HUMAN FACTORS & MEDICINE (HFM) PANEL

CALL FOR PAPERS

HFM-371-Resarch Specialists' Meeting (RSM) on

Blast Exposure Monitoring in Military Training and Operations

To be held in
The Canadian Forces College
Toronto, Canada
9-11 April 2025

For information please contact:

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This Research Specialists' Meeting is open to STOEOP, MD, PfP, Global Partners (GP), and will be conducted at a NATO Unclassified level

DEADLINE FOR RECEIPT OF ABSTRACTS:
Date: 30 September 2024

The NATO Science and Technology Organization (STO) Collaboration Support Office and the Human Factor and Medicine Panel (HFM) Panel are seeking papers for a Research Specialist Meeting (RSM) on " Blast Exposure Monitoring in Military Training and Operations (BEMMTO)**, to be held in 9-11 April 2025 in Toronto, Canada.**

THE HUMAN FACTOR AND MEDICINE (HFM) - 371- Research Specialists' Meeting (RSM) Blast Exposure Monitoring in Military Training and Operations (BEMMTO)

The HFM-371-RSM intends to provide an initial foundation for the administration of surveillance programs specific to blast exposure monitoring and brain health conservation initiatives (i.e., US DoD Comprehensive Strategy for Warfighter Brain Health) across all NATO nations. The HFM-371-RSM BEMMTO is leveraging existing research, development, test and evaluation (RDT&E) in all NATO nations, that have multi-year mandates to address this complex environmental blast exposure topic. HFM-371-RSM's initial efforts will also include military research enterprises that employ wearable sensors in various military training environments, simultaneously testing candidate biomarkers, and effects on human sensory and cognitive performance following repeated blast exposure. The HFM-371-RSM's goal is to provide a venue for sharing actionable research findings and data across all partner nations in order to translate exposure data and health outcomes to the research community, and other military stakeholders such as public health, training and operational commands, and weapons development and fielding communities. The research community can then use these established data sets to continue development and validation of brain injury risk thresholds and health hazard assessment tools that will feed into injury mitigation strategies. The RSM will bring together scientists from all over the world to present, exchange information, and discuss their work and ideas in blast exposure monitoring in training and in extreme operational environments against current and merging blast threats for better protection of Defense and Security personnel, and other professionals. An overarching theme will be supporting the development of empirically-derived metrics for the valid and reliable measurement of the effects of blast exposure on psychological and physiological functioning, which can in turn be used to inform safety guidelines for Service Members in operations and training.

STO Collaboration Support Office – HFM Panel - BP 25 - F-92201 Neuilly-sur-Seine Cedex - France
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HFM Panel Assistant: Mrs. Marie Linet; Tel: 33 1 55 61 22 62 - Email: marie.linet@cso.nato.int

RESEARCH SPECIALISTS' MEETING INFORMATION

A. BACKGROUND

Mild traumatic brain injury (mTBI), as well as other health related concerns, are a risk for military personnel over the course of their careers due to a combination of repeated low-level and/or high-intensity blast exposures from a variety of sources such as shoulder-fired weapons and improvised explosive devices, respectively. Currently, military personnel exposed to blast in training and combat do not have an objectively-measured record of blast exposures. In addition, there are no agreed upon biologic or performance marker(s) of effects from these exposures. Because of this, the US, Canada, and others nations are either pursuing blast exposure monitoring capabilities, and/or funding research to better characterize the amount and frequency of blast exposures during training and combat and their resulting effects on military brain health and operational performance. Recently the North Atlantic Treaty Organization (NATO) Human Factors and Medicine (HFM)-234 (RTG), perceived blast exposures as an "environmental toxicology problem", and released a report guiding the future of such research Environmental toxicology of blast exposures: injury metrics, modelling, methods and standards. This development represents the emergence of an understanding that health hazards from extreme environmental exposures resulting from repetitive use of weapon systems may require a multi-disciplined research approach. There is also a need to identify health hazards of blast overpressure exposure from weapon systems, and explosive charges for physics-based modeling of primary blast injury generated by currently known blast sources. Obtaining a larger spectrum of exposures as well as resultant health outcomes will help identify specific characteristics of blast, that may increase risk of injury and identify what specific factors of blast should be collected and potentially attached to Service member's medical records. This information can in turn inform treatment and rehabilitation following blast-induced mTBI.

