Contract for R&D Services – Veterans & Military TASK # 11 – Statement of Work

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SPECIFIC ANALYSES OF THE 2013 CANADIAN ARMED FORCES MENTAL HEALTH SURVEY DATA ON SUICIDALITY, CHILD ABUSE VICTIMIZATION, ANXIETY DISORDERS OTHER THAN PTSD, INCOME AND MENTAL DISORDERS, ALCOHOL USE DISORDERS, AND CHRONIC PAIN

FOR SUBCONTRACT WITH CIMVHR

Please note that this Work has a security requirement.

Requirement

1. The CAF needs a collaborative mental health epidemiology research team to lead six specific analysis projects using its 2013 Mental Health Survey data and to serve as a co-author on six additional analysis projects using the same survey data.

Background

2. The mental health of the workforce is of great interest to any employer, given the enormous impacts of mental health and mental disorders on absenteeism, productivity, medical care costs, disability insurance costs, and unwanted turnover. In military organizations, mental health has additional significance: Mental disorders can interfere with performance of duties in high-stakes/high-threat environments, in which performance deficits may threaten the safety and success of the mission. Military duties can also lead to occupational mental health problems, meaning that the military employer has a special duty for prevention and control. Finally, military organizations usually deliver mental health programs and services to their personnel, giving them more control than the typical employer over efforts for prevention, control, treatment, and rehabilitation.

3. Planning and managing a mental health system starts will a fulsome understanding of the mental health needs of the population being served. In 2002, the CAF funded the execution (by Statistics Canada) of a large, population-based mental health survey of CAF personnel; these data were central to the development of the CAF's mental health system over the past decade.

4. Much has changed since 2002. The deployment of more than 40,000 CAF personnel in support of the mission in Afghanistan has exposed larger numbers of CAF personnel to a greater degree of adversity than at any time since the Korean War. Available data has demonstrated a powerful impact of this mission on the mental health of those who deployed in support of it. In addition, the CAF has strengthened its mental health services in many ways over the past decade, including 1) more than doubling the number of clinicians; 2) standing up

seven centres of excellence for diagnosis and treatment of PTSD and related problems; 3) initiating systematic post-deployment mental health screening; 4) development of a sophisticated mental health education and training program; and 5) development of an innovative peer support program for personnel and veterans with deployment-related mental health problems.

5. To assess the effects of these and other changes over the past decade, the CAF once again engaged Statistics Canada to collect survey data from more than 8,000 CAF personnel in 2013. Data from this survey are now available in Statistics Canada's Research Data Centres. The Directorate of Mental Health (D MH) has organized a collaborative team of 30 researchers in three entities within DND (Defence Research and Development Canada (Toronto); D MH itself (Ottawa); and Director General, Military Personnel Research and Analysis (Ottawa)) and in several academic institutions. D MH has completed a coordinated analysis plan for the survey data, and a number of internal and external researchers have been identified for most of the high-priority projects.

6. However, not all high-priority analysis projects have an identified investigator with the required subject matter knowledge and experience. As a result, D MH is seeking a contractor to perform six particular projects (Annex A) over the next two years. These proposed analyses require the expertise of military mental health epidemiologists in the domains of:

a. Suicidality;
b. Adverse childhood experiences;
c. Anxiety disorders other than PTSD;
d. Income and mental disorders;
e. Alcohol use disorders; and
f. Chronic pain.

7. The contractor will also serve as a consultant or co-author on an additional six publications for which D MH will be lead author (Annex B).

8. A single team (which may involve multiple investigators and multiple CIMVHR partner institutions) is sought to complete this panel of analysis projects so as to ensure comparability of theoretical frameworks, methods, and approaches, as well as to simplify coordination of analysis efforts and dissemination of results by D MH.

Objective

9. The fundamental objective of this project is to understand the current state of mental health and use of mental health services in CAF personnel through analysis of the data of the 2013 CAF Cross-sectional Mental Health Survey. A secondary objective is to build the next generation of military mental health researchers through mentorship and supervision of graduate students doing military mental health research projects.

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Scope

10. The contractor shall complete the six proposed analysis projects for the mental health survey data (Annex A), each of which shall lead to at least one peer-reviewed publication and at least one conference presentation. The contractor shall also serve as a co-author on six additional publications using the mental health survey data for which D MH personnel are lead authors (Annex B).

