

FORUM 2017

ABSTRACTS 2017 RÉSUMÉS

The 8th annual conference of the Canadian Institute for Military and Veteran Health Research
La 8ème conférence annuelle de l'Institut canadien de recherche sur la santé des militaires et des vétérans



2017

CIMVHR
FORUM
ICRSMV

MINDS TO BODIES
D'ESPRIT ET DE CORPS

IN PARTNERSHIP WITH
EN PARTENARIAT AVEC

INVICTUS
GAMES

TORONTO 2017

FOR OUR WOUNDED WARRIORS
POUR NOS GUERRIERS BLESSÉS



CIMVHR

Canadian Institute for Military
and Veteran Health Research

ICRSMV

L'Institut canadien de recherche sur
la santé des militaires et des vétérans

CONTENTS

ADVANCES IN PRIMARY AND TRAUMA CARE	1
PODIUM PRESENTATIONS.....	1
6E02: Goal-directed Damage Control Resuscitation in Operation Inherent Resolve. Platelet Concentrates are not Required to Reverse Severe Trauma Induced Coagulopathy	1
<i>Beckett, A., Maj, MD</i>	
POSTER PRESENTATIONS.....	1
P101: Exploring Pharmacogenetic Testing for the Treatment of Depressive Symptoms in Post-traumatic Stress Disorder Patients	1
<i>*Cheema, SY, HBSc, Zai, CC, PhD, Tiwari, AK, PhD, Zai, GC, MD, PhD, Herbert, D, HBSc, Shahmirian, A, MHSc, Sherman, M, HBSc, Tampakeras, M, HBSc, Shaikh, SA, HBSc, Freeman, N, MSc, King, N, HBSc, Mueller, DJ, MD, PhD, Kennedy, JL, MSc, MD</i>	
P102: The Involvement of Service Dogs in the Treatment of Posttraumatic Stress Disorder Among Veterans	1
<i>*Gillet, J., PhD; McKinnon, M., PhD; Kates, N., BM</i>	
P103: Biological Response to Stress during Battlefield Trauma Training: Live Tissue vs. High Fidelity Patient Simulator.....	2
<i>*Peng, H., PhD; Tenn, C., PhD; Vartanian, O., PhD; Rhind S., PhD; Jarmasz, J., PhD; Smith, I., BSc; Blackler, K., MSc; Bouak, F., PhD; Sullivan-Kwantes, W., MSc; Saunders, D., BSc; Caddy, N; Blais, A-R., PhD; Pannell, D., Capt; Tien, H., MD Beckett, A., Maj., MD</i>	
P104: MASCAL: A Manual for a Customizable, Low Tech, High Fidelity Simulation Training Program to Prepare Civilian Hospitals for Mass Casualty Events.....	2
<i>Hilsden, R., Maj, MD; *Smith, S., Maj, MD; McAlister, V., LCol, MB</i>	
PODIUM PRESENTATIONS.....	3
3E02: Treating Moral Injury and Posttraumatic Stress: Exploring a Model That Works.....	3
<i>Graeser, N., MDiv; MSW, DSW (Cand); *Lipana, N., DSW (Cand)</i>	
6D02: Neural and Behavioural Correlates of Moral Injury in Military Members and Veterans.....	3
<i>*McKinnon, M.C., PhD, CPsych; Jetly, R., Col, OMM, CD, MD, FRCPC; Rhind, S., PhD; Nazarov, A., PhD; Lloyd, C., MSc; Protopopescu, A., BSc; O'Connor, C., MA, MSc; Hood, H., PhD, CPsych; Lanis, R., MD, PhD</i>	
6D04: Positive Mental Health in CAF Members at Risk for Moral Injury.....	3
<i>*Nazarov, A., PhD; Fikretoglu, D., PhD; Liu, A., PhD</i>	
6D05: A Qualitative Investigation of Moral Injury Using a Preliminary Clinician-Based Survey.....	4
<i>*McIntyre-Smith, A., PhD; Berke, D., PhD; Yeterian, J., PhD; Gifford, S., PhD; King, L., MSc; Richardson, J. D., MD; Nelson, C., PhD; St. Cyr, K., MSc; Litz, B., PhD</i>	
POSTER PRESENTATIONS.....	4
P171: Military Humanitarian Civic Assistance Programs: Can the Provision of Care ever be Wrong?	4
<i>*Clifford, J., MWO, PhD (Student), MA, MPH</i>	
P172: Do Know Harm: Mitigating Post-disaster Disempowerment in Canadian Armed Forces Disaster Response Operations.....	5
<i>*Clifford, J., MWO., PhD (student), MA, MPH; Clifford, P., Col., MD CCFP(EM)</i>	
P173: Measuring Moral Injury in Non-military (Civilian) Populations: The Moral Injury Assessment.....	5
<i>*Lloyd, C., BA; Jetly, R., Col, OMM, CD, MD FRCPC; Rhind, S., PhD; Nazarov, A., PhD; Protopopescu, A., BA, BSc; O'Connor, C., MSc; Hood, H., PhD CPsych; McKinnon, M., PhD CPsych; Lanis, R., PhD, MD</i>	
GENDER DIFFERENCES IN HEALTH	6
PODIUM PRESENTATIONS.....	6
3A03: The Relationship between Indicators of Mental and reproductive Health among Military Servicewomen Deployed in the Current War Zone in Eastern Ukraine.....	6
<i>*Burlaka, O., PhD, MD; Chaban, O., PhD, MD; Bezsheiko, V., MD</i>	
3A05: Gendering the Diagnosis: Interactions between Stigma, Gendered Identity, and Traumatogenic Events.....	6
<i>Callaghan, W., MA</i>	
4D02: Exploring Sex Differences in Concussion / Mild Traumatic Brain Injury-related Chronic Pain	6
<i>*Mollayeva, T., MD, PhD; Cassidy, J.D., PhD, DrMedSc; Shapiro, C., FRCPC, MBBCh, PhD; Mollayeva, S., HonsBSc, MSc (student); Colantonio, A., MScOT, PhD</i>	
MENTAL HEALTH AND REHABILITATION	7
PODIUM PRESENTATIONS.....	7
1A01: Posttraumatic Stress Disorder in a Cohort of Self-Identified Veterans	7
<i>*Wolfson, C., PhD; Magalhaes, S., MSc; Scarfo, B., BA; VanTil, L., PhD; Aiken, A., CD, PhD; Feinstein, A., MD, PhD</i>	
1A02: Perception of Emotional Faces Induces Fear Circuit Hyper Connectivity in Soldiers with PTSD	7
<i>*Taylor, M.J., PhD; Wong, S., BSc; Shah-Basak, P., PhD; Jetly, R., MD; Pang, E.W., PhD; *Dunkley, B.T., PhD</i>	
1A04: An Exploration of Recovery from Posttraumatic Stress Disorder in Canadian Armed Forces Veterans: A Qualitative Inquiry Using Interpretive Phenomenological Analysis	8
<i>*Gilberto, A., BScPN; Clements, K., MA; Karpa, J., PhD (Cand); Enns, C., MSW</i>	

1C01: First Responder Well-Being: Understanding Firefighters Experience of Occupational Stress and Wellness.	8
<i>*Shields, D., PhD; Visser, D., MA; Kuhl, D., MD, PhD; Farina, S.</i>	
2A01: A Comparison of Mental Health Services use in Older Dependents and Spouses of Service Personnel in the Canadian Armed Forces to Age and Sex Matched Civilian Comparison Cohort.....	8
<i>*Mahar, A.L., PhD; Cramm, H., PhD; Whitehead, M., MStat; Groome, P., PhD; Kurdyak, P., MD, PhD; Aiken, A.B., PhD</i>	
2A02: Help Seeking for Mental Health Issues among UK Armed Forces Serving Personnel and Military Veterans	9
<i>*Stevenson, S., PhD; Dyball, D., BSc; Khera, C., BSc; Rona, R., FFP; Wessely, S., FMedSci; Fear, N., DPhilOxon</i>	
2A03: The Use of Mental Health Screening to Improve the Health of Military Personnel	9
<i>*Greenberg, N., Capt, MD; Rona, R.J., FFP; Burdett, H., PhD; Khondoker, M., PhD; Chesnokov, M., MA; Green, K., MSc; Pernet, D., MA; Jones, N., PhD; Wessely, S., FMedSci; Fear, N.T., DPhilOxon</i>	
2A04: Mental Health Services Use in the Canadian Armed Forces 2009-2015	10
<i>*Johnson, D., MSc (Cand); Zamorski, MA., MD; Garber, BG., MD</i>	
2C01: The Psychological and Social Impacts of Physical Activity Participation for Military Personnel with Illnesses and Injuries: A Scoping Review	10
<i>*Shirazpour, C.H., PhD; Tennant, E. M., BA; Aiken, A.B., PhD; Latimer-Cheung, A.E., PhD</i>	
2E04: Evaluating Client Perception of Care among Veterans, Military Members, and RCMP Members Receiving Treatment at the Carewest Operational Stress Injury Clinic	10
<i>*Novick, J., MA; Stewart, M., PhD</i>	
3A02: First-Hand Narratives of Operational Stress Injuries	11
<i>*Eichler, M., PhD; Whelan, J., PhD; Norris, D., PhD; Landry, D., MEd</i>	
3A04: Identifying Military and Veteran Family Cultural Competencies for Healthcare Providers.....	11
<i>*Tam-Seto, L., PhD (Cand); Cramm, H., PhD; Krupa, T., PhD; Lingley-Pottie, P., PhD; Stuart, H., PhD; Aiken, A., PhD</i>	
3A06: A New Approach to Well-being in Strategic Military Mental Health Policy: Making it Count.....	12
<i>Cosgrove, M.E., MCLinPsych</i>	
3D02: Contributions of Mental Health and Physical Health to Disability within the Canadian Armed Forces	12
<i>*Beliveau, P., SLt., DC, MSc; Boulos, D., MSc; Zamorski, M., MD, MHSA</i>	
3E06: Wizards in White Coats: The Canadian Defence Research Board and Early Research in Building Psychological Resilience.....	12
<i>Fitzpatrick, M., PhD</i>	
4A01: Sexual Functioning in Treatment-Seeking Veterans: The Role of Emotional Numbing	13
<i>*Richardson, J.D., MD; Ketcheson, F., MSc; King, L., MSc; Shneider, P., PhD; McIntyre-Smith, A., PhD; Elhai, J.D., PhD</i>	
4A02: Factors Related to Risky Drinking Behaviours among Canadian Armed Forces Members of the Regular Force.....	13
<i>*Richer, I., PhD; Thériault, F.L., MSc; Gauthier, M., PhD; Strauss, B.A., MSc</i>	
4A03: Alcohol use Trajectories among the UK Armed Forces	13
<i>*Palmer, L., MSc; Fear, N., DPhil (Oxon); Goodwin, L., PhD; Norton, S., PhD</i>	
4B01: Do Children and Youth with a Parent in the Canadian Armed Forces use Provincial Mental Health Services Differently than Civilians? A Retrospective Cohort Study	14
<i>Cramm, H., PhD; *Mahar, A.L., PhD; Whitehead M, MStat; Groome, P., PhD, Kurdyak, P., MD, PhD; Aiken, A.B., PhD</i>	
4B02: Mental Health of Canadian Children Growing Up in Military Families: A Qualitative Study.....	14
<i>*Cramm, H., PhD; Khalid-Khan, S., MD; Reddy, P., MD; Groll, D., PhD; Williams, A., MScOT</i>	
5A01: Findings of an Expert Panel on Suicide Prevention regarding Suicide Prevention Strategies in the Canadian Armed Forces Health Services.....	15
<i>*Holens, P., PhD; Sareen, J., MD; Turner, S., MA</i>	
5A02: Pre-enlistment Social and Psychological Risk Factors for Suicide among Canadian Armed Forces Members.....	15
<i>*Gottschall, S., PhD; Weeks, M., PhD; Rolland-Harris, E., PhD; McCuaig Edge, H., PhD</i>	
5A03: Commemoration and Contagion: Public Responses to Suicide within the Canadian Military	16
<i>Barrett, M., PhD (Cand)</i>	
5B01: Being a Parent of a Young Adult with Posttraumatic Stress Disorder	16
<i>*Dekel, R., PhD; Levavi, N., MA; Lavi, T., PhD</i>	
5B02: Family Impacts of Military-related Posttraumatic Stress Disorder: A Scoping Review	16
<i>Cramm, H., PhD; Houlton, C., MScOT(student); Flindall-Hanna, M., MScOT(student); Norris, D., PhD; *Tam-Seto, L., PhD(Cand)</i>	
5B03: Parental Posttraumatic Stress Disorder and its Impact on Children Growing up in Military-connected Families: A Qualitative Systematic Review	17
<i>*Cramm H., PhD; Godfrey, C., PhD; Murphy, S., MScOT; Dekel, R., PhD McKeown, S. MLS</i>	
5C01: Does the Road to Mental Readiness program work? Results from a Pilot Group Randomized Control Trial at Basic Military Qualification	17
<i>*Fikretoglu, D., PhD; Liu, A., PhD; Blackler, K., MSc</i>	

5C03: A Pilot Group Randomized Control Trial to Test the Efficacy of the Road to Mental Readiness (R2MR) Mental Health Training Program during Basic Military Qualification: Feasibility Findings.....	18
<i>*Blackler, K., MSc; Fikretoglu, D., PhD; Liu, A., PhD</i>	
6A01: Rapport final sur l'évaluation sommative du Programme d'aide aux vétérans en équitation thérapeutique	18
<i>*Blackburn, D., PhD; Robichaud, F., PhD; Sia, D., PhD; Tchouaket, E., PhD</i>	
6A02: Evaluation of the Psychological Outcomes of an Equine Therapy Program for Current and Former Australian Armed Forces with Mental Health Difficulties.	18
<i>*Romaniuk, M., DPsych; Evans, J., PhD; Kidd, C., BPsych (Hons); Gilmour, J., BPsych (Hons)</i>	
6A03: Quantifying the Effectiveness of Service Dogs on Posttraumatic Stress Disorder Related Symptoms and on their Impacts among Veterans: Preliminary Results of a 3-month Follow-up Assessment in the Context of a One-group Time-series Design Study	18
<i>*Gagnon, D.H., PhD; Vincent, C., PhD; Belleville, G., PhD; Auger, E., MD; Lavoie, V., PhD; Besemann, M., LCol, MD; Dumont, F., PhD; Champagne, N., ED, MA; Lessart, G., PhD (Cand)</i>	
6A04: The Value and Relevance of the Spiritual Dimension of Health and Well-being: Findings of a Literature Review and Expert Consultation	19
<i>*Brémault-Phillips, S., PhD; Koenig, H., MD; Pargament, K., PhD; Plante, T., PhD; Hamner, K., PhD; Smith-MacDonald, L., MA; M; Scarcella, F., BHK; Weis, J., MN; Sinclair, S., PhD; Olson, J., PhD</i>	
6D01: Moral Injury and Posttraumatic Stress Disorder: A Scoping Review	19
<i>Cramm, H., PhD; Monk, K., MScOT (Cand); Ferguson, E., MScOT (Cand); *Belanger, S., PhD</i>	
6D03: Operational Ethics: Effects of Scenario and Choice on Military Moral Decision Making	20
<i>*Thompson, M.M., PhD; Hendriks, T., MA; Blais, A.-R., PhD</i>	
POSTER PRESENTATIONS	20
P105: Opioid Crisis in Canada: Relevance to the Canadian Armed Forces	20
<i>*Afanasyeva, M., MD, PhD; Carew, M., MD; Rolland-Harris, E., PhD; Strauss, B., MSc; Theriault, F., MSc</i>	
P106: An Assessment of Component and Deployment-related Experiences on Mental Disorders among Serving CAF Personnel who returned from an Afghanistan Deployment.....	21
<i>Boulos, D., MSc</i>	
P107: The Relation between Dissociative Symptoms of Depersonalization and Derealization and Functional Disability among Military Members and Veterans with PTSD.....	21
<i>*Boyd, J.E., MSc; Protopopescu, A., BSc, BA; Jetly, R., Col., OMM, CD, MD FRCP; O'Connor, C., MA, MSc; Hood, H.K., PhD, CPsych; Lanius, R.A., MD, PhD; McKinnon, M.C., PhD, CPsych</i>	
P108: Increased Default Mode Network Connectivity in Magnetoencephalography is Associated with Concussion Severity	22
<i>*Dunkley, B.T, PhD, Da Costa, L., MD, Wong, S., BSc, Jetly, R., MD, Pang, E.W., PhD; *Taylor, M.J., PhD</i>	
P109: Developing an Occupational Therapy Trauma Intervention Framework	22
<i>*Edgelow, M., MSc; Cramm, H., PhD</i>	
P110: The Future of Community Mental Health and Wellness-A Report on Community Action	22
<i>Rostek, M., LCol, PhD; *Gamble, B., PhD</i>	
P111: Emotionally Focused Couple Therapy in the Treatment of Combat-related PTSD.....	23
<i>Irwin, T., Lt(N)</i>	
P112: Evaluation of a Two-Week Intensive Clinical Program for Veterans with Traumatic Brain Injury and Psychological Health Problems	23
<i>*Jervson, G., PhD; Clark, E., PhD; Bui, E., MD; Silverberg, N., PhD; Zafonte, R., DO; Simon, N., MD, MSc; Harvey, M., PsyD</i>	
P113: Medical Cannabis in the Treatment of Post-traumatic Stress Disorder	23
<i>Loheswaran, G., PhD; Rafat, B., MSc; *Singh, M., MD; Quinn, J., MD</i>	
P114: Canadian Forces Health Services Return to Work Occupational Therapy Program: A Vision For Future Canadian Forces Return to Duty Mental Health Occupational Therapy	24
<i>*Brown, H., PhD (Student), M.O.T., Reg. (Ont.); Besemann, M., LCol, MD</i>	
P115: Understanding the Trajectory of Care Prior to a Mental Health-related Psychiatrist or Pediatrician Consultation for Military-connected Children and Youth.....	24
<i>Cramm, H., PhD; *Mahar, A.L., PhD; Whitehead M., MStat; Kurdyak, P., MD, PhD; Aiken, A.B., PhD</i>	
P116: Does Membership in a Military-connected Family Increase the Risk of being a High Intensity user of Mental Health Services in the Public Health Care System?	24
<i>*Mahar, A.L., PhD; Cramm, H., PhD; Whitehead M., MStat; Kurdyak, P., MD, PhD; Aiken, A.B., PhD</i>	
P117: Moral Injury, Difficulties with Emotion Regulation, and Social Functioning in the Canadian Armed Forces (A Study in Progress).....	25
<i>*Protopopescu, A., BSc, BA; Jetly, R.; Col, OMM, CD, MD, FRCP (Cand); Boyd, J.E., MSc; Lloyd, C.; Nazarov, A., PhD; Rhind, S.G., PhD; O'Connor, C., MSc, MA; Hood, H.K., PhD, CPsych; Lanius, R.A., MD, PhD, FRCP (Cand); McKinnon, M.C., PhD, CPsych</i>	
P118: Advanced Data Analytics and Machine Learning Methods for Biological Research in Mental Health	25
<i>*Zhang, J., PhD; *Rhind, S.G., PhD; Boileau, I., PhD; Tong, J., PhD; Di Battista, A.P., PhD; Shiu, M.Y., MSc; Richardson J.D., MD; Jetly, R., Col., MD; Lanius, R.A., MD, PhD</i>	
P120: The Impact of PTSD on Dementia in Older Veterans: A Scoping Review	26
<i>*Ritchie, K., MN; Cramm, H., PhD; Aiken, A., CD, PhD; Donnelly, C., PhD; Goldie, K., PhD</i>	

P121: From Villains to Superheroes: The use of Graphic Novels in Promoting Resiliency and Supporting Recovery from Military Traumatic Exposure	26
<i>*Seagram, B., PhD; *Crawford, M.</i>	
P122: Design and Evaluation of a First-Responder Resiliency Pilot Program	27
<i>*Shields, D., PhD; Kuhl, D., MD, PhD; Spiess, T., Cpl (CAF Retd)</i>	
P123: Exploring the Role of Adaptive Sport in the Support and Care of Invictus Games Competitors and their Families	27
<i>*Shirazipour, C.H., PhD; Aiken, A.B., PhD; Latimer-Cheung, A.E., PhD</i>	
P124: Towards a Better Understanding of Moral Injury among CAF Members and Veterans Referred to The Royal's Operational Stress Injury Clinic in Ottawa	27
<i>*Vincent, C., MSW; *Daoust, J.P., PhD; Jansman-Hart, E., MSc</i>	
P125: Project Trauma Support: Addressing Moral Injury in First Responders an Update	28
<i>*Dentry, S.J., PhD; Joannou, M., MD; *Besemann, M., MD; Kriellaars, D., PhD</i>	
NOVEL HEALTH TECHNOLOGIES	28
PODIUM PRESENTATIONS.....	28
3C06: Long-term Impact on Social Participation using the JACO Robotic Arm on Powered Wheelchair Users with Upper Extremity Disabilities.....	28
<i>*Bérubé, C., OT, MA; Lettre, J., OT, MSc; Routhier, F., PEng, PhD</i>	
4C03: Structured Approaches to Resilience Assessment and Development through the Integration of Big Data Analytics, Immersive Simulation Environment and Haptic Garments	29
<i>*McGregor, Carolyn PhD; Bonnis, Brendan CD</i>	
4D04: A Randomized Controlled Trial of an Online Chronic Pain Treatment for Military, Police and Veterans	29
<i>*Buhler, J., B.A. hon; Holens, P., PhD; Klassen, K., PhD</i>	
5C02: R2MR Mobile Application for Arousal Control Training in Military Police	29
<i>*Granek, J., PhD; Martin, B., PhD; Jarmasz, J., PhD, Bae, J., Cpl; Guest, K., MSW; Bailey, S., LCol, MSW</i>	
6E01: Development of Novel Instrumentation for the Brain Injury Protection Evaluation Device Headform and Novel Dynamic Mechanical Characterization Techniques for Foam Liner Materials in Advanced Combat Helmets	30
<i>Azar, A. BEng; Bharadwaj, K., BEng; Ouellet, S., PhD; Satapathy, S., PhD; Hogan, J.; *Dennison, C.R., PhD</i>	
6E03: A Novel Aortic Occlusion Device for Combat Trauma Victims	30
<i>*Smith, S., Maj, MD, MSC; McAlister, V., LCol, MB; Power, A., MD, MBE</i>	
POSTER PRESENTATIONS.....	31
P126: Measurement of Pressure-flow Relationship for Gas Mask Technology on a Bench Test: Partitioning of the Different Parts of the Gas Mask and Comparison of Eight Canisters	31
<i>*Bourassa, S., Capt (Retd), CD, MScRN, PhD (Student); Bouchard, P.-A., RP; Lellouche, F., MD, PhD</i>	
P127: Hazard Assessment of High-Nitrogen Explosive Compounds: A Novel in Vitro Multi-Cellular Approach.....	31
<i>Maurais, T., Capt., MSPH; Donohue, K., PhD; Mayo, A., BSc; Wilbanks, M., MSc; Barker, N., MSc; Guan, X., PhD; Garcia-Reyer, N., PhD; Perkins, E., PhD; Gellach, C., LCol., PhD; Brueggemeyer, M., Col., MD; Gust, K., PhD; *Johnston, G., MHSc</i>	
P161: Clinical Guidelines for Using the Wii Gaming Console System in Military Rehabilitation.....	31
<i>Sinitiski, E.H., MASc; Cardinal, D., PT; Lambert, A.-M., Capt, PT; Mahoney, N., Capt, CD, PT; *Besemann, M., LCol, MD</i>	
OCCUPATIONAL HEALTH	32
PODIUM PRESENTATIONS.....	32
1C02: Mental Health among Canadian Public Safety Personnel: Taking a National Pulse.....	32
<i>*Carleton, R. N., PhD; Duranceau, S., MA; Ricciardelli, R., PhD; Cramm, H., PhD</i>	
1C03: The Elephant in the Room: Understanding Trauma Hierarchies and Unpacking Perceptions of "Legitimacy"	32
<i>*Ricciardelli, R., PhD; Carleton, R.N., PhD; Cramm, H. PhD; Mooney, T.</i>	
1C04: "Playing the System": Structural Factors Potentiating Stigma, Challenging Awareness and Creating Barriers to Care.....	33
<i>*Ricciardelli, R., PhD; Cramm, H. PhD; Mooney, T.; Carleton, R.N., PhD</i>	
2C03: The Application of Novel Movement Analysis Methods to Improve Soldier Physical Performance and Health.....	33
<i>*Graham, R., PhD; Fischer, S., PhD; Karakolis, T., PhD; Keefe, A., MSc; Bossi, L., CD., MSc</i>	
2E02: Veterans Trauma Network- UK	33
<i>*Hettiaratchy, S.P., FRCS; Swarbrick, R., MA; Leach, J., FRCGP; Moran, C., FRCS</i>	
3D01: The Effects of Six Hours of Mild Hypoxia below 10,000 ft on Cognition, Flight Performance, Subjective Symptoms, Mood and Fatigue.....	34
<i>*Bouak, F., PhD; Vartanian, O., PhD; Hofer, K.D., MA; Miles, R.</i>	
3E05: Enhancing Resilience for Military Reservists - The Conflict between Professional Soldier and Civilian Health Provider	34
<i>Lamarche, K., DNP, Capt, NP</i>	

4E03: Does a Military Career Protect You From Death? Causes of Death in the Canadian Armed Forces, 1976-2012	35
<i>*Rolland-Harris, E., PhD; Simkus, K., MPH; Weeks, M., PhD; VanTil, L., DVM MSc</i>	
6E04: Modelling the Trade-offs between Soldier Equipment, Mobility and Vulnerability in order to Mitigate Soldier Injury and Enhance Survivability.....	35
<i>*Bossi, L., CD, MSc; Karakolis, T., PhD; Jones, M., PhD; Keefe, A., MSc; Tack D., MSc</i>	
POSTER PRESENTATIONS.....	36
P119: Building Resilience in Situations of Ongoing Exposure: The Case of Police Officers and Hospital Staff	36
<i>Lavi, T., PhD</i>	
P128: The Health and Well-Being of Military Drone Operators and Intelligence Analysts: A Systematic Review	36
<i>*Armour, C. PhD; Ross, J. MSc</i>	
P129: The Impact of Occupational Exposure to Repetitive Low-level Blast Events in Breaching Instructors and Range Staff	36
<i>*Blackler, K., MSc; Vartanian, O., PhD; Tenn, C., PhD; Nakashima, A., MSc; Rhind, S.G., PhD; Smith, I., HBSc; Replete, V., BSc., Cpl; Thompson, K; Lam, Q., MSc; Caddy, N., RVT; Garrett, M., RN., BN; Saunders, D.; Shiu, M.Y., MSc; Di Battista, A.P., PhD; Jetly, R., Col., CD., OMM., MD., FRCPC</i>	
P130: Self-reported Exposure to Work and Leisure Noise and use of Hearing Protection among a Sample of Regular Force Canadian Armed Forces Personnel	37
<i>*Bogaert, L., PhD (Cand); Hawes, R.A., PhD (Cand); Lamontagne, P., Sgt (Retd); Blier, S., LCol</i>	
P131: Access to Care Among Military Health Service Providers: Preliminary Results of C4C Focus Groups	37
<i>Born, J., MSc; Frank, CK., PhD; *Richer, I., PhD; Nguyen, V., MSc</i>	
P132: Performance Coaching: Expanding Psychological Skills Training Beyond the Classroom Environment	37
<i>*Guest, K., MSW; *Khan, S., MSc; Bailey, S., LCol., MSW</i>	
P133: An Assessment of Op SOPRANO Respirable Hazards during the 2016 Juba Clashes in South Sudan.....	38
<i>*Johnston, G.K., Maj., MHSc; Lalonde, J.D., PhD</i>	
P134: Quantifying the Effects of Body Armour and Fighting Load on Joint Range of Motion, Stiffness, and Strength	38
<i>*Karakolis, T., PhD; Sy, A., BS; Maceda, E., BS; Bossi, L., CD, MSc</i>	
P135: DND's Drinking Water Disinfection App	39
<i>*Lalonde, J.D., PhD; Downey, H.K., MWO; Melançon, J.R.F., Maj., MD, MPH; Blier, J.J.S., LCol, MD, MPH</i>	
P136: Use of Personal Protection Measures in the CAF: Beliefs, Perceptions, and Behaviours Concerning Bite-prevention Measures and Hearing Protection Devices	39
<i>*McCuaig Edge, H., PhD; Born, J., MSc; Schofield, S., PhD; Banta, G., M.D., MSc</i>	
P137: Deployment Health Surveillance in Action: 18 months of Data from the Canadian Armed Forces Health Facility in Kabul, Afghanistan	40
<i>*Naicker, K., PhD (Cand); Valbuena, L., MPH; Carew, M., MD; Dubiniecki, C., MSc</i>	
P138: Hearing in Breaching Instructors and Range Staff Exposed to Repeated Low-level Blasts.....	40
<i>Nakashima, A., MSc; *Vartanian, O., PhD; Blackler, K., MSc</i>	
P139: Circulatory Disease Mortality in Canada's Serving and Released Armed Forces – Early Findings from CF CAMS II Comparing Mortality in the Canadian Armed Forces to the Canadian General Population	40
<i>*Simkus, K., MPH; Weeks, M., PhD; VanTil, L., DVM, Rolland-Harris, E., PhD</i>	
P140: Operating in the Arctic: Medical Readiness for Arctic Operations	41
<i>*Sullivan-Kwantes, W., MA; Goodman, L., PhD; Love, R., PhD</i>	
P141: Motor Vehicle Accident-Related Mortality in Serving and Released Males in the Canadian Armed Forces, 2000-2012: Comparisons with the Canadian General Population using the CF-CAMS II.....	41
<i>*Weeks, M., PhD; Simkus, K., MPH; Rolland-Harris, E., PhD</i>	
PHYSICAL HEALTH AND REHABILITATION	42
PODIUM PRESENTATIONS.....	42
1E02: Canadian Forces Health Services National Occupational Therapy Program: A Program Update by the Rehabilitation Program	42
<i>*Brown, H., PhD (Student), M.O.T., Reg. (Ont.) Besemann, M., LCol, MD</i>	
1E03: Tackling Repeated Healthcare Seeking for Low Back Pain – A Canadian Forces Health Services Centre Atlantic Pilot Initiative	42
<i>*Glover, S., MSc; Trudel, D., Maj, MSc; Godsell, P., Capt; Rowe, P., LCol</i>	
1E04: Exploring the Relationship between Complex Regional Pain Syndrome and Concussion: A Case Study.....	42
<i>Holly, J., MSc; Besemann, M., LCol., MD</i>	
2C04: HR-BASE Study: Physical Activity Levels of a Representative Sample of CAF Personnel	43
<i>*Martin, J., PhD; Gagnon, P., MSc; Spivock, M., PhD</i>	
3C01: First Steps in Understanding the Long-term Health of Amputees	43
<i>*McGregor, A.H., PhD; Hopkins, M., MSc; Vaidyanathan, R., PhD</i>	
3C02: A Novel Gaze and Movement Assessment Metric for Measuring Advanced Upper Limb Technologies: Prosthetic User Results	44
<i>*Hebert, J.S., MD; Valevicius, A.M., MSc; Boser, Q., BEng; Lavoie, E., BSc; Vette, A.H., PhD; Chapman, C.S., PhD; Pilarski, PM., PhD</i>	

3C03: A Novel Performance Assessment Tool for the Computer-Assisted Rehabilitation Environment System	44
<i>*Forero, J., PhD; Hall, J., BSc; Kelly, B., Kin-student; Vette, A.H., PhD; Hebert, J., MD FRCP</i>	
3C04: The Computer Assisted Rehabilitation Environment System: Opportunities and Challenges in Digital Medicine at The Ottawa Hospital	44
<i>Perry, K., MA</i>	
3C05: Emerging Findings from the Armed Services Trauma Rehabilitation Outcome Study (the ADVANCE Study) - A Longitudinal Cohort Study of Battlefield Casualties from Conflicts in Iraq and Afghanistan	45
<i>*Chesnokov, M., MA. Fear, N., PhD; Bennett, A, Gp. Capt., PhD, FRCP; Cullinan, P., MD</i>	
3D03: The Canadian Longitudinal Study on Aging Veterans' Health Initiative: A Platform for Research	45
<i>*Wolfson C., PhD; Aiken, A., CD, PhD; Feinstein, A., MD, PhD; VanTil L., PhD; Magalhaes, S., MSc, Scarfo, B., BA</i>	
4C01: Cardiovascular Risk Profile of the Royal Canadian Navy: Coordinating Health Strategies and Surveillance	46
<i>*Hawes, R.A., PhD (Cand); Cross, C.H.T., Cdr; Thériault, F., PhD (Cand); White, J., Maj; Neilson, M.; Siu, T. Lt(N)</i>	
4C02: Lessons Learned from a Mixed Methods Evaluation of a Canadian Armed Forces Weight Management Intervention	46
<i>*Gottschall, S., PhD; Dubiniecki, C., MSc; Thériault, F., PhD (Cand); Bogaert, L., PhD (Cand); Pierre, A., PhD; Carew, M., MD, MSc, FRCP</i>	
4D01: Association between Peripheral Blood Biomarkers and Advanced MRI Findings Post-concussion	47
<i>*Hutchison, M.G., PhD, Churchill, N., PhD, Di Battista, A.P., PhD, Schweizer, T.A., PhD, Rhind, S.G., PhD, Richards, D., MD</i>	
6C01: Preliminary Results from the Correlation between Analgesics & Long-term Function Study following Lateral Ankle Sprains Study.....	47
<i>Lui, K., Capt; *Robitaille, E., PhD; Debouter, K., Capt; Ma, J., RPh; Carpenter, A., Capt; Reid, R., Capt</i>	
6C02: Can a Knowledge Translation Intervention Improve the Evidence Based Management of Lateral Ankle Sprains by Canadian Armed Forces Physiotherapists?	47
<i>*Robitaille, E., PT, PhD; MacRae, M., Maj., PT, MSc; Rowe, P., PT, MRSc; Aiken, A., PT, PhD</i>	
6C03: Fractures in the Canadian Armed Forces: Operational Impact, Cost and Opportunities for Injury Prevention	48
<i>*Cousineau-Short, D., MPH (Cand); Hawes, R.A., PhD(Cand); Theriault, F., PhD (Cand)</i>	
6C04: Burden of Musculoskeletal Injuries on Deployment in 2015: An Analysis of the Canadian Armed Forces Deployment Health Surveillance System	48
<i>*Dubiniecki, C., MSc, Valbuena, L., DDS, MPH; Carew, M., MD FRPC; MSc Naicker, K., PhD (Cand)</i>	
POSTER PRESENTATIONS	49
P142: Increasing Severity of Traumatic Brain Injury Is Associated with an Increased Risk of Subsequent Headache or Migraine: A Retrospective Cohort Study of US Active Duty Service Members, 2006-2015	49
<i>*Beswick-Escanlar, V., LCdr, MD; Lee, T., PhD; Hu, Z., MS; Clark, L., PhD</i>	
P143: Strategies for Implementation of Programs of Care in the Active Military: A Scoping Review	49
<i>*Cancelliere, C., DC, PhD (Cand); Côté, P., DC, PhD; Mior, S., DC, PhD; French, S., BAppSc (Chiro), PhD; Sutton, D., BSc (OT), MEd, MSc</i>	
P144: Identifying Dysfunctional Breathing Patterns in a Chronic Pain Patient: A Case Study.....	50
<i>*Courchesne, I., Capt., BSc (PT); Ingimundarson, L., MCISC (MT), BHSc (PT), BSc (HK)</i>	
P145: Translating Knowledge about Concussion to the General Public: Lessons Learned from a National Concussion Awareness Program and Cross-Sectional Study	50
<i>*Cusimano, M.D., MD, PhD; Zhang, S., BM; Jing, R., PhD; Topolovec-Vranic, J., PhD; Ilie, G., PhD</i>	
P146: Ultrasound Guided Needle Fenestration Combined with Prolotherapy and Scraping for Treatment of Insertional Achilles Tendinopathy	50
<i>*Elliott, J., Cpl; Besemann, M., LCol, MD FRCP; MacGillivray, P., MSc, MD CCFP; Gupta, G., MD FRCP</i>	
P147: Musculoskeletal Injury Recurrence Rates in Active Duty Personnel.....	51
<i>*Trudel, R.D., Maj, MSc RRPT, Thibault, M.D.I., Capt, BScPT, Godsell, P., BscPT</i>	
P148: What Gets Measured Gets Managed – Meridium.....	51
<i>*Godsell, P., Capt, BSc (PT); MacPhail, C., MSc, CP(c); Parker, K., MSc, PEng; Besemann, M., LCol, MD FRCP; *Trudel, D., Maj, MSc</i>	
P149: Antibiotics in the Treatment of Patients with Low Back Pain Associated with Modic Changes: A Case Series	51
<i>*Gupta, G., MD FRCP; Jarzem, P., MD FRCS; *Meredith, S., Maj., Pharm D; Radhakrishna, M., MD FRCP; Besemann, M., LCol, MD FRCP; Elgueta, M.F., MD (Fellow); Charghi, R., MD FRCP; Chankowsky, J., MD FRCP</i>	
P150: Self-report of Asthma Diagnosis among Participants in the VA/DoD Airborne Hazards and Open Burn Pit Registry	52
<i>Jani, N., MPH; *Helmer, D., MD</i>	
P151: The use of Virtual Reality as a Treatment Medium for Autonomic Dysfunction across Three Diagnostic Groups: Clinical Case Studies	52
<i>*Holly, J, BHSc PT, MSc; Lambert, AM, Capt., BSc PT; Bridgewater, C., B.Eng., MSc</i>	
P152: Development of a Reliable Gait Assessment Protocol for Elderly Veterans with Dementia, using an Instrumented Walkway	52
<i>Walford, A., BSc; *Hong, J., BSc; Ghebrial, T., BSc; Millette, A., BSc; Chassé, K., PT BSc; Preuss, R., PT PhD</i>	
P153: Effects of 12-Weeks of DFit.ca Fitness Training on the Performance of FORCEcombat in Canadian Army Personnel	53
<i>*Laframboise, J., MSc, Walsh, E., MSc, Stockbrugger, B., MSc</i>	

P154: Virtual Reality Treatment for Complex Mild Traumatic Brain Injury: A Case Study.....	53
<i>Lambert, A.M., Capt, PT; Sinitski, E.H., MASC; *Bridgewater, C., MSc</i>	
P155: Does the Chronic Pain Self- Management Program and Back Class at Canadian Forces Health Services Centre Atlantic have an Effect on Patient Reported Self-efficacy using the Pain Self-Efficacy Questionnaire?	54
<i>*MacIntyre, K., BSc; Robinson, H., BN; Glover, S., MSc; Campbell, A., BSc; Godsell, P., Capt., BSc; Trudel, R., Maj., MSc</i>	
P157: Exploring Chiropractic Services in the Canadian Forces Health Services - Opportunities and Challenges	54
<i>*Mior, S.A., PhD; Vogel, E. PhD; Sutton, D., MSc; French, S., PhD; Côté, P., PhD; Nordin, M., Dr. Med. Sci; Loisel, P., MD; Laporte, A., PhD</i>	
P158: Benefits of a Dually-trained Occupational Therapist Assistant and Physiotherapist Assistant Collaborating with Physiotherapists and Occupational Therapists in Military Physical Rehabilitation Environments	54
<i>*Quinn, J., OTA & PTA; Godsell, P., Capt., BSc (PT); Trudel, R., Maj., MSc; Campbell, A., BSc (OT)</i>	
P159: Can a Survey of Non-respondents Inform Future Surveys?	55
<i>*Strauss, B.A., MSc; Naicker, K., MSc; Thériault, F.L., MSc</i>	
P160: In Garrison Management of mTBI in the Canadian Armed Forces: Trial of a Proposed Clinical Care Pathway.....	55
<i>Mahoney, N.A., Capt, PT; Crumback, D.J., Maj, PT; Courchesne, I., Capt, PT; Godsell, P.A., Capt, PT; Lambert, A.M., Capt, PT; *Besemann, M., LCol, MD</i>	
SOCIAL HEALTH AND WELLBEING	56
PODIUM PRESENTATIONS.....	56
1A03: Post-traumatic Growth and Posttraumatic Stress Disorder: A Scoping Review	56
<i>Cramm, H., PhD; Boushey, C., MScOT (Candidate); Rowe, J., MScOT (Candidate); *Norris, D., PhD; Tam-Seto, L., PhD (Candidate); Smith-Evans, K., MA (Candidate)</i>	
1B01: Support for the Families of UK Reservists: Too Much, Too Little or About Right?	56
<i>Vincent Connelly; *Nicola Fear; Zoe Morrison; Sarah Hennelly; Joana Smith</i>	
1B02: Exploring Family Resiliency within Canadian Armed Forces Veteran Families During the Military to Civilian Life Transition	56
<i>*Wynia, K. MA (Cand); Norris, D., PhD; Schwartz, K.D., PhD; Whelan, J., PhD; Cramm, H., PhD</i>	
1B03: Couples Overcoming PTSD Every Day Program: Evaluation of Group-Based Intervention to Support Couples Living with PTSD - Year Three.....	57
<i>Black, T., PhD</i>	
1B04: The Health and Well-being of Royal Navy/Royal Marine Spouses/Partners in the UK during Family Separation.....	57
<i>*Gribble, R., PhD; Fear, N.T., DPhil</i>	
1E01: The Soldier On Program	58
<i>Lagacé, G., MSM</i>	
2B01: Peer Support and Social Connections: The Operational Stress Injury Social Support Program (1 of 4)	58
<i>*Coulthard, J., PhD; Lee, J., PhD; Silins, S., PhD</i>	
2B02: "Every Woman in There, Their Life was Exactly Like Mine": Peer-support for Family Members of the Operational Stress Injury Social Support Program (2 of 4)	58
<i>*Silins, S., PhD; Lee, J.E.C., PhD; Coulthard, J., PhD</i>	
2B03: "Not Only Helping Someone Else": The Experiences of Peer Volunteers of the Operational Stress Injury Social Support Program (3 of 4)	59
<i>*Lee, J.E.C., PhD; Silins, S., PhD; Coulthard, J., PhD</i>	
2B04: Exploring the Impact of Peer Support and Shared Experiences Following an Injury: The Canadian Armed Forces and the Role of the Soldier On Program (4 of 4)	59
<i>*Coulthard, J., PhD; Woycheshin, D., PhD</i>	
2C02: Invictus Durability: The Role of Sport in Identity Reconstruction of Injured Military Personnel.....	60
<i>*Dentry, S., PhD; Kriellaars, D., PhD</i>	
2E03: Using a Population Health Approach for the Development of a Veteran and Family Health Strategy.....	60
<i>*Garland Baird, L., RN, PhD (Cand); Craig, J., BA, MPA</i>	
3A01: Veterans Who Are Caregivers: A Gap in Research	60
<i>*Albright, D. L., PhD; Hamner, K., PhD; Currier, J., PhD</i>	
3B01: Military Spouses: Coping with Service Members' Injuries (1 of 6)	61
<i>*Dursun, S., PhD; Wang, Z., PhD</i>	
3B02: Military Member's Illness and Injury and Spousal Well-Being and Divorce Considerations: The Role of Caregiver Burden (2 of 6)	61
<i>*Skomorovsky, A., PhD; Lee, J.E.C., PhD; Dursun, S., PhD</i>	
3B03: The Canadian Armed Forces Transition and Well-Being Survey (3 of 6)	62
<i>*Lee, J.E.C., PhD; Skomorovsky, A., PhD; Dursun, S., PhD</i>	
3B04: Families of Canadian Veterans - Building an Evidence Base (4 of 6)	62
<i>McIntyre, F., MA</i>	

3B05: Posttraumatic Growth among CAF Veteran Couples: The Role of Spousal Support (5 of 6).....	62
<i>Smith-Evans, K., MA (Cand); *Norris, D., PhD; Eichler, M.; Whelan, J., PhD</i>	
3B06: What is the Impact of Paternal PTSD on Family Functioning? (6 of 6)	63
<i>*Fear, N.T., DPhil; Parnell, N., MSc; Verey, A., MSc; Rye, K., MSc; Parker, B., Chui, Z., MSc; Pernet, D., BSc; Chesnokov, M., MA</i>	
3D04: High Cost Users of VAC Health Care.....	63
<i>*MacLean, MB., MA (Econ); VanTil, L., DVM, Epi; Macintosh, S., BA; Poirier, A.; McKinnon, K.</i>	
3E03: Group Adventure Therapy for Veterans Suffering from Chronic PTSD	64
<i>*Shorer, S., MSW, PhD; *Shacham-Shoer, M., MSW, PhD; Gotfried, A.; Reshef, A., MD; Gamliel, M., MSW; Bloch, B., MD</i>	
3E04: Equi-Assist: An Equine Facilitated Treatment Program to Strengthen Resilience and Enhance Coping and Communication Skills for Military Families (A Pilot Study).....	64
<i>Wideman, G., PhD</i>	
4A04: Studying In-service Offending Behaviour in the UK Military	65
<i>*Kwan, J., MSc; Pernet, D., BA; Hull, L., MSc; Wessely, S., FMedSci; Fear, N.T., DPhilOxon; MacManus, D., MRCPsych</i>	
4B03: More Than Just Surviving: Exploring Resilience and Developmental Assets in Military-Connected Youth.....	65
<i>*Schwartz, K., PhD; Stelnicki, A., MSc; Wheeler, B., BA</i>	
4B04: Adolescents' Subjective Experiences toward Deployment and Relocation.....	65
<i>Bullock, A., PhD; *Skomorovsky, A., PhD</i>	
5D01: Well-being of Children from Canadian Armed Forces Single-parent Families: The Mediational Role of Parental Well-being.....	66
<i>Skomorovsky, A., PhD</i>	
5D02: Written in Light: A Focused Visual Ethnography Gaining Adolescent Perspectives on Reintegration after a Parental Deployment to Afghanistan with the Canadian Armed Forces	66
<i>Hawryluk, H., PhD (Cand)</i>	
5D03: Who Knows Best? Examining the Similarities and Differences between Parent and Child Self-reports of Functioning in Children from Military Families	67
<i>*Stelnicki, A., MSc; Schwartz, K.D., PhD; RPsych</i>	
5E02: Adapting the Collective Impact Model to Veterans Services: The Case of AmericaServes.....	67
<i>*Armstrong, N., PhD; McDonough, J., MA, COL, USA (Ret.); *Cantor, G., MPH; Chapman, B., RN, MPH</i>	
POSTER PRESENTATIONS	67
P162: Shared Health Care Responsibilities for Veterans and Their Families.....	67
<i>Kelly, M., Policy Analyst; *Barry, D., Policy Analyst</i>	
P163: Veterans Financial Benefits 2016 Actuarial Analysis	68
<i>Cue, C., Col (Retd)</i>	
P164: Operation Family Doc	68
<i>Hylland, K., BSW</i>	
P165: Monitoring the Well-being of Veterans – A Veteran Well-being Surveillance Framework.....	69
<i>*MacLean, L., MSc; Roach, M.B., MBA, MA</i>	
P166: Assessing the Needs of Canadian Armed Forces Communities.....	69
<i>Manser, L., MM</i>	
P167: Feeling of Belonging to the Military Community: A Measure of Self-rated Health and the Perception of Crime within the Neighbourhood	69
<i>Ouellet, E., Capt, MA</i>	
P168: A Qualitative Analysis of Factors Affecting Canadian Army Reservists' Well-being	70
<i>*Pickering, D., PhD; D'Agata, M., MSc; Blackler, K., MSc; Nazarov, A., PhD; Richardson, M. LCol, MA</i>	
P169: Institutionalizing Veteran Well-Being into the Policy Planning Cycle	70
<i>Roach, M.B., MBA, MA</i>	
P170: Resilience in Military Children: Which Factors best Protect against the Development of Problems?	71
<i>*Stelnicki, A., MSc; Schwartz, K., PhD, R.Psych; Wheeler, B., BSc</i>	
TRANSITION FROM MILITARY TO CIVILIAN LIFE	71
PODIUM PRESENTATIONS.....	71
1D01: Experiences of Female CAF Veterans: Gendering Military-to-Civilian Transitions	71
<i>Eichler, M., PhD</i>	
1D02: Veterans' Identities, Well-being and Recognition: Findings of the 2016 VAC-CIMVHR Research Theme Working Group	71
<i>*Thompson, J., MD; Lockhart, W., BA BEd; Roach, M.B., MBA MA</i>	
1D03: Rethinking the Concept of Identity among Veterans in Transition	72
<i>Rose, S., PhD</i>	

1D04: Occupational Identity and Military-Civilian Transition	72
<i>*Dunn, R., MSc; Brooks, S., PhD; Goodwin, L., PhD; Greenberg, N., MD</i>	
2D01: From Service to Civilian Life: Emerging Patterns from an Australian Investigation Examining Common Factors among Those Who Transition Well in the Context of Cultural Reintegration and Psychological Adjustment	72
<i>Romaniuk, M., DPsych</i>	
2D02: Duelling Devotions – Military Service, Family and Adaptation to Civilian Life after the Military	72
<i>Bérubé, N., PhD</i>	
2D03: Determinants of Successful Transition Qualitative Study	73
<i>Squire, S., MA</i>	
2D04: From Here to Eternity: Impacts of Veteran’s Mental Health on Families in Military to Civilian Transition	73
<i>Schwartz, K., PhD; *Norris, D., PhD; Cramm, H., PhD</i>	
2E01: Supporting Medically-Releasing CAF Members and Their Families - A National Pilot Project.....	74
<i>Ogilvie, L., MA; *Manser, L., MM</i>	
3E01: The Canadian Armed Forces-Veterans Affairs Canada Joint Suicide Prevention Strategy: A Roadmap for Collaboration	74
<i>*Heber, A., MD, LCol (Retd); Fillion, J., LCol (Retd); Cameron, D., LCol; Thompson, J., MD; Briere, S., PhD; Downes, A., MD, Col; Jetly, R., MD, Col; Purdy, J., MD, Maj; O’Connor, N., PhD; Leahy, M., MSc, Maj</i>	
4D03: Chronic Pain in Canadian Veterans.....	75
<i>*Pedlar D. PhD; Thompson, J. MD</i>	
4E01: Health of Canadian Veterans Released after 1953.....	75
<i>*VanTil L, DVM, MSc (Epi); MacLean MB, MA (Econ); Sweet J, MSc; McKinnon K.</i>	
4E02: «New Faces Come Back»: The Return of Royal Canadian Air Force Aircrew Burn Casualties in 1946.....	75
<i>Mayhew, E., PhD</i>	
5E01: The “Shaping Purpose” Program for Military Participants Transitioning from Military to Civilian Life. A CIPP Model Program Evaluation	76
<i>*Shields, D., PhD; Frender, J., MA; Garsch, A., Capt (Retd)</i>	
POSTER PRESENTATIONS.....	76
P174: Mental and Physical Durability during an Antarctica Expedition.....	76
<i>*Dentry, S., PhD; Kriellaars, D., PhD; Besemann, M., LCol, MD</i>	
P175: Les Sentinelles : La fin de l’itinérance chronique des anciens combattants à Montréal.....	77
<i>*Fewster, B., MA, MBA; Duchesne, A., MScPH; Paulin, M., PhD</i>	
P176: The Diversity of Commitment(s) of Canadian Military and Veterans: The Impacts of Social Representations of Civilian Support	77
<i>Giroux-Lalonde, Vincent, M.A., PhD (Cand)</i>	
P177: Emploi et qualité de vie psychologique chez les vétérans	77
<i>*Lacroix, C., B.A.psy; Lavoie, V., PhD; BelleVille, G., PhD</i>	
P178: Life After Service Studies 2016.....	78
<i>*MacKinnon, A., MBA; VanTil, L., DVM, MSc(Epi)</i>	
P179: Family Life After Service: Secondary Analysis of the LASS 2016 Survey.....	78
<i>Schwartz, K., PhD</i>	

Asterisk indicates *presenting author(s)

1A00 indicates presentation session and its identification number

P100 indicates poster and its identification number

ADVANCES IN PRIMARY AND TRAUMA CARE

Podium Presentations**6E02: Goal-directed Damage Control Resuscitation in Operation Inherent Resolve. Platelet Concentrates are not Required to Reverse Severe Trauma Induced Coagulopathy***Beckett, A., Maj., MD*

Department of National Defence; McGill University

Introduction: Hemorrhage is the most common cause of preventable death on the battlefield. Forward damage control resuscitation (DCR) provided by Forward Surgical Teams and Role 2 Medical Treatment Facilities is essential to control ongoing hemorrhage and reverse trauma induced coagulopathy. However, ratio driven massive transfusion protocols (MTPs) can lead to wasted blood product in environments without robust cold chain support. In this retrospective descriptive study, we report the Royal Canadian Medical Service experience on Operation Inherent Resolve using ROTEM to provide goal directed resuscitation using Fibrinogen Concentrate (FC) (RiaSTAP), Fresh Whole Blood (FWB), Packed Red Blood Cells (PRBCs) and Fresh Frozen Plasma (FFP).

Methodology: Retrospective review of the Role 2 database during period of 1 Nov 2016- 15 Feb 2017 was completed, and patient charts were reviewed. All patients who received blood products or had a ROTEM study were included. Detained personnel and patients under 16 years of age were excluded. Chain of Command approval was obtained for the study. Data was entered, and descriptive statistics (mean, IQR) were conducted using SPSS (Rialto, California).

Results: 6 patients were admitted and underwent resuscitation at this time, mean SBP, HR, temp was 36°C, respectively. The MTP was activated for 5 patients, 3 patients met the definition for a massive transfusion. ROTEM analysis (EXTEM and FIBTEM) was used in 5 patients, with a mean of 4 times per patient. 4 gm (mean/pt) of FC was administered, 6 units (mean/pt) of PRBCs and 5 units (mean/pt) of FFP. 8 units (mean/pt) of FWB was given without complications. Tranexemic acid (TXA) was given in 100% of patients. ROTEM results revealed XXX patients with hyperfibrinolysis, with correction using TXA infusions and FC. Delays were noted in obtaining rapid access to plasma, leading to lower ratios of FFP:PRBCs in 2 cases.

Conclusion: To our knowledge, this is the first report of goal-directed damage control resuscitation in Operation Inherent Resolve. Using ROTEM to guide reversal severe coagulopathy in Role 2 MTFs is feasible in the combat setting, even without platelet concentrates. However, continue to provide ready access of thawed plasma or freeze-dried plasma to avoid low ratio resuscitation. Using FC in conjunction with FFP, PRBCs, FWB and TXA can reverse severe trauma-induced coagulopathy without platelets.

Poster Presentations**P101: Exploring Pharmacogenetic Testing for the Treatment of Depressive Symptoms in Post-traumatic Stress Disorder Patients**

**Cheema, SY, HBSc¹, Zai, CC, PhD^{1,2}, Tiwari, AK, PhD^{1,2}, Zai, GC, MD, PhD^{1,2}, Herbert, D, HBSc¹, Shahmirian, A, MHSc¹, Sherman, M, HBSc¹, Tampakeras, M, HBSc¹, Shaikh, SA, HBSc¹, Freeman, N, MSc¹, King, N, HBSc¹, Mueller, DJ, MD, PhD^{1,2}, Kennedy, JL, MSc, MD^{1,2}*

¹Centre for Addiction and Mental Health; ²University of Toronto

Introduction: The prevalence of post-traumatic stress disorder (PTSD) and other anxiety disorders, and the extent of comorbidity of mood and anxiety disorders in the Canadian Armed Forces personnel have been increasing since 2002. PTSD being one of the higher reported disorders at 11% lifetime prevalence, it is important for clinicians and allied health professionals to seek the best treatment methods early on. Medications can help with symptoms of depression and anxiety often experienced by patients with PTSD, but may result in adverse reactions, side-effects and non-adherence.

Methodology: The Individualized Medicine: Pharmacogenetic Assessment & Clinical Treatment (IMPACT) is a research study at the Psychiatric Neurogenetics Research section of the Centre for Addiction and Mental Health (CAMH), which uses genetic testing to assay six liver enzymes and two serotonin system genes related to the action of psychiatric medications. Within the IMPACT study, 83 PTSD patients were referred by their physicians and received the GeneSight Pharmacogenetic Test report. These patients were assessed for depressive symptom severity using the Beck Depression Inventory at baseline, 4 weeks, and 8 weeks.

Results: Among these 83 patients, the distribution of liver enzyme gene metabolizer status are as follows: for CYP2D6: 45 extensive metabolizers, 21 intermediate metabolizers, 8 poor metabolizers, 5 ultra-rapid metabolizers; for CYP2C19: 63 extensive metabolizers, 14 intermediate metabolizers, 4 poor metabolizers, and 2 ultra-rapid metabolizers. A subset of these patients have completed the follow-up assessments with detailed medication information, where we found a trend for patients whose medications were guided by the Pharmacogenetic test report to have greater decrease in depressive symptom severity compared to patients whose medications were not guided by the report (40.46% vs 6.33%, $p=0.061$).

Conclusion: Our preliminary findings support the use of pharmacogenetic testing to improve treatment outcomes in patients with PTSD.

P102: The Involvement of Service Dogs in the Treatment of Posttraumatic Stress Disorder Among Veterans**Gillet, J., PhD; McKinnon, M., PhD; Kates, N., BM*

McMaster University

Introduction: Increasingly individuals are using service animals to reduce the symptoms of mental illness. Many veterans living with post-traumatic stress disorder (PTSD), for instance, incorporate service dogs in their approach to managing their condition. Drawing on current literature, this presentation outlines issues arising from the involvement of service dogs in the treatment of trauma. Research on the contribution of service dogs to the management of PTSD has primarily concentrated on evaluating effectiveness. In light of this work, our presentation points to questions beyond effectiveness that are relevant to the involvement of service dogs in the treatment of trauma.

Methodology: A systematic literature was conducted on three intersecting areas: (1) involvement of service dogs in the management of mental health; (2) the use of the service dogs in the treatment of PTSD; (3) service dog participation in clinical settings like in patient treatment programs. Themes relevant to the implications of using service dogs in treatment care beyond the question of effectiveness were identified.

Results: The systematic review of literature identified several issues: (1) It is evident that the presence of a service dog significantly changes the nature of care (medical encounter, for instance) Few studies, however,

explore this dynamic and its implications for care, for example, in an inpatient setting. (2) Similarly, studies show that patients and providers incorporate service dogs into the management of mental health; yet, there is a little work on best practices for care. (3) The effect on staff and clinicians of service dogs in care is another issue that is raised but not sufficiently explored in research. (4) The policies and regulations regarding the rights of patients to bring service dogs into care setting, and under what circumstances, is very contentious and unclear. There is need for clear policy recommendations for hospitals and care facilities as they related to current legislation. (5) The institutional classification of dogs in a clinical care and health management context is similarly vague and diverse: they are considered care partners, or devices, or treatments, or family members. Each different definition has formal and informal implications for care that are unclear and require further analysis. (6) A key issue in the literature is the need for more attention to the health and welfare of service dogs themselves as they are being used increasingly in treatment and care of mental illness.

