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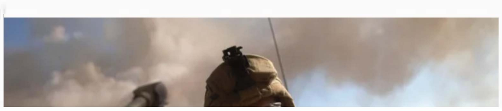
OPINION

Daniel Johnson: US soldiers at risk of suffering brain injuries from their own weapons



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Cohort of Chronically Concussed Mortarmen

C3mortarmen.org

Patient Request for Independent Medical Opinion (IMO) in Support of Service Connection for MOS Indirectfire Combat Infantry 11C/0341 with chronic Post-Concussive Syndrome related symptoms, disorders & dysfunctions.

WSJ

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U.S.

Weapons Training Likely Causes Brain Injury in Troops, Study Says

Gauges worn on troops' helmets and body armor register substantial blasts in combat and in training

By Ben Kesling Follow

April 30, 2018 12:01 am ET

The New York Times

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Senators Seek Answers From Pentagon on Troops' Blast Exposure

Lawmakers from both parties wrote to Defense Secretary Lloyd J. Austin III on Thursday demanding to know what was being done to safeguard troops' brains from the blasts caused by their own weapons.

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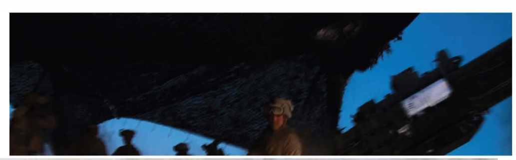

Patient Request for Independent Medical Opinion (IMO)

Dear Doctor: Date:

I am, ____________________________, I served Honorably in the **U.S. Army**, as an Infantry Mortar Platoon member from **____________________________** to **_______________________________.**

C3M-Cohort for Chronically Concussed has conducted the following research on military occupational exposure to low level blasts (LLB) and/or recurrent occupational overpressure exposure, we have provided this servicemember or veteran with the following information in order to obtain an independent medical opinion on the following issues for the purposes of follow up studies, research, and reports:

1. Whether or not I have a clinical diagnosis for a cluster of conditions or symptoms which ***may be at least as likely as not (50/50 probability), or more likely than not (greater than 50/50 probability)*** due to chronic occupational exposure to low level blasts coincident to my time serving in the U.S. military.

I am including for you, available copies of my military medical and personnel records, to include my Military Separation Document (DD form 214 or equivalent), and the following research pertaining to this request.

I understand and agree that answering this request is voluntary, will only be used to secure Department of Veterans Affairs (VA) Healthcare and Benefits, and will not compel the medical practitioner to testify before any VA/DoD decision-makers. A statement in support of this request will likewise not confer upon the VA or the opining medical practitioner any guarantee that I will receive any VA benefit or if awarded, their amount, duration or any other factor. I agree to hold harmless C3M and the professional opinion offered by the opining medical professional. _______(patient initials)

You agree that you possess the credentials to offer such an opinion in good faith.

Statement of Facts:

Explosive blasts or explosions are physical phenomena that result in a sudden release of energy. This process causes a near instantaneous compression of the surrounding medium (e.g., air or water) and an increase in pressure ("overpressure") above atmospheric pressure, resulting in an overpressure wave (or blast wave)[1]

According to Defense Explosive Safety Regulation (DESR) 6055.09, under the authority of the Secretary of Defense (2019), "personnel protection must limit incident blast overpressure to 2.3 psi [15.9 kPa]."

While operational environments in deployed theatres will inevitably vary due to mission requirements and operational tempo, we can extrapolate from the known training data an estimated level of cumulative exposure to BOP over a period of time that infantry mortar crews may experience. This estimated total number of rounds fired exposing personnel to BOP then becomes the basis for U.S. military infantry MOS 11C/0341's to be in the hundreds at year 1, several thousand at years 2-7, and approximately tens of thousands at years 8-14[1].