Tasks

11. The Contractor shall, for the six analysis projects for which it is in the lead (Annex A):

a. Consult with D MH personnel to develop a specific analysis plan for each of the six projects;
b. Complete any required analysis proposals for approval under the Statistics Canada Research Data Centre program
c. Complete analysis and regularly review results with D MH personnel.
d. Serve as lead author(s) in at least one publication-quality manuscript for each analysis project (six in total, Annex A), with authors being:
   i. One or more **doctoral-level senior mental health epidemiology researchers and military/veteran mental health subject matter experts** with at least five years of experience as a lead author and co-author in at least 30 peer-reviewed publications (collectively) in the field of mental health epidemiology, including at least 10 such papers (collectively) on military mental health issues and at least 5 such papers (collectively) in each of the 6 specific topics that are the subject of this Statement of Work (listed in para 6 above); and
   ii. One or more graduate students or research associates.
e. Submit each of the six manuscripts to a peer-reviewed scientific journal;
f. Prepare and deliver at least one presentation at a scientific meeting on each analysis project for which the contractor serves as lead author; and
g. Provide brief quarterly reports to D MH on the progress made on each of the analysis projects.

12. The contractor shall, in its role as a consultant or co-author on the six publications for which D MH personnel are the lead authors (Annex B):

a. Consult with D MH personnel to develop the analysis strategy for each paper;
b. Review and comment on analysis output performed by D MH personnel;
c. Assist D MH personnel with the interpretation of the study findings;
d. Advise D MH personnel in development of an outline for each paper;

e. In a consultant or co-author role, draft, review and edit manuscripts of each of the six papers prepared by D MH personnel. The role as a co-author vs a consultant and order of authorship (if applicable) on these papers will be determined by the mutual agreement of the contractor and the Scientific Authority, applying contribution guidelines of the International Committee of Medical Journal Editors; and
f. Assist D MH personnel in completing any revisions required as part of the peer review process.

Deliverables

13. The Contractor shall provide the products and services described below with care, skill, diligence and efficiency:

For the analysis projects for which the contractor is lead author (Annex A):

a. Complete the required analysis proposals for approval under the Statistics Canada Research Data Centre program;
b. Complete the analysis tables and statistical models required for each of the six analysis projects;
c. Complete at least one manuscript for each of the six analysis projects for ultimate submission to a peer-reviewed journal;
d. Provide each manuscript to D MH for review and comment;
e. Submit each manuscript to a peer-reviewed publication;
f. Prepare and submit abstracts for at least one presentation per project at a scientific meeting; and
g. Deliver at least one presentation per project at a scientific meeting.
h. Provide copies of deliverables e), f), and g) (manuscripts, presentation slides, etc) to CIMVHR.

For the papers in which D MH personnel will be lead author and for which the contractor will serve as a consultant or co-author (Annex B):

i. Provide consultation and advice to D MH personnel regarding the concept, analysis plan, and interpretation of results for each paper; and
j. Provide to D MH personnel written comments and proposed edits on each analysis plan, paper outline, manuscript, and manuscript revisions.
k. Provide to CIMVHR no later than 1 March 2016 and 2017 a draft invoice and supporting documents for all expenses incurred to date.
l. Provide to CIMVHR no later than 15 March, 2016 and 2017 final invoices for all expenses incurred according to the items approved in the cost estimate approval document, copies of signed timesheets for all personnel, original receipts for all expenses claimed and any other supporting documents.

m. Provide to CIMVHR no later than 15 December 2016 a progress report of all expenditures to date and a projection of expenditures for the remaining 3 months of the project. Please contact CIMVHR for a copy of the progress report form.

Mandatory Criteria

14. The successful team will collectively have the following minimum qualifications:

a. One or more senior investigators with an MD and/or a PhD in a relevant discipline;
b. Demonstrated subject matter expertise and recent productivity in mental health epidemiology (manifested by authorship or co-authorship of at least 30 peer-reviewed publications in the field over the previous 5 years);
c. Demonstrated subject matter expertise in military mental health research (manifested by at least 10 peer-reviewed publications in the field); and
d. Demonstrated subject matter expertise in the each of the six specific topic areas listed above (manifested by at least 5 peer reviewed publications in each area).

