Review of Current Global Science and Best Practices for the Prevention of Posttraumatic Stress Disorder (PTSD) in Uniformed Personnel Participating in UN Peace Operations

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SUMMARY

This document reports the results of a review of current science and global best practices for the prevention and mitigation of PTSD in uniformed peace operations conducted by the Uniformed Capabilities Support Division of the Department of Operational Support as a follow-on to the PTSD Study completed on 24 December 2021,[1] coordinated with the Division of Healthcare Management and Occupational Safety and Health, and consulted with the Advisory Committee for Mental Health Support Strategy and PTSD Implementation Plan.

To meet our objectives, we conducted three parallel searches of medical and mental health scientific literature databases. Our first two searches reviewed the current state of the science and worldwide practices for two common approaches to preventing or mitigating PTSD in military or police personnel: screening for mental health problems before and after operational deployments, and monitoring and intervening to mitigate the stress of individuals during deployments. Our third systematic search focused on potential gender differences in risk for, experiences of, and resources needed to recover from posttraumatic stress in uniform. Each search comprised several keyword queries of medical and mental health databases and the downloading and reading of all pertinent English-language articles.

We found that pre-deployment mental health screening is widely used by national militaries as a just-in-time check on the mental health and readiness of personnel about to deploy, and that post-deployment screening for PTSD, depression, anxiety, alcohol use problems, and emotional distress at various points after returning home is widely used as a means to identify and connect with treatment those individuals who have developed new stress-related mental disorders or experienced the exacerbation of old ones. We identified best-practice procedures and instruments for performing deployment-related mental health screening, and for determining whether military or police personnel with a diagnosed but stable mental disorder such as PTSD can safely deploy to a peace operation. Thus far, evidence of the effectiveness of deployment-related mental health screening is not strong, and many challenges have been identified, including especially under-reporting and failing to follow through with recommendations for further mental health evaluation because of mental health stigma and real consequences to careers.

We found much greater diversity in national approaches to monitoring and managing the stress of forward-deployed personnel, especially in which personnel groups are trained to monitor individuals' stress levels and respond to mitigate adverse stress states once identified. The roles played by military and police mental health professionals have received the greatest research attention, but given the relative scarcity of mental health professionals, worldwide, especially in operationally deployed environments, many nations assign responsibilities for forward operational stress control to other personnel groups, including chaplains, general medical personnel, unit leaders, and peers, among others.

[1] United Nations Department of Operational Support. (2021). Comprehensive Study to Develop a PTSD Framework for Uniformed Personnel: Final Report. Available online at: https://operationalsupport.un.org/sites/default/files/ptsd_study_final_report_with_appendix_0.pdf

We found and compared several examples of peer support programs, a rapidly emerging global best practice for monitoring and managing stress in military and police organizations, which provides frontline personnel the knowledge and skills needed to recognize and respond effectively to stress problems in themselves or others, and to encourage help-seeking when appropriate. Global research has resulted in consensus guidelines for occupational peer support, which we reviewed, although we could not find strong empirical evidence that formal peer support programs can significantly improve the mental health of unit members or reduce their rates of chronic PTSD.

Early approaches to forward mental healthcare emerging from the WWI shell shock crisis were based on conceptions of acute stress reactions as maladaptive coping with fear due to a pre-existing personality weakness or cowardice and were designed primarily to limit medical evacuations due to stress. As evidence has accumulated that acute stress reactions likely represent literal and irreversible injuries to individuals' social identities, rather than fully reversible coping choices, a new global best practice for indicated prevention has proliferated, worldwide, known generically as psychological first aid (PFA). PFA focuses on restoring the social and spiritual resources that can be depleted by overwhelming stress, such as perceptions of safety, calmness, social connectedness, self-efficacy, and hope. We compared the key features of several different but interrelated national and organizational approaches to PFA, including those employed in military, police, and civilian disaster settings. As with peer support programs, more studies are needed favoring the notion that training members of military units to deliver PFA actually reduces risk for later PTSD in unit members, or otherwise improves public mental health and wellbeing.

Another emerging best practice we identified is the Mental Health Continuum, based on the U.S. Marine Corps Stress Continuum Model and slightly modified by NATO, as an aid for people who are not mental health professionals to assess their own or someone else's current stress level across four colour-coded stress zones: Ready/Healthy (Green), Reacting (Yellow), Injured (Orange), and Ill (Red). Versions of the Mental Health Continuum are increasingly being incorporated into programs for peer support and the delivery of PFA, even though evidence of its effectiveness is still being developed.

Our review of the emerging scientific literature regarding potential gender differences in risk for, experiences of, and resources needed to recover from traumatic stress in uniform raised as many questions as it answered. We found evidence that women have slightly higher rates than men of depression and anxiety, but significantly lower rates of alcohol use problems and violence. Studies comparing rates of PTSD in military and police women and men reported mixed results, with some finding slightly higher PTSD rates in women compared to men, but others finding no gender differences in PTSD rates. The greatest difference we found between women and men in uniform regarding their risk for PTSD was in their rates of exposure to one particularly harmful stressor event: sexual harassment or assault by members of one's own unit, including once-trusted peers or members of one's chain of command. A growing number of studies, although from a small number of countries, have reported high rates of exposure in women to so-called military sexual trauma (MST), resulting in worse mental and physical health outcomes and poorer responses to prevention interventions and clinical treatments than PTSD from other types of traumatic stressors. Another PTSD-related gender difference for which we found emerging evidence was the experience by women in uniform of significantly less social support from their peers and leaders, and less horizontal and vertical cohesion in their units, caused by distorted gender-related attitudes and power imbalances, along with the fact that women still comprise a small minority of world military and police organizations, and therefore, may be assigned to mostly-male operational units with few female peers or leaders. Further research is needed to determine whether emerging evidence for relative social isolation among women in uniform applies to military and police women deploying to UN operations, and whether risk for PTSD is increased because of that.

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Section 1. Introduction

I. OBJECTIVES

This introductory section of the report lays out the goals, objectives, and methods for this in-depth literature study focusing on prevention and mitigation and describes the organization and content of the rest of this report.

II. BACKGROUND

On 24 December 2021, a comprehensive study of the problem of post-traumatic stress disorder (PTSD) in UN peace operations,[1] was completed. The study was pursuant to General Assembly resolutions[2] to address hundreds of claims for permanent disability due to PTSD submitted by Member States for military and police personnel who had deployed to UN missions decades prior. Based on analyses of a 28-item survey completed by 65 T/PCCs, interviews with mental health experts in a subset of UN Missions and T/PCCs, and searches of the current scientific literature on PTSD in military and police personnel, the report drew the following conclusions about the problem of PTSD in peace operations:

- PTSD is a globally recognized chronic mental disorder for which uniformed first-responders, including military and police personnel, are at elevated risk just because their occupational roles expose them to the stress of repeated potentially traumatic events (PTEs).
- Whereas early theories hypothesized that PTEs involving intense fear for one's physical safety had the greatest potential to lead to disabling PTSD, moral injury (Litz et al., 2009; Nash et al., 2013; Shay, 2014) has emerged as likely the predominant mechanism of psychological injury in all settings, including peace and combat operations; potentially morally injurious events (PMIEs) inflict emotional harm to the extent they threaten individuals' moral safety because of betrayals of moral trust in high-stakes situations.
- Although rates of PTSD in various populations vary widely, significantly disabling PTSD can be expected to occur in 4% to 8% of military and police personnel who have deployed to a high-risk peace operation.
- Managing PTSD risk during UN peace operations is the shared responsibility of T/PCCs, UN Missions, the Secretariat, and individual military and police personnel and their families.
- A sustainable and appropriate approach to the management of PTSD in uniformed personnel deployed to UN peace operations should include measures to prevent and mitigate PTSD, in order to reduce both the incidence of future disability due to PTSD and its severity.[3]

[1] Phase 1 PTSD Study Report is available online at https://operationalsupport.un.org/sites/default/files/ptsd_study_final_report_with_appendix_0.pdf.
[2] A/RES/74/280, A/RES/75/293, A/74/809, A/75/849
[3] Secretary-General Report (A/76/662). 24 January 2022

From a review of current mental health practices in world militaries and police organizations, the PTSD Study identified eight key components of a comprehensive framework to prevent and mitigate PTSD in future UN peace operations, listed in Figure 1-1, below.

Figure 1-1. Key Components of a Comprehensive PTSD Prevention Framework

1. A consensus understanding of the nature of PTSD as an occupational health hazard, including aspects of risk for PTSD related specifically to gender
2. Clearly delineated responsibilities throughout deployment cycles for monitoring and maintaining psychological health in uniformed personnel and their families
3. Training in monitoring and maintaining mental health for various personnel groups at various points in deployment cycles, collaboratively developed with UN PTSD stakeholders but delivered by T/PCC mental health experts
4. Screening of uniformed personnel before they deploy to a UN peace operation to ensure they are medically qualified to deploy, and after they return from a UN deployment to identify and manage new deployment-related mental health problems, including PTSD
5. A set of procedures for monitoring the mental health of uniformed personnel during deployments and intervening early to mitigate acute stress reactions in individuals (e.g., through trained peer support)
6. A continuous campaign to raise awareness about mental health stigma and to reduce its impact on population mental health
7. A unified deployment record-keeping system that collects and stores data on the names of individuals deploying and a chronology of major stressor events during UN peace operations
8. A well-maintained coordination network linking PTSD support offices in the Secretariat with mental health focal-points in UN Missions and formed T/PCC units

Source: Comprehensive Study to Develop A PTSD Framework for Uniformed Personnel: Final Study Report, 24 December 2021, p. 24.

As a starting point, the PTSD Study Report offered the following table, Figure 1-2, to illustrate how responsibilities for various prevention activities could be shared throughout deployment cycles by T/PCCs, the Secretariat, and individual military and police personnel and their family members.