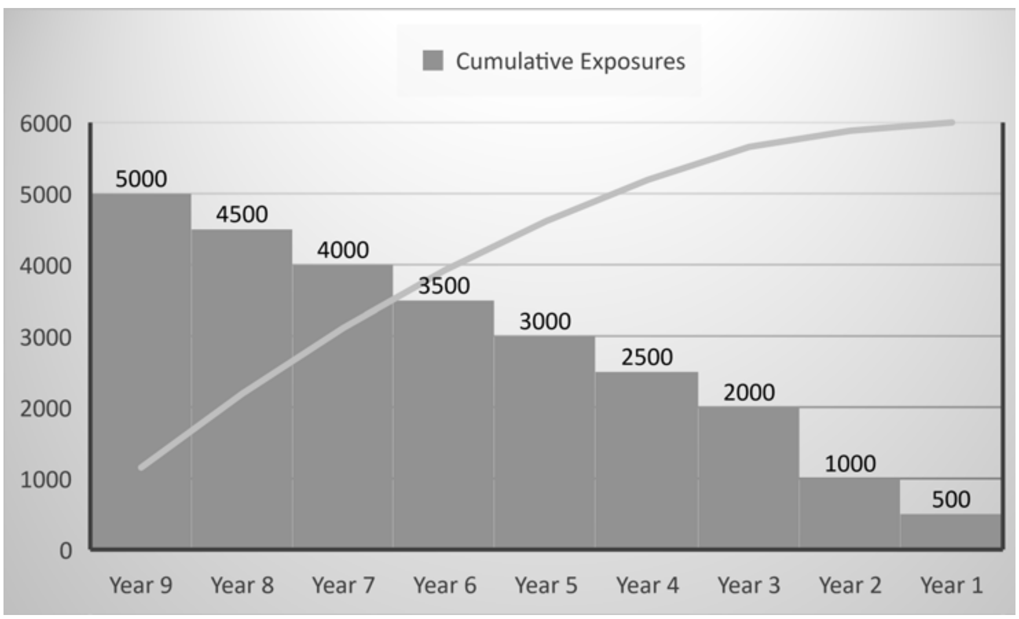

Figure 1 *Cumulative Exposures Diagram (Grossman & Strader, 2020)*

Established in 2007, the Blast Injury Research Program Coordinating Office (PCO), redesignated Department of Defense (DoD) Blast Injury Research Coordinating Office (BIRCO) in 2018, "works with a diverse community of medical and non-medical researches within the DoD, other federal agencies, academia, private sector, and international

[1] Grossman and Strader (2020). These analyses can be duplicated across exposed groups to enhance the data above and beyond that which has already been collected herein.

communities"[2].

BIRCO is responsible for responding to National Defense Authorization Act for Fiscal Year 2018 (FY18 NDAA) Section 734, which mandates that the Secretary of Defense conduct a Longitudinal Medical Study on Blast Pressure Exposure of Members of the Armed Forces. In 2020, BIRCO led and coordinated with internal, external and academic partners Blast Overpressure Studies (BOS) Working Group addressing the requirements of FY18 NDAA Section 734, FY 2019 NDAA Section 253, and FY 2020 NDAA Sections 717 and 742, which expand on the FY18 mandate[3].

In June 2022, the DoD in launched the Warfighter Brain Health Initiative to bring together the operational and medical communities in a more unified approach toward tracking and optimizing service member brain health and countering traumatic brain injuries. Likewise, the program provides information to the public and private sector medical community on the effects of LLB to include symptoms associated with LLB and military occupations which may expose service members to low level blasts[4].

Notably, a systemic review conducted by Belding, et al. (2021) stated, "blast exposure has been recognized as a significant source of morbidity and mortality in military populations" also stating, "our understanding of the effects of blast exposure, particularly low-level blast (LLB) exposure, on health outcomes remains limited.[5]" Belding, et al. (2021) provide a comprehensive review of the peer-reviewed literature that has been published on blast exposure over the past two decades, with specific emphasis on LLB spanning two decades of research on both human and animal subjects[6].

Belding, et al (2021) provide, "more than 3,000 articles on blast overpressure have been published since 2000, fewer than 2% of these articles specifically examined health outcomes that may be associated with LLB…the majority of studies examining the effects of LLB on humans attempted to determine if exposure is associated with acute and long-term effects, such as impaired neurological functioning, neurochemical evidence of brain damage, damage to auditory, vestibular, or visual systems, and self-reported symptoms[7]".

Of the 20 published peer-reviewed studies on humans,16 were conducted in training environments, 11 were exclusively related to military personnel, 3 were conducted in corporate settings, and there was a single online survey. The sample sizes were relatively small ranging from 14 to 357 participants with an average of 83[8].

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[2] Blast Injury Research Coordinating Office (BIRCO). "History." Blast Injury Research Coordinating Office (BIRCO) - History, 26 Sept. 2022, blastinjuryresearch.health.mil/index.cfm/about_us/history.
[3] Id.
[4] Defense Health Agency . "Low-Level Blast Exposure." *Military Health System*, 21 Sept. 2023, www.health.mil/Military-Health-Topics/Warfighter-Brain-Health/Brain-Health-Topics/Low-Level-Blast-Exposure.
[5] Belding, J. N., Englert, R. M., Fitzmaurice, S., Jackson, J. R., Koenig, H. G., Hunter, M. A., Thomsen, C. J., & da Silva, U. O. (2021). Potential Health and performance effects of high-level and low-level blast: A scoping review of two decades of research. Frontiers in Neurology, 12. https://doi.org/10.3389/fneur.2021.628782
[6] Id.
[7] Id.
[8] Id.