Conclusion: Questions remain on the complexities of involving service animals in the treatment of PTSD. Further research is required on the social, legal, welfare and clinical dimensions of their role in health care. One way forward is to conduct longitudinal and mixed methods studies in controlled clinical environment for the purposes of developing a set of policies and best practices so that all can benefit.

P103: Biological Response to Stress during Battlefield Trauma Training: Live Tissue vs. High Fidelity Patient Simulator

*Peng, H., PhD¹; Tenn, C., PhD¹; Vartanian, O., PhD¹; Rhind S., PhD¹; Jarmasz, J., PhD¹; Smith, I., BSc¹; Blackler, K., MSc¹; Bouak, F., PhD¹; Sullivan-Kwantes, W., MSc¹; Saunders, D., BSc¹; Caddy, N¹; Blais, A-R., PhD¹; Pannell, D., Capt¹; Tien, H., MD² Beckett, A., Maj, MD³

¹Department of National Defence; ²Sunnybrook Health Sciences Centre, ³McGill University

Introduction: Combat casualty care training may impose stress on medics. It is unclear whether these stressors vary with selected training modalities and whether stress levels impact operational performance and skill uptake. We conducted a pilot study to compare the effects of a live tissue (LT) model with a high fidelity patient simulator (SIM) on stress, performance and skill uptake during battlefield trauma training in an operating room (OR) and a simulated battlefield scenario (field). This presentation focuses on the effects of LT and SIM training on stress responses, as measured by salivary and blood biomarkers.

Methodology: Twenty healthy Canadian Armed Forces Medical Technicians participated in combat casualty life-saving training on either LT or SIM in the OR followed by testing on the same or different modalities in the field. Stress levels were quantified at baseline, pre-, post-OR, and pre- and post-field using the following biomarkers: amylase (AMY, epinephrine (E), norepinephrine (NE) and neuropeptide Y (NPY).

Results: We found that both OR training and field testing resulted in significant stress, as indicated by elevated levels of all biomarkers relative to baseline ($p < 0.05$). Compared to pre-OR levels, we observed an increase in plasma levels of E, NE and NPY ($p = 0.013$, 0.023 , 0.004 , respectively), and a trend toward an increase in salivary AMY level ($p = 0.073$) at post-OR for the LT training, while the SIM group showed increases in plasma levels of NE and NPY ($p = 0.003$ and 0.008); and an almost significant increase in plasma E level ($p = 0.064$). No differ-

ences in biomarker levels were found between LT and SIM groups at both pre- and post-OR. Compared to pre-field levels, field testing on the same modality as that in the OR resulted in increases in the plasma NPY level ($p = 0.015$), while testing on the different modality increased AMY, E and NPY levels ($p = 0.016$, 0.05 , 0.018 , respectively). The different modality group showed an increasing plasma NE concentration than the same modality group, but did not achieve significance ($p = 0.083$). The plasma NE levels remained above baseline levels 24 h after the field testing on both the same and different modalities ($p = 0.04$ and 0.002).

Conclusion: Combat casualty training led to significant stress, as indicated by elevated levels of various biomarkers. The training modalities did not result in any differences in stress levels, while the switch in training modalities appeared to elicit greater stress as implied by specific biomarkers (amylase, catecholamines). A comparative study with a larger sample size is warranted.

P104: MASCAL: A Manual for a Customizable, Low Tech, High Fidelity Simulation Training Program to Prepare Civilian Hospitals for Mass Casualty Events

Hilsden, R., Maj, MD^{1,2}; *Smith, S., Maj, MD^{1,2}; McAlister, V., LCol, MB^{1,2}

¹Royal Canadian Medical Service; ²University of Western Ontario

Introduction: Simulation training was adopted by military medicine from its combat arms comrades over a century ago. It has since become popular in civilian health care environments. Full scale simulation training has high fidelity but it is costly in time, space and resources. Full scale simulation is commonly used outside of the hospital to prepare for mass casualty events (MCE) but is difficult to apply within the hospital. We developed a low tech, high fidelity alternative to full scale simulation. Here we sought to prepare a manual to permit civilian hospitals create their own preparatory exercises.

Methodology: We combined our experience of MCE in the combat environment to develop a course for the Canadian Surgery Forum (CSF). We formed a writing group to prepare an explanatory manual that would allow institutions customize preparatory exercises using minimal resources. The group determined core and adjunct objectives. We reviewed the CSF course to create a template for chapters dealing with the core objectives. These core chapters were bookended with introductory and adjunctive chapters using a similar template.

Results: Core objectives were determined to be: code orange (alarm and callback); triage; creating surge capacity; critical resource prioritization; supervision of walking wounded; and palliative care. Adjunct objectives included: security; public relations; and bottle-neck identification. The standard format was to start with a didactic session (briefing), followed by a scripted exercise and completed with standardized debriefing. Mixing formats and choreography were found to be essential to maintain momentum and minimize delays between exercises. These exercises required the audience to consist of different trades within the hospital.

Conclusion: It is possible to create a novel manual that permits civilian hospitals to prepare for MCE in a manner relevant to their situation. Minimal resource and space is required to create exercises that give a heightened sense of realism, meeting the objectives of preparing for MCE. Low tech exercises can be scaled to the size of the audience, either whole hospital or units, without losing fidelity. Mixing trades allows each to understand the roles and responsibilities of other trades within the hospital.

THE ETHICS OF HEALTH CARE

Podium Presentations

3E02: Treating Moral Injury and Posttraumatic Stress: Exploring a Model That Works

Graeser, N., MDiv; MSW, DSW (Cand); *Lipana, N., DSW (Cand)

University of Southern California (USA)

Brief Description: This presentation will describe the California-based, Citrus Heights Vet Center's approach to treating veterans and their families. The Vet Center addresses posttraumatic stress disorder (PTSD) and moral injury as separate phenomena requiring overlapping and simultaneous interventions. We will explore the center's three-phase, two-year, family level intervention providing clinicians, families, and communities a model for implementing the concepts central to moral injury treatment. The presentation will examine the models and core components used over the last sixteen years and some preliminary outcomes at this time. Lastly, we will close with recommendations for future research on similar interventions, the development of standardized screening criteria to assist clinicians in diagnosing moral injury as well as present a tool to evaluate veterans post-therapy. Presenters lead the session in discussion of the model by reading actual letters written by veterans who completed the program.

Clinical Outcomes: Reduced anxiety, sleep disturbance, and frequency and intensity of family conflicts.

Patient Population: Patient population includes combat veterans and survivors of military sexual assault. Family members of these groups are included as well because the program administers psychoeducation and conflict management skills during the service member's participation in the core moral injury program.

Conclusion Recognizing and addressing the disparities and similarities of PTSD and moral injury is fundamental to healing veterans suffering from these afflictions separately or co-morbidly. Lacking this knowledge, standardized screening tools, and evaluation of programs that target moral injury, we will continue to view the mental and moral health of our veterans through the wrong lenses, leading to incomplete diagnoses, with the wrong treatments in the hands of the wrong people. Clinical settings often lack the tools for treating complex concepts like forgiveness and morality that espouse moral injuries.

6D02: Neural and Behavioural Correlates of Moral Injury in Military Members and Veterans

*McKinnon, M.C., PhD, CPsych^{1,2,3}; Jetly, R., Col, OMM, CD, MD, FRCPC^{4,5}; Rhind, S., PhD⁴; Nazarov, A., PhD⁴; Lloyd, C., MSc¹; Protopopescu, A., BSc^{1,2}; O'Connor, C., MA, MSc³; Hood, H., PhD, CPsych^{1,3}; Lanius, R., MD, PhD^{6,7}

¹McMaster University; ²St. Joseph's Healthcare (Hamilton); ³Home-wood Health; ⁴Department of National Defence; ⁵University of Ottawa; ⁶Western University; ⁷Lawson Health Research Institute

Introduction: Traditional theories surrounding Post-Traumatic Stress Disorder (PTSD) follow a bio-psycho-social model, focusing on how prolonged exposure to combat and other repeated traumas can lead to fear conditioning and anxiety (Brewin et al., 2003; Dalgeish et al., 2004; Stein et al., 2012). In recent years, it is increasingly recognized that the psychological effects of deployment extend beyond fear-related conditioning and anxiety caused by undergoing potentially life

threatening positions during deployment. Instead, military members can also encounter situations that come into conflict with their own deeply held beliefs around what is and is not morally/ethically correct behaviour, which in turn can affect their psychological and social functioning post-deployment. Here, "moral injury" (Litz et al., 2009; Dresher et al., 2011), is a pattern of psychological functioning believed caused by events where the individual perpetrated, witnessed, failed to prevent, or learned about later and that occurred while on operations. These events are thought to violate deeply held beliefs about one's own morality or ethical standards and cause the individual significant inner conflict. Our group recently published a systematic review (Nazarov et al, 2015) that confirmed strong evidence linking direct and indirect exposure to such situations and feelings of guilt and shame; feelings that have in turn, been linked with a variety of adverse mental health outcomes, including PTSD. The goals of our study are three-fold: i) to better characterize the psychological and functional sequelae associated with moral injury among military members and veterans; ii) to examine patterns of behavioural response in the same population to moral dilemmas similar to those encountered during combat operations; iii) to conduct neuroimaging studies examining patterns of neural response to morally injurious and non-morally injurious traumatic events.

Methodology: A sample of 46 Canadian military members and veterans underwent a comprehensive assessment including measures of symptom severity, moral injury, and global functioning. Military members and veterans will next undergo behavioural testing and functional neuroimaging examining responses to morally injurious and non-morally injurious events.

Results: Data analysis is ongoing for the results of the comprehensive assessment and will be presented at the conference. Initial behavioural findings will also be reviewed. First responders exposed to a moral injury measure noted a similarity of responses to these events among first responders; a first-responder version is now in construction.

Conclusion: These findings have important implications for the prevention and treatment of PTSD-related symptoms in military samples. Early intervention efforts may have the potential to ameliorate these effects.

6D04: Positive Mental Health in CAF Members at Risk for Moral Injury

*Nazarov, A., PhD¹; Fikretoglu, D., PhD¹; Liu, A., PhD²

¹Department of National Defence; ²McGill University

Introduction: There is accumulating evidence that suggests a link between moral injury (the psychological distress caused by any action or inaction that transgresses a moral standard) and PTSD, depression, and suicidal ideation. Individuals exposed to morally injurious events commonly report symptoms of shame, feelings of worthlessness, and may exhibit self-blame and social withdrawal. Evidence suggests that individuals who experience shame in relation to a traumatic event or a moral transgression may undergo a re-definition of their inner representations of the world and the self, which may disrupt hedonic (i.e., subjective experiences of happiness) and eudaimonic (i.e., life direction and meaning) well-being. Critically, current treatment interventions for PTSD have centred predominantly on fear-based symptoms and may not be sufficient for individuals exposed to this unique class of psychological trauma. The objective of this study is to investigate positive mental health (i.e., hedonic and eudaimonic well-being) in deployed CAF personnel at risk for moral injury.

Methodology: The 2013 Canadian Forces Mental Health Survey data on previously deployed personnel will be analyzed. The impact of exposure to morally injurious events will be explored in relation to past-month perceived positive mental health (PMH). The 14-item Mental Health Continuum-Short Form assessed PMH across three factors: hedonic emotional well-being (e.g., “you feel satisfied with your life”), eudaimonic psychological well-being (e.g., “your life has a sense of direction or meaning to it”), and eudaimonic social well-being (e.g., “the way our society works makes sense to you”). A series of multivariate regressions will be conducted, controlling for exposure to other deployment and non-deployment-related psychological trauma, military factors, and sociodemographic variables.

Results: Analyses are currently underway. Preliminary results demonstrate that approximately 58% of CAF personnel deployed overseas between 2001 and 2013 were exposed to events that heighten the risk of moral injury (e.g., 39% saw and were unable to help ill or injured women or children; 32% felt responsible for the death of Canadian or ally personnel; 6% had difficulty distinguishing between combatants and non-combatants) during deployment.

Conclusion: The results of this study will yield a more comprehensive understanding of the impact of moral injury on positive mental health, subjective well-being, and inner representations of the world and the self. Results may guide the development of novel treatment approaches that target symptoms of shame and facilitate meaning-making in the aftermath of trauma.

6D05: A Qualitative Investigation of Moral Injury Using a Preliminary Clinician-Based Survey

*McIntyre-Smith, A., PhD¹; Berke, D., PhD²; Yeterian, J., PhD²; Gifford, S., PhD¹; King, L., MSc¹; Richardson, J. D., MD¹; Nelson, C., PhD¹; St. Cyr, K., MSc¹; Litz, B., PhD²

¹Parwood Institute Operational Stress Injury Clinic; ²Veterans Affairs Boston Healthcare System

Introduction: Historically, the conceptualization of posttraumatic stress disorder (PTSD) emphasizes danger and fear as integral components. However, not all events that contribute to PTSD are life-threatening and fear-based. Modern warfare invites more complex traumas involving violation to moral and ethical values. These so-called *moral injuries* can evoke serious psychological distress and warrant further examination of their occurrence and effects on service-members/veterans and their families.

Methodology: A clinician-based moral injury survey will be administered to 25 clinicians working at an Operational Stress Injury (OSI) clinic. Clinicians will be asked to document their experiences working with treatment-seeking service members and veterans. The vast majority of survey items are open-ended questions focusing on morally injurious events committed by a service member/veteran (*self* questions; e.g., treated the helpless with disrespect), or in the presence of a service member/veteran (*other* questions; e.g. witnessed another person treat the helpless with disrespect). This study has the following aims: 1) to identify types and frequencies of morally injurious events present among treatment-seeking veterans and service members; 2) to gain deeper insight into the construct of moral injury; and 3) to employ a bottom-up approach in order to generate content for a future moral injury outcome measure.

Results: Quantitative data (e.g., frequency of events) will be reported to describe the sample and contextualize qualitative analyses. Qualita-

tive data will be analyzed using a grounded theory framework; themes and direct quotations will be presented.

Conclusion: The concept of moral injury, and the events that evoke it, warrants further research attention. Results obtained from the present investigation will provide important insight towards the theoretical understanding of moral injury, and ultimately help guide the construction of a reliable and valid measurement tool for use in clinical practice and research.

Poster Presentations

P171: Military Humanitarian Civic Assistance Programs: Can the Provision of Care ever be Wrong?

*Clifford, J., MWO, PhD (Student), MA, MPH^{1,2}

¹Carleton University; ²Department of National Defence

Brief Description: Military humanitarian civic assistance programs are short-duration medical programs that utilize military medical personnel to provide medical assistance to a population affected by war, conflict or disaster. The U.S. military has been conducting humanitarian civic assistance missions since the Vietnam War - and over the passage of time, the authority for the military to conduct humanitarian civic assistance programs has been incorporated into both military doctrine and government regulations and policy in the U.S and in Canada.

Today the Canadian Armed Forces (CAF) conduct humanitarian civic assistance programs around the globe. Academics, and in some instances, military healthcare providers, have long held the position that there are ethical challenges inherent within military humanitarian civic assistance programs. Some critics have claimed that these programs negatively impact the affected population's expectations regarding the capabilities of their national health services. Others suggest that these programs are effectively *parachute programs* and that their short duration renders them unable to improve an individual's health status in a meaningful way. Finally, some critics have suggested that these programs represent Western hegemony and the militarization of aid to achieve global dominance.

I argue that the inherent structure of these programs can exacerbate or create situational vulnerabilities in the patient population. Moreover, I suggest that the program structure may challenge the ability of military healthcare providers to adhere to the four guiding principles of biomedical ethics: respect for autonomy, nonmaleficence, beneficence, and justice.

In examining these programs through a biomedical ethical lens, it is believed that many of the challenges present in these programs can be mitigated through the following: enhancements to pre-deployment training to include education for healthcare providers in vulnerability and biomedical ethics; greater partnerships with local healthcare providers; and a re-examination of program-specific policies and doctrine within senior government and the military.

Outcomes: Desired outcome is a revision in military medical training and education programs, with the goal of reducing the biomedical ethical challenges military healthcare providers face in the course of their duties.

Patient Population: Host Nation residents receiving CAF medical healthcare services.

Conclusion: Many of the biomedical ethical challenges posed by these programs can be mitigated through: enhancements to pre-deployment training to include education for healthcare providers in vulnerability and biomedical ethics; greater partnerships with local healthcare providers; and a re-examination of program-specific policies and doctrine within senior government and the military.

P172: Do Know Harm: Mitigating Post-disaster Disempowerment in Canadian Armed Forces Disaster Response Operations

*Clifford, J., MWO., PhD (student), MA, MPH^{1,2}; Clifford, P., Col., MD CCF-P(EM)²

¹Carleton University; ²Department of National Defence

Brief Description: The Canadian Forces Health Services Group is an integral component of the Canadian Armed Forces Disaster Assistance Response Team (DART). This research examines whether aspects of empowerment theory and development ethics can be incorporated into the Health Services role within DART program delivery.

The primary, and often unintended, ethical challenges arising from international humanitarian response, including DART missions, are dependency syndrome, donation fatigue, corruption, and compensation. Of these challenges, it is the mitigation of dependency syndrome that the DART can best influence. Dependency syndrome refers to the reliance that disaster-affected communities develop on the international community for the provision of the basic necessities of life: food, clean water, and shelter. Preliminary research suggests that disempowerment is a major driver of dependency syndrome.

Evidence suggests that the exclusion of disaster-affected citizens in the post-disaster recovery process disempowers those most severely affected - often, women and girls. The literature suggests that exclusion of the affected population may have long-term detrimental effects within the community. Thus, paradoxically, the unintended consequence of a DART mission may be dependency syndrome via disempowerment and mal-development.

Several prominent humanitarian organizations have developed humanitarian and/or disaster response frameworks. For example, the Core Humanitarian Principles of the United Nations and the Core Humanitarian Standard, developed in collaboration with several international non-government organizations, including the SPHERE project. However, neither the prevention/mitigation of disempowerment, nor the concept of worthwhile development, features prominently in any of these accounts. To varying degrees, all view the aid recipients as passive *patients*, and not as change *agents* integral to rebuilding their community.

Noting that synergies exist between the disciplines of disaster response and international development, scholars posit that to reduce dependency syndrome, participatory development efforts should be incorporated into the early phases of disaster response and not, as has traditionally occurred, in the post-disaster phase.

Incorporating aspects of empowerment theory and development ethics into DART programming may serve to both mitigate dependency syndrome and strengthen local capacity and resilience.

Outcomes: Reduction of dependency syndrome in disaster-affected populations.

Patient Population: Vulnerable populations affected by disaster, including the sub-population of women and girls.

Conclusion: In order to mitigate dependency syndrome and strengthen local capacity and resilience, DART programming should incorporate aspects of both empowerment theory and development ethics. This innovative approach to DART programming will facilitate an ethically appropriate, needs-based response to disaster-affected citizens.

P173: Measuring Moral Injury in Non-military (Civilian) Populations: The Moral Injury Assessment

*Lloyd, C., BA¹; Jetly, R., Col, OMM, CD, MD FRCPC^{2,3}; Rhind, S., PhD⁴; Nazarov, A., PhD⁴; Protopopescu, A., BA, BSc¹; O'Connor, C., MSc⁵; Hood, H., PhD CPsych⁵; McKinnon, M., PhD CPsych^{1,5,6}; Lanuis, R., PhD, MD^{7,8}

¹McMaster University; ²Department of National Defence; ³University of Ottawa; ⁴Toronto Research Centre; ⁵Homewood Health; ⁶St. Joseph's Healthcare (Hamilton); ⁷Western University; ⁸Lawson Health Research Institute

Introduction: "Moral injury" occurs when individuals violate and/or betray their own moral or ethical belief system. To date, research investigating moral injury has focused almost exclusively on military populations and events that take place within the "combat theatre". Conceivably, certain civilian populations may also be at high risk for sustaining moral injury. Nilsson et al. (2015) noted certain occupational groups are exposed to particularly high levels of "moral stress". For example, first responders - such as paramedics, police, fire-fighters, doctors and nurses in emergency care - must routinely make morally difficult decisions under very stressful, and sometimes even life-threatening, conditions. Survivors of abuse represent a second population who may experience situations that are inconsistent with their own moral convictions, leading to significant moral stress and subsequent potential for moral injury. Currently, moral injury remains unexplored in civilian (non-military) populations. Furthermore, aside from The Morally Injurious Events Scale (MIES) which was developed for military members, no comprehensive assessment tools exist. The primary aim of this study is to evaluate the Moral Injury Assessment (MIA) - a novel self-report measure of moral injury developed for use with two civilian (non-military) populations.

Methodology: To achieve these aims, we plan to administer the Moral Injury Assessment (MIA) to two (2) civilian groups of English-speaking males and females between the ages of 18 and 60. One group will consist of first responders and the other will consist of adult survivors of abuse (N= 1000; n=500). These participants will have experienced at least one morally injurious event during their lifetime. The MIA was developed based on client reports resulting from in-depth clinical interviews with both first responders (n=12) and adult survivors of abuse (n=12). The MIA offers two 40-item, self-report scale versions: one relevant to first responders (MIA-FR) and the other relevant to survivors of abuse (MIA-A). In an attempt to gain a deeper understanding of moral injury within these two civilian groups, the MIA will be administered electronically to consenting participants through an internet-based survey platform (CrowdFlower and Mechanical Turk).

Results: We plan to conduct factor, structure, and principle component analysis (PCA) to explore the factor structure of the MIA-FR and MIA-A. Convergent validity will be investigated using bivariate correlations between MIA-FR, MIA-A, and the Morally Injurious Events Scale (MIES).

Conclusion: Once validated, we hope to employ this scale in future studies investigating moral injury across civilian populations with and without PTSD.

GENDER DIFFERENCES IN HEALTH

Podium Presentations

3A03: The Relationship between Indicators of Mental and reproductive Health among Military Servicewomen Deployed in the Current War Zone in Eastern Ukraine

*Burlaka, O., PhD, MD¹; Chaban, O., PhD, MD²; Bezsheiko, V., MD²

¹Ukrainian Military Medical Academy; ²Bohomolets Medical University (Ukraine)

Introduction: The dynamics of indicators of reproductive health in 55 military women with symptoms of post-traumatic stress disorder (PTSD) in the Anti-Terrorist Operations (ATO) zone in Donbass was evaluated. While the first phase, to determine the effect of combat stress on the soldiers of both sexes the questionnaire on symptoms of PTSD (PTSD Checklist) was applied.

Methodology: We have conducted a survey with the use of self-report measure tools for PTSD, depression and anxiety assessment. For this purpose PTSD Checklist for DSM-5 and Hospital Anxiety and Depression Scale were used. The sample was mostly comprised of military, exposed to direct combat. Methods of gynecological examination and ultrasound diagnosis were also used in this study.

Results: According to preliminary data, the overall average total score was 35.29 (95% CI 7,88-62,69) for women and 23.00(95% CI 8,88-37,12) for men with no statistically significant differences between them ($p=0,324$). At the same time, marked gender differences in response to stress manifested itself in the form of more frequent mental symptoms for men in option of open and conscious suffering as opposed to somatisation symptoms in women who probably had communication with the formation of unconscious psychosomatic problems associated with impaired reproductive health. Somatisation symptoms especially in women were associated with increased periodic complaints in the form of premenstrual syndrome (PMS), cyclic pain and bleeding diagnosed in the absence of structural changes in the reproductive system. Among the surveyed military women with symptoms of PTSD- 38.18% complained algomenorrhea, 21.81% for hyper-/polymenorrhea; 10.91% for moderate-severe PMS; while in 57.14% of cases occurred algomenoreya combination with one of two other symptoms. There was also a certain high correlative relationship between a combination of symptoms of menstrual discomfort and severity of clinical symptoms of PTSD in military women who are in the ATO zone.

Conclusion: The obtained preliminary data on gender-specific features of response to stress indicate the need for the differentiated and interdisciplinary approaches to diagnosis and correction of disorders of reproductive and mental health of military women who are or have returned from the zone of armed conflict.

3A05: Gendering the Diagnosis: Interactions between Stigma, Gendered Identity, and Traumatogenic Events

Callaghan, W., MA

University of Toronto

Brief Description: The social stigma surrounding a psychiatric diagnosis has been long recognized as a significant barrier to treatment-seeking amongst individuals experiencing psychological distress, especially in hyper-masculinized environments such as the military. Much of

this stigma is associated with perceptions of acceptable gender-normative behaviour, with the expression of emotion and distress being viewed as signs of weakness and therefore not befitting the masculinized gendered identity of the soldier. While recent attempts to challenge these perceptions have met with partial success, largely through the reframing of psychological distress, particularly that which meets the diagnostic criteria for post-traumatic stress disorder, as being a normal response to an abnormal situation, social stigma still remains a significant barrier not just to treatment-seeking but also to social reintegration after transitioning from military to civilian life. However, the means through which this has been done – the near-total focus on traumatic events related to combat exposure, and the lack of attention paid to other A-Criterion events – has in itself created a situation where the acceptability and acknowledgement of psychological distress has become tied to the nature of the traumatogenic event. In effect, the dominant focus on psychobiological responses to combat exposure, including in programs meant to develop resiliency, has had a perhaps unintended consequence of potentially gendering the traumatogenic event, and in turn gendering the diagnosis itself. Based on extensive and ongoing ethnographic fieldwork with veterans of the Canadian Armed Forces, this paper explores the meaning-making processes that veterans utilize in coming to terms with their traumatic experiences and how they navigate, or avoid, the social stigma implicated in the interaction between their gendered social identity and the gendering of psychological distress.

Outcomes: This ethnographic research identified different ways and processes through which veterans come to understand, interpret, and make meaning of their traumatic experiences and the social stigma they encountered.

Patient Population: Veterans of the Canadian Armed Forces.

Conclusion: The dominant focus on psychobiological responses to combat exposure, including in programs meant to develop resiliency, has had a perhaps unintended consequence of potentially gendering the traumatogenic event, and in turn gendering the diagnosis itself. This, in turn, has contributed to novel forms of stigma surrounding mental health and created new barriers to social reintegration and treatment outcomes.

4D02: Exploring Sex Differences in Concussion / Mild Traumatic Brain Injury-related Chronic Pain

*Mollayeva, T., MD, PhD; Cassidy, J.D., PhD, DrMedSc; Shapiro, C., FRCPC, MBBCh, PhD; Mollayeva, S., HonsBSc, MSc (student); Colantonio, A., MScOT, PhD

University of Toronto

Introduction: Pain is an unpleasant, complex, and subjective state that places a significant burden on patients and clinicians. Its severity may be mediated by emotion, attitude, and environmental influences, and it may be expressed differently in males and females. Traumatic brain injury (TBI) is frequently associated with chronic pain, with headaches and neck pain comprising the primary complaint long after the initial injury has resolved. Latest studies have consistently recorded changes in brain regional connectivity following concussive blows, which may be responsible for the persistent symptomatology observed. At the same time, clinicians are cautioned against assuming that pain in TBI is injury-related, and current evidence-based practice suggests that chronic pain in patients with TBI is best assessed holistically.

Methodology: We employed Guindon and Hofmann's theoretical

framework of the multidimensionality of pain. To be able to study this framework, we applied a reductionist methodological approach, which postulates that understanding parts is important to improve the quality of inductive inferences made regarding the whole. We hypothesized that: (1) chronic pain in males and females with concussion/mTBI is a multi-dimensional entity; (2) these dimensions comprise psychological, neurophysiological, cultural, social, and environmental aspects; and (3) the precise elements that constitute chronic pain and their relative importance differ between males and females.

To test these hypotheses, we performed a diagnostic multivariable modeling study. The intensity of pain was measured using the visual analogue scale. Univariate and multivariate linear regression models were used to explicate and compare covariates of unpleasantness of the pain experience, in men and women separately. We fitted our stepwise regression sex-specific models on the bases of the bivariate analyses, associations reported in the literature, and pre-defined hypotheses.

Results: A total of 94 patients (45.20 ± 9.94 years; 61.2% male) with an established diagnosis of concussion/mTBI were included in the analysis. The median time since injury (TSI) was 197 days [interquartile range 139–416]. Our results revealed that head/neck and bodily pain are highly pervasive, being present in 93% and 64% of our sample, respectively, with no sex-differences identified in pain frequencies. However, pain intensity/unpleasantness appears to be construed differently by males and females, and only sex-specific analyses allowed us to capture these differences.

Conclusion: The results of our study confirm that various hypothesized factors are related to the perception of pain in the chronic phase after concussion/mTBI. Sex-specific research expanding on therapeutic targets such as sleep disorders and psychosocial distress holds the potential to assist in minimizing the suffering of persons with concussion/mTBI.

MENTAL HEALTH AND REHABILITATION

Podium Presentations

1A01: Posttraumatic Stress Disorder in a Cohort of Self-Identified Veterans

*Wolfson, C., PhD¹; Magalhaes, S., MSc¹; Scarfo, B., BA¹; VanTil, L., PhD²; Aiken, A., CD, PhD³; Feinstein, A., MD, PhD⁴

¹McGill University; ²Veterans Affairs Canada; ³Dalhousie University; ⁴University of Toronto

Introduction: Posttraumatic stress disorder (PTSD) is an important mental health concern in the military, has relatively high prevalence in those recently released from service, and a dramatic impact on the veteran and their family. The minimal extant research on PTSD in older veterans has shown increased in the prevalence of PTSD with age, and re-emergence, and even new onset, of PTSD as many as 50 years following military service. A Veterans Health Initiative (VHI) has been included in an ongoing national study of aging, the Canadian Longitudinal Study on Aging (CLSA). The CLSA is a 20 year study of 51,000 participants who were aged 45-85 at recruitment (2012-2015).

Methodology: In the CLSA, the four item Primary Care PTSD screen (PC-PTSD), was included in the baseline assessment of all 51,000 CLSA participants. A score of three or more items out of four on the PC-PTSD has been validated against the DSM-IV clinical criteria for PTSD. Within the CLSA,

veterans were identified through self report responses to a set of veteran identifier questions also asked of all 51,000 participants at baseline.

Results: More than 4,000 CLSA participants self-identified as veterans. In this presentation we estimate the proportion of veterans who screen positive for PTSD in the CLSA according to the accepted cut-off on the PC-PTSD. In addition we present the PTSD screening results in relation to veteran age, sex, time since military service and duration of military service.

Conclusion: This presentation will provide a profile of PTSD in self-identified veterans who are participants in a national longitudinal study on aging, shedding light on the mental health status of Canada's older veterans.

1A02: Perception of Emotional Faces Induces Fear Circuit Hyper Connectivity in Soldiers with PTSD

*Taylor, M.J., PhD ^{1,2}; Wong, S., BSc ¹; Shah-Basak, P., PhD ¹; Jetly, R., MD³; Pang, E.W., PhD ^{1,2}; *Dunkley, B.T., PhD ^{1,2}

¹The Hospital for Sick Children; ²University of Toronto; ³Department of National Defence

Introduction: Posttraumatic stress disorder (PTSD) is a mental health injury of international concern. Results of a 5-year post-Afghanistan deployment study demonstrate that ~8% of returning Canadian Armed Forces members are diagnosed with PTSD. One of the hallmarks of the disorder is difficulty with emotional processing, and particularly with regulating emotional reactivity to threatening expressions in others. The biological basis of this phenomenon is thought to lie in a hyperconnected 'fear network', with circuitry involving the amygdala. Previously, using magnetoencephalography, we had observed preferential processing of threat-related facial expressions in this brain circuit during an emotional faces task in soldiers with PTSD compared to trauma-exposed controls. In this longitudinal follow-up study, we examined brain connectivity in the same task.

Methodology: Longitudinal studies with a 1.5-2 year interval were conducted with soldiers with PTSD ($n=13$) and a trauma-exposed group of control soldiers ($n=21$). Magnetoencephalography (MEG) was recorded during an implicit emotional faces task. Using a computational neuroscience analytic approach, we measured phase-locking of brain oscillations to define brain communication and how areas of the brain interact; known as *functional connectivity*.

Results: Analyses revealed hypersynchrony in the 2-20Hz brain rhythm range for the PTSD group in response to emotional faces, which was consistent with previous findings of a larger sample from this cohort. The over-connectivity in PTSD soldiers during emotional face recognition was present over large areas of the brain and anchored in the fusiform, a key brain area for facial recognition. Furthermore, significant increases in connectivity were found in the left ventromedial prefrontal cortex, bilateral postcentral gyri, and inferior parietal lobule in PTSD soldiers when viewing angry faces compared to happy – this difference was absent in control soldiers. These areas are core 'social brain' regions.

Conclusion: Our current results replicate our previous findings that show PTSD is associated with maladaptive brain responses to emotional expressions in others, and this in part due to over-connected functional circuitry that deals with fear and the 'fight or flight' response. Thus, these MEG measures are stable indicators of PTSD. These findings pave the way for the development of novel diagnostics and the assessment of therapeutic efficacy, as well as contributing to accumulating evidence that PTSD is a disorder of brain systems rather than being confined to individual regions.

1A04: An Exploration of Recovery from Posttraumatic Stress Disorder in Canadian Armed Forces Veterans: A Qualitative Inquiry Using Interpretive Phenomenological Analysis

*Gilberto, A., BScPN^{1,2}; Clements, K., MA¹; Karpa, J., PhD (Cand)¹; Enns, C., MSW²

¹Brandon University; ²Deer Lodge Operational Stress Clinic

Introduction: The experience of Posttraumatic Stress Disorder (PTSD) within the Canadian Armed Forces (CAF) veteran population has been described as complex and under researched (Pare, 2013). Although there is significant evidence to support the efficacy of specific evidence based treatments (EBT) for PTSD, these specific therapies are limited to a set number of sessions and do not fully address all aspects of recovery. This qualitative study was designed to capture the lived experience of the PTSD recovery journey as experienced by the true recovery experts—those diagnosed and treated for duty related PTSD.

Methodology: Interpretive phenomenological Analysis was the qualitative method of inquiry, chosen to capture three veterans' experiences of their recovery journey. Findings from this research are expected to increase understanding of the lived experience of recovery as interpreted by study participants who all served on deployments overseas and were subsequently diagnosed with duty related PTSD. The two primary research questions that guided this study were: how do individuals who have completed evidence-based treatment (EBT) for PTSD interpret 'recovery'; and what factors, in addition to or outside of the EBT protocols, facilitated their recovery.

Results: The following three Superordinate themes evolved from this inquiry and were as follows: 1) Culture has an important role in recovery; 2) Recovery is a journey; and 3) Relationships are critical throughout recovery. Analysis and discussion of these three Superordinate themes and their supporting themes provide a deeper understanding of the recovery phenomena, as conceptualized by those diagnosed and treated for PTSD. The insights from this research will be valuable to other veterans in understanding they are not alone, that their journeys of recovery are life long journeys in which they can achieve valued lives in the presence of persisting or recurring PTSD symptoms.

Conclusion: The findings will complement and expand on quantitative data about recovery from duty related PTSD, and will contribute to literature on recovery from PTSD. It is anticipated that these findings will influence further development and expansion of the OSIC recovery based program in Winnipeg. Further, it is anticipated that these findings will help inform practice around enhancing resilience and informing early intervention strategies as it pertains to assisting members in the CAF and RCMP. Most importantly, this research gives voice to the true experts in the recovery journey- the veterans who have embarked on and continue to progress in their healing trajectories and their lives following diagnosis and completion of treatment for PTSD.

1C01: First Responder Well-Being: Understanding Firefighters Experience of Occupational Stress and Wellness.

*Shields, D., PhD¹; Vissers, D., MA²; Kuhl, D., MD, PhD¹; Farina, S.³

¹University of British Columbia; ²Work to Wellness; ³British Columbia Professional Fire Fighters Association

Introduction: The goal of this project is to consider the experiences

of firefighters as they cope with the regular demands of their work. Firefighter culture often emphasizes a need to project a strong, stoic image which may inadvertently interfere with social support, and increase adjustment difficulties such as posttraumatic stress disorders, problematic substance abuse, relationship dysfunction, and depression. While some literature points to the usefulness of peer support programs for firefighters, they have also highlighted firefighters' resistance to engagement in such programs and the existence of stigma about admitting to difficulties with operational stress. The current research will attempt to address a knowledge gap in how to design programs to support firefighters in their work.

Methodology: Through semi-structured in-depth interviews, this research project attempted to identify key themes in the experiences of occupational stress, resilience and social supports with the objective of informing future wellness services for this population. Thirty interviews were conducted with active duty professional fire fighters recruited from the BC Professional Firefighters Association (BCPFFA). Interviews were then transcribed and coded for themes.

Results: Results of the qualitative analysis show a changing culture that is beginning to come to terms with the new understanding that operational stress and associated injuries are real, are valid, and require a different approach than has historically been taken.

Conclusion: Exposure to traumatic incidents as a professional firefighter is inevitable. A better understanding of the unique trauma coping needs of this population will contribute to better service and support design, delivery and accessibility. In addition, these findings will likely have relevance to other populations working in first responder roles.

2A01: A Comparison of Mental Health Services use in Older Dependents and Spouses of Service Personnel in the Canadian Armed Forces to Age and Sex Matched Civilian Comparison Cohort

*Mahar, A.L., PhD¹; Cramm, H., PhD¹; Whitehead, M., MStat²; Groome, P., PhD^{1,2}; Kurdyak, P., MD, PhD^{2,3}; Aiken, A.B., PhD⁴

¹Queen's University; ²Institute for Clinical Evaluative Sciences; ³Centre for Addictions and Mental Health; ⁴Dalhousie University

Introduction: The military lifestyle involves geographic mobility, separation, risk, and exposure to other unique mental health stressors that is not shared by civilian families. There are no population-based, Canadian data describing patterns of mental health services use in older dependents and spouses of active service personnel in the Canadian Armed Forces, or comparing those patterns to civilians. This study is one of four investigating mental health service use in military-connected families in Ontario.

Methodology: This was a retrospective, matched cohort study of older dependents and spouses of active Canadian Armed Forces members who were posted in Ontario between April 1, 2008 and March 31, 2013. Military-connected individuals were identified using codes housed at the Ministry of Health and Long-Term Care. The civilian comparator cohort was matched 4:1 on age, sex, and region of residence. Six provincial, administrative healthcare databases at the Institute for Clinical Evaluative Sciences were combined. Psychiatric hospitalizations and emergency department visits, psychiatrist visits, and mental health-related primary care visits were studied. Follow-up was complete to March 31, 2014. Categorical variables were compared using chi square tests for independence. Skewed continuous data were compared using Kruskal-Wallis tests.

Results: This study included 2,901 older dependents and spouses of active CAF personnel, and 11,634 age-, sex-, and LHIN- matched civilians (n=14,535). Military-connected dependents and spouses aged 20-24 were less likely to have at least one visit to primary care for a mental health reason, compared to the civilian comparison group. Military-connected cohorts aged 34 and younger had a lower average number of visits to a PCP for mental health reasons, compared to the same age-stratified civilian cohorts. Military-connected dependents and spouses of all ages were less likely to have at least one visit to a psychiatrist and had a lower average number of visits per individual. A similar proportion of military-connected dependents and spouses aged 25-40 presented to an emergency department. Anxiety and depression were the most commonly recorded diagnosis codes across all mental health services used.

Conclusion: This study provides quantitative evidence that military-connected older dependents and spouses of active Canadian Armed Forces personnel are accessing mental health services in the public system, and these services may be used differently than in the civilian population. Information on how mental health services are accessed in the public health system are critical to understanding pathways of care, and needed to inform the planning and delivery of mental health services.

2A02: Help Seeking for Mental Health Issues among UK Armed Forces Serving Personnel and Military Veterans

*Stevellink, S., PhD; Dyball, D., BSc; Khera, C., BSc; Rona, R., FFPH; Wessely, S., FMedSci; Fear, N., DPhilOxon

King's College London (UK)

Introduction: UK military personnel are more likely to report symptoms of common mental health disorders (CMD) compared to the general population. Despite this, the number of personnel who seek help for their problems remains relatively low, with less than one in four with probable CMD seeking help from a medical professional. The current study examined, in detail, help-seeking behaviour and mental health service use among service personnel and military veterans who self-reported to have a current or past mental health, stress, emotional or alcohol problem.

Methodology: 1713 potential participants were invited to take part in a semi-structured telephone interview examining their general health, mental health (Post-traumatic checklist - PCL-5; Patient Health Questionnaire - PHQ-9; Generalised Anxiety Disorder scale - GAD-7; Alcohol Use Disorder Identification Test - AUDIT-C), help seeking and mental health service utilization, stigma and social support. Data collection took place from February 2015 to December 2016. A total of 1448 participants completed the telephone interview (response rate 85%).

Results: Approximately half of the participants were 40 years and older (55%). The majority were male (85%) and were either current or former members of the Army (66%). Slightly more than half were still serving (55%). In our population, 18% of the participants had symptoms of anxiety; 9% met the criteria for probable PTSD and 8% reported symptoms of depression. A further 19% screened positive for potential alcohol misuse, and 21% of the participants screened positive for more than one mental health issue. The majority of the participants had sought help for their self-reported current or past stress, emotional, mental health or alcohol problem; 7% had not sought any help and a quarter (25%) only received informal support. Just over half (55%) of the sample had received help that included formal medical support and 14% received help that included formal non-medical

support. Analyses are currently underway to explore the predictors of help-seeking behavior as well as facilitators and barriers to mental health care utilization.

Conclusion: The preliminary findings suggest an apparent increase in help-seeking for mental health issues among UK military personnel, yet a significant minority does not seek help. Explanations for the increased levels of help-seeking will be discussed as well as implications for clinical practice.

2A03: The Use of Mental Health Screening to Improve the Health of Military Personnel

*Greenberg, N., Capt, MD; Rona, R.J., FFPH; Burdett, H., PhD; Khondoker, M., PhD; Chesnokov, M., MA; Green, K., MSc; Pernet, D., MA; Jones, N., PhD; Wessely, S., FMedSci; Fear, N.T., DPhilOxon

King's College London (UK)

Introduction: The effectiveness of post-deployment mental health screening has not been assessed in a randomised controlled trial. We aimed to assess the effectiveness of post-deployment screening for post-traumatic stress disorder (PTSD), depression, anxiety, or alcohol misuse. Screening was defined as the presumptive identification of a previously unrecognised disorder so that those people with a probable disorder could be referred appropriately. We assessed effectiveness and help-seeking behaviours at follow-up between those receiving tailored help-seeking advice and those who received general mental health advice.

Methodology: This was a cluster randomised controlled trial among UK military combat troops after deployment to Afghanistan. Platoons were randomly assigned by stratified block randomisation with randomly varying block sizes of two and four to the screening group (tailored help-seeking advice) or the control group (general mental health advice). Initial assessment took place 6-12 weeks after deployment; follow-up were 10-24 months later. Measures used were the PTSD Checklist-Civilian Version, Patient Health Questionnaire-9, Generalised Anxiety Disorder (GAD)-7 scale, Alcohol Use Disorder Identification Test, and self-reported help-seeking from clinical and welfare providers comparing those receiving tailored advice and those receiving only general advice. All participants and all investigators other than the person who analysed the data were masked to allocation. Primary outcomes were PTSD, depression or GAD, and alcohol misuse at follow-up. A key secondary outcome was whether post-deployment screening followed by tailored advice would modify help-seeking behaviour. Primary analyses were intention to treat.

Results: Between Oct 24, 2011, and Oct 31, 2014, 434 platoons (10,190 personnel) were included: 274 (6350 personnel) in the screening group and 160 (3840 personnel) in the control group. 5577 (88%) of 6350 personnel received screening and 3996 (63%) completed follow-up, whereas 3149 (82%) of 3840 received the control questionnaire and 2369 (62%) completed follow-up. 1958 (35%) of 5577 screened personnel declined to see the tailored advice, but those with PTSD (83%) or anxiety or depression (84%) were more likely than non-cases (64%) to view the advice (both $p < 0.0001$). At follow-up, there were no significant prevalence differences between groups for PTSD (AOR 0.92, 95% CI 0.75-1.14), depression or anxiety (0.91, 0.71-1.16), alcohol misuse (0.88, 0.73-1.06), or seeking support for mental disorders (0.92, 0.78-1.08).

Conclusion: We found post-deployment screening for mental disorders did not reduce prevalence of mental health disorders nor did it

increase help-seeking. Countries which use post-deployment screening programmes for mental disorders should consider monitoring the outcomes of their programmes.

2A04: Mental Health Services Use in the Canadian Armed Forces 2009-2015

*Johnson, D., MSc (Cand); Zamorski, MA., MD; Garber, BG., MD

Department of National Defence

Introduction: There has been increasing concern regarding the CAF's ability to meet the demand for clinical mental health services of its personnel. An examination of the time trends for the volume of mental health services use allows decision makers to more adequately assess the need for services, particularly over a time period when the mission in Afghanistan has come to a close.

Methodology: The Canadian Forces Health Information System (CFHIS) appointment registry was analyzed to describe and explore trends in mental health services use over the period January 1st 2009 – December 31st 2015. Mental health visits were identified as those in which the provider was a mental health clinician or in which the appointment location was one of the Canadian Armed Forces (CAF) mental health clinics. Details about date and time of appointments, types of appointments, and appointment locations are captured within the register. Descriptive statistics were applied to describe the frequency of appointment types and duration, number of appointments per base, number of appointments per user of mental health services, number of pre- and post-deployment screenings, trends in unique & new patients across time, and changes in clinical contact hours across time.

Results: Over the study period there were 550,002 mental health appointments representing 38,656 unique individuals. Individual counselling (37.5%), treatment/therapy (19.7%), and consults (11.0%) were the three most common types of appointments. The number of unique individuals seen each year declined significantly, from 15605 in 2009 to 11223 in 2015, a decrease of 4.7% per year, on average. However, total annual visits increased from 68024 in 2009 to 81430 in 2015, representing an average yearly increase of 3.3% per year. As a result of a temporal increase in average number of visits per person and (to a lesser extent) an increase in the mean visit length, yearly contact hours increased slightly more steeply, from 69812 in 2009 to 86078 in 2015.

Conclusion: Demand for MH services has continued despite the end of the mission in Afghanistan. Although the number of unique individuals seeking care has declined, the number of yearly visits and total clinical contact hours has increased likely due to greater intensity of service use (more appointments per individual and slightly longer appointments on average). This reinforces the need for a robust clinical mental health system for the CAF.

2C01: The Psychological and Social Impacts of Physical Activity Participation for Military Personnel with Illnesses and Injuries: A Scoping Review

*Shirazipour, C.H., PhD¹; Tennant, E. M., BA²; Aiken, A.B., PhD¹; Latimer-Cheung, A.E., PhD²

¹Dalhousie University; ²Queen's University

Introduction: Physical activity (PA; e.g. sport, exercise, therapeutic recreation) is a common intervention used to support service mem-

bers and Veterans as they recover from physical and mental illness and injury. With the growing implementation of PA programming, researchers have aimed to examine its usage and the potential implications of PA participation post-injury and illness. The objective of the current investigation was to conduct a scoping review that explored the role of PA, and the psychological and social impact of PA participation for service members and Veterans with physical and mental illness and injury.

Methodology: As per scoping review guidelines (Arksey & O'Malley, 2005), our aim was to examine the extent and nature of research activity, summarize findings, identify knowledge gaps, and propose a research agenda that would move the field of military adaptive PA research forward. Academic research databases were searched, and key researchers and program staff were contacted to identify relevant studies (published and unpublished). Studies met inclusion criteria if they (a) included military service members and Veterans with physical and/or mental illness and injury, or physical activity program staff, as participants; (b) examined PA; and (c) examined psychosocial aspects of PA participation.

Results: Fifty-three articles met inclusion criteria. The most studied type of PA was therapeutic recreation ($n=20$), while the least examined types of PA were physical challenges ($n=2$), competitive sport ($n=2$), and fitness ($n=1$). Among the investigations, the most commonly researched military personnel were those with post-traumatic stress ($n=25$). Generally, the articles demonstrated either significant improvements or trends supporting the beneficial impact of participation. Of the quantitative articles, most ($n=11$) demonstrated improvements in indicators of mental health and well-being. However, only one quantitative investigation contained any long-term follow-up (i.e. a three month post-participation follow-up), with the majority of quantitative investigations consisting of pre- and post- interventions ($n=9$) or pre-, post- and one month follow-up timelines ($n=3$).

Conclusion: In a bid to move knowledge forward, a research agenda is proposed which includes a need to explore the growing field of competitive military adaptive sport participation, and the long-term implications of participation, as well as the constructs/elements of participation experiences that account for participation benefits. By building this evidence base, practitioners will have knowledge of best practices that will support the long-term PA participation, and the well-being of service members and Veterans with illnesses and injuries.

2E04: Evaluating Client Perception of Care among Veterans, Military Members, and RCMP Members Receiving Treatment at the Carewest Operational Stress Injury Clinic

*Novick, J., MA; Stewart, M., PhD

Carewest Operational Stress Injury Clinic

Brief Description: The objective of this study is to investigate variations in client perception of care at the Carewest Operational Stress Injury (OSI) Clinic across time and in accordance with demographic characteristics, treatment progression, and perceived pressure to seek treatment.

Outcomes: Perception of care was assessed by having clients complete the Ontario Perception of Care Tool for Mental Health and Addictions (OPOC-MHA; Rush et al., 2013). The OPOC-MHA contains 38 self-report Likert items measuring client perception of care, which are categorized into seven subscales (access and entry to services, services provided, participation in treatment and rights, staff members, envi-

ronment, discharge from the program, and overall experience). The first 32 items inquire about perception of care within community and residential/inpatient settings. The final six items are only relevant to clients receiving residential/inpatient services. Response categories range from strongly disagree (1) to strongly agree (4), with a not-applicable option. Not applicable responses do not count towards the calculation of subscale means. The OPOC-MHA also asks clients to provide demographic information, along with comments pertaining to each subscale, helpful aspects of the clinic, and aspects that could be improved.

Patient Population: The Carewest OSI Clinic provides treatment to veterans, members of the Canadian Forces, and members of the Royal Canadian Mounted Police who have developed psychological difficulties as a result of operational duties. Family members can also receive treatment. In order to assess differences in perception of care across time, clients completed the OPOC-MHA during two separate data collection windows: March 2016 – April 2016 ($n = 133$) and October 2016 – December 2016 ($n = 142$). For the current analysis, we compared client perception of care between these two testing times and examined predictors of client perception of care among clients who participated in the second round of data collection.

Conclusion: This investigation revealed that clients reported favourable perceptions of care regarding the treatment services received at the Carewest OSI Clinic at both testing points. In addition, less favourable perceptions of care were associated with clients of younger age, clients who were in the earlier stages of treatment, and clients who felt pressured to seek treatment. The current study provides guidance for the provision of resources aimed at optimizing client perception of care. Accordingly, continued emphasis on beneficial aspects and potential modifications to the delivery of services will enable client recovery outcomes to be enhanced across the Canadian network of OSI clinics.

3A02: First-Hand Narratives of Operational Stress Injuries

*Eichler, M., PhD; Whelan, J., PhD; Norris, D., PhD; Landry, D., MEd

Mount Saint Vincent University

Introduction: This study examines operational stress injuries (OSIs) such as post-traumatic stress disorder (PTSD), depression, and others, from the perspective of Veterans, their partners, and the mental health service providers that work with them. The interdependencies emerging across the boundaries between the veterans/family system and broader systems (e.g. neighbourhoods, communities, formal and informal support programs and services, the military institution) as well as their relationship to the military-to-civilian transition (MCT) process are analyzed through the application of the critical-ecological model which includes personal, structural, and ideological aspects.

Methodology: A qualitative methodology was used to conduct interviews and focus groups with Veterans, Veterans' partners, and service providers regarding experiences of living with OSIs, supporting a partner with an OSI, or working with a veteran with an OSI. Participants' accounts were thematically analyzed with MAXQDA computer software. Theoretically, we draw on work that foregrounds the experiences of individuals in their everyday lives and links these experiences to larger social processes.

Results: These first-hand narratives of injury and treatment indicate a complex, contextual, and contradictory understanding of the potentially bidirectional relationship between OSIs and MCT. Ongoing anal-

ysis of these narratives of injury and treatment reveal some of the following themes: feelings of dislocation in both the service provider and Veterans communities, existing treatment models and identities that leave both Veterans and service providers feeling overwhelmed and under-resourced, an understanding of military to civilian transition as an ongoing process rather than an outcome, and attempts at building networks of support.

Conclusion: First-hand narratives of injury and treatment generated in this study can facilitate an understanding of the pathways through which ideological factors, regulatory policies, community-level supports, and relational and individual processes interact within the MCT experiences of the participants. These accounts will help develop a critical-ecological conceptualization of OSIs as well as innovative recommendations for those supporting Veterans with an OSI.

3A04: Identifying Military and Veteran Family Cultural Competencies for Healthcare Providers

*Tam-Seto, L., PhD¹ (Cand); Cramm, H., PhD¹; Krupa, T., PhD¹; Lingley-Pottie, P., PhD^{2,3}; Stuart, H., PhD¹; Aiken, A., PhD²

¹Queen's University; ²Dalhousie University; ³Strongest Families Institute

Introduction: The National Defence and Canadian Forces Ombudsman's Special Report, *On the Homefront: Assessing the Well-being of Canada's Military Families in the New Millennium* (2013), describes how the military lifestyle can affect the lives of Canadian military families. Frequent relocation can present challenges to the stability, mental health and well-being of military families compounded by the stressors of accessing and navigating a new healthcare system. Unlike their American counterparts, military families in Canada access the civilian health care system. Because the military is perceived as its own unique culture, the need for cultural competency among healthcare providers working with military members and their families has been discussed in the American literature. However, little is known about the health care experiences of Canadian military and Veteran families. This has also been identified as a priority by Canadian healthcare associations. Therefore, there is a need to conduct research to answer the question: "What are the cultural competencies required of healthcare providers when working with Canadian military and Veteran families?"

Methodology: The first phase of this multi-phase mixed methods study aimed at developing a cultural competency model and involved in-depth, one-on-one qualitative interviews. Participants were asked to describe and reflect on specific positive and negative health care interactions. Framework analysis was used to identify cultural competencies from the perspective of the service user.

Results: Seventeen interviews were conducted including one with a military family, a Veteran and 15 spouses/partners of active members. Families identified the need to increase awareness among healthcare providers on the unique lifestyle and stressors experienced by military families. Lifestyle factors such as increased mobility directly affect the abilities of military families to access continuous healthcare. Stressors including deployment and extended absences due to training exercises influence the types of healthcare supports military families are seeking. There are also significant systemic factors that influence the healthcare experiences of military families.

Conclusion: The results of this study will be integrated with a second phase of the study that will capture the healthcare provider perspectives on critical cultural competencies and how they came to develop

them. Ultimately, this cultural competency model will broadly inform healthcare providers when working with Canadian military and Veteran family members. This study will also contribute to the growing body of knowledge on the healthcare experiences of Canadian military and Veteran families.

3A06: A New Approach to Well-being in Strategic Military Mental Health Policy: Making it Count

Cosgrove, M.E., *MClinPsych*^{1,2}

¹Australian National University; ²Australian Department of Defence

Introduction: This study examines the way Australian Defence Force mental health and wellbeing policy affects how people think about mental illness in the ADF and how this in turn shapes mental health outcomes. Increased operational engagements, the higher prevalence of common mental disorders in the ADF and stories of personal tragedy, which imply that the ADF is failing members who experience mental illness, contribute to heightened public concern about the mental health and wellbeing of service personnel. Mental health and wellbeing in the ADF is a complex policy issue. Despite several high level external reviews recommending incremental changes to ADF mental health policies, to date the suite of documents supporting the *ADF Mental Health and Wellbeing Strategy* (2011) have not been systematically reviewed to examine their influence on mental health outcomes.

Methodology: The study examined nominal ADF 'mental health and wellbeing' policies from the perspective of public mental health outcomes: to promote positive mental health and avert the burden of disease. A content analysis of thirty four relevant policies was conducted to identify unobserved cultural patterns of thinking and interactions which influence mental health outcomes, and to identify alternative ways of approaching the problem.

Results: The results show that 'mental health outcomes' are subsumed within 'capability outcomes', which means that positive mental health is valued as a 'special kind of capability' only. As such, the policies focus on reducing the impact of mental illness on capability by providing health services and with personnel management strategies. By contrast there is very little attention given to positive mental health or wellbeing, which are not operationalised. Because of this the body of 'mental health policies', in the context of broader Defence policy, force trade-offs between mental health and capability outcomes and transfers mental health outcomes to other government agencies.

Conclusion: The current policy approach responds to the unique context of the military. However, the study concluded that it is likely to hamper the achievement of the ADFs strategic objectives to develop a culture that promotes good mental health and wellbeing, and affect the strategic development of whole-of-government partnerships. Adopting an approach which distinguishes the promotion of positive mental health and wellbeing, averting the burden of disease, and maximising capability as distinct and equally valued outcomes is likely to improve the effectiveness of ADF mental health policies and ensure that the Australian Governments strategic mental health and Defence aims are achieved over the life course and across government.

3D02: Contributions of Mental Health and Physical Health to Disability within the Canadian Armed Forces

*Beliveau, P., *SLt., DC, MSc*¹; Boulos, D., *MSc*¹; Zamorski, M., *MD, MHSA*^{1,2}

¹Department of National Defence; ²University of Ottawa

Introduction: A diminished fighting force in the Canadian Armed Forces (CAF) due to disability is a national concern. Associations between mental and physical disorders to disability are well established, yet little is known about the extent to which they each contribute to disability in military personnel. The main objective was to examine the relative contributions of mental and physical health to disability among CAF Regular Force members.

Methodology: The study sample consisted of CAF Regular Force members who participated in the 2013 Canadian Forces Mental Health Survey. Disability was measured using the 12-item version of the World Health Organization Disability Assessment Schedule (WHODAS-2). Self-reported diagnoses by health professionals were used to measure mental and physical disorders. The mental health disorders assessed were mood disorders, anxiety disorders, and post-traumatic stress disorder. The physical health disorders assessed were asthma, fibromyalgia, arthritis, back problems, other chronic musculoskeletal problems, hypertension, migraine headaches, diabetes, and traumatic brain injury/concussion. Regression modeling, predicted probability, and population attributable fractions were used to measure the contribution of each mental and physical disorder to disability.

Results: The prevalence of moderate and severe disability was 10.0% (95% confidence interval [CI]: 9.2% - 10.8%). Physical disorders contributed to moderate and severe disability to a much larger extent (PAF = 62.1%, 95% CI: 56.2% to 67.3%) than did mental disorders (PAF = 26.8%, 95% CI: 22.7% to 30.6%). Chronic musculoskeletal problems (other than arthritis, back pain, or fibromyalgia) contributed to disability the greatest among physical health disorders (PAF = 32.7%, 95% CI: 25.7% to 39.1%). Mood disorders were the largest contributor to disability among mental health disorders (PAF = 15.5%, 95% CI: 11.4% to 19.3%).

Conclusion: Physical health contributes to disability among CAF Regular Force members more so than mental health. These findings identify the need for physical health interventions, in addition to mental health interventions, to effectively reduce workforce disability in the CAF.

3E06: Wizards in White Coats: The Canadian Defence Research Board and Early Research in Building Psychological Resilience

Fitzpatrick, M., *PhD*

Royal Military College of Canada

Brief Description: The Canadian Army's Integrated Performance Strategy defines resilience as the, "capacity of the soldier to adapt, resist and thrive in the face of stress imposed by...life in garrison, training and operational environments." Over the past decade, all three services have invested heavily in generating and improving the mental resilience and adaptability of serving personnel. However, interest in this subject is longstanding.