Figure 1-2. Responsibilities for PTSD Prevention Throughout UN Deployment Cycles

	RESPONSIBILITIES			
	SECRETARIAT	T/PCCs	INDIVIDUALS	FAMILIES
Before Deployment	• Assess risk factors for planned mission • Collaborate with T/PCC to develop pre-deployment trainings • Coordinate preparations	• Deliver pre-deployment training to leaders, uniformed personnel, and family members • Screen potential deployers for medical fitness	• Attend pre-deployment training • Notify leaders of any limiting health conditions • Prepare to deploy	• Attend offered pre-deployment training • Prepare the family for separation and other stressors • Get help when needed
During Deployment	• Monitor and record major stressors of operation	• Monitor and record major stressor events and who was exposed	• Monitor personal stress level	• Monitor family members for stress • Practice prescribed prevention activities

	• Coordinate assessment and mitigation measures with T/PCCs	• Reduce risk and enhance protective factors • Monitor individual and unit health and wellbeing • Apply mitigation measures	• Monitor peers and subordinates for stress • Practice prescribed prevention activities • Notify leaders of any change in physical or mental health • Reduce risk and enhance protective factors	• Reduce risk and enhance protective factors • Get help when needed
After Deployment	• Coordinate assessments, mitigation measures, and PTSD claim submissions • Collect, analyze, and report outcome metrics (e.g., numbers & results of trainings delivered)	• Screen repatriated personnel for stressor exposures and mental health symptoms • Mitigate and treat identified problems • Submit PTSD claims when indicated	• Report persistent mental health problems • Monitor subordinates for mental health problems • Engage in mitigation measures and treatment • Initiate a claim for PTSD disability when indicated	• Attend offered post-deployment training • Reduce risk and enhance protective factors • Get help when needed
Source: Comprehensive Study to Develop A PTSD Framework for Uniformed Personnel: Final Study Report, 24 December 2021, p. 25.				

This report is an in-depth further study focusing on prevention and mitigation of PTSD for uniformed personnel in UN peace operations. The key deliverable for this report is to inform the Mental Health Strategy.

III. METHODOLOGY

A. Conceptual Starting Points

To develop a framework for the prevention and mitigation of PTSD in UN peace operations (Figures 1-1 and 1-2), four conceptual tools were used. These tools were recommended by the U.S. Institute of Medicine (IOM) in its 2014 review and sharp critique of PTSD prevention and resilience programs fielded by U.S. military service branches.[4] According to the IOM (2014), the only way to create an evidence basis for attempted prevention activities is through the careful application in their development and refinement of the following four public health concepts: (1) program logic models, (2) scientific and cultural validity, (3) intervention spectrum for mental disorders, and (4) the socioecological model of disease causality. Each is described below.

1. Importance of Program Logic Models and Measuring Outputs and Outcomes

[4] IOM (Institute of Medicine). (2014). Preventing psychological disorders in service members and their families: An assessment of programs. Washington, DC: The National Academies Press.

Citing a 2009 report by the U.S. Substance Abuse and Mental Health Services Administration (SAMHSA),[5] the IOM argued that the crucial first step toward developing evidence-based interventions to prevent PTSD is to construct *program logic models* explaining how each proposed intervention is related to the specific problem it is intended to address. The general form of a program logic model is illustrated in Figure 1-4, below.

Figure 1-4. Program Logic Model Steps

Based on SAMHSA (2009). Identifying and Selecting Evidence-Based Interventions

According to IOM, instead of building their prevention programs on logical and testable hypotheses about the nature of PTSD in military operations and how available levers into that problem are expected to reduce the risk for deployment-related PTSD, many military mental disorder prevention programs selected their interventions arbitrarily, without first explaining how selected interventions related to the specific mental disorders to be prevented. In particular, so-called resilience programs in military organizations could not clearly define the construct of resilience, describe how it could be measured in individuals, or provide evidence that resilience, however defined, negatively correlates with risk for PTSD.

Once developed using logic models, the *outputs* of PTSD prevention interventions must be measured to document that the intervention was actually delivered to personnel as intended. The *outcomes* of the intervention in terms of PTSD prevention must be measured to determine what impact, if any, the intervention had on the prevalence and severity of PTSD in the population.

2. Importance of Scientific and Cultural Validity

To be effective, levers into public health problems such as occupational PTSD must possess both *scientific* and *cultural validity* (SAMHSA, 2009). Without scientific evidence that the planned intervention actually reduces the prevalence or severity of the targeted health problem in a similar population, it is unlikely that the intervention will do any good, no matter how well performed. On the other hand, if the planned intervention is not consistent with uniformed military and police cultures and usable in operational environments, no one will actually perform the planned intervention because it won't make sense to the target population or perhaps even be possible for them to use.

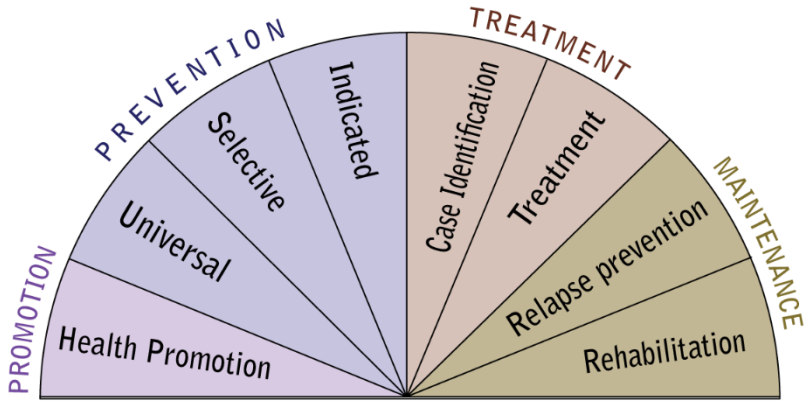
the scientific validity of each of its recommendations in this report will be ensured by thorough reviews of current scientific and governmental mental health literature.

3. Intervention Spectrum for Mental Disorder Prevention

This report also elected to utilize the IOM's (1994, 2014) "protractor" model depicting the *intervention spectrum* for the management of any mental health problem, based on Gordon's (1983) operational classification of disease prevention activities, reproduced in Figure 1-5, below.

[5] Substance Abuse and Mental Health Services Administration (SAMHSA). (2009). Identifying and Selecting Evidence-Based Interventions.

Figure 1-5. Intervention Spectrum for Mental Health Problems



Source: Gordon (1983); IOM (1994, 2014)

The right half of the IOM intervention-spectrum protractor comprises interventions for the professional treatment and maintenance of cases of mental illness in clinical healthcare systems, whereas the left half of the spectrum comprises interventions carried out in community settings (including operational deployments) for either the promotion of overall health and well-being in individuals, or the prevention in them of specific mental disorders such as PTSD.

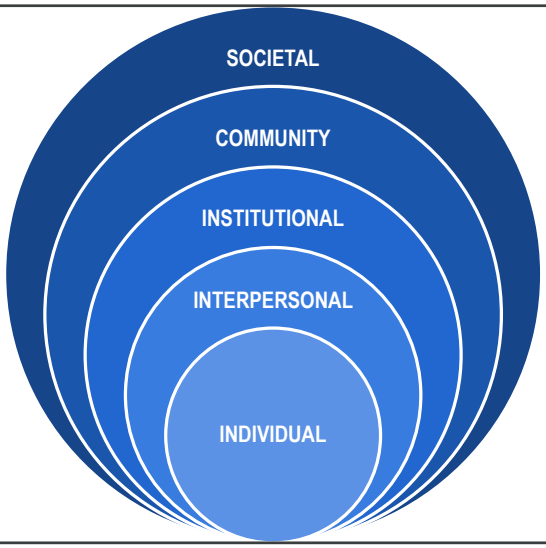
Gordon (1983) proposed three levels of disease prevention based solely on who is targeted by each level of prevention. *Universal prevention* encompasses all interventions that target all members of a population, irrespective of current health status, typically by reducing risk factors and enhancing protective factors for the problem to be prevented. During the COVID-19 pandemic, for example, universal prevention measures included wearing masks and keeping social distance, activities which require no professional assistance to accomplish. *Selective prevention* includes all interventions that target a sub-group of the population believed to be at elevated risk for the health problem for some reason. During the COVID-19 pandemic, selective prevention for individuals at elevated risk for COVID infection because of unprotected exposure to an active case of COVID included screening for COVID antigens in nasal swabs and a period of social isolation until the danger of infecting others passes. As with the prevention of COVID-19 infections, selective prevention of PTSD targets sub-groups of individuals who are at elevated risk for PTSD because of their known exposure to the "pathogen" that causes PTSD: one or more potentially traumatic events (PTEs) or potentially morally injurious events (PMIEs), typically occurring during deployment. *Indicated prevention* comprises all interventions that target individuals who have been identified as already experiencing early symptoms of the disorder to be prevented. Like first aid for physical injuries and illnesses, indicated prevention of PTSD includes all interventions to mitigate harm and promote recovery, either instead of or as a prelude to clinical health care. Management of a relatively mild COVID-19 illness at home is an example of indicated prevention of COVID-19.

4. Socio-ecological Model of Disease Causality

The fourth conceptual tool recommended by the IOM (2014) for developing evidence-based approaches to the prevention of PTSD and related mental health problems in uniformed personnel is the *socio-*

ecological model of disease causality, proposed by Bronfenbrenner (1979) and refined by the Institute of Medicine (2014), depicted in Figure 1-6, below.

Figure 1-6. Socio-ecological Model of Levels of Disease Causality



Source: Adapted from Bronfenbrenner (1979), IOM (2014).

The socio-ecological model draws attention to the many nested levels of social organization in which individuals live and work, and in which risk and protective factors for any health problem operate.

In the Implementation Phase, we reviewed research and practices addressing risk and protective factors operating in all socio-ecological domains, including those operating within individual military and police personnel; their peer, family, and unit relationships; and the institutions, communities, and societies in which they live. Since the causes and mitigators of mental disorders like PTSD operate simultaneously at all these system levels, effective interventions for prevention and mitigation operate best at all system levels simultaneously.