"Although research on LLB is growing rapidly, it still presents a tiny fraction of research on blast injury. Specifically, our review located only 51 peer-reviewed published articles on LLB across the past 20 years, including both animal and human research. (Belding, et al, 2021)[9]"

Nonetheless, "These findings contribute to a growing body of research linking overpressure exposure with adverse health and wellbeing outcomes. As with previous research, the most consistent findings emerged primarily for conditions that were neurological, hearing-related, or mental health-related. Specifically, these findings provide yet more evidence of the association between overpressure exposure (including single HLB, repeated HLB, and occupational LLB exposure) and hearing loss and tinnitus diagnosis.[10]"

The authors conclude,

> "Taken together, the findings herein suggest that overpressure exposure increases the likelihood of several self-reported diagnoses including PTSD, hearing loss, chronic fatigue syndrome, tinnitus, neuropathy-caused reduced sensation in the hands and feet, depression, vision loss, sinusitis, reflux, and anemia. Furthermore, the data reported herein provide additional support for the idea that the combination of HLB and LLB exposure may be associated with greater risk of migraines, PTSD, and impaired fecundity, and may adversely affect performance. These findings provide further evidence of the potential adverse consequences associated with overpressure exposure and underscore the necessity of public health surveillance initiatives for blast exposure and/or safety recommendations for training and operational environments (Belding, et al, 2021)[11]."

Neurocognitive effects were studied on a cohort of U.S. Army Rangers, Woodall, et al (2021), in their work they note, "nearly 500 rounds were fired during the study, resulting in a high cumulative blast exposure for all mortarmen…exceeding the 4 psi threshold…[resulting in] high prevalence of mTBI like symptoms among all mortarmen, with over 70% experiencing headaches, ringing in the ears, forgetfulness/poor memory, and taking longer to think during the training week.[12]"

The authors explain, "The mortar systems used in the U.S. Army are the 60 mm, the 81 mm, and the 120 mm. When a mortar round is fired, explosive charges ignite within the mortar tube, launching the round to its target. This process exposes mortarmen to an LLB every time a round is fired.[13]" Continuing, "there is limited research on the LLB exposure of mortarmen, and, to the best of our knowledge, there are no publications to date on the physiological effects of blast exposure within the mortarmen population" (Woodall, et al, 2021)[14].

[9] Id.
[10] Id.
[11] Id.
[12] Woodall, J. l.a, Sak, J. a, Cowdrick, K. R., Bove Muñoz, B. m, McElrath, J. h, Trimpe, G. r, Mei, Y., Myhre, R. l, Rains, J. k, & Hutchinson, C. r. (2021). Repetitive low-level blast exposure and neurocognitive effects in Army Ranger Mortarmen. Military Medicine, 188(3–4). https://doi.org/10.1093/milmed/usab394
[13] Id.
[14] Id.

Referencing earlier research from Kamimori et al. (2017), finding that BOP exceeded 4 psi while using the 120mm mortar system, the authors expand in the previous research using The Blast Guage System© (BlackBox Biometrics Rochester NY), noting, “These gauges measure both reflected and incident pressure—capturing true environmental exposure—and have been used to measure LLB in numerous other studies” (citations incorporated herein by reference)[15].” Blast measurements for this study were obtained using BlackBox Biometrics, Gen 7, with three devices placed on each participant.

Mortarmen self-reported symptoms immediately before and after firing each day using a modified Rivermead post-concussion symptom questionnaire to rank each symptom from 0 (not experienced) to 4 (a severe problem)”...”Questionnaire results were analyzed to identify the prevalence of symptoms among all subjects and test the hypothesis that mortarmen experience more symptoms than controls. The most common symptoms were further analyzed by mortarmen classifications: mortar crew and average BOP above or below 4 psi”[16]. The PLR-3000 pupillometer (NeurOptics, Irvine, CA) was used to collect PLR measurements during the study. The results of which are captured in the following graphic models, figures or diagrams[17].

