Environment
- Cultural/Social Environment

Suicide Prevention Guidelines for Military & Veteran Populations

Evidence to guide guidelines is limited

Suicide Prevention Guidelines – Military & Veterans

**Lines of Effort**

1. Communicate, engage, educate
2. Support resilient CAF members/Veterans
3. Strengthen through families & community
4. Timely access to effective health care
5. Promote well-being through transition to post-service life
6. Align business practices to manage risk and stress
7. Improve through research and lessons learned

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Lack of evidence is not evidence that something does not work

Sall et al. 2019: “Despite a preponderance on the national suicide prevention stage of strategies for community-based intervention, evidence for the benefits of such interventions is lacking.”

But: “these guidelines are restricted in their view; they emphasize randomized trials but neglect findings that broadly based suicide prevention is possible, as shown by sustained reductions in such countries as Denmark, Finland … and the United Kingdom” (Caine)

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**References**


Community-Based Peer Support

• Upstream suicide prevention.
• Two main themes:
  • Support for community-based suicide prevention
  • Promote evidence-based culture
• Beyond “call 911” or “get them to the Emergency Department”


Emerging Evidence for Upstream Prevention

A study of community centre based peer support with clinical guidance

Men approaching retirement

“Participants experienced significant increases in attitudinal sources of meaning in life, psychological well-being, life satisfaction, retirement satisfaction, and general health, and decreases in depression, hopelessness, loneliness, and suicide ideation.”

Knowledge Translation – How?

“In comparison with the Resilience Retreat (n = 24), ASIST training (n = 31) was not associated with a significant impact on all outcomes of the study based on intention-to-treat analysis. There was a [statistically insignificant] trend toward an increase in suicidal ideation among those who participated in the ASIST in comparison to those who were in the Resilience Retreat. Conclusions: The lack of efficacy of ASIST in a First Nations on-reserve sample is concerning in the context of widespread policies in Canada on the use of gatekeeper training in suicide prevention.”


No Widely Accepted Suicide Theory

Still in a pre-paradigm phase
Still in a Pre-paradigm Phase

• We reviewed 17 suicide theories & frameworks:
  • Durkheim 1897
  • Psychodynamic theorists 1920-1938
  • Integrative: Shulman 1978 to O’Connor 2018
• Suicide causation is understood to be multifactorial, complex, varying individually, and due to interacting factors rather than linear causal chains.


Four Decades of Study in Military Veterans

“Data from a 1983 prospective study of suicide in a cohort of 4800 psychiatric inpatients were reanalyzed using logistic regression, which is more appropriate for a binary outcome. The results were the same as in the previous study: too few of the subsequent suicides were identified and there were too many false positives to make this procedure useful.”

Far from a Perfect Science

Rives (1999) Summary of principles for Emergency Department assessment of suicidal patients:

- Focus on mental illness diagnosis and treatment, especially depression and alcoholism.
- Risk assessment uncertain.
- No discussion of contributing well-being factors.

Belsher et al. (2019) systematic literature review:

- “suicide prediction models produce accurate overall classification models, but their accuracy of predicting a future event is near zero”


Common to all suicide theories

1. It’s not just all about mental illness or “depression”.
2. Heterogeneity in life course trajectories to suicide.
3. Multiple causal factors interlinked in nonlinear ways that vary person to person.
4. Individuals vary in vulnerability to becoming suicidal: stress-diathesis.
5. Waxing and waning over time in response to well-being influences.

Move Beyond Lists of “Risk Factors”

The future lies I think in integrative models

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Multicausality

From Nancy Krieger’s 1994 paper on the “spider web” metaphor for multicausality:

“... modern epidemiology often seems more concerned with intricately modelling complex relationships among risk factors than with understanding their origins and implications for public health. Reflecting this trend, graduate students in epidemiology are far more likely to be taught about study design and data analysis than they are about how to generate epidemiologic hypotheses about the societal dynamics of health and disease.”

Stuck in Monocausal Thinking

Kendler (2019):
“Despite ample evidence to the contrary, monocausal thinking continues to influence our field, for example, in the popular but improbable view that we can, with a few key advances, move easily from descriptive to etiologically based diagnoses.”

Chang et al (2016):
“currently known biological factors are weak predictors of future suicidal behaviors...”

Ribeiro et al. (2016): “Prior self-injurious thoughts and behaviours confer risk for later suicidal thoughts and behaviors. However, they only provide a marginal improvement in diagnostic accuracy above chance.”