Language of Work

15. Language of work shall be English.

Period of Work

16. This work shall start when all security requirements have been completed and the budget has been approved by Canada. Work will be completed by **15 March 2017**.

Location of Work

17. The work shall take place on contractor's premises and their local Statistics Canada Research Data Centre.

Travel Requirements

18. All travel must have prior written authorization from the Scientific Authority and the Technical Authority, and must be undertaken and will be reimbursed in accordance with the Treasury Board's Travel Directive and Special Travel Authorities. The Sub Contractor must notify CIMVHR 60 days prior to the time of travel about specific travel plans and costs to obtain this approval.

19. Contractor shall attend scientific meetings for presentation of the findings for each of the six analysis projects for which the Contractor is the lead author (Annex A).

Security

20. All work and deliverables shall be unclassified. The Contractor will not have access to any classified information. No protected data or materials will be held on the contractor's premises.

The Sub Contractor is required to secure personal security clearances at the Reliability Status level for all personnel, as required for gaining access to the Research Data Centre that houses the study data. Contractor shall follow all policies and security practices required by Statistics Canada's Research Data Centre program.

In order to bid on this Sub Contract the researcher's University or affiliated Hospital must be registered in the federal Industrial Security Program (ISP), must have approved Designated Organization status with the ISP, and must be in current good standing with all aspects of the program. Interested parties should contact their research services office to inquire as to whether their institution is registered in the Program and to get information about requirements related to personal security clearances before submitting their application to CIMVHR.

Sub Contractor may not commence Work until all security clearances have been approved by the Canadian Industrial Security Directorate. Please expect some delay in starting work due to processing time for security clearances.

Budget

21. The Sub contractor will be paid by CIMVHR as per the terms of Contract # W7714-145967 between Defence Research and Development Canada and CIMVHR. The amount of funding available is allocated by fiscal year (April 1 - March 31st) and is approximately $136,500 for both FY 2015-16 and FY 2016-17. Details TBD upon award.

A draft budget will be submitted with the proposal along with a budget justification and a detailed budget will be developed post award in consultation with CIMVHR. Interested parties should request budget documents and guidance from Jocelyne Halladay in order to create their budget.

Annex A: Analysis Projects for Which Contractor Shall Serve as Lead Author

Mental Health Survey Project Number	**Title**	**Rationale/Contribution**
1.5	Suicidality in Canadian Armed Forces personnel and civilians, 2002 – 2012/13	Suicide is an important public health threat in the CAF. While rising military suicide rates seen in the US have not been seen in the CAF, military suicide remains a prominent concern of Commanders, parliamentarians, journalists, and the general public. This project will examine trends in the prevalence of suicidal ideation, suicide plans and attempts in CAF personnel and civilians over the period 2002 – 2012/13. In addition, it will compare mental health services use in military personnel and civilians over the same period.
4.7, 4.8.1	Child abuse victimization in CAF personnel and civilians, 2012/13	Childhood adversity, especially physical and sexual abuse, is powerful predictor of mental disorders and other negative health outcomes across the life course. Its effects on suicidality are especially powerful. Recent work from the US military has shown a striking excess prevalence of childhood adversity in military personnel in the post-draft era, relative to civilians of the same age; military/civilian differences were much smaller in the draft (Vietnam) era. This suggests that modern military organizations may be recruiting disproportionately vulnerable personnel. If so, this could explain differences in the prevalence of depression (seen in the CAF and elsewhere) and even of suicidal behaviour (seen elsewhere). This project will use the CAF and general population data from 2012/2013 to explore differences in the prevalence of child abuse victimization in the two populations. Further work may involve exploration of whether differences in child abuse victimization explain the excess of depression in CAF and other military personnel. This project will also explore the contribution of childhood abuse victimization to mental health problems and suicidality in the CAF 2013 survey. In particular, it will try to place these impacts in the context of the impact of deployment and combat experiences on mental health, specifically looking for evidence of interaction between childhood adversity and deployment/combat.