B. MILITARY RELEVANCE

HFM-371-RSM BEMMTO research specialists' meeting (RSM) provides a venue for sharing information and building each individual nation's blast exposure monitoring programs of record. The RSM's goal is to create a larger multi-national consortium that will recommend standard operating procedures for collecting and analyzing training- and combat-related blast exposure data, associated health and performance outcome data, as well as interpreting the relationship between military exposures, brain health and cognitive performance. The timing for an integrated effort amongst NATO members and their allies is strategic because nations are establishing surveillance programs, and enacting changes to training doctrines, leadership and education in order to reduce the weapon effects of single and repetitive exposures to blast. In the US alone, Congress has mandated blast exposure monitoring in training and combat in multiple National Defense Authorization Acts (NDAA): Fiscal Year (FY) 2018, Section 734: Longitudinal Medical Study on Blast Pressure Exposure of Members of the Armed Forces; FY19 NDAA Section 253, and FY 20 NDAA Section 717 and 742. In 2018, a memorandum was signed by the Deputy Secretary of Defense directing the development of a Comprehensive Strategy and Action Plan for Warfighter Brain Health focusing on blast exposure and cognitive performance of Warfighters. Similarly, the Canadian Armed Forces (CAF) has begun to establish longitudinal health monitoring programs to track and monitor the impact of repeated expsoure to low-level blast amongst operators. Combining resources and data across countries will accelerate medical research goals of predicting Service member health risk and developing effective protection strategies from blast exposure. Furthermore, the harmonization of data-collection methodologies across countries will accelerate the rate of knowledge generation, and highlight context-specific differences in blast

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effects due to training and operational procedures.

C. SCIENTIFIC OBJECTIVES AND EXPECTED ACHIEVEMENTS

The primary objective of the research specialists' meeting (RSM) is to enhance the understanding of Service Members' occupational health hazards resulting from repetitive use of weapon systems and explosives during a military career. The secondary objective will be to recommend a need for further exploration for strategies to prevent or mitigate unnecessary exposures, and sustain Service Member's health and performance. An overarching aim will be to support the development of empirically-derived metrics for the valid and reliable measurement of the effects of blast exposure on physiological and psychlogical functioning, which can in turn be used to inform safety guidelines for Service Members in operations and training. Toward those goals, the organizers of the RSM will publish a proceedings volume that will document the findings of the RSM for the community of researchers, practitioners, clinicians, Service Members and Veterans, as well as policy makers and advisors on the effects of blast exposure on health and performance.

D. TOPICS

The RSM will accept papers including but not limited to these topics:
1) Enhance understanding of health hazards from extreme environmental exposures resulting from repetitive use of weapon systems and explosives during military operations;
2) Explore and define the range of health hazards resulting from repetitive use of weapon systems in current NATO operations;
3) Explore technologies and methodologies for the valid and reliable assessment of blast overpressure, and the development of algorithms that can link blast overpressure levels to clinical outcomes;
4) Develop a taxonomy of measures that are currently used to assess the impact of blast exposure on health and performance, with an eye toward developing a framework that can be used consistently across countries;
5) Outline some of the personnel protection and medical strategies for prevention, mitigation and treatment of injuries due to exposure to heavy weapons in NATO personnel.

The RSM will be organized around thematic sessions (determined in part by the abstract submissions), and keynote presentations. Demonstrations of concepts may be possible depending on requirements and availability of local facilities.

E. PARTICIPATION

Nations/organizations willing to join this activity are all NATO Nations, NATO Bodies, EOP, MD, PfP,GP , in accordance with NATO Unclassified level.

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F. PROGRAMME COMMITTEE

Chairpersons

Dr. Thuvan Piehler (Chair) U.S. Army Military Operational Medicine Research Program USA	**Dr. Oshin Vartanian (Chair)** Defence Research and Development Canada
Dr. Richard Shoge (Co-Chair) Defense Health Headquarters USA	Dr. Raj Gupta (Co-Chair) Blast Injury Research Program Coordinating Office USA

Organising Committee Members

Dr. David Borkholder BlackBox Biometrics, Inc. USA	LtCol/Dr. Steffen Grobert Bundeswehr / Federal Armed Forces Germany
Cpt MSc Henrik Seeber Bundeswehr / Federal Armed Forces Germany	Prof. Lorenzo Peroni Politecnico di Torino Italy
Dr. Mattias Skold Department of Neuroscience, Experimental Traumatology Unit Sweden	Mr. Tim Westerhof Scientist Biomechanics, TNO Netherlands
MAJ Stephen Krauss US Army Medical Materiel Development Activity USA	Dr. Walter Carr The Walter Reed Army Institute of Research USA
Dr. Michael Roy (USA) Military Traumatic Brain Injury Initiative and Department of Medicine, Uniformed Services University. USA	Dr. Lucas Glover Force Readiness and Health Assurance Policy, ODASD for Health Readiness Policy & Oversight (HRPO), OASD Health Affairs (HA)USA
Dr. Ryland Gaskins Force Readiness and Health Assurance Policy, ODASD for Health Readiness Policy & Oversight (HRPO), OASD Health Affairs (HA)	Mr. Scott Featherman AirBoss Defense Group | BlackBox Biometrics USA