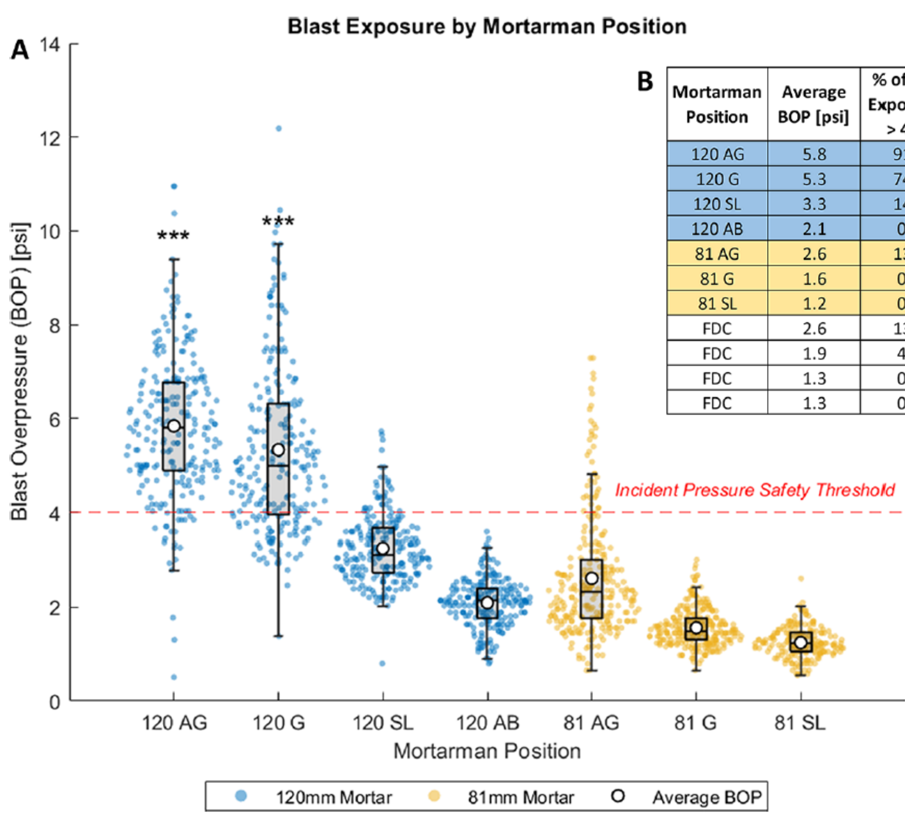

Figure 2 Swarm scatter chart displaying all blast events for each mortarman on the 120 mm and 81 mm mortars (AG=assistant gunner, G=gunner, SL=squad leader, AB=ammunition bearer). Overlaid with box plots for each. Subjects with means significantly greater than 4 psi are

[15] Id.
[16] Id.
[17] Id.

indicated with ***$P < 0.001$. (B) Blast overpressure (BOP) exposure values for all mortarmen, including FDCs (FDC=fire direction center). Abstract from Woodall, et al, (2021).