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1.8	Anxiety disorders in CAF personnel	Anxiety disorders such as Generalized Anxiety Disorder (GAD), Obsessive-Compulsive Disorder (OCD), Panic Disorder (PD), Social Phobia (SP), are collectively the most common mental disorders among military personnel. Disconcertingly, these disorders are associated with a significant degree of occupational and interpersonal impairment, compromised physical health, and poor quality of life. PTSD (no longer considered an anxiety disorder) has received a considerable amount of attention in the military research literature, with a past-year prevalence rate of 2.3% observed in Canadian Forces Personnel in 2002. The 2002 Canadian Community Health Survey-Canadian Forces Supplement has provided information about the prevalence and correlates of SP, PD, and GAD, all of which are known to be prevalent and impactful in civilian populations. PD is of particular interest because the 2002 survey showed a 50% higher prevalence of 12-month PD in Reg F personnel compared to civilians. Recent research from Australia has shown a surprisingly high prevalence of OCD, and a strong association of OCD with deployment. Hence there is a need for a better understanding of epidemiology of anxiety disorders in CAF personnel. The objective of this project is to examine the past-year prevalence and correlates of 12-month GAD and PD in the 2013 survey. While OCD was not assessed in the CIDI disorder modules in either the 2002 or 2013 survey, the 2013 survey did inquire about OCD as a chronic condition. Provided its prevalence is high enough, there will be an opportunity to do some descriptive epidemiology using that as an outcome.
4.10	Relationship between income and mental disorders in CAF personnel	Income has been found to be an important correlate of mental disorders, with the most consistent finding being a small excess prevalence of mental disorders in the lowest income groups. Such effects are strongest and most consistent in the US, which understandably has a much weaker safety net for low income individuals than does Canada or most of its closest allies. There is evidence that this excess prevalence of mental disorders in the lowest income categories is due to both "downward mobility" (mental disorders interfere with the ability to secure and retain employment) and to the additional stress and strain of poverty (again, especially where the safety net is weak). In Canada, remuneration for military personnel compares very favourably with civilians. Corporals, for example, start at close to $60,000 per year, well above the median income for Canadian families. Military personnel also enjoy generous benefits, including health insurance, disability

Mental Health Survey Project Number	Title	Rationale/Contribution
		insurance, pension, etc. As a result, there are essentially no Regular Force personnel in the lowest income brackets. Income may thus be an important contextual factor in understanding differences in mental disorder and their impacts between military personnel and civilians. This project will thus explore the role of income in mental disorders in CAF personnel.
4.5	Alcohol use disorders in CAF personnel	Alcohol use and alcohol use disorders have an important impact on a broad range of physical, mental, and social health outcomes. For the 2002 survey, very little analysis on alcohol use or alcohol use disorders was performed. There is evidence that heavy alcohol use is more common in some military populations (notably in the US and UK armed forces). In addition, there is evidence that deployment can be associated both with high-risk drinking and alcohol dependence, with other mental disorders such as PTSD mediating some but not all of these effects. Not surprisingly, alcohol and drug dependence are highly prevalent among treatment-seeking veterans with service-related disorders. However, recent CAF research (Boulos and Zamorski, 2013) showed an unusually low incidence of substance use disorders in previously-deployed personnel. This low prevalence may reflect the benefits of early care-seeking for those with mental disorders (that is, seeking care before substance use disorders developed as a comorbidity). Alternatively, it could represent under-reporting of alcohol use by CAF personnel or normalization of problem drinking behaviour by CAF clinicians. Survey data will help explore these potential explanations. The focus of this project is to examine the changes in alcohol use and alcohol use disorders among Canadian Forces from 2002 to 2013, as well as examining how these rates compare to a general Canadian population. Further, this research will examine military alcohol use utilizing age, period, and birth cohort (APC) groupings, and deployment as potential explanatory factors. It will also explore co-morbidity with mental disorders. The findings of this study will generate new information regarding how military deployment over the past decade has impacted alcohol use disorders while being able to control for the natural effects of an ever-changing society by comparing these findings to a non-militarized Canadian sample. The primary value of these findings will be 1) to be able to respond to the often-repeated myth that CAF personnel are much more likely to be heavy drinkers or to have an alcohol use disorder; 2) to situate the effect of deployment on alcohol use and alcohol use disorders in a larger context of determinants of mental