B. Approach to the Task: Levers into the Operational PTSD Problem

Using the conceptual tools just described, the task of researching current science and global best practices for the prevention and mitigation of PTSD in uniformed personnel deploying to UN peace operations was divided into the following three principal areas of focus for the prevention of PTSD in uniformed peace operations.

1. Screening for PTSD and other mental health problems before and after deployment
2. Monitoring and restoring the mental health of individuals and units during deployments
3. Gender differences in the prevention of PTSD in uniform

Our first two areas of focus are the most widely employed and studied levers into the occupational PTSD problem, and the core of many global military and police PTSD prevention programs. Our third area of focus is the spectrum of potential gender differences that may exist in risk for and experience of PTSD in military and police occupational settings. Given the UN's commitment to gender parity, and emerging

evidence that gender can play a role in risk for PTSD and other mental health problems in military and police populations, topic of gender issues should have a co-equal area of focus.

C. Research Methodology: Searches of the Published Scientific and Governmental Literatures

To meet our objectives, this report elected to perform three systematic, semi-independent searches of the English-language scientific and institutional literatures. Our first two searches sought to uncover current scientific knowledge and global best practices addressing the two most widely employed levers into the problem of PTSD in uniformed occupations: screening for PTSD and other mental disorders before and after deployments, and actively monitoring individuals' stress levels during deployments and intervening to mitigate acute stress reactions once identified. For these two areas of focus, we searched for answers to the following questions:

1. What are current global practices in this area of prevention?
2. Which, if any, have been identified as global best practices?
3. What evidence exists that this lever actually prevents PTSD or contributes to mental health and well-being of uniformed personnel (i.e., what is its scientific validity)?
4. What evidence exists that approaches in this category are acceptable and make sense to the uniformed personnel who must use them (i.e., what is its cultural validity)?
5. What gender differences have been identified in this category of prevention interventions?

Because the searches for studies addressing PTSD prevention in uniform returned very little on potential gender differences, we elected to conduct a third literature search specifically focused on how the prevention of PTSD may be different whether targeting men or women in uniform, because of potential differences in stressor exposures or resources available to manage those stressors.

The results of each of these three literature searches — focusing on mental health screening, monitoring and mitigating stress reactions, and potential gender differences in PTSD prevention in uniform — will be examined in detail in the following three sections of this report. Specific methods for searching the literature, such as keywords used in systematic searches of medical (e.g., PUBMED) and mental health (e.g., PsycInfo) databases, are described in succeeding sections of this report.

IV. ORGANIZATION OF THIS REPORT

This reportis divided into an initial Executive Summary followed by these four report sections:

1. Introduction
2. Mental Health Screening Before and After Deployments
3. Monitoring and Restoring Mental Health During Deployments
4. Potential Gender Differences in PTSD Prevention and Mental Health Maintenance

V. REFERENCES

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Section 2. Deployment-Related Mental Health Screening

I. OBJECTIVE

This Section reviews the rationale, scientific literature, and global best practices for screening for PTSD and other stress-related mental disorders in uniformed military and police personnel before and after deploying to an operational environment, such as a peace or combat operation.

II. BACKGROUND

Screening is the process of using standardized assessment procedures to identify members of a population who may be experiencing symptoms of a recognized physical or mental health problem; mental health screening is the process of identifying persons currently experiencing symptoms of a mental disorder such as PTSD or a behavioral problem such as suicide. Screening for a mental disorder is not the same as diagnosing it since screening instruments can only determine the presence of symptoms characteristic of a specific disorder, not whether those symptoms are sufficiently severe and persistent to meet diagnostic criteria for a mental disorder. Diagnosis requires clinical evaluation by a mental health professional, which may be triggered by a positive screen for PTSD or other mental disorders.

Persons who screen positively using a standardized assessment procedure who are subsequently determined to fully meet diagnostic criteria for the condition in question are called true positive cases. Those who screen positively but are not subsequently determined to have the disorder in question are called false positives, and those who screen negatively but actually do suffer from the target mental disorder are called false negatives. Because no screening instrument is 100% accurate and reliable, screening programs always produce both false negatives and false positives in addition to true positives and true negatives.

National and international programs designed to manage risk specifically for PTSD in uniformed military or police personnel always screen for PTSD at every assessment point, but most such programs, if not all, also screen for other mental health problems at every assessment point because PTSD is often comorbid with depression, anxiety, substance use, and other stress-related mental health problems, any of which may be the cause of the greatest distress and loss of social and occupational functioning at any point in time. For this reason, we will address in this section of our report screening for all common stress-related mental health problems at every opportunity, not just PTSD.[1]

III. RATIONALE FOR DEPLOYMENT-RELATED MENTAL HEALTH SCREENING

A. Pre-Deployment Mental Health Screening

[1] For a discussion regarding potential targets for operational mental health surveillance, see Nash et al. Consensus recommendations for common data elements for operational stress research and surveillance: Report of a federal interagency working group. *Arch Phys Med Rehabil* 2010;91:1673-83.

If uniformed military and police personnel are screened by T/PCCs for mental health problems immediately prior to their deploying to a UN peace operation, it is primarily to confirm that they are physically and mentally healthy enough to perform their expected duties in a high-stress environment for the expected duration of the deployment. Pre-deployment mental health screening attempts to answer two questions: (a) Does the individual currently experience symptoms consistent with the diagnosis of a mental disorder? And (b) If the individual currently suffers from a diagnosable mental disorder, is that disorder sufficiently severe that the individual is likely to fail to perform their required duties or to require mental health treatments which are unavailable in a UN Mission? What matters in predicting an individual's ability to tolerate the stress of deployment, regardless of their health history, may be their performance during tough, realistic pre-deployment training in their operational units.

A third objective of pre-deployment screening, besides determining the presence or absence of a mental disorder and determining whether that disorder is severe enough to pose a risk during deployment, is to determine whether uniformed personnel possess sufficient resilience to place them at low relative risk for deployment-related mental illness. A recent Cochrane review of resilience-building programs for the prevention of mental disorders such as PTSD (Doody et al., 2021) found that so far, research in this area has failed to demonstrate significant benefits from resilience training or screening for resilience prior to deployment.

Pre-deployment mental health screening serves primarily to maximize the mental fitness and readiness of deploying individuals and units as a whole.

B. Post-Deployment Mental Health Screening

In contrast, if uniformed military and police personnel are screened for mental health problems following their repatriation after an operational deployment, it is primarily to determine which members of a returning unit are currently in need of further evaluation and possible treatment for a mental disorder that either resulted from or was exacerbated by the stress of the recent deployment. Post-deployment screening for PTSD and related problems can be performed routinely — for all returning deployers — or offered on a voluntary basis. Mental health screening in the early post-deployment period can be repeated at various intervals, given how slowly PTSD often develops such that it may take years for symptoms to reach crisis levels after a peace deployment.

Post-deployment mental health screening serves to maximize the mental health of individual unit members.

IV. COSTS AND CONSEQUENCES OF DEPLOYMENT-RELATED SCREENING

In its 2020 report entitled "Screening Programmes: A Short Guide: Increase Effectiveness, Maximize Benefits, and Minimize Harm" the World Health Organization Regional Office for Europe cautioned organizations currently or planning to screen their members for physical or mental health problems to consider and prepare for the costs and potential adverse consequences of screening. These include:

- The time cost for unit members to undergo screening and possible follow-on referrals for diagnosis and treatment.
- The time and facilities costs for unit and medical personnel to administer and score screening instruments, and to clinically evaluate and recommend treatments and dispositions for

individuals who screen positively; screening programs always place a burden on clinical resources for evaluation and treatment.

- False positives place a needless burden on healthcare systems required to determine that, in those cases, no mental disorder actually exists; they can also lead to unnecessary diagnostic procedures or treatments, or complications from those procedures or treatments.
- False negatives cause harm more indirectly because they typically go unrecognized in a screened population; false negatives lead to significant health problems going undiagnosed and untreated, and can cause organizations to underestimate the health problems currently experienced by a given population and overestimate their medical readiness.

In its 2020 report, WHO cited ten principles for screening developed by Wilson and Jungner and published by the WHO in 1968, reproduced in Figure 2-1, below.

Figure 2-1. Wilson & Jungner's Principles of Screening

1. The condition should be an important health problem.
2. There should be an accepted treatment for patients with recognized disease.
3. Facilities for diagnosis and treatment should be available.
4. There should be a recognizable latent or early symptomatic phase.
5. There should be a suitable test or examination.
6. The test should be acceptable to the population.
7. The natural history of the condition, including development from latent to declared disease, should be adequately understood.
8. There should be an agreed policy on whom to treat as patients.
9. The cost of case-finding (including a diagnosis and treatment of patients diagnosed) should be economically balanced in relation to possible expenditure on medical care as a whole.
10. Case-finding should be a continuous process and not a "once and for all" project.

Source: Wilson & Jungner (1968), cited by WHO (2020)

Programs for deployment-related mental health screening typically conform to most of these principles — certainly, PTSD and other deployment-related mental disorders are important health conditions for which quick and simple screening instruments exist, with well-studied thresholds for triggering further evaluations. Greater challenges often exist, especially in developing countries with few mental health resources, in providing clinical mental health evaluations of individuals who screen positively, and in providing a course of treatment for those who receive a mental health diagnosis (WHO Mental Health Atlas, 2020). Costs and risks of performing deployment-related mental health screening must be actively managed and weighed against anticipated benefits from screening.

V. FINDINGS FROM PHASE 1 PTSD STUDY SURVEY OF T/PCCs

A. Pre-Deployment Screening: 56 of 61 participating T/PCCs (92%) responded positively to Question 1, which asked whether your country routinely screened uniformed personnel for mental health problems such as PTSD before deploying to a UN peace operation.

B. Post-Deployment Screening: Of 63 T/PCCs who responded to Question 4, which asked whether your country screens personnel for PTSD and mental health problems after returning from deployment:

- 40 (64%) reported routinely screening personnel for PTSD one or more times post-deployment, even if not known to be symptomatic.
- 19 (30%) reported screening personnel for PTSD post-deployment, even if not known to be symptomatic.
- 4 (6%) reported either not screening for mental health problems post-deployment or not knowing whether their country performed such screening.