Franklin et al. (2017): “prediction was only slightly better than chance for all outcomes; no broad category or subcategory accurately predicted far above chance levels; predictive ability has not improved across 50 years of research; studies rarely examined the combined effect of multiple risk factors; risk factors have been homogenous over time, with 5 broad categories accounting for nearly 80% of all risk factor tests; and the average study was nearly 10 years long, but longer studies did not produce better prediction.”
Depression

A majority who die by suicide had depression prior to death, but:
1. The great majority with depression do not become suicidal or die by suicide.
2. Many who die by suicide did not have a mental illness.

Franklin et al. (2017) found that depression is not a strong risk indicator for suicide.

So, is suicidal depression a unique form of “depression”? If so, does that make well-being factors even more significant, in addition to finding treatments specific for acute suicidality?

Figure 14. Female Veteran smoothed hazard function for risk of dying by suicide by component (Regular Force vs. Reserve Force Class C service only), 1976 to 2012 releases.

Health Canada Suicide Task Force Report 1987:

“Studies of common personal characteristics and traits are reported, as are studies of family relationships and structure. There are job-related factors as well as findings in terms of social disorganization. Physical illness can be a factor. Of major importance in many suicides is mental disorder. Drug and alcohol abuse are also common factors. Findings concerning the role of stress are discussed, as well as such biological factors as seasonal variation, the menstrual cycle and socio-biochemical and genetic determinants. Some psychoanalytic contributions are briefly noted. The necessity for a 'multidimensional approach' in understanding the causal chain is clearly illustrated...”

Big Data, Machine Learning, Precision Risk

**Possible advantages:**
- Might help us to do suicide prevention like heart disease prevention.
- Can look upstream at heterogenous pathways to suicide.

**Yellow flags:**
- Garbage in, garbage out.
- We still do not have a universally accepted suicide paradigm.

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**References**


Silos in Health Care

Importance of:

Chronic physical health conditions and chronic pain
and
Social Identity

Why so Little Attention to Physical Health and Chronic Pain?

Important determinants of mental health problems, and suicidality

Canadian Veterans: Life After Service Studies

**LASS 2010, 2013, and 2016:**
- Canadian Armed Forces Veterans.
- Released from 1998.
- Living in the general Canadian population.
- Two types of studies:
  - A. Surveyed within years after release, large sample sizes.
  - B. Also income studies, whole population data.

*Veteran = ex-military, regardless of type or length of service.


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**Health: Chronic conditions prevalence**

![Graph showing chronic conditions prevalence among Canadian Veterans and General Population]

Comorbidity of Physical and Mental Health Conditions

<table>
<thead>
<tr>
<th>Percent of Population</th>
<th>No Limitations</th>
<th>Some Limitations</th>
<th>High Limitations</th>
<th>Adjusted Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Health Conditions</td>
<td>33%</td>
<td>&lt;1%</td>
<td>17%</td>
<td>1.00</td>
</tr>
<tr>
<td>Mental only</td>
<td>2%</td>
<td>&lt;1%</td>
<td>1%</td>
<td>9*** (3-30)</td>
</tr>
<tr>
<td>Physical only</td>
<td>59%</td>
<td>71%</td>
<td>38%</td>
<td>25*** (12-52)</td>
</tr>
<tr>
<td>Both Physical and Mental</td>
<td>7%</td>
<td>28%</td>
<td>23%</td>
<td>73*** (34-157)</td>
</tr>
</tbody>
</table>

Odds of having activity limitations **four times** higher in those with both physical and mental health conditions than either one alone.


Chronic Pain Common in Military Veterans

CAF Regular Force and Class C Reserve Veterans released in 1998-2015:

- **41%** had chronic pain or discomfort, **double** the Canadian general population (age-sex adjusted).
- **63%** with chronic pain had diagnosed mental health conditions.
- Of those with mental health conditions:
  - **91%** also had a chronic physical health condition.
  - **62%** had chronic pain.
  - **57%** had activities reduced by chronic pain.

Two different self-report pain measures:
1. LASS 2010 (64%): Asked directly if they had pain or discomfort.
2. LASS 2013 (36%) and LASS 2016 (41%): Used HUI module, asked indirectly if they did not have pain or discomfort. Comparable to general population.

https://www.veterans.gc.ca/eng/about-vac/research/research-directorate/info-briefs/chronic-pain
Connection to Suicidality

Suicidal ideation associated with poorer physical health status measured 3 different ways

Independently of the stronger association with chronic diagnosed mental health conditions


Social Identity Might be a Key

I was not taught social identity theory in medical school


Identity Challenges in Transitions: Major Life Transitions are all about Identity Shifts

- **Personal identity:**
  - Our cores, the Self: *Who am I?*
  - How we are unique and differ from others: *What am I?*

- **Social Identity:**
  - How we are like some, and different from others: *Where do I belong?*
  - Formed by (1) memberships in social groups and (2) value attached to those memberships.
  - We have many social identities, always changing.
  - Enable us to have good well-being.
  - Need to integrate old and new social identities as we adapt in transition to the new culture.
  - Success: Adopt the norms, values and beliefs of the groups.