Mental Health Survey Project Number	Title	Rationale/Contribution
		health and substance abuse; 3) guide prevention and control efforts; and 4) potentially inform clinical practices regarding assessment and treatment of alcohol use disorders in the CAF.
4.2	Chronic pain in CAF personnel	Chronic pain has been identified as a major problem in military personnel and in veterans. The unique demands of military life on the musculoskeletal system likely contribute. Research on Canadian veterans who are clients of VAC show that a large fraction endorse moderate to severe chronic pain. Pain also has an impact on serving personnel, especially in the context of heavy operational demands: In the US military at least, at least, there is evidence of skyrocketing levels of medical and non-medical use of opioids. Chronic pain has clear relationships with mental disorders and functional status. However, research on the phenomenology of chronic pain in CAF personnel is limited to data collected during post-deployment screening, which did show that about 1/3 of previously-deployed personnel endorsed being "bothered a lot" by musculoskeletal pain in the previous two weeks. In recognition of the importance of chronic pain in mental health, a brief pain questionnaire was included in both the CAF and general population surveys in 2012/13. The purpose of this project is to identify the prevalence, correlates, and impacts of chronic pain in CAF personnel. This line of inquiry may help identify populations that might be targeted in outreach efforts and will provide insight into the potential impact of better pain management in the CAF.

Annex B: Analysis Projects for Which D MH Personnel Shall Be Lead Authors and for Which Contractor Shall Serve As a Co-author

Mental Health Survey Project Number	**Title**	**Rationale/Contribution**
1.1	Prevalence of 12-month mental disorders in the CAF Regular Forces, 2002 – 2013	This paper will provide an updated picture of need for services to help in planning purposes. Ultimately, it will give a sense of the net effects of mental health services renewal and the mission in Afghanistan, as well as all of the usual determinants of mental health. These prevalence rates will be used 1) to persuade critics that we have a handle on the current magnitude of the "mental health problem" in the CAF; and 2) to reassure stakeholders that despite the extraordinary demands of the mission in Afghanistan there has been only modest growth in the prevalence of some mental disorders (likely PTSD and depression). These findings will help instil confidence among leaders, parliamentarians, and journalists that the CAF has the problem of mental disorders well in hand. It will likely also provide evidence against the hypothesized "tsunami" of OSI cases that are not yet in care. Analysis will focus on cruse and age-sex adjusted prevalence rates (using 2013 as the reference population). Prevalence rates for disorders not measured at both time points (social phobia), 2002 prevalence rates will be presented alone as a contextual factor. Logistic regression will be used to explore changes over time for each 12-month disorder except alcohol dependence, for which the instruments are just too different. For depression, PTSD, and panic disorder, results will be directly comparable because the algorithms did not change. For GAD, there were very minor adjustments to the algorithms which mean that two 2013 prevalence rates will be reported--one that is comparable with the 2012 general population data and one that is comparable with the 2002 CAF data. An aggregate outcome of "any 12-month mental disorder" will be used as an outcome as well.

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1.2	Differences in the prevalence of distress and 12-month mental disorders in the CAF Regular Forces and Canadian civilians, 2012/2013	Relative to civilians, military personnel have both risk factors and protective factors for mental disorders and distress. Recent discourse and research has of course focused on the negative effects of occupational trauma in military personnel. However, protective factors in military personnel relative to civilians, such as employment, secure income, and excellent access to quality mental health services, may also be at play. The balance in these risk and protective factors is expressed in the 12-month disorder prevalence rate. In 2002, an excess of depression and panic disorder was seen in Reg F personnel. This project will compare distress and 12-month disorder prevalence in CAF personnel and civilians.
1.10	Descriptive epidemiology of depression	Depression has particular importance as a disorder in the civilian population in that it is widely recognized as being the most impactful single mental disorder on society; over the next decade it is expected to be the largest single contributor to disability worldwide. In military personnel, depression has additional significance: First, there has been a significant excess of depression in Regular Force military personnel in both Canada and in Australia. Second, depression is the second most common OSI diagnosed in CAF personnel. Third, as the most important driver of suicidal behaviour, understanding depression will ultimately aid in understanding (and preventing) suicidal behaviour. The reasons behind the excess of depression in Regular Force personnel remain mysterious. It is not due to simple confounding due to sociodemographic differences between military and civilian populations. It is clearly not due to chance, given the magnitude of the effect. It is not clearly related to differences in age of onset, episode length, or care-seeking, all of which appear similar Regular Force personnel and civilians using the 2002 data. Likewise, deployment does not seem to be an important driver, given that the prevalence of depression is either the same or lower in personnel with multiple deployments. Further evidence against an important role of deployment-related trauma includes the low Population Attributable Fraction for combat and exposure to atrocities seen in the 2002 survey data. Among all of the findings on the 2002 survey, this excess of depression in CAF Regular Force personnel stands out as the most striking and important single difference with respect to civilians and it remains unexplained. Finally, preliminary findings from the 2013 data show a persistent excess of depression in CAF personnel, a