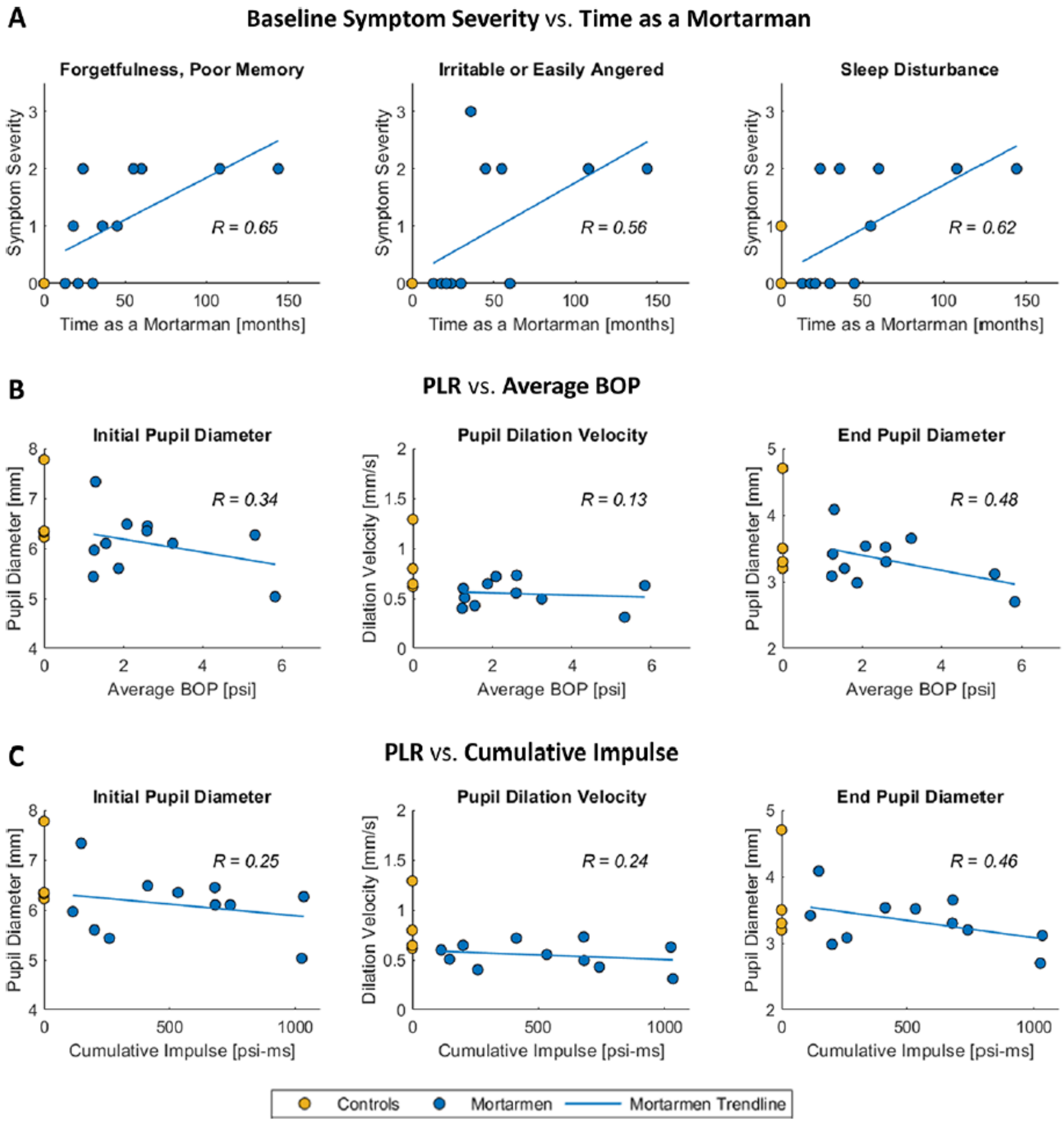

Figure 3 Cross comparison of symptoms, blast history, and blast exposure. Trendlines of mortarmen data, excluding controls from calculations. Pearson correlation coefficients displayed as R. (A) Baseline symptom severity scores compared to time as a mortarmen (*n*=3 controls, *n*=12 mortarmen). (B) Pupillary light reflex (PLR) measures compared to average blast overpressure (BOP) (B-C: *n*=4 controls, *n*=11 mortarmen). (C) PLR measures compared. to cumulative impulse. Abstract from Woodall, et al, (2021).

TABLE I. Summary Statistics for Pupillary Light Reflex (PLR)

	Mortarmen ($n = 11$)	Controls ($n = 4$)	
Pupillary response	*Mean ± SD*	*Mean ± SD*	*P*
Dim light pulse (10 μW)			
Initial pupil diameter (mm)	6.29 ± 0.66	6.82 ± 0.89	0.28
End pupil diameter (mm)	3.76 ± 0.48	4.22 ± 0.79	0.25
Constriction latency (s)	0.23 ± 0.03	0.23 ± 0.02	0.85
Constriction velocity (mm/s)	3.15 ± 0.49	3.50 ± 0.35	**0.09**
Max constriction velocity (mm/s)	5.69 ± 2.29	6.05 ± 0.78	0.55
Dilation velocity (mm/s)	1.02 ± 0.28	1.33 ± 0.23	**0.04***
Bright light pulse (121 μW)			
Initial pupil diameter (mm)	6.10 ± 0.68	6.71 ± 0.74	0.16
End pupil diameter (mm)	3.33 ± 0.41	3.73 ± 0.66	0.23
Constriction latency (s)	0.22 ± 0.03	0.24 ± 0.05	0.85
Constriction velocity (mm/s)	3.20 ± 0.48	3.60 ± 0.41	**0.06**
Max constriction velocity (mm/s)	5.99 ± 2.54	6.26 ± 0.53	0.62
Dilation velocity (mm/s)	0.55 ± 0.29	0.87 ± 0.45	**0.02***

Figure 4 Mean and standard deviation (SD) of pupillary responses measured at night from controls (n=4) without blast exposure and from mortarmen (n=11) immediately after mortar firing. Includes responses from both dim and bright light pulses. Significant values of $P < 0.10$ are in bold, and $P < 0.05$ is indicated with *. Abstract from Woodall, et al, (2021)

Woodall, et al (2021) report, "Mortarman had smaller pupil diameters and slower pupillary responses than controls (Figure 3, Table I). Dilation velocity was significantly slower in mortarmen than controls for both dim (P=0.04) and bright (P=0.02) light pulses. Constriction velocity was also significantly slower in mortarmen for both dim (P=0.09) and bright (P=0.06) light pulses when increasing the significance threshold (α=0.10).[18]"

In their discussion and findings, the authors note,

> "Multiple mortarmen had blast exposure exceeding the 4-psi incident pressure safety threshold. This included the AG, G, and SL on the 120 mm mortar and the AG on the 81 mm mortar.[19]" BOP as high as 5.8 was observed affecting members of the 120mm mortar system. Likewise, within just 3 days of training, the highest cumulative BOP was 1,361 psi, more than double that of instructors' cumulative exposure. This, in comparison to other studies over six days of breaching training wherein the average cumulative impulse to be 51 psi for students and 43 for instructors. The difference lies in the sheer amount of rounds fired by mortar crews with averages of "89 and 78 rounds fired per day during our study and even lower when compared to the hundreds of rounds

[18] Id.
[19] Id.

fired per day in other training events or combat.[20]"

As a result, reported symptoms include, "headaches, ringing in the ears, forgetfulness/poor memory, taking longer to think, sleep disturbance, and being irritable or easily angered were reported by over 60% of mortarmen during
the training week.[21]"