Founded in 1947, the Canadian Defence Research Board (DRB) was created to ensure the fighting services benefited from the best in modern research and development. Building upon work conducted during the Second World War, the DRB designed and developed an extensive program in experimental psychology designed to dissect the strengths and weaknesses of the human mind. This presentation examines the DRB's early research on resilience with the goal of highlighting lessons for current policymakers and outlining possible frameworks for effective cooperation between the military and academia.

The research will use primary and secondary sources to identify key strands in DRB investment. It takes a comparative approach by evaluating Canadian policy in relation to major allies (e.g. UK, USA). In addition, it will assess what lessons we can derive about resilience, maximizing the potential of military-academic partnerships, and the ethical implications of these relationships.

Outcomes: The DRB played a pivotal role in pioneering Canadian research into psychological resilience. By carefully cultivating an extra-mural grant and contract system, the DRB mobilized academic networks both at home and abroad to break ground in controversial fields like psychometric screening, man's capacity to adapt in extreme environments and sensory deprivation. Consequently, it grew to become one of the principal sponsors of psychological research in the country.

Patient Population: This presentation addresses building mental resilience in active duty military personnel.

Conclusion: The DRB's early research efforts highlight the Canadian military's longstanding interest in mental resilience. Moreover, the growth of that organization underlines what can be achieved when the military and academia partner to maximize and share results.

4A01: Sexual Functioning in Treatment-Seeking Veterans: The Role of Emotional Numbing

*Richardson, J.D., MD,^{1,2,3}; Ketcheson, F., MSc¹; King, L., MSc¹; Shnaider, P., Ph.D⁴; McIntyre-Smith, A., Ph.D¹; Elhai, J.D., Ph.D⁵

¹Parwood Institute Operational Stress Injury Clinic; ²Western University Canada; ³McMaster University; ⁴St. Joseph's Healthcare Hamilton; ⁵University of Toledo

Introduction: Problems associated with sexual intercourse and intimacy, or sexual dysfunction, are common among military personnel and veterans—particularly in clinical samples. Previous research has demonstrated a common comorbidity between sexual dysfunction and posttraumatic stress disorder (PTSD); however, the mechanisms behind this association are unclear.

Methodology: The current study investigated whether PTSD symptom clusters (intrusion, avoidance, negative mood and cognition, and arousal) predicted two outcomes: pain or problems during sexual intercourse, and lack of sexual desire (sexual anhedonia). All measures were administered as part of a standard intake protocol completed by treatment-seeking veterans and Canadian Forces (CF) personnel ($N = 578$). Two multiple logistic regression models were computed to investigate the effect of PTSD symptom clusters on pain or problems during intercourse as well as sexual anhedonia while controlling for depression, age, chronic pain, sex, and alcohol and psychotropic medication use.

Results: Over one-third of participants reported experiencing pain or problems during intercourse and nearly three-quarters reported experiencing lack of sexual desire. Chronic pain was the only significant predictor of problems during intercourse (adjusted odds ratio [aOR] = 0.98, 95% confidence interval [CI] [0.97 - 0.99]). Negative mood and cognition was the sole significant predictor of lack of sexual desire (aOR = 1.14, 95% CI [1.07 - 1.22]). Emotional numbing was the most significant negative mood and cognition symptom impacting lack of sexual desire (aOR = 1.24, 95% CI [1.02 - 1.51]).

Conclusion: While PTSD symptoms were not significantly associated with pain or problems during sexual intercourse when controlling for

other confounds, symptom clusters were differentially associated with sexual anhedonia—specifically, negative mood and cognition. Among symptoms included in this cluster, emotional numbing symptoms were found to be the most impactful. Results provide further insight into the relationship between comorbid PTSD and sexual dysfunction.

4A02: Factors Related to Risky Drinking Behaviours among Canadian Armed Forces Members of the Regular Force

*Richer, I., PhD; Thériault, F.L., MSc, Gauthier, M., PhD, Strauss, B.A., MSc

Department of National Defence

Introduction: Heavy alcohol use can negatively impact occupational productivity and is an important factor of morbidity and mortality. The prevalence of risky drinking is high among Canadian Armed Forces (CAF) members and is a key concern among military personnel. Some research findings have shown that the prevalence of substance use in civilians differs across geographic locations and increases in rural areas. As such, remote CAF members serving in rural locations may be at increased risk of substance misuse and related problems. This is problematic as being geographically isolated has been linked to increased alcohol-related risky behaviours such as drinking and driving and mental health care accessibility challenges. Yet, information regarding structural factors of risky drinking among military personnel, such as workplace geographic location, is still sparse. This study aims to explore the correlates of risky drinking behaviours among CAF members of the Regular Force.

Methodology: Secondary analyses will be conducted on data collected in a cross-sectional population-based survey, The Health and Lifestyle Information Survey (HLIS) 2013-14, of currently serving Canadian Armed Forces (CAF) Regular Force members. Outcomes related to alcohol use were measured with the Alcohol Use Disorders Identification Test (AUDIT). The main outcome variables will include patterns of alcohol use, exceeding low-risk drinking guidelines, binge drinking, hazardous/harmful drinking, and alcohol-associated risk-taking behaviours. The participants will be categorized based on the geographical location of the currently serving base/unit/wing. We will explore the feasibility of using the Statistical Area Classification system developed by Statistics Canada to determine the level of rurality of the serving base. Demographic and military characteristics that will be included in the analysis are: age, sex, rank, service element, marital status, and level of education. Multivariate regression models will be conducted to assess the independent effect of correlates of alcohol-related outcomes. Analyses will control for potential confounders and will account for the complex sampling methodology.

Results: Analyses will be performed in spring/summer 2017.

Conclusion: This study addresses the need to deepen our understanding of the factors associated with excessive drinking and alcohol-related risky behaviours among CAF members. Findings could have implications for prevention and intervention strategies targeting alcohol use so that the specific needs of CAF members serving on rural bases are better addressed.

4A03: Alcohol use Trajectories among the UK Armed Forces

*Palmer, L., MSc¹; Fear, N., DPhil (Oxon)¹; Goodwin, L., PhD²; Norton, S., PhD¹

¹King's College London (UK); ²University of Liverpool (UK)

Introduction: Research has shown that the prevalence rates of alcohol use are higher among the UK Armed Forces than both the general population and other military forces. Longitudinal studies have suggested an overall decrease in drinking levels among the UK military, however this obscures diverse drinking patterns which do not conform to the average decline. This presentation discusses the preliminary findings of my mixed-methods PhD which examines the heterogeneous drinking patterns of the UK Armed Forces and the factors associated with these patterns. My research also aims to qualitatively explore why ex-personnel continue to engage in risky levels of drinking after leaving service.

Methodology: The quantitative component of my PhD is formed by a secondary analysis of three phases (2003-2017) of already obtained data of approximately 7,000 current and ex-military personnel from the King's Centre for Military Health Research's (KCMHR) Cohort Study. Alcohol use was measured using the World Health Organization's (WHO) Alcohol Use Disorders Identification Test (AUDIT) and trajectories were modelled using latent class analysis and growth mixture modelling. According to the PhD's qualitative aims, a final sample of 30 ex-military personnel with a high risk drinking trajectory will be interviewed and their data analysed using framework analysis. Interviews will explore participants' reasons behind their risky alcohol use, the positive and negative impact of their drinking and a comparison of their in-service and post-service drinking experiences.

Results: Firstly I will present working growth mixture models which separately describe the most common alcohol use trajectories of current and ex-military personnel. I will then explore the initial themes arising from my qualitative interviews with ex-military personnel.

Conclusion: These findings will provide a more nuanced and representative picture of alcohol use and will valuably highlight the potential differences in how current and ex-military personnel drink over time. The quantitative and qualitative findings could further support the identification of high-risk drinking groups, the development of wider alcohol policies for serving members and the delivery of targeted interventions.

4B01: Do Children and Youth with a Parent in the Canadian Armed Forces use Provincial Mental Health Services Differently than Civilians? A Retrospective Cohort Study

Cramm, H., PhD¹; *Mahar, A.L., PhD¹; Whitehead M, MStat²; Groome, P., PhD^{1,2}; Kurdyak, P., MD, PhD^{2,3}; Aiken, A.B., PhD⁴

¹Queen's University; ²Institute for Clinical Evaluative Sciences; ³Centre for Addictions and Mental Health; ⁴Dalhousie University

Introduction: The military lifestyle involves geographic mobility, separation, risk, and exposure to other unique mental health stressors that is not shared by civilian families. There are no population-based, Canadian data describing patterns of mental health services use in children and youth with a parent in the military, or comparing those patterns to children and youth in civilian families. This study is one of four investigating mental health service use in military-connected families in Ontario.

Methodology: This was a retrospective, matched cohort study of the children of active Canadian Armed Forces members who were posted in Ontario between April 1, 2008 and March 31, 2013. Military-connected children and youth were identified using codes housed at the Ministry of Health and Long-Term Care. The civilian comparator cohort was matched 4:1 on age, sex, and region of residence. Six provincial,

administrative healthcare databases at the Institute for Clinical Evaluative Sciences were combined. Psychiatric hospitalizations and emergency department (ED) visits, psychiatrist visits, and mental health-related primary care (PC) visits were studied. Follow-up was complete to March 31, 2014. Categorical variables were compared using chi square tests for independence. Skewed continuous data were compared using Kruskal-Wallis tests.

Results: This study included 4,607 children and youth with a parent in the Canadian Armed Forces and 15,497 age-, sex-, and LHIN matched civilians (n=19,142). Military-connected children and youth between the ages of 7-19 were more likely to see a PC physician than their civilian comparison group; however, the average number of visits did not vary. A similar proportion of children and youth in both the military-connected and civilian comparison groups saw a pediatrician or a psychiatrist, or visited the ED with a mental health-related concern. The median number of pediatrician visits for mental health reasons was higher in the military-connected cohort aged 15-19. Anxiety and depression were the most common diagnosis codes associated with the mental health services used in both groups.

Conclusion: This study provides quantitative evidence that military connected children and youth are accessing mental health services in the public system, and may use them differently than civilians. Information on how mental health services are accessed in the public health system are critical to understanding pathways of care, and needed to inform the planning and delivery of mental health services.

4B02: Mental Health of Canadian Children Growing Up in Military Families: A Qualitative Study

*Cramm, H., PhD; Khalid-Khan, S., MD; Reddy, P., MD; Groll, D., PhD; Williams, A., MScOT

Queen's University

Introduction: Military-connected children can face stressors such as frequent moves, protracted parental separation or deployment, and risk of parental injury or loss. American research suggests such stressors may place military-connected children at increased risk of developing mental health issues; however, there is little research regarding mental health issues and needs of children in Canadian military families. There may be distinct structural differences, such as accessing healthcare services from provincial rather than federal systems, that must be considered when interpreting American research. In-depth qualitative interviews explored the strengths, challenges, child factors, family factors, military contexts, and mental health service access for military families. Purposive sampling ensured a broad range of stakeholder representation, including Canadian Armed Forces (CAF) serving and non-serving parents/guardians and youth. The purpose of this study was to explore the family perspective on mental health issues and needs for Canadian military-connected children.

Methodology: In-depth qualitative interviews explored the strengths, challenges, child factors, family factors, military contexts, and mental health service access for military families. Purposive sampling ensured a broad range of stakeholder representation.

Results: To date, 29 participants from military families have been interviewed representing 27 families and 54 children; 27 participants were parents and 2 were children. Families had up to 4 children, ages 16 months to 21 years old. All three CAF service elements with a range of service ranks and roles are represented, along with Western, Central, and Eastern provinces. Families reported up to 12 postings and

up to 6 deployments. The majority of participants reported that there were greater mental health, social, and educational challenges for children in military families vs those in civilian families, although this view was not unanimous. Family separation and geographic mobility were identified major stressors, especially for adolescents. Factors participants associated with greater resilience in children in military families included family cohesion, positive attitude, and close connection with military community whereas parental mental health issues, negative attitudes, and isolation were often associated with vulnerability. All participants either experienced or knew someone who experienced significant difficulty accessing adequate mental health care, especially when it was sought through the provincial health system. Recommendations for improvements to mental health services were noted.

Conclusion: This work creates the basis for understanding the mental health issues and service access needs of Canadian military families. Preliminary findings indicate significant challenges regarding mental health, social, and academic well-being for military-connected children as well as accessing health care resources for Canadian military families.

5A01: Findings of an Expert Panel on Suicide Prevention regarding Suicide Prevention Strategies in the Canadian Armed Forces Health Services

**Holens, P., PhD^{1,2}; Sareen, J., MD^{1,2}; Turner, S., MA¹*

¹University of Manitoba; ²Winnipeg Operational Stress Injury Clinic

Introduction: An Expert Panel on Suicide Prevention was convened in October, 2016. The Panel was tasked with examining the current CAF-HS mental health services and suicide prevention programs as compared to current evidence-informed best practices.

Methodology: A literature review was completed and shared with Panel members in advance of the October 2016 meeting. The panel then met and deliberated over three days. The first day was dedicated to reviewing current programs and systems in place in the CAF and determining the strengths and weaknesses. Day two comprised individual presentations from each Panel member to share their knowledge and expertise in their specialized area of suicide prevention. Day three consisted of structured discussion to develop suggestions for improving the CAF approach to suicidality.

Results: The Panel learned that in the Canadian Armed Forces Regular Forces population of approximately 70,000 people, there are an average of 11 suicide deaths per year (range 7 to 21), and that access and availability of mental health services for serving military personnel with suicidal behavior are greater compared to the Canadian civilian population. The Panel, while recognizing that the CAFHS is providing the highest quality of mental health care for military personnel, identified a total of 11 suggestions that have the potential to further improve the CAFHS approach to suicide prevention.

Conclusion: Recommendations by the Panel: 1) Create a new position: CAF Suicide Prevention Quality Improvement Coordinator; 2) Conduct a systematic multi-disciplinary review of CAF member suicides in the last 7 years; 3) Increase suicide risk assessment and safety planning training for primary care and specialty mental health care staff; 4) Conduct a needs assessment for training in suicide-specific psychosocial interventions; 5) Consider implementing the Caring Contacts protocol after a mental health crisis; 6) Review best practices for screening for mental disorders and suicidal behavior during recruitment, pre-deployment, and post-deployment; 7) Create a work-

ing group to develop optimal suicide prevention and well-being support strategies for CAF members/veterans who are in transition from military to civilian life; 8) Consider evidence-based treatments that allow for integrated, rather than sequential, treatment of addictions and mental health disorders; 9) Consider options for delivery of psychological and pharmacological interventions through novel delivery methods (internet, telephone, classroom) to improve accessibility for CAF members; 10) Create a task force that disseminates updated media guidelines on reporting completed suicides to Canadian journalists, editors and reporters; and 11) Engage patients and families in treatment and program planning.

5A02: Pre-enlistment Social and Psychological Risk Factors for Suicide among Canadian Armed Forces Members

**Gottschall, S., PhD; Weeks, M., PhD; Rolland-Harris, E., PhD; McCuaig Edge, H., PhD*

Department of National Defence

Introduction: Although overall rates of suicide have been found to be lower among still-serving Canadian Armed Forces (CAF) members compared to the Canadian civilian population, there has been increasing interest in suicide in the military context. Limited research has focused on demographic and career-related risk factors for suicidal behaviours among CAF members. The current study explored pre-enlistment social and psychological risk factors for suicide among CAF personnel.

Methodology: A nested case-control study was designed to compare responses on the Recruit Health Questionnaire (RHQ) between 32 Regular Force members who committed suicide between 2009 and 2015, and 128 randomly-selected controls matched on gender, age group (i.e., under 25 years, 25 to 29 years, 30 or more years), rank (i.e., non-commissioned member recruit, officer cadet), and recruitment year, according to RHQ data. All cases and controls were still serving at the time of death of cases. All cases and controls were male, and most were non-commissioned members (84.4%) under the age of 25 (65.6%) at the time of recruitment between the years 2006 and 2010 (81.2%). Conditional logistic regression analyses were used to compare cases and controls in terms of pre-enlistment recruit/cadet mental health, parent mental health, and recruit/cadet social environment captured by the RHQ.

Results: Two statistically significant and large effects emerged while controlling for the influences of gender, age, rank, and recruitment year through the matched samples. Specifically, recruits/cadets whose responses on the RHQ indicated they were likely suffering from a mental health condition (i.e., post-traumatic stress disorder, other anxiety disorder, and/or depression) in the two to four weeks before basic training had a significantly elevated risk of taking their own lives (OR = 5.84, $p < .01$). Additionally, those reporting having lived with a problem drinker or alcoholic as a child were more than 8 times more likely to die by suicide than those not reporting this experience (OR = 8.05, $p < .001$).

Conclusion: The significant effects detected despite the small sample size and limited statistical power of the study design lend additional support to existing research linking mental health and suicidal behaviour, and suggest that adverse childhood experiences may be important to consider in future research and suicide prevention. In particular, future research may link the RHQ to the CF Cancer and Mortality II cohort to further explore these and other relationships in a broader sample that includes the released CAF population.

5A03: Commemoration and Contagion: Public Responses to Suicide within the Canadian Military

Barrett, M., PhD (Cand)

Queen's University

Brief Description: Concern over suicide among Canadian military personnel and veterans has drawn significant attention from press outlets, government policymakers and stakeholders in recent years. Building on historical research into public and institutional perceptions of soldier suicide, this study will assess the role commemoration and remembrance has played in government, medical and military responses to the issue of suicide within the Canadian Forces. This study will use selected historical cases to examine the social beliefs and cultural attitudes that have influenced to what extent the government and the public commemorate and recognize military personnel and veterans who died by suicide.

Outcomes: This study uses primary and secondary sources to trace the governmental, institutional and cultural attitudes toward suicide in the Canadian military that have historically influenced how the issue has been presented and discussed in public forums. It analyzes historical and modern case studies to assess how stakeholders and policymakers have balanced calls for commemoration with concerns over triggering a contagion effect in certain at-risk populations. This research will be used to explain how the prevailing cultural beliefs of institutions and the public shape how military casualties have been defined and to what extent these deaths have been formally remembered.

Patient Population: Based on an historical analysis, the results of this research indicate that in addressing the topic of suicide within the military, government policies have had the effect of limiting a public emphasis on commemoration due to a greater concern with producing an inadvertent contagion effect. It is hypothesized that initiatives to de-stigmatize suicide within Canada's military and veteran populations must take into account the historical background, cultural attitudes and institutional priorities that impact the ability of governments and the public to commemorate and remember military dead.

Conclusion: The research will provide stakeholders with a necessary understanding of how the different priorities of the public, government institutions and policymakers influence their respective responses to the issue of suicide in soldier and veteran populations. Approaches that focus entirely on commemoration risk concealing the cause of death and obscuring underlying mental health issues. Approaches that focus primarily on a concern over a contagion effect risk reinforcing silences and stigmas against the individual. Understanding the history behind these issues will assist stakeholders in identifying the cultural beliefs and attitudes towards suicide de-stigmatization in pursuing initiatives aimed at reducing the occurrence of suicide in military and veteran populations.

5B01: Being a Parent of a Young Adult with Posttraumatic Stress Disorder

*Dekel, R., PhD¹; Levavi, N., MA¹; Lavi, T., PhD²

¹Bar Ilan University (Israel); ²NATAL (Israel)

Introduction: While many studies have assessed the effects of post-traumatic stress disorder (PTSD) on families in general and on spouses in particular, little is known about these effects on the relationship

between young veterans with PTSD (over the age of 20) and their parents. This particular angle is especially important given that veterans tend to have sustained mental injuries during the developmental phase of their young adulthood, a stage characterized by identity exploration, instability, self-focus, and an "in-between" status, i.e., being neither child nor adult. Moreover, many veterans with PTSD have difficulty in maintaining stable relationships with partners, thus giving pride of place to parents as their primary source of emotional and financial support. Therefore, the current study explored Israeli parents – their experiences and coping – in the context of their relationships with their military veteran sons who have PTSD. Specifically, questions about aspects of autonomy versus dependence were asked.

Methodology: We conducted 14 semi-open interviews, which were recorded, transcribed and analyzed.

Results: Results highlighted themes related to the effects of the child's PTSD on the parents' emotional and functional adjustment as well as on the parent-child relationship. Parents reported experiencing severe distress, impaired marital relations (of their own), and problems related to their physical health. The relationships they had with their children were characterized by a strong life-long commitment to them alongside deep worries regarding their current and future adjustment. Parents described their lives as being a constant struggle with their child in regard to his functioning and with the army system in regard to the proper recognition of their child's rehabilitation.

Conclusion: This study is one of the first to identify a population that has been deeply affected by the ripple effects of PTSD but has received little attention in the literature. Understanding the needs of these parents, and helping them to cope, will facilitate their sons' – the veterans' – better recovery.

5B02: Family Impacts of Military-related Posttraumatic Stress Disorder: A Scoping Review

Cramm, H., PhD¹; Houlton, C., MScOT(student)¹; Flindall-Hanna, M., MScOT(student)¹; Norris, D., PhD²; *Tam-Seto, L., PhD(Cand)¹

¹Queen's University; ²Mount Saint Vincent University

Introduction: Posttraumatic Stress Disorder (PTSD) is a complex mental health condition that can emerge after exposure to traumatic events. The individual living with PTSD experiences a range of symptoms, including intrusion, avoidance, negative changes in cognition and mood, and changes in arousal and reactivity. If the individual is living within a family unit, these types of symptoms can create barriers to enacting familial roles and challenges to effective communication and sustaining interpersonal relationships. The purpose of this scoping review was to explore how the research literature describes the family impacts for military personnel and Veterans living with PTSD.

Methodology: To synthesize and describe the literature in this area, a scoping review was most appropriate. Scoping reviews allow for broad research questions to be mapped, using a systematic, transparent, and iterative process. We followed Arksey and O'Malley's 5-step structured approach to conduct a scoping review to identify and synthesize knowledge on military-related PTSD and the family. With consultation from a health sciences librarian, PsycINFO, Embase, CINAHL and Sociological Abstracts were selected as most relevant for the comprehensive search strategy. Included sources were also mined for additional references.

Results: From the 3975 potential sources identified initially, 539 stud-

ies proceeded through title and abstract screening. A total of 42 studies proceeded through full text screening to analytic data extraction. At least two reviewers were involved at each step of the review.

Most of the literature describes the serving member or Veteran with PTSD as a male member in a traditional nuclear family system. Parental PTSD impacts children and their family systems both directly and indirectly. PTSD symptoms affect the style and quality of interactions within the families. Children and spouses may themselves present as traumatized, even if they themselves have not had direct trauma exposure. The ways in which families structure their daily lives can shift to a tense and highly rigid pattern of interaction, with altered communication and roles.

Conclusion: There is a broad global impact of PTSD on family relationships and routines that impact children's lived experiences in an ongoing manner. These findings strengthen the evidence for family-centred approaches to PTSD.

5B03: Parental Posttraumatic Stress Disorder and its Impact on Children Growing up in Military-connected Families: A Qualitative Systematic Review

*Cramm H., PhD¹; Godfrey, C., PhD¹; Murphy, S., MScOT¹; Dekel, R., PhD²; McKeown, S. MLS¹

¹Queen's University; ²Bar-Ilan University (Israel)

Introduction: When a serving military member or Veteran is living with Posttraumatic Stress Disorder (PTSD), the family system is affected. Secondary traumatization has been documented among spouses. The literature about the specific impacts on children in military-connected families is less developed, which informed our research questions:

1. What are the impacts of parental PTSD on children growing up in military-connected families?
2. Is there evidence of secondary traumatization? Following the Joanna Briggs Institute procedure, the research team conducted a qualitative systematic review. The search process entailed a three-step search process: 1) initial search of MEDLINE and CINAHL; 2) detailed search across all databases using *all* keywords and index terms; 3) hand search the reference lists of included papers to locate additional studies. Targeted databases included: Medline, Embase, Web of Science Core Collection including Social Sciences Index, CINAHL, PsycINFO, AMED, ERIC, and ProQuest Dissertations and Theses. At least 2 reviewers completed all screening and appraisals.

Methodology: Following the Joanna Briggs Institute procedure, the research team conducted a qualitative systematic review. The search process entailed a three-step search process: 1) initial search of MEDLINE and CINAHL; 2) detailed search across all databases using *all* keywords and index terms; 3) hand search the reference lists of included papers to locate additional studies. Targeted databases included: Medline, Embase, Web of Science Core Collection including Social Sciences Index, CINAHL, PsycINFO, AMED, ERIC, and ProQuest Dissertations and Theses. At least 2 reviewers completed all screening and appraisals.

Results: The search yielded 13,485 citations. Studies focusing on homeland conflicts, groups impacted by terrorism or political unrest, child soldiers, spouses exclusively, and program descriptions were excluded. Nine qualitative studies proceeded to full extraction and analysis.

Conclusion: Overall, the quality of the evidence proved to be mixed. Preliminary analysis suggests that children may be impacted both directly and indirectly by the expression of parental PTSD that includes parents experiencing difficulty with the modulation and expression of emotion. Disruption to the family system appears to impact communication and attachment for children. There is some evidence of increased rates of certain mental health conditions among the children.

5C01: Does the Road to Mental Readiness program work? Results from a Pilot Group Randomized Control Trial at Basic Military Qualification

*Fikretoglu, D., PhD^{1,2}; Liu, A., PhD²; Blackler, K., MSc¹

¹Department of National Defence; ²McGill University

Introduction: In 2008, the Canadian Armed Forces (CAF) developed the Road to Mental Readiness (R2MR) program as its standard mental health education and resilience building program and quickly implemented it across the military training and deployment cycles. However, to date, the efficacy of R2MR has not been tested. The current study is the pilot phase of a large, group randomized control trial (GRCT) to test the efficacy of R2MR, during CAF members' first exposure to this type of training, in Basic Military Qualification (BMQ).

Methodology: Eight Anglophone Non-Commissioned Member (NCM) recruit platoons were included in this pilot study. The platoons were randomized to an Intervention (R2MR at week 2 of the BMQ) or a Delayed Intervention Control (R2MR at week 9 of the BMQ) group. Psychological health (Patient Health Questionnaire, PHQ-9; Generalized Anxiety Disorder Scale, GAD-7; Kessler Psychological Distress Scale, K-10; and the Subjective Units of Discomfort Scale (SUDS), resilience (Connor-Davidson Resilience Scale, CD-RISC), and mental health service use attitudes and intentions (CAF Mental Health Service Use Questionnaire, CAF-MHSUQ) were assessed at three time points: around week 2 (a day or two before the Intervention group received R2MR; Baseline), towards the middle of the BMQ, around week 5 (Followup1), and towards the end of the BMQ, a day or two before the control group received R2MR, around week 9 (Followup2). Mixed linear models (assuming random intercepts and slopes to account for platoon-level differences) were used to determine whether R2MR has beneficial effects on psychological health, resilience and mental health service use attitudes and intentions.

Results: There were 388 participants at Baseline, 332 at Followup1, and 300 at Follow-up2. At follow-up1, there were no statistically significant differences between the Intervention and Control groups for any of the outcome measures. At Followup2, there were no statistically significant differences on measures of psychological health and resilience. However, at Followup2, there were statistically significant differences on 5 out of the 6 subscales of the CAF-MHSUQ, with the Intervention groups reporting more favorable mental health service use attitudes in all cases. Effect sizes for these differences were small (Cohen's $d=.24-.33$).

Conclusion: In this small pilot GRCT, we found beneficial effects for R2MR for some but not all of the key outcomes. We discuss these findings in the context of study limitations (e.g., low statistical power) and the extant military mental health education and resilience training literature. We also discuss emerging findings from the ongoing GRCT.

5C03: A Pilot Group Randomized Control Trial to Test the Efficacy of the Road to Mental Readiness (R2MR) Mental Health Training Program during Basic Military Qualification: Feasibility Findings

*Blackler, K., MSc¹; Fikretoglu, D., PhD¹; Liu, A., PhD²

¹Department of National Defence; ²McGill University

Introduction: The Road to Mental Readiness (R2MR) mental health education program is delivered during Basic Military Qualification (BMQ) to Non-Commissioned Member (NCM) recruits. A pilot study was completed in preparation for a larger Group Randomized Control Trial (GRCT) to test the efficacy of R2MR. The main objective of the pilot study was to assess the feasibility of the larger GRCT. This included examining randomization, blinding, participation rates, attrition, and data validity.

Methodology: Blocked randomization was created and shared with the recruit school several months prior to the start of the study. The pilot study included eight Anglophone platoons, randomly assigned to either the intervention or control group. Both groups completed three assessments at week 2, 5 and 9 of the BMQ. At each data collection, participants were assessed on psychological health, psychological resilience, and mental health service use attitudes and intentions.

Results: There were a few instances in which the scheduling of assessment sessions did not respect the randomization scheme, these were resolved quickly; there was an instance of possible un-blinding of participants, which led to additional training for study staff in charge of data collection. Out of a possible 427 recruits, a total of 388 consented to participate in the study (91%). Of those 388 participants, 274 completed all three data collection sessions (71%). There was not a significant difference in attrition between the intervention and the control group ($p=0.34$). Some potential threats to data validity were noted, for instance the late evening timing of assessment sessions, difficulty understanding and/or complying with the instructions of some of the study measures, and decreasing motivation to complete repeated measures over the course of the study. A number of adjustments were made to study procedures to minimize the effects of these threats.

Conclusion: The operational and training settings in military organizations pose special challenges for the feasibility of RCTs. As the Canadian Armed Forces (CAF) moves towards testing mental health interventions such as R2MR in RCTs, it will be important to capture lessons learned about feasibility. This pilot study is the first GRCT on a mental health intervention in the CAF and provides valuable information about RCT feasibility issues that arise in military operational and training contexts.

6A01: Rapport final sur l'évaluation sommative du Programme d'aide aux vétérans en équitation thérapeutique

*Blackburn, D., PhD; Robichaud, F., PhD; Sia, D., PhD; Tchouaket, E., PhD

Université du Québec en Outaouais

Introduction: Le Programme d'aide aux vétérans en équitation thérapeutique (PAVÉ) a été développé par le centre équestre Équi-Sens de Terrebonne (Québec) et est une version québécoise et adaptée du programme américain *Equine Assisted Psychotherapy* (EAP) and *Equine Assisted Learning* (EAL) de l'organisation *Equine Assisted Growth and Learning Association* (EAGALA). Il s'adresse spécifiquement aux anciens

combattants des Forces armées canadiennes qui souffrent d'une blessure de stress opérationnel.

Methodology: Le projet s'est déroulé entre les mois de janvier 2015 et de juin 2017 avec trois cohortes de participants. L'échantillon est composé de 14 anciens combattants des Forces armées canadiennes qui parlent le français à la maison, qui habitent la province de Québec et qui vivent avec une ou des blessures de stress opérationnel. Une méthodologie mixte a été préconisée et les participants devaient remplir un court questionnaire sociodémographique, compléter une pré-évaluation et une post-évaluation du fonctionnement psychosocial, répondre en deux temps (t_1 = deux semaines avant le début des séances; t_2 = deux semaines après la dernière séance) à un questionnaire qui inclut des échelles validées, compléter 10 sessions d'équitation thérapeutique et finalement rencontrer l'équipe de chercheurs dans le cadre d'un entretien individuel, semi-dirigé. L'analyse des résultats a été faite par l'entremise de SPSS 22 et de NVivo 11.

Results: La majorité des composantes du PAVÉ est évaluée positivement par les participants. Quelques participants font ressortir quelques points négatifs du PAVÉ dont la structure des séances et les rétroactions suite aux séances. Le PAVÉ a des effets sur la qualité de vie générale et sur le fonctionnement social général, mais a peu d'effets sur les symptômes de la blessure de stress opérationnel. Les effets du PAVÉ sur les émotions sont de courte durée pour la majorité des participants. La relation et les interactions avec le cheval sont évaluées positivement par la totalité des participants. Le PAVÉ est jugé comme une intervention complémentaire à la psychothérapie traditionnelle par les participants. Deux semaines après l'intervention, les effets généraux du PAVÉ se sont dissipés. La totalité des participants recommandent aux frères et sœurs d'armes l'équitation thérapeutique.

Conclusion: Ce projet de recherche a permis de jeter un regard évaluatif sur le Programme d'aide aux vétérans en équitation thérapeutique, programme francophone et adapté aux réalités des anciens combattants québécois. Au final, l'évaluation sommative a permis de faire ressortir les forces et les faiblesses du PAVÉ. Ce projet a aussi permis d'enrichir la littérature dans le domaine de l'équitation thérapeutique, des blessures de stress opérationnel et des anciens combattants.

6A02: Evaluation of the Psychological Outcomes of an Equine Therapy Program for Current and Former Australian Armed Forces with Mental Health Difficulties.

*Romaniuk, M., DPsych^{1,2}; Evans, J., PhD¹; Kidd, C., BPsych (Hons)¹; Gilmour, J., BPsych (Hons)¹

¹Gallipoli Medical Research Institute (AU); ²Queensland University of Technology (AU)

Abstract not published

6A03: Quantifying the Effectiveness of Service Dogs on Posttraumatic Stress Disorder Related Symptoms and on their Impacts among Veterans: Preliminary Results of a 3-month Follow-up Assessment in the Context of a One-group Time-series Design Study

*Gagnon, D.H., PhD¹; Vincent, C., PhD^{2,3}; Belleville, G., PhD²; Auger, E., MD⁴; Lavoie, V., PhD⁴; Besemann, M., LCol, MD⁵; Dumont, F., PhD³; Champagne, N., ED, MA⁶; Lessart, G., PhD (Cand)¹

¹Université de Montréal; ²Université Laval; ³Center of Interdisciplinary Research in Rehabilitation and Social Integration; ⁴Operational Stress

Injury Clinic of CIUSSS de la Capitale Nationale; ⁵Department of National Defence; ⁶Mira Foundation

Introduction: Among veterans who are affected by a posttraumatic stress disorder (PTSD), psychiatric service dogs (PSD) represent a potential complementary intervention alongside conventional psychotherapy or pharmacotherapy interventions. PSD are expected to reduce the PTSD-related symptoms and, consequently, to improve daily and social functioning as well as health-related quality of life (HRQOL) in this population. Nevertheless, the strength of the evidence on the effects of PSD remains very weak, particularly among veterans. Hence, the objective of the present study aims to quantify the short-term effectiveness (i.e., 3-month) of a first PSD provided to veterans who are affected by a PTSD on psychiatric symptoms, daily/social functioning and HRQOL.

Methodology: 20 veterans, waiting for their first PSD, were recruited across seven dog training schools in Canada and in the USA. After enrolling into a time-series research single group design, they completed five standardized questionnaires at three distinct times in the context of a time-series design: 3 months before (T1), immediately before (T2), and three months after (T3) having been paired with their personal PSD. The five standardized questionnaires were: *Posttraumatic Stress Disorder Checklist for military* (PCL-M) that measures PTSD-related symptoms such as cognitive intrusions, avoidance, alterations of mood, intrusive thoughts, and hyperarousal, *Beck Depression Inventory* (BDI-II) that measures depressive symptoms, *Pittsburgh Sleep Quality Index* (PSQI) that measures the quality of sleep, *Life Space Assessment* (LSA) that measures social integration in the community, and comfort in public and commercial places, and *Brief World Health Organisation Quality of Life Questionnaire* (WHOQOL-BRIEF) that measures HRQOL. Friedman tests compared measures obtained at T1, T2, and T3 and, whenever a difference was found ($p < 0.05$), posthoc tests (T1 vs T2 & T2 vs T3) were conducted with an adjusted p -value ($p < 0.025$).

Results: 15 veterans completed their 3-month follow-up assessment after having been paired with their PSD whereas five veterans dropped out. The results highlight that pairing veterans affected by a PTSD with a PSD has significant and beneficial effects on 13/17 symptoms measured with the PCL-M, BDI-II (total score), and PSQI (global score and habitual sleep efficiency subscore). No significant change was found for the LSA and WHOQOL-BRIEF.

Conclusion: Pairing veterans affected by PTSD with a personal PSD reduces PTSD-related symptoms and improve quality of sleep within a 3-month period. A longer period may be needed before these effects translate into improved functioning and HRQOL in this population. Hence, continuing follow-up assessments every three months over a one-year period will strengthen these preliminary evidences.

6A04: The Value and Relevance of the Spiritual Dimension of Health and Well-being: Findings of a Literature Review and Expert Consultation

*Brémault-Phillips, S., PhD¹; Koenig, H., MD²; Pargament, K., PhD³; Plante, T., PhD⁴; Hamner, K., PhD⁵; Smith-MacDonald, L., MA⁶; M; Scarcella, F., BHK¹; Weis, J., MN¹; Sinclair, S., PhD⁶; Olson, J., PhD¹

¹University of Alberta; ²Duke University; ³Bowling Green University; ⁴Santa Clara University; ⁵The University of Alabama; ⁶University of Calgary

Introduction: There is growing interest in the concept of spirituality among civilian, military and veteran populations as it relates to spiri-

tual fitness and overall well-being. Approximately 3300 studies were identified by Koenig in a 2010 review of the literature regarding religion/spirituality and health, with the number of studies continuing to rise. Spiritual fitness has been defined as: a sense of purpose, direction, and resources that facilitate the core self and feelings of connectedness with people and the world¹. This construct is currently being explored in its relationship to resilience, operational readiness, and the military to civilian transition. Early evidence is illustrating that there is a strong connection between spiritual well-being and veterans' mental health and wellbeing trajectories. However, due to the subjective nature of this complex construct, objective assessment and intervention is difficult to address.

Methodology: Expert consultation with leading scholars and a preliminary review of the literature from relevant databases (EBSCO, Medline) was conducted January through March 2017. The objectives were to identify (1) spiritual dimensions of health, fitness, and resiliency; (2) the importance of spiritual health to overall well-being (physical, mental, and social); (3) the value of spiritual health for veterans; and (4) current best practices to support spiritual health.

Results: This review revealed a strong evidence-base for the spiritual dimensions of health, but, a substantive gap within military specific literature. For example, within the Canadian context, only 5 scholarly articles explicitly addressing spiritual health and wellbeing were found to meet eligibility criteria. More broadly speaking, the literature describes the positive impact of spirituality and religion on mental, physical, and social health. Evidence demonstrates improvement in mental health conditions (e.g. PTSD, depression, suicide, anxiety) through the use positive spiritual coping, with negative spiritual coping producing the inverse. In addition, spirituality has also been shown to influence behavioural health (e.g. exercise, diet, substance use, sexual behaviour), physical health (e.g. cardiac, cancer, mortality), and social health (e.g. identity, community, culture, connection).

Conclusion: An emerging consensus among international experts suggests that the spiritual dimension plays a significant role in the health and well-being of civilians, military personnel and veterans across the lifespan. Successful transition of military personnel to post-service functioning, community engagement or participation, and well-being can be supported by attention being given to the spiritual domain. There is a need to further identify strategies to assess and support spiritual dimensions of health and well-being.

6D01: Moral Injury and Posttraumatic Stress Disorder: A Scoping Review

Cramm, H., PhD ^{1,2}; Monk, K., MScOT (Cand)¹; Ferguson, E., MScOT (Cand)¹; *Belanger, S., PhD ^{1,2}

¹Queen's University; ²Royal Military College of Canada

Introduction: Through the course of their duties, military personnel can be exposed to a variety of traumatic stressors. While Posttraumatic Stress Disorder (PTSD) has garnered much research attention, the concept of moral injury has recently been increasingly raised. While definitions are varied, moral injury is thought to involve a psychological conflict that can emerge from situations such as acting on commands like leaving behind a wounded comrade, or failing to stop immoral acts involving violence and cruelty. The purpose of this scoping review was to explore how the literature conceptualizes the relation between PTSD and moral injury.

Methodology: This review followed the 5-step scoping review pro-

cess described by Arksey and O'Malley (2005), which includes identifying the research question, identifying relevant studies, study selection, charting the data, collating, and summarizing and reporting the results. Through consultation with a health sciences librarian, search terms, databases and methods for data retrieval appropriate for the research question were determined. In June 2016, the following databases were electronically reviewed: PsycINFO, Medline, Embase, Sociological Abstracts, and CINAHL. The analytic data charting form included categories such as the type of military personnel (non-deployed, Veterans, peacekeepers, active combatants, civilians), active agent vs passive observer, morally injurious event or transgressive act, moral injury and suicide, possible signs and symptoms of moral injury, moral injury/PTSD link with depression, spirituality, social isolation and withdrawal, perceived culpability, types of moral emotions (contempt, disgust, guilt, shame, blend of guilt/shame, anger, helplessness, regret), directionality of relationship between moral injury and PTSD (overlapping, distinct, sequential), and organizational factors or issues (culture of combat/military, policy and structures of the military).

Results: 3547 references were identified as potential sources. After de-duplication and title/abstract screening, 61 studies proceeded to full-text screening. 37 studies were included in full data extraction and analysis. Three main themes emerged: (1) The concepts of PTSD and moral injury are messy in the research literature, with overlapping definitions and differences around whether they are separate, sequential, or simultaneous; (2) Mechanisms of acquisition, expression of the condition, neuropathological changes, and the role of spirituality can create protective factors and vulnerabilities; and (3) Distinguishing between PTSD and moral injury for detection and intervention remains problematic given the current state of the research.

Conclusion: The concept of moral injury is becoming increasingly relevant in discussions about PTSD. The current understanding of these concepts and how they relate to one another will need further clarification through research, including neuroimaging.

6D03: Operational Ethics: Effects of Scenario and Choice on Military Moral Decision Making

*Thompson, M.M., PhD; Hendriks, T., MA; Blais, A-R., PhD

Department of National Defence

Introduction: The current research sought a deeper understanding of military moral decision making processes research. We apply a traditional moral decision making experimental procedure to explore the moral choices and decision processes of military personnel using the two ethical scenarios drawn from the operational experiences of Canadian Armed Forces commanders.

Methodology: 153 military participants read one of two military moral scenarios with mission orders for neutrality and impartiality embedded and then selected one of two possible response options (1. Refugees asking to enter your military camp: a) let them in vs. b) turn them away; 2. Disobedient subordinate: a) private reprimand or b) court martial). Participants were also assigned to one of three harm perspectives: (self, others, or undefined) before completing other moral decision-making indices (moral awareness, social consensus, magnitude of consequences).

Results: Scenario and option choice affected decision-making processes, particularly in terms of moral conflict, i.e., the consistency among the moral indices. In the refugee scenario participants whose choice was more consistent with the mission orders also rated their

choice as being significantly *less* moral and indicated that fewer other people would agree with their choice than did those who chose to let the refugees in. Conversely, in the subordinate scenario, choices reflective of mission rules were evaluated as being significantly *more* moral and *more* likely to be agreed with by others than did those participants who selected the private reprimand. Moral awareness scores were also significantly higher for those whose choice was not consistent with stated mission orders.

Conclusion: Our findings highlight some of the complexity expected to characterize the moral challenges of the future security environment. Moreover, the current methodology provides a systematic way to assess and understand the moral decision making processes of soldiers. The methodology also holds promise for operational ethics training. For instance, it allows soldiers to work through moral scenarios and to have feedback concerning relevant issues to consider. It also allows for variations of other aspects of the scenarios to demonstrate their effects on moral decisions, and provides the method to be able to pinpoint the aspects of the moral decision making process that are most affected. Further it would allow for the systematically quantifying of the effects of operational stressors (time pressure, information overload, sleep deprivation) on the moral decisions and the moral decision making processes of military personnel – compelling information that could be incorporated into military moral education.

Poster Presentations

P105: Opioid Crisis in Canada: Relevance to the Canadian Armed Forces

*Afanasyeva, M., MD, PhD¹; Carew, M., MD²; Rolland-Harris, E., PhD²; Strauss, B., MSc²; Theriault, F., MSc^{1,2}

¹University of Toronto, ²Department of National Defence

Introduction: Canada has been experiencing a dramatic rise in opioid-related deaths. This increase in mortality has been particularly pronounced in British Columbia, where a public health emergency was declared in April 2016. The rise in overdoses has been mostly attributed to the recent emergence of widely available, inexpensive, and highly potent fentanyl. The problem of the increased fentanyl supply is twofold: 1) Canada has become a world 'champion' in fentanyl prescribing; 2) both domestic and international markets have been flooded with fentanyl produced in clandestine laboratories. Increases in the supply have been paralleled by increases in the demand. The high prevalence of chronic pain among adults coupled with the unbridled opioid prescribing created a strong demand for opioids. Canadian Armed Forces (CAF) personnel do not exist in isolation from the rest of the Canadian population, thereby warranting a closer look at the state of opioid use within the CAF.

Methodology: We identified a list of existing CAF data sources that could be used to assess the use of opioids and the rates of overdoses due to opioids. The main data sources available to assess the use of opioids include the CAF *Health and Lifestyle Information Survey (HLIS)* and pharmacy prescription data. Data sources to assess the rates of opioid-related overdose include the CAF *Mortality Database* and *CF Cancer and Mortality Study II*.

Results: According to the 2013-2014 HLIS results, 5.9% of Regular Force personnel used drugs for non-medicinal purposes in the preceding 12 months, including 1.0% of personnel who used opioids. These numbers were unchanged from 2008-2009. The drug use was associated with being younger, being a non-commissioned member, having no post-secondary education, being single, having symptoms suggestive of depression and of post-traumatic stress disorder, and contemplat-

ing suicide in the preceding 12 months. Interpretation of these results should take into account that the HLIS relies on self-reporting and is, therefore, subject to social desirability bias likely leading to an underestimation of drug use.

Conclusion: We are currently analyzing other data sources to generate a more complete epidemiological picture of opioid use and to identify gaps to further improve surveillance and data collection to inform the development of a comprehensive program of opioid addiction prevention, treatment, and harm reduction in the setting of the CAF.

P106: An Assessment of Component and Deployment-related Experiences on Mental Disorders among Serving CAF Personnel who returned from an Afghanistan Deployment

Boulos, D., MSc

Department of National Defence

Introduction: The mission in Afghanistan has been shown to have an impact on mental disorders in Canadian Armed Forces (CAF) personnel. While others have identified some differences in the prevalence of mental disorders between Regular Force (RegF) and Reserve Force (ResF) personnel who returned from deployments, little is known on whether this may be attributed to differences in deployment-related experiences. The current study explores the influence of deployment-related experiences on differences in mental health problems (MHP) between serving RegF and ResF members who deployed in support of the mission in Afghanistan.

Methodology: Data were obtained from the 2013 CAF Mental Health Survey of currently serving personnel. The World Health Organization's Composite International Diagnostic Interview (WHO-CIDI) identified past-year MHP (i.e., PTSD, panic disorder, generalized anxiety disorder, major depressive episode, alcohol abuse, and alcohol dependence). Logistic regression was used to compare MHP between RegF and ResF members after sequentially adjusting for covariates: military and socio-demographic variables, child abuse and lifetime traumatic experiences, pre- and post-deployment mental health training, and deployment-related characteristics and experiences.

Results: After adjusting for potential confounders, ResF personnel remained less likely to be identified with a past-year anxiety disorder (AOR=0.72 [95%CI: 0.58-0.90]), specifically both generalized anxiety disorder and panic disorder, but more likely to be identified with a past-year alcohol abuse disorder (AOR=1.63 [95%CI: 1.04-2.58]). The estimated covariate-adjusted prevalence differences for component was highest for the any anxiety disorder outcome (2.8% [95%CI: 1.0-4.6]; lower for ResF). We found that, with the exception of the 'ever received incoming artillery, rocket, or mortar fire' experience, each identified deployment-related experience had some association with at least one of the measured MHP. The 'ever felt responsible for the death of a Canadian or ally personnel' experience had the strongest association with MHP; its estimated covariate-adjusted prevalence differences was highest for the outcome of any of the 6 measured mental disorders (11.2% [95%CI: 6.6-15.9]; higher with the experience).

Conclusion: Past-year MHP differences between currently serving RegF and ResF personnel were identified and these largely persisted after adjustment for potential confounders. The findings suggest that although deployment-related experiences were

highly associated with MHP, these experiences only partially accounted for MHP differences between CAF components with an Afghanistan deployment.

P107: The Relation between Dissociative Symptoms of Depersonalization and Derealization and Functional Disability among Military Members and Veterans with PTSD

*Boyd, J.E., MSc^{1,2,3}; Protopopescu, A., BSc, BA^{1,2,3}; Jetly, R., Col., OMM, CD, MD FRCPC^{4,5}; O'Connor, C., MA, MSc³; Hood, H.K., PhD, CPsych^{1,3}; Lanius, R.A., MD, PhD^{6,7}; McKinnon, M.C., PhD, CPsych^{1,2,3}

¹McMaster University; ²St. Joseph's Healthcare (Hamilton); ³Homewood Health; ⁴Department of National Defense; ⁵University of Ottawa; ⁶University of Western Ontario; ⁷Lawson Health Research Institute

Introduction: Post-Traumatic Stress Disorder (PTSD) is associated with significant negative impacts on day-to-day functioning. Indeed, among veterans, PTSD is among the factors most predictive of functional disability following return from the combat theatre. Here, we sought to evaluate which symptom-level variables, including dissociative symptomatology, are most critical in determining functional disability among military members with PTSD. In particular, we hypothesized that among military personnel and veterans with PTSD, dissociative symptoms, particularly depersonalization and derealization as seen in the dissociative subtype of PTSD (PTSD-DS), would be most strongly related to functional disability, given the association of this subtype and increased disease severity.

Methodology: Clinical assessment of multiple symptom domains, including PTSD symptomatology (PTSD Checklist for DSM-5 (PCL-5)), dissociative symptoms of depersonalization and derealization (Multiscale Dissociation Inventory (MDI)), depression, anxiety, stress (Depression Anxiety Stress Scale (DASS)), emotion regulation (Difficulties in Emotion Regulation Scale (DERS)), alexithymia (Toronto Alexithymia Scale (TAS)), and functional disability (World Health Organization Disability Schedule 2.0 (WHODAS 2.0)-36 item) were accessed for 44 veterans or military personnel seen at Homewood Health Center's Program for Traumatic Stress Recovery via retrospective chart review. Relations between functional disability (as measured by WHODAS 2.0) and symptom-level variables were assessed by correlational analyses using Pearson's r or Spearman's ρ , depending on the normality of the data.

Results: Correlational analysis revealed the strongest relationship between overall functional disability (WHODAS 2.0) and MDI depersonalization ($p = 0.570$, $P = .000$) and derealization ($p = 0.674$, $P = .000$) symptoms. This was followed by significant relationships between overall functional disability and DERS total score ($p = 0.538$, $P = .000$), DASS stress ($p = 0.447$, $P = .002$), depression ($p = 0.442$, $P = .003$), and anxiety ($p = .436$, $P = .003$), PCL-5 total score ($p = .442$, $P = .003$), and TAS total score ($p = 0.436$, $P = .003$).

Conclusion: As hypothesized, dissociative symptoms of depersonalization and derealization associated with PTSD-DS demonstrated the strongest relation with overall functional disability among veterans or military personnel with PTSD. In addition, difficulties in emotion regulation were strongly related to functional disability, followed by depression, anxiety, and stress, PTSD symptoms and alexithymia. These findings are critical in further characterizing the dissociative subtype of PTSD, and in informing which treatment targets are most essential in allowing military members and veterans to recover on a functional level.

P108: Increased Default Mode Network Connectivity in Magnetoencephalography is Associated with Concussion Severity

*Dunkley, B.T, PhD^{1,2}, Da Costa, L., MD³, Wong, S., BSc¹, Jetly, R., MD⁴, Pang, E.W., PhD^{1,2}, *Taylor, M.J., PhD^{1,2}

¹The Hospital for Sick Children; ²University of Toronto, Toronto, Canada; ³Sunnybrook Hospital; ⁴Department of National Defence

Introduction: A single concussion (mild traumatic brain injury) can leave lasting changes to brain structure and function – one particularly damaging aspect of the injury is how it impacts communication between different brain regions, affecting *functional connectivity*. Previous studies using magnetoencephalography (MEG) have shown bidirectional changes in brain oscillations and synchrony during the resting state, but few have explicitly targeted neurophysiological ‘intrinsic connectivity networks’ (ICNs), such as the default mode, attention, visual, and motor networks – functionally-segregated networks that perform specific mental tasks. We examined oscillations and amplitude envelope coupling following concussion in adults via MEG targeting ICNs.

Methodology: Resting data were collected in 20 participants (all males, mean age = 31) with a single concussion in the acute/sub-acute stage of injury and a group of matched controls (all males, mean age = 27). Ongoing neural activity was captured from coordinates that defined 5 ICNs – the default mode, salience, dorsal & ventral attention, vision, and motor networks. Time-series were filtered in canonical frequency ranges (3-7, 8-14, 15-30, 30-55, 65-80 Hz) and functional connectivity was computed for all intranet work source pairs using amplitude envelope correlations (AEC).

Results: Between-groups contrasts of connectivity revealed significantly increased coupling in the concussion group in the DMN and motor networks across alpha, beta and gamma ranges. These differences were not explained by power spectrum alterations. Moreover, connectivity in the DMN and motor networks positively correlated with concussion symptom severity – however, when anxiety and depression symptoms were accounted for, the association with motor network connectivity disappeared whilst the DMN correlation remained.

Conclusion: These results suggest that even a single concussion can disturb the organisation of the brains’ intrinsic, functionally-integrated, and specialised networks – specifically, the DMN appears perturbed by injury, which distinct regions that comprise this network unable to efficiently segregate and decouple from one another. The DMN is an important network that facilitates shifting among the other intrinsic networks in the brain, and poorer functioning within the DMN could have wide-ranging ramifications that may help explain the cognitive symptoms experienced post-concussion.

P109: Developing an Occupational Therapy Trauma Intervention Framework

*Edgelow, M., MSc; Cramm, H., PhD

Queen’s University

Brief Description: Experiencing a traumatic event can negatively impact an individual’s coping abilities and participation in daily life. Serving military members and Veterans who have experienced trauma may meet the criteria for an operational stress injury (OSI) and may also be diagnosed with post-traumatic stress disorder (PTSD) or other men-

tal health conditions. Occupational therapists may encounter individuals who have experienced trauma in a variety of practice settings. Evidence informed practice is developing in this area, but to date, there are no occupation-focused intervention guidelines for occupational therapists working with clients who have experienced trauma.

Clinical Outcomes: An occupational therapy trauma intervention framework was developed using existing evidence, with a focus on client readiness. Domains of the framework include general approaches, occupational therapy enablement skills, assessment, treatment and self-regulation. This framework has been piloted with occupational therapists at several professional development sessions, with positive feedback on clarity and clinical utility. Further validation of the framework is ongoing.

Patient Population: This occupational therapy intervention framework is well suited for use with populations who have experienced trauma, such as serving military members and Veterans. Clients may have experienced an OSI and be diagnosed with PTSD, a mood or anxiety disorder, or other mental health conditions.

Conclusion Continued research and development of the occupational therapy trauma intervention framework will support best practices for occupational therapists focused on the occupational needs of clients who have experienced trauma, such as serving military members and Veterans. This framework provides a starting point for the development of evidence informed occupational therapy practice with clients who have experienced trauma.

P110: The Future of Community Mental Health and Wellness-A Report on Community Action

Rostek, M., LCol., PhD; *Gamble, B., PhD

University of Ontario Institute of Technology

Introduction: The contemporary health and wellness environment reveals a convergence of an aging population, rapidly increasing burden of chronic diseases, and the exponential growth of disruptive changes (e.g. technological innovation) in the health and social care systems. In particular, shifts in the site of care delivery from the hospital to the community and home. Further, mental health is now recognized as a key component of health and wellness; currently depression is the leading cause of disability worldwide; and five of the 10 leading causes of disability are related to mental disorders. Community-based treatment of mental illness has been shown to be cost-effective with lasting change and recovery potential. Disruptive change, the ubiquitous nature of mental illness coupled with its crisis status in certain communities make the future of community mental health and wellness a timely topic for the civilian sector but also for military personnel and veterans; and their families who could potentially access mental health and social services in the civilian sector.

From “mindfulness” to “health promotion” to “health data analytics” this presentation will report on the Futures Forum taking place May 2017 in Ontario’s Durham Region between Canadian military representatives, academia, government, and industry. The purpose of the forum is to sustain and form collaborative partnerships to connect disruptive changes (or innovations) to support community mental health and wellness services. The harnessing of innovative disruptions requires a shift in thinking of the “who and where” of health and social care.

Methodology: Using an integrated knowledge translation approach this presentation will begin with an overview of the genesis of the future focus taken with this forum. Next, we will report on the “who and where” of ser-

vice implementation within four thematic areas: Mental health of vulnerable populations; Occupational health and well-being; Physical activity and healthy communities; and Health technology and quantifying health.

Results: The outcomes of this Futures Forum will be analyzed in a report to the President of the University of Ontario Institute of Technology with a view to enhancing our collaborative and cooperative research initiatives on community mental health and wellness with academic, private, public and not-for-profit sectors.

Conclusion: Viewing disruptive changes as innovations within collaborative partnerships can foster a climate of engagement that can change the way we view not only the way services are delivered but to empower the lived experiences of individuals living with mental illness from a population health perspective.

P111: Emotionally Focused Couple Therapy in the Treatment of Combat-related PTSD

Irwin, T., Lt(N)

Department of National Defence

Brief Description: Research shows a strong correlation between posttraumatic stress disorder (PTSD) and social support on the one hand and insecure attachment and relationship distress on the other. PTSD is a systemic diagnosis with bi-directional effects which has a severe and pervasive negative impact upon dyadic functioning for both partners while exacerbating PTSD symptom. Among CAF members who committed suicide following the mission in Afghanistan, nearly 70% of those who were in a committed partnership experienced relationship breakdown not long before ending their life. Could better outcomes be had by bringing an intimate partner into the healing process in couple based therapy in addition to the present individual treatment model in an effort to leverage the powerful role of intimate partner support in a more comprehensive approach to the treatment of PTSD? This presentation will offer theoretical and research evidence justification for the use of couple-based interventions in the treatment of PTSD by examining research around PTSD and social support, attachment theory, and couple therapy.

Clinical Outcomes: Research to date in support of couple-based interventions in the treatment of combat-related PTSD will be presented in several areas. Meta-analysis of predictors for and protectors against PTSD that reveal social support to be either the number one factor (Brewin, Andrews, & Valentine, 2000) or one of the most significant factors (Trickey Siddawa, Mesier-Stedam, Serpell, & Field, 2012; Ozer, Best, Lipsey & Weiss, 2003) will be examined. In addition, research around attachment theory where secure attachment promotes recovery from PTSD while insecure attachment has been shown to aggravate PTSD will be considered (Renaud, 2008; Horesh, Cohen-Zrihen, Ein Dor, & Solomon, 2014).

Patient Population: This research and its implications for clinical practice is geared towards serving members and their families, especially those struggling with OSIs such as PTSD. It is also relevant for transitioning members and retired veterans for whom OSIs have had a negative impact upon their primary relationships.