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Weak Group Identity is Associated with Difficult Adjustment & Suicidal Ideation

<table>
<thead>
<tr>
<th>Group Identity</th>
<th>Per Cent of Population</th>
<th>Difficult Adjustment</th>
<th>Suicidal Ideation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong SoLCB &amp; Part of a group</td>
<td>46%</td>
<td>Reference</td>
<td>Reference</td>
</tr>
<tr>
<td>Strong SoLCB &amp; Not part of a group</td>
<td>3%</td>
<td>7*</td>
<td>23*</td>
</tr>
<tr>
<td>Weak SoLCB &amp; Part of a group</td>
<td>35%</td>
<td>3*</td>
<td>7*</td>
</tr>
<tr>
<td>Weak SoLCB &amp; Not part of a group</td>
<td>16%</td>
<td>11*</td>
<td>34*</td>
</tr>
</tbody>
</table>

Unadjusted Odds Ratios


Veterans Adapt over Time after Release

Difficult adjustment and Weak sense of community belonging Improve over time

LASS 2016, All CAF Regular Force Veterans (Cross-sectional)
Determinants of Well-being in the Health Domain – and of Suicidality


An Ecological, Life Course, Whole-of-Community Approach to Suicide Prevention

Look upstream from the precipice
The Move to Integrative Models

Kenneth Shulman (1978):

Argued for integrative models in suicide risk assessment, rather than lists of risk and protective factors


Caine et al. (2018) – Ecological Model of Suicide Prevention

Life Course, Well-being Framework for Suicide Prevention

Suicide Influences Across the Life Course
Suicide Pathway Influences

- Targets for suicide prevention activities.

- Use this diagram to think through what you and your agency can do to help prevent Veteran suicides.


Wrap-up:
So what are we to do?

Getting suicide prevention right
Whole of Community, Across the Life Course

“Suicide prevention efforts have tended to be one-by-one initiatives rather than comprehensive efforts that bring together communities, state agencies, health systems and diverse stakeholders to work in a synergistic fashion that pushes forward multiple efforts simultaneously. Suicide is not a singular problem, or a specific medical diagnosis. Rather it serves as a final common pathway for an array of elements reflecting personal, family, community and societal stresses and turmoil—typically expressed one individual at a time. While the final moments of action—killing oneself—predominantly have drawn past attention from medical and mental health professionals, it is timely to integrate the person level with what can be done in both health systems and beyond their walls across entire communities, and far upstream, so that it is possible to alter life trajectories.”


Putting it all Together

Suicide prevention requires both:

1. Access to mental health care for assessment and treatment of:
   • Mental illness
   • Acute suicidality

2. Support for good well-being in all the domains
   • Across the life course and
   • When suicidality develops
Engage the Community

“Support an evidence-based culture in community suicide prevention:”

• “Research findings need to be transparent and freely available in lay language. Mechanisms for open and free sharing of research knowledge are essential in advancing suicide prevention work.”

• “Help groups to develop data collection. Foster participation in whole-of-community data collection.”


Three Centres of Excellence
Funded by Veterans Affairs Canada

Canadian Institute for Military & Veteran Health Research
  • Based at Queens University and the Royal Military College of Canada, Kingston
  • 10 years of progress
  • Network of 45 Canadian universities

Center of Excellence on Post Traumatic Stress Disorder (PTSD) and Related Mental Health Conditions
  • Based at the Royal Ottawa Mental Health Centre, Ottawa
  • Announced 2018

Center of Excellence on Chronic Pain
  • Based at McMaster University, Hamilton
  • Announced 2019
What one thing can every one of us do, every day?

**OP IDENTITY**: Transition tactics for you and your village

<table>
<thead>
<tr>
<th>I</th>
<th>Identity awareness and etiquette</th>
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</thead>
<tbody>
<tr>
<td>D</td>
<td>Do seek out new social groups</td>
</tr>
<tr>
<td>E</td>
<td>Embrace transitioners into your social group</td>
</tr>
<tr>
<td>N</td>
<td>Normalize transition challenges</td>
</tr>
<tr>
<td>T</td>
<td>Tell a positive life story</td>
</tr>
<tr>
<td>I</td>
<td>Ideal stereotypes are positive and real</td>
</tr>
<tr>
<td>T</td>
<td>Think to ask: What recognition works for you?</td>
</tr>
<tr>
<td>Y</td>
<td>You aren’t alone: The power of positive peers</td>
</tr>
</tbody>
</table>

Thank you

Have a good day, and good year