Thus, 92% of T/PCCs who responded to the PTSD Survey reported screening military or police personnel prior to a UN deployment, and 94% reported screening personnel after they returned from a UN deployment, although about one-third of those who screen after deployment reported only assessing personnel for possible PTSD if they experienced mental health problems, not routinely regardless of reported symptoms.

VI. FINDINGS FROM REVIEW OF SCIENTIFIC AND GOVERNMENTAL LITERATURES

A. Research Questions

The following are the questions we sought to answer from a review of published descriptions of national approaches to PTSD prevention in uniformed military or police personnel, and reports of scientific studies of the effectiveness and tolerability of these same approaches.

1. Which specific screening procedures are the most effective for identifying potential deployment-limiting mental health conditions such as PTSD prior to a UN deployment?
2. Which standards are the most effective for determining whether unit members with known mental health problems such as PTSD can safely deploy to UN peace operations?
3. Which specific screening procedures are the most effective for identifying need for evaluation and treatment of potential mental health problems such as PTSD in uniformed personnel after returning from a UN peace deployment?
4. What are the recognized costs and risks associated with pre- and post-deployment mental health screening of uniformed military or police personnel?
5. What, if any, gender differences may exist with respect to deployment-related mental health screening?

B. Research Methods

We conducted a series of keyword searches of PUBMED, PsycInfo, and Google Scholar combining the terms “PTSD,” “Mental Health,” “Screening,” “Post-deployment,” “Pre-deployment,” “Military,” and “First Responders.” We also conducted focused searches of national and international English-language military mental health sites for current policies and practices.

These searches returned N = 64 English-language full-text articles which we downloaded and read. Of these, N = 34 were selected for full review because they directly addressed one or more of our four research questions; the remaining 30 did not.

Our sample of N = 34 articles were published between 2004 and 2023 by researchers from the following six nations: Australia, Brazil, Canada, Denmark, U.K., and U.S.A. They are all included in the list of References at the end of this Section.

C. Global Practices: Pre-Deployment Mental Health Screening

1. Objective of Pre-Deployment Mental Health Screening: Given that for most nations, pre-deployment mental health screening is one element of a comprehensive approach to monitoring and maintaining the physical and mental health and fitness of military and police personnel throughout their careers, few new physical or mental health problems are typically found during pre-deployment screening; by that point in each unit's and individual's preparations for deployment, most potential deployment-limiting health problems should already known to both individual unit members and their healthcare support systems. Thus, the principal objective of pre-deployment mental health screening is as a final, mostly perfunctory check on health status before deploying.

2. Components of Pre-Deployment Mental Health Screening: The following are the components of national and international programs for pre-deployment screening, as described in published literature.

- Review of the member's individual health record by a general medical officer
- Administration and scoring of self-report screening questionnaires for common mental health problems (most commonly for PTSD, Depression, Anxiety, Alcohol Use, & Psychological Distress)
- Clinical interview and examination by a general medical officer
- Mental health consultation, if indicated
- Collection and recording of data on individual and unit mental health readiness

3. Global Best Practice: Assessing Deployability Despite the Presence of a Mental Disorder

The most widely used standard for assessing whether a uniformed unit member with a known physical or mental health condition is physically qualified to deploy to an operational environment is "A NATO Guide for Assessing Deployability for Military Personnel with Medical Conditions," STO Technical Report TR-HFM-174, 2014. This NATO report provides guidelines for assessing deployability of military personnel with any physical or mental health problem, including PTSD. The following factors are recommended for consideration in every case:

- Length and location of deployment
- Availability of medical support during deployment
- Type of mission
- Individual's role
- Severity and stability of symptoms
- Risk for exacerbation (both its likelihood and potential consequences)

Figure 2-2, below, lists the current NATO standards for deciding not to deploy an individual to an operational environment known to suffer specifically from symptoms of PTSD.

Figure 2-2. NATO Standard 3.2.13.3 for Non-Deployability in Cases of PTSD

- Currently being evaluated for possible diagnosis of PTSD; **OR**
- Diagnosed with PTSD and currently has symptoms which interfere with ability to carry out full military duties; **OR**
- Diagnosed with PTSD and with symptoms controlled but period of stability is less than 6 months; **OR**
- Diagnosed with PTSD and has symptoms under control but requires frequent follow-up with a specialist (more often than every 6 months); **OR**
- Diagnosed with PTSD and with symptoms controlled and stabilized, but judged to be at risk for deterioration if deployed; **OR**
- Requiring anti-psychotics; or lithium or anti-convulsants; **OR**
- Ongoing requirement for mental health treatment

Source: A NATO Guide for Assessing Deployability for Military Personnel with Medical Conditions," STO Technical Report TR-HFM-174, 2014

Note that according to this NATO standard, a uniformed person should be considered eligible for deployment despite being diagnosed with PTSD if all the following conditions are met:

(a) PTSD symptoms have been stable for at least 6 months

(b) Individual is not prescribed anti-psychotics, lithium, or other anti-convulsants

(c) individual does not require frequent (e.g., weekly) mental health follow-up or treatment

(d) Individual has demonstrated their ability to perform their duties during pre-deployment training

Medical officers can assess the first three of these four criteria on their own, but require input from unit leaders to assess the all-important fourth criterion: proven ability to do one's job under the stress of tough and realistic pre-deployment training.

D. Global Practices: Post-Deployment Mental Health Screening

1. Objectives of Post-Deployment Mental Health Screening: Unlike pre-deployment screening, screening for mental health problems during the post-deployment period is considered to be an important tool for early recognition and treatment of either new mental health conditions or pre-existing mental health problems that worsened over the course of deployment. For this reason, many nations invest many more resources in post-deployment screening, often beginning before unit members repatriate and continuing for months or years afterward. The following are the principal objectives of post-deployment mental health screening.

- Review during-deployment mental health evaluations and treatments, if any
- Evaluate current level of mental health symptoms, and the extent to which they may interfere with occupational or social functioning
- Evaluate and document significant deployment stressors & other occupational exposures during deployment, as risk factors for later illnesses
- Initiate mental health referral or follow-up when indicated
- Collect and record data on population risk for mental health problems

2. Components of Post-Deployment Mental Health Screening: The following are the components of national and international programs for post-deployment screening, as described in published literature.

- Review records of contacts with healthcare systems during deployment, if any
- Administer self-report screening questionnaires for common mental health problems (e.g., for PTSD, Depression, Anxiety, Alcohol Use, & Psychological Distress)
- Administer self-report questionnaires addressing major psychosocial stressors and other health-related occupational exposures during deployment
- Clinical interview and examination by a general medical officer
- Clinical interview by a mental health professional, either routinely for all repatriating personnel or only for those who screen positively on one of the mental health symptom questionnaires
- Referrals for further evaluation and treatment, if indicated
- Collection and recording of data on population risk for mental illness

3. Timing of Post-Deployment Mental Health Screening: As with their diversity of components of post-deployment mental health screening programs, world nations perform these screenings at widely differing timepoints. Most common are screening activities occurring within 30 days of repatriating and again, 6 to 12 months later, but many nations repeat screening activities at 6 to 12 month intervals for as long as they have access to recently deployed personnel, many of whom soon either leave military or police service or transfer to other units which may not be aware of their deployment-related risk for mental health problems and may not repeat post-deployment screening.

E. Global Practices: Screening Questionnaires

The following English-language, self-report screening questionnaires have emerged over recent decades as the most widely employed and validated instruments to screen for the four most common pre- or post-deployment mental health problems in uniformed personnel (PTSD, depression, anxiety, and alcohol abuse), as well as a rapidly emerging instrument to screen for levels of psychological distress, an important predictor of risk for worsening and current need for mental health assistance. Almost all of these screening questionnaires have been translated into one or more other languages, and many have been empirically validated in diverse populations worldwide.

For each screening questionnaire, we have provided a key reference citation, the range of possible scores, and the score levels that are typically used to trigger further evaluation and possible treatment (sometimes called *cut scores*). Where two cut scores or a range of cut scores are given, it is because differences exist between users of that instrument in deciding when a mental health referral is indicated. In most cases, a higher cut score is used when a population already has a high base-rate for that particular mental health problem, so only the highest scores will trigger a new mental health referral. Lower cut scores typically result in more specialty mental health referrals, and more false positives, but also fewer false negatives. In only one case — the short form of the Alcohol Use Disorder Identification Test (AUDIT-C) — different cut scores are recommended for women and men in uniform, given the higher base rates of alcohol use typically found in males in military or police populations.