Conclusion Relationships may hold the key to recovery from trauma. Combat-related PTSD is a diagnosis with significant systemic implications. It impacts both the life of the veteran who suffers from it along with the lives of their family who often suffer with them. Moreover, the systemic impact is bi-directional – the PTSD contributes to relation

distress and the relation distress aggravates the symptoms of PTSD. In light of the systemic and bi-directional implications of PTSD, more comprehensive treatment protocols should be developed which include the targeting of relationship distress.

P112: Evaluation of a Two-Week Intensive Clinical Program for Veterans with Traumatic Brain Injury and Psychological Health Problems

**Iverson, G., PhD^{1,3}; Clark, E., PhD³; Bui, E., MD^{1,3}; Silverberg, N., PhD^{1,4}; Zafonte, R., DO^{1,3}; Simon, N., MD^{1,3}, MSc; Harvey, M., PsyD^{1,3}*

¹Harvard Medical School (USA); ²Spaulding Rehabilitation Hospital (USA); ³Massachusetts General Hospital (USA); ⁴University of British Columbia

Brief Description: Some post-9/11 veterans with traumatic brain injuries (TBI) also have difficulties with traumatic stress, depression, cognitive functioning, alcohol misuse and disorders, drug abuse, chronic bodily pain, chronic headaches, or insomnia. These problems, in combination, can have substantial adverse effects on daily functioning. The Intensive Clinical Program at Home Base provides an innovative model of care that allows post-9/11 veterans to stay in Boston while they receive two weeks of clinical care. The treatment program integrates evidence-based behavioral health care practices, group and individual cognitive rehabilitation, mindfulness training, rehabilitative medicine, fitness and nutrition, integrative therapies such as yoga, Tai Chi, and expressive arts, and family education and support. The program has two tracks, traumatic stress and TBI. Cohorts of approximately 10 veterans are treated in each two-week cycle, 8 in the traumatic stress track and 2 in the TBI track.

Clinical Outcomes: Between January 2016 and February 2017, 20 patients completed the program in the TBI track. Before and after the treatment program, veterans completed measures of traumatic stress (PTSD Checklist- 5), depression (PHQ-9), post-concussion symptoms (Neurobehavioral Symptom Inventory), and satisfaction with social functioning (Satisfaction with Participation in Social Roles). There was a statistically significant reduction in symptoms of traumatic stress ($p < .004$) with a large effect size (Cohen's $d = .79$). Similarly, there was a statistically significant reduction in symptoms of depression ($p < .003$; $d = .72$) and post-concussion symptoms ($p < .001$; $d = .75$). There was a large improvement in their ratings of their ability to participate in their social roles and responsibilities at the completion of the program ($p < .001$, $d = 1.0$).

Patient Population: The program is designed for veterans who have serious problems with psychological health and daily functioning.

Conclusion The veterans experienced statistically significant and clinically meaningful improvements in traumatic stress, depression, and post-concussion symptoms after participating in the program.

P113: Medical Cannabis in the Treatment of Post-traumatic Stress Disorder

*Loheswaran, G., PhD¹; Rafat, B., MSc¹; *Singh, M., MD²; Quinn, J., MD¹*

¹Apollo Applied Research; ²Trillium Health Partners

Introduction: Post-traumatic stress disorder (PTSD) is a psychiatric disorder characterized by chronic, irregular activation of the stress response following a major traumatic event. Many PTSD patients report using cannabis to cope with their symptoms (Bremner et al., 1996). A

few studies have supported the use of cannabis and its active components in the treatment of PTSD (Roitman et al., 2014; Greer et al., 2014). However, there is a lack of literature on the use of medical cannabis in the treatment of PTSD symptoms. The aim of the current study was to examine the effectiveness of medical cannabis treatment to alleviate symptoms of PTSD and improve quality of life in PTSD patients in a prospective observational trial.

Methodology: The effect of 1 month of daily medical cannabis use on PTSD symptoms and quality of life was assessed in a sample of 37 PTSD patients, including veterans, first responders and civilians seeking treatment at Apollo Marijuana Clinics. PTSD symptoms were assessed using the PCL-5 (PTSD Checklist for DSM-5). The effects of medical cannabis use on health-related quality of life was explored using the 36-item short-form survey (SF-36).

Results: Following medical cannabis treatment for 1 month, patients reported a statistically significant 22% reduction in PTSD symptoms as assessed by the PCL-5 ($p < 0.001$). This reduction in symptom was accompanied by a 54% improvement in Emotional Well-Being Subscale of the SF-36 ($p < 0.001$). Patients also reported an increase in 77% increase in the Social Functioning Subscale of the SF-36 ($p < 0.001$).

Conclusion: Results from this study suggest that medical cannabis use provides symptom relief for patients suffering from PTSD. Medical cannabis use also improves measures of quality of life in patients, through improvements in emotional and social functioning. Improvements in these areas are of interest as emotional and social functioning is often impoverished in PTSD patients. Together, these findings suggest that medical cannabis holds promise as a treatment for PTSD.

P114: Canadian Forces Health Services Return to Work Occupational Therapy Program: A Vision For Future Canadian Forces Return to Duty Mental Health Occupational Therapy

*Brown, H., PhD (Student)^{1,2}, M.O.T., Reg. (Ont.); Besemann, M., LCol, MD²

¹Western University; ²Department of National Defence

Brief Description: Currently, Canadian Forces Rehabilitation Occupational Therapists (CF OT) are not mandated to work with Canadian Armed Forces (CAF) military members on a Return to Duty (RTD) plans. Canadian Forces Health Services (CFHS) is presently not resourced to support members with medical, non-traumatic or mental health issues in their RTD or transition to civilian life process. Knowing that over 80% of CAF medical releases are related to combined mental health and musculoskeletal issues, there is a significant gap in supporting members in a standardized RTD program. Because members are not provided access to standardized CF OT RTD planning, they will continue to have limitations in everyday activities and/or challenges with RTD resulting in long-term sick leave. The lack of CF OT in direct support of patients challenged with RTD due to mental health issues in particular is a significant gap in CFHS care delivery. Occupational Therapists (OT) are "making significant contributions in the workplace by providing individualized interventions for injured workers" as well, evidence shows OT provides those with serious mental illness interventions that support work placement employment education and life skills programs.

Clinical Outcomes: The intent of this presentation is to disseminate a potential program for CF OTs in the area of RTD and mental health.

Patient Population: All ill and or injured military members with long-term issues impacting on a successful RTD.

Conclusion Given the importance of work as a determinant of health and the challenges inherent to RTD in both physical/mental health conditions, a CFHS standardized RTD program is essential to optimize the potential for CF RTD as soon as possible following injury. Without it is likely that current numbers of members on prolonged sick leave will remain unchanged. CF OTs are ideally suited to fulfill this mandate by virtue of their solution oriented, practical approach to RTD.

P115: Understanding the Trajectory of Care Prior to a Mental Health-related Psychiatrist or Pediatrician Consultation for Military-connected Children and Youth

Cramm, H., PhD¹; *Mahar, A.L., PhD¹; Whitehead M., MStat²; Kurdyak, P., MD, PhD^{2,3}; Aiken, A.B., PhD⁴

¹Queen's University; ²Institute for Clinical Evaluative Sciences; ³Centre for Addictions and Mental Health; ⁴Dalhousie University

Introduction: Spouses of Canadian Armed Forces members experience delays and barriers to seeking specialty mental health services for their children, as the result of the disruptions in usual care caused by frequent relocations. This study aimed to describe and quantify differences between military-connected and civilian children and youth in the interval preceding a consultation with a psychiatrist or pediatrician. This study is one of four investigating mental health services use in military-connected families in Ontario.

Methodology: This was a retrospective, matched cohort study of child and youth dependents of active Canadian Armed Forces personnel who were posted to Ontario between April 1, 2008 and March 31, 2013. Military-connected children and youth were identified using codes housed at the Ministry of Health and Long-Term Care. The civilian comparator cohort was matched 4:1 on age, sex, and region of residence. Six provincial, administrative healthcare databases at the Institute for Clinical Evaluative Sciences were combined. Psychiatric hospitalizations and emergency department visits, psychiatrist visits, and mental health-related primary care visits were studied. Follow-up was complete to March 31, 2014.

Results: This study will be performed on a subset of both cohorts who have at least one visit with a specialist (psychiatrist or pediatrician) for a mental health-related diagnosis. The interval of time between the referral for the specialist visit, and the specialist visit date will be estimated and compared. The type and number of mental health-related visits that occurred prior to the specialist visit (e.g. emergency department visit, primary care visit) will be described and compared between the groups. Analyses are ongoing.

Conclusion: This study will provide a picture of how military-connected children and youth requiring specialist mental health services transition through the public health care system in Ontario.

P116: Does Membership in a Military-connected Family Increase the Risk of being a High Intensity user of Mental Health Services in the Public Health Care System?

*Mahar, A.L., PhD¹; Cramm, H., PhD¹; Whitehead M., MStat²; Kurdyak, P., MD, PhD^{2,3}; Aiken, A.B., PhD⁴

¹Queen's University; ²Institute for Clinical Evaluative Sciences; ³Centre for Addictions and Mental Health; ⁴Dalhousie University

Introduction: Military-connected families are users of mental health services in the public health system. However, it is unclear if being in a

military-connected family is a risk factor for being a high intensity user of mental health services. This study is one of four investigating mental health service use in military-connected families in Ontario.

Methodology: This is a retrospective, matched cohort study of the dependents and spouses of active Canadian Armed Forces members who were posted in Ontario between April 1, 2008 and March 31, 2013. Military-connected families were identified using codes housed at the Ministry of Health and Long-Term Care. Six provincial, administrative healthcare databases at the Institute for Clinical Evaluative Sciences were combined. Psychiatric hospitalizations and emergency department visits, psychiatrist visits, and mental health-related primary care visits were studied. The civilian comparator cohort was matched 4:1 on age, sex, and region of residence. Follow-up was complete to March 31, 2014. Matched logistic regression models will be used to study the association between membership in a military-connected family and risk of being a high intensity user of mental health services.

Results: This study will be performed in a subset of 7,508 military-connected dependents and spouses, and 30,032 matched civilians who are users of mental health services during the study timeframe. High intensity users will be defined using a combination of physician and emergency department data. Analyses are ongoing.

Conclusion: Understanding the characteristics of military-connected children, youth, and spouses who are high intensity users of mental health services in the public system, and quantifying the added risk of being in a military-connected family will help guide the planning and delivery of mental health services.

P117: Moral Injury, Difficulties with Emotion Regulation, and Social Functioning in the Canadian Armed Forces (A Study in Progress)

*Protopopescu, A., BSc, BA¹; Jetly, R.; Col, OMM, CD, MD, FRCP (Cand)²; Boyd, J.E., MSc¹; Lloyd, C.; Nazarov, A., PhD²; Rhind, S.G., PhD²; O'Connor, C., MSc, MA³; Hood, H.K., PhD, CPsych³; Lanius, R.A., MD, PhD, FRCP (Cand)⁴; McKinnon, M.C., PhD, CPsych^{1,3}

¹McMaster University; ²Department of National Defence; ³Homewood Health; ⁴Western University

Introduction: Over the course of deployment, military personnel encounter various scenarios where unmarked enemies and civilians may be difficult to discriminate, but decisions regarding action (or inaction) are necessary for survival. This ambiguous context of warfare presents personnel with ethical and moral challenges. Moral injury, which is defined as committing, failing to prevent, observing, or learning about an event that violates one's moral and ethical values may result. This burgeoning area of research theorizes that as a consequence of a morally injurious event(s), negative emotions may be difficult to regulate, which can result in problems with social functioning; however, this assertion has yet to be examined. Therefore, the purpose of this study is to examine the relations among moral injury, difficulties with emotion regulation, and social functioning within a Canadian Armed Forces sample. Specifically, we predict that higher levels of moral injury will predict greater challenges with social functioning, which will be moderated by difficulties with emotion regulation.

Methodology: A standardized assessment protocol was administered to all newly admitted patients at the Program for Traumatic Stress Recovery at Homewood Health Centre. The sample was composed of 46 Canadian Military Veteran participants. Assessments administered

included the Moral Injury Events Scale, the Difficulties in Emotion Regulation Scale, and the WHODAS 2.0, which was used to assess for difficulties in social functioning. Data will be analyzed in SPSS using multiple regression in order to assess for moderation effects.

Results: As the study is currently in progress, results have yet to be statistically analyzed.

Conclusion: The study's small sample size, convenience sampling, and its cross-sectional design will temper its results. Importantly, however, the conclusions of this study will enhance our knowledge of moral injury and its associated consequences, which will provide clinicians working with military populations important targets for treatment.

P118: Advanced Data Analytics and Machine Learning Methods for Biological Research in Mental Health

*Zhang, J., PhD¹; *Rhind, S.G., PhD²; Boileau, I., PhD³; Tong, J., PhD³; Di Battista, A.P., PhD²; Shiu, M.Y., MSc²; Richardson J.D., MD¹; Jetly, R., Col., MD²; Lanius, R.A., MD, PhD¹

¹Western University; ²Department of National Defence; ³Centre for Addiction and Mental Health

Introduction: Detailed understanding of the pathobiology of psychiatric disorders remains elusive, but it is clear that mental illnesses are caused by perturbed molecular pathways that affect brain circuitries and elicit dysfunctional responses in peripheral tissues. Understanding mental health and its disruption, therefore, relies on linking multiple interacting levels, from molecules to cells, circuits, cognition, behavior, and environment. Identified biomarkers of psychiatric disorders are derived from various domains, including neuroimaging, genomics, proteomics, and metabolomics. These omics-driven technologies, with high-throughput data generation, have accelerated the search for unique biosignatures associated with disease processes that have clinical utility for early detection, prognosis, and monitoring therapy. The era of Big Data, with the ability to acquire and manipulate high-dimensional datasets, including clinical, molecular, cognitive, and others, holds promise to uncover these complex relations, but also poses formidable data-analytic challenges.

Methodology: To address these challenges, we employed a data-driven machine-learning approach adapted to complexity analysis that utilizes powerful computational models of biological functions. Eligible participants were 18–60 years, male treatment-seeking veterans (n=20) diagnosed with PTSD with a Clinician Administered PTSD Scale (CAPS) score ≥50; trauma-exposed (n=20; CAPS≤15) and non-deployed (n=20) controls without PTSD. Applying multivariate pipelines and random forest-based feature selection (RF-FS) methods, the present study screened plasma samples for >50 protein targets – comprising cytokines, chemokines, acute-phase proteins, endothelial molecules, enzymes, neurotrophins – using a Meso-Scale Discovery MULTI-ARRAY™ platform.

Results: Utilizing multiplexed proteomic immunoassay data, hierarchical clustering analysis (HCA) was carried out to assess overall profile patterns for molecules of interest. Principal component analysis (PCA) further characterized the variance in molecular profiles among the 3 groups tested. Potentially important targets contributing to such variance were observed in PCA. A recursive RF-FS strategy was implemented to select biomarkers capable of differentiating groups. The results showed a striking difference in overall molecular biosignatures between PTSD and non-PTSD groups based on HCA and PCA. The RF-

FS analysis identified 20 targets as the most important factors among all groups, with interleukin(IL)-15 and C-reactive protein unique to PTSD. Key factors differentiating trauma-exposed and unexposed were revealed, including brain-derived neurotrophic factor, IL-8, matrix metalloproteinases (MMP)-1,-9, and tumor necrosis factor- α . Accordingly, with multivariate machine-learning and RF-FS approaches, we were able to identify key biomarkers for PTSD discrimination based on multiplex profiling data.

Conclusion: Multivariate machine-learning classification tools are useful for the analysis of biological datasets and provide unprecedented opportunities in psychiatry for exploration, hypothesis generation, and as a guide for clinical diagnosis and personalized treatments.

P120: The Impact of PTSD on Dementia in Older Veterans: A Scoping Review

*Ritchie, K., MN¹; Cramm, H., PhD¹; Aiken, A., CD, PhD²; Donnelly, C., PhD¹; Goldie, K., PhD¹

¹Queen's University; ²Dalhousie University

Introduction: The Veteran Affairs Canada report, 'Keeping the Promise, the future of health benefits for Canada's War Veterans', (2006) notes that surviving war Veterans are similar to all older Canadians who are coping with the effects of aging, but they are unlike other Canadians in that they may also be coping with the long-term impact of military service on their health.

Posttraumatic stress disorder (PTSD) is a mental health condition that has been associated with trauma from military service. Although often associated with younger veterans, PTSD is now known to be chronic condition that can affect older veterans and is associated with poor quality of life (Chopra et al., 2014). PTSD in older veterans has also been associated with an increased risk of dementia (Yaffe et al., 2010). PTSD can worsen or re-emerge following the onset of dementia by interfering with cognitive strategies or defense mechanisms that had previously been employed to ward off, or cope with, chronic memories of trauma (Yaffe et al., 2010). This could have a negative impact on the cognitively impaired Veteran through re-experiencing traumatic memories, and subsequently on their formal and informal caregivers. This purpose of this scoping review is to identify and describe the impact of PTSD on dementia in older Veterans.

Methodology: This scoping review follows Arksey and O'Malley's (2005) 5-step structured approach to identifying and synthesizing knowledge on PTSD and dementia in the Veterans' population. The databases that were accessed include: CINAHL, MEDLINE, EMBASE, PsycInfo, Healthstar and PubMed.

Results: A total of 248 citations were identified for this study. English language sources that focused on PTSD and dementia in the Veteran population were included. Title and abstract review yielded 26 articles for full review. Preliminary analysis suggests that the majority of articles are from the United States and have been completed since 2000. Approximately half of the sources were commentaries and reviews, and the other half reported on research studies.

Conclusion: The results of this scoping review will be used to identify current knowledge related to veterans with PTSD and dementia. This information will be used to inform further research on healthcare challenges and needs of this population.

P121: From Villains to Superheroes: The use of Graphic Novels in Promoting Resiliency and Supporting Recovery from Military Traumatic Exposure

*Seagram, B., PhD¹; *Crawford, M.²

¹Seagram & Associates; ²Fuel Graphics

Brief Description: Memory Dysfunction is both a pre-existing risk factor for the development of PTSD as well as a consequence of the condition (Samuelson, 2011). Individuals diagnosed with PTSD are thought to have developed memories that come back as emotional and sensory states with little verbal representation (van der Kolk, 1996). Fear and exposure avoidance also serve to impact access to and recall of traumatic memories. Thus, development of an understanding of events, sequencing, meaning and interpretation are all important steps in the recovery process (Zoellner & Bittenger, 2004).

Memory problems reduce the resources available to individuals diagnosed with PTSD, both in terms of coping with life's demands as well as their ability to respond to psychological treatment. Verbal memory impairment predicts poorer outcome in patients receiving CBT (Wild & Gur, 2008). Consequently, therapeutic resources and support materials should take into account neuropsychological deficits related to PTSD (Samuelson, 2011).

Despite individual learning style differences, traditional psychotherapy tends to be talk-based. Education research demonstrates that visual learners remember best what they see: diagrams, flow charts or other visual representations of material; whereas verbal learners benefit more from written or spoken explanations (Felder & Solomon, 2007). Graphic novels are increasingly being integrated into educational curriculum. They reinforce left-to-right sequencing, and for weak language learners or those struggling with memory or comprehension issues, concise text paired with detailed images helps readers to decode and interpret text (Alverson, 2014). The pairing of words and images gives learning a boost by creating new memory pathways and associations (Jaffe, as cited by Alverson, 2014). For visual learners, graphic novels provide an alternative and complimentary method of information delivery, removing barriers that might otherwise be present in accessing and consolidating information.

Clinical Outcomes: Embedded within a story, the first installment of the graphic novel will convey the following information:

- Recognizing the signs of PTSD
- Reducing isolation
- Providing hope that recovery is possible
- Laying the groundwork for recovery

The second installment will convey the following core therapeutic principles:

- Understanding that avoidance prolongs injury
- Management of window of tolerance and CNS activation
- Understanding the causes of PTSD

Patient Population: Serving military members, veterans, family members and community.

Conclusion This presentation describes the development and content of graphic novels designed to boost resiliency and increase access to PTSD treatment resources. Aesthetically pleasing, high quality graphics and an engaging storyline are designed to mitigate avoidance ten-

dencies, providing an effective alternative to traditional therapeutic modes of communication.

P122: Design and Evaluation of a First-Responder Resiliency Pilot Program

*Shields, D., PhD¹; Kuhl, D., MD, PhD¹; Spiess, T., Cpl (CAF Retd)²

¹University of British Columbia; ²Coquitlam Fire and Rescue

Brief Description: The First-Responder Resiliency Program (FRP) is a peer-based program that is being piloted to help First-Responders help themselves and their peers to retain or regain their resilience and well-being despite ongoing exposure to operational stressors. The FRP was pilot tested with BC Firefighters and consisted of a three-day residential retreat that focused on understanding the mechanisms and effects of operational stress on the body, the brain, on behaviour, and on relationships, normalizing work experiences and reactions, building skills for self-regulation, and providing a venue for peer support, and an access point for referral to more intensive mental health services.

Clinical Outcomes: A mixed methods approach was used to inform formative and summative evaluation questions.

Qualitative evaluation consisted of semi-structured intake interviews and a follow up interview 2 weeks post-program. A six month follow up is planned for August 2017.

Quantitative measures included Beck Depression Inventory (BDI II), the PTSD Checklist for DSM-5 (PCL-5), and the Outcome Questionnaire 45.2 (OQ 45.2). Measures were administered at intake, two weeks post-program completion. A third administration is planned for six months post program.

Patient Population: The three pilot runs of the program each consisted of 8 to 10 fire fighter participants, two professional facilitators and two team lead first responders who helped develop the program. A total of 25 firefighters agreed to participate in the pilot test. Participants were all currently employed as fire fighters and had to be able to refrain from substance use during the duration of the program.

Conclusion The sample size and design of the pilot study limit generalizability and statistical significance. Initial results, however, show clinically significant decreases across measurement types and on all subscales for most individual cases and for participant average pre and post scores on the BDI II, PCL-5 and OQ-45.2 and subscales. Qualitative interviews show preliminary support for the value of this type of resiliency program in giving first-responders the tools and social support necessary for them to manage operational stressors encountered in their work.

First-Responder culture often emphasizes a need to project a strong, stoic image which may inadvertently contribute to stigma, interfere with social support, and increase adjustment difficulties. Resiliency programs may offer a culturally-acceptable, up-stream entry point to decrease long term harm associated with operational stress injuries in this population. This preliminary pilot test shows promising results that warrant further investigation by other researchers and with other first-responder groups.

P123: Exploring the Role of Adaptive Sport in the Support and Care of Invictus Games Competitors and their Families

*Shirazipour, C.H., PhD¹; Aiken, A.B., PhD¹; Latimer-Cheung, A.E., PhD²

¹Dalhousie University; ²Queen's University

Introduction: Research has identified multiple potential benefits to adapted physical activity (i.e. sport, exercise, physical challenges, and therapeutic recreation) participation for service members and Veterans with physical and mental illness and injury, including physical, psychological, and social benefits. However, minimal research has gone beyond identifying the short-term benefits of adapted physical activity participation. As a result, many knowledge gaps exist. These gaps include: (1) whether these benefits extend to competitive adaptive sport participation, and are maintained in the long-term; (2) how these benefits are achieved; and (3) the perceptions of competitors' family members, and the impact of participation on the military family unit. This knowledge is critical for evidence-based program delivery, which would promote optimal participation experiences and outcomes for competitors and their families.

The Invictus Games is an international adaptive sport competition for service members and Veterans with physical and mental illnesses and injuries. The Games presents an optimal opportunity to fill these research gaps and advance the current state of military adaptive sport knowledge. Thus, the aim of this research was to develop a more thorough understanding of competitive adaptive sport participation for service members and Veterans with physical and mental illness and injury, by exploring the views and experiences of Invictus Games competitors and their families.

Methodology: Competitors from previous Invictus Games (London 2014 and Orlando 2016), as well as family members of former competitors, took part in semi-structured qualitative interviews. Interviews explored their Invictus Games journey, and the outcomes of Invictus Games participation.

Results: Preliminary results will be presented, and will provide evidence regarding whether participation in an international competitive adaptive sport event supports the psychosocial well-being of service members and Veterans, as well as their families.

Conclusion: Based on these findings, evidence-based program delivery recommendations can be made to support best practices for future Invictus Games, and other military adaptive sport programming.

P124: Towards a Better Understanding of Moral Injury among CAF Members and Veterans Referred to The Royal's Operational Stress Injury Clinic in Ottawa

*Vincent, C., MSW¹; *Daoust, J.P., PhD^{1,2}; Jansman-Hart, E., MSc¹

¹The Royal's Operational Stress Injury Clinic; ²University of Ottawa

Introduction: The term moral injury has been proposed to describe psychological conflict resulting from operational experiences that transgress core values and expectations, such as perceived betrayals by leadership, and/or witnessing, perpetrating or failing to prevent acts that violate a member's deeply held moral beliefs (Litz et al., 2009; Shay, 2014). To date, very little research on moral injury has been conducted in a CAF context (Thompson, 2015). The present study explored the psychometric properties of the Moral Injury Events Scale (MIES; Nash et al., 2013) among a population of CAF members and veterans referred to The Royal's OSI Clinic for assessment, as well as relevant correlates of exposure to potentially morally injurious events (PMIEs) based on data collected at intake.

Methodology: All clients referred to The Royal's OSI Clinic completed a series of questionnaires at intake, including socio-demographic data, MIES, Connor-Davidson Resilience Scale (Connor & Davidson, 2003),

Post-Traumatic Stress Disorder Checklist Scale for DSM-5 (Weathers et al., 2013), Quick Inventory of Depressive Symptomatology (Rust et al., 2003), and Outcome Questionnaire (Lambert et al., 1996). For the purpose of this study, only veterans and service members that completed all intake measures were considered.

Results: An exploratory factor analysis on the MIES's latent factor structure supports a two-factor solution: *OTHER-based*, encompassing witnessing immoral acts and betrayal; and *SELF-based*, encompassing perpetration and failure to prevent immoral acts. This solution explains 61.4% of the variance and, interestingly, is slightly different than either the two-factor solution proposed by Nash et al. (2013) or the three-factor solution proposed by Bryan et al. (2016).

Regression analyses on available variables suggest that exposure to PMIEs is associated with traumatic re-experiencing features and interpersonal difficulties; while exposure to *OTHER-based* PMIEs specifically is a significant predictor of overall PTSD symptom distress.

Conclusion: Data from a sample of CAF veterans and service members suggest a two-factor solution for the MIES (*OTHER-based* and *SELF-based*). It also appears that exposure to *SELF-based* PMIEs versus *OTHER-based* PMIEs predict different symptom profiles, which may indicate distinct underlying emotional processes that would benefit from more targeted clinical interventions.

P125: Project Trauma Support: Addressing Moral Injury in First Responders an Update

*Dentry, S.J., PhD¹; Joannou, M., MD²; *Besemann, M., MD³; Kriellaars, D., PhD¹

¹University of Manitoba; ²Queen's University; ³University of Ottawa

Brief Description: Post-traumatic Stress Disorder (PTSD) amongst military, police, Royal Canadian Mounted Police and first responder personnel often includes a moral injury component. The Project Trauma Support (PTS) program is designed to address moral injury in the emergency service personnel population. The Kessler scale of psychological distress (K6) and a new Life Challenges survey (LCS) were administered pre-and post-course to seven cohorts undergoing the PTS program, providing a within-subject design examining 66 males and 11 female emergency services personnel, in 2016-2017. All participants were above K6 threshold for distress upon entry into program. Positive improvement was noted in both instruments, and across all K6 subdomains ($p < .001$) and across 8 of the 10 LCS subdomains. The results indicate that the PTS course shows promise to provide a holistic therapy for military veterans, police, Royal Canadian Mounted Police and other emergency personnel suffering from PTSD.

Clinical Outcomes: The Kessler scale of psychological distress (K6) and a new Life Challenges survey (LCS) were administered pre-and post-course to three cohorts undergoing the PTS program, providing a within-subject design.

Patient Population: Military, veteran, police, Royal Canadian Mounted Police and first responder personnel.

Conclusion Project Trauma Support has developed a novel residential, experiential program that shows promise in alleviating the symptoms and disability caused by PTSD in first responders and military personnel. The short duration and utilization of peer support with medical supervision and guidance make the program quite cost ef-

fective. In addition, the short time away from families and loved ones makes the program more appealing than more prolonged hospital based programs. Utilizing a variety of therapies and modalities increases the chance of effectively reprocessing experiences, and imparting tools that may be applied to symptom control in the future. Further studies are needed to investigate long term outcomes and applicability to more diverse groups.

NOVEL HEALTH TECHNOLOGIES

Podium Presentations

3C06: Long-term Impact on Social Participation using the JACO Robotic Arm on Powered Wheelchair Users with Upper Extremity Disabilities

*Bérubé, C., OT, MA¹; Lettre, J., OT, MSc²; Routhier, F., PEng, PhD²

¹Kinova Robotics; ²Université Laval

Introduction: Individuals with upper extremity disabilities, often related to a neuromuscular disease or a spinal cord injury, are daily confronted with difficulties restricting their activities. Over the past two decades, different assistive robots have been developed to facilitate the grasping and manipulation of objects. One of these is JACO, a robotic arm developed by Kinova Robotics (<http://www.kinovarobotics.com/>). In May 2012, the Government of Canada, in partnership with the Canadian Forces Health Services Group, Veterans Affairs Canada and Kinova Robotics, conducted a pilot study to evaluate the impact of the JACO's daily use over a one-year period on life habits realization and social participation. This trial was financed by the Canadian Innovation Commercialization Program. A second phase now proposes to assess the long-term impact of JACO's use, i.e. five years' post-attribution, with the same individuals and according to the same research protocol.

Methodology: This is an exploratory and retrospective case study research. The new data (five years' post-attribution) will be collected in spring 2017 and will then be compared to those collected in 2012-2013. Users were and will be asked about some of their sociodemographic characteristics, the assistance required from their caregiver(s), the accomplishment of their life habits, their satisfaction with the JACO robotic arm and its psychosocial impact. Their performance while executing specific manual tasks with JACO was, and will also be, documented. Caregivers, remunerated or not, were and will be questioned about the assistance provided to users in various activities of daily living. Descriptive and quantitative statistics will be used to report the results.

Results: Four of the five participants from the study conducted in 2012-2013 will be visited, one participant having since died. They are all men, and have either multiple sclerosis, amyotrophic lateral sclerosis or a spinal cord injury. In 2012-2013, users reported being generally satisfied with their device and that using JACO had a globally positive psychosocial impact. JACO did increase the users' capacity to complete manual tasks and facilitate the accomplishment of certain life habits. A decrease in care time was noted for some tasks (e.g., drinking, leisure). Impact changes after prolonged use of five years will be described.

Conclusion: To our knowledge, no studies on such long-term impact of a robotic arm have been conducted to date. Such data would support the promotion and development of this type of assistive technology.

4C03: Structured Approaches to Resilience Assessment and Development through the Integration of Big Data Analytics, Immersive Simulation Environment and Haptic Garments

*McGregor, Carolyn PhD^{1,2}; Bonnis, Brendan CD³

¹University of Ontario Institute of Technology; ²University of Technology, Sydney (AU); ³IFTech Inventing Future Technology Inc.

Introduction: Immersive simulation environments (ISEs) are being used increasingly for combat tactical training. Recently there has been recognition that in addition to basic operational skills training, these environments can be utilised to create training scenarios to promote resilience against certain stressors that are likely or could occur within those scenarios in a real-life setting. ISEs to date have focussed on the use of visual and auditory queues only. There has been limited research to address how the manner in which visual information is presented interacts with other multisensory input (e.g. sound, haptics, temperature, etc.) to impact user experience and training efficacy. Mismatches between visual and sensory input can lead to maladaptive (harmful) brain plasticity. For example, the absence of the ability to be able to feel firing and being wounded responses on the body. ARAIG is a haptic garment that provides tactile stimulation through the use of muscle stimulation and vibration. It also contains 7.1 sound for directional sound to improve realism. Assessment of stressors requires assessment of trainee response and our structured approach to game design incorporates the design of physiological response analytics that correlate with the stressors within the context of the overall training goals.

Methodology: We have created a structured approach to game scenario design that explicitly enables the integration of stressors. In addition, it enables the design of the haptic cues along with the design of the visual and auditory cues for the game in general and also for the stressors. To enable analysis of trainee performance, data relating to trainee interaction with the game incorporating both what is happening to them in the game and their responses need to be captured and analysed. Our structured approach supports the design of this data capture. Various physiological data streams such as heart rate, respiration rate and blood oxygen can be acquired and integrated with the serious game data to support advanced analytics on the trainees' experience. Our Big Data analytics platform Athena provides the platform to integrate and analyse the data.

Results: Our initial results will demonstrate the capacity of this approach within the context of combat tactical training game scenario design.

Conclusion: Providing this structured approach and the use of an ISE supports repeatability and an approach for the structured design of clinical research and clinical practice protocols required for their use in both proactive health assessment during training and potentially the use of this environment for posttraumatic stress disorder.

4D04: A Randomized Controlled Trial of an Online Chronic Pain Treatment for Military, Police and Veterans

*Buhler, J., B.A. hons¹; Holens, P., PhD^{1,2}; Klassen, K., PhD¹

¹University of Manitoba; ²Deer Lodge Operational Stress Injury Clinic

Introduction: Chronic pain is a significant health problem in Canada, as data have shown that 18.9-29% of the Canadian population suffers

from chronic pain. These rates are estimated to be doubled in Canadian military and veteran populations. Chronic pain leads many to have to permanently leave their careers, withdraw from social activities, and can cause deterioration and distress on marital relationships. Cognitive behavioral therapy (CBT) is one of the most prevalent and efficacious psychotherapies in treating chronic pain. Internet-based CBT treatment designs have been developed to address the growing need for psychological services and to provide treatments to those in rural and remote locations. These rationales for the development of internet-based treatments are especially germane to military and police populations, as many of these individuals are stationed in locations where treatments for conditions such as chronic pain are not readily accessible.

Methodology: The purpose of this study is to gauge the efficacy of an online chronic pain treatment for military, police, and veterans. An online 8-week chronic pain treatment was tailored specifically for military and police populations. A pilot study assessing the efficacy of the treatment found significant reductions in participants' pain-related cognitions such as pain catastrophizing and kinesiphobia, and significant increases in pain acceptance. To further gauge the causal relationship, we will be conducting a randomized controlled trial utilizing a waitlist-control group as our comparison sample. Based on a power analysis we will be recruiting forty adult participants diagnosed with chronic pain, who will then be randomized to either the online treatment group, or the waitlist control group. Participants, will be recruited via the Operational Stress Injury Clinic (Winnipeg, MB) and screened based on inclusion/exclusion criteria. A battery of pain-related self-report measures will be completed pre-and-post treatment, and the resulting data will be statistically analyzed to evaluate participants' pain-related indices. A follow-up appointment will be scheduled 3 months following the completion of the online program to assess the maintenance of treatment gains.

Results: We are currently conducting the study and do not yet have enough data to run analyses. We anticipate similar results to the successful pilot study, and we will have data to present at the Forum in September.

Conclusion: This research will provide valuable insight into the utility of the online treatment for chronic pain. If significant improvements are found, we can confidently attribute these improvements to the treatment program and begin to actively disseminate the treatment to health care providers.

5C02: R2MR Mobile Application for Arousal Control Training in Military Police

*Granek, J., PhD; Martin, B., PhD; Jarmasz, J., PhD; Bae, J., Cpl; Guest, K., MSW; Bailey, S., LCol, MSW

Department of National Defence

Introduction: The Canadian Armed Forces (CAF) are conducting a major effort to enhance the training provided to CAF members for mental health and resilience. The core of this effort is the Road to Mental Readiness (R2MR) program. As previous work has suggested that repeated application and practice of the R2MR skills improves retention and effectiveness, we are developing and evaluating a series of mobile applications ("apps") designed to make this training available to CAF members when and how they need it. These apps are designed to help CAF members manage their stress responses, improve short-term performance and long-term mental health outcomes. Integrated into existing mobile technology, these apps will enable users to set

reminders and monitor their progress over time, and track physiological responses (i.e., real-time biofeedback) via wearable technologies (e.g., heart rate monitors) in a number of different mental health areas. As part of the validation process, we are examining specific features of the app with different members of the CAF community.

Methodology: Humans can effectively manage stress and physiological responses through controlled breathing. The breathing component of the R2MR app (i.e., Tactical Breathing) provides interactive instruction for controlled, deep breathing, as well as real-time heart rate biofeedback. Here as a complement to the classroom-based R2MR training, we evaluate: 1) effectiveness and compliance with self-paced arousal training with and without mobile apps and real-time heart rate biofeedback, and 2) arousal control during the performance of stressful training modules (e.g., written tests, driver simulator training, etc.) for members of the Canadian Forces Military Police Academy (CFMPA) training program.

Results: Preliminary results indicate that the R2MR Tactical Breathing app does not improve on self-paced arousal training. Similar to previous findings from CAF Search and Rescue Technicians, no changes were observed in subjective stress ratings and heart rate between conditions (i.e., no app, app only, app and biofeedback) at rest. Across conditions, however, preliminary evidence suggests that even one breathing cycle (inhale, hold, exhale, and hold) is sufficient for heart rate reduction at rest in this population. Further analyses are required to indicate the relationship between heart rate and performance during stressful modules during CFMPA training.

Conclusion: Comprehensive evaluation during all stages of mobile app development is crucial for effective mobile training apps, but requires tailoring to specific use-cases. In order to increase compliance rates in self-paced mobile learning, preliminary evidence suggests the requirement for integrating training apps as a complement to an ongoing classroom curriculum.

6E01: Development of Novel Instrumentation for the Brain Injury Protection Evaluation Device Headform and Novel Dynamic Mechanical Characterization Techniques for Foam Liner Materials in Advanced Combat Helmets

Azar, A. BEng^{1,2}; Bharadwaj, K., BEng¹; Ouellet, S., PhD³; Satapathy, S., PhD⁴; Hogan, J., PhD¹; *Dennison, C.R., PhD^{1,2}

¹University of Alberta; ³Department of National Defence; ⁴US Army Research Laboratory

Introduction: Efforts to understand the biomechanics of blast-induced head injury and the performance of head protection systems is a focus of intense research. Specific to biomechanics of head injury, research groups worldwide are developing both mechanical surrogate and biologic (animal) models in an effort to understand how blast overpressure creates injury. Specific to protection systems, research focuses on characterizing the dynamic mechanical performance of materials used in protection with an aim toward developing lighter and more effective protection devices. In this abstract, we present preliminary work to advance a mechanical head surrogate used to understand energy transfer in blast, and novel dynamic mechanical characterization methods to study helmet materials response during blast.

Methodology: Beginning with the Brain Injury Protection Evaluation Device (BIPED) headform, we are developing novel optical fibre based transducers to measure the mechanical interaction between a simulant brain and simulant skull, and to validate these transducers

for measurements over blast timescales. Measurements of strains and pressures obtained during blast are used to define regimes of interest for testing the mechanical response of helmet materials. Mechanical testing is coupled to in-situ visualization of failure processes using ultra-high-speed cameras, and post-test characterization using microscopy.

Results: The optical fibre transducers are capable of measuring mechanical interaction forces between the simulant skull and brain over a 500 N range at rates up to 62 kHz. These transducers can be arrayed within the simulant skull such that spatial distributions of impact forces can be quantified. Simultaneous studies on material failure reveal the relationships between the microstructure and the onset and growth of strain-rate-dependent failure mechanisms in typical helmet materials. These efforts will be expanded upon in the presentation.

Conclusion: With continued development, the optical transducers will be used in controlled blast experiments using the BIPED. Force measurements in tandem with intracranial pressure measurements within the BIPED simulant CSF space will be compared to results from post-mortem human subject experiments in an effort to understand the mechanical biofidelity of the BIPED with respect to post mortem human subject data. At the same time, links will be made between the sensor measurements and the helmet response during blast, and fundamental studies on the mechanical response of helmet materials. Combined, new material configurations and microstructures will be proposed that provide controlled failure response, thus offering opportunities for development of next-generation helmet protection with improved performance.

6E03: A Novel Aortic Occlusion Device for Combat Trauma Victims

*Smith, S., Maj, MD, MSC^{1,2}; McAlister, V., LCol, MB^{1,2}; Power, A., MD, MBE²

¹Royal Canadian Medical Service; ²University of Western Ontario

Introduction: Lower torso hemorrhage is a significant cause of death from injuries in combat. Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) has been successfully used in hospital setting to rescue patients. Pre-hospital use of REBOA is controversial. Current devices require imaging to minimize the risk of misplacement. Injured vessels are at risk of further damage from guide-wires or stiff catheters. We sought to design and prototype a device which self-positions, with minimum trauma that does not require imaging.

Methodology: We have designed a novel device that is balloon rather than wire led. Prototypes of various sizes were made from commonly available commercial materials. Thin latex rubber sheaths were reassembled in cylindrical conformation aligned to the shape of the aorta and invaginated into vinyl tubing. Placement of the catheter into the femoral vessel is followed by expression of the balloon with inflation by CO₂ in a proximal direction. Thus it can navigate and treat damaged pelvic vasculature, occluding the distal aorta, and is technically simple to use. This CO₂ balloon system was tested on model aortas with inline fluid flow and pressure monitoring to determine the maximum pressure the balloons could occlude. The device was tested on both healthy and injured cadaveric porcine aorta for its ability to occlude fluid flow and to test vessel safety. The device was tested on a perfused human cadaveric model.

Results: Flow was occluded with the balloon up to an average of 561.1 mmHg (SD 124.3). The balloon always ruptured before causing damage to the porcine aorta (n=10). The balloon was able to occlude injured iliac vessels and proceed to occlude the distal aorta. The device was

effective in occluding the distal aorta of a perfused human cadaver.

Conclusion: This novel device can occlude the distal aorta in a simulated human aorta model, cadaveric porcine model and perfused human cadaver. It can occlude fluid flow to supra-physiologic pressures and will rupture before injuring the vessel in the event of over inflation. It has the advantage of being able to navigate and treat injured pelvic vessels and is easy to use. This device may provide a tool to forward medical care providers in managing non-compressible pelvic hemorrhage.

Poster Presentations

P126: Measurement of Pressure-flow Relationship for Gas Mask Technology on a Bench Test: Partitioning of the Different Parts of the Gas Mask and Comparison of Eight Canisters

**Bourassa, S., Capt (Retd), CD, MScRN, PhD (Student); Bouchard, P-A., RP; Lellouche, F., MD, PhD*

Université Laval

Introduction: During a Chemical, Biological, Radiological and Nuclear event, the protection of the respiratory system is done with a gas mask. We have shown that wearing a mask could increase the work of breathing in healthy subjects and in COPD patients by up to 60%. The resistance of these devices may be the important factor. The aim of the study was to measure the pressure-flow relationship of the gas mask components and to compare eight selected canisters

Methodology: The bench study design combined: the pressure-flow relationship measurement of eight selected canisters and separate measurements of the C4 gas mask parts (Airboss Defence, Bromont, Canada): inhalation system (inhalation valve and internal valve); exhalation system and global mask-system. Measurements were done with a stepwise increase of medical air flow from 0 to 5.0 L/sec. Data were analyzed from 0.5 to 2.5 L/sec, based on maximum peak flows obtained from a healthy subjects study during efforts. Flow-pressure set-up was assembled with air-flow input, a flowmeter and a pressure sensor plugged-in to the gas mask parts. Differential pressure was generated from the pressure of the measured assembly with an atmospheric pressure equal to zero ($P_{atm} = 0$). The differential pressure tubing was connected to a MP45±100 cmH₂O sensor (Validyne). Flow rate was measured with a calibrated pneumotograph (Hans Rudolph). The bench (Biopac System) was operated by Acknowledge version 3.9 software where the flow-pressure relationship was computed. A second order polynomial regression was applied on all the data processed.

Results: 42 measurements were made to compare the canisters and 56 measurements were made to characterize the different resistances of the mask components. The main data are shown in the table 1, the flow-pressure relationship values were displayed according to a flow range of 0.5 to 2.5 L/sec and the pressure expressed in cmH₂O. We measured the different parts of the inspiratory and expiratory resistances of the gas masks. Inspiratory resistances were more than three-fold greater in comparison with expiratory resistances. Canisters account for almost 75% of the inspiratory resistance of the tested mask. Interestingly, major differences were shown between the tested canisters.

Conclusion: With this protocol, we measured large differences in the resistances of the different parts of the mask and between the tested canisters. To improve the usability of these devices, it may be interesting to propose less resistive components, while keeping the most

important part: protection. Our protocol can be used for assessing gas masks and canisters entirely.

P127: Hazard Assessment of High-Nitrogen Explosive Compounds: A Novel in Vitro Multi-Cellular Approach

*Maurais, T., Capt., MSPH¹; Donohue, K., PhD²; Mayo, A., BSc³; Wilbanks, M., MSc²; Barker, N., MSc⁴; Guan, X., PhD⁴; Garcia-Reyero, N., PhD²; Perkins, E., PhD²; Gellasch, C., LCol., PhD¹; Brueggemeyer, M., Col., MD¹; Gust, K., PhD²; *Johnston, G., MHSc⁵*

¹Uniformed Services University of the Health Sciences; ²United States Army; ³SOL Engineering Services; ⁴Bennett Aerospace; ⁵Department of National Defence

Introduction: The energetic properties of high-nitrogen (high-N) content materials have increased the interest towards the development of high-N compounds for use in insensitive munitions. However, the use of such compounds is known to lead to an increase risk of adverse health effects towards munition factory workers, military members and the general population. While chemical hazard assessment with live animals has many advantages, the high cost of in vivo testing, in terms of resource consumption, animal usage, and time, only allows for the testing of a limited number of compounds. Current in vitro systems are limited by screening cells in isolation, underestimating the cytotoxicity of metabolites. In order to address these limitations, the objective of this research is to develop a rapid and efficient in vitro model capable of assessing the toxicological impact of high-N compounds.

Methodology: The Integrated Discrete Multiple Organ Co-Culture (Id-MOC) system allows for the co-culture of up to 6 discrete organ cell types; demonstrating cell-specific toxicity of parent compounds and of metabolites generated by other cells. In this research, 5 cell lines were used: kidney, liver, lung, heart and vascular endothelium. The high-N compounds assessed through this system were 2,4,6-trinitrotoluene (TNT) and 2,4-dinitroanisole (DNAN). TNT, with its well documented cytotoxicity, served as a comparative model, while the assessment of DNAN led to a better understanding of its less known toxicity. Cytotoxicity was assessed by viability and functional assays as well as by functional analysis of common regulated genes following microarray analysis.

Results: Following viability assays with the cell lines used in the Id-MOC system, the toxicity of DNAN was found to be less than the toxicity of TNT by a factor of 10. Furthermore, results from the functional assays and microarray analysis indicate the effects of TNT and DNAN on the gene expression profiles of the different cell lines as well as the impact of metabolites, leading to a better understanding of the in vitro multi-tissue dynamic of high-N metabolism.

Conclusion: The IdMOC system is expected to play an increasing role in the hazard assessment of high-nitrogen compounds in order to facilitate their safe development and use in insensitive munitions, with the potential for an extended use of the system with other contaminants, natural or industrial.

P161: Clinical Guidelines for Using the Wii Gaming Console System in Military Rehabilitation

*Sinitski, E.H., MASc; Cardinal, D., PT; Lambert, A-M., Capt, PT; Mahoney, N., Capt, CD, PT; *Besemann, M., LCol, MD*

Department of National Defence

Brief Description: Virtual reality (VR) has become an integral part of rehabilitation of both physical and mental health issues. Less immersive VR systems, such as the Wii gaming console, are an affordable alternative to expensive fully immersive virtual reality systems for physical and neurological rehabilitation. Research on this interactive gaming technology for rehabilitation has demonstrated improved motor and cognitive functionality as well as increased motivation and treatment adherence. However, evidence remains limited and there are no standard treatment guidelines for use of Wii gaming console in rehabilitation. Our aim is to present clinical guidelines and recommended outcome measures for the use of the Wii gaming console for Canadian Armed Forces (CAF) Physical Rehabilitation.

Clinical Outcomes: Lessons learned from CAF physiotherapists and current practice at Canadian Forces Health Services (Ottawa) as well as the current literature led to the compilation of recommendations and clinical guidelines for using the Wii gaming console system for rehabilitation in the CAF. Rehabilitation guidelines include recommendations on diagnoses or deficits that can benefit from low level virtual reality treatment, frequency and intensity, and performance outcome measures.

Patient Population: CAF military personnel referred to physiotherapy with access to a Wii gaming console system. Members should be able to tolerate a visual display and should not present with severe visual impairment or motion sickness.

Conclusion The Wii gaming console is commonly thought to primarily benefit musculoskeletal disorders. However, the Wii gaming console should be considered for addressing cognitive functionality, especially for members with concussion symptoms. This system can be used to treatment goals such as, light sensitivity, motion sensitivity, visual processing, and multi-tasking in addition to balance and mobility. Recommend to track outcome measures including session time, game score, game time, and difficulty setting. Monitor member symptoms (e.g., headache, dizziness, pain) before, during, and after Wii sessions to help guide intensity and duration of each session. The CAF Physical Rehabilitation program strives to achieve its aim by incorporating end-user feedback into policy and program updates. These clinical guidelines will provide CAF physiotherapists with additional tools needed to address rehabilitation goals using the Wii gaming console system.

OCCUPATIONAL HEALTH

Podium Presentations

1C02: Mental Health among Canadian Public Safety Personnel: Taking a National Pulse

*Carleton, R. N., PhD¹; Duranceau, S., MA¹; Ricciardelli, R., PhD²; Cramm, H., PhD³

¹University of Regina; ²Memorial University; ³Queen's University

Introduction: Canadian Public Safety Personnel (PSP; e.g., Firefighters, Paramedics, Police) are regularly exposed to potentially traumatic events as a function of their vocation. Such exposures facilitate risk for developing clinically significant symptoms related to mental disorders sometimes characterized as operational stress injuries (OSIs). Recent media attention focused on suicide as a cause of death for PSP has highlighted significant concerns about the impact of Canadian public safety service on mental health. The increased attention has raised interest in risk and resilience factors, as well as emphasizing that PSP

need accessible treatment resources. The Canadian Institute for Public Safety Research and Treatment (CIPSRT) recently completed a national survey assessing self-reported 1) OSI symptom frequencies and severities; and 2) suicidal ideation, plans, and attempts within Canadian PSP.

Methodology: Participants included more than 5800 PSP (33% women) from six broad PSP categories (i.e., Call Center Operators/Dispatchers, Correctional Workers, Firefighters, Municipal/Provincial Police, Paramedics, RCMP). Participants were solicited from national PSP agencies and advocacy groups and invited to complete validated self-report questionnaires online between September 2016 and January 2017. Questionnaires were available in both English and French and assessed current mental health symptoms (e.g., past month) and lifetime suicidal ideation, plans, and attempts. Socio-demographic, occupation, and trauma-related variables were also collected. Point estimates were computed for the outcome variables of interest (i.e., current mental health symptoms, lifetime suicidal ideation, plans, and attempts).

Results: The current presentation will present a review of the published results available from the CIPSRT survey as of September 2017. Based on prior national and international research results assessing OSI symptoms and suicidal behaviours, a substantial proportion of Canadian PSP are expected to report clinically significant concerns. In addition, significant differences are expected across males and females, as well as across the six broad PSP categories.

Conclusion: Comprehensive results, implications, and future research are discussed.

1C03: The Elephant in the Room: Understanding Trauma Hierarchies and Unpacking Perceptions of "Legitimacy"

*Ricciardelli, R., PhD¹; Carleton, R.N., PhD²; Cramm, H. PhD³; Mooney, T.¹

¹Memorial University; ²University of Regina; ³Queen's University

Introduction: Despite knowing that many Public Safety Personnel (PSP) experience trauma—directly or indirectly—in their occupational role, and that each person responds differently to traumatic events, there remain barriers to accessing care or coming forward as potential in need of intervention.

Methodology: We analyzed open-ended comments put forth by over 800 PSP in an online survey designed to assess the prevalence of mental disorders, sometimes referred to as operational stress injuries (e.g., posttraumatic stress disorder).

Results: The results indicated support for a "hierarchy of trauma" amongst PSP. Specifically, certain experiences are interpreted as more traumatic than others and based on the event and the role of the PSP in the actual event; for example, being directly involved in a shooting is interpreted as more traumatic than arriving on the scene later. Similarly, a single 'anchor' event is deemed more traumatic than an accumulation of events. Accordingly, the PSP who were directly involved are deemed more eligible for being traumatized than the PSP who arrived on scene—and any deviation from such expectations may be interpreted by colleagues as evidence of 'weakness' or not being cut out for the job. The trauma hierarchy is used to define some experiences as 'legitimate' and others as illegitimate, while also evaluating trauma by type (i.e., accumulative trauma versus an 'anchor event'). As such, the interactions between individual PSP and social context in shaping experiences are largely ignored when interpreting trauma. The apparent interpretation bias effectively creates systematic perception that may

discredit certain experiences and devalue some individuals, thereby reinforcing barriers to care seeking. Traumatized PSP who are subjected to these perceptions may internalize their feelings and experiences as 'wrong'.

Conclusion: The latent functions of such a hierarchy, which includes propagating stigma, alienating individuals, and facilitating legitimization of discrimination against PSP with mental health concerns, are explored in relation to policy, practice, and direction for future research. Attention is focused on how trauma hierarchies should be explicitly recognized, discussed, and contextualized to create a genuinely respectful, open, and evidence-based occupational culture for supporting mental health.

1C04: "Playing the System": Structural Factors Potentiating Stigma, Challenging Awareness and Creating Barriers to Care

*Ricciardelli, R., PhD¹; Cramm, H. PhD²; Mooney, T.¹; Carleton, R.N., PhD³

¹Memorial University; ²Queen's University; ³University of Regina

Introduction: In 2016, the Standing Committee on Public Safety and National Security reported that the available estimates of Canadian Public Safety Personnel (PSP) affected by mental disorders appeared inconsistent. Perhaps partially in consequence, barriers to care-seeking and the stigma associated with mental disorders prevail with frequent reports of insufficient access to care. We ask, what are these barriers? Why do some people seek care and others not? Why do many Canadian PSP practice non-disclosure? And where do such stigmatizing interpretations of mental disorders or the persons seeking assistance (i.e., people "playing the system") originate?

Methodology: We thematically analyzed the unsolicited open-ended comments provided by over 800 PSP in an online survey designed to assess the prevalence of mental disorders sometimes referred to as operational stress injuries (OSIs).

Results: The results indicated systematic processes may have shaped the decisions for care-seeking, how care seekers were viewed by their colleagues, and perhaps encouraged under-awareness of personal mental health needs. As such, we begin by explaining how people who do seek care may be viewed by others, in particular, we address a widespread suspicion among participants that co-workers who took time to address their mental health needs were "abusing the system." We unpack what constitutes, "abusing the system", unpacking what this means, looks like, and where the notion comes from. For example, a prevalent theme across participants and occupations was that select individuals' insincerely report stressors, attribute personal sources of stress to their work experience, or simply take 'advantage' of the provisions available for those experiencing work related difficulties. Next, we shed light on how organizational structures—systematic processes within different public safety organizations—can create and reinforce the notion of persons 'playing the system', particularly in occupations where the positions of employees on leave may not get back filled. The understaffing may facilitate scrutiny of the injured by those left to shoulder additional burden. A sense of cynicism may emerge alongside a cyclical relationship that creates an unacknowledged structural stigma that can prevent PSP from identifying their mental health needs and from seeking help.

Conclusion: The many nuances among PSP interpretations are explored in relation to policy and practice. Specifically, seemingly structural stigma can be potentiated by budget constraint fallout when PSP take any leave of absence. Implications for PSP training and future re-

search needs are also discussed.

2C03: The Application of Novel Movement Analysis Methods to Improve Soldier Physical Performance and Health

*Graham, R., PhD¹; Fischer, S., PhD²; Karakolis, T., PhD³; Keefe, A., MSc³; Bossi, L., CD., MSc³

¹University of Ottawa; ²University of Waterloo; ³Department of National Defence

Introduction: Understanding how soldiers move under various occupational stresses (e.g. physical load, gunfire, and heat/cold) is critical to developing strategies to improve physical performance and musculoskeletal health, as well as prevent risk of traumatic injury. The goal of the current work is to apply advanced statistical modelling techniques, which have been applied successfully to dynamic movement tasks in professional athletes, to objectively model changes in movement behaviour under such stresses.

Methodology: We will recruit 20 regular force Canadian Armed Forces members to complete a series of outdoor occupationally relevant tasks (e.g. bounding rushes, casualty drags, etc.) that are designed to be representative of realistic combat tasks in theatre. Each participant will complete the course under four different scenarios: 1) unloaded, no simulated fire; 2) loaded, no simulated fire; 3) unloaded, simulated fire; and 4) loaded, simulated fire. During each scenario, we will collect full-body motion capture using wireless inertial measurement units (IMU; MVN BIOMECH, Xsens Technologies B.V., The Netherlands) placed over each segment's centre of mass. IMU data will be combined with three-dimensional body scans for each participant (Vitus XXL, Human Solutions of North America, Inc., USA) in order to develop a robust subject-specific kinematic model to track each movement task. Full-body movement data across time for each task and participant will then be analyzed using Principal Components Analysis (PCA), and Linear Discriminant Functions (LDFs) will be used to differentiate movement patterns between loaded vs. unloaded, and fire vs. no fire conditions. Soldier body shape, size, and biological sex will also be considered as covariates in the models.

Results: These results will be used in a variety of ways. First, we will create a morphable model for each movement task that can be scaled by adding and subtracting the LDFs, multiplied by a given standard deviation, to the average movement pattern across all participants. This model can first be used to subjectively evaluate and better understand how movement patterns and musculoskeletal injury risk may change based on body size and shape, external load, environmental stresses, and biological sex. Secondly, this morphable model can be used as input to the Virtual Battle Simulator to: a) produce more realistic movement patterns for training purposes, and b) to simulate the probability of being shot or injured based on all model inputs.

Conclusion: As a whole this work will be critical in improving overall soldier physical performance and health.

2E02: Veterans Trauma Network- UK

*Hettiaratchy, S.P., FRCS; Swarbrick, R., MA; Leach, J., FRCGP; Moran, C., FRCS

National Health Service (UK)

Brief Description: The UK has never had a system for delivering healthcare for veterans in a co-ordinated manner. There are no mili-

tary hospitals and no formal veterans health system. All military personnel who need medical attention do so within the civilian hospital system, the National Health Service (NHS). Veterans have access to the NHS but there is no mechanism to ensure they receive the appropriate care. This is despite the NHS constitution and the Armed Forces Covenant, both underwritten by the UK government, explicitly stating that veterans should receive prioritised, high quality care. In response to this gap in service, NHS England set up in 2016 the Veterans Trauma Network, the first network to provide organised veteran healthcare in the UK. To access the network, the veteran has an e-referral sent by their primary care physician to a contact point. This is then forwarded to one of 10 regional Veteran Trauma Centres. These are co-located in Major Trauma Centres which form part of the national Major Trauma Network. These centres have the full suite of services to meet the complex needs of veterans. In addition most have military personnel working in the centres alongside civilian trauma experts, as the UK military has preferentially placed personnel in Level 1 trauma centres. The initial experience of the network has been very favourable.