Woodall, et al, (2021) conclude, "The symptoms exhibited by mortarmen expectedly paralleled symptoms experienced by breachers and aligned with some of the symptoms typical of post-concussive and mTBI patients. This supports the theory that repetitive LLB can lead to subconcussive injuries, similar to repetitive head impact in sports. Increased symptom severity in those with longer history as mortarmen suggests there is an accumulation of repetitive, subconcussive effects over mortarmen's careers, resulting in cumulative neurodegeneration presented as delayed onset and increased severity of post-concussive symptoms.[22]"

Similar to earlier studies in Kamimori et al (2017), Wiri, Suthee et al (2023), return to examining to effects of blast overpressure through gathering biometric data under the CONQUER pilot blast monitoring program. The authors report,

> "Overpressure exposure data was collected using the BlackBox Biometrics (B3) Blast Gauge System (BGS, generation 7) sensors mounted on the body during training. To date, the CONQUER program has recorded 450,000 gauge triggers on monitored service members. The subset of data presented here has been collected from 202 service members undergoing training[23]."

For the purpose of this paper, we will brightline the overpressure data obtained for the Mortar systems (60, 81 and 120mm). As an overview, 25 subjects captured 2,828 waveforms, with an average of 113 per subject.[24]. Wri, Suthee, et al (2023) explain, "The mortar systems have impulses that are less than about 21 kPa-ms (~3 psi-ms). However, a large number of peak overpressures exceeding ~28 kPa (4.0 psi) are present with some blast exposure magnitudes up to 53.6 kPa (7.8 psi)." The following chart reflects gathered information relative to the gunner and assistant gunner positions:

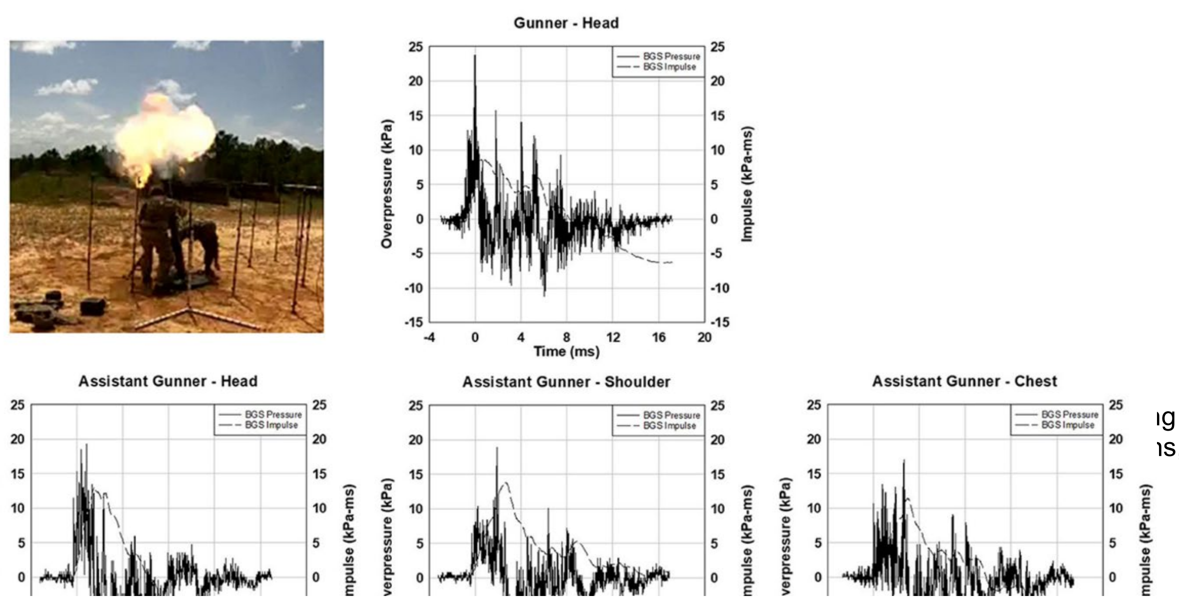

Figure 5 Photo of the gunner (standing) and assistant gunner (bending down) around a 120 mm mortar. The plot of overpressure vs. time histories for gunner (top) and assistant gunner (bottom) for 120 mm mortar with 1 M230 propelling charge. (Abstract Wri, Suthee, et al, 2023)

Wiri, Suthee et al, (2023) explain, "Both peak overpressure and peak overpressure impulse (a measure of blast energy) data are presented since both could be important for correlation with physiologic changes. All overpressure waveforms include the negative phase overpressure and impulse. The number of blast exposures over time (within a day, month, or year) is expected to have an effect on adverse neurologic outcomes, but the relationship between peak overpressure, peak overpressure impulse, and number of exposures is not yet known".

In another study, Hunfalvay, et al, (2023) note, "[r]ecent findings suggest that chronic exposure to low-level blasts may be implicated in neurological alterations and elevated biomarkers associated with traumatic brain injury.[25]" Assessing for oculomotor effects, the results of this study "revealed significant differences in SPEM, saccades, and fixations between the blast exposure group and control group."