Figure 2-3. Screening Questionnaires in Frequent Use for PTSD

MEASURE	# OF ITEMS	SCORE RANGE	CUT SCORE*	KEY REFERENCE
PTSD Checklist for DSM-5 (PCL-5)	20	0 – 80	30 – 50	Weathers et al., 2013
Psychological Reactions following International Missions (PRIM-PTSD)	12	12 – 48	24.5 – 29.5	Karstoft et al., 2017
Abbreviated PTSD Checklist (PCL-6)	6	5 – 30	14	Lang & Stein, 2005
Primary Care Screen for DSM-5 PTSD (PC-PTSD-5)	5	0 – 5	1 – 3	Prins et al., 2016
** Cut score is the minimum score or range of scores considered a positive screen*				

Figure 2-4. Screening Questionnaires in Frequent Use for Depression

MEASURE	# OF ITEMS	SCORE RANGE	CUT SCORE*	KEY REFERENCE
Beck Depression Inventory-II (BDI-II)	21	0 – 63	14 – 29	Beck et al., 1996
Patient History Questionnaire-9 (PHQ-9)	9	0 – 27	5 – 20	Spitzer et al., 1999
Psychological Reactions following International Missions (PRIM-Depression)	8	0 – 8	6	Karstoft et al., 2017
Patient History Questionnaire-2 (PHQ-2)	2	0 – 6	3	Spitzer et al., 1999
** Cut score is the minimum score or range of scores considered a positive screen*				

Figure 2-5. Screening Questionnaires in Frequent Use for Anxiety

MEASURE	# OF ITEMS	SCORE RANGE	CUT SCORE*	KEY REFERENCE
Generalized Anxiety Disorder-7 (GAD-7)	7	0 – 21	5 – 15	Spitzer et al., 2006
Panic Disorder Severity Scale (PDSS)	7	0 – 28	8 – 9	Shear et al., 2001
Generalized Anxiety Disorder-2 (GAD-2)	2	0 – 8	6	Karstoft et al., 2017
Patient History Questionnaire-2 (PHQ-2)	2	0 – 6	3	Kroenke et al., 2007
** Cut score is the minimum score or range of scores considered a positive screen*				

Figure 2-6. Screening Questionnaires in Frequent Use for Alcohol Use

MEASURE	# OF ITEMS	SCORE RANGE	CUT SCORE*	KEY REFERENCE
Alcohol Use Disorder Identification Test (AUDIT)	10	0 – 40	8 – 15	WHO, 1990
Alcohol Use Disorder Identification Test (AUDIT-C)	3	0 – 12	3 (W) – 4 (M)†	Shear et al., 2001

** Cut score is the minimum score or range of scores considered a positive screen*
† AUDIT-C is the only screening questionnaire with different cut scores for women (W) and men (M)

Figure 2-7. Screening Questionnaires in Frequent Use for Psychological Distress

MEASURE	# OF ITEMS	SCORE RANGE	CUT SCORE*	KEY REFERENCE
Kessler Psychological Distress Scale (K10)	10	10 – 50	5 – 15	Kessler et al., 2002
Kessler Psychological Distress Scale (K6)	6	0 – 24	13	Kessler et al., 2010

** Cut score is the minimum score or range of scores considered a positive screen*

Whether assessed before or after a scheduled deployment, scores which exceed published cut scores on screening questionnaires for PTSD, depression, anxiety, or alcohol use suggest the possibility of a diagnosable mental disorder and should, therefore, trigger a mental health referral for further evaluation and possible treatment. Scores greater than published cut-scores for the K10 and K6 do not indicate the presence of any particular mental disorder, but rather the presence of significant and potentially disabling psychological distress, independent of diagnosable mental disorders, an important predictor of risk for a mental health crisis, including suicide or violence.

F. Global Practices: Checklists of Stressor Exposures

Although not widely studied, a number of nations include in their procedures for post-deployment mental health screening the administration and review of a brief questionnaire addressing roles and stressor experiences during deployment, particularly experiences with a high likelihood of being emotionally or morally harmful, so-called potentially traumatic events (PTEs) and potentially morally injurious events (PMIEs). The simplest form of stressor-exposure checklist could be a few yes/no questions asking about witnessing, causing, or being unable to prevent physical injury or death, losing close comrades to injury or death, and witnessing or experiencing harassment or assault based on race or gender.

Figure 2-8, below, lists widely studied self-report measures of operational stressor exposures of various types, which can be added in whole or part to procedures for post-deployment mental health screening (see also Nash et al., 2010, "Consensus Recommendations for Common Data Elements for Operational Stress Research and Surveillance: Report of a Federal Interagency Working Group.")

Figure 2-8. Screening Questionnaires Addressing Operational Stressor Exposures

MEASURE	# OF ITEMS	SCORE RANGE	KEY REFERENCE
Combat Experiences Scale	17	17 – 102	Vogt et al., 2012, Deployment Risk & Resilience Inventory (DRRI-2).
Postbattle Experiences Scale	13	13 – 78	
Deployment Concerns Scale	12	12 – 60	
Deployment Environment Scale	14	14 – 70	
Support from Family/Friends Scale	8	8 – 40	

Unit Support Scale	12	12 – 60	
Moral Injury Events Scale (MIES)	9	9 – 54	Nash et al., 2013

Note that unlike screening questionnaires for mental disorder symptoms, stressor exposure questionnaires have no cut scores as thresholds for action; what matters is the volume and severity of stressors experienced during deployment, so every positive response to a stressor exposure questionnaire is potentially significant.

G. Global Best Practice: Primary Care Screen for DSM-5 PTSD (PC-PTSD-5)

Given the status of PTSD as both one of the most common and most serious mental health problems that can follow deployment to an operational peace or combat environment, it is not surprising that screening instruments for PTSD have been the most broadly studied of any screening tools in uniformed military and police populations. One specific screening questionnaire for PTSD — the Primary Care Screen for DSM-5 PTSD (PC-PTSD-5), Figure 2-9, below — has emerged as a global best practice because it is brief and efficient (comprising only five questions in Part B answered only if the response to the Part A scoping question is affirmative) while also incorporating an important change to PTSD diagnostic criteria in the American Psychiatric Association's most recent diagnostic manual, DSM-5, addressing guilt and anger as symptoms of possible moral injury trauma, an important mechanism of psychological harm in peace operations. Even though in existence only since 2016, the PC-PTSD-5 has also already been translated into several languages.

Figure 2-9. Primary Care Screen for DSM-5 PTSD (PC-PTSD-5)

A. **Sometimes things happen to people that are unusually or especially frightening, horrible, or traumatic. For example:**

- a serious accident or fire
- a physical or sexual assault or abuse
- an earthquake or flood
- a war
- seeing someone be killed or seriously injured
- having a loved one die through homicide or suicide

Have you experienced this kind of event? (YES/NO)

B. If you answered YES to part A, then in the past month, have you…

1. Had nightmares about the event(s) or thought about the event(s) when you did not want to? **YES / NO**
2. Tried hard not to think about the event(s) or went out of your way to avoid situations that reminded you of the event(s)? **YES / NO**
3. Been constantly on guard, watchful, or easily startled? **YES / NO**
4. Felt numb or detached from people, activities, or your surroundings? **YES / NO**
5. Felt guilty or unable to stop blaming yourself or others for the event(s) or any problems the event(s) may have caused? **YES / NO**

Prins et al. (2016). Journal of General Internal Medicine, 31, 1206-1211

H. Effectiveness and Acceptability of <u>Pre-Deployment</u> Mental Health Screening

Of the N = 34 full-text English-language scientific articles we found addressing deployment-related mental health screening, the N = 8 studies tabulated in Figure 2-10 evaluated the effectiveness or acceptability specifically of pre-deployment mental health screening.

As you will see, only one of these studies (Warner et al., 2011a) reported positive findings confirming that pre-deployment screening actually resulted in lower rates of mental health problems during deployment. The other seven studies drew attention to the following weaknesses and shortcomings of national pre-deployment mental health screening programs:

- Failure of pre-deployment mental health screening to predict mental health diagnoses after returning from deployment (Rona et al., 2006)
- Underreporting of known mental health diagnoses by soldiers preparing to deploy (Nevin, 2009)
- Under-recording of known deployment-limiting mental health conditions or medication treatments in individual health records (Cha et al., 2023; Curley & Warner, 2017; Westphalen, 2018)
- Inadequate training of medical and mental health officers performing screenings in occupational roles and requirements (Curley et al., 2018; Wallace et al., 2021)
- Limitations in screening accuracy caused by institutional and individual mental health stigma (Curley et al., 2018)

Figure 2-10. Studies of the Effectiveness or Acceptability of Pre-Deployment Screening (N = 8)

STUDY / COUNTRY	METHOD	RESULTS
Warner et al., 2011a USA	Controlled study of effectiveness of DoD's stricter 2006 MH deployability standards	Screened brigades had lower rates during deployment of SI, MH impairment, or Medevac
Rona et al., 2006 UK	Longitudinal cohort study of N = 2820 soldiers screened before Iraq deployment	Pre-deployment screening did not predict MH diagnoses 2-3 years after deployment
Nevin 2009 USA	Compared PreDHA with recorded MH Dx in N = 11,179 service members	Only 36% of 615 soldiers with a MH Dx correctly admitted it on their PreDHA
Curley & Warner, 2017 USA	Compared Inf. Div. records of recent acute MH problems or medication use with current deployability status	The Profile system missed almost 50% of soldiers with recent suicidality, homicidality, or disqualifying medication use
Curley et al., 2018 USA	Focus groups & interviews with N = 29 Army BH providers regarding weaknesses in Profile system	Four obstacles: (1) Insufficient time, (2) Concerns over soldier's careers, (3) Inadequate training, (4) MH stigma
Westphalen, 2018 Australia	Reviewed challenges of assessing medical deployability and suitability in ADF	35% of 13,816 medical employment classification reviews on record lacked sufficient information

Wallace et al., 2021 Australia	Reviewed ADF medical deployability process and made recommendations	Psychiatrists need better training on occupational roles and stressors
Cha et al., 2023 USA	Study of a Deployment-Limiting Medication (DLM) surveillance program	Only 8% of soldiers on a deployment-limiting med were correctly Profiled as non-deployable

I. Effectiveness and Acceptability of Post-Deployment Mental Health Screening

Of the N = 34 full-text English-language scientific articles we found addressing deployment-related mental health screening, the N = 11 studies tabulated in Figure 2-11 evaluated the effectiveness or acceptability specifically of post-deployment mental health screening.

As you will see, only two of these studies (**McCarthy et al., 2012, and Boulos & Garber, 2020)** reported positive findings confirming that post-deployment screening actually resulted in the accurate identification and earlier treatment of new cases of deployment-related mental health problems.

The other nine studies drew attention to the following weaknesses and shortcomings of national post-deployment mental health screening programs:

- High rates of false negatives due to under-reporting by screened personnel of current symptoms and recent stressor exposures or stress reactions (Aralis et al., 2014; Bull et al., 2015; Warner et al., 2011b)
- Failure of many individuals who screened positively for post-deployment mental health problems (especially PTSD) to receive subsequent specialty mental health evaluation or treatment as recommended (**Panaite et al., 2018;** Rona et al., 2004; Rona et al., 2017; **Mengeling et al., 2022; Vanneman et al., 2017**)
- Failure of some personnel scheduled for post-deployment mental health screening to actually receive one (Beliveau et al., 2019)

Two of the N = 11 studies evaluating the effectiveness of post-deployment mental health screening sought to examine gender differences in post-deployment screening.