Clinical Outcomes: Qualitative patient experience; time to triage and treatment; improvements in health economic outcomes.

Patient Population: Veterans and families; military personnel transitioning to civilian life.

Conclusion The Veterans Trauma Network is a major advance in UK veteran healthcare. It provides veterans with a simple way of accessing appropriate healthcare. It maintains the link between military clinicians and veterans to ensure continuity of care. By using an existing network (the Major Trauma Network) it is an effective and efficient use of resources and should translate into better use of healthcare resources. Initial experience of the network has been very encouraging, with positive feedback from all stakeholders.

3D01: The Effects of Six Hours of Mild Hypoxia below 10,000 ft on Cognition, Flight Performance, Subjective Symptoms, Mood and Fatigue

*Bouak, F., PhD¹; Vartanian, O., PhD^{1,2}; Hofer, K.D., MA¹; Miles, R.¹

¹Department of National Defence; ²University of Toronto

Introduction: The Royal Canadian Air Force (RCAF) regulations require all occupants of an aircraft to breathe supplemental oxygen (O₂) continuously when operating at cabin altitudes above 10,000 ft (10K), or above 8,000 (8K) ft for periods exceeding four hours (cumulative) per crew day. Supplemental O₂ is used to prevent hypoxia at altitude, but weight, volume and risk restrictions dictate the amount of O₂ available to the crew members during a mission, and available O₂ supplies often do not meet the requirements. In unpressurized aircrafts such as helicopters, O₂ systems are not available due to the limited space. Current RCAF restrictions about duration and altitude, which are not based on empirical evidence, could negatively impact a mission's success, specifically Search and Rescue missions. This gap in knowledge was highlighted in the recent RCAF Statement of Capability Deficiency (SOCD, 3515-1 [442 T&R Sqn]), providing the impetus of this study. We hypothesized that extended exposure without supplemental O₂ to mild hypoxia below 10K ft will have no effect on performance and safety.

Methodology: Sixteen volunteer helicopter pilots from the RCAF were randomly exposed to two 6-hour altitude exposures (8K and 9.5K ft.) on two separate days in a hypobaric chamber at Defence Research and Development Canada-Toronto Research Centre. On each day, par-

ticipants periodically performed a simulated rotary wing flight task, a cognitive test battery (delayed matching-to-sample, n-back, and the Stroop test), and the NASA Multi Attribute Task Battery at ground level (pre- and post-exposure) and at altitude. Cerebral regional and finger pulse oxyhemoglobin saturation levels and heart rate were continuously measured. The participants indicated their subjective signs and symptoms of hypoxia, mood and fatigue at different stages of each experimental condition.

Results: Data analysis and statistical evaluation are presently underway. Preliminary results show a significant decrease in cerebral and pulse O₂ saturations with increasing simulated altitude, but values remained stable during the 6 hour exposure. No significant negative impact on cognition or simulator performance was found. Self-reported symptoms of fatigue and headache were reported at altitude with a slight increase with time.

Conclusion: No clear evidence of negative effects on performance were noted in healthy participants when exposed to mild levels of hypoxia for 6 hours. More detailed analyses of all data will provide evidence to recommend any changes to the current RCAF restriction between 8,000 and 10,000 ft without supplemental oxygen.

3E05: Enhancing Resilience for Military Reservists - The Conflict between Professional Soldier and Civilian Health Provider

Lamarche, K., DNP, Capt, NP¹

Athabasca University; Department of National Defense

Brief Description: The purpose of this review is to explore factors related to provider resilience, professional preparation, clinical practice, and withdrawal/transfer of care for military reservist health providers. It is timely to explore the factors that contribute to the resilience of our reserve military personnel. There is much known about the health and psychological readiness of full time force members, and an increasing body of evidence related to health care provider resilience, especially in the wake of the Global war on Terror. What is not known is the specific implications regarding resilience when examining part time military members who are health care providers in the civilian sector. The recent history of increased military protection response, and the increased tempo of international medical challenges including civil assistance, humanitarian relief, post-disaster aid, and mass-casualty response has created a paralleled increase in the deployment of Reservist members.

A challenge for the occupational mental health of any international aide provider is how to ensure that well-meaning interventions are not the cause of adverse unintended personal health sequelae. Health care providers (pre-hospital, community based, and administrative) need to ensure that their domestic civilian approaches to care are leveled with the realities of international medicine. The CAF reserve forces provides a cadre of expert clinicians to supplement the efforts of the regular force. The difficulty lies in the context of said experience.

Outcomes: The objectives of the session will be to address the realities that CAF reservists who are also civilian health system providers face. The level of commitment these individuals demonstrate is rivaled only to the perceived conflict, both internal and systemic, in juggling a civilian position and a part time military commitment. Specifically understanding the context of part time military service and the challenges these providers face will enhance their protective factors leading to

more effective members and increased resilience prevention.

Patient Population: This session is of interest to military personnel, family members as well as administrators and managers that work to support them.

Conclusion: Using a case based and literature review approach, the author will present challenges related to provider resilience, professional preparation, clinical practice, and withdrawal/transfer of care. Attendees at this interactive session will learn concrete strategies to enhance their resilience and become a more effective, and healthier soldier and civilian health provider. Concluding the presentation will be a review of future research needs and strategic resources for current providers to further development resilience in preparation for deployment.

4E03: Does a Military Career Protect You From Death? Causes of Death in the Canadian Armed Forces, 1976-2012

*Rolland-Harris, E., PhD¹; Simkus, K., MPH^{1,2}; Weeks, M., PhD¹; VanTil, L., DVM MSc²

¹Department of National Defence; ²Veterans Affairs Canada

Introduction: Media and public perception frequently assert that being in the military puts an individual at higher risk of premature death. While this may be true for certain very specific causes of death (COD), usually within very specific age groups, there is evidence that supports the assertion that, over a lifetime, military service may actually provide a protective effect against premature death.

The CF Cancer and Mortality Study (CF CAMS) I, published in 2011, showed that all-cause mortality was lower in both males and females who had enrolled in the Canadian Armed Forces (CAF) between 1972 and 2006 compared to civilian counterparts [aka "Canadian General Population" (CGP)] (Statistics Canada et al, 2011). For females, this difference was most pronounced for cancer and cardiovascular (CV) deaths, where the standardized mortality ratios (SMR) were significantly below 1.0 for both categories of COD. For males, SMRs were significantly below 1.0 for deaths due to injury; infectious, digestive, endocrine, nervous, and respiratory diseases; mental disorders, as well as also cancer and CV deaths.

Methodology: The CF CAMS II study record linkage methodology is described in detail elsewhere [Rolland-Harris et al, 2016; Simkus et al, 2016(a); Simkus et al, 2016(b)]. As part of this study, ICD-10 standardized chapter-level analyses (representing broad categories of COD) that compare standardized death rates between still serving/released Regular/Reserve Class C CAF members and the CGP will be conducted to: 1) determine whether the CF CAMS I observations hold true in this better defined cohort, and 2) investigate whether any occupational factors contribute to explaining any (statistically significant) differences in the CODs between those who have served versus those who have not.

Results: Analyses of deaths in the CF CAMS II cohort by ICD-10-equivalent chapter will commence in spring 2017.

Conclusion: It is our hope that the results from this study will provide sound evidence to drive the discussion around the relationship between military service and long-term health outcomes (particularly death) and to provide military and veteran policy-makers with the information they need to continue developing, implementing and fine-tuning prevention, care delivery and pension programs within the military/veteran community.

6E04: Modelling the Trade-offs between Soldier Equipment, Mobility and Vulnerability in order to Mitigate Soldier Injury and Enhance Survivability

*Bossi, L., CD, MSc¹; Karakolis, T., PhD¹; Jones, M., PhD²; Keefe, A., MSc¹; Tack D., MSc³

¹Department of National Defence; ²University of Michigan; ³Human-Systems Incorporated

Introduction: Throughout history, soldiers have necessarily carried heavy loads comprising weapons, clothing and individual equipment (CIE) including combat supplies. These loads have been steadily increasing; soldiers on recent operations routinely carried loads approaching own body weight, well above maximum recommended fighting loads. Contributing to overload has been the fielding of new capabilities such as communications and information technology, each adding battery weight, and increased protection to counter new threats (such as Improvised Explosive Devices).

The costs of overload are clear in the scientific literature: increased physiological strain, altered biomechanics, contributing to increased risk of injury, and impaired task performance. However, few have examined the contribution of other CIE mass properties (e.g., bulk, stiffness, mass distribution, etc.) to soldier performance or injury risk. The effects of degraded task performance on operational effectiveness and ultimate survivability are understood even less.

Methodology: DRDC's Soldier Systems Effectiveness (SoSE) project is developing methods to characterize soldier burden due to CIE, and is studying the impact of burden parameters on operationally-relevant task performance such as mobility and simulated marksmanship. Using the Canadian Load Effects Assessment Program (CanLEAP) instrumented combat mobility course, soldier physical task performance (speed, accuracy, movement strategies, etc.) was captured across eight studies to date in which soldiers wore operationally realistic CIE that varied in weight, bulk, stiffness, and mass distribution (e.g., PPE coverage). A preliminary study of the impact of CIE-induced mobility decrements was conducted in a virtual immersive simulated shooting environment to examine the impact of mobility decrements on soldier vulnerability to enemy fire. Data analysis, modeling and further studies are underway.

Results: It is clear that CIE weight, bulk and stiffness weight contribute to decrements in mobility performance, as well as, in some cases, shooter speed of engagement. Correlates of performance have been determined. Under a preliminary set of shooting conditions, these CIE-induced mobility decrements contribute to increased vulnerability to enemy fire. Further studies are recommended and modeling is underway to focus strategies for intervention in terms of injury mitigation and improving survivability.

Conclusion: Outcomes of this research will inform requirements, specifications, standards, and test methods in the acquisition of less burdensome CIE in future. Models of the trade-off between protective CIE, mobility and vulnerability may also be used to develop decision aids, for use by planners and commanders alike, for the effective selection and employment of CIE to optimise operational effectiveness and survivability on future operations.

Poster Presentations

P119: Building Resilience in Situations of Ongoing Exposure: The Case of Police Officers and Hospital Staff

Lavi, T., PhD¹

¹NATAL, (Israel)

Brief Description: Police officers, and hospital workers are some of the first responders who help stricken individuals and communities during crises. As part of their work, they are continuously exposed to human pain and suffering, to multiple potentially traumatic events and to extremely stressful situations. Such exposure is associated with high levels of psychological distress such as depression, PTSD, burn-out, and substance abuse, as well as an elevated risk of physical health problems. Furthermore, continuous exposure may also affect the first responders' occupational performance and ability to provide critical services.

Thus, it is crucial to promote resilience and adaptive coping mechanisms among these professions, with the aim both of reducing the pathogenic effects of exposure and of countering high staff turnover.

In the following presentation I will review two resilience intervention programs that are designed to reduce mental distress and burnout among police officers and hospital nursing staff. The interventions provide participants with psycho-education on psychological responses to trauma, practical tools to improve their coping strategies, self care issues, training in delivering bad news to patients and families and strengthens relationships and interpersonal support within the group. These interventions are unique as they utilize combined methods including theoretical lectures, live simulations, and experiential learning methodologies.

Clinical Outcomes: Preliminary results of the evaluation study conducted for the nursing staff's intervention will be presented.

Self-report questionnaire were administered at the beginning and at the end of the workshop and included measures of: Professional self-efficacy, (Gelkopf, Ryan, Cotton & Berger, 2008). Professional quality of life, (Stamm, 2009) Mastery and attitudes regarding delivering bad news. Burnout and Secondary Traumatization.

Patient Population: 507 nurses.

Conclusion Following the workshop participants felt more satisfied in helping others professionally, felt less exhausted / frustrated, and were less negatively influenced by the traumatic/adverse experiences of their patients.

The issue of resilience interventions, themes, and training methodologies will be discussed in light of the unique characteristics and defense mechanisms associated with first responders, and of the existing knowledge on situations of Continuous Traumatic Stress (CTS).

P128: The Health and Well-Being of Military Drone Operators and Intelligence Analysts: A Systematic Review

*Armour, C. PhD; Ross, J. MSc

Ulster University (IRL)

Introduction: The aim of this study was to systematically review the existing research on the health and well-being of military drone operators and intelligence analysts in order to provide an overview of

research and identify gaps in this area.

Methodology: Six literature databases and two databases containing unclassified military reports, from the US and the UK, were searched for relevant papers produced between January 1996 and May 2016. The search criteria were broad to allow for the identification of all relevant studies on the topic.

Results: Fifteen studies met the inclusion criteria; all of which were conducted in the U.S. with the U.S. Air Force personnel. The main sources of occupational stress reported by participants across the studies were operational. The rates of mental health diagnoses, including PTSD, were low, but levels of psychological distress were higher in drone and intelligence operators than in comparison groups. Fatigue emerged as a significant concern.

Conclusion: The health and well-being of drone operators and intelligence analysts should be studied not just in the U.S., but also in other countries that are using drones for military purposes.

P129: The Impact of Occupational Exposure to Repetitive Low-level Blast Events in Breaching Instructors and Range Staff

*Blackler, K., MSc; Vartanian, O., PhD; Tenn, C., PhD; Nakashima, A., MSc; Rhind, S.G., PhD; Smith, I., HBSc; Replete, V., BSc., Cpl; Thompson, K; Lam, Q., MSc; Caddy, N., RVT; Garrett, M., RN., BN; Saunders, D.; Shiu, M.Y., MSc; Di Battista, A.P., PhD; Jetly, R., Col., CD., OMM., MD., FRCPC

Department of National Defence

Introduction: Breachers comprise a unique military population trained in the tactical use of explosives to gain entry into enclosed spaces. The Army's tactical breaching manual recommends that breachers not be exposed to blasts that exceed a threshold of 3 psi during training. However, a recent study conducted by Defence Research and Development Canada at the Canadian Forces School of Military Engineering (CFSME) indicated that approximately 12% of blast events exceeded that prescribed level during training. Although the precise nature of the relationship between long-term exposure to repetitive low-level blast and human health is unknown, previous data suggest that long-term exposure to blast events can have adverse effects on the nervous system, including headaches, sleep disturbances, memory impairments and other concussion-like symptoms. Our goal was to assess the effects of long-term occupational exposure to repetitive low-level blast in a group of CFSME breaching instructors and range staff on outcome measures related to health, psychological and physiological performance.

Methodology: Data were collected from 15 breaching instructors/range staff and 15 sex- and age-matched controls recruited from the Canadian Armed Forces on (a) self-report measures of physical and mental health, (b) tests of postural stability, ataxia (i.e., balance), and a measure of postural tremor (vertical finger displacements), and (c) neuropsychological tests of short-term visual memory, working memory, executive functions, and 4-choice reaction time.

Results: Breachers reported significantly lower levels of general physical ($p = .03$) and mental ($p = .02$) health. Breachers also exhibited significant differences compared to the control group on a test of postural tremor including increased drift ($p = .01$), a lower dominant frequency ($p = .02$), and higher frequency concentration ($p = .03$). The performance of the two groups did not differ on tests of balance or neuropsychological tests.

Conclusion: Data collection is ongoing, and therefore the present results must be considered preliminary. Nevertheless, consistent with published self-reports of professional U.S. breachers, our results suggest that occupational exposure to breaching is associated with negative general physical and mental health outcomes. The drift and dominant frequency data from the measure of postural tremor indicate worse performance in breachers, and suggest that repetitive exposure to low-level blast might interact with the central pacemaker involved in tremor generation. However, critically, additional work is necessary to isolate the unique contribution of repetitive low-level blast exposure to health, psychological and physiological performance.

P130: Self-reported Exposure to Work and Leisure Noise and use of Hearing Protection among a Sample of Regular Force Canadian Armed Forces Personnel

*Bogaert, L., PhD (Cand)^{1,2}; Hawes, R.A., PhD (Cand)¹; Lamontagne, P., Sgt (Retd)¹; Blier, S., LCol¹

¹Department of National Defence; ²University of Toronto

Introduction: Occupational noise exposure is a common workplace hazard, especially in manufacturing, transportation, mining, construction, agriculture, and the military. Hearing conservation efforts aim to reduce noise hazards through noise controls, hearing protection, education/training, and monitoring of hearing acuity. Hearing conservation is an essential component of military population health, as hearing-related disorders can adversely affect communication abilities and effectiveness, operational readiness, and personal wellbeing.

In the Canadian Armed Forces, monitoring of electronic hearing test data and matched self-report questionnaires is ongoing. Analysis of these data provides the opportunity to identify high-risk occupational subgroups and generate the information necessary to develop targeted prevention approaches and support ongoing hearing conservation efforts.

Methodology: De-identified questionnaire data from all Regular Force personnel who underwent hearing tests during a 4-year period at five randomly selected CAF bases were included in this analysis (n=19,966). For those with multiple records, the most recent data were used. Missing data was uncommon, with less than 2% of responses missing from these questionnaire items.

Descriptive analysis of this cross-sectional data examined self-reported noise exposure in work and leisure settings and the frequency and type of hearing protection used by those who are exposed to noise.

Results: Preliminary analysis suggests that 24% are “often” exposed to loud noise at work and another 42% are “sometimes” exposed. Only 6% are “often” exposed to loud noise during leisure activities and another 44% are “sometimes” exposed.

Of those who are exposed to noise at work, 35% reported always using hearing protection and 6% reported never using hearing protection. Among those exposed to noise in leisure settings, 22% reported always using protection and 21% reported never using protection. Ear-plug use is more than twice as common as earmuff use in both noisy workplace and leisure settings.

Conclusion: This preliminary analysis found two-thirds of the CAF Regular Force (approximately 43,240 personnel) are exposed to loud noise at work. While roughly one-third of those exposed at work reported always using protection, we estimate there are roughly 2,600

active personnel who never use protection at work. This suggests there may be a subgroup that requires additional support for the prevention of hearing loss.

Future analysis will include questionnaire results from all active personnel who had a hearing test since 2010 as well as demographic and occupational covariates to identify high risk subgroups. Future longitudinal analysis will provide a more comprehensive understanding of how noise exposure and hearing protection behaviours change over time.

P131: Access to Care Among Military Health Service Providers: Preliminary Results of C4C Focus Groups

Born, J., MSc; Frank, CK., PhD; *Richer, I., PhD; Nguyen, V., MSc

Department of National Defence

Introduction: Similar to realities faced by civilian care providers, being a health care provider in the Canadian Armed Forces (CAF) can be both physically and psychologically demanding. CAF health care providers have similar occupational demands as their civilian counterparts, but the military environment may introduce additional stressors and barriers to accessing health care (e.g., combat exposures and complicated patient-provider relationships). CAF providers have a duty to maintain their own physical and mental health in order to provide health care to the broader CAF community. In order to maintain one's health, it is imperative to access care when needed. Despite national guidelines encouraging providers to access care, evidence suggests that providers still experience social and systematic barriers that reduce care seeking. This study was designed to address the concern that CAF health care providers are under-accessing health care due to real and perceived barriers to accessing care.

Methodology: A review of the published literature was conducted to identify potential barriers that prevent access to mental and physical health care in both military and non-military health settings. Using methodologies from implementation research, we systematically mapped barriers onto a pre-existing framework to better conceptualize the underlying constructs relevant to care seeking behavior. Using this framework, a structured focus group guide was developed to identify barriers through group discussion, followed by a working group activity on the relative importance of identified barriers. These focus groups will be conducted with up to 200 CAF health care providers at ten locations across Canada. Key exploration variables include: language, base size, and command (Air, Navy, and Army). A thematic analysis of the audio-recorded transcripts will be conducted to identify emerging themes. The findings of the thematic analysis will be used to construct a survey to assess barriers to care across all CAF health care professionals.

Results: An overview of the literature review, the study's objectives, and the methodology will be presented. Data collection and analysis will begin in spring 2017. Preliminary findings will be discussed.

Conclusion: This study addresses the need to effectively assess factors that act as barriers to accessing health services and support strategies to implement change. The domains highlighted in the analysis will be used to develop a survey to quantitatively assess barriers that influence CAF providers' access to care. Furthermore, the use of theory-based methodology will facilitate the identification of evidence-based strategies to improve access to care.

P132: Performance Coaching: Expanding Psychological

Skills Training Beyond the Classroom Environment

*Guest, K., MSW; *Khan, S., MSc; Bailey, S., LCol., MSW

Department of National Defence

Brief Description: The Canadian Armed Forces (CAF), like other militaries, recognizes that mental fitness and well-being are key contributors to occupational health and operational readiness. As such, over the past nine years the CAF has developed the Road to Mental Readiness (R2MR) program, an evidence-based comprehensive mental health training and education program designed to increase mental health literacy and enhance resilience and mental toughness in order to ultimately improve short term performance and mental health outcomes. Since its inception, the R2MR program has made great gains in the training of psychological skills that promote performance and positive mental health, with improvements realized in the areas of mental health literacy, skill development and self-confidence. However, recent evidence has suggested that repeated application and practice of the psychological skills in the training environment can further enhance skill retention and effectiveness. Therefore, the program has begun expanding the psychological skills training beyond the classroom environment into regular training activities.

Clinical Outcomes: The R2MR coaching content is designed to enhance military occupational health through enabling CAF military course instructors to integrate stress training techniques into CAF courseware and to coach the psychological skills that promote resilience and mental toughness throughout regular training activities.

Patient Population: The performance coaching content is taught to CAF course instructors, with the intent of assisting them to provide further training and coaching to all CAF members attending these military courses.

Conclusion This presentation will review the R2MR coaching curriculum objectives and key foundation teaching points as well as review the findings from the pilot project at the Canadian Forces Infantry School. These findings will demonstrate increases in knowledge and skill acquisition for instructors, changes in performance and well-being of CAF course candidates, with further recommendations for expanding the material to other CAF training institutions.

P133: An Assessment of Op SOPRANO Respirable Hazards during the 2016 Juba Clashes in South Sudan

*Johnston, G.K., Maj., MHSc; Lalonde, J.D., PhD

Department of National Defence

Introduction: To address Canadian Armed Forces (CAF) requirements for health surveillance, a Deployable Health Hazard Assessment Team (DHHAT) conducted a health hazard assessment in support of Op SOPRANO, in Juba, South Sudan from 12 June to 17 July 2016. During the deployment, hostilities broke out between rival government factions, forcing the DHHAT to halt data collection and evacuate the country. Water and soil samples were abandoned, however air samples were successfully repatriated and compared against health guidelines to determine risks and guide protective mitigation requirements over a six-month deployment period.

Methodology: Due to the tropical nature of equatorial Africa coupled with the urban environment of Juba, the air was sampled for a variety of aerosols and pollutants, including Particulate Matter (PM10 and

PM2.5), respirable and inhalable dust, silica, metals, polycyclic aromatic hydrocarbons (PAHs), and volatile organic compounds (VOCs). At each location, samples were collected at a minimum of two sites over several days where CAF personnel live or work, to assure representative sampling for exposure. Water and soil samples were to be collected due to possible contamination from industrial or agricultural sources.

Results: Throughout the mission, rain and humidity were a factor due to the deployment occurring during South Sudan's rainy season. Despite these variables, 270 air samples were collected under clear and routine weather conditions before fighting broke out in Juba and forced a halt to the mission, preventing the collection of water or soil samples. PM10 levels of 98 µg/m³ and PM2.5 levels of 38 µg/m³ were observed; the highest of these concentrations correspond to an Air Quality Index from "moderate" to "unhealthy for sensitive groups." Other analytes such as airborne metals, silica, PAHs and VOCs were not found at levels of concern, and in most cases were below the laboratory's detection limits.

Conclusion: The overall outdoor air quality should not have adverse health effects on deployed CAF members for Op SOPRANO, however uncontrolled trash burning and lack of vehicular pollution controls were observed to produce unhealthy conditions. An AQI of "unhealthy for sensitive groups" means that respiratory symptoms are possible for those with lung disease, older adults and children. For generally healthy individuals, the short-term health effects from exposure to the PM levels in Juba would be minimal, while the likelihood for long-term adverse health effects would be unlikely.

P134: Quantifying the Effects of Body Armour and Fighting Load on Joint Range of Motion, Stiffness, and Strength

*Karakolis, T., PhD; Sy, A., BS; Maceda, E., BS; Bossi, L., CD, MSc

Department of National Defence

Introduction: Modern soldier clothing equipment, while critical to soldier survival and lethality, are imposing significant burden, degrading their performance and putting them at increased risk of musculoskeletal injury. As part of a research program to understand and mitigate the health and operational task performance effects of soldier burden, this study examined the effects of torso-borne equipment (body armour, tactical vest with fighting load) on soldier range of motion and strength.

Methodology: Twenty Regular Force soldiers participated in a study to determine the effect of wearing the in-service fragmentation protective vest (less hard armour) and tactical vest (with simulated minimum fighting order combat load comprising 4 loaded C7 magazines, grenades, 1L water, C9 drum, two field dressings) on isolated joint movements. Joint range of motion (ROM), strength, and stiffness were all measured using a Biodex System 3 (Biodex Medical Systems, Inc. Shirley, NY, USA). The isolated joint movements tested were: shoulder flexion/extension, shoulder abduction/adduction, and trunk flexion/extension.

Results: Average ROM significantly decreased ($p < 0.05$) while wearing the frag/tac vests compared to the non-loaded condition for all isolated joint movements (Shoulder Abduction/Adduction – Non-loaded = 163.44 ± 13.60 degrees, Frag/Tac = 147.84 ± 22.37 degrees; Shoulder Flexion/Extension – Non-loaded = 194.17 ± 12.17 degrees, Frag/Tac = 180.88 ± 17.72 degrees; Trunk Flexion/Extension – Non-loaded = 111.21 ± 7.83 degrees, Frag/Tac = 94.48 ± 11.77 degrees). Strength was generally not significantly affected

while wearing the frag/tac vests, with the exception that trunk flexion strength was significantly decreased while wearing the frag/tac vests (Non-loaded = 151.02 ± 33.88 Nm, Frag/Tac = 140.40 ± 32.91 Nm). Shoulder abduction joint stiffness and trunk flexion joint stiffness were both significantly affected while wearing the frag/tac vests (Shoulder abduction – Non-loaded = 0.20 ± 0.04 Nm/degree, Frag/Tac = 0.18 ± 0.06 Nm/degree; Trunk flexion – Non-loaded = 0.58 ± 0.32 Nm/degree, Frag/Tac = 0.69 ± 0.42 Nm/degree).

Conclusion: This study quantified the effects of soldier clothing and personal equipment on isolated joint movements. By quantifying changes in ROM, strength, and stiffness, and relating them to soldier mobility performance, one can begin to develop equipment or system-equipment design criteria. This study provides initial insights into musculoskeletal injury risk of soldier fighting loads, and the development of mitigating or preventative strategies. Future work should focus on developing relationships between decreases in ROM and strength, and increases in joint stiffness, with the incidence and risk of musculoskeletal injury of Canadian soldiers.

P135: DND's Drinking Water Disinfection App

**Lalonde, J.D., PhD; Downey, H.K., MWO; Melançon, J.R.F., Maj., MD, MPH; Blier, J.J.S., LCol, MD, MPH*

Department of National Defence

Introduction: The treatment of water for safe use is one of the greatest achievements of the twentieth century. Disinfection, a chemical process whose objective is to control disease-causing microorganisms by killing or inactivating them, is the most important step in drinking water treatment. Monitoring the disinfection level of drinking water is the easiest way to assess drinking water safety. The Canadian Armed Forces (CAF) face a unique challenge since a variety of disinfectants are used to treat drinking water across bases and wings as well as on vessels, all of which are monitored differently and have different disinfection target levels. The Directorate of Force Health Protection (DFHP) developed a drinking water disinfection app to help CAF medical personnel regulate drinking water disinfection in this complex military environment.

Methodology: The first step in monitoring drinking water disinfection level is identifying which disinfectant is used. We have surveyed DND bases and wings as well as the various classes of vessels to facilitate the identification of their disinfection systems. The second step is knowing how to accurately measure the disinfectant levels using direct reading instruments. We identified the specific methods for each military environment. The third step is knowing the specific disinfection target level. The disinfection target levels were reviewed and confirmed for each disinfectant used by the CAF. Lastly, equations for proper disinfectant dosage were developed including situations when different types of disinfected drinking waters are mixed.

Results: The drinking water from CAF bases is either chlorinated or chloraminated. In the Royal Canadian Navy (RCN), chlorine or bromine is used to treat drinking water produced on ships. Moreover, operations sometimes requires different types of disinfected water to be mixed. Within the RCN, concerns were raised regarding the mixing of brominated water, produced onboard, with chlorinated but also chloraminated drinking water taken onboard from Canadian and/or international ports. Similar concerns were raised by the Canadian Army in the military field environment where disinfectant needs to be added to various types of already disinfected drinking water to maintain an

adequate disinfection level during both transportation and storage. Calculating the appropriate disinfection dosage in these various environments have proven to be challenging.

Conclusion: A drinking water disinfection app was developed to help guide CAF medical personnel in identifying the disinfectant on DND bases, wings and vessels as well as the disinfection residual target levels. The app will optimize the use of drinking water disinfectant so that the drinking water safety and palatability will be enhanced.

P136: Use of Personal Protection Measures in the CAF: Beliefs, Perceptions, and Behaviours Concerning Bite-prevention Measures and Hearing Protection Devices

**McCuaig Edge, H., PhD; Born, J., MSc; Schofield, S., PhD; Banta, G., M.D., MSc*

Department of National Defence

Introduction: Canadian Armed Forces (CAF) members may be exposed to a number of hazards that can cause health problems (e.g., arthropod associated diseases [AAD] or noise-induced hearing loss [NIHL]). Guidelines are in place to protect CAF personnel from these harms by encouraging the use of personal protection measures (PPMs). Despite proven effectiveness in reducing these health risks, barriers to the use of PPMs persist. There is a paucity of literature as to how behavioural constructs influence PPM use. In this study, we compared factors that influence the use of bite prevention measures (BPMs), with the factors that influence hearing protection devices (HPDs).

Methodology: Interviews were conducted with military personnel to explore beliefs, perceptions, and behaviours related to AAD and NIHL as health risks, in relation to the PPMs that counter these risks (i.e., BPM to prevent AAD, and HPD to prevent NIHL). Interview methods were based on the Theoretical Domains Interview approach to develop theory-informed interventions. Transcripts of the interviews were coded using a grounded, inductive approach to develop themes within a deductive organizing framework. Finally, a thematic content analysis was performed to compare the factors that influence the use of BPM to those influencing the use of HPD.

Results: CAF members recognized the likelihood and seriousness of the risks of both AAD and NIHL, as well as the importance of using the PPM (BPM and HPDs respectively) for prevention. Participants acknowledged the long-term health consequences and career implications of not using PPM. Despite participants' understanding of these risks, some participants actively chose not to use PPMs – for instance, when using PPM would be a tactical disadvantage. Results indicate that motivating factors specific to the health risk are important constructs to predicting PPM use.

Conclusion: This study interviewed a purposeful sample of CAF members and identified factors relative to the uptake of PPMs. In general, the results suggest that similar factors may increase the use of PPMs (e.g., better quality products and education on the health risks and effectiveness of PPMs). Yet, certain barriers to the use of PPMs existed that were specific to the associated health risk. This theory-based understanding of how and why CAF members use PPMs provides insight into interventions to reduce health risks. Furthermore, the use of theory-based methodology to increase the uptake of BPMs and/or HPDs demonstrates the utility of thematic content analysis as an evidence-based research strategy.

P137: Deployment Health Surveillance in Action: 18 months of Data from the Canadian Armed Forces Health Facility in Kabul, Afghanistan

*Naicker, K., PhD (Cand)^{1,2}; Valbuena, L., MPH¹; Carew, M., MD¹; Dubiniecki, C., MSc¹

¹Department of National Defence; ²University of Ottawa

Introduction: This study provides a unique overview of a year and a half worth of health surveillance efforts from Operation ADDENDA in Kabul, Afghanistan. This ongoing operation facilitates the day-to-day activities of the Canadian embassy, and the Role 1 health facility at this location serves almost equal numbers of both military and civilian personnel. The information presented in the report details the findings captured by the CAF deployment health surveillance system, and provides an update of the utility of the DISS in a long-term deployment context.

Methodology: The Disease and Injury Surveillance System (DISS) is an automated electronic coding system that captures health information on medical visits in deployed settings. In addition to meeting Epi-NATO reporting standards, the DISS collects information on primary diagnoses, as well as injury mechanisms and outbreak markers. The data extracted for this report covered the surveillance period of 07 June 2015 to 31 Jan 2017. Frequencies and distributions of primary diagnoses, injuries, and specialist referrals were calculated based on the total number of medical visits. Special focus is given to period trends of key outbreak indicators (i.e., upper respiratory tract infections, lower respiratory tract infections, gastrointestinal, climatic and fever indicators). All analyses were performed in STATA 14.0 and Microsoft Excel 2010.

Results: A total of 846 medical encounters occurred over this 18-month period, corresponding to 413 visits (48.8%) by CAF personnel, 406 civilian visits (48.0%), and 27 visits (3.2%) by other military personnel. The majority of civilians treated during this period were male (66.5%). The primary reasons for medical visits for all groups included vaccinations (n=120), diseases of the respiratory tract (n=105), and injuries (n=78). The distribution of all diagnoses by ICD-10 category is provided. Within CAF personnel, 76 injuries were reported which were either sport or non-battle non-sport related. In addition, a total of 10 specialist referrals were made and a minimum of 11.5 days of duty were lost. A breakdown of the 61 outbreak indicators reported during this period are presented by month to illustrate seasonal trends.

Conclusion: The ongoing deployment health surveillance efforts in Kabul, Afghanistan using the DISS have allowed for the capture of a comprehensive range of health conditions and operational impacts. This information can be used to facilitate resource planning, track outbreaks and quantify the burden of disease arising from a given mission. Future linkage with reliable denominator data could strengthen the utility of this data and its potential applications.

P138: Hearing in Breaching Instructors and Range Staff Exposed to Repeated Low-level Blasts

Nakashima, A., MASC; *Vartanian, O., PhD; Blackler, K., MSc

Department of National Defence

Introduction: A previous study conducted by Defence Research and Development Canada at the Canadian Forces School of Military Engineering (CFSME) indicated average peak overpressure levels of 1.6 to 2.1 PSI (174 to 177 dB) during breaching courses. Although the blast

events were recorded with body-worn blast gauges and are not representative of at-ear exposure levels, it is clearly of interest to study the hearing function of this population. Hearing threshold data were collected as part of a cross-sectional study on breaching instructors and range staff to assess the effects of long-term occupational exposure to repeated low-level blasts on various health and performance measures.

Methodology: Pure-tone audiometric data in the range of 0.5 to 8 kHz were collected from 19 breaching instructors and range staff and 15 sex- and age-matched controls recruited from the Canadian Armed Forces (data collection from controls still in progress). All participants were administered a background health questionnaire that included questions about occupational and recreational noise exposure, auditory injuries and tinnitus.

Results: The preliminary results show that four participants in the breacher group had mild-to-moderate hearing loss and seven reported experiencing tinnitus. Moderate positive correlations were found between years of breaching experience and hearing thresholds at 3 kHz ($r = 0.594$, $n = 19$, $p = 0.007$) and 4 kHz ($r = 0.635$, $n = 19$, $p = 0.004$), in the right ear only. However, there were no significant differences between the breacher and control groups for hearing thresholds at any of the measured audiometric frequencies.

Conclusion: Although some of the members in the experimental group had measurable hearing loss, the preliminary results did not show significant differences in hearing thresholds from the control group. Additional tests of hearing function, such as speech understanding in noise, should be considered for future studies. Confounding factors including non-breaching noise exposure and use of hearing protection will be discussed.

P139: Circulatory Disease Mortality in Canada's Serving and Released Armed Forces – Early Findings from CF CAMS II Comparing Mortality in the Canadian Armed Forces to the Canadian General Population

*Simkus, K., MPH^{1,2}; Weeks, M., PhD¹; VanTil, L., DVM²; Rolland-Harris, E., PhD¹

¹Department of National Defence; ²Veterans Affairs Canada

Introduction: The Canadian Forces Cancer and Mortality Study II (CF CAMS II) is a retrospective record linkage study of serving and released Canadian Armed Forces (CAF) Regular Force and Class C Reserve personnel. The study aims to describe the mortality and cancer mortality of CAF personnel. For the first part of the study, the Department of National Defence's (DND) administrative pay data and human resources data from 1976 to 2012 was linked to the Canadian Mortality Database to obtain death records data. Analyses are underway to estimate the mortality burden in serving and released CAF personnel compared to the Canadian general population.

Findings from CF CAMS I observed in both males and females that still serving and released CAF personnel were at significantly lower risk of dying from circulatory disease (CD). We hypothesize that this may be due to the healthy worker effect, whereby military enrolment criteria selects for more physically fit individuals, in combination with CAF personnel's requirement to maintain their fitness levels throughout their military careers, and therefore maintain their circulatory health.

We will revisit and explore this possible protective effect of military service against CD mortality. Compared to the CF CAMS I, the improved data quality of the CF CAMS II cohort may allow us to delve deeper into subchapters and possibly examine the effect of occupa-

tional explanatory variables.

Methodology: The military cohort file was created and validated by DND epidemiologists, and includes demographic and military data, including enrollment and release dates, occupational data, and dates and locations of foreign deployments, in addition to extrapolated explanatory variables (e.g. total length of service, time since release). The cohort file was probabilistically linked to the Canadian Mortality Database using SINS as a highly weighted matching variable, to provide coroner's data (date of death, underlying cause of death by ICD code).

Analyses will be conducted to estimate the risk of death due to CD (ICD-10 Chapter 9). This may include, but is not limited to the following: risk of death by subchapter, age-group, sex, time period, military rank, component, command, time since release, and length of service.

Results: Analyses of deaths due to CD will commence in spring 2017.

Conclusion: With the improved data quality and completeness in CF CAMS II compared to CF CAMS I, this study offers an opportunity to conduct more detailed analyses into some of the protective effects of military service on health.

P140: Operating in the Arctic: Medical Readiness for Arctic Operations

**Sullivan-Kwantes, W., MA; Goodman, L., PhD; Love, R., PhD*

Department of National Defence

Introduction: Northern deployments to the Canadian Arctic by the Canadian Armed Forces (CAF) have conducted on and off since the 1940s and continuously since 2007. Military operations during the winter in the Arctic have unique challenges imposed on them by extreme cold weather and isolation. The knowledge and experience required to operate effectively in the Arctic takes time and effort to learn and is easily lost if not practiced regularly.

Arctic operations for the CAF usually take place in remote locations with minimal outside medical care available. Small military staffed clinics are set up with CAF medical personnel and equipment to handle minor injuries and coordinate medical evacuations if necessary.

The purpose of this study was to observe medical personnel support operations during EXERCISE ARTIC RAM, held in Resolute Bay, Nunavut (NU), in February 2016; Operation NUNLIVUT, held in Hall Beach, NU, February 2017; and EXERCISE NOREX, held in Resolute Bay, March 2017.

Methodology: Semi-structured interviews were conducted with 30 medical personnel (medical officers, Search and Rescue, critical care nurses, nurses and medics) during three Arctic exercises (EXERCISE ARCTIC RAM, OPERATION NUNLIVUT and EXERCISE NOREX).

Results: The interviews revealed gaps in cold weather medical training for CAF medical personnel, medical planning, and specialized medical and protective equipment for Arctic Operations. Challenges were also identified for medical personnel while performing pre-hospital, treatment for particular injuries/illnesses and medical evacuation during Arctic operations.

Conclusion: Harsh environmental conditions, logistical issues, clothing/equipment limitations, communication challenges, and cold weather injuries have impacted the CAF during Arctic operations since the 1950s. Many of these challenges still exist today. Safety in this

harsh Arctic desert environment is paramount due to the risk of injury and the difficulty accessing the Arctic.

Interviews conducted with medical personnel have identified key challenges for operating in the Arctic. Specialized health care training and equipment for medical personnel is required in this harsh environment to ensure proper monitoring, diagnosis, sustainability and treatment of injuries. Extreme cold weather clothing and equipment is required for health protection and to minimize risk of frostbite. Attention is required for particular trades, such as the engineers and medics that are at a higher risk for cold weather injuries due to the repeated exposure to cold weather.

P141: Motor Vehicle Accident-Related Mortality in Serving and Released Males in the Canadian Armed Forces, 2000-2012: Comparisons with the Canadian General Population using the CF-CAMS II

**Weeks, M., PhD¹; Simkus, K., MPH^{1,2}; Rolland-Harris, E., PhD¹*

¹Department of National Defence; ²Veterans Affairs Canada

Introduction: Although motor vehicle accident (MVA)-related deaths in the military have generally decreased over time, MVAs remains a leading cause of death in military populations. Canadian military data are lacking, with the existing studies examining rates over time and civilians comparisons emanating from the U.S. Armed Forces. Relevant research in the Canadian Armed Forces (CAF) has been limited to Canadian soldiers that were killed in Afghanistan between 2006 and 2008, and therefore little is known regarding trends over time or comparisons to Canadian civilians. The current study will examine rates of MVA-related death in still-serving and released CAF personnel over a 36-year period and directly compare to age-sex adjusted rates in the Canadian general population (CGP).

Methodology: This project represents part of the Canadian Forces Cancer and Mortality Study II (CF-CAMS II), a retrospective data-linkage study of still serving and released CAF Regular Force and Class C Reserve personnel. Administrative pay data and human resources data from 1976 to 2012 were probabilistically linked through SINS to the Canadian Mortality Database to obtain death records data (date of death, cause of death by ICD code).

In order to estimate the risk of death due to MVAs, we will examine ICD codes (ICD-8, -9, -10) involving motor vehicle use. We will compare the risk of death in the military cohort compared to the CGP by calculating standardized mortality ratios, including the risk of any MVA-related death, as well as by sub-chapter, and other occupationally-related factors.

Results: Although analyses are scheduled to commence in spring 2017, some preliminary work has begun. Early findings for years 2000 to 2012 suggest that, overall, current and former CAF personnel are not at higher risk of MVA-related mortality than the CGP. However, in individuals aged 25 to 29, MVA-related mortality was significantly more likely to occur in current and former CAF personnel than in the CGP. Also, deaths due to a motorcycle accident appeared more likely in current and former CAF personnel, and this increased risk was particularly pronounced among those aged 25 to 29.

Conclusion: This study will provide detailed information on MVA-related mortality in the CAF that has thus far been lacking. The results of this study may have implications for future policy decisions, as well as

the development and implementation of prevention efforts pertaining to motor vehicle safety.

PHYSICAL HEALTH AND REHABILITATION

Podium Presentations

1E02: Canadian Forces Health Services National Occupational Therapy Program: A Program Update by the Rehabilitation Program

*Brown, H., PhD (Student), M.O.T., Reg. (Ont.)^{1,2}; Besemann, M., LCol, MD²

¹Western University; ²Department of National Defence

Brief Description: Canadian Forces Rehabilitation Occupational Therapists (CF OT) work with ill and/or injured military personnel to reduce/eliminate barriers impacting participation in valued roles and routines. The ultimate aim of CF OT intervention is to empower Canadian Armed Forces (CAF) military personnel to reach the highest level of independence in everyday activities, including return to military duty (RTD). Valued roles and routines are what military personnel want to do and are expected to do and can be considered 'occupation'. In the last three years the Canadian Forces Health Services (CFHS) Rehabilitation Occupational Therapy National Program, in which CF OTs work, has shown tremendous growth. Locally, additional CF OT employees have been hired, clinic infrastructure reorganized, and practice activities restructured. Nationally, policy and procedures for administration practices, referrals, documentation and reporting have been modernized and simplified. Further, outcome measures and client/patient profiles have been generated to track functional improvements of personnel and inform caseload management procedures.

Clinical Outcomes: The following presentation will detail the CFHS Rehabilitation Occupational Therapy National Program inputs (e.g., people, funding, infrastructure, equipment, policy, legislation), CF OT activities (e.g., clinical activities, management structure and governance), and overall program outcomes, performance indicators, and intended effects.

Patient Population: The CF OT program is designed to work with any CAF military member struggling with disability that impedes their ability to engage in everyday activities in the area of self-care, productivity particularly in the area of RTD. CF OTs also work with CAF families, educating them and striving to decrease caregiver burden.

Conclusion CF OTs are typically tasked to prevent, develop, increase, improve and restore a CAF member's RTD and adapt/modify environments impeding return to valued occupation (e.g., home modification and vehicle prescription). The current role of OT within the CF is emerging. New approaches to improve everyday participation in CAF military members valued roles and routines are quickly being reviewed and integrated within the organization. Disseminating growth to the audience will (1) demonstrate program impacts to users; (2) highlight "what works" and "did not work"; (3) showcase program effectiveness for stakeholders; and (4) with solicit audience feedback to plot potential future system level adjustments.

1E03: Tackling Repeated Healthcare Seeking for Low Back Pain – A Canadian Forces Health Services Centre Atlantic Pilot Initiative

*Glover, S., MSc; Trudel, D., Maj, MSc; Godsell, P., Capt; Rowe, P., LCol

Department of National Defence

Brief Description: Low back pain (LBP), by its inherent nature, is a recurrent condition¹. In the Canadian Armed Forces (CAF), a LBP clinical pathway is being developed in order to standardize the delivery of care for CAF members seeking treatment for LBP through Canadian Forces Health Services². The physiotherapy component of the pathway guidelines will include recommendations for addressing recidivism, or members recurrently accessing healthcare services for their LBP. In a time where the effective management of CAF healthcare resources is paramount, it is important to look at not only the rate of recidivism for LBP in the CAF but at how these members are managed when they return for care. Canadian Forces Health Services Centre Atlantic (CF H Svcs C (A)) Physiotherapy department conducted a pilot initiative in order to address those who were returning for care frequently for LBP. Depending upon their previous history of care for their LBP, they met criteria to either be kept in-garrison physiotherapy for a 'Top Up', or given the next available appointment, whether in-garrison or outsourced. A 'Top Up' appointment is defined as one to four sessions with a physiotherapist to re-iterate self-management strategies for a long term condition.

The purpose of this pilot initiative is: (1) To describe the rates of recidivism for LBP at CF H Svcs C (A); (2) To compare resource use between different accesses to care.

Clinical Outcomes: 1) Proportion of CAF members who re-access physiotherapy care for LBP within 6 months or within 1 year of being discharged from physiotherapy. 2) Number of visits per referral for those who access care as a 'Top up' versus general access to physiotherapy.

Patient Population: Ill and injured CAF military personnel with LBP who presented for physiotherapy care at CF H Svcs C (A) between 1 August 2015 and 1 Aug 2016.

Conclusion Of the 408 members who reported their previous physiotherapy or chiropractic use for LBP, 67.4% had accessed care for LBP before, and 24% had accessed care within the last 6 months. Once the rest of the data is analyzed, the conclusions will report on the difference in resource use.

1E04: Exploring the Relationship between Complex Regional Pain Syndrome and Concussion: A Case Study

Holly, J., MSc¹; Besemann, M., LCol., MD²

¹The Ottawa Hospital; ²Department of National Defence

Brief Description: Complex regional pain syndrome (CRPS) is a sensory, vasomotor and autonomic disorder of an extremity which can result in disability and impacts to quality of life. The pathophysiology of CRPS can be thought of as three major biological pathways: neuroinflammation, vasomotor dysfunction and maladaptive neuroplasticity. FMRI studies have demonstrated changes to somatosensory areas I and II. This maladaptive neuroplasticity can lead to altered body perception, pseudoneglect, spatial inattention and visuospatial perceptual deficits. These symptoms are comparable to those found in concussion and traumatic brain injury (TBI) whereby difficulties of spatial perception, orientation and visual midline shifts have been reported.

The prevalence rate among civilians is 26/100000 and among armed forces personnel has been found to be 2% of all American soldiers involved in Operation Iraqi Freedom.

An unpublished chart audit demonstrated significant levels of pre-existing comorbidities within a CRPS sample. A surprising finding was a 20% prevalence rate of concussion or TBI pre-CRPS. There were other individuals without diagnoses of concussion within the sample who had incurred substantial motor vehicle accidents and others with seizure disorders.

The symptom similarities and the high prevalence rate of comorbid concussions generated the hypothesis: Is there an interrelationship (causal or otherwise) between a premorbid concussion and the development of CRPS?

Case Study- This presentation will focus on a case study of a Canadian Forces Member who incurred a ligamentous injury to the knee which was not resolving. The member reported unremitting burning pain which completely interfered with sleep, significant sensory, autonomic and motor symptoms. On clinical evaluation, a diagnosis of CRPS was made using the Budapest Criteria. Further investigation revealed the member had incurred a ground contact to the head during a jump course two days prior to the knee injury. This presentation will share clinical and diagnostic findings as well as the course of treatment towards recovery.

Clinical Outcomes: The member's physical function as measured by the Lower Extremity Functional Scale and Patient Specific Functional Scale was tracked as were impairments of pain, body schema, vertigo and sweating.

Patient Population: Pain, TBI, CRPS populations within the military, veterans or civilian populations.

Conclusion Concussion in armed forces personnel can be an occupational reality. American armed forces data reports that since 2000 more than 300000 soldiers were diagnosed with TBI in which 80% of these were concussions. This case study may provoke further critical thought in cases of atypical recovery post-injury leading to improved outcomes in Canadian Forces personnel.

2C04: HR-BASE Study: Physical Activity Levels of a Representative Sample of CAF Personnel

*Martin, J., PhD^{1,2}; Gagnon, P., MSc²; Spivock, M., PhD^{1,2}

¹University of Ottawa; ²Department of National Defence

Introduction: In February 2015, Armed Forces Council mandated the Directorate of Fitness (DFit) to develop a new fitness strategy for CAF personnel. To help leaders in their effort, longitudinal assessment to examine the efficiency of the strategy, at first through baseline and then repeated measures was needed. While questionnaires and self-reported data have value, it is well recognized in the scientific literature that it is very limited in terms of accuracy (up to a 3-fold overestimation of physical activity participation). A more objective tool is required to measure levels of daily physical activity in order to implement appropriate interventions. Estimation of energy expenditure and physical activity via heart rate (HR) monitoring is convenient, relatively inexpensive, non-invasive, and versatile. Along with accelerometers, HR monitors are excellent examples of objective measurement. Monitoring HR minute-by-minute enables detailed information on frequency, intensity, and duration of free-living physical activity.

Methodology: The objective of this study is to measure the levels of energy expenditure from daily activities and physical activity behaviour. Participants are asked to wear a HR monitor/accelerometer

24h/day for 6 consecutive days, while keeping a diary. Anthropometric measurements, such as height, body composition, waist circumference and blood pressure are conducted. In addition, some determinants of health are also assessed through a questionnaire. These measurements are being conducted on a stratified and representative sample of CAF personnel. To represent all 3 environments across Canada, we are conducting data collection across 8 Bases/Wings and during operations on Ship, giving a sample of over 600 participants.

Results: Results on physical activity levels will be presented, with comparisons between environments, ranks, sex and age.

Conclusion: These baseline data of objectively assessed physical activity levels data will help to orient interventions of the Fitness Strategy for CAF personnel. A follow-up study will be conducted in 2 years after implementation to assess its efficiency.

3C01: First Steps in Understanding the Long-term Health of Amputees

*McGregor, A.H., PhD; Hopkins, M., MSc; Vaidyanathan, R., PhD

Imperial College London (UK)

Introduction: The combat trauma amputee became the signature injury of the recent ISAF campaigns in Iraq and Afghanistan with over 265 servicemen and women in the UK losing limbs in Afghanistan alone. Many achieved high levels of function, however, there are many uncertainties and threats to long term well-being including issues with residual limb skin and bone health, and residual joint osteoarthritis.

Methodology: At the Centre for Blast Injury Studies we are evolving technologies and models to understand these problems with a view to maintaining and improving quality of life and function with ageing. Mathematical models of amputee function are being created to predict joint loading and bone health but these rely on appropriate and robust measures of function. Traditionally such measures are obtained in laboratory conditions but these often fail to account for "real life" activities. Metrics to understand loading within the amputee socket are poor, and as such this has been a core technological focus. The ability to measure pressure within an amputee socket has led to the evolution of the "smart socket" that can provide a wealth of data on socket fit, skin pressure build up, activity, and temperature - providing biofeedback metrics for amputee, prosthetist and physiotherapist.

Results: In realising a smart socket, two core in-house wearable technologies have been drawn upon; an inertial measurement unit (IMU) capable of tracking position and movement and a portable wireless pressure sensor system with a highly flexible, thin and customisable form factor. The pressure system is low cost and can be adapted to different socket shapes and sizes. It has been synchronised with the IMU and integrated with Bluetooth technology permitting real time biofeedback to a smart phone or tablet. Calibration results are encouraging and proof of concept studies are underway exploring pressure variations within the socket during prosthesis fitting and daily functional tasks including walking, stairs and sit to stand activity.

Conclusion: Following proof of concept, we will determine the viability of the device in relation to socket fitting and prosthetic adjustment. This includes the development of a biofeedback system to profiles socket pressure build up and identify potential skin breakdown; a tool to assist early rehabilitation and gait re-training; and a tool to quantify daily socket loading for input into models to predict joint and bone health. Our long term vision is to guide healthy ageing, safe joint load-

ing and the prevention of pressure sores and skin breakdown.

3C02: A Novel Gaze and Movement Assessment Metric for Measuring Advanced Upper Limb Technologies: Prosthetic User Results

*Hebert, J.S., MD^{1,2}; Valevicius, A.M., MSc¹; Boser, Q., BEng¹; Lavoie, E., BSc¹; Vette, A.H., PhD^{1,2}; Chapman, C.S., PhD¹; Pilarski, PM., PhD¹

¹University of Alberta; ²Alberta Health Services

Introduction: Advanced upper limb prosthetic devices with multiple degrees of freedom and multi-function grasp patterns are emerging on the market. In addition, there is a strong interest in developing and commercializing methods of providing sensory feedback from the prosthetic device to the user. From a functional perspective, sensory feedback is hoped to reduce cognitive burden and lessen the need for visual attention, amongst other possible benefits such as improving embodiment and acceptance of devices. Methods to evaluate the effectiveness of new approaches with respect to these features are lacking. Ideally, an appropriate measure would quantify changes in upper limb performance in a functional manner, while providing some mechanistic insight into the contributing features of improved function. We developed a new method of measuring upper limb performance during functional tasks that combines motion capture and eye tracking to provide a complete picture of upper limb sensory motor function.

Methodology: Data was collected from 20 able-bodied participants using a simulated sensory-motor prosthesis, and 10 upper limb prosthetic users. Participants performed up to four functional upper limb tasks. Data was collected using a 12-camera optoelectronic VICON motion capture system and a Dikablis eye tracking system. Angular joint kinematics were computed from low-pass filtered motion capture data using custom written MATLAB codes. Eye tracking metrics were assessed by fixation times on areas of interest. Custom software routines were written in MATLAB to allow combination of the eye and kinematic data and reconstruction of a 3D gaze vector for identifying intersection of gaze with objects of interest. Kinematics and eye tracking metrics were segmented according to defined phases of reach-grasp-transport-release for functional task breakdown.

Results: Results were compared to a previously established normative data set. Prosthetic users showed significantly slower movement times, spent disproportionately longer time grasping, and had prolonged fixations to the hand especially during transport phases. Kinematic differences were notable particularly for trunk and shoulder compensation. Differences in kinematics and eye gaze behaviour were also noted between type of prosthesis.

Conclusion: This analysis of upper limb prosthetic users showed the sensitivity of the 3DGAM test protocol in identifying differences between prosthetic users and able bodied users, as well as differences with level of amputation and type of prosthesis. This outcome tool provides a reliable quantitative method of assessing movement strategies and visual compensation for upper limb impairments, advanced assistive technologies, and for tracking performance improvements over time.

3C03: A Novel Performance Assessment Tool for the Computer-Assisted Rehabilitation Environment System

*Forero, J., PhD^{1,2}; Hall, J., BSc¹; Kelly, B., Kin-student¹; Vette, A.H., PhD^{1,2}; Hebert, J., MD FRCPC^{1,2}

¹University of Alberta; ²Glenrose Rehabilitation Hospital

Introduction: The Computer-Assisted Rehabilitation Environment (CAREN) system represents an ideal environment for training balance and mobility in high performance populations such as military personnel. However, there are currently no standardized methods that measure functional improvement over time on the CAREN. As a consequence, it is difficult to decide when an individual has reached a level of "maximal performance" or performance levels required to safely re-engage in military activities. We have developed a Performance Assessment Tool (PAT) for the CAREN that is sensitive to identifying balance and mobility impairments, as well as high-level gait deviations. By harvesting the diverse capabilities of the CAREN, the PAT has been designed with minimal ceiling effects to allow injured military members to be assessed to the highest performance levels required for military duties.

Methodology: After deconstructing the most relevant outcomes measures used in the clinic, we generated a series of 136 individual modules to test balance and performance during standing and walking. We then developed and programmed a series of tasks to be run on the CAREN as games to collect data related to balance and performance while participants are engaged in playing. Initially, ten able-bodied individuals, free of chronic or acute pain with complete, pain-free active and passive range of motion of the lower extremities, will be participating in this study. Each participant will be tested twice on the full task battery by two different raters.

Results: Once data has been collected and analyzed, test-retest reliability of the normative data (able-bodied subjects) will be assessed using intra-class correlation coefficients and the standard error of measurement. Test tasks with a test-retest reliability below 0.7 will be revised or eliminated from the test. A linear scaling system will be developed based on the range of scores obtained, to combine the task items and produce a composite score, with higher scores indicating better performance.

Conclusion: Because measurements will be quantitatively recorded by the CAREN system and not subjectively appraised by the rater, we expect little errors due to raters. The PAT will help clinicians identify specific deficits to be targeted with CAREN treatment, and allow measurement of improvement over time. Accordingly, the tool will form the basis for studying the effects of CAREN interventions to make the most effective use of this new technology.

3C04: The Computer Assisted Rehabilitation Environment System: Opportunities and Challenges in Digital Medicine at The Ottawa Hospital

Perry, K., MA

University of Victoria

Introduction: Multi-sensory full body immersion virtual reality systems have become a part of day-to-day healthcare for members of the Canadian Forces and civilians in Canada. The Computer Assisted Rehabilitation Environment (CAREN) features a digitally enhanced walk-in chamber, responsive treadmills on hydraulic pistons, surround sound audio, advanced graphics and user feedback utilizing force plates and a dynamic infrared motion capture system. Housed at The Ottawa Hospital in Ontario and Glenrose Rehabilitation in Alberta, the Canadian Forces' CAREN systems provide new therapeutic possibilities for rehabilitation. This paper addresses practitioner-directed outcomes associated with the CAREN Research Study conducted at The Ottawa Hospital between April and October 2016. Under a joint agreement, the CAREN system is shared part time between members of the Cana-

dian Forces and civilian patient populations at the hospital.

Methodology: Drawing from mixed qualitative methods, including hospital ethnography, in-depth qualitative interviews and CAREN system application filming, this paper addresses the outcome of 210 clinical observations and 40 interviews conducted with CAREN practitioners and CAREN patients at The Ottawa Hospital. Physiotherapists, technicians and social workers that work with the CAREN system are situated as explorers in a new form of medicine, creating innovative practices as they come to terms with patient needs and digital medicine in the 21st century.