The authors explain,

> "Concussed individuals have higher fixation percentages as they are constantly falling behind the target, requiring their eyes to saccade to catch up to the target…The saccadic system includes several brain structures including the brain stem, pons, midbrain, and cerebral cortex. Saccades are generated by burst neuron circuits in the brain stem, which activate motor signals that control the extraocular muscles in the eye. Multiple studies have shown that saccadic impairment is associated with TBI. (citations incorporated by reference)[26]".

The blast exposure group stopped moving their eyes significantly more often when compared to the controls. This dysfunction is implicated in frontal lobe planning and decision-making activities, only evident when a decision is required", providing a "clearer understanding of the impact that chronic low-level blast exposure has on the CSP fixation percentages of military personnel" (Hunfalvay, et al, 2023).

In an exploratory analysis of data from 138,949 members of the Millennium Cohort Study, Belding, et al, (2023), estimated associations between single HLB, repeated HLB, and occupational risk of LLB on newly-reported diagnoses. For the purpose of this report, we will focus on occupational risk of LLB exposure. The authors note,

> "LLB was significantly associated with 11 of the 45 diagnoses examined, including 6 of the 11 conditions hypothesized a priori to be affected by blast. The highest magnitudes of association were observed for PTSD (1.45), significant hearing loss (1.34), chronic fatigue syndrome (1.24), tinnitus (1.20), neuropathy-caused reduced sensation in the hands and feet (1.19), significant vision loss (1.12), and depression (1.11)[27]"

[25] Hunfalvay, M., Murray, N. P., Creel, W. T., & Carrick, F. R. (2022). Long-term effects of low-level blast exposure and high-caliber weapons use in military special operators. Brain Sciences, 12(5), 679. https://doi.org/10.3390/brainsci12050679

[26] Id.

[27] Belding, J. N., Kolaja, C. A., Rull, R. P., & Trone, D. W. (2023). Single and repeated high-level blast, low-level blast, and new-onset self-reported health conditions in the U.S. Millennium Cohort Study: An exploratory investigation. Frontiers in Neurology, 14. https://doi.org/10.3389/fneur.2023.1110717

Among the conclusions, further research should be conducted which may inform our understanding of the possible associations between overpressure and suicide that has been posited elsewhere[28]".

In a first of its kind review, Kilgore & Hubbard (2024), discuss LLB on cerebral blow flow, stating, "(LLB) exposure can lead to alterations in neurological health, cerebral vasculature, and cerebral blood flow (CBF). The development of cognitive issues and behavioral abnormalities after LLB, or subconcussive blast exposure, is insidious due to the lack of acute symptoms. One major hallmark of LLB exposure is the initiation of neurovascular damage followed by the development of neurovascular dysfunction.[29]"

The authors note, previous work has shown that repeated LLB can lead to transient symptomatology as well as conditions that persist throughout a service member's military career. Specifically noting, "high occupational risk of LLB not only correlates with diagnoses of mild to moderate TBI but also with an increased likelihood of experiencing symptoms similar to those experienced after TBI, such as memory loss. These include cognitive issues, headaches, hearing problems, non-headache pain, sleep disturbances, and behavioral health conditions such as anxiety, drug and alcohol dependence, and post-traumatic stress disorder (PTSD)" (Belding et al, 2021; Carr et al, 2015; Carr et al, 2016; as cited in Kilgore & Hubbard, 2024)[30].

Citing two earlier studies, Kilgore & Hubard (2024) note,

> *"Veterans with a history of blast exposure not only showed a similar graded association via DTI but also demonstrated a more rapid decline in white matter integrity with age compared to unexposed individuals, indicating that cumulative blast exposure may contribute to an accelerated aging process" (Trotter, et al, 2015; as cited in Kilgore & Hubbard 2024). The authors continue, "repeated LLB exposure show elevated PET neuroinflammation, a characteristic of neurovascular dysfunction and contributor to the progression of neurodegenerative diseases such as Alzheimer's disease (AD), Parkinson's disease (PD), and amyotrophic lateral sclerosis (ALS)" (Stone, et al. 2024, as cited in Kilgore & Hubbard, 2024)[31]".*

The authors hypothesize that "early brain CBF changes and secondary neurovascular deficits can lead to chronic perfusion alterations after LLB[32]"

[28] Id.
[29] Kilgore, Madison O., and W. Brad Hubbard. "Effects of low-level blast on neurovascular health and cerebral blood flow: Current findings and future opportunities in neuroimaging." International Journal of Molecular Sciences, vol. 25, no. 1, 4 Jan. 2024, p. 642, https://doi.org/10.3390/ijms25010642..
[30] Id.
[31] Id.
[32] Id.