- Mengeling et al., 2022, found that military women were slightly less likely to screen positively for mental health problems post-deployment (69% for women vs. 72% for men), and slightly less likely to accept a mental health referral (40% for women vs. 48% for men)
- **Vanneman et al., 2017**, found that women military veterans who screened positively post-deployment were slightly more likely to seek subsequent mental health care than men

Figure 2-11. Studies of the Effectiveness or Acceptability of Post-Deployment Screening (N = 11)

STUDY / COUNTRY	METHOD	RESULTS
McCarthy et al., 2012 USA	Reviewed PDHRA screening results in N = 58,242 USAF personnel in 2008	PDHRA was moderately effective at identifying PTSD & depression, but many false positives

Boulos & Garber, 2020 Canada	Compared post-dep screening status with subsequent MH care in N = 3005 CAF personnel	74% were screened; delay to MH care was 578 days for screeners, 928 days for non-screeners
Rona et al., 2004 UK	Compared full to abridged post-dep screens in N = 4500 military troops	< 30 % who screened positive on any screen accepted a referral for MH evaluation
Warner et al., 2011b USA	Compared anonymous surveys to mandatory PDHAs in N = 1712 soldiers	Soldiers were 2–4 times more likely to admit to MH problems on an anonymous survey
Aralis et al., 2014 USA	Performed latent class analyses (LCAs) on PDHA data in N = 12,581 sailors & Marines	PDHAs and PDHRAs under-report the true prevalence of MH problems after deployment
Bull et al., 2015 UK	PDHAs and PDHRAs under-report the true prevalence of MH problems after deployment	Concerns included likely under-reporting by troops, inc. workload, and knowing how to help
Rona et al., 2017 UK	Followed the MH of N = 10,190 troops 10-24 mos. after post-deployment MH screening	Offering tailored MH advice to pos. screeners had no impact on later MH burden
Vanneman et al., 2017 USA	Compared PDHRA screening results in N = 25,168 Reserve soldiers with records of later enrollment for MH care in the VA	A little more than 50% of demobilized soldiers who had screened pos. for depression or PTSD received MH care in the VA, W > M
Panaite et al., 2018 USA	Reviewed studies of military post-deployment MH screening (PDHA) in US	Rates of MH referral after PDHA varied from 4 to 54% for PTSD, 6 to 91% for depression
Believeau et al., 2019 Canada	Reviewed rate of completion of post-dep MH screens in N = 28,460 CAF 2009-2014	67% of CAF personnel requiring a post-dep screen received one; only 43% when due
Mengeling et al., 2022 USA	Evaluated a new online post-dep MH screen, Web-Ed, in N = 414 RNG OIF/OEF soldiers	69% of women and 72% of men screened pos.; 40% (W) and 48% (M) planned to seek MH referral

VII. CONCLUSIONS

A. Pre-Deployment Mental Health Screening

1. Pre-deployment mental health screening is an important and widely employed component of comprehensive health promotion programs in military and police organizations. Along with physical and mental health screening performed prior to accession and periodically thereafter (e.g., tri-annually for most personnel or annually for high-risk groups), screening for both physical and mental health problems within 30 days prior to deploying to a peace operation serves as a just-in-time check to ensure that everyone scheduled to deploy is physically and mentally qualified to do so. Besides serving to assure the mental health of military and police deployers, and therefore also their ability to tolerate the stress of

peace operations, unit-wide pre-deployment mental health screening also serves as a check on the ability of occupational health maintenance programs to keep track of individual unit-members' health and well-being, including their current active health problems and ongoing treatments. In an optimally functioning occupational healthcare system, pre-deployment screening should uncover few surprises. It should lead to few new mental health diagnoses.

2. Just as many chronic but well-controlled physical health problems are not incompatible with successful operational deployment, the mere presence of mental health symptoms or an active mental health diagnosis should not automatically disqualify otherwise trained and capable military or police personnel from deploying to a UN peace operation. As with physical health problems, what matters is whether individuals' current symptoms, if any, limit their abilities to perform their expected duties, require them to receive treatments that are unavailable in an operational environment, or are likely to require them to be medically evacuated from a UN mission because of a disabling worsening of their symptoms. NATO's (2014) Guide for Assessing Deployability for Military Personnel with Medical Conditions (STO Technical Report TR-HFM-174) provides best-practice guidelines for assessing deployability of military personnel with any physical or mental health problem, including PTSD. Most important are symptom stability for at least 6 months and a proven ability to perform operational duties during pre-deployment training.

3. The essential procedure for pre-deployment mental health screening is a review of the individual's health records and a clinical interview and assessment by a general medical officer who is familiar with operational roles and stressors. As adjuncts, medical officers may also review individuals' responses to screening questionnaires addressing current life challenges or symptoms of common mental health problems — e.g., for PTSD, depression, anxiety, and alcohol abuse — with the expectation that significantly positive responses to screening questionnaires will trigger a specialty mental health evaluation before being medically cleared for deployment. Most nations who screen military or police personnel for mental health problems immediately prior to their deployments embed such screening in a broader program of evaluating health, fitness, and readiness across many biological, psychological, social, and spiritual dimensions, a practice which may help to destigmatize mental health and PTSD.

4. The greatest challenge for performing effective pre-deployment mental health screening is obtaining complete and accurate information about each individual's current health status and recent mental health evaluations and treatments, if any. The two most common causes for inaccurate or incomplete information about individuals' current health status during pre-deployment screening are under-reporting of recent mental health symptoms by individuals who either don't want to admit to having mental health problems or don't want to be excluded from scheduled deployments, and gaps or fragmentation in individuals' available health record. The latter problem can be mitigated by ensuring the completeness of health records before attempting pre-deployment screening, whereas the problem of under-reporting may be addressed, as many nations do, by combining or preceding pre-deployment mental health screening with destigmatizing education and training about the nature, recognition, and management of stress-related mental health problems, including guidance on how to decide when mental health help is needed.

5. Although pre-deployment mental health screening may reduce the risk for disabling stress reactions in uniformed personnel during deployment, screening cannot eliminate risk for new mental health problems during and after deployment because operational stress injuries can happen to anyone at any time. No one is immune. Hence, recognizing and attending to mental health problems in unit members must be an ongoing responsibility of unit and medical leaders in all settings, not a "once and for all" screening at one point in time (WHO, 2020).

B. Post-Deployment Mental Health Screening

1. Post-deployment voluntary mental health screening is also a widely employed component of comprehensive health promotion programs in military and police organizations that engage in operational deployments, given the strong correlations between stressor exposures during peace or combat deployments and subsequent mental health problems. Because of the frequent long delays between returning from a stressful deployment and the emergence of disabling mental health symptoms, post-deployment screening is often repeated at 6- to 12-month intervals for as long as is practicable.

2. As with pre-deployment screening, the core procedure for post-deployment mental health screening is an interview and assessment by a general medical officer or mental health officer, but compared to pre-deployment screening, assessments of mental health after returning from deployment rely more heavily of self-report questionnaires addressing common mental health symptoms and stressor exposures. The most widely used and validated self-report questionnaires for post-deployment mental health screening are the following:

a. For PTSD: PC-PTSD-5 (5 items) or PCL-5 (20 items), both based on DSM-5 criteria

b. For depression: PHQ-2 (2 items) or PHQ-9 (9 items)

c. For anxiety: Both GAD-7 (7 items addressing generalized anxiety) and PDSS (7 items addressing panic anxiety), since they address two different anxiety domains

d. For alcohol abuse: AUDIT-C (3 items) or AUDIT (10 items)

e. For psychological distress: K6 (6 items) or K10 (10 items)

In general, shorter versions of screening questionnaires for these five mental health domains perform as well as longer versions (i.e., with similar rates of false positives and false negatives).

Self-report questionnaires addressing stressor exposures during deployment are less well studied and standardized as components of deployment-related mental health screening. Ideally, organizations might create ad hoc checklists of potentially traumatic or morally injurious stressor events for each deployment to a peace operation based on the history of that particular deployment and a list of challenging events that occurred during that deployment.

The Moral Injury Events Scale (MIES, Nash et al., 2013) has emerged as a useful measure of exposure to potentially morally injurious events (PMIEs) in operational environments and a powerful predictor of the entire spectrum of occupational mental health problems, including PTSD, Complex PTSD, and burnout. The MIES has been translated into several languages other than English.

3. Compared to mental health screening prior to deployment, post-deployment mental health screening often requires a much greater investment of professional resources and time during each round of screening. Since scores on screening questionnaires above published thresholds (cut scores) require further specialty mental health evaluations and possible treatment, military or police organizations should have ready access to professional mental health resources to even attempt post-deployment mental health screening of recently repatriated personnel (WHO, 2020).

4. Organizations performing post-deployment mental health screening should expect significant numbers of both false negatives (due to under-reporting or delayed emergence of mental health symptoms) and false positives (due to the initial presence of acute stress symptoms and emotional distress that resolve over the next few weeks or months without resulting in a diagnosable mental disorder, a not-uncommon trajectory for post-traumatic stress symptoms). Even more than during the

pre-deployment period, personnel who recently returned (or are about to return) from an operational deployment may benefit from concurrent education and training about the nature, recognition, and management of stress-related mental health problems, including guidance on how to decide when mental health help is needed, especially if such training is based on destigmatizing best-practice models of stress such as the Mental Health Continuum Model, which acknowledges psychological injuries as intermediate states between health and illness (see NATO Standard AMedP-8.6, Forward Mental Heathcare, 2019). Besides training in modern mental health literacy, another action organizations can take to reduce rates of under-reporting during mental health screenings is to ensure that organizational policies and practices treat those with recognized mental health problems fairly and compassionately, without blaming them for their own problems (e.g., because of so-called "maladaptive coping") and without removing the possibility of recovering and returning to full active duty in the future.