Results: The study highlights practitioner development of clinical tactics for working with the CAREN system, including the therapeutic treatment of: Traumatic Brain Injuries (TBIs), Complex Regional Pain Syndrome (CRPS), Post-Traumatic Stress Disorder (PTSD), Acquired Brain Injuries (ABIs), Guillain-Barré Syndrome (GBS), spinal cord injuries, and lower limb amputations. Critically, this paper also addresses after effects associated with CAREN system use, the impact of the system on patients with multiple disabilities, and the psycho-social benefits of the game-like quality of CAREN applications used for physiotherapy. Finally, the CAREN Research Study calls attention to challenges associated with the system's use for the treatment of PTSD.

Conclusion: This research study benefits from the collective experiences of both civilian and military clinicians and patients at The Ottawa Hospital. Their collective insight into the use of the CAREN system provides invaluable guidance for the development of future forms of digital medicine and may assist other sites currently working with the CAREN system in clinical or research settings.

3C05: Emerging Findings from the Armed Services Trauma Rehabilitation Outcome Study (the ADVANCE Study) - A Longitudinal Cohort Study of Battlefield Casualties from Conflicts in Iraq and Afghanistan

*Chesnokov, M, MA,^{1,2} Fear, N., PhD³; Bennett, A, Gp. Capt., PhD, FRCP^{1,2}; Cullinan, P., MD¹

¹Imperial College London (UK); ²Defence Medical Rehabilitation Centre Headley Court (UK); ³Institute of Psychiatry, Psychology and Neuroscience (UK)

Introduction: 2003-2014 saw a significant increase in the survival of severely injured personnel due to the world leading, cutting edge battlefield trauma care provided by the UK Defence Medical Services (DMS) in operational theatre. The long-term study of these individuals needs to be undertaken to ascertain many aspects of their health and psychosocial outcomes and so the DMS can learn for future conflicts. Previous studies into war veterans from conflicts such as Vietnam and World War II have investigated long-term health outcomes but some have been inconclusive, others have focused just on Post Traumatic Stress Disorder patients and most have been retrospective cross-sectional studies rather than more methodologically robust longitudinal cohort studies.

Methodology: Beginning data collection in early 2016, ADVANCE is a longitudinal cohort study spanning 20 years, with the exposure being physical battlefield trauma. Group 1 "Exposed Group": n = 600 battlefield trauma casualties. Inclusion criteria: UK AF personnel, male, sustaining physical battlefield trauma on deployment which required aeromedical evacuation and direct UK hospital admission.

Group 2: "Non-Exposed Group": n = 600 frequency matched for age,

sex, service, rank, deployment and combat role. No battlefield trauma as described in the inclusion criteria.

Primary Outcomes investigated include: cardiovascular risk as determined by pulse wave velocity at 20 years, major Adverse Cardiovascular Endpoint at 20 years and osteoarthritis of the hip and knee as determined by patient reported outcomes and radiographic assessment at 20 years.

Secondary Outcomes include: cardiovascular risk and disease, musculoskeletal disease (osteoarthritis and osteoporosis), all-cause mortality, pain - back and stump/phantom (if applicable), mental health, functional status, quality of life, employment, relationship status and sexual function. Secondary outcomes will be measured at these time points: 3 years, 5 years, 10 years, 15 years and 20 years.

Results: Data collection is underway on 1200 servicemen and veterans and we will describe the features of the cohort recruited to date, together with any emerging findings.

Conclusion: We will present emerging findings from the Armed Services Trauma Rehabilitation Outcome Study (the ADVANCE Study) which aims to investigate the long-term physical and psychosocial outcomes of battlefield casualties sustained by UK Armed Forces (AF) personnel following deployment to Iraq and Afghanistan between 2003 and 2014.

The ADVANCE study is a collaboration between The Defence Medical Rehabilitation Centre (DMRC) Headley Court, Imperial College London and King's College London, with partners from the University of Bournemouth. Funding has come from Help for Heroes, the UK Ministry of Defence and LIBOR.

3D03: The Canadian Longitudinal Study on Aging Veterans' Health Initiative: A Platform for Research

*Wolfson C., PhD¹; Aiken, A., CD, PhD²; Feinstein, A., MD, PhD³; VanTil L., PhD⁴; Magalhaes, S., MSc¹, Scarfo, B., BA¹

¹McGill University; ²Dalhousie University; ³University of Toronto; ⁴Veterans Affairs Canada

Introduction: The Canadian Longitudinal Study on Aging (CLSA) is a national prospective study that has recruited more than 51,000 participants from across Canada who were aged 45-85 at their baseline assessment (2012-2015). Participants are being assessed every three years and follow up will continue for 20 years. Data collection takes place at two levels of intensity with 20,000 participants being assessed primarily through telephone interviews and 31,000 undergoing more detailed assessment. This in-depth evaluation consists of in-home personal interviews plus visits to one of 11 CLSA data collection sites across Canada where physical assessments, neuropsychological testing and blood and urine collection are carried out. In addition to being a study designed to examine the trajectories of aging, the CLSA is also a research platform with a mandate to provide researchers with access to the data and biospecimens over the life of the study. In this presentation we describe the methodology and content of the CLSA, a profile of the veterans within the CLSA, as well as the procedures for accessing the data.

Methodology: In the early years of development of the CLSA, a partnership was formed with Veterans Affairs Canada which enabled the inclusion of a set of veteran identifier questions as well as a screening tool for Post Traumatic Stress Disorder (PTSD) into the baseline questionnaire for

all 51,000 participants. The veteran identifier questions included information on branch of service, country of service, join year and release year.

Results: The recruitment and baseline assessment of all 51,000 CLSA participants is now complete and 4468 participants self identified as veterans. Of these 3558 indicated that they were veterans of Canadian forces and 910 reported service in the military outside of Canada. Amongst the Canadian veterans, 466 (13%) are women as compared to 39 (4%) of the non Canadian veterans. Decade of enrolment ranged from 1940-1949 to 2000-2009. As anticipated, CLSA veterans were older on average than participants who did not report being veterans and more than half were aged 60 and over.

Conclusion: The CLSA Veterans' Health Initiative has enabled the identification of more than 4,000 individuals across Canada who have self identified as veterans within a population based cohort. These individuals were not identified based on their service, their health status or their use of services making this cohort a unique group in Canada for further study as they age and are followed within the CLSA.

4C01: Cardiovascular Risk Profile of the Royal Canadian Navy: Coordinating Health Strategies and Surveillance

**Hawes, R.A., PhD (Cand); Cross, C.H.T., Cdr; Thériault, F., PhD (Cand); White, J., Maj; Neilson, M.; Siu, T. Lt(N)*

Department of National Defence

Introduction: The production and maintenance of cardiovascular health has significant operational benefits for the Royal Canadian Navy (RCN). Recent evidence suggests that increases in screen time and sedentary activities, poor nutritional intake, persistent rates of hazardous alcohol and tobacco use and increasing levels of overweight and obesity may threaten the health and readiness of RCN sailors.

The recent implementation of a comprehensive health and wellness strategy by the RCN utilizes 5 key principles of health promotion, including: building healthy public policy; creating supportive environments; strengthening community actions; developing personal skills; and reorienting health services.

The Directorate of Force Health Protection (DFHP) was engaged to develop and report on key cardiovascular indicators and provide actionable evidence to RCN stakeholders.

Methodology: Data from the Canadian Armed Forces Health Information System (CFHIS) and Master Patient Index (MPI) was linked to develop a suite of health indicators to monitor the cardiovascular risk profile of RCN personnel. Comparative analyses of obesity, tobacco use, hypertension and diabetes among RCN Atlantic and Pacific fleets provide opportunities to target policy and population health interventions to improve the operational readiness of RCN sailors.

The RCN Health and Wellness Strategy develops and implements action plans using timely, comprehensive, and localized data provided by DFHP. Behavioural and policy interventions to improve the cardiovascular risk profile and health of RCN sailors are evidence-based and can be transferred to other CAF Commands.

Results: Examination of demographic, occupational and temporal characteristics showed that the prevalence of risk factors associated with cardiovascular disease is unequally distributed between the RCN and CAF. Measured obesity and current tobacco use were, respectively, 17% and 21% more prevalent among RCN personnel than

in the rest of the CAF.

Hypertension in the RCN Atlantic fleet was 40% more common than in the RCN Pacific fleet, and tobacco use was 10% higher. Ship-level disparities in hypertension, obesity and tobacco varied two-fold and three-fold, supporting the need for targeted interventions and rigorous evaluation of the strategic framework.

Conclusion: The epidemiological surveillance of cardiovascular disease risk factors among RCN sailors provides empirical support to the RCN Health and Wellness Strategy. The presentation will culminate with a discussion concerning leverage points in policy, education and population health.

4C02: Lessons Learned from a Mixed Methods Evaluation of a Canadian Armed Forces Weight Management Intervention

**Gottschall, S., PhD¹; Dubiniecki, C., MSc¹; Thériault, F., PhD (Cand)^{1,2}; Bogaert, L., PhD (Cand)^{1,3}; Pierre, A., PhD^{1,4}; Carew, M., MD, MSc, FRCPC¹*

¹Department of National Defence; ²University of Ottawa; ³University of Toronto; ⁴Public Service Commission of Canada

Introduction: Recent reports suggest overweight and obesity are ongoing health issues for the Canadian Armed Forces (CAF). These are important issues in a military population given they may be associated with reduced operational readiness, in addition to other health problems (e.g., cardiovascular disease). Consequently, the Weight Wellness (WW) Lifestyle course was designed to educate and motivate voluntary participants from the CAF and others (e.g., military families) to adopt and maintain positive eating habits and an active lifestyle for overall healthy weight management. The current study assessed the implementation (e.g., participation rates) and outcomes (e.g., participant weight loss) of this course.

Methodology: Forty-seven WW courses offered between October 2011 and September 2012 were examined through six lines of evidence: 1) attendance records from 45 of the courses ($N = 443$ participants); 2) scientific literature on workplace weight management interventions (15 systematic reviews and meta-analyses); 3) course facilitator surveys for 32 courses ($N = 22$ unique facilitators); 4) CAF policy documents and WW course materials; 5) pre- and post-course participant surveys ($N = 297$ participants with surveys at both time points); and 6) semi-structured interviews ($N = 11$ health promotion directors and/or course facilitators). Scientific literature and internal documents were subjected to a narrative review. Qualitative survey and interview data were organized according to themes. Quantitative attendance and survey data were analyzed to describe patterns in the data and changes between different time points, and identify factors associated with outcomes of interest through regression analyses. Evidence from multiple lines of evidence were combined to address process and outcome evaluation questions as appropriate.

Results: Three key findings were identified: 1) Most WW course materials were drawn from reputable scientific sources and the literature review supported key elements of the course (e.g., food/exercise journals); 2) Survey data suggested participants significantly improved their knowledge, physical activity, and eating habits, and experienced modest but statistically significant weight loss, especially with the inclusion of an optional physical activity component; 3) Much of the course's target audience may not have been reached. Attendance form, interview, and facilitator survey data suggested that participation may be limited by barriers, such as the duration of the course.

Conclusion: Although WW is only part of the solution to overweight and obesity in the CAF, evidence suggests it can contribute to healthy weight management. Addressing factors that inhibit overall course participation may increase the positive impact of the course.

4D01: Association between Peripheral Blood Biomarkers and Advanced MRI Findings Post-concussion

*Hutchison, M.G., PhD^{1,2}, Churchill, N., PhD², Di Battista, A.P., PhD^{1,3}, Schweitzer, T.A., PhD², Rhind, S.G., PhD³, Richards, D., MD¹

¹University of Toronto; ²St. Michael's Hospital; ³Department of National Defence

Introduction: Concussion is a major health concern, associated with disturbances in cognition and behaviour, in the absence of overt structural brain lesions. Advanced Magnetic Resonance Imaging (MRI) has shown that concussion is associated with alterations in cerebral blood flow, neural activity and tissue microstructure. There is also emerging literature showing alterations in peripheral blood biomarkers following a concussion. If peripheral blood biomarkers are related to secondary injury pathophysiology after concussion, we expect to observe significant associations between brain imaging (MRI) and candidate peripheral makers of neuro-injury and inflammation.

Methodology: Forty-three (43) athletes were recruited from interuniversity teams at a single institution. Of the 43 individuals, 15 reported no history of concussion (NC), 12 with a history of concussion (HC), and 16 athletes were also recruited following a physician diagnosis of concussion (ACU). Venous blood samples were taken in addition to Magnetic Resonance Imaging (MRI) of the brain. T Cerebral blood flow (CBF) was obtained using 2D pulsed arterial spin labelling. Also, brain function was evaluated using blood oxygen level dependent functional MRI (BOLD fMRI, GConn). Peripheral neuro-injury and inflammatory markers included s100 calcium-binding protein (s100) B, brain derived neurotrophic factor (BDNF), peroxiredoxin (PRDX)-6, total tau, von Willebrand factor (vWF), monocyte chemoattractant protein (MCP)-1 and -4 and Eotaxin.

Results: Only the comparisons of ACU vs. NC and HC vs. NC show significant effects, with the acute group showing more biomarkers with significant associations. Extensive negative co-modulation of CBF and TAU was seen at acute injury, indicating that acutely concussed individuals with lower CBF also tend to have lower TAU. For ACU vs. NC, extensive anti-modulation of CBF with S100B, PRDX6 and MCP4 was seen at acute injury, indicating that concussed individuals with lower CBF tend to have elevations in these markers at acute injury. The associations between Gconn and blood markers were similar to CBF.

Conclusion: These observations suggest that a select number of serum biomarkers hypothesized to be related to neuro-injury and/or inflammatory process are associated with specific neuroimaging findings, cerebral blood flow and functional connectivity.

6C01: Preliminary Results from the Correlation between Analgesics & Long-term Function Study following Lateral Ankle Sprains Study

Lui, K., Capt¹; *Robitaille, E., PhD^{1,2}; Debouter, K., Capt¹; Ma, J., RPh¹; Carpenter, A., Capt¹; Reid, R., Capt¹

¹Department of National Defence; ²Dalhousie University

Introduction: Recent guidelines report strong evidence that a short

course of non-steroidal anti-inflammatory drugs (NSAIDs) may decrease pain and improve function following acute lateral ankle sprain (LAS). However, reports of greater swelling and static instability in subjects with LAS receiving NSAIDs have led to a concern that these may adversely affect healing and delay rehabilitation. Such studies have further been criticized for short-term follow-ups, limited outcome measures and an inability to articulate whether the observed effects result from analgesic or anti-inflammatory effects. Therefore, the objective of this pragmatic randomized controlled trial is to determine the effect of adding non-opioid analgesics/NSAIDs to a standardized rehabilitation program over longer follow-ups on functional outcome measures.

Methodology: All Canadian Armed Forces (CAF) members reporting to Garrison Petawawa with a grade I/II LAS sustained within 48 hours were invited to participate. All eligible subjects were provided a standardized rehabilitation program and randomized to receive either; no medication, or a 7 day course of: acetaminophen 500mg four times daily, celecoxib 100mg twice daily, or naproxen 500mg twice daily. The primary outcome of this study is the mean difference between groups in the Foot & Ankle Abilities Measure questionnaire from baseline to 3 months. Secondary outcomes include the mean difference between groups in clinical measures of pain, swelling, mobility, static and dynamic stability at 2, 4 & 52 weeks. To determine a statistically significant difference between groups with a two-sided significance of 0.05, a power of 80%, and an estimated attrition rate of 25%, 40 subjects/group are required (n=160).

Results: To date, 66 subjects have been enrolled and randomized into either the; rehabilitation only (n=17, 28.3±9.9years), acetaminophen (n=17, 28.6±7.2years), celecoxib (n=16, 51.8±14.9years), or naproxen (n=17, 32.7±10.7years) groups. All subjects have reported clinically relevant changes in pain and self-reported function between baseline and 3 months, without any signs of static instability. Interestingly, only subjects in the medication only and acetaminophen groups have reported clinically relevant changes in swelling.

Conclusion: The pragmatic nature of this RCT and the training demands of CAF members have resulted in challenges in subject recruitment and enrollment. To date, all subjects have reported clinically relevant differences in pain & self-reported function, with no differences in static instability. The results of this study will address some of the limitations of the current research on using non-opioid analgesics/NSAIDs in the management of ligament injuries & provide practical clinical guidance on the effect of adjunct pharmacological management of individuals with LAS.

6C02: Can a Knowledge Translation Intervention Improve the Evidence Based Management of Lateral Ankle Sprains by Canadian Armed Forces Physiotherapists?

*Robitaille, E., PT, PhD^{1,2}; MacRae, M., Maj., PT, MSc¹; Rowe, P., PT, MRSc¹; Aiken, A., PT, PhD²

¹Department of National Defence; ²Dalhousie University

Introduction: Lateral Ankle Sprains (LAS) are the 3rd most common musculoskeletal injury among military members, resulting in considerable time loss and a substantial rehabilitation workload. The operational relevance of these consequences to the Canadian Armed Forces (CAF) should be minimized through the use of evidence based practices. A previous survey of CAF Physiotherapists indicated a 'knowledge to practice gap' in their LAS management practices, including reporting of delayed rehabilitation interventions and limited outcome mea-

tures. A follow-up focus group reported their preferred knowledge translation (KT) strategies and specific implementation facilitators/barriers perceived to influence their integration of research knowledge into clinical practice. The purpose of this research project is to use a comprehensive implementation strategy that applies KT interventions tailored to the preferences and facilitators/barriers reported by CAF Physiotherapists, to improve their knowledge of and use of the rehabilitation interventions and outcome measures recommended in the management of LAS.

Methodology: All CAF Physiotherapists practicing in CAF Health Services Centres across Canada were sent an email invitation to participate in this project by completing an online questionnaire investigating their knowledge of and use of rehabilitation interventions and outcome measures recommended in the management of LAS. A comprehensive, active, multi-component KT intervention including summarized research knowledge, point-of-care practice tools and guided interactive peer discussion on the rehabilitation interventions and outcome measures recommended in the management of LAS was then delivered to CAF Physiotherapists via a distance learning platform. The primary outcome for this project will be the mean change reported on the online questionnaire between baseline, 3 and 6 months.

Results: This project is a work in progress and is collecting data until summer 2017. Our response rate to the online questionnaire at baseline was 75% (n=67/89). Almost all respondents reported familiarity with the rehabilitation interventions recommended in LAS management, and over 85% reported frequently using them throughout the stages of healing. However, while almost all respondents reported familiarity with using subjective and objective outcome measures in LAS management, less than 50% reported frequently using specific outcome measures recommended in the management of LAS.

Conclusion: Our findings at baseline suggest discrepancies between the knowledge and practice of using specific outcome measures in LAS management amongst CAF Physiotherapists. As current evidence in research implementation recommends the use of tailored KT interventions directed towards known facilitators/barriers, it is hypothesized that the strategy of this project will be an effective means of improving the evidence based practices of CAF Physiotherapists in their management of LAS.

6C03: Fractures in the Canadian Armed Forces: Operational Impact, Cost and Opportunities for Injury Prevention

*Cousineau-Short, D., MPH (Cand); Hawes, R.A., PhD(Cand); Theriault, F., PhD (Cand)

Department of National Defence

Introduction: Musculoskeletal injuries represent a significant burden to the Canadian Armed Forces (CAF), leading to reduced force readiness and an increased risk of disability and medical release. Studies from allied Western nations have documented the magnitude of fracture in military populations, and the relative contribution of occupational, environmental and personal factors that increase the likelihood of bone injury. Examining the distribution and cause of fractures in Canada's military will inform preventive actions and risk management strategies.

The CAF Health Evaluations and Reporting Outcomes (HERO) surveillance system was used to identify cases of fracture, and estimate their operational impact between 2014 and 2016. To support injury prevention and health policy initiatives we identified the contributing mech-

anism and calculated the direct and indirect costs of fracture during the study period.

Methodology: The CAF Master Patient Index (MPI) was used to identify all Regular Force personnel enlisted in the CAF between 01 Jan 2014 and 31 Dec 2016. Fracture-specific billing codes from thirteen provincial and territorial physician fee guides were linked to the CAF Blue Cross (BC) health insurance database and arrayed by body part as per the Canadian Classification of Interventions (CCI) nomenclature.

We selected a 50% random sample of suspected fracture cases for manual chart review to validate the BC database and determine the causative mechanism of injury. Estimates of days lost due to fracture, direct (hospital, physician) and indirect (CAF salary) costs were calculated based on CAF Cost Factors Manual (2015-2106), Canadian Institute of Health Information (CIHI) publications, and the Consumer Price Index (CPI).

Results: Between 2014 and 2016, we identified 1,219 fracture cases among Regular Force personnel; the highest rates of fracture occurred to the hand and fingers (130.2/65,000 person-years), upper and lower leg (99.4/65,000py), arm and shoulder (84.3/65,000py) and foot and toes (48.7/65,000py).

The injury mechanisms associated with the highest rate of fracture were sports (141.9/65,000py), non-work falls (65.8/65,000py), military training (36.3/65,000py), motor vehicle collisions (32.9/65,000py) and violence or self-harm (31.5/65,000py). Annually, these fractures resulted in an estimated 10,394 to 20,691 lost personnel days, \$4.3 to \$8.6 million in lost wages, and \$2.5 million in direct hospital costs.

Conclusion: Fractures represent a preventable source of operational, financial and physical strain to the resources of the CAF. Key intersections of injury site and mechanism will be discussed, along with the preventive applications of this work in training and sports safety, fall mitigation and averting motor vehicle accidents.

6C04: Burden of Musculoskeletal Injuries on Deployment in 2015: An Analysis of the Canadian Armed Forces Deployment Health Surveillance System

*Dubiniecki, C., MSc, Valbuena, L., DDS, MPH; Carew, M., MD FRPC; MSc Naicker, K., PhD (Cand)

Department of National Defence

Introduction: The Canadian Armed Forces (CAF) Deployment Health Surveillance System (DHSS) is the official electronic disease and injury surveillance system used by the Directorate of Force Health Protection (DFHP) to capture disease and injury data for overseas operations and humanitarian missions. The DHSS uses the CAF Disease and Injury Surveillance System application (DISS) version 3.4 (V3.4) to collect the following data for each CAF clinic visit at overseas operations: primary diagnosis/reason, visit type (first and follow-up visits), demographic group (CAF, non-Canadian military or civilian), injury status, injury mechanism, and disposition. This report details the incidence of musculoskeletal (MSK) injuries during 2015 at three overseas operations.

Methodology: This analysis included DISS V3.4 data for all MSK injuries reported at Operation Impact, Operation Reassurance LTF, and Operation Unifier between January 1 and December 31, 2015. Descriptive analyses performed include frequencies, proportions, and cross-tabulations by visit type, injury type, operation, and disposition. All analyses were performed using Microsoft Excel and STATA version 14.

Results: During 2015, there were 4952 visits for disease, injuries, and medical administration at all three operations, of which 3925 (79.3%) were first-time visits and 1027 (20.7%) were follow-up visits. MSK injuries represented 13.7% (n=676) of all visits (first-time and follow-up) in 2015 and 80.7% of all injury types (n=838). Operation Impact had the highest frequency of MSK injury visits (62.0%; n=419), followed by Operation Reassurance (30.0%; n=203), and Operation Unifier (8.0%; n=54). First-time visits accounted for 75.7% (n=512) of all MSK injury visits at all three operations. Overall, the five most common incident injury diagnoses were lacerations (10.7%; n=55), blisters (10.5%; n=54), back-related pain, strain, or sprain due to injury (8.6%; n=44), ankle sprain (8.6%; n=44), and tendonitis from multiple sites (8.4%; n=43). After excluding administrative visits, MSK injuries represented 17.3% of all disease-related visits. In total, incident injuries resulted in 398 days lost to illness during a one-year period.

Conclusion: This analysis of DISS data shows that injuries accounted for a high proportion of first-time visits at overseas operation clinics in 2015. The burden of injuries on deployment may impact operational readiness, although to what extent is not well understood and needs to be explored further.

Poster Presentations

P142: Increasing Severity of Traumatic Brain Injury Is Associated with an Increased Risk of Subsequent Headache or Migraine: A Retrospective Cohort Study of US Active Duty Service Members, 2006-2015

*Beswick-Escanlar, V., LCdr, MD¹; Lee, T., PhD²; Hu, Z., MS²; Clark, L., PhD²

¹Department of National Defence, ²Department of Defense (USA)

Introduction: Traumatic brain injury (TBI) is a common injury in the U.S. Compared to the general population, military service members can be at increased risk for TBI because of the nature of their work. Sequelae of TBI, such as ongoing headache or migraine, can lead to military duty limitations or separation from service. Knowledge of whether a dose-response relationship exists between TBI and headache or migraine risk may help providers and patients better anticipate and manage these sequelae of TBI. If such a relationship exists, military medical personnel may be able to better predict the ability of a service member to return to unrestricted duty on the basis of the severity of the TBI.

Methodology: To determine whether the severity of TBI is associated with the risk of headache or migraine, this 2006–2015 retrospective cohort study compared the incidence of these diagnosed sequelae among all active component service members in the US Army, Navy, Air Force and Marine Corps with a first-time mild or moderate/severe TBI (N=111,018) against a matched sample without any history of TBI. For each TBI case, there was a 1-year follow-up period to detect any subsequent diagnoses of headache or migraine. Previous studies have shown that the majority of people who sustain a TBI that does not lead to long-term clinically significant sequelae are symptom free within 2 weeks. Therefore, to focus on headaches or migraines associated with TBI at higher risk for longer-term symptoms that could interfere with recovery and military duty, only those encounters for headache or migraine occurring after 14 days following the TBI event (or the date of matching) were counted.

Results: Risk increased according to the severity of TBI. Compared to service members without TBI, those who sustained a mild TBI were 3.99 (95% CI: 3.85-4.14) times more likely to have a headache or mi-

graine, and those with a moderate/severe TBI were 8.89 (95% CI: 8.42-9.40) times more likely. Among service members who had deployed, those whose incident TBI occurred during deployment were at even higher risk (mild TBI: 6.68 [95% CI: 6.15–7.26] times more likely; moderate/severe TBI: 14.36 [95% CI: 12.79–16.13] times more likely) of headache or migraine, compared to those with no history of TBI.

Conclusion: Patients, medical providers, and military leaders can use these results to guide care after a TBI. Early identification of those at higher risk of ongoing headache or migraine could improve medical management and reduce disability.

P143: Strategies for Implementation of Programs of Care in the Active Military: A Scoping Review

*Cancelliere, C., DC, PhD (Cand)^{1,2}; Côté, P., DC, PhD¹; Mior, S., DC, PhD³; French, S., BAppSc (Chiro), PhD⁴; Sutton, D., BSc (OT), MEd, MSc¹

¹University of Ontario Institute of Technology; ²University of Toronto; ³Canadian Memorial Chiropractic College; ⁴Queen's University

Introduction: Musculoskeletal (MSK) injuries are among the most common activity-limiting acute injuries in the Canadian Armed Forces (CAF) and are associated with lost productivity due to sick parade attendance and lost duty days. For example, low back pain (LBP) is one of the most common reasons for CAF personnel not being deployed, and is responsible for one out of every 10 CAF medical releases. Under the current mandate the CAF is tasked with identification of efficiencies in all areas of the military. Identification of an efficient and cost-effective solution for the management of MSK disorders including LBP will benefit individual members and the overall military system. Implementing new programs of care is challenging in complex systems. A number of contextual factors may influence program implementation in the CAF such as the military culture, support of interest groups, and managerial authority and resources. Multiple sources of information are required to understand the implementation problem. The objective of this study is to conduct a scoping review of the literature to identify implementation strategies and outcomes of programs of care for the management of MSK disorders in the active military.

Methodology: A search strategy will be developed with the aid of a health sciences librarian, including input from CAF personnel and other stakeholders. Relevant studies will be identified through searches of electronic databases including MEDLINE, CINAHL and EMBASE; and hand searching reference lists of relevant articles. Eligible studies will be restricted to the English language, and will include studies from database inception to the current date. The data will be charted according to implementation strategy. An implementation strategy is any method used to support the adoption, implementation, and sustainability of a clinical program or practice such as provider education, checklists and algorithms. The methodology of each intervention or program will be included. Outcomes of interest include: acceptability, adoption, appropriateness, feasibility, fidelity, implementation cost, coverage, or sustainability.

Results: Tables and charts mapping the geographic distribution of the studies, programs of care or interventions, development and implementation strategies, and implementation outcomes will be prepared.

Conclusion: Identification of evidence-based approaches for the management of MSK disorders including LBP is a priority for the Canadian Forces Health Services. This scoping review could be used by military health services to inform implementation strategies for the management of MSK disorders in the active military and in consideration of their unique setting.

P144: Identifying Dysfunctional Breathing Patterns in a Chronic Pain Patient: A Case Study

*Courchesne, I., Capt., BSc (PT); Ingimundarson, L., MCISc (MT), BHSc (PT), BSc (HK)

Department of National Defence

Brief Description: Dysfunctional breathing (DB) is described as “an alteration in the normal biomechanical patterns of breathing that result in intermittent or chronic symptoms”. Bradley et al. demonstrated the importance of diaphragmatic breathing on functional movement and stated that inefficient breathing can result in musculature imbalance and dysfunctional motor control. In healthy subjects, when core stability is challenged, the diaphragm stabilizes the trunk while simultaneously performing its respiratory function. Studies have shown that patients complaining of chronic low back pain often present with altered diaphragm function which may contribute to a loss of postural stability in these individuals.

It is well recognized that physiotherapists should emphasize proper breathing patterns when treating chronic pain (CP) patients. However, the utilization of clinical tools to assist with the identification of DB is currently not common in physiotherapy practice and the importance of minimizing its potential consequences is not well understood.

Low End Tidal (ET) carbon dioxide (CO_2) (ETCO_2) ETCO_2 is the partial pressure of CO_2 at the end of an exhalation. Low CO_2 can lead to a wide range of complaints including paraesthesia, headaches, dizziness, cramps, stiffness and hypertonus. Given these links between low ETCO_2 measures and CP, a complete physiotherapy assessment including capnography was performed on a patient complaining of chronic neck pain and headaches amongst other physical and psychological symptoms. The Capnotrainer provides real-time continuous ETCO_2 measurements and was used to help with the identification of DB.

Outcomes: In this particular case, responses from a short period of hyperventilation included; hand paresthesia, tremors, headache and blurred vision. These symptoms were familiar for the patient who reported these issues with stress and physical activities. Theoretically, improved CO_2 exchange could improve functioning of body systems thereby decreasing patient symptoms. With the Capnotrainer, the patient can visualize and understand how different breathing strategies may impact body chemistry.

Patient Population: Ill and injured CAF military personnel.

Conclusion: In this case study, the Capnotrainer helped in the identification and understanding of poor breathing pattern and its potential consequences. Further studies are required to see if the identification of DB could help in the treatment of unexplained symptoms such as the ones described above. This may have a direct impact on unnecessary specialist referrals and its associated economic burden placed on the CAF health care system.

P145: Translating Knowledge about Concussion to the General Public: Lessons Learned from a National Concussion Awareness Program and Cross-Sectional Study

*Cusimano, M.D., MD, PhD^{1,2}; Zhang, S., BM¹; Jing, R., PhD¹; Topolovec-Vranic, J., PhD²; Ilie, G., PhD³

¹St. Michael's Hospital; ²University of Toronto; ³Dalhousie University

Introduction: While progress is occurring regarding the diagnosis and treatment of concussion, more work is required on how to translate new knowledge about concussion to stakeholders. The purpose of the present study was to identify the organizations who should deliver sports-related concussion information, the best methods for delivery, and factors affecting the accessibility and usability of the resources.

Methodology: Respondents of a nationwide Canadian survey of the sports community conducted in 2012 (n=6937) and 2013 (n=5231) completed a detailed questionnaire on concussion and knowledge translation.

Results: National or provincial sports organizations, coaches and trainers, federal and provincial governments were identified as the top five groups who should deliver concussion information in both the 2012 and 2013 survey, regardless of the respondent's age or community role. Among the information delivery options specific to the 2013 survey, physical education class at school (71.0%) and receiving materials from coach/trainer (68.3%) were most selected. TV ads were more popular among younger respondents whereas brochures were more popular among those over 35 years of age. Usability and accessibility of resources varied widely and regression analyses showed that age, sex, educational level, community/social role, and experience of TBI affected respondents' rating of the accessibility and usability.

Conclusion: Sports organizations and governments should play larger roles in the delivery of concussion information through teams, leagues, school physical education class, TV, brochures, or coaches/trainers. Respondents' ratings of the accessibility and usability of the various concussion resources will provide useful information for both the resource developers and users.

P146: Ultrasound Guided Needle Fenestration Combined with Prolotherapy and Scraping for Treatment of Insertional Achilles Tendinopathy

*Elliott, J., Cpl¹; Besemann, M., LCol, MD FRCP¹; MacGillivray, P., MSc, MD CCFP¹; Gupta, G., MD FRCP^{1,2}

¹Department of National Defence; ²McGill University

Introduction: Insertional Achilles tendinopathy (IAT) represent 20-25% of Achilles tendinopathies, and are typically less responsive than midsubstance Achilles tendinopathy (MAT). Treatments for AT include, topical anti-inflammatories, eccentric strength training, nitroglycerin patch application, shockwave treatment and in refractory cases, surgery. Non-surgical MAT response rate is high, but success rates of treatment of IAT can be as low as 28%.

Document outcome of ultrasound guided needle fenestration used in conjunction with prolotherapy and scraping (NFPS) on IAT. To the best of our knowledge, this is the first time NFPS has been performed and described as a treatment option for IAT when other less invasive, non-surgical treatment options have failed.

Methodology: This is a retrospective analysis of patients treated for IAT at the Canadian Forces Health Services Centre in Ottawa. Patient A is a 58y/o male with a medical history of right sided L3 radiculopathy and left sided IAT. Patient B is a 36y/o male with a medical history of right ankle fracture, unspecified shoulder injury, left 1st MTP gout and right sided IAT. Patient C is a 33y/o male with a medical history of bilateral IAT with a previous attempt of left Achilles debridement and

tendon lengthening. All patients had failed conventional treatments. Patients underwent ultrasound guided NFPS and were evaluated pre-procedure and post-procedure to compare pain and functionality.

Results: Patient A, who is now deployed, reports being 100% pain free for the first 4 months post-procedure, allowing him to pass the FORCE test. At 7 months, Patient A continues to report a sustained 80% improvement in pain allowing him to return to running and playing squash both of which he had ceased altogether pre-procedure. At 1 month, Patient B reports reduced discomfort and an increase in function. At 2 months, Patient B was able to return to cycling without having pain flares and to progress with previously plateaued eccentric loading exercises. Patient C, who has had failed surgical repair on the treated side, did not report any significant benefit. No complications were noted.

Conclusion: Needle fenestration used in conjunction with prolotherapy and scraping may be a viable treatment option for refractory Insertional Achilles Tendinopathy prior to surgical consideration. Data on this procedure is limited and requires additional research.

P147: Musculoskeletal Injury Recurrence Rates in Active Duty Personnel

**Trudel, R.D., Maj, MSc RRPT, Thibault, M.D.I., Capt, BScPT, Godsell, P., BScPT*

Department of National Defence

Brief Description: Musculoskeletal dysfunctions are consistently the most common injuries reported by Canadian Armed Forces personnel. Current data from the Health and Lifestyle Information Survey 2013/2014 demonstrates that 51.7% of Regular Force personnel self-reported acute and/or repetitive strain injuries serious enough to limit their normal activities. This percentage is significantly higher than previous surveys (43.1% in 2008/2009).

Even though it is believed that a significant proportion of these injuries are exacerbations of previous injuries, we do not have statistics prove this. If true, this assumption would point to major issues in the recidivism rates post-musculoskeletal treatment and could be an area to focus on to increase efficiency and reduce overall costs.

The aim of this analysis is to provide statistics on recurrence rates of musculoskeletal injuries in an active duty military population.

Clinical Outcomes: A self-report questionnaire will be utilized to determine if the current injury for which the patient is presenting is a new event or a recurrence of a previous injury.

Patient Population: The questionnaire will be given to all patients presenting to the Physiotherapy section for a new assessment from February to August 2017. This analysis will include all bases from the Atlantic region (Gagetown, Halifax, Shearwater, and Greenwood) and covered all elements.

Conclusion As this analysis is ongoing we do not have conclusions at this time.

P148: What Gets Measured Gets Managed – Meridium

**Godsell, P., Capt, BSc (PT)¹; MacPhail, C., MSc, CP(c)²; Parker, K., MSc, PEng²; Besemann, M., LCol, MD FRCPC¹; *Trudel, D., Maj, MSc¹*

¹Department of National Defence; ²Nova Scotia Rehabilitation Centre

Brief Description: Prosthetic care is a speciality, requiring a collaborative team approach to decision-making. Wherever a Canadian Armed Forces (CAF) member is posted, a team advocating for their medical needs and assisting in developing sound medical justifications is available. CAF physiotherapists, alongside Canadian certified prosthetists, collect the objective data required. A physiatrist specializing in amputee care's notes and prescriptions must corroborate with the practitioners' clinical data. With CAF members' unique service requirements and many current prosthetic technological advances, CAF members require a team approach to ensure high quality prosthetic services are delivered to Canada's fighting Force wherever they may serve.

Emerging prosthetic technologies must be evaluated under basic military requirements and environments. They must also be coupled with therapeutic gait training to prevent secondary physical conditions associated with lower limb amputation and long term prosthetic use, a vital component to any high performance amputee rehabilitation process.

This poster will illustrate our team's clinical trial, assessing whether the Ottobock Meridium microprocessor controlled foot offers medical benefits beyond that of the CAF member's current prosthesis through enhanced high level vocational and functional performance.

Clinical Outcomes:

Satisfaction and Prosthesis (SAT PRO)
Trinity Amputation and Prosthesis Experience Scales – Revised (TAPES-R)
Activities-specific Balance Confidence (ABC) Scale
Locomotor Capabilities test (LCI-5)
Socket Comfort Score (SCS)
Stair and Ramp Ascent/Descent
Sit to Stand 5 Times
Stepscan® Pedway data
Nova Scotia Rehabilitation Centre Mobility Centre data
Comprehensive High Activity Mobility Predictor (CHAMP)
Fitness for Operational Requirements of CAF Employment (FORCE)

Patient Population: Ill and injured CAF military personnel

Conclusion Institutional credibility first and foremost stems from CAF members themselves and their clinicians; a team which works tirelessly together in order to maintain participation in meaningful activities. The insights gained through this clinical trial of Meridium could be applied to select patients in civilian populations, with similar clinical profiles, and in other countries with similar demographics and resources.

P149: Antibiotics in the Treatment of Patients with Low Back Pain Associated with Modic Changes: A Case Series

**Gupta, G., MD FRCPC^{1,2}; Jarzem, P., MD FRCSC¹; *Meredith, S., Maj., Pharm D²; Radhakrishna, M., MD FRCPC¹; Besemann, M., LCol, MD FRCPC²; Elgueta, M.F., MD (Fellow)¹; Charghi, R., MD FRCPC¹; Chankowsky, J., MD FRCPC¹*

¹McGill University; ²Department of National Defence

Introduction: To determine the clinical impact of antibiotic treatment for patients with low back pain and Modic 1 changes.

Methodology: This is a retrospective case series of patients treated at the Canadian Forces Health Services Centre in Ottawa and the McGill University Health Centre. Where available, pain, functional and imaging outcomes in 11 patients treated between 2013 and 2015 were analyzed to determine impact of antibiotic treatment for patients with

low back pain and associated Modic 1 changes on magnetic resonance imaging.

Results: Conservatively only 3/11 of patients met the criteria for improvement for pain and/or function. While a larger proportion improved in the long term, outcomes were felt not to be temporally attributable to antibiotic treatment, as in most cases, ongoing therapy, medications and/or injections were required. There did not appear to be a correlation between clinical improvement and associated end plate volume involvement for Modic changes.

Conclusion: Antibiotics for the treatment of low back pain in the context of Modic changes on MRI, did not generally provide significant improvement in pain and function for patients in this small cohort. Despite early excitement regarding this treatment, further research is required.

P150: Self-report of Asthma Diagnosis among Participants in the VA/DoD Airborne Hazards and Open Burn Pit Registry

Jani, N., MPH^{1,2}; *Helmer, D., MD^{1,2}

¹Rutgers University (USA); ²VA-New Jersey Health Care System (USA)

Introduction: Many U.S. service members and veterans report concerns that their airborne hazards exposures during military service contributed to persistent health effects and conditions. The Veterans Administration and Department of Defense (VA/DoD) established the Airborne Hazards and Open Burn Pit Registry (AHOBPR) as a voluntary, online survey. In this nested case control study, we assessed risk factors among AHOBPR participants with and without a self-reported diagnosis of asthma.

Methodology: METHODS: As of July 31, 2015, 42,558 individuals who were deployed to Iraq, Afghanistan or the surrounding regions after October 7, 2001, completed the online questionnaire and were included in this analysis. 'Cases' responded "yes" to the item, "Have you ever been told by a doctor or other health care professional that you had Asthma?". 'Controls' responded "no" to that item; we matched 1:2 by age (+/- 1 year) and sex (male/female). We characterized participants by military service, exposures, and health conditions from the survey and used logistic regression to identify independent associations between these variables (p

Results: 5,970 (14%) AHOBPR participants who self-reported asthma were matched to 11,940 controls (28%). Most cases were male (5,078(85.1%)), overweight (BMI 25.0-29.9 kg/m²) (2,606(43.7%)), and never smoked (3,479(58.3%)). Compared to controls, more cases reported current dyspnea or decreased exercise tolerance, wheezing, and other respiratory symptoms. Cumulative hours of burn pit smoke exposure was higher among cases (highest quartile 25.0% in cases 25.0% vs. 19.4% in controls). Logistic regression revealed strongest associations between asthma diagnosis and burn pit smoke exposure (Quartile 4 vs. none [OR 2.9(CI 2.4-3.5)]); Naval service (vs. Army [OR 2.4(CI 1.9-3.1)]); occupational exposure to dust (vs. none [OR 2.0(CI 1.7-2.3)]); and self-reported diagnoses (yes vs. no) of hay fever/allergies [OR 3.2(CI 2.9-3.4)] and COPD [OR 24.9(CI 16.5-37.5)].

Conclusion: There are differences in military service (Navy>Army), reported exposures (burn pit smoke exposure, occupational dust), and comorbid conditions (hay fever, COPD) between participants who self-reported asthma and those who did not. Clinicians should be familiar with respiratory exposure concerns and fully evaluate and accurately characterize respiratory symptoms to appropriately diagnose and treat asthma and other respiratory conditions in this population.

P151: The use of Virtual Reality as a Treatment Medium for Autonomic Dysfunction across Three Diagnostic Groups: Clinical Case Studies

*Holly, J, BHSc PT, MSc¹; Lambert, AM, Capt., BSc PT²; Bridgewater, C., B.Eng., MSc¹

¹The Ottawa Hospital; ²Department of National Defence

Brief Description: Virtual reality technology has been utilized to treat patients with complex rehabilitation needs. Three distinct groups respectively diagnosed with Complex Regional Pain Syndrome (CRPS), persistent pain with Post-Concussion Syndrome and persistent pain with Post-Traumatic Stress Disorder (PTSD) have been undergoing part of their rehabilitation in the CAREN Virtual Reality System at the Ottawa Hospital Rehabilitation Centre (TOHRC). The common treatment goal for these patients is to use virtual reality to promote top down regulation of the autonomic nervous system (ANS) by challenging the patients with different applications. Some of the most common applications employed involve postural adaptation and movement while being exposed to vestibular stimulation, proprioceptive stimulation, and altered visual flow. The underlying principle of treatment is that patients will be taught conscious control of the autonomic symptoms triggered during the application. Specific breathing and relaxation techniques found to be effective for each patient are used for this purpose. Through controlled, repeated and progressive exposure to sensorimotor environments, maladaptive neural plasticity will be altered through sensory learning. The exposures and subsequent required control by the patients will promote creation of new adaptive neuroplastic networks. This poster will present three case studies of Canadian Forces Members who participated in this novel treatment approach.

Clinical Outcomes: Pre and post session outcome measures for pain, swelling, vertigo and sweating are tracked. Heart rate and eye tracking was monitored in two separate patients. Overall functional changes after multiple sessions were also tracked.

In the three cases, overall improvements in physical function were seen to varying degrees. Decreased pain, sweating, vertigo and reduced vigilant eye tracking were also found.

Patient Population: The findings of this poster apply to Canadian Forces Members and Veterans suffering from PTSD, Post-Concussion Syndrome, CRPS, persistent pain or combinations of these conditions.

Conclusion The findings of these three clinical case studies provide insight into areas of further investigation by randomized controlled trials of the use of virtual reality to alter the environment to promote increased levels of arousal and activation of the sympathetic nervous system. Virtual reality creates a repeatable and adaptable treatment environment to learn control of autonomic nervous system symptoms and allowing for the creation new adaptive neural networks. Positive findings of these future trials would benefit the health outcomes of future Canadian Forces Members and Veterans.

P152: Development of a Reliable Gait Assessment Protocol for Elderly Veterans with Dementia, using an Instrumented Walkway

Walford, A., BSc¹; *Hong, J., BSc¹; Ghebrial, T., BSc¹; Millette, A., BSc¹; Chassé, K., PT BSc²; Preuss, R., PT PhD^{1,3}

¹McGill University ²Ste. Anne's Hospital ³Centre for Interdisciplinary Research in Rehabilitation of Greater Montreal

Introduction: Changes in gait that occur with aging can lead to an increased risk of falls. Such changes may be difficult to assess without the use of specialized equipment, especially in a population with dementia where the therapist's attention may be particularly focussed on patient safety. An instrumented walkway may be used to measure changes in gait parameters, allowing the therapist to interact with the patient. For the acquired measures to be useful in directing fall-prevention interventions, however, the measures must be reliable and sensitive to change. The primary objective of this study is to develop a clinically feasible and reliable data collection protocol for gait assessment for veterans aged 65 years and older who have been diagnosed with dementia. The protocol should produce a realistic minimal detectable change (MDC) for the primary gait parameters of interest, with a minimal number of repetitions and sessions.

Methodology: Study participants will be recruited from Ste. Anne's Hospital, near Montreal. Ste. Anne's Hospital was Canada's last veterans' hospital, and remains home to many veterans from the Second World War and the Korean Conflict. Participants will be aged 65 years and older, and must have been previously diagnosed with dementia. An observational, two-point test-retest reliability design will be used. Participants will be asked to attend two gait measurement sessions, separated by no more than 2 weeks. At each session, participants will complete five barefoot passes across a Stepscan Pedway® walkway, at a comfortable, self-selected pace. Generalizability theory (G-theory) will be used to evaluate how the number of repetitions (passes across the walkway) and sessions affects the reliability and MDC for gait parameters identified as being of interest to the treating physiotherapists at Ste. Anne's Hospital.

Results: The study is the initiative of clinicians at Ste. Anne's Hospital, and will be run by students from McGill University's School of Physical and Occupational Therapy. The study will undergo review by the internal research ethics board in April, 2017, with participant recruitment and data acquisition to run in May-July, and data analysis and write-up scheduled for July-August.

Conclusion: The findings are expected to provide the clinicians at Ste. Anne's Hospital with a reliable gait acquisition protocol when assessing elderly veterans with dementia. The data from this protocol will be used to direct early interventions to reduce fall risk and monitor gait progression.

P153: Effects of 12-Weeks of DFit.ca Fitness Training on the Performance of FORCEcombat in Canadian Army Personnel

*Laframboise, J., MSc, Walsh, E., MSc, Stockbrugger, B., MSc

Department of National Defence

Introduction: The Directorate of Fitness developed FORCEcombat, to replicate and assess the physical requirements that are specific to combat roles within the Canadian Army (CA) (Reilly T, 2016). The evidence-based operationally relevant fitness training platform, *dfit.ca* will be included in the CA Training Plan to help prepare members for the demands of FORCEcombat. Demonstrating the effects of *dfit.ca* physical training on the ability to increase performance on FORCEcombat is an essential component to its successful program implementation as of April 2017. Base PSP fitness instructors are recognized who help provide effective use of training time and feedback on controlled movements (lifting). The purpose of this study was to measure the changes in physical performance of FORCEcombat after 12-weeks of PSP coached *dfit.ca* generated Army *In Garrison* fitness training performed 5 days/week in Army personnel, and to provide feedback to

the online *dfit.ca* programming.

Methodology: Army personnel were recruited, 8 as the control (CON) and 17 as the training (*dfit*+PSP) groups. FORCEcombat performance was tested at week 0, after 4, 8 and 12 weeks of *dfit.ca* training. The CON continued with their physical activity routines similar to the previous 3-6 months, however tested at the same intervals as *dfit*+PSP.

Results: After 12 weeks, the improvement measured in *dfit*+PSP was 256s, 197s greater than what had been reported as a true change beyond what is attributed to learning or familiarization (Reilly T, 2017). In addition, this improvement did not reflect that 5 *dfit*+PSP that could not complete the FORCEcombat at week 0, all of whom completed the test after week 8. The feedback provided by the 18 *dfit*+PSP participants regarding their experience with PSP and *dfit.ca* was very positive.

Conclusion: Because performance on high intensity tasks appear to be very affected when external loads are added, such as seen in FORCEcombat, the principle of specificity must be applied when programming (O'Neal E, 2014). A review of the effect of load carriage by P. Henning (2013) demonstrates that an effective training program to support FORCEcombat should include key elements such as those seen in *dfit.ca*: progressive external load bearing, strength, power, cardiovascular intervals, movement preparation (for lifting), flexibility and mobility, and offer a progressive approach to attempting FORCEcombat. Based on this study, this type of training is relevant, effective and optimized with the support of a fitness professional.

P154: Virtual Reality Treatment for Complex Mild Traumatic Brain Injury: A Case Study

Lambert, A.M., Capt, PT¹; Sinitski, E.H., MASc¹; *Bridgewater, C., MSc²

¹Department of National Defence; ²The Ottawa Hospital

Brief Description: Majority of individuals sustaining a mild traumatic brain injury (mTBI) have a full recovery of symptoms within 3 months. Approximately 25% of Canadian Armed Forces (CAF) with deployment-related mTBI diagnoses experienced persistent symptoms, which may lead to delayed recovery. Treatment may be further compounded by additional co-morbidities commonly observed in military service members, including Post-Traumatic Stress Disorder (PTSD), depression and anxiety. As a result, the patient and their health care team may have greater difficulty utilizing the standard rehabilitation program to achieve significant functional gains and often reach a plateau in recovery. Virtual reality (VR) is one treatment modality that offers a safe environment to deliver innovative therapy and to identify deficits difficult to observe in a clinical setting. CAF physiotherapy program incorporates VR treatment to support patient care, especially when rehabilitation goals are challenging to accomplish using standard rehabilitation program. Previous research reported promising results after use of VR in treating individuals with mTBI. However, few studies are available in the literature on mTBI cases with complex symptomatology. The purpose of this case study is to describe a virtual-reality based clinical intervention for treating a member diagnosed with complex mTBI.

Clinical Outcomes: SCAT-3 and HIT-6 were evaluated before and again after 10 VR sessions. Within session outcome measures were selected to assess the VR based intervention, including treatment time, recovery time, simulator sickness symptoms, and dizziness. Recovery time was the self-reported time to return to baseline symptom following the treatment session. Dizziness was rated on a 10-point Likert scale and symptoms of nausea, oculomotor, and disorientation were rated using the Simulator

Sickness Questionnaire (SSQ). After 10 sessions, SCAT-3 symptom score decreased from 61/132 to 42/132, and the HIT-6 score from 65/78 to 61/78. Subjectively, the member was able to tolerate busier environments at faster gait speeds (0.68m/s compared to 0.38m/s initially) without increasing headache severity. She also reported improved ability to use a computer, which allowed her to increase working hours to 3 hr twice per week.

Patient Population: CAF service member diagnosed with complex mTBI.

Conclusion This treatment modality provided the ability to quickly and easily adapt intervention to sufficiently challenge rehabilitation goals in a safe and controlled environment. VR helped address key barriers that were difficult to address in a clinical setting and was considered a catalyst in her recovery.

P155: Does the Chronic Pain Self- Management Program and Back Class at Canadian Forces Health Services Centre Atlantic have an Effect on Patient Reported Self-efficacy using the Pain Self-Efficacy Questionnaire?

*MacIntyre, K., BSc; Robinson, H., BN; Glover, S., MSc; Campbell, A., BSc; Godsell, P., Capt., BSc; Trudel, R., Maj., MSc

Department of National Defence

Brief Description: Psychologist Albert Bandura has defined self-efficacy as one's belief in one's ability to succeed in specific situations or accomplish a task. How people perceive their self-efficacy can play a major role in how they complete tasks, approach challenges, and achieve goals. In the 1980's, Michael Nicholas developed The Pain Self-Efficacy Questionnaire (PSEQ). The PSEQ is a 10 item patient reporting instrument used to assess the confidence people with ongoing pain have in performing activities while in pain. Unlike other self-efficacy measurement tools, the PSEQ asks the patients to take their pain into account when rating their confidence in performing a variety of functions including house hold chores, socializing, and work. The PSEQ has strong psychometric properties, having been shown to be both valid and reliable. The total score ranges from 0 to 60, and higher scores reflect higher self-efficacy. Scores around 40 are associated with return to work and maintenance of functional gains, while lower scores after treatment tend to predict less sustainable gains.

This poster will aim to review pre-post PSEQ scores from the 4 week Chronic pain self-management program and the 6 week Back Class offered at Canadian Forces Health Services Centre (Atlantic) to see if the experience of these programs has any effect on Canadian Armed forces member's self-efficacy.

Clinical Outcomes: The Pain Self Efficacy Questionnaire will be used in the Chronic Pain Self-Management Program and the 6 week back class at Canadian Forces Health Services Centre (Atlantic) to obtain pre and post scores. The minimal important change (MIC) of the PSEQ is 5.5 (9% of the scale range).

Patient Population: Ill and injured CAF military personnel that participate in the Chronic Pain Self-Management Program and/or Back Class in 2017 served by Canadian Forces Health Services Centre (Atlantic).

Conclusion A patient's self-efficacy can be altered in three main ways: by experience; by observing their peers with similar problems do the same; and, by education. Since both programs use all 3 of these techniques, it is hypothesized that PSEQ scores would improve in patients participating in the Chronic Pain Self-Management Program and the Back Class at Canadian Forces Health Services Centre (Atlantic).

P157: Exploring Chiropractic Services in the Canadian Forces Health Services - Opportunities and Challenges

*Mior, S.A., PhD¹; Vogel, E. PhD²; Sutton, D., MSc²; French, S., PhD³; Côté, P., PhD^{1,2}; Nordin, M., Dr. Med. Sci⁴; Loisel, P., MD⁵; Laporte, A., PhD⁵

¹Canadian Memorial Chiropractic College; ²University of Ontario Institute of Technology; ³Queen's University; ⁴New York University; ⁵University of Toronto

Introduction: Musculoskeletal conditions (MSK) are common in the Canadian Armed Forces (CAF) and have an important impact on the readiness of deployable personnel. Canadian Forces Health Services (CFHS) provides a spectrum of services in managing CAF personnel health care needs, including services offered within civilian facilities. In Canada, chiropractic care is a CAF benefit covered by Blue Cross and is provided off-base only by direct referral. Despite accessibility to chiropractic care, there is the suggestion of minimal collaboration between chiropractors and CFHS, which can lead to fragmented and lower quality care. The purpose of our qualitative study was to explore how chiropractic services could be designed to improve inter-professional collaboration within an interdisciplinary CFHS practice setting.

Methodology: An exploratory qualitative approach was employed to: understand how chiropractic services are currently accessed within the CAF; identify existing challenges and opportunities for improvement in care delivery; and to identify existing barriers and enablers for its inclusion within the existing CAF health care delivery model. Purposive and snowball sampling were applied to identify health care professionals, military personnel and chiropractors across Canada. A semi-structured interview guide was theoretically developed with exploratory open-ended questions, accompanied by probes. Telephone interviews were 45- to 60-minutes in length, audiotaped, transcribed verbatim and underwent member-checking process. A constant comparative analysis method was utilized to develop a thematic framework through independent coding of transcripts by three researchers, with coding consensus achieved through discussion.

Results: We contacted 27 key informants, of which 25 [MDs (n=7); PTs (14); DCs (5)] completed interviews. Saturation was achieved on numerous emergent themes. Data supported the common but challenging management of LBP, importance of collaboration, and identified strategies to improve off-base chiropractic services. The theme of divergent perspectives and experiences captured the categories of base-to-base variations, variable gate-keeper roles, and referral processes. The role of chiropractors, scope of practice, and variable application of evidence in care delivery emerged as conflicting views. Duplication of services, role of patient, communication, and inherent CAF culture emerged as prominent categories that could potentially impact the delivery of collaborative inter-professional care.

Conclusion: Key informants highlighted the barriers and enablers in advancing collaborative chiropractic services in the CFHS. These findings are important in modeling inter-professional collaborative care.

P158: Benefits of a Dually-trained Occupational Therapist Assistant and Physiotherapist Assistant Collaborating with Physiotherapists and Occupational Therapists in Military Physical Rehabilitation Environments

*Quinn, J., OTA & PTA; Godsell, P., Capt., BSc (PT); Trudel, R., Maj., MSc; Campbell, A., BSc (OT)

Department of National Defence

Brief Description: As our profession celebrates its 100th anniversary, with our origins in 1917 at Hart House, when World War One (WWI) was coming to a close and thousands upon thousands of injured soldiers were in need of rehabilitation treatment. Occupational Therapist Assistants and Physiotherapist Assistants (OTA & PTA) work in collaboration with Physiotherapists and Occupational Therapists. Ellis stated *assistants fulfill a variety of roles, reflecting the varied needs of physiotherapy practice* (2001). The role is wide-ranging based on prior education and career experience. With formal training from sixteen accredited programs across Canada, Therapist Assistants are essential to effective and timely holistic care in our Centre of Excellence locations. Since World War One (WWI), assistants have worked with ill and injured Canadian Armed Forces (CAF) members in various settings. Due to the diversity of skills, OTA & PTAs have an evolving role in their respective places of work. At the Canadian Forces Health Services Centre (Atlantic), the OTA & PTA contributes in many aspects of the clinic: therapeutic exercises, functional mobility, hydrotherapy, use of assistive devices, therapeutic electro-physical agents, bracing and lower extremity garment fitting, charting, perform routine measures and tests assigned, record workload measurements and monthly reports, maintain safe and cost-effective working environments, various administrative tasks, material management, and carries a caseload supervised via a Physiotherapist and Occupational Therapist.

This qualitative research poster will aim to review the role of the Occupational Therapist Assistant and Physiotherapist Assistant within Canadian Forces Health Services (Atlantic) while reviewing the professions evolution stemming from WWI.

Clinical Outcomes: Qualitative review of evolving roles and responsibility from the Occupational Therapist Assistant and Physiotherapist Assistant perspective and the medical needs of CAF members from WWI-present.

Local workload measurement review.

Patient Population: Ill and injured CAF military personnel

Conclusion Under the supervision of Physiotherapists and Occupational Therapists, OTA & PTAs are employed in a variety of practice settings and their role is to assist therapists in ensuring rehabilitation services are delivered in a safe, effective, and efficient manner to achieve and maintain optimal client outcomes while promoting holistic environments to recover to their full duties.