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		significant increase in the prevalence of PTSD and panic disorder but, surprisingly, no increase in the prevalence of depression since 2002. The explanation for the failure of increasing prevalence of PTSD to result in increases in its more common and most impactful comorbidity (depression) is unknown. Exploring the descriptive epidemiology of depression using the 2013 data (with reference to the 2012 civilian data and to the 2002 CAF data) will confirm this important finding and will contribute to better understanding its origin and implications. In addition to advancing scientific knowledge about depression in military personnel, it may contribute to prevention and control efforts.
1.13	A population-health perspective on the overlap of 12-month disorders, distress, perceived need for care, and use of mental health services	Past research using HLIS data has identified different groups with different patterns of need, perceived unmet need, and use of health services. These three dichotomous variables define eight distinct groups, each with its own implications and each requiring potentially different countermeasures. For example, individuals who are not distressed, had no perceived unmet need, and who sought care are not of concern—they could be framed as "happy customers" of the mental health system. Among those with distress, a perceived unmet need for care, but no care-seeking, the appropriate intervention would be to find ways to overcome barriers to care. In contrast, those who are distressed, have no perceived unmet need, and have not sought care need interventions need interventions to increase their awareness of an unmet need. The size of these eight groups varies substantially. The purpose of this analysis is to extend the work done on the HLIS dataset using both the 2002 and 2012/13 CAF and general population data. It will in essence explore the relative size of these groups in both populations over time. In addition, it will explore predictors of different patterns of distress/disorder/perceived need for care/use of health services, with a focus on those groups of greatest interest, such as those with "hidden unmet need" (that is, distress or mental disorders but no recognition of an unmet need for care or use of health services). This analysis will provide insight into the effectiveness of the CAF's efforts to enhance mental health literacy and overcome barriers over the past decade, using Canadian general population data as a frame of reference. Understanding the absolute size of these different groups will help identify specific

Mental Health Survey Project Number	Title	Rationale/Contribution
		groups for education and outreach efforts and the specific messages they need to hear. Findings could be incorporated into the R2MR program.
1.15	Chronic Conditions in CAF Personnel vs. Veterans vs. civilians	Research on Canadian veterans has identified differences between the health of serving personnel and modern veterans. For example, the CF Cancer and Mortality Study demonstrated that serving personnel have suicide rates that are below those of civilian populations, but modern veterans have elevated rates. There have not been any other formal comparisons in the health status of serving personnel and veterans. VAC's recent Life After Service Survey (LASS) of Reg F and Res F personnel released over the past decade and the 2013 CAF Mental Health Survey used identical instruments to assess mental disorders as chronic conditions. This provides an opportunity to formally compare the mental health of serving personnel and veterans, adjusting for potentially confounding factors. This analysis will merge the CAF Mental Health Survey with that of the LASS and will compare the prevalence of mental disorders as chronic conditions in the two populations.
4.8.2	Adverse childhood experiences in CAF personnel and civilians, 2002	This project will replicate project 4.8.1, using data from the 2002 military and civilian surveys. The 2002 survey used an Adverse Childhood Experiences Scale as opposed to a child abuse victimization scale, which was what was used in the 2012/13 surveys. A key focus will differences between the effect of ACE on mental health outcomes in military personnel and civilians to explore the possibility that military service may attenuate the association between childhood adversity and later mental health outcomes.