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Dr. Johann- David Reinecke Council for Scientific and Industrial Research (CSIR) South Africa	Dr. Satoko Kawauchi National Defense Medical College Japan
Ms. Olivia Webster US Army Public Health Center USA	Dr.-Ing. Daniel Krentel Federal Institute for Materials Research and Testing (BAM) Germany
Dr. Yasumasa Sekine National Defense Medical College Japan	Dr. Robert Carson US Army USA

Mentor

Dr. Terry Rauch — Office of the Assistant Secretary of Defense (Health Affairs)

NATO-STO-CSO / HFM Panel

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Mrs. Marie Linet — marie.linet@cso.nato.int — Tel: 33 1 55 61 22 62

G. ABSTRACTS, PAPERS AND MEETING PROCEEDINGS INFORMATION

Papers are solicited that draw from historical perspectives, leadership experience, and research insights, and should contribute to a clearer, shared understanding of how national contributions to alliance activities can be linked to collective military objectives.

Authors who are invited to submit abstract should provide an explicit statement of the content of the paper and its relevance to the RSM. Abstract word count must not exceed 500 words in English, excluding diagrams, figures (with short captions), and references, adopting the following format:

- Title
- Authors and affiliations
- Abstract (500 words)
- References
- One figure with caption (optional)

Abstract shall be NATO Unclassified.

Contributions from military operations and industry communities are welcome. An indication of the RSM's theme(s) into which the paper would most logically fit would be of assistance to the Programme Committee who will adjudicate the submitted papers.

Abstracts should be submitted electronically in PDF or MS Word format to the Programme Committee Chairs, Dr. Thuvan Piehler, and Dr. Oshin **V**artanian as well as to the HFM Panel Assistant, Mrs. Marie Linet **no later than 30 September 2024 for all authors.**

Authors will be notified of the Programme Committee decision by **[01 December 2024]**. Selected authors should submit a full paper version by **[01 February2025**] in accordance with the guidelines and paper template which will be provided upon acceptance.

Papers should be accompanied by a signed **Publication Release Form** available at the NATO STO website**. Without this duly filled and signed form, no material will be published on the NATO STO website https://www.sto.nato.int/Pages/support-for-authors.aspx**.

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H. CLASSIFICATION

The RSM will be conducted at a **NATO Unclassified** level.

I. PARTICIPATION

Participation is open to NATO Nations, NATO Bodies, EOP, MD, PfP, and GP

J. PRELIMINARY SCHEDULE

- Abstracts submission: **30 September 2024**
- Abstracts acceptance notification: **1 December 2024**
- Opening registration: **TBD**
- Final paper submission: **1 February 2025**
- Presentation submission: **TBD**
- Closing registration: **TBD**

If you have any questions, please contact any of the undersigned.

Sincerely,

Drs. Thuvan Piehler, and Oshin Vartanian (Chairs)

Drs Richard Shoge, and Raj Gupta (Co-Chairs)

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ANNEX 1

SPECIAL NOTICE FOR U.S. AUTHORS AND NON-U.S. AUTHORS AFFILIATED WITH U.S. ORGANIZATIONS

, **Papers and Publication Release Forms from the U.S. must be sent ONLY to the following P.O.C.**:

NATO S&T Organization U.S. National Coordinator

OASD(R&E)/International Technology Programs

4800 Mark Center Drive, Suite 17D08

Alexandria, VA 22350-3600

Tel: +1 571-372-6539 / 6538

E-MAIL: OSD.PENTAGON.OUSD-ATL.MBX.USNATCOR@MAIL.MIL

1. All U.S. Authors must submit one electronic copy to this P.O.C. by **19 January 2025**
2. All U.S. Authors must include the following statement in a covering letter to the P.O.C.:

- The work described in this abstract is cleared for presentation to NATO audiences;
- If work is sponsored by a government agency, identify the organization and attest that the organization is aware of the submission;
- The abstract is technically correct;
- The classification of the abstract is NATO Unclassidied
- The abstract does not violate any proprietary rights.

In addition to their abstract, all U.S. Authors must provide the P.O.C. with:

a) A certification (can be signed by the author) that there are no proprietary or copyright limitations;

b) Internal documentation from their local public affairs or foreign disclosure office (or equivalent) that clearly shows:

- Title of the paper or presentation
- Level of clearance NATO Unclassified
- Name, title, and organization of the approval authority

c) Full details of authors

Note that only complete packages (papers + items listed above) will be accepted by the US P.O.C. After review and approval, the US P.O.C. will forward all U.S. papers to the HFM Panel Office, who will send them to the Programme Committee.

U.S. authors are encouraged to address questions and concerns to the P.O.C. as early as possible. Delays in meeting P.O.C. deadlines will impact the timely submission of your abstract.