P159: Can a Survey of Non-respondents Inform Future Surveys?

*Strauss, B.A., MSc¹; Naicker, K., MSc^{1,2}; Thériault, F.L., MSc^{1,2}

¹Department of National Defence; ²University of Ottawa

Introduction: The Health and Lifestyle Information Survey (HLIS) is a quadrennial population-based cross-sectional survey that provides information on the health status of Canadian Armed Forces (CAF) personnel. Obtaining a high response rate to this mail survey has been challenging over the past decade despite using a variety of methods to bolster response rates. In an effort to understand the key issues preventing CAF personnel from completing the survey, non-respondents from the HLIS 2013/14 mail survey and the electronic pilot survey were surveyed to inform future surveys.

Methodology: A one-page paper questionnaire was developed to ascertain the key issues preventing Regular Force CAF personnel from

completing the HLIS 2013/14. The questionnaire included questions on survey mode, reasons for not completing the survey, some basic demographic information, and a comments section. Non-respondents were identified by nonreceipt of a postcard that was to be returned separately from the completed 2013/14 survey or by nonreceipt of a unique ID from the electronic survey. The paper survey was sent out to 2,212 Regular Force mail survey non-respondents and to 1,077 Regular Force electronic survey non-respondents. Descriptive statistics were used to summarize the reasons for nonresponse by survey mode. A deductive approach was used to group free text comments into like themes to ascertain additional barriers.

Results: The response rates to the mail and electronic survey were 23% and 14% respectively. Of all respondents, 68% reported receiving the mail survey, 20% reported receiving the electronic survey, 7% could not remember the format, and 5% did not receive the survey. Half of the respondents reported completing the survey. Of the remaining 322 respondents (n=210 mail, n=112 electronic) there was little difference in responses. The most common reasons noted for not completing the survey were: (1) no time during working hours to complete the survey (65%); (2) the survey was too long (38%); and (3) too many requests to complete surveys (27%). Common free-text themes were also enumerated and described.

Conclusion: The primary reasons for not completing the survey revolved around a lack of time. The results confirmed the need to shorten the length of the survey, reinforced the need for command support to provide personnel the time required to complete the survey, and underscored the need for research and survey coordination within the CAF. As similar time barriers were identified for both mail and electronic versions, changing delivery mode is unlikely to increase response rates.

P160: In Garrison Management of mTBI in the Canadian Armed Forces: Trial of a Proposed Clinical Care Pathway

Mahoney, N.A., Capt, PT; Crumback, D.J., Maj, PT; Courchesne, I., Capt, PT; Godsell, P.A., Capt, PT; Lambert, A.M., Capt, PT; *Besemann, M., LCol, MD

Department of National Defence

Brief Description: The delivery of a CAF Mild Traumatic Brain Injury (mTBI) Program is a current objective of the Canadian Armed Forces Health Services (CFHS). Despite the recent increased awareness of mTBIs (or concussion) and changes in clinical protocols, there are still gaps between the time of injury and that of medical intervention and treatment. Clinicians require the knowledge of best evidence-based practices in mTBI rehabilitation in order to achieve optimal function and quality of life for our members. CAF members who sustain a concussion do not consistently seek out medical attention. It is the culture among service members to ignore their signs and symptoms following a direct or indirect trauma and return to the fight as quickly as possible. Thus, CAF health care providers must be vigilant with recognizing the signs and symptoms of concussion in any service member who may have sustained a direct or indirect blow to the head. The proposed concussion pathway serves as a guide to the health care team as well as the CAF member and offers a step-by-step approach to the management of mTBI. It includes; symptom monitoring tools, list of standardized MELs, education pamphlet for members and their caregivers and guidelines for specialists referral when needed. As part of the CFHS quality initiative, the proposed clinical pathway was presented and implemented in two CFHS clinics: Halifax and Ottawa.

Clinical Outcomes: Measures will be captured at each site at three and six months. These measures as well as the key lessons learned

from each site will influence the CFHS mTBI clinical pathway resulting in policy changes as needed.

Patient Population: CAF serving members presenting to Primary Care with symptoms of a mTBI as well as those presenting with persistent symptoms of a concussion for ongoing care.

Conclusion Clinical programs exist to serve unique populations in an evidence based, effective and efficient manner. The CFHS strives to achieve its aim by incorporating health care clinicians and patients' feedback into guidance updates. Given the ever-changing landscape in regards to mTBI management and rehabilitation practice, it is critical that feedback be incorporated whenever possible. The purpose of this clinical pathway is to improve patient care by creating a framework that can be adopted by health care professionals. It must be emphasized that guidance pathways are provided in an endeavor to create a systematic approach. They are not meant to replace or supersede sound clinical judgment.

SOCIAL HEALTH AND WELLBEING

Podium Presentations

1A03: Post-traumatic Growth and Posttraumatic Stress Disorder: A Scoping Review

*Cramm, H., PhD¹; Boushey, C., MScOT (Candidate)¹; Rowe, J., MScOT (Candidate)¹; *Norris, D., PhD²; Tam-Seto, L., PhD (Candidate)¹; Smith-Evans, K., MA (Candidate)²*

¹Queen's University; ²Mount Saint Vincent University

Introduction: Exposure to traumatic and stressful life events can allow for the experience of post-traumatic growth (PTG), a positive psychological change. The majority of the literature around post-traumatic growth focuses on the experiences of people who have survived cancer. Other conditions such as posttraumatic stress disorder (PTSD) can also emerge after exposure to traumatic events, but the conditions under which PTG becomes possible for those living with PTSD are unclear. The purpose of this scoping review was to explore the extent to which PTG is understood in the context of PTSD for military personnel and Veterans.

Methodology: Arksey and O'Malley's (2005) structured 5-step protocol for comprehensive scoping reviews was followed, with at least 2 investigators involved in study selection and analysis. Databases were prioritized through consultation with a health sciences librarian; Medline, PsycInfo, Embase, CINAHL, and Sociological Abstracts were searched comprehensively.

Results: A possible 4205 articles were identified from 1990 until June 2016. After title and abstract screening, 33 studies proceeded to full inclusion and analysis. The co-occurrence of PTSD and PTG appears to differ across populations, and different types of trauma may influence a growth response. PTSD, rather than resiliency, may be a predictor of the PTG experience. A curvilinear relationship seems to exist, suggesting that mild or moderate levels of PTSD may be more likely to result in PTG.

Conclusion: This scoping review described how post-traumatic growth (PTG) is reported to emerge in the context of post-traumatic stress disorder (PTSD) in military personnel/Veterans. The results of this study can be used to identify ways in which healthcare providers working with military personnel and Veterans experiencing PTSD can create conditions that optimize the likelihood of PTG.

1B01: Support for the Families of UK Reservists: Too Much, Too Little or About Right?

*Vincent Connelly¹; *Nicola Fear²; Zoe Morrison³; Sarah Hennelly¹; Joana Smith¹*

¹Oxford Brookes University (UK); ²Kings College London (UK); ³Aberdeen University (UK)

Introduction: The British Armed Forces are undergoing changes that will require part time Reservist personnel to be more integrated. However, Reservist family members may not identify as members of the military community and so are less likely to seek help and as they do not reside near any military base, separation is both physical and psychological. Therefore, when the Reservist is deployed, families may have little knowledge of welfare support. Lack of awareness is a key barrier to support and is often predictive of family coping. Thus, there is a clear need to reach Reservist families to raise awareness and provide access to support. How Reservist families negotiate and access support is currently unknown.

Methodology: This project surveyed over 100 family members of Reservists from across the three UK Armed Services with an online survey targeting their awareness of welfare support and provision. These responses were analysed for trends and comparisons were made with Regular force family members. 35 detailed interviews with family members allowed us to acquire detailed experiences and opinions about the provision of welfare support. 25 interviews were conducted with military personnel who had a welfare or support role in Reservist units and 20 interviews were conducted with regional and national military welfare staff as well as a number of charities and organisations associated with providing military welfare support. Qualitative analysis of the sets of interviews were conducted using both deductive and inductive methods.

Results: Many examples of good practice were identified and support during deployment was seen to be well supported. However, there are some potential gaps in provision and converging themes around communication to family members and basic awareness by family members and service providers of what is provided were identified as areas for improvement. Qualitative data from the interviews with family members allowed us to acquire detailed experiences and opinions about the current provision of welfare support. Data from service providers showed very low levels of service use by Reservists and their families.

Conclusion: Analysis is ongoing. However, it is clear that these results have implications for policy and service providers. Support mechanisms appropriate for Reservists and their families are highlighted. Reservists are not a homogenous group and there are different concerns for different groups of reservist family members. The difficulty of reaching Reservist families is highlighted.

1B02: Exploring Family Resiliency within Canadian Armed Forces Veteran Families During the Military to Civilian Life Transition

**Wynia, K. MA (Cand)¹; Norris, D., PhD¹; Schwartz, K.D., PhD²; Whelan, J., PhD¹; Cramm, H., PhD³*

¹Mount Saint Vincent University; ²University of Calgary; ³Queen's University

Introduction: The Military to Civilian Life Transition (MCT) is defined

by Thompson & Lockhart (2015) as the peri-release time period that begins a few months before the official release from service and that ends up to two years after. Although the majority of Canadian Armed Force (CAF) veterans experience a smooth MCT trajectory, MCT can be associated with emotional, financial, relational, and physical challenges. Walsh (2002) coined the concept of family resilience to describe the capacity of families to “withstand and rebound” when faced with challenges or stressors as collective relational networks (p. 130). Military family research underscores the notion that families can play a salient role in supporting veterans through MCT and are likewise affected by the challenges and opportunities inherent to this transitional period.

Methodology: Using data from a qualitative study undertaken by Cramm, Norris, & Schwartz (2017), this study explored the question, “How do family members of CAF veterans in Atlantic Canada with a mental or physical health problem cultivate family resiliency during MCT?” The constructivist grounded theory coding techniques outlined by Charmaz (2014) were leveraged to analyze ten in-depth interviews and one focus group involving family members of CAF veterans living in Atlantic Canada. This study employed a multidimensional and integrative approach to exploring the cultivation of family resiliency in an effort to capture this phenomenon holistically. This approach conceptualizes family resiliency as an outcome influenced by characteristics pertinent to the family, intra-familial processes, and the family-context interactions at each level of social analysis in the ecological systems model put forward by Bronfenbrenner (1977).

Results: The analysis revealed that MCT can potentially pose challenges that provide opportunities for CAF veteran families to cultivate resiliency. Their ability to cultivate family resiliency was strengthened by institutional, community, and family supports.

Conclusion: Results could be leveraged to inform policies, practices, and services for CAF veterans and their families during MCT. Social policies and services that promote or protect the processes and contextual factors that support the cultivation of family resiliency can act as early interventions that prevent families from experiencing crisis.

1B03: Couples Overcoming PTSD Every Day Program: Evaluation of Group-Based Intervention to Support Couples Living with PTSD - Year Three

Black, T., PhD

University of Victoria

Introduction: The session will focus on year three of an ongoing program evaluation of the Couples Overcoming PTSD Every Day (COPE) Program. The COPE Program is designed to assist couples in learning how to better cope with the effects PTSD in their relationship to reduce isolation, improve dyadic adjustment, decrease loneliness and increase social support. This presentation will provide extended follow-up data on four different scales being used to evaluate the outcomes of this group-based program consisting of two phases: 1) Phase One - 5-Day residential retreat; and, 2) Phase Two - 6 months of individual coaching for each couple. The number of participants completing the program continues to increase providing for more robust descriptive data.

Methodology: The evaluation employs a baseline, pre-post, 6 month and 12 month follow up design using 4 established measures chosen to evaluate the four stated outcomes of the program. Currently descriptive data are being collected and t-scores have been evaluated to determine statistical differences between measurement points for

the group as a whole, and for veterans and for spouses as subgroups. Given that groups are ongoing, the “n” continues to increase with each subsequent year of deliveries.

Results: Year two evaluation data found statistically significant differences between measurement points on all but 1 of the measures. At the time of preparing this abstract data are still being collected and will be collected up until one month before the conference. At CIMVHR 2016, partial data was provided for the 6 month follow up, which will be expanded, along with partial 12 month data to come.

Conclusion: Statistically significant differences in all but 1 measure have been found for COPE participants including 6 month follow-up data. Without randomization and a control group we cannot establish causality at this point, but the data trend appears to support COPE’s stated objectives of reducing loneliness and isolation, improving dyadic adjustment and increasing military and couples’ ability to cope with PTSD in their relationship.

1B04: The Health and Well-being of Royal Navy/Royal Marine Spouses/Partners in the UK during Family Separation

**Gribble, R., PhD; Fear, N.T., DPhil*

King’s College London (UK)

Introduction: Life in the UK Armed Forces involves frequent separations due to extensive training missions and deployments. Such experiences are part and parcel of life in the Services but can be the cause of stress and poor well-being among Service personnel and their family members. Royal Navy/Royal Marine families experience different patterns of family life and separation from personnel in other Service branches; 36% of UK Royal Navy/Royal Marine families report living separately from Service personnel during the working week compared to 24% of UK Armed Forces families overall (Ministry of Defence 2016). With much of the previous literature focused on the deployment-related experiences of Army personnel and their families, little is known about how non-deployment related separation might influence the health and well-being of military families. This study aims to expand on current military family research by exploring the family life during non-deployment related family separation and the perceived influence on the health and well-being of Royal Navy/Royal Marine spouses/partners.

Methodology: This is a mixed methods study. Quantitative data from a range of studies from within KCMHR is being used to examine the health and family lives of Navy personnel and their spouses/partners and children using validated measures. Interviews (n=20-25) with spouses/partners of Royal Navy/Royal Marine personnel will be used to expand on these findings by describing family life, functioning and relationships during non-deployment related family separations and exploring the perceived influences on well-being. Focus groups (two groups, n=6-8 participants) will also be conducted with young people from Royal Navy/Royal Marine families exploring the same issues.

Results: This project commenced in January 2017. Data collection from the spouse/partner interview study will be completed by the end of August 2017. I will present preliminary findings regarding the experiences of Navy spouses/partners during non-deployment related family separations and the perceived influences on well-being. Recommendations on how to support spouses/partners of Royal Navy/Royal Marine personnel during these separations will be made.

Conclusion: This project is currently underway. (NB: Ethics will be sought before the qualitative components of this study are undertaken)

1E01: The Soldier On Program

Lagacé, G., MSM

Department of National Defence

Brief Description: Soldier On is a Canadian Armed Forces (CAF) program that supports currently serving members and veterans to overcome their physical or mental health illness or injury through physical activity and sport. The program is a highly visible and integral component of the Department of National Defence and CAFs' commitment and priority towards providing a comprehensive approach to care for ill and injured members.

Clinical Outcomes: Since its inception in 2007, Soldier On has helped more than 2,500 ill and injured members to obtain sporting or recreational equipment, gain access to high-level training from world-class instructors and supported their participation in a wide range of structured activities from alpine skiing to fishing to adventure expeditions. Although Soldier On events are primarily focused on sport or other physically challenging activities, promoting an active lifestyle is only part of the mission. Soldier On not only supplies members with equipment and coaches to meet their needs, they also provide members with a safe environment to challenge themselves to get inspired in ways that they may not have thought possible. Soldier On achieves several aims. Not only does it encourage injured members to achieve a healthy and active lifestyle, it also supports participants in increasing their independence, in developing new skills, and in attaining goals. Significantly, it also provides members with the opportunity to socialize and form relationships with others who have similar experiences and to help them build social connections.

Patient Population: Serving members and veterans who acquired a permanent physical or mental health illness or injury while enrolled in the Canadian Armed Forces, regardless if it is attributable or not to service.

Conclusion The Soldier On program provides resources and opportunities for ill and injured CAF members and veterans to attain and maintain a healthy and active lifestyle through physical fitness, recreation and sport. This presentation will provide an overview of the program and highlight the important impacts on the population of ill and injured participants.

2B01: Peer Support and Social Connections: The Operational Stress Injury Social Support Program (1 of 4)

*Coulthard, J., PhD; Lee, J., PhD; Silins, S., PhD

Department of National Defence

Introduction: [Note: This presentation is part of the symposium, *Peer Support Programs for Ill/Injured Members, Veterans, and their Families*, and is presentation 1 of 4]

In order to examine the role of the Operational Stress Injury Social Support (OSISS) program in providing support to military members and veterans who have experienced a mental health injury, a qualitative research study was conducted.

Methodology: For the purposes of this discussion, study partici-

pants included a total of 64 peer support program members in the OSISS program. Interviews were conducted in each of the following regions: Calgary/Edmonton, Gaagetown, Halifax, Kingston, Petawawa, Ottawa, Trenton, Valcartier, and Victoria. Questions addressed a number of issues regarding their general experiences with the program, and on the impacts it has had on them, on their quality of life, on their family, and on their mental health. Interviews lasted around 45 minutes and were audio-recorded, transcribed, and subjected to a thematic analysis.

Results: Participants reported that their experience with the program was generally positive, with a wide range of positive impacts identified, including: increased access to support, access to a safe environment, learning and information exchange, benefits of the shared experience, social connections, improved family relations, and being able to see progress. For some participants, the support they received through OSISS extended beyond the program, with social connections established through the peer support meetings continuing informally beyond the program. Also of note was the finding that OSISS was often found to be an important mechanism through which participants were able to gain information about other services and programs that would help them in their recovery and assist them in other aspects, such as in the transition from military to civilian life.

Conclusion: On the whole, the OSISS program was found to be a positive experience for both Canadian Armed Forces members and veterans with a mental health injury. The vast majority of participants indicated that they received a great deal of support through their involvement in the program, that it increased their access to sources of support, and that it offered them a sense of camaraderie and connection when they otherwise felt alone.

2B02: "Every Woman in There, Their Life was Exactly Like Mine": Peer-support for Family Members of the Operational Stress Injury Social Support Program (2 of 4)

*Silins, S., PhD; Lee, J.E.C., PhD; Coulthard, J., PhD

Department of National Defence

Introduction: [Note: This presentation is part of the symposium, *Peer Support Programs for Ill/Injured Members, Veterans, and their Families*, and is presentation 2 of 4]

Formal support networks, such as peer-support groups, provide an opportunity for individuals to come together and access instrumental and emotional resources. This is especially beneficial for the caregivers of individuals with operational stress injuries (OSIs), who face unique stresses and demands. This study explores the experiences of peers in the Operational Stress Injury Social Support (OSISS) family support program, to determine the benefits and challenges of their participation in this peer-support group.

Methodology: Participants included 34 OSISS family program members, in 10 cities across Canada. Length of membership ranged from under 1 year to 10+ years. Using qualitative interviews, participants were asked about their experiences in OSISS, including personal impacts and the perceived positive/negative aspects of the program. Interviews were audio-recorded and transcribed, and then a thematic analysis was performed to identify common themes.

Results: The vast majority of participants reported positive experiences in the OSISS program. The most commonly reported impact of OSISS was no longer feeling alone, and gaining friendship and sup-

port; these were also seen as the most valuable aspects of the program. The importance of sharing a common bond with their peers and having a non-judgemental, confidential atmosphere to discuss the challenges of OSIs were highlighted. Many participants reported that OSISS helped them gain perspective about caring for someone with an OSI, and some reported improved family relationships. Reported challenges within the program included the perception that the program is not well known and/or misunderstood in the military and veteran community. Other challenges, which were often presented in the context of the caregiver role, included limitations to appropriate and accessible meeting locations; limited opportunities for social activities; and limited resources for increasing accessibility to the coordinator outside of meetings. Finally, some participants discussed the utility of expanding the family peer support program to be more inclusive of non-spousal family members, such as parents and children.

Conclusion: The OSISS family peer support program was considered an important source of support for participants, both personally and in their role as caregivers to family members with an OSI. Since many of the valuable aspects and limitations of the program were contextualized from the perspective of those caring for individuals with an OSI, results provide important insight into the value of peer support for the families of ill and injured members and veterans.

2B03: “Not Only Helping Someone Else”: The Experiences of Peer Volunteers of the Operational Stress Injury Social Support Program (3 of 4)

*Lee, J.E.C., PhD; Silins, S., PhD; Coulthard, J., PhD

Department of National Defence

Introduction: [Note: This presentation is part of the symposium, *Peer Support Programs for Ill/Injured Members, Veterans, and their Families*, and is presentation 3 of 4]

Participation in peer support has been found to foster an increased sense of autonomy and empowerment. For the present study, interviews were conducted with participants of the Operational Stress Injury Social Support (OSISS) program, including individuals who were provided volunteer training. A qualitative analysis was conducted on transcripts of these interviews to identify central themes in participants' experiences as volunteers within the program.

Methodology: Participants included 31 peers and 17 family peers who identified themselves as volunteers for the OSISS program. Interviews were conducted in each of the following regions: Calgary/Edmonton, Gagetown, Halifax, Kingston, Petawawa, Ottawa, Trenton, Valcartier, and Victoria. Questions addressed a number of issues regarding the experience of volunteers, including the nature of their involvement as volunteers, what motivated them to volunteer, and challenges they may have encountered. Interviews lasted around 45 minutes and were audio-recorded, transcribed, and subjected to a thematic analysis.

Results: Levels of experience of OSISS volunteers varied, ranging from less than one year to well over 5 years. Volunteer activities most commonly involved providing help with the coordination of group meetings, providing individual support to peers, and engaging in outreach activities. In addition to gaining mutual support and social contact, factors that motivated peers to volunteer for OSISS included wanting to help others, seeing the experience as validating, and wanting to give back. In addition to this, family

peer volunteers reported wanting to volunteer because they had related interests due to their involvement in a 'helping' profession. Similar to peer volunteers, they also reported that volunteering provided a sense of gratification, personal learning and growth, and the pleasure of seeing others succeed. Challenges related to volunteering that were identified included emotional demands, issues with personal readiness for providing support, frustration with peers, challenges with outreach, limited resources, lack of recognition, and lack of information. Nevertheless, volunteers were able to overcome these challenges in a number of ways, such as engaging in self-care, socializing, seeking support, and knowing and enforcing one's boundaries.

Conclusion: In line with past research, many peers and family peers found volunteering for OSISS to be a validating experience. Volunteers were cognizant of the emotional demands that their role as a volunteer could place on them, but used the strategies and resources at hand in order to overcome these challenges.

2B04: Exploring the Impact of Peer Support and Shared Experiences Following an Injury: The Canadian Armed Forces and the Role of the Soldier On Program (4 of 4)

*Coulthard, J., PhD; Woycheshin, D., PhD

Department of National Defence

Introduction: [Note: This presentation is part of the symposium, *Peer Support Programs for Ill/Injured Members, Veterans, and their Families*, and is presentation 4 of 4]

As part of their commitment to providing support to ill/injured military personnel, the Canadian Armed Forces has developed a comprehensive approach in their multi-faceted model of treatment and care following a traumatic injury. One integral initiative is the Soldier On program, which supports both actively serving military personnel and veterans in overcoming their physical and/or mental health injury through the promotion of physical activity and sport.

Methodology: In order to assess the role of Soldier On in helping to meet the needs of injured members, an exploratory qualitative study, based on semi-structured, in-person interviews (n=50), was conducted with program participants at events across Canada. The interviews were recorded and transcribed, and thematic analysis of the data was conducted using the qualitative software program MAXQDA.

Results: In examining the motivation to get involved with Soldier On, participants frequently reported that it was perceived to be an avenue through which they could connect with others who have a shared experience and to help them break out of the social isolation that they had been facing since their injury. Further analysis of the data indicates that Soldier On is an effective pathway to increasing positive interpersonal connections with other injured members and, further, that access to peer support has a positive impact on the mental health and well-being of study participants. As well, participants reported being more motivated to engage in physical activity and sport as a result of their involvement with Soldier On.

Conclusion: Overall, the program was reported to foster an environment of shared experience and provide injured members with a sense of community that was found to be a significant additional benefit in their recovery, reintegration, and rehabilitation.

2C02: Invictus Durability: The Role of Sport in Identity Reconstruction of Injured Military Personnel

*Dentry, S., PhD; Kriellaars, D., PhD

University of Manitoba

Introduction: The 2016 Invictus Games hosted over 500 participants from over 13 countries who competed in ten sports, in individual and team settings. Created by HRH Prince Harry, the Invictus Games aims to use sport as a rehabilitative process for injured Armed Forces personnel. This project explored the 2016 Canadian participants' perception of identity and challenge encountered during the Invictus experience, within the durability framework, and the positive role Invictus has on the rehabilitation process.

Methodology: Participants (N=12; 10M:2F) were recruited from Invictus Games 2016 Team Canada, which included 30 Canadian Forces (26M:4F) serving personnel and veterans who had physical and/or mental injuries as a result of their military service. Semi-structured laddering interviews, a technique from personal construct psychology, were conducted with participants during the competition and two weeks post-competition, focusing on their perception of challenge and their personal resources to overcome the challenges they may face.

Results: Four major psychological themes akin to mental toughness were involved in their perception of challenge and the process of post-injury identity transformation. These included control, commitment, challenge and confidence. Physical components of durability were embedded in the psychological themes. Participants mentioned a sense of control, which can only come about through their physical training – the increased strength, endurance, technical knowledge and improved body composition. Additionally, as they gained technical knowledge and mastery in a new skill it led to an examination of their reconstructed identity and commitment to their new sport. Participants began referring to themselves as 'athlete' rather than 'injured veteran'. Thus, the durability framework shows that durability is concomitantly physical and psychological processes. The physical was a means, a process, to the achievement of the psychological components and vice versa.

Conclusion: The Invictus Games provided an arena for injured service personnel to increase their durability post-injury through regaining a sense of control, commitment, positive perception of challenge and increasing their confidence through improved physical components such as endurance, strength, technical knowledge, and improved body composition. These changes have the potential to ultimately lead to an identity transformation, which can be better understood within the durability framework as it is a holistic framework, including physiological, psychological and social components of rehabilitation and durability.

2E03: Using a Population Health Approach for the Development of a Veteran and Family Health Strategy

*Garland Baird, L., RN, PhD (Cand); Craig, J., BA, MPA

Veterans Affairs Canada

Brief Description: Guided by a population-health approach, Veterans Affairs Canada (VAC) developed a Veteran and Family Health Strategy to address the evolving and complex health needs of Veterans and their families. The scope of the strategy focuses on the domain of

health, defined in VAC's Well-Being Construct as the physical, mental, social, and spiritual health of Veterans and their families.

Historically, VAC's health services have been delivered through an eligibility criteria and medical model approach that focused solely on individual's clinical needs related to particular illnesses or disabilities. This takes a narrow view of health and does not take into account the protective or harmful impacts and interactions that all determinants of health have on Veterans and their families as they transition from military to civilian life.

Veteran and Family Health Strategy proposes an approach whereby Veteran and family strengths and needs guide the development of VAC policy and programming. Furthermore, the Strategy proposes actions to ensure that the Department's policies, programs and services are integrated, evidence-based and outcome-oriented, and which consider VAC's role in the context of partnerships with health service providers across the country's provinces and communities.

Clinical Outcomes: The outcome is a Veteran and Family Health Strategy that uses a population-health approach to assist the development and evaluation of VAC health policies, programs and future research to reduce inequities in health services and ultimately improve health outcomes for Veterans and their families.

To develop the strategy, a core team of policy analysts was established within the Policy and Research Division to lead analysis of available research and evidence, and to conduct consultations and reflect contributions from internal and external stakeholders.

Patient Population: Canadian Armed Forces Veterans and their families; policy and research professionals at VAC; and VAC leadership who have responsibility for the well-being of Veterans and their families.

Conclusion Using a population-health approach to develop the Veteran and Family Health Strategy demonstrates VAC's commitment to respond to the unique health needs of Veterans and their families. Moving away from a long-established eligibility approach for VAC health services requires strategic and coordinated legislative, regulatory, policy and service delivery action that is reflective of an evidence-based population-health approach that strives to improve the health outcomes of Veterans and their families.

3A01: Veterans Who Are Caregivers: A Gap in Research

*Albright, D. L., PhD¹; Hamner, K., PhD¹; Currier, J., PhD²

¹University of Alabama (USA); ²University of South Alabama (USA)

Introduction: Many of us are a caregiver for someone's daily health needs at some point in our lives. By caregiver, we mean any unpaid relative or friend who helps care for someone who needs assistance with everyday activities such as personal care, giving medicines or treatments, transportation to doctors' appointments, etc.

Eleven percent of all US caregivers have served in the military, and research suggests that over 20% of US older veterans are caregivers. While the caregiving experience can be positive, some caregivers may find that they are unprepared for or overwhelmed by the daily care needs of their ill family member or friend. Research suggests that there are numerous stressors associated with caregiving often leading to physical and psychological health effects,

including anxiety, depression, fatigue, and neglect of self-care. Research also suggests that mental health concerns like post-traumatic stress disorder and major depression can be significant problems for veterans, which can lead to this population being at increased risk for social withdrawal and social isolation; increased risk for suicidal ideation, attempts, and completed suicides; and increased risk for family problems, including marital strain and domestic violence.

We know very little, however, on the experiences and needs of veterans who are caregivers. While the US Department of Veterans Affairs and other agencies focus on the needs of caregivers of veterans, to our knowledge, there is limited focus on the needs of veterans who are caregivers and related supportive resources.

The purpose of the study was to inform the development of supportive resources for veterans who are caregivers. We propose to present our findings on the needs of veterans who are caregivers.

Methodology: We conducted the study in two phases using an exploratory sequential design. We recruited eligible participants (English speaking and US military service status) in the southeastern US. We used qualitative methods, including individual interviews and focus groups, and a quantitative method (survey).

Results: Fourteen percent of our sample reported that they are a caregiver, with these respondents reporting they are caregiving for a parent (27%), spouse (21%), or parent-in-law (18%). The majority of respondents reported that they are unaware of resources/services to/for: coordinate care (96%), self-care (94%), and caregiver related training or education (98%).

Conclusion: The experiences and needs of veterans who are caregivers is underexplored and warrants additional attention.

3B01: Military Spouses: Coping with Service Members' Injuries (1 of 6)

*Dursun, S., PhD; Wang, Z., PhD

Department of National Defence

Introduction: [Note: This presentation is part of the symposium, *Families of Ill/Injured Military Members and Veterans*, 1 of 6]

Over the last 20 years, medical releases have increased from 9% (1997) to 35% (2015) for several reasons, including combat operations and policy changes. Director General Military Personnel Research and Analysis (DGMPPRA) studies the challenges faced by military families and the effectiveness of CAF programs and services in addressing these challenges. This presentation is an overview of the program of research that looks at the challenges faced by military families caring for an ill and injured CAF member. Some key findings are provided from the most recent survey of military spouses, including their views of the services offered by the Integrated Personnel Support Centres (IPSC).

Methodology: This is a secondary data analysis of the Quality of Life Survey administered to spouses of Regular Force CAF members, including those whose military partners or spouses were posted to the Joint Personnel Support Unit. The survey assesses the impact of military life on families along several lines, including health and well-being, spousal employment, impacts of deployment on the family, and conflict between the military and family life.

Results: The survey results indicated that spouses of ill and injured CAF members experienced more stress and depleted resilience. These spouses also reported poorer physical and mental health than the spouses of the non-injured members.

Conclusion: These initial analyses have led to DGMPPRA's Transition and Well-Being program of research, which seeks to understand the challenges of families dealing with injuries and the experiences of military families preparing for or undergoing the transition to civilian life. The research will focus on particular groups of CAF members, especially ill or injured members and their spouses, to identify risk factors and factors associated with coping with injuries. The results will assist the CAF in optimizing resources, services, programs, and policies to better support CAF families.

3B02: Military Member's Illness and Injury and Spousal Well-Being and Divorce Considerations: The Role of Caregiver Burden (2 of 6)

*Skomorovsky, A., PhD; Lee, J.E.C., PhD; Dursun, S., PhD

Department of National Defence

Introduction: [Note: This presentation is a part of the symposium *Families of Ill/Injured Military Members and Veterans*, and is presentation 2 of 6]

Recent combat missions have contributed to an unprecedented number of members returning to their families with various illnesses and injuries that have long-term repercussions. Following members' illness or injury, families must confront the unexpected needs of ill or injured members and associated responsibilities while coping with the stress of living a military lifestyle. Previous research has demonstrated that a military member's illness is associated with spousal psychological distress. Moreover, there is evidence that illness and injury of military member can negatively influence marital relationships and lead to divorce. However, the role of caregiver burden in the path between military member's health and these well-being and relationship outcomes has received little research attention and has not been examined among Canadian military families.

Methodology: To address this gap, the current study examined the mediating role of caregiver burden in the path between military members' illness and psychological distress and divorce considerations among spouses of ill and injured Canadian Armed Forces (CAF) members. CAF members were recruited at informational seminars for military members leaving the CAF for a medical reason and at Military Family Resource Centres (MFRCs) across Canada. In total, 164 ill or injured CAF members and 68 spouses or partners of ill or injured members completed and returned their surveys. The present presentation is based on 68 spouses or partners of ill or injured members from the CAF Regular and Reserve Forces. The mediational model was tested using Hayes' (2013) PROCESS macro for mediational analyses in SPSS version 23.

Results: Members' poor mental health (but not physical health) predicted spousal psychological distress and divorce considerations. The results also supported the mediation models: Severity of members' illness or injury predicted higher caregiver burden, which in turn predicted higher psychological distress and divorce considerations among CAF spouses. The results suggested that the well-being and perceived relationship quality of spouses of ill or injured military members can be considerably impacted, particularly if the illness or injury is psychological.

Conclusion: Evidence for the mediation of caregiver burden has important organizational implications, as the caregiver burden may be diminished through the provision of greater instrumental and emotional support to the caregiver. Recommendations for mitigating caregiver burden to enhance spousal and relationship well-being are offered.

3B03: The Canadian Armed Forces Transition and Well-Being Survey (3 of 6)

*Lee, J.E.C., PhD; Skomorovsky, A., PhD; Dursun, S., PhD

Department of National Defence

Introduction: [Note: This presentation is part of the symposium, *Families of Ill/Injured Military Members and Veterans*, and is presentation 3 of 6]

While the needs of families are beginning to get attention in research on the transition from military to civilian life, few studies have examined transition-related issues from the perspective military member and spouse/partner dyads; that is, examining the perspective of military members and their spouses/partners concurrently. Yet, it would be important to understand the needs of both parties in this process given the important role of family as military members adapt to civilian life. Extending from a pilot study on the well-being of ill/injured Canadian Armed Forces (CAF) members and their families, the CAF Transition and Well-Being Survey (CAF TWS) was developed in order to understand some of the challenges faced by recently released CAF members and their spouse/partner during the transition from military to civilian life, as well as their experiences with various transition programs and services. Moreover, the survey was developed to better understand transition services needs and gaps, particularly as they pertain to military members who were medically released. This presentation will provide an overview of the CAF TWS, including an outline of how results of the pilot study informed the development of the survey and its analysis plan.

Methodology: The CAF TWS will be administered in spring 2017 by Statistics Canada and will consist of Computer Assisted Personal Interviews (CAPI) with up to 1000 military members who were medically released in the past year and a comparison group of 1000 military members who were released under other categories. If applicable, spouses or partners ($N \approx 1200$) will also be invited to complete a paper survey developed to understand their unique experiences in providing the member with assistance and support. CAF TWS questions were drawn from a variety of sources, but were selected so that comparisons could be made with results of other civilian or CAF military and veteran surveys, including the Canadian Community Health Survey and Life After Service Studies.

Results: Results of the CAF TWS will provide valuable information regarding the experiences and needs of CAF members and their spouse/partner during the transition from military to civilian life.

Conclusion: The CAF TWS will help identify key challenges faced by military members and their families during the transition process, and will provide insight into the role of spouses/partners in providing members with assistance and support throughout this process.

3B04: Families of Canadian Veterans - Building an Evidence Base (4 of 6)

McIntyre, F., MA

Veterans Affairs Canada

Introduction: [Note: This presentation is part of the symposium, *Families of Ill/Injured Military Members and Veterans*, and is presentation 4 of 6]

Research identifies the importance of families to the well-being of military Veterans, and families face challenges as a result of Veterans' service-related conditions. Family support is also critical for Veterans as they transition from military to civilian life. However, research on Veteran families in Canada is limited. The Department established an Advisory Group on Families whose scope includes identifying areas of further research related to Veteran families. This presentation will include themes from the Advisory Group and an overview of Veterans Affairs Canada's research activities to advance knowledge in this important area.

Methodology: This presentation will describe research activities undertaken to better understand and ultimately enhance the well-being of Veterans' families. It will draw from meetings of the Advisory Group on Families, of which the presenter is a co-chair, as well as a Literature Review, a Scoping Review, the Life After Service Studies and a qualitative study currently underway.

Results: Themes from the Advisory Group range from the importance of accessing family members and caregivers directly for studies as their perspective often differs from that of the Veteran or serving member to children as young as 15 years old that are providing care, know about trauma, and need to be included in research activities. Other themes will be discussed at the symposium as well as details of current research activities.

Conclusion: Military service and the subsequent transition from military to civilian life can have a significant impact on the families of serving members and Veterans – particularly if they are dealing with illness or injury. While the importance of family support has long been touted as an essential component to Veteran well-being, research on the experiences of Canadian Veteran families has been limited. For example, little is known about both the positive and negative impacts for a broad range of families. Veterans Affairs Canada is among the organizations looking to build the evidences base in this area with research that will inform planning and policy development, including a Departmental Family Strategy. This work will also look to assess existing family-centered care and treatment modalities being used in the Canadian context and the extent to which they are being accessed by and working for Veteran families.

3B05: Posttraumatic Growth among CAF Veteran Couples: The Role of Spousal Support (5 of 6)

Smith-Evans, K., MA (Cand); *Norris, D., PhD; Eichler, M.; Whelan, J., PhD

Mount Saint Vincent University

Introduction: [NOTE: This presentation is part of the symposium, *Families of Ill/Injured Military Members and Veterans*, and is presentation 5 of 6]

Literature emphasizing the negative psychosocial impact of service-related posttraumatic stress disorder (PTSD) in the military is established, indicating that detrimental PTSD outcomes sometimes ensue for the injured individual and their spouses/partners (Norris et al., 2015). For others, PTSD facilitates positive growth (Tsai et al., 2015). Little is known about post-traumatic growth (PTG), positive psychological change acquired through managing stressful experiences (Tedeschi & Calhoun, 2004), in the military context, particularly for Cana-

dian Armed Forces (CAF) Veterans and their spouses/partners. While it appears that social support fosters PTG (Calhoun & Tedeschi, 2006), the mechanisms involved in this process are unexplored. The purpose of this study informed through interpretive/constructivist theory is two-fold: (1) to learn how PTG has been experienced among CAF Veteran couples who are living with service-related PTSD and (2) to examine the role of spousal support in the development of PTG among CAF Veteran couples.

Methodology: A qualitative methodology was implemented to address some of the current limitations in PTG research through addressing two questions: (1) how has PTG been experienced within the couple relationship for CAF Veterans living with PTSD and their spouse/partner? (2) how have social processes within the spousal support system fostered PTG? Narratives of spouses/partners of CAF Veterans, who are living with service-related PTSD, were collected through in-depth, semi-structured interviews with nine spouses/partners. Interviews were taped, transcribed and analyzed using principles from grounded theory methodology (GTM).

Results: Formal support resources at the community level are necessary for successful healing among CAF Veterans living with PTSD. Spouses/partners, through their provision of emotional and instrumental support, are vital for facilitating access and continued engagement with community level resources. Adaptive processes established within the couple relationship, such as meaning-making and communication skills, help maintain the spousal support process. The level of spousal support provided to the injured Veteran shifts from a caregiving role to an autonomy-supportive role as healing progresses. Collectively, these interdependent components of spousal support facilitate PTG among CAF Veteran couples.

Conclusion: As understandings of PTSD evolves, this inquiry is both timely and essential as it expands the focus of research to include positive outcomes for CAF Veterans and their spouse/partner. These perspectives hold significance for the advancement of strength-based programs and services that will foster optimal social health and well-being for CAF Veterans and their families.

3B06: What is the Impact of Paternal PTSD on Family Functioning? (6 of 6)

*Fear, N.T., DPhil; Parnell, N., MSc; Verey, A., MSc; Rye, K., MSc; Parker, B., Chui, Z., MSc; Pernet, D., BSc; Chesnokov, M., MA

King's College London (UK)

Introduction: [Note: This presentation is a part of the symposium, *Families of Ill/Injured Military Members and Veterans*, and is presentation 6 of 6]

Military children and adolescents are exposed to a range of stressors that are not experienced by their civilian counterparts. Such stressors can include the periodic and extended separation from a parent during deployment to a combat zone, frequent moves and relocations, and exposure to a parent who may return with physical or psychological injury, including post-traumatic stress disorder (PTSD). While the prevalence rate for PTSD is low (4%), it can have a negative impact. A major concern for policy makers is how parental mental health issues impact on the psychosocial development and emotional wellbeing of military offspring and the functioning of these families. To date there has been a dearth of investigations in this area, especially from a UK perspective.

Methodology: This study examined the influence of paternal PTSD

on family functioning (parent-child communication, family dynamics) among those military families with adolescent aged children, compared to those whose fathers did not have PTSD. This two-group comparison study, was nested within the King's Centre for Military Health Research's ongoing tri-Service Health & Well-Being Study of the UK Armed Forces and drew on data from a previous study on 621 UK military families. Data were collected from over 100 UK military families. Families were eligible to take part if the father was in, or had left Service and if he had children aged between 11-17 years old. Data were collected via online questionnaires (the DAWBA), paper questionnaires (the Family Assessment Device (FAD), the Patient Health Questionnaire-9 (PHQ-9), PTSD checklist for DSM-5 (PCL-5), and the Alcohol Use Disorders Identification Test (AUDIT)) and two interactive video tasks (Five Minute Speech Sample (FMSS) and Hot Topics paradigm). The FAD assessed family dynamics and functioning. This study used multi-informant, validated measures and longitudinal data. Univariate, and multivariate models are being conducted to determine the influence of paternal PTSD on parent-child communication, family dynamics and overall family functioning.

Results: The mean age of fathers who completed both online questionnaires and home visits was 44.2 years; 84% were Regulars and 16% were Reserves; 51% of fathers were serving and 49% had been discharged.

Conclusion: The results of this study will be available for presentation by June 2017 and they will impact on service providers and policy makers, providing guidance on the prevalence of family related problems and possible times for intervention.

3D04: High Cost Users of VAC Health Care

*MacLean, MB., MA (Econ); VanTil, L., DVM, Epi; Macintosh, S., BA; Poirier, A.; McKinnon, K.

Veterans Affairs Canada

Introduction: Studies have found that health care costs are concentrated among a small proportion of the population who tend to have high levels of need. Since Veterans who require case management may be among those who are high-cost users of health care, this study examined the relationship between high-cost use of VAC health care and need, risk and receipt of case management.

Methodology: This study examined the trends in VAC health care use (Veterans Independence Program and Treatment benefits) among Veteran clients from 2011-12 to 2015-16. Clients were divided into four groups based on spending patterns: high (top 5%), moderate (6-49%) and low cost (bottom 50%) and non-health care users. Health care use, characteristics, screening and assessment, and receipt of case management of these groups of users were then compared.

Results: Of the total Veteran population, 16% were in receipt of benefits from VAC and eligible for health care. Spending on health care was more concentrated among CAF Veterans, with the top 5% (high-cost users) accounting for 33% of spending compared to 23% among war service Veteran clients. High-cost users spent proportionately more on personal care; intermediate care; prescription drugs, and hospital services. They were also more likely to live in Atlantic Canada and to use multiples types of care. There was little relationship between high-cost use and risk level. Many high-cost users scored as minimal or low risk, below the risk level for referral to case management. A minority of CAF clients were being actively case managed; 9% of CAF Veterans and less than 1% of war service

Veterans. Over one-third (37%) of case managed clients scored as minimal or low risk and one in five (18%) had a low case need score. Most high-cost users were not being case managed. However, the majority (87%) of those being actively case managed were participating in the Rehabilitation program.

Conclusion: VAC health care costs were concentrated among a minority of clients and high-cost users of health care have spending patterns and characteristics consistent with high need as in the literature. There appears, however, to be little relationship between high-cost use, risk level and receipt of case management. Receipt of case management was for the most part associated with participation in the Rehabilitation Program not on need or risk level. This suggests the need for examination of the criteria for receiving case management and further research into effective screening for case management.

3E03: Group Adventure Therapy for Veterans Suffering from Chronic PTSD

*Shorer, S., MSW, PhD^{1,2}; *Shacham-Shoer, M., MSW, PhD^{1,3,4}; Gotfried, A., A.⁵; Reshef, A., MD^{1,6}; Gamliel, M., MSW¹; Bloch, B., MD^{1,6}

¹HaEmek Medical Center (Israel); ²Bar Ilan University (Israel); ³University of Haifa (Israel); ⁴Kibbutzim College of Education (Israel); ⁵Israel Association for the Disabled; ⁶Technion, Israel Institute of Technology

Brief Description: Chronic PTSD impairs daily functioning and social relations, and is associated with co-morbid depression. Effective evidence-based treatments emphasize exposure to avoidant stimuli, and highlight rehabilitation activities, which are mostly effective when held in a social and relational context. Physical activities are among the first line treatments for depression, and spending time in nature is well-known to have a positive effect on mood and affect. We present a case report of group adventure therapy for Israeli Defense Forces (IDF) veterans with chronic PTSD. This therapy aims to reduce participants' avoidance behaviors, and improve their well being and self efficacy, as well as facilitate additional therapies and rehabilitation processes. Weekly outdoors 120 minute group sessions are provided. Due to the chronic nature of the disorder, the group work is open-ended. During the course of treatment participants practice team work through challenging activities such as hikes, navigation and over-night camping. This approach provides a masculine environment, simulating military environment, while providing functional and emotional challenges.

Clinical Outcomes: Significant changes in participants' lives were noted throughout the course of treatment. These changes, which will be presented through verbatim and quotes of the group participants, are formulated into five themes: (1) Recovery of vitality and of hope for change and for a better future; (2) Restoration of self-efficacy and positive self-esteem; (3) Regeneration of trust in others and in the world as a safe place; (4) Improvement of inter-personal relationships, based on mutual empathy leading to improved relations between patients and their family and community members; (5) Enhancement of illness management, inducing further pursuit of employment and treatment.

Patient Population: During 2013-2017, thirty IDF veterans of multi-cultural backgrounds (Jewish and Muslim-Bedouin) dealing with PTSD have participated in weekly outdoors group sessions, after previous evidence-based therapies (PE, CPT) had not lead to sufficient improvement. 5-8 participants take part in each meeting.

Conclusion Behavioral and emotional avoidance is a major concern

in the treatment of veterans with chronic PTSD. Patients are often faced with solitude and depression, stemming from their perception of social and environmental encounters as being extremely stressful. By challenging the participants' 'safe zone', the therapeutic group outdoor setting utilizes both nature and human resources as mediators of stress and fear. Through outdoor group activities, participants approach previously avoided situations. By accomplishment of challenges, participants gain a new sense of competence, motivating further mood and functional improvements, along with better illness management.

3E04: Equi-Assist: An Equine Facilitated Treatment Program to Strengthen Resilience and Enhance Coping and Communication Skills for Military Families (A Pilot Study)

Wideman, G., PhD

Memorial University of Newfoundland

Brief Description: This presentation will describe the implementation and evaluation of an equine facilitated program located in St. John's, NL. Equine facilitated practice (EFP) is an experiential, solution-focused treatment that incorporates horses into the counseling process. As with other animal assisted therapies, EFP uses the human-animal bond in goal-directed activities and can be integrated into individual or group counselling. EFP assists participants in ways that are, for some clients, superior to traditional approaches: horses are prey animals with an ability to read and respond to non-verbal communication, assisting clients to understand the impact of their actions; interacting with large, powerful animals empowers clients, increasing self-esteem and self-confidence; positive physical touching of animals has short term (calming) and longer term benefits (lowering of blood and cortisol levels) related to increased secretion of oxytocin.

Clinical Outcomes: At the outset of participation, treatment objectives and planning were developed in collaboration with clients and client groups to achieve goals related to 1) improving stress management skills, 2) building emotional strengths, 3) connecting with self, feelings and emotions, and 4) enhancing communication. Using a logic model approach, multi measure outcome indicators were implemented that included a standardized clinical assessment tool, a pre- and post-test of individual client/family goal achievement, and a post program interview to provide qualitative feedback on participants' experience of the program.

Patient Population: EFP has been demonstrated to have particular efficacy in work with military personnel and their families due in part to the following elements: the focus is on interaction between client and horse, reducing the role of the mental health practitioner (non-stigmatizing); clients recreate experiences using metaphor making difficult experiences accessible; emphasis is on objective observations rather than analysis, facilitating control and self-awareness; evidence that animal assisted therapy has been found to increase treatment compliance. In collaboration with the St. John's Military Family Resource Centre and with support from the True Patriot Love Foundation, the program was offered in 3 blocks of 6 week sessions. Potential participant groups and individuals were identified by MFRC personnel and included military spouses, younger children between the ages of 7-11 years, and youth between the ages of 12-17. Priority was given to families who were experiencing deployment or dealing with bereavement, PTSD, or other service-related injury.

Conclusion This project was developed as a pilot study to demonstrate the efficacy of EFP. At submission of this abstract, the 9 month program was at mid-point of its implementation. This presentation

will outline the outcomes of the pilot study evaluation.

4A04: Studying In-service Offending Behaviour in the UK Military

*Kwan, J., MSc; Pernet, D., BA; Hull, L., MSc; Wessely, S., FMedSci; Fear, N.T., DPhilOxon; MacManus, D., MRCPsych

King's College London (UK)

Introduction: Offending behaviour in the community by military personnel has been a concern throughout history with an increase in media attention in the past decade following conflicts in Iraq and Afghanistan. Research into violent offending behaviour in both the United Kingdom and the United States has demonstrated that this is an issue of concern among military personnel.

Most available research to date has focused on violent offending behaviour in the post-deployment and post-service periods. Although previous research has provided an estimate of the prevalence of non-violent offending among military personnel, details of different types of non-violent offending have yet to be explored. Studies to date have mostly relied on civilian community offending records which risk underestimating offending by overlooking in service offending behaviour which is captured on military crime databases. While there is some research that has begun to examine in-service offending in US military populations, this is still unexplored in the UK.

The main aims of this project are to examine the prevalence of and risk factors for all types of in-service offending behaviour. The impact of deployment to Iraq and Afghanistan and exposure to combat and traumatic events as well as mental health problems on in-service offending and domestic violence will be examined.

Methodology: This is a data linkage study that will utilise data from a large questionnaire based cohort study of a sample of randomly selected serving and ex-serving military personnel, conducted by the King's Centre for Military Health Research (n=11,635). This sample will be linked with official UK military police offence records from the Service Police Crime Bureau (SPCB) database known as REDCAP.

Results: The primary hypothesis of this study is that the prevalence of violent offending will be higher than other offending when comparing different types of in-service offending behaviour. The secondary hypothesis is that deployment to Iraq/Afghanistan, or factors related to deployment including combat and traumatic events as well as the presence of mental health problems will be associated with increased risk of all types of in-service offending behaviour.

Conclusion: Although violent offending has received the most attention in recent years, military personnel are also involved in other, non-violent offences, including military specific offences. This study will provide much needed insight into the offending behaviours of military personnel during their time in service.

4B03: More Than Just Surviving: Exploring Resilience and Developmental Assets in Military-Connected Youth

*Schwartz, K., PhD; Stelnicki, A., MSc; Wheeler, B., BA

University of Calgary

Introduction: Children and youth who grow up in military families are sometimes characterized as being at-risk, vulnerable, or just general-

ly destined for a troubled future. Indeed, children from military-connected families do experience a unique developmental trajectory because of frequent moves, deployment and re-entry of one or both parents, isolation in segregated military base towns, and lack of consistent friendship base. A growing literature is suggesting that children and youth from military families demonstrate features of resilience as they cope with the extraordinary demands of military family life. Less well understood, developmental strengths or assets might also be active in serving as positive factors that not only reduce risk but also contribute to developmental thriving. The present study will explore the presence and power of these two relational systems – resilience and developmental assets – as they support the development of youth in military families, the results of which might elucidate which system best predicts both positive and negative developmental outcomes for military-connected youth.

Methodology: Children and youth aged 11-17 were recruited to participate in the Strengths in Military Families Study, provided they had at least one parent who served in CAF (Regular and Reserve Force members) within the past five years. Using an online survey format, youth participants completed three measures: 1) the Child and Youth Resilience Measure (CYRM) is a 26-item self-report scale which examines resilience according to three factors: Individual capacities/resources, relationships with primary caregivers and contextual factors that facilitate a sense of belonging; 2) the Developmental Assets Profile (DAP), a 58-item self-report assessing the presence of developmental assets in five areas: Personal, social, family, school, and community; and 3) the Youth Self-Report (YSR), a 112-item measure of behavioural, social-emotional, academic problems, and positive qualities.

Results: Preliminary results of the study will be presented. Analysis will focus on the relative levels of both resilience and developmental asset factors reported by youth, as well as how each system relates to and predicts behavioural, social-emotional, academic and positive outcomes.

Conclusion: Children and youth growing up in military families are not destined for negative developmental outcomes. The present study will reveal how self-reported resilience and developmental asset factors are prominent in the lives of military-connected youth in ways that both protect from risk and promote thriving.

4B04: Adolescents' Subjective Experiences toward Deployment and Relocation

Bullock, A., PhD; *Skomorovsky, A., PhD

Department of National Defence

Introduction: The Double ABC-X Model of Adjustment and Adaptation states that military stressors and military families' subjective experiences of these stressors influence their adjustment. Indeed, there is growing evidence that deployment and relocation are significant stressors that negatively influence the functioning and well-being of adolescents from military families. However, there is a paucity of research on adolescents' subjective experiences of deployment and relocation and in turn, the influence on adolescents' well-being. To date, only one study conducted over two decades ago has been found to investigate the subjective experiences of adolescents from US Air Force families and the impact on adolescents' well-being. Therefore, the goals of the present study were to examine: (1) adolescents' subjective experiences of deployment and relocation; and (2) the influence of adolescents' subjective experiences of deployment and relocation on their well-being.

Methodology: A survey was mailed to the home addresses of a random sample of 3,000 adolescents (aged 14–19 years) from families of Regular Force Canadian Armed Forces (CAF) members. Responses were received from 201 (117 girls, 81 boys, 3 did not indicate adolescents ($M_{age} = 16.44$ years, $SD = 1.59$). Adolescents responded to open-ended question about the types of challenges they believed they experience in comparison to youth from non-military families. In addition, adolescents completed measures on their subjective experiences toward deployment (e.g., “I worry about my parent when s/he is deployed”) and relocation (e.g., “relocating to a new home is stressful for me”) using scales specifically developed for the purpose of the study as well as previously validated assessments on their well-being (an aggregate of self-esteem and youth symptom checklist).

Results: Results from thematic analysis suggested that the main concerns that adolescents from CAF families believe they encountered in comparison to adolescents from non-military families were related to the broad challenges of deployment and relocation. For example, adolescents experienced a lot of fear and worry over their deployed parents’ safety. As well, adolescents felt a lack of belonging and experienced distress over frequent moves. Furthermore, results from hierarchical linear regressions indicated that adolescents’ subjective experiences of deployment and relocation were related to their well-being. Specifically, more negative experiences of deployment and relocation were each uniquely predictive of adolescents’ lower well-being.

Conclusion: Findings suggest that adolescents’ perceptions and experiences of deployment and relocation influence their well-being. Results have implications for developing prevention and intervention programs to help adolescents’ cope and adapt to deployment and relocation.

5D01: Well-being of Children from Canadian Armed Forces Single-parent Families: The Mediational Role of Parental Well-being

Skomorovsky, A., PhD

Department of National Defence

Introduction: Military life can be stressful for children due to frequent relocations, changes in routine, parental separation, reduced feelings of belonging and stability, and risk of parental injury or death. While the impact of military life stressors can be directly related to child well-being, this is also evidence that parental well-being and child-parent relationships can play an important role in the path between stressors and child emotional and behavioural difficulties. Adjustment to military stressors is thought to be especially difficult for single-parent military families, due to the cumulative effects of stress from the demands of single-parenthood and military life demands and lack of support from the other parent. However, there has been limited evidence on the role of occupational stressors and parental well-being in the well-being of children from military families.

Methodology: An electronic survey was administered to Regular Force CAF members who reported having children 19 years of age or younger and were single, divorced, separated or widowed. Of the 3,211 CAF single parents who received a link to the survey, 1,260 provided responses to the survey. The final sample consisted of 552 single parents who completed at least 65% of the survey, yielding an adjusted response rate of 17.2%.

Results: Multiple regression analysis demonstrated that occupational stress predicted psychological distress among CAF single par-

ents. Specifically, deployment stress and work family interference were each uniquely predictive of CAF single-parents psychological distress. Moreover, parental well-being significantly mediated the relationship between parental occupational stress and child well-being. Specifically, work interference with family and deployment stress types of occupational stressors uniquely contributed to CAF single-parents’ heightened levels of psychological distress, which, in turn, diminished child well-being. In addition, the quality of parent-child relationship significantly mediated the relationship between parental deployment stress and child well-being.

Conclusion: Findings suggest that the effects of occupational stress not only adversely impact parental well-being, but have negative implications for child-parent relationships and child well-being. The implications for military families and recommendations to the military organization will be discussed.

5D02: Written in Light: A Focused Visual Ethnography Gaining Adolescent Perspectives on Reintegration after a Parental Deployment to Afghanistan with the Canadian Armed Forces

Hawryluk, H., PhD (Cand)

University of Calgary; Military Family Resource Centre (Edmonton)

Introduction: This study aims to provide a rich, in-depth description of the reintegration experiences of adolescence living on a military base who have had a parent deploy to Afghanistan. The military base, for the purposes of this focused ethnographic research, is viewed as a unique cultural context. It provides the environmental conditions surrounding the adolescent and shapes both vulnerabilities and protective factors. Research has predominantly examined the well-being of families during the immediate months following the members return-the reintegration phase. Virtually no literature has explored how youth have adapted, over time (Creech, Hadley, & Borsari, 2014; Marek & Moore, 2015). Military youth are at increased risk of experiencing mental health issues including anxiety, depression, and high-risk behaviors, due to the cumulative effect of multiple stressors associated with long-term parental separations (Harrison, Albanese & Berman, 2014; Heubner, Mancini, Wilcox, Grass & Grass, 2007). Missions to Afghanistan are exceptional in that members have been involved in multiple, prolonged combat deployments, and have experienced significant adjustment difficulties upon return (Chandra, et al. 2010).

Methodology: This qualitative study utilizes focused ethnography to gain insight of youth, ages 12-16 years, living on a military base, who have experienced at least one parental deployment to Afghanistan. Data collection methods include photo elicitation; participant-taken photographs of life on a military base, followed by individual interviews exploring the meaning of the photographs to the youth participant.