5. **Besides false negatives and false positives, another major challenge for effective post-deployment mental health screening is ensuring that individuals who are referred to a mental health specialist for evaluation and possible treatment of identified mental health symptoms actually receive such evaluation and treatment.** Several nations have reported sometimes very low rates of follow-through by individuals referred to a mental health professional because of a positive post-deployment evaluation. There are many possible reasons for failures to obtain recommended mental health care, including especially mental health stigma, the real consequences to an individual's career of receiving a mental health diagnosis and treatment, or practical challenges getting access to a mental health professional. Organizations that perform post-deployment mental health screening may benefit from monitoring rates of compliance with subsequent medical and mental health referrals, and identifying and reducing barriers to follow-through with specialty referrals.

6. As with pre-deployment mental health screening, identifying and attending to mental health problems in unit members after repatriation is best an ongoing responsibility shared by unit and medical leadership, unit members, and members of their families over the long haul, not a "once and for all" screening at one or two points in time (WHO, 2020).

C. Gender Differences in Mental Health Screening

Few researchers have had sufficient numbers of women in their samples to be able to compare military or police women and men in their experiences of and responses to pre- or post-deployment mental health screening, but evidence suggests that significant gender differences may exist. Two studies on post-deployment screening included enough women to draw conclusions about gender as a predictor of responses to mental health screens: Mengeling et al., 2022, found that military women were slightly less likely to screen positively for mental health problems post-deployment and slightly less likely to accept a subsequent mental health referral; whereas Vanneman et al., 2017, found that women military veterans who screened positively post-deployment were slightly more likely to seek subsequent mental health care than men.

Differences in base rates of certain mental health problems between women and men also suggest that women should be screened for mental health problems using different thresholds for referral (cut scores) on screening questionnaires. One example already noted is the three-item Alcohol Use Disorder Identification Test (AUDIT-C) test for alcohol abuse, for which women have a lower cut score than men (3 vs. 4 out of 12 possible points) just because men in uniform were found to drink more heavily than women, on average. Given traditional differences in the roles of women and men in operational settings, women may also be exposed to a very different set of stressors than men in uniform.

VIII. REFERENCES

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Section 3. Forward Mental Healthcare: Monitoring and Restoring Mental Health During Deployments

I. OBJECTIVE

This section reviews the rationale, evidence basis, and global best practices for the broad group of prevention activities that involve monitoring and intervening to restore the mental health and well-being of military and police personnel while they are deployed.

II. BACKGROUND

Synonyms for the set of critical prevention activities in peace or combat operations[1] addressed in this section include *Operational Stress Control* (OSC), *Combat and Operational Stress Control* (COSC), *Forward Psychiatry*, and *Forward Mental Healthcare* (NATO, 2019), among others.

From the perspective of Gordon's (1983) operational classification of levels of prevention (Figure 1-4 in Section 1), activities that involve monitoring and mitigating the stress of deployed personnel constitute *Indicated Prevention* because, like first aid for physical illnesses and injuries, these activities target individuals who are already experiencing distress and loss of function, either instead of or as a prelude to receiving clinical healthcare. From the perspective of military or police operations, activities that monitor and restore the mental health of deployed personnel also serve an important *Force Preservation* function to the extent they restore the functional capacity of stress-injured persons and limit the numbers unable to perform their duties during deployment because of stress. These two objectives of activities intended to monitor and mitigate stress during deployment — indicated prevention of mental disorders such as PTSD and preserving the strength of deployed units by limiting the numbers of unit members incapacitated by stress — are sometimes aligned but at other times at odds, creating challenges for unit leaders and mental health professionals supporting peace or combat operations.

The activities reviewed in this section can be carried out by a very diverse group of mental health stakeholders in deployed units, including peers, small unit leaders, chaplains, social workers, nurses, medics, occupational therapists, medical and mental health professionals, and individuals themselves. Regardless of who else is involved in these activities, NATO's (2019) standard for Forward Mental Healthcare asserts that the psychological welfare of deployed troops is the primary responsibility of leaders in the chain of command. Only commanders are in a position to balance mission requirements against the consequences of operational stress on the mental health of deployed personnel and their families, and small unit leaders are often the first to recognize and intervene, whether trained or not, when a unit member becomes impaired by stress. Medical, mental health, religious ministry, and other welfare

[1] Although most of the research in the area of operational stress management has come from combat rather than peace operations, existing evidence indicates that the stressors, mechanisms of psychological injury, and mental health outcomes are virtually the same in peace and combat operations, so we will not attempt to distinguish between the stress of peace and combat operations.

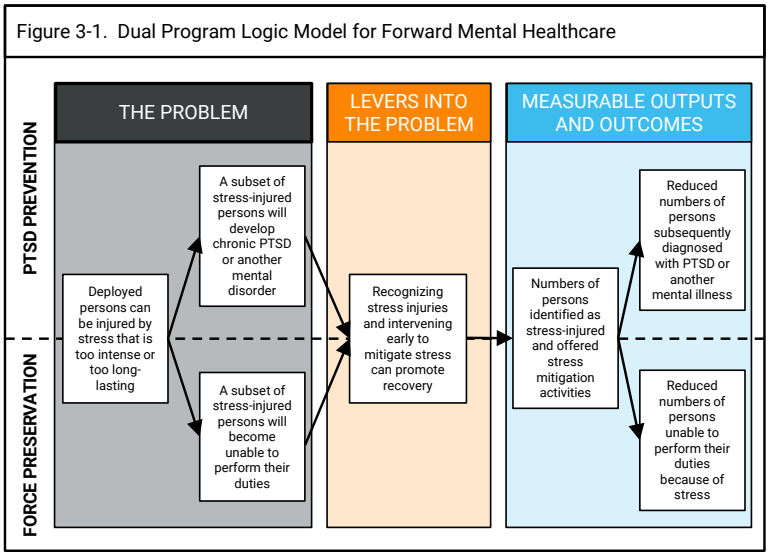
Fprofessionals provide support for military and police chains of command in their crucial PTSD-prevention and force-preservation leadership functions.

III. RATIONALE FOR FORWARD MENTAL HEALTHCARE

A. Logic Model for Forward Mental Healthcare

Figure 3-1, below, depicts a generic logic model for a program to monitor the stress levels of deployed military and police personnel, and to intervene quickly to mitigate the stress levels of those recognized as having problems. Note how the single problem of the potential for deployed personnel to become harmed by stress increases risk for both later mental health problems like PTSD and, more immediately, becoming unable to perform one's duties while deployed. This logic model for Forward Mental Healthcare proposes that activities performed during deployment that promote the early identification and rapid mitigation of acute stress problems can potentially reduce risk for both short-term role failure and long-term mental health problems. Whether such interventions successfully reduce the subsequent incidence and severity of PTSD or successfully reduce the numbers of stress casualties requiring limitations in their duties or medical evacuations can only be determined through the careful collection and analyses of output and outcome data.

Figure 3-1. Dual Program Logic Model for Forward Mental Healthcare



B. Terms and Definitions

Over the past century, a number of different labels have been used for the problem state we have termed *injured by stress* in our proposed logic model. Among those in the broadest use are:

- Combat Stress Reaction (CSR)
- Operational Stress Reaction (OSR)
- Combat or Operational Stress Reaction (COSR)
- Acute Stress Reaction (ASR)

The first three of these terms all refer to "a disorder of psychological function which is a normal response to an abnormal situation experienced during operations, and which may cause a temporary inability to perform duties." (NATO, 2019, p. 1-2.) The only difference between them is the setting of the stress

reaction, i.e., whether the stress is caused by exposure to combat or some other military or police operation.

The fourth term, *Acute Stress Reaction*, is the corresponding medical term for the same psychological and biological state as an OSR or CSR. Because it is so well defined, applicable to all settings (not just during military or police operations), and already studied in many populations, ASR may be the preferred term for research reports. The diagnostic features of ASR, as established in the World Health Organization's (2023) International Classification of Diseases, 11th Edition (ICD-11), are listed in Figure 3-2, below. Note that even though included in a compendium of diseases, an ASR is not considered a mental illness, per se, but rather a condition that might occur during normal life that deserves special attention because it can easily progress into a potentially preventable and serious stress-related mental illness such as PTSD.

Figure 3-2. Acute Stress Reaction (ICD-11 QE84)

"Transient emotional, somatic, cognitive, or behavioural symptoms as a result of exposure to an event or situation (either short- or long-lasting) of an extremely threatening or horrific nature (e.g., natural or human-made disasters, combat, serious accidents, sexual violence, assault). Symptoms may include autonomic signs of anxiety (e.g., tachycardia, sweating, flushing), being in a daze, confusion, sadness, anxiety, anger, despair, overactivity, inactivity, social withdrawal, or stupor. The response to the stressor is considered to be normal given the severity of the stressor, and usually begins to subside within a few days after the event or following removal from the threatening situation."

Source: WHO (2023).

Another set of terms has emerged in recent years spawned by conceptions of acute stress reactions as symptoms of literal wounds to a person's identity or core self inflicted by stress, rather than as behaviors consciously chosen as a means to cope with stressful situations. Terms in current global use for potentially disabling stress symptoms occurring during military or police operations, conceived as literal stress injuries, include:[2]

- Operational stress injury (OSI)
- Combat stress injury (CSI)
- Combat or operational stress injury (COSI)
- Post-traumatic stress injury (PTSI)

OSI, CSI, COSI, and PTSI refer to the same state of acute distress and impairment as that labeled OSR, CSR, or COSR in other systems. The only difference between the two sets of labels is in the etiology of distress and impairment implied by them, with the key difference lying between consciously chosen, potentially fully reversible coping behaviors ("reactions") and the irreversible and unchosen sequence of events that can follow literal harm to a person caused by stress that exceeds their ability to cope because it is either too intense or too long-lasting ("injuries").

IV. HISTORICAL CHALLENGES FOR FORWARD MENTAL HEALTHCARE

[2] For a discussion of the distinction between stress reactions and stress injuries, see Nash WP. Combat/operational stress adaptations and injuries. In Figley CR & Nash WP, Eds. Combat Stress Injury: Theory, Research, and Management. New York: Routledge; 2006: 33-64.