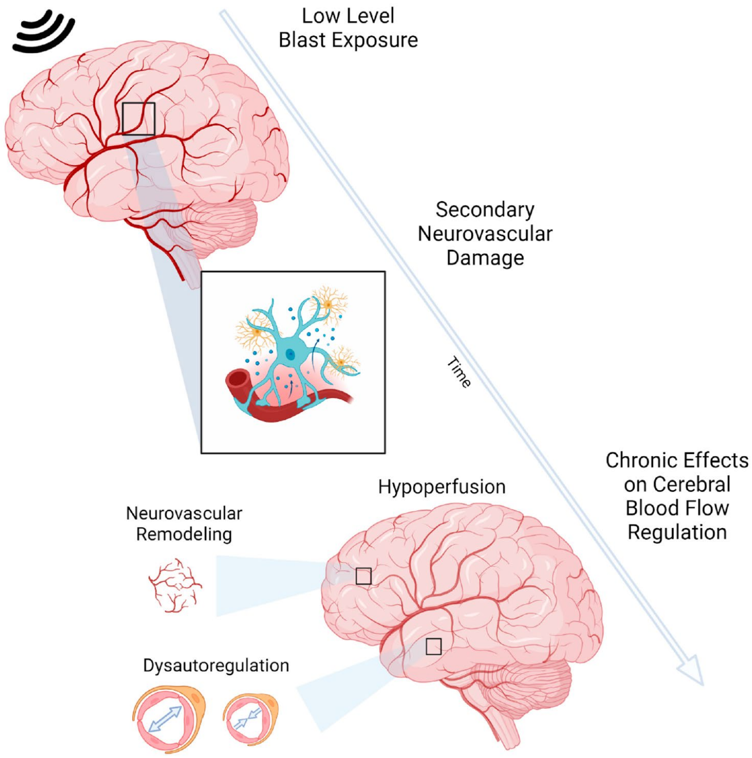

Figure 6 Development of Neurovascular dysfunction over time following cumulative LLB exposure results in secondary neurovascular damage, including BBB breakdown, astrocytic alterations, inflammation, and pericyte loss. Ongoing neurovascular damage can lead to chronic effects on CBF and the regulation of cerebral perfusion, including hypoperfusion, neurovascular remodeling, and dysautoregulation. These consequences of cumulative LLB exposure contribute to neurological dysfunction and acceleration of brain aging mechanisms.

Kilgore & Hubbard (2024), note:

> *"[E]vidence suggests that blast overpressure is linked to changes in cerebrovascular function. Examining the long-term ramifications of exposure to LLB is particularly significant due to its potential to contribute to chronic deficits in cerebral perfusion by accelerating aging-related mechanisms in cerebrovascular dysfunction, such as reductions in nitric oxide (NO) availability and neurovascular oxidative stress [108]. Notably, preclinical investigations have demonstrated that blast exposure triggers acute oxidative stress and alters NO production, linking both to disruptions in [Brain Blood Barrier] permeability"[33].*

Through these and other ongoing initiatives into BOP and LLB research, a body of evidence continues to support rather deny the potential for lasting effects of LLB within the military community, in particular those within military occupations where cumulative exposure to peak overpressures above 4 psi is part and parcel to their assigned activities.

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[33] Id.

Request:

A medical opinion is considered substantive when (1) the examiner possesses the requisite credentials to form an expert opinion, (2) the examiner is sufficiently informed of the facts of the case, (3) the medical examiner applies their expertise reliably to the facts of the case, and forms an opinion based upon scientific or medical knowledge, without resorting to mere speculation.

Factors such as chronicity and continuity should be discussed and considered, as well as pertinent discussion of exacerbations while ruling out of any intercurrent causes. Additionally, please note any physiological changes or cause and effect, which may shed light on the initial manifestation of the conditions as noted.

Kindly provide your medical opinion as to whether "*sufficient evidence (a 50/50 medical probability)*" exists that a relationship between any effects related to chronic post-concussive syndrome, to include any conditions related thereto and chronic occupational exposure to low level blasts are concurrent coincident to the individual's time serving in the U.S. military.

<u>Please substantiate or reconcile your medical opinion with medical reasoning based on a review of all available records to include service medical and personnel records made available by our client.</u>

Once you have provided your written opinion, please provide your patient with a copy in accordance with HIPAA Public Law 104-191.

Sincerely,

____

Disclaimer:

The requested opinion is to be utilized in supplementing the Department of Veterans Affairs (VA) in regard to etiology and/or severity of the claimed conditions. There is no requirement for the opining doctor to appear at any conference, hearing, or other such procedure.

The patient understands that the health care practitioner's opinions and statements are not official VA decisions regarding whether he or she will receive other VA benefits or, if he or she receives VA benefits, their amount.

C3M is a non-profit organization, which provides free public awareness for our cohort. Any clinical fees made in conjunction with this request are the sole responsibility of the patient and his or her healthcare provider.

C3M does not assist in the filing, preparation, or presentation of individual claims before any federal agency, cohort remittals of this document by C3M are to be used as a data gathering tool for future studies, research, and reporting.