Results: Research is at the earliest stages of data collection. Preliminary results are tentative and subject to revision. What has been remarkable to date has been the enthusiasm of community members to participate in the research. Youth participants have been attracted to participate in the study primarily due to their interest in photography. Engaging youth in participant-taken photographs is to create a bridge between culturally distinct worlds of the researcher and the youth participant (Croghan, Griffin, Hunter & Phoenix, 2008). Military youth have an opportunity to direct what is important in the context of their lives and photo-elicitation methods pro-

motes greater access to their constructions of self though asking the participant the meaning behind the image (Liebenberg, Ungar & Theron, 2015).

Conclusion: The findings of this study will begin to address the gap in research on reintegration experiences of adolescence who had a parent deploy to Afghanistan, living within a specific context. The outcomes of this study will create an opportunity for youth's voices to be heard through creating a collaborative approach using photo-elicitation methods.

5D03: Who Knows Best? Examining the Similarities and Differences between Parent and Child Self-reports of Functioning in Children from Military Families

**Stelnicki, A., MSc; Schwartz, K.D., PhD; RPsych*

University of Calgary

Introduction: It is generally accepted that the military lifestyle can result in unique challenges to the military family, including frequent moves, extended parental absences, and the resulting family stress. Canadian Armed Forces members have reported lower life satisfaction, negative self-perceived mental health, higher rates of alcohol dependence, and higher rates of major depression than the general population. While likely impacting their ability to serve to their capacity, such experiences are also likely to affect their post-deployment adjustment, family relations, and parenting abilities. Military family life is complicated further by the presence of OSIs or mental health concerns for the at-home caregiver. This poses a methodological challenge for military family researchers. As parents are often asked to report on their child's behavioural, emotional, social, and academic functioning, the quality and accuracy of their responses may be questionable due to their perceived levels of family stress. This issue has not yet been explored in the existing military literature; that is, are there differences in the types of, number of, and severity of problems in children from military families, as reported by parents and children?

Methodology: As part of a larger study (The Strengths in Military Families Study), families were eligible if they had at least one parent who had served in CAF within the past 5 years and at least one child between the ages of 6 and 18 living in the home. Parents completed surveys of their child's current levels of functioning (Child Behavior Checklist [CBCL]). If their child was over the age of 8, they completed a self-report questionnaire of their own levels of functioning (Youth Self-Report). A concordance-discordance analysis was used to evaluate similarities and differences in reports of the child's functioning (1) between parents, and (2) between parents and the child's self-report, and whether these differences were able to predict maladaptive functioning in their children.

Results: Preliminary results will be presented. It is expected that families who are more discordant in their ratings identify their child as having more significant areas of concern in their functioning compared to families who had more concordant ratings.

Conclusion: The results of this study provide further support for the importance of multi-informant reports in military family research. Researchers should aim to better understand the *perceived* levels of challenges for children in military families, rather than rely solely on parent reports. This may also have implications for military families presenting to physicians.

5E02: Adapting the Collective Impact Model to Veterans Services: The Case of AmericaServes

**Armstrong, N., PhD; McDonough, J., MA, COL, USA (Ret.); *Cantor, G., MPH; Chapman, B., RN, MPH*

Syracuse University (USA)

Brief Description: This presentation will highlight the preliminary findings and lessons learned from AmericaServes, the United States' first collective impact initiative focused on military-connected populations in eight major communities (and growing). Today, U.S. veterans consistently cite difficulty knowing where to turn due to the diversity and fragmentation of actors across the human services landscape. Collaboration between clinical and social service provision is necessary to meet the holistic needs of the military-connected population. Analogous to health care coordination models, AmericaServes seeks to strengthen how nonprofits operate together by providing initial funding for a coordination center and a shared technology platform to manage a referral-based system of care. The aim is such that military-connected clients receive efficient, timely, and comprehensive access to the full range of resources they need.

Clinical Outcomes: In the six to eight months prior to each network launch, 40-50 local and regional organizations from the public and private sectors (including veteran governmental agencies) are brought together through a series of strategic planning sessions. Members adopt a common intake form and software technology to screen clients for social determinants of health and obtain consent for network referrals to address needs that may arise beyond any single organization's capacity or expertise. Network health outcomes have been defined in accordance with systems performance measures: a) timeliness (speed), or whether the network effectively supported an expedited referral between the client and provider; b) appropriateness (accuracy), or whether the network reduced the rate of poor referrals; and c) scalability, or whether the network increased capacity to accommodate clients. Long-term study will focus on the secondary outcomes, or whether more timely and appropriate service delivery resulted in better quality of care for the military-connected population.

Patient Population: In under three years, eight AmericaServes community networks have launched across six states. These networks include more than 348 network providers and 1,133 practitioners and have managed more than 13,000 service requests. Nearly half of AmericaServes clients presented with at least two needs (e.g., employment, housing, financial assistance). Communities also meet regularly to address questions and insights raised by the data, and to adapt processes to tackle common challenges. The IVMF provides measurement and evaluation support for providers, coordination centers, and funders to improve network performance and evidence-based decision making.

Conclusion AmericaServes poses a unique case to highlight both the promises and challenges of scaling coordination among human services organizations supporting military-connected populations.

Poster Presentations

P162: Shared Health Care Responsibilities for Veterans and Their Families

*Kelly, M., Policy Analyst; *Barry, D., Policy Analyst*

Veterans Affairs Canada

Introduction: A promising trend found in the United Kingdom and Australia important to consider in the Canadian context is the emergence of “shared social responsibility” with respect to health care for Veterans and their families. The approach taken by these countries show how the obligation to support the Veteran community extends beyond the VA and is an important social issue at the local, regional and national level. The three examples below illustrate shared social responsibility in practice:

- The UK’s Armed Forces Covenant holds the nation responsible for ensuring Veterans and their families are at no disadvantage relative to other citizens in terms of accessing health care to adequately serve their needs. An example of shared social responsibility is the addition of Covenant principles to the constitution of the National Health Service resulting in the prioritization of health care for Veterans and their families.
- The Australian VA supports State and Territorial governments by holding official consultation forums with their representatives to discuss Veteran health care issues. The purpose of these forums is to share information and improve the administration of health care to the Veteran community at all levels of government.
- Veteran community grant programs in the UK and Australia often aim to improve the health of Veterans and their families in their local neighbourhoods. These funding opportunities are designed to engage the Veteran community by supporting the development of various grass roots Veteran-centric initiatives such as promoting health lifestyles and integrating Veterans into the local community.

Methodology: An international environmental scan of peer reviewed and gray literature was conducted based on information related to Veteran community health; collaboration between government entities; and community integration.

Results: The analysis of the data indicates that the Governments in the UK and Australia collaborate closely between national and local levels in order to provide improved access to health care services for Veterans and their families.

Conclusion: The insights drawn from the UK and Australian are useful in the Canadian context because they may inform an initiative supporting government collaboration to improve health care for Veterans and their families.

P163: Veterans Financial Benefits 2016 Actuarial Analysis

Cue, C., Col (Retd)

Office of the Veterans Ombudsman

Introduction: The Office of the Veterans Ombudsman created a desktop tool to allow a comparative analysis to be conducted of the financial benefits provided to Veterans under the New Veterans Charter (NVC) to that of the Pension Act (PA). The tool, by generating actuarial scenarios, provides the data to analyze the life-long impact of the financial benefits under the NVC. The tool has evolved with changes to the NVC and has been improved to increase flexibility for the analyst.

Methodology: The Veterans Benefits Actuarial Tool (VBAT) allows for all existing Veterans financial benefits to be selected (or deselected) to allow the analyst to compare existing or create alternative benefit schemes against each other. Values of existing benefits can be

changed and new benefits can be added, actuarial tables of payments are created, as well as a visual display of the lifetime payment broken down by benefit type or the annual payments that a Veteran could receive over their lifetime. The VBAT was used to update the Veterans Ombudsman’s actuarial analysis conducted in 2013 to show the impact of changes on lifetime compensation including announcements made in Budget 2016.

Results: The Actuarial Analysis Follow-up Report re-analyzed the original five scenarios and found:

- **The amount of lifetime compensation for some Veterans who cannot work as of result of their service related disability has increased since 2013.** In only one scenario does the NVC financial benefits provide more lifetime compensation than what was achieved under the Pension Act.
- **Multiple Benefits Create Complexity.** To achieve the increase in lifetime compensation under the 2016 NVC, four new benefits and eight enhancements were implemented. Each new benefit has different eligibility criteria, a separate application process, a different dollar value and different appeal rights. As a result, communicating and administering the intricacies and interrelationships of these benefits to Veterans and their families is challenging.
- **It is not clear whether the NVC financial benefit programs are meeting Veterans’ needs.** Many of the financial benefit programs do not have an easily understood and veteran-centric policy rationale for the benchmark that is trying to be achieved.

The latest analysis also points out that financial outcomes need to be determined for survivors and Veterans who can work but may have a diminished earnings capacity.

Conclusion: Incremental changes to financial benefits are making a difference for some Veterans but with increased complexity. Financial benchmarks need to be established to measure impact for all Veterans.

P164: Operation Family Doc

Hylland, K., BSW

Department of National Defence

Brief Description: The *Operation Family Doc* mission is to provide access to and continuity of health care to every Canadian Armed Forces (CAF) family member and releasing and retiring military member in the National Capital Region. Launched in September of 2012, the program is the product of a partnership between the Military Family Resource Centre in the National Capital Region and the Academy of Medicine Ottawa, with the support of the Military Family Services. The 2013 report by the CAF Ombudsman states that “accessing health care and maintaining a reasonable level of continuity during mandatory moves remains a persistent challenge for military families”. Evidence shows that up to 23.8% of military families do not have access to a primary care physician.

Clinical Outcomes: In 2013, the Canadian Medical Association adopted a resolution which states that CAF family members and retiring/releasing members have a right to “continuous access to local physicians as they relocate to new military bases and communities across Canada.” Through a community engagement strategy, *Operation Family Doc* manages ongoing collaborations with local family physicians. Currently, we have a 100% same-day placement success rate for eligible CAF families living in Ontario.

Patient Population: Families that serve in the Canadian Armed Forces are presented with unique challenges associated with recurring geographic relocations, relentless separations and elevated levels of risk with loved ones training and serving around the world. As CAF families relocate multiple times throughout a member's career, this has a significant impact on a family's ability to access and maintain a continuity of healthcare. *Operation Family Doc* is an orphan-patient program that serves to alleviate some stress experienced by CAF families.

Conclusion: To date, the program has referred over 4300 patients to primary care physicians. As a community engagement oriented program, *Operation Family Doc* aims to not only support CAF families in the National Capital Region, but to lend guidance and information to all serving and retiring or releasing members across Canada.

P165: Monitoring the Well-being of Veterans – A Veteran Well-being Surveillance Framework

*MacLean, L., MSc¹; Roach, M.B., MBA, MA²

Veterans Affairs Canada

Brief Description: Based on a Veteran well-being construct (developed in 2016), Veterans Affairs Canada (VAC) has developed a Well-being Surveillance Framework to provide ongoing, systematic assessment and surveillance to monitor and measure Veteran well-being. An accepted set of high-level indicators has been identified and will be used to monitor the well-being of the Veteran population. Over time, analysis of the indicators will allow VAC to understand trends, areas where Veterans are facing challenges and where gaps exist. This evidence-informed surveillance will then inform VAC's policy and research priorities. This poster will illustrate VAC's Veteran Well-being Surveillance Framework and its indicators.

Clinical Outcomes: The outcome is a framework for surveillance of the Canadian veteran population, comprised of an accepted set of high level indicators that measure and monitor the well-being of Veterans in order to support evidence-based decision making.

To develop the Framework, a working group in VAC was established within the Policy and Research Division and included an Epidemiologist, a Health Economist, and Policy Analysts. The working group researched and evaluated available indicators and data sources in order to select the list of indicators for each area (domain) of well-being. A scan of related literature as well as existing health and well-being surveillance models, both Canadian and International, was also completed.

Patient Population: Canadian Armed Forces Veterans and their families; policy and research professionals at VAC; and VAC leadership who have responsibility for the well-being of Veterans.

Conclusion: Ongoing, systematic assessment and surveillance that measures and monitors the well-being of Veterans based on an accepted set of high level indicators leads to evidence-based decision making and priority setting that supports sound policy development, improved effectiveness of Veterans programs, and ultimately the improved well-being of Veterans and their families.

P166: Assessing the Needs of Canadian Armed Forces Communities

Manser, L., MM

Department of National Defence

Introduction: Canadian Forces Morale and Welfare Services (CFMWS) is responsible for delivering public morale and welfare programs, services and activities to Canadian military communities. In order to be responsive to Canadian Armed Forces (CAF) members and their families and to assist Base/Wing Commanders in determining the unique needs of their community, a new comprehensive CAF community needs assessment (CNA) tool was implemented in fall 2016 based on externally validated measures.

Methodology: The CAF CNA was an online survey completed by military community members with questions focused around 7 main components:

Context (e.g. location, demographics).

1. What have respondents experienced as problems? The framework captures experiences across 9 domains that military families self-define as rising to the level of a problem (work/life balance, household management, financial, legal, health care, relationship, child well-being, spousal well-being and personal well-being). For those with problems in multiple domains, respondents are asked to prioritize the most significant problems.
2. What types of help did respondents need in order to address their most significant problems (e.g., the need for information, advocate, counselling)? Which of those problem-related needs did they deem the greatest?
3. What resources did families contact to try to meet the most important needs?
4. What factors made resources easier or more difficult to access? What barriers and bridges did the respondents perceive or encounter?
5. Did the resources that respondents contacted actually help them meet their problem-related needs?

What is the connection between met needs and outcomes?

Results: Over 11,000 respondents completed the CAF over the course of one month. Respondents included Regular Force members, Reservists, Spouses, Veterans, Parents of single serving members and DND/NPF civilian employees.

The CAF CNA provides a national picture of the current trends in emerging unmet needs within the military community as a whole, as well as base/wing analysis that show what is needed to better serve individual military communities.

Conclusion: The new CAF CNA tool links the most pressing problems of military families to their self-defined needs. Then, within that context, it allowed for the direct comparison between service usage and satisfaction with family perceptions of how their needs have been addressed. Through the new CAF CNA tool, CAF members have the opportunity for active and meaningful participation in the development, delivery and evaluation of their morale and welfare programs and services.

P167: Feeling of Belonging to the Military Community: A Measure of Self-rated Health and the Perception of Crime within the Neighbourhood

Ouellet, E., Capt, MA

Department of National Defence; University of Ottawa

Brief Description: This research focuses on the feeling of belonging to the Canadian military community as an indicator of social capital to measure its impact on self-rated health and the perception of crime within the neighbourhood. Our focus is on the active duty member of the Canadian military community, as this group presents homogeneous social characteristics that have been institutionalized and therefore provide conditions to assess the applicability of the concept of social capital on different quality of life indicators.

Outcomes: We conducted binary logistic regression on the responses provided by Regular Forces military members (N=880) from Halifax, NS; Petawawa, ON; and Cold Lake, AB. With each of our variables, we have added other independent variables associated with social capital: Life Satisfaction and Feeling of Security and demographic variables: Age Group, Rank Group, City, Gender and Languages. When we compared the results from the feeling of belonging to the military community and its impact on the quality of life to the results from the feeling of belonging to the neighbourhood and its impact on the quality of life, we found that there was a fundamental difference between these two concepts. The feeling of belonging to the military community positively influenced self-rated health and did not influence the perception of crime within the neighbourhood. However, the feeling of belonging to the neighbourhood significantly diminished the perception of crime within the neighbourhood and did not influence self-rated health.

Patient Population: The targeted population are the Regular Forces active duty Canadian Military Members.

Conclusion: In conclusion, although the feeling of belonging to the military community and the feeling of belonging to the neighbourhood are both associated with social capital, they do not influence the quality of life of the Canadian military in the same way. Each concept belongs to a specific aspect of social capital. If we want to evaluate the quality of life, the results of our research suggest that we should be cognizant of the difference between these two concepts.

P168: A Qualitative Analysis of Factors Affecting Canadian Army Reservists' Well-being

**Pickering, D., PhD; D'Agata, M., MSc; Blackler, K., MSc; Nazarov, A., PhD; Richardson, M. LCol, MA*

Department of National Defence

Introduction: The vast majority of military well-being research as focused on the experiences of Regular Force personnel. Far fewer studies have assessed the well-being of Reservists, or sought to better understand the factors that may impact their well-being (e.g., Giffith, 2011). This is evident upon review of the well-being research in a Canadian context. The current research seeks to address this gap by examining the positive and negative well-being experiences of Canadian Army Reservists.

Methodology: Canadian Primary Army Reservists were invited via e-mail to participate in an online Health and Well-Being survey. As a part of this survey Reservists were asked the following question, 'Are there any events (personal, national, international) that have taken place over the past year that have had a significant impact on your well-being (e.g., how you feel about yourself, others, or the world more generally)?' Individuals responding in the affirmative to this question were asked if they would like to explain their answer. Qualitative analysis of responses to this open-ended question will be undertaken.

Results: The first set of results to be presented will discuss the extent to which individuals make reference to more positive or negative aspects of their well-being in open-ended responses. Also, in what way(s) is well-being described, or in other words, characterized by respondents? This focus on both positive and negative well-being is important as much of the health and well-being research tends to focus on the negative (e.g., maladaptive functioning, symptomatology) while neglecting the more positive aspects (e.g., thriving, happiness) of well-being (Dodge et al., 2012). The second set of results to be highlighted pertain to the specific factors related to positive and to negative well-being. Of interest will be the specific types of events, i.e., personal vs. more global, that are mentioned as having a significant impact on an individual's well-being. Delving further, are there specific sub-categories of events that are mentioned more frequently than others (e.g., a specific type of personal event)? Also, to what extent are the factors described military, or Reserve-specific events? Finally, the extent to which more national or international events are mentioned will be assessed. Considering the world has become more globally connected via technology, are more distal events able to have a significant affect on an individual's well-being?

Conclusion: Implications of the research findings will be discussed with respect to the broader well-being research domain.

P169: Institutionalizing Veteran Well-Being into the Policy Planning Cycle

Roach, M.B., MBA, MA

Veterans Affairs Canada

Brief Description: At Veterans Affairs Canada (VAC), well-being has long been the desired outcome for Veterans (core responsibility). While most agreed it was about living well, there was no accepted definition for well-being within the Department. So VAC's Research Directorate developed a Veteran well-being construct indicating that enabling the well-being of Veterans' involves taking action in seven domains. This poster will provide an overview of how VAC's Policy Directorate then embedded the well-being construct into the policy planning cycle and practice by:

- developing strategic outcomes for each domain of well-being;
- leading research and analysis for each domain of well-being that describes the Veteran population to comprehensively understand Veterans' challenges when weighed against desired well-being outcomes so that priorities for strategic policy development and action (e.g. strategies, programs, partnerships) occur based on identified areas of need (gaps);
- developing a framework for well-being surveillance and outcome measurement so that the action taken is evaluated against desired well-being outcomes; and
- beginning the cycle again ... so trends and gaps are continually addressed resulting in improved Veteran well-being.

Clinical Outcomes: The outcome is to contribute to the well-being of Veterans, throughout their life course, by leveraging the benefits of institutionalizing the well-being construct into the policy planning cycle.

Patient Population: Canadian Armed Forces Veterans and their families; policy and research professionals at VAC; and VAC leadership who have responsibility for the well-being of Veterans.

Conclusion Institutionalizing Veteran well-being into the policy planning cycle results in evidence-based decision making and priority setting that supports sound policy development directed at the improved well-being of Veterans.

P170: Resilience in Military Children: Which Factors best Protect against the Development of Problems?

*Stelnicki, A., MSc; Schwartz, K., PhD, R.Psych; Wheeler, B., BSc

University of Calgary

Introduction: While the existing literature is inconclusive regarding whether being part of a military family affects the social, emotional, or behavioural functioning of these youth, many children are able to adapt and thrive in their challenging social contexts. However, the majority of research designed to better understand military families is deficit- and problem-focused. The purpose of this presentation is to add to the minimal base of literature on resilience of military children. Specifically, this poster will aim to answer what areas of resilience protect against the development of behavioural, social-emotional, and academic problems?

Methodology: Families were recruited to participate in a larger study, The Strengths in Military Families Study, provided they had at least one parent who served in CAF within the past 5 years. Using the Child and Youth Resilience Measure (CYRM), results will describe characteristics of resilience in a sample of Canadian military-connected children (i.e., children of Regular and Reserve Force members). The CYRM examines resilience in three ways: individual capacities/resources, relationships with primary caregivers and contextual factors that facilitate a sense of belonging. Children and youth also completed the Youth Self-Report (YSR) as a measure of behavioural, social-emotional, and academic problems.

Results: Children of military families endorse many areas of resilience. Children reporting higher scores on the CYRM endorsed lower rates of problems on the YSR.

Conclusion: Identifying different areas of resilience in military-connected children will better inform programming to enhance strengths within this unique population. When children are identified with maladjustment issues related to military life, enhancing specific resilience factors can be used as part of a strength-based intervention.

TRANSITION FROM MILITARY TO CIVILIAN LIFE

Podium Presentations

1D01: Experiences of Female CAF Veterans: Gendering Military-to-Civilian Transitions

Eichler, M., PhD

Mount Saint Vincent University

Introduction: While Veterans policies and programs often assume the male Veteran as the norm, it is significant that gender-blind policies may overlook the specific needs of female Veterans. Gender remains an underexplored area of inquiry into Veterans' transition from military to civilian life – both in Canada and elsewhere – but one that is growing in importance in view of the changing gender make-up of militaries across the globe. That gender is a key variable affecting the success of Veterans' reintegration into civilian society is increasingly evident in the literature. In part, female and male Veterans face similar challenges upon their return from a war zone and/or their release from the military. However, some aspects of the transition are gender-specific and related to societal gender norms and gendered military culture.

Methodology: A qualitative methodology was used to conduct interviews and a focus group with female CAF Veterans regarding their experiences transitioning from military to civilian life. A gender-sensitive narrative approach underpinned the interviews and focus group. Participants' accounts were thematically analyzed with MAXQDA computer software.

Results: Female CAF Veterans shared their experiences of life before, during and after military service. The most common reasons for joining the CAF included financial support for education and an appeal of the military lifestyle. Pre-military expectations were sometimes inconsistent with their actual experiences during their military career, particularly around gender issues. Although these women generally had a positive view of their military career, some had negative experiences related to gendered power dynamics or military sexual harassment and assault. Most participants had released from service voluntarily; in some cases, release was prompted by family concerns. Common themes that related to participants' transition to civilian life included community re-integration (e.g., civilian education and employment, Veteran identity, re-socialization), family (e.g., responsibilities, expectations), and post-service supports (e.g., program/service availability). Participants offered gender-specific perspectives on each of these topics.

Conclusion: It is important to recognize female Veterans' unique experiences and needs, and how military and civilian gender norms as well as other factors may impact their military-to-civilian transition. Insights from this research will help inform guidelines for more gender-sensitive Veterans policies and programs in Canada.

1D02: Veterans' Identities, Well-being and Recognition: Findings of the 2016 VAC-CIMVHR Research Theme Working Group

*Thompson, J., MD^{1,2}; Lockhart, W., BA BEd¹; Roach, M.B., MBA MA¹

¹Veterans Affairs Canada; ²Queen's University

Introduction: Identity challenges are central to the experiences of military personnel undergoing military-civilian transition (MCT). Agencies and service providers who support military Veterans want to better understand Veterans' identities and the relationships between identities, well-being and recognition both during MCT and throughout later life. However, we found no published summaries of Veterans' identity concepts and applications to inform service delivery or policy and program development.

Methodology: To close this key knowledge gap, VAC partnered with the CIMVHR in 2016 to establish a Health Canada funded Research Theme Working Group called "Veterans' Identities in MCT: What do we know and what can we do?" We assembled a panel of ten experts from four countries and asked them to address four objectives: review current knowledge of Veterans' identities; explore relationships between identities and well-being; suggest effective activities to enhance well-being through identities; and suggest ways to measure effectiveness. We kept notes during the pre-Forum workshop in Vancouver in November 2016 and during teleconferences outside the workshop. We synthesized the panelists' contributions together with a literature review that we conducted.

Results: Identity theories offer rich frameworks for understanding how the well-being of military Veterans is shaped during service and MCT, including managing the military identity, civilian workplace integration difficulties and the onset and mitigation of mental health

and relationship problems. The social identity approach yields insights for Veterans, families, employers and service providers in issues as diverse as coping with MCT challenges, preventing mental health problems in MCT, getting along in civilian workplaces, social recognition of Veterans, suicide prevention and communicating with Veterans. Empirical research has been clarifying the theories worldwide in the past two decades in non-Veteran populations, and is now growing internationally in Veterans.

Conclusion: Identity challenges are central to the MCT experience and the related distress typically is normal. There is a strong theoretical and growing empirical evidence basis for understanding Veterans' identities and their relationships to well-being. The social identity approach suggests ways to help Veterans adapt during MCT, including when their transitions are complicated by chronic physical or mental health problems or stigmatizing identities. Ways to measure social identities are developing. This presentation will be a practical summary of the findings of the Working Group with a view to informing service providers and policy and program development seeking to optimize the well-being of Canadian Armed Forces members and Veterans in MCT, and informing research and outcomes measurement.

1D03: Rethinking the Concept of Identity among Veterans in Transition

Rose, S., PhD

Eastern Michigan University

Brief Description: This inquiry evaluates the concept of concept of identity among veterans in transition to civilian life. Beyond the concept of social identity and the importance of belonging, this reconceptualization of identity demonstrates the relevance of a sense of purpose/direction, as conceptualized sociologically through the concept of anomie. The anomic transition from a highly regulative military social structure to a relatively unregulated civilian context can have a profound impact on one's ability to maintain a satisfactory sense of identity. Despite strong identification with military culture, a military identity alone does not sufficiently provide veterans with a sense of purpose and direction in a civilian social context lacking regulation. In many cases, a military identity further emphasizes a veteran's sense of disconnection from civilians.

Outcomes: Beyond the importance of belonging in the concept of social identity, purpose/direction is also a key element of identity. This is particularly relevant to veterans in transition from the highly regulative social environment in the military to a relatively unregulated social environment in civilian life.

Patient Population: Canadian veterans in transition to civilian life.

Conclusion: By only focusing on belonging, as emphasized in the concept of social identity, researchers and practitioners may be missing an important component of identity-related issues faced by veterans in transition to civilian life. Transition programs can assist veterans by providing a sense of structure and foster the pursuit of meaningful goals in civilian life.

1D04: Occupational Identity and Military-Civilian Transition

**Dunn, R., MSC¹; Brooks, S., PhD¹; Goodwin, L., PhD^{1,2}; Greenberg, N., MD¹*

¹King's College London (UK); ²University of Liverpool (UK)

Introduction: Research into occupational identity is growing. Recent findings show occupational identity gives meaning and direction, and positively relates to personal and work related outcomes, including high work engagement and low burnout. Little is known however, about the occupational identity of military personnel and how it might change when leaving the Armed Forces. One's identity may require some adaptation in order to operate successfully in a civilian environment. The possible difficulty for ex-service personnel however, is that their previous occupational cognitions may be so deeply entrenched in their self-concept, and not easy to let go of.

To understand what happens when personnel leave the Armed Forces; an organisation with a strong identity. In particular, to explore how transitions affect their sense of self and their social and occupational integration?

Methodology: A qualitative systematic review of 16, mainly US studies, synthesising the lived experiences of ex-service personnel navigating their transition out of the Armed Forces and their occupational identity. Data was synthesised using a meta-ethnographic approach.

Results: Findings suggest that future occupational success, and to some extent general transition success (relationships, community integration), may be independent upon whether an individual recognises and accepts the need for adjustment of the prior occupational identity. However, this may in turn be influenced by positive or negative experiences of the transition process (public prejudice, resettlement support).

Conclusion: Occupational identity and consequential transitional success appear deeply intertwined. This finding suggest that ex-service personnel may benefit from increased psychological and emotional transitional preparation upon resettlement. This approach may help ex-service personnel cognitively and emotionally prepare for a different life to that which they have previously had. Service leavers therefore may need to acknowledge the inevitable need for active adjustment in order to succeed, within both themselves and society. The human and financial costs of ignoring the impact of failed transitions are likely to be considerable.

Future research plans on this topic will be discussed.

2D01: From Service to Civilian Life: Emerging Patterns from an Australian Investigation Examining Common Factors among Those Who Transition Well in the Context of Cultural Reintegration and Psychological Adjustment

Romaniuk, M., DPsych

Gallipoli Medical Research Institute (AU); Queensland University of Technology (AU)

Abstract not published

2D02: Duelling Devotions – Military Service, Family and Adaptation to Civilian Life after the Military

Bérubé, N., PhD

Royal Military College of Canada

Introduction: There is increasing, but limited understanding about the long-term processes of adaptation to civilian life following military service. Studies in this area have focused on the dramatic and nega-

tive outcomes of this transition, while the experiences of a majority, who managed this transition successfully, has remained largely unexplored. Based on the premise that the connection to the military remains strong after the transition to civilian life, this study explores this perspective from the angle of competing devotions to military service and to family life.

Methodology: In-depth, semi-structured interviews were conducted with a sample of eight veterans in the late phased of their lives, who had served in the Canadian Armed Forces for at least ten years. The interviews were structured to enable the researcher to probe some issues in greater depth and to follow emergent disclosures that appeared important to the participant. A thematic analysis was conducted to understand how respondents felt about their devotion to family, compared to their devotion to work during and after their military service. An inductive analytical approach was used to allow emergence of various perspectives.

Results: The diverse sample revealed common perceptions of competing commitments to military versus family life, particularly at the time of the decision to release from the military. In addition, there was a general agreement regarding low psychological readiness to leave military service and fit into civilian life. Narratives also commonly revealed patterns of instability in self-identity for a number of years post-service, along with feelings of loss and rebuilding of standing over time. These effects appeared to be moderated by the degree of family devotion described by the respondents. The narratives further suggested that when competing devotions between military service and family life were strong, the transition to civilian life was facilitated. Moreover, for these participants, a military identity was clearly helpful to a positive self-image and the maintenance of well-being during their working years, and especially, in the later phases of their lives.

Conclusion: This exploratory study represents a step towards understanding factors that play important roles in the transition from military to civilian life. Insights about devotion to military service and devotion to family life could help us understand processes, such as adaptation of self-image and self-identity, which may contribute to successful re-integration of military members to civilian life.

2D03: Determinants of Successful Transition Qualitative Study

Squire, S., MA

Office of the Veterans Ombudsman

Introduction: To better understand the factors that contribute to a successful transition from military to civilian life, the Office of the Veterans Ombudsman (OVO) initiated a two-phased study. Phase I was undertaken through a contract with CIMVHR and included a literature review to identify a comprehensive list of factors that contribute to a successful transition to civilian life for Veterans. The results of this review were presented at the 2015 CIMVHR Forum. This phase also included the development of the research methodology for Phase II including recruitment and selection criteria and an interview guide.

This presentation represents the results of Phase II, a series of interviews which further explore the contributors to successful transition based on the lived experiences of medically-released Veterans who self-identified as having successfully transitioned.

Methodology: A small sample of 15 volunteer participants, who medically released between 2006 and 2014 and self-identified as having

successfully transitioned, were interviewed. The sample included a mix of regular and reserve force, male and female, officer and non-officer and various years of service.

The semi-structured interview was organized by the areas of interest from the literature review including: the transition process; health and disability; employment and education; financial security; family, peer and social support; and military culture.

Results: Several themes emerged from this study:

- Being proactive and “owning” one’s transition was mentioned as the most important factor contributing to their successful transition.
- Several participants cited the Second Career Assistance Network (SCAN) seminar as a valuable tool to prepare for transition.
- The support of a spouse was an important element in the success of participants.
- Specific programs noted as important in their transition included the Integrated Personnel Support Centre (IPSC), the Veterans Transition Network, the VAC transition interview, supportive staff members, and access to medical care and rehabilitation.
- Two participants were disappointed that they did not receive any formal recognition for their service when they were released, leaving them with the sense that as a result of their injuries and medical release, their service had been devalued.
- Finding a purpose, outside of the military, or finding new or different ways to serve their community, represented a challenge for most of the participants.

Conclusion: As the first qualitative research study on the determinants of successful transition of medically-released Canadian Veterans, the results of this study will generally inform other Canadian research efforts and will drive the OVO’s future research on transition including, among other initiatives, a focus group with family members.

2D04: From Here to Eternity: Impacts of Veteran’s Mental Health on Families in Military to Civilian Transition

Schwartz, K., PhD¹; *Norris, D., PhD²; Cramm, H., PhD³

¹University of Calgary; ²Mount Saint Vincent University; ³Queen’s University

Introduction: Approximately one thousand military personnel are medically released from the Canadian Armed Forces each year (CAF; DND, 2014). Although many Veterans transition successfully after a military career, others experience difficulties negotiating the challenges of the military to civilian transition (MCT). Some may develop health problems, including operational stress injuries (OSIs), that impact their own health and the health and well-being of their families also experiencing changes in their personal and familial identities through MCT. Health problems can be compounded by the stress of navigating an unfamiliar civilian health care system, adjusting to changes in school settings and supports, and finding critical peer and social support if the release includes a community move (Cramm et al., 2015). There is a need for Canadian research on how the mental health problems of Veterans may be affecting the well-being of their families as well as how family life may be impacting the well-being of the Veteran. The purpose of this qualitative study, informed through the interpretive/constructivist paradigm, is to understand the bidirectional impacts of Veteran’s mental health problems on their families, the determinants

of mental health and well-being, and the effectiveness of supports through MCT.

Methodology: Thirty families from across Canada were invited to participate in semi-structured interviews. Selection criteria included any person providing care/social support/help to a Veteran released in the past five years, including a spouse/partner, adult child, sibling, or parent. Families supporting Veterans with mental health problems (including OSIs) are a critical sampling population for the study. Interview items included questions about changes to daily routines and patterns of family functioning, changes in family identity and definition, issues of reintegration into civilian communities, methods of seeking medical and psychological support, and the mechanisms of formal and informal social support that contribute to their well-being. Interviews were taped, transcribed, and analyzed using MAXQDA data analysis software.

Results: Preliminary results focus on the adaptive and resilient factors that are contributing to families' abilities to retain or regain healthy functioning. The common (e.g., family support, access to mental health services) and unique (e.g., geographical location, severity of mental health problem) factors accounting for family and member well-being will be presented.

Conclusion: The preliminary results will inform a critical inquiry into the lives of CAF families as they experience MCT. The firsthand narratives will illuminate the obstacles and sources of resilience needed for CAF families to navigate this unique life transition.

2E01: Supporting Medically-Releasing CAF Members and Their Families - A National Pilot Project

Ogilvie, L., MA; *Manser, L., MM

Department of National Defence

Brief Description: There is increasing public attention on the challenges faced by medically-releasing Canadian Armed Forces (CAF) personnel who are transitioning from active service. There is also increasing concern for the families caring for ill and injured personnel and Veterans. Approximately 1,200 military members are medically released each year, with 700 spouses and 850 children impacted.

Veterans Affairs Canada, Military Family Services and Military Family Resource Centres are testing a pilot project to support medically-releasing CAF members and their families.

Clinical Outcomes: Military Family Services Program services have been made available to medically released CAF veterans and their families for 2 years from the date of release. These services are accessible through the 24/7 Family Information Line and online at CAFconnection.ca, as well as at seven Military Family Resource Centre (MFRC) locations: Esquimalt, BC; Edmonton, AB; Shilo, MB; Trenton, ON; North Bay, ON; Valcartier, PQ and Halifax, NS.

As the primary military family service organization, MFRCs are well positioned to extend their services during a Veteran's transition period. These services include welcome and community orientation sessions, parenting workshops, child care, outreach, information and referral, personal growth and development programming, as well as employment and educational assistance.

Extensive client outcome measurements are being collected and evaluated that are determining the effectiveness of the intervention as

well as adjustments for improving the supports offered.

Patient Population: Research has shown that the transition from military to civilian life can be an especially stressful time for CAF members and their families. It is believed that making these services available to members of the CAF may help to address some of the challenges they face, in particular, those faced by newly transitioning members.

Studies shows that personnel who medically release, in particular, often face the greatest challenges during transition. While opening up new services to medically releasing CAF members, the Veteran Family Program pilot will continue to offer access to already established, familiar and trusted services. The pilot is consistently being evaluated to demonstrate outcomes and whether medically releasing CAF members and their families wish to use these services going forward.

Conclusion When a CAF member makes the transition from active service to Veteran status, their family does too. The Veteran Family Program pilot supports members who medically release each year, as well as their military spouses and children who are also impacted by their release and transition into the civilian world.

3E01: The Canadian Armed Forces-Veterans Affairs Canada Joint Suicide Prevention Strategy: A Roadmap for Collaboration

*Heber, A., MD, LCol (Retd)^{1,3}; Fillion, J., LCol (Retd)¹; Cameron, D., LCol²; Thompson, J., MD¹; Briere, S., PhD¹; Downes, A., MD, CoP²; Jetly, R., MD, CoP^{2,3}; Purdy, J., MD, Maj²; O'Connor, N., PhD²; Leahy, M., MSc, Maj²

¹Veterans Affairs Canada; ²Department of National Defence; ³University of Ottawa

Brief Description:

The Canadian Armed Forces (CAF) provides members with many unique experiences and opportunities, but military service also places extraordinary stress on members and their families. Given these experiences and demands, CAF Members and Veterans have additional risks for developing mental health problems compared to the general Canadian population. Mental disorders, especially Depression, are present in greater than 90% of those who die by suicide. The Canadian Armed Forces and Veterans Affairs Canada (VAC) Joint Suicide Prevention Strategy (SPS) provides a framework for a collaborative approach and the coordination of our suicide prevention programs. Within this framework, we will assess, analyze and address the issue of suicide within the CAF and Veteran populations. Despite the differences in these two organizations, the strategy will outline a common set of principles to address the factors that influence suicide, including mental health and physical health problems, barriers to care, access to lethal means, suicide contagion, loss of meaningful relationships and other life stressors that contribute to suicide risk. A special focus will be that critical period when the CAF member transitions to civilian life, as this is known to be a time of particular vulnerability, as the new Veteran negotiates changes to identity, relationships, occupation, community, and health care providers. Those with existing mental health challenges can lose their connection to follow-up care, which can risk deterioration of health. The shared Strategic Objectives of the SPS will be elaborated, and the challenges of developing a joint strategy on suicide prevention for these two distinct organizations will be discussed.

Clinical Outcomes: Outcome measurement will be based on SPS Objectives: Timely access to care; Education of clinicians, frontline

staff, stakeholders and the public; Resilience-building; Supporting families; Understanding causes of suicide; Establishing best practices in suicide prevention. Outcomes will be measured by: Tracking wait times for health care; Tracking training of staff and stakeholders in suicide prevention; Measuring knowledge retention post-training; Routine reviews of medical charts (CAF) and administrative files (VAC) post-suicide; Medical Professional Technical Suicide Reviews (MPTSR) (CAF); Stakeholder and Family focus groups (VAC); Annual Reports on Suicide Mortality (CAF).

Patient Population: Canadian Armed Forces Military and Veterans.

Conclusion Through a shared vision, common guiding principles and strategic objectives, with a special focus on transition from military to civilian life, the SPS will foster an environment where Military and Veterans live fulfilling lives, receive support and care when needed, and where suicide is decreased.

4D03: Chronic Pain in Canadian Veterans

*Pedlar D. PhD¹; Thompson, J. MD^{1,2}

¹Veterans Affairs Canada; ²Queen's University

Introduction: Chronic pain is unusually common in military Veterans owing to the rigors of military service, with far-reaching impacts on quality of life and well-being. Chronically painful disorders are also the most common diagnoses leading to disability benefits from Veterans Affairs Canada. Chronic pain remains a challenging condition to live with, and a complex condition for health care and rehabilitation services. This presentation will paint a picture of chronic pain in the Canadian Veteran population and discuss related impacts and needs.

Methodology: This presentation uses findings from the Life After Service Studies (LASS) and world literature to examine the extent and correlates of chronic pain in Canadian Armed Forces Veterans released since 1998 and impacts on well-being during and after transition to civilian life. Qualitative experience based on my six-month tenure as Fulbright Visiting Research Chair in Military Social Work at the University of Southern California (USC) in 2016 also informs this presentation. During my time at USC, I worked directly with Carl Castro (Director, USC Center for Innovation and Research on Veterans and Military Families), several industry and political leaders, support operations and talked directly with dozens of Veterans who are personally dealing with transition and chronic pain issues.

Results: In national surveys of CAF Regular Force Veterans released since 1998, chronic pain was present in two-thirds (64%) and was 70% more common in Veterans than in the similarly-aged general Canadian population. Chronic pain was strongly associated with poor physical health-related quality among Veterans, present in the majority (54%) of Veterans who reported having a difficult adjustment to civilian life and present in 83% of those with past-year suicidal ideation. Veterans we interviewed shared stories of the well-being impacts of living with chronic pain including ability to find and keep employment and effects on relationships and mental health.

Conclusion: Chronic pain is common in CAF Veterans, accounts for a significant well-being burden in this population and is a substantial driver of utilization of VAC programs and services and impacts Provincial healthcare systems and civilian rehabilitation services. Assisting Veterans to live with and manage chronic pain requires multidisciplinary approaches. Issues related to managing and treating chronic pain require enhanced focus and additional research so as to better

support Veteran well-being.

4E01: Health of Canadian Veterans Released after 1953

*VanTil L, DVM, MSc (Epi); MacLean MB, MA (Econ); Sweet J, MSc; McKinnon K.

Veterans Affairs Canada

Introduction: Currently Veteran population forecasts used for planning are based on estimates from the 1971 Census, the 1988 Labour Force Survey and the 2003 Canadian Community Health Survey (CCHS), take only the age structure of the population into account and assume Veteran mortality rates are the same as those of Canadians. In order to inform policy development and planning for the future needs of the Veteran population, we describe Veteran population estimates in Canada and examine the health of two eras of Veterans.

Methodology: This study reviews various survey sources of estimates of the Veteran population and Veterans Affairs Canada's methods to provide ongoing estimates and forecasts of the population. This study used the 2003 Canadian Community Health Survey and the 2013 Life After Service Survey to examine the health of two eras of post-Korean War Regular Force Veterans – Veterans released 1953 to 2003 and Veterans released 1998 to 2012. Comparisons of indicators of health were made to Canadians using age-sex adjusted rates and confidence intervals.

Results: Regular Force Veterans of both eras were worse off than Canadians for self-perceived mental health, participation and activity limitation and back problems, better off for low income and similar for life stress and heavy drinking. Veterans released 1998 to 2012 were worse off than Canadians in many more indicators of health and chronic conditions than Veterans released 1953 to 2003.

Conclusion: Veterans differed from Canadians in many areas of well-being, particularly those released 1998 to 2012. This highlights the need for forecasting, planning and policy that is sensitive to these differences. While the Life After Service Studies provided much needed information on the health of recent Veterans, more recent data is needed on the broader Veteran population.

4E02: «New Faces Come Back»: The Return of Royal Canadian Air Force Aircrew Burn Casualties in 1946

Mayhew, E., PhD

Imperial College London (UK)

Brief Description: At the end of the Second World War the Canadian government commissioned a unique feature film to be shown in its cinemas as part of its efforts to assist wounded veterans with the transition from civilian to military life. "New Faces Come Back" told the story of a RCAF crewman, who had suffered severe facial and hand burns as a result of service in the war. The aim of the film was to raise public awareness of issues of stigma and isolation suffered by patients who experienced disfigurement and to assist in providing readings of the injury which emphasise its military meanings. The film explained the complex and pioneering treatments received by these patients, showed the personal costs of rejection and the benefits of understanding and acceptance. The film provides an exemplar for the long term integration of military personnel into civilian life by the creation of civilian understanding of the medical nature of their condition, in addition to the appreciation of their military service.

Outcomes: The film was an important component in the acceptance of the facially disfigured patient cohort from the Second World War in civilian life, as part of a wider effort generated by The Guinea Pig Club. The Club offered its members a new definition of post-service support, informed by their own expertise in their medical conditions, and their participation as a cohort in pioneering medical research. The Club is the longest surviving service/wound-specific support organisation in the world.

Patient Population: 700 male, RCAF crewmembers (various trades) with severe burns injury to face and functional areas.

Conclusion: “New Faces Come Back” and the organisation it represents provides an effective historical example and model for organisations supporting the transition from military to civilian life over both the short and long term.

5E01: The “Shaping Purpose” Program for Military Participants Transitioning from Military to Civilian Life. A CIPP Model Program Evaluation

*Shields, D., PhD¹; Frender, J., MA²; Garsch, A., Capt (Retd)³

¹University of British Columbia; ²Independent Research Contractor; ³Shaping Purpose Inc.

Brief Description: An emerging consensus among international experts suggests that the circumstances of the transition “peri-release” period (from 6 months prior to approximately 2 years after release) may play a particularly important role in long-term transition “success” in terms of post-service functioning, community participation, and well-being (Thompson & Lockhart, 2015). There is, however, little research concerning the needs of releasing military personnel during this critical period, or of programs that offer services within the peri-release period of military to civilian transition (MCT) (Shields et al., 2016). The goal of this project was to conduct a qualitative program evaluation of the Shaping Purpose program, to consider challenges members face in the peri-release period, and to assess the programs impact on members during MCT.

The Shaping Purpose program is an established personal and career development course that is currently being adapted for transitioning military personnel. The program is conducted off-base in a group setting, over a four-day period, and consists of a series of lectures, group discussions and exercises leading towards a personal planning process aimed at clarifying participants sense of purpose and meaning in their post CAF life and roles.

Clinical Outcomes: The methodology for this evaluation was informed by Stufflebeam’s (2007) “CIPP” model of program evaluation (Context, Input, Process, and Product). This approach to impact evaluation seeks not only to measure what was achieved in relation to intended objectives, but also to gain a nuanced understanding of the context, and how and why these achievements occurred. The approach can discover unintended outcomes, assess the validity of intended outcomes for recipients and stakeholders, and develop a better understanding of how the program “fits” participant needs, and in the full suite of transition services offered by VAC and the CAF.

Patient Population: Data for this evaluation was derived from interviews of program participants, program facilitators and referral sources within Veterans Affairs and the Canadian Armed Forces. Preliminary

findings from referral stakeholders, participants and facilitators will be presented.

Conclusion Military to civilian transition is known to be a challenging time, yet our understanding or the normative trajectory of this transition is incomplete. The current research provides insights, not only about the effectiveness and relevance of the SP program, but also into the needs of this population that have relevance to service design, delivery and strategies for accessibility.

Poster Presentations

P174: Mental and Physical Durability during an Antarctica Expedition

*Dentry, S., PhD¹; Kriellaars, D., PhD¹; Besemann, M., LCol, MD²

¹University of Manitoba; ²Department of National Defence

Introduction: In January 2016, 10 mentally and physically injured Canadian military veterans and 25 civilians attempted to summit Vinson Massif (16,067ft) in Antarctica, one of the World’s Seven Summits. In one of the harshest and most isolated environments on the planet, the climb took 10 days to complete. This project explores mental and physical durability of the expedition team, including physiological and psychological components.

Methodology:

Participants (N=30, Female=6) were selected from a 35 person True Patriot Love Foundation Antarctica expedition team, including nine mentally/physically injured veterans. Prior to the expedition participants completed psychological surveys online to measure personality traits, hardiness, mental toughness, emotional intelligence, motivation/goal scales and stress coping styles. During the expedition measures included heart rate variability (HRV), oxygen saturation, accelerometer data, as well as self-report journals to capture participants’ perception of the day’s physical and mental challenges and their perceived resources for handling the challenge. Semi-structured interviews were conducted during and after the expedition, using techniques from personal construct psychology and focusing on perceptions of durability.

Results: Participants’ largest challenge was the reduced opportunity for them to feel in control due to glacial travel rope teams that force everyone to walk at the exact same pace. Participants invented ways to regain a perception of control, such as increasing their pace for three steps then taking a few seconds break. This minimal control had profound positive effects.

Confidence in their technical mastery impacted their perceived ability to make it to the summit. A perceived decrease in a participant’s technical mastery was related to a perceived loss of confidence and control, especially at higher altitudes. Decreasing motivation due to high altitude and fatigue, coupled with perceived lack of technical ability and loss of control were stated to have contributed to five participants’ decision to turn back on summit day.

Physiological measures are currently being analysed and will be presented at Forum.

Conclusion: Durability encompasses a certain mental state as well as a certain physical state³. Although the 10 veterans had physical and/or mental injuries, only one was not able to make it to the summit. The

ability of participants to creatively construe ways to regain a sense of control while on the mountain positively impacted their ability to successfully make it to the summit. Commitment to the team, positively embracing the challenge, and commitment to the whole group impacted continued effort despite the adverse conditions.

P175: Les Sentinelles : La fin de l'itinérance chronique des anciens combattants à Montréal

*Fewster, B., MA, MBA¹; Duchesne, A., MScPH²; Paulin, M., PhD¹

¹Concordia University; ²Old Brewery Mission

Introduction: Selon l'enquête Je Compte Mtl 2015, les anciens combattants comptent pour 6 % des itinérants montréalais. Certains ont des problèmes de santé physique ou mentale, de dépendance, et de rupture sociale. Les prestataires de services d'urgence travaillent souvent sans le savoir avec d'anciens combattants, les aidant à se prévaloir des services et à accéder à un logement stable. Ils utilisent le vaste réseau de ressources général, mais ne misent pas nécessairement sur les services conçus à l'intention des anciens combattants, ni sur leurs réseaux d'entraide. Le ministère des Anciens Combattants, le Programme de soutien social aux blessés de stress opérationnel, la Légion royale canadienne, et VETS Canada offrent un large éventail d'aide : soutien entre pairs, services sociaux, de santé et de transition, secours financier d'urgence, service de conseil et d'assistance sur les avantages consentis aux anciens combattants, et accès à des services thérapeutiques.

Méthodologie: Nos concepts sont issus de la mercatique relationnelle, de la logique d'une valeur axée sur le service, et de la cocréation des valeurs; nous présentons une modélisation fondée sur une conception multiniveau du service, en vue d'enrayer l'itinérance chronique chez les anciens combattants. L'affiche s'appuie sur un projet pilote de la Mission Old Brewery, Les Sentinelles, et présente le prototype d'un système de service fondé sur les partenariats, dont la modélisation de l'expérience client.

Résultats: Un tableau des besoins, fondé sur les résultats préliminaires de l'enquête, révélera les points de rupture, les facteurs déstabilisants et les retards vécus par les anciens combattants dans le système d'hébergement. Ces lacunes seront jumelées aux organismes de service afin d'établir des partenariats et améliorer la prestation de services pour les vétérans à la Mission Old Brewery. Le modèle qui émergera pourra être reproduit ailleurs, et les leçons apprises consignées, pour pouvoir les transmettre à d'autres ressources.

Conclusion: La Mission Old Brewery dirige la plus importante ressource du Québec pour hommes sans abri. C'est une ressource multiservice qui, grâce à ses nombreux programmes de soutien à la transition, à la santé en milieu urbain et au logement, collabore avec les itinérants de Montréal pour combler leurs besoins premiers et trouver des solutions durables à l'itinérance chronique. L'objectif à long terme de notre étude est d'éliminer les entraves au succès des anciens combattants, en misant sur les ressources existantes et en développant de nouveaux partenariats multisectoriels.

P176: The Diversity of Commitment(s) of Canadian Military and Veterans: The Impacts of Social Representations of Civilian Support

Giroux-Lalonde, Vincent, M.A., PhD (Cand)

University of Ottawa

Brief Description: As Ouellet (2005) notes, one of the challenges for the CAF consists in articulating a leadership throughout a fragmented universe of meanings. The military commitment is no longer only driven by national attachment, but coexists within a diversity of particular motivations that are more strategic and reflexive. Becoming a military, or a veteran, is also a way of building an identity that is always in evolution and serving different purposes, depending on the socio-economic context.

To understand these changes, my thesis subject focuses on the relationships between commitment and social representations. Based on a qualitative methodology, I will conduct semi-guided interviews, on a sample of 36 armed forces members and veterans, to understand how their representations of the valorisation and support from the civilian society impact their commitment as military and contribute to shape the veteran identity. Semi-guided interviews will allow me to discover the social representations that contemporary armed forces members and veterans hold in regards of civilian support; it will also unveil the nature of their commitments.

Outcomes: Comparing the data of (18) active duty NCM's and (18) voluntarily release veterans, that ended their service between 2005 to current, will permit me to gain a clearer view on how commitment shapes identities throughout social experiences and how social representations impact commitment variations.

Very few analytical models from military sociology and political sciences allows a comprehensive approach of the military as a social actor. Thus, by developing a scientific approach inspired by symbolical interactionism defined by Becker (2006), I will be able to take in account simultaneously the structural and institutional contexts with the subjective experiences of the military as a social actors.

Patient Population: (18) Regular force NCM exclusively from the army M.O.C's and holding five years or less of service at the time of the inquiry.

(18) Voluntarily release regular force veterans who transferred to civilian life between 2005 to current.

Conclusion: Martin (2011) notes that one of the challenges military sociology is facing today is the fact that its theoretical framework leads with great difficulty to a well-rounded methodology. By approaching the military as a social actor, by better identifying the transformations between identity and commitment and by better evaluating the distance between social actors and their institutions, modern sociology can offer a better understanding of cultural and diversity changes in the Armed Forces. Conducting qualitative methodology will provide accurate comparison units that could be used in quantitative surveys.

P177: Emploi et qualité de vie psychologique chez les vétérans

*Lacroix, C., B.A.psy¹; Lavoie, V., PhD²; BelleVille, G., PhD¹

¹Université Laval; ²Clinique TSO CIUSSS Capitale-Nationale

Introduction: Le fait d'avoir ou non un emploi est démontré comme étant un enjeu important d'ajustement à la vie civile pour le militaire. Pour plus de 25% des vétérans, trouver un emploi satisfaisant après leur libération des forces est le facteur le plus important pour une bonne réintégration sociale, et ce même plus qu'une bonne santé mentale. Par ailleurs, il semblerait que les vétérans ayant le plus de difficulté à trouver un emploi après leur libération sont ceux présen-

tant une moins bonne santé mentale. Les objectifs de cette étude sont 1- de vérifier si la qualité de vie psychologique (QdV-P) diffère selon le statut de l'emploi du vétéran et 2- si c'est le cas, vérifier si le statut de l'emploi peut prédire la QdV-P du vétéran en contrôlant pour la sévérité des symptômes du Trouble de Stress Posttraumatique (TSPT).

Methodology: 87 vétérans libérés des Forces Armées Canadiennes et consultant dans une clinique de trouble de stress opérationnel ont rempli différents questionnaires, dont le *World Health Organization Quality of Life Questionnaire* et le *PTSD Symptoms Checklist-military version*

Results: Les résultats d'une ANOVA à plan simple montrent une différence significative entre le statut de l'emploi et la QdV-P $F(3, 83) = 3,11, p < .05$. Les résultats d'un test de comparaison multiple a posteriori (REGW f) montrent que les vétérans sans emploi ($M = 8,20$ $ET = 2,30$) ont une QdV-P inférieure à ceux ayant un emploi rémunéré ($M = 11,29$ $ET = 3,14$) ou étant retraité ($M = 11,43$ $ET = 3,62$), mais pas à ceux ayant une occupation non rémunérée ($M = 10,19$ $ET = 2,64$). L'analyse de régression démontre un lien faible ($R^2 = 0,35$), mais significatif, $F(2, 84) = 22,24, p < .001$, entre la mesure de QdV-P et le statut de l'emploi ainsi que la sévérité des symptômes du TSPT. Toutefois, seule la sévérité des symptômes du TSPT a permis de contribuer significativement au modèle en expliquant 30% de la QdV-P.

Conclusion: Les vétérans sans emploi présentent une QdV-P inférieure à ceux avec un emploi. Toutefois, ce n'est pas le statut de l'emploi du vétéran qui semble le plus impacter sur sa QdV-P, mais la sévérité des symptômes du TSPT. Ces résultats soulignent l'importance d'intervenir sur les symptômes pour favoriser la recherche et le maintien d'un emploi satisfaisant.

P178: Life After Service Studies 2016

*MacKinnon, A., MBA; VanTil, L., DVM, MSc(Epi)

Veterans Affairs Canada

Introduction: The goal of Life After Service Studies (LASS) is to further understand the transition from military to civilian life, and ultimately improve the well-being of Veterans in Canada. LASS 2016 includes a survey and an income linkage study; this is the third cycle of LASS.

Methodology: The LASS 2016 cross-sectional survey used a population frame of personnel with Regular Force service in the Canadian Armed Forces who released from service 01 January 1998 to 31 August 2015. Excluded from the survey were those who released at entry ranks. Survey data was collected over a 6 week period in February and March 2016 by trained Statistics Canada interviewers using the Computer Assisted Telephone Interview. The response rate was 73%, and 92% agreed to share their data with VAC and DND. Prevalence rates for selected indicators were calculated taking into account a complex stratified survey design utilizes sample weights provided by Statistics Canada methodologists.

Results: Prevalence rates will be provided for selected indicators in the areas of Veterans' self-rated health, satisfaction with life, sense

of belonging, adjustment to civilian life, chronic conditions, hearing, chronic pain, activity limitations, social support, obesity, alcohol consumption, main activity in past year, skills transfer, labour force status, and income.

Conclusion: Veterans differed from Canadians in many areas of well-being. The Life After Service Studies continues to provide information on the health of Veterans after their transition to civilian life.

P179: Family Life After Service: Secondary Analysis of the LASS 2016 Survey

Schwartz, K., PhD

University of Calgary

Introduction: The Life After Service Studies (LASS) program of research is designed to further understand the transition from military to civilian (MTC) life and ultimately improve the health of Veterans in Canada. LASS partners are Veterans Affairs Canada (VAC), the Department of National Defence/Canadian Armed Forces, and Statistics Canada. Building on the previous 2010 and 2013 surveys, the goal of LASS 2016 is to further understand the transition from military to civilian life, and ultimately improve the well-being of Veterans in Canada. The purpose of the present secondary data analysis of the LASS 2016 was to develop a demographic profile of Canadian Armed Forces (CAF) Veterans' families, and to use this profile to identify themes and possible research questions that might be explored in future.

Methodology: The LASS 2016 cross-sectional survey used a population frame of personnel with Regular Force service in the Canadian Armed Forces who released from service 01 January 1998 to 31 August 2015. The sample was designed to draw about half from those surveyed in 2013, and about half from Veterans released since LASS 2013. Survey data was collected over a 6-week period trained Statistics Canada interviewers using the Computer Assisted Telephone Interview. The response rate was 73%. The result was 3,033 cross-sectional respondents completing the questionnaire; of the responders, 2,789 (92%) agreed to share their data with VAC and DND. Respondents completed a module of questions in a wide range of areas: Activities of daily living, adjustment to civilian life, chronic health and mental health conditions (including PTSD), social provisions, utilization of health and allied health professionals, and life satisfaction.

Results: Preliminary results of the secondary analysis will be presented, with particular focus on the questions left unanswered related to the Veteran's military-connected family.

Conclusion: The secondary data analysis revealed that, although changes have been made to the 2016 LASS compared to previous versions, more focus on the role, impact on, strategies to support, and programs available for the Veteran's family is necessary. Themes and research questions related to Veteran's families will be presented and discussed.