To make sense of the current diversity and sometimes contradictory nature of global approaches to Forward Mental Healthcare, it may be helpful to review its history over the past century. Historian Ben Shephard's (2001) *War of Nerves: Soldiers and Psychiatrists in the Twentieth Century* chronicled the responses of Western militaries to the crisis of shell shock (and *Nervenschock*) during the early years of World War I, when tens of thousands of stress casualties were medically evacuated from the battlefields of Europe on both sides of the war, decimating up to 10% of deployed personnel in some units.[3] This truly was a crisis for Austria, Britain, France, and Germany because personnel losses due to shell shock not only created critical shortages of combatants on the front lines, they also created an economic nightmare for these nations, which now had to build and staff a growing number of new psychiatric hospitals, and pay disability pensions to a growing number of permanently disabled veterans. In 1916, stress casualties were clearly a serious Force Preservation challenge, so the first approaches to Forward Mental Healthcare focused primarily on reducing the numbers of stress casualties medically evacuated from the front lines. The prevention of later mental disorders such as PTSD was not yet a concern because post-traumatic stress illnesses were not yet known, and wouldn't be recognized for another 60 years or more.

In 1916, there existed sharp differences of opinion among medical and psychiatric professionals whether shell shock or *Nervenschock* constituted real psychiatric problems, representing literal damage to the central nervous system, rather than an expression of mere cowardice, weakness of character, or both. In his book, *Hysterical Men: War, Psychiatry, and the Politics of Trauma in Germany, 1890-1930*, Paul Lerner (2003) traced the scientific arguments that collided on 21 September 1916, when the German Association for Psychiatry convened a special "War Congress" in Munich to address the *Nervenschock* crisis in the war in Europe.[4]

On one side, a group of psychiatrists and neurologists led by Hermann Oppenheim argued that the loss of authority over one's own nervous system that characterized shell shock must be due to literal damage to brain tissues caused by nearby artillery explosions or some other external factor, even though the technologies of the day could find no evidence of such damage. On the other side of the argument stood a group of neurologists and psychiatrists who, following the psychological theories of Sigmund Freud, believed that adult personality in humans was fixed and unchanged by life experiences, so that the massive breakdowns in functioning observed in shell shock cases must be due to a pre-existing weakness or vulnerability that was somehow uncovered by experiences of war. They called this personality weakness *Hysteria,* from the Greek word for uterus, a term chosen to be intentionally stigmatizing to men in uniform (Lerner, 2003).

X-rays of the head never revealed evidence of literal damage to bone or brain in cases of shell shock, and neurologic examinations showed no evidence of focal neurological deficits, as occurred in cases of cerebral stroke or penetrating head trauma, for example. And in some cases, suggestive or coercive treatments (such as through hypnosis or by applying increasing-voltage shocks to the skin of a paralyzed arm or leg) caused symptoms to abate or at least change in character. Worst of all, shell shock cases were increasingly being recognized in soldiers who were never near an artillery blast. Biological stress science did not yet exist in 1916, so no explanation could then be offered for the symptoms of shell shock other than a pre-existing character weakness such as was described by the term hysteria.

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[3] Shephard, Ben. War of Nerves: Soldiers and Psychiatrists in the Twentieth Century. Cambridge, MA: Harvard University Press; 2001.

[4] Lerner, Paul. *Hysterical Men: War, Psychiatry, and the Politics of Trauma in Germany, 1890-1930.* Ithaca, NY: Cornell University Press; 2003.

At the conclusion of three days at the Munich War Congress heatedly debating these two competing theories and their limited empirical support, a vote was called by Karl Moeli, chair of the governing board of the German Association for Psychiatry, to decide whether shell shock could *only* occur in individuals with the pre-existing vulnerability known as hysteria. Dr. Moeli was explicit about his motivation for convening the Munich War Congress and calling this vote: the governments of Germany and Austria had requested it as a means to reduce their financial liability to treat and compensate shell shock cases as true casualties of war. Despite the fact that scientific questions are never decided by a vote, a vote was called and the resolution passed over Oppenheim's strident objections.

The first formal programs for managing stress reactions in war, based on a conception of their being caused more by a pre-existing internal weakness than literal harm caused by some external force, were fielded in 1917. The leader of this effort in the British Army was Charles Myers, who with his partner in the American military, Thomas Salmon, developed the PIE(S) principles for managing combat stress reactions (some versions exclude Simplicity).[5] These principles, still taught and practiced around the world, include:

- (P)roximity: keep the stress casualty near the front lines, within the sound of the guns, so they won't expect to be sent home; keep them in uniform and away from physical casualties
- (I)mmediacy: intervene quickly, as soon as problems are recognized
- (E)xpectancy: create an expectation in the individual that they will recover within 72 hours and return to the front line, and if they don't recover, it can only be because of a pre-existing mental health problem
- (S)implicity: offer little more than 72 hours of rest with three warm meals a day, since stress symptoms are believed to be *normal*, no matter how severe and disabling, and require no specific treatment

As Jones and Wessley (2003) conclude in their review of the history of Forward Mental Healthcare, "The principal aim of PIE treatments was to return men to duty rather than to address their mental state."[6]

Many of the scientific challenges faced by psychiatrists attending the Munich War Congress still confront military and police organizations today. Although the emergence of biological stress science and moral injury as a common mechanism of psychological injury have partially refuted conceptions of acute stress reactions as cowardice or personality weakness, the full nature of acute stress reactions is still poorly understood and many mental health professionals, and likely even more military and police leaders, continue to believe that acute stress reactions are not indications of literal harm to the brain and body, but rather a set of so-called "normal responses to abnormal situations" that are not independent risk factors for later mental illness.

Note that both the definition for OSR or CSR given in NATO's (2019) current Forward Mental Healthcare doctrine and the description of Acute Stress Reaction from WHO's (2023) ICD-11(see paragraph III.B., above) describe these stress states as "normal responses to abnormal situations," even though it is hard to understand how a completely normal stress state could be such a powerful predictor of later mental illnesses of many kinds, as ASRs are now known to be. In high-impact situations, injuries may be

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[5] Another version of WWI-era forward mental healthcare still in use is represented by the acronym, BICEPS, with six principles nearly identical with those in PIES: Brevity, Immediacy, Contact (or Centrality), Expectancy, Proximity, and Simplicity (e.g., Brusher, 2011).

[6] Jones E & Wessely S. "Forward Psychiatry" in the military: Its origins and effectiveness. *J Traum Stress.* 2003;16(4): page 414.

expectable, but that doesn't make them normal. This process of "normalizing" adverse stress states by conceiving of them as normal rather than pathological is intended to reduce the stigma surrounding stress and mental health problems, but its relationship to the WWI battlefield psychiatry principle of Expectancy is apparent, as a means of encouraging recovery through the power of suggestion.

V. FINDINGS FROM THE SURVEY OF T/PCCs IN PHASE 1 PTSD STUDY

The survey conducted of T/PCCs in Phase 1 did not include any items inquiring specifically about current national approaches to CSC, OSC, or Forward Mental Healthcare. Question 17 asked whether each T/PCC provided training for its military and police personnel in stress recognition and management, but did not inquire about the specific concepts and interventions taught. As depicted in Figure 3-3, 51 of 61 responding T/PCCs (84%) reported providing training for their military and police personnel in the recognition and management of stress during deployment.

Of the N = 51 Member States who responded positively to question 17:

- 44 T/PCCs (86%) reported providing PTSD-related training prior to each deployment
- 21 T/PCCs (41%) reported providing PTSD-related training during each deployment
- 24 T/PCCs (47%) reported providing PTSD-related training after each deployment
- 19 T/PCCs (37%) reported providing PTSD-related training at other times even if not deploying

Thus, a large majority of T/PCCs train their personnel in the recognition and management of acute stress problems at various points in deployment cycles.

VI. FINDINGS FROM REVIEW OF SCIENTIFIC AND GOVERNMENTAL LITERATURES

A. Research Questions

The following are the questions we sought to answer from a review of published descriptions of national approaches to Forward Mental Healthcare in uniformed military or police personnel and reports of scientific studies of the effectiveness and tolerability of these same approaches.

1. What are current global practices for monitoring the stress and mental health of deployed military or police personnel, and intervening to mitigate the stress and restore the mental health and well-being of individuals affected by stress during deployment?
2. Which, if any, of these approaches to Forward Mental Healthcare have emerged as global best practices because of their apparent scientific and cultural validity?
3. To what extent have global studies of mental health outcomes in formerly deployed military or police personnel documented the effectiveness of current national approaches to Forward Mental Healthcare at preventing later PTSD and other stress-related mental disorders?
4. What challenges have nations encountered in implementing their policies and procedures for Forward Mental Healthcare?
5. What gender differences may exist in need for and responses to Forward Mental Healthcare?

B. Research Methods

Given the broad scope and diversity of current and historical approaches to Forward Mental Healthcare, we conducted multiple keyword searches of PUBMED, PsycInfo, and Google Scholar combining the terms "Peacekeeping," "Deployment," "Combat," "Military," "Police," "Stress," "Stress Control," "Trauma," "Mental Health," "Monitoring," "Psychological support," and "Psychological intervention."

As the broad spectra emerged of interventions employed to monitor and mitigate stress during operational deployments, and of personnel types tasked with performing these interventions, we performed additional focused literature searches targeting "Peer support," "Chaplain support," "Leader support," "Psychological debriefing," and "Psychological first aid."

These searches returned N = 149 unique English-language articles, which we downloaded in their full text and read. Of these, N = 114 were selected for full review because they directly addressed one or more of our five research questions; the remaining 35 did not.

Our final sample of N = 114 articles were published between 1982 and 2023 by researchers from the following nations and international organizations: Australia, Canada, India, Israel, NATO, Netherlands, Spain, Sweden, U.K., and U.S. They are all included in the references at the end of this section of the report.

C. Global Practices: Monitoring and Restoring Mental Health During Deployments

A general formula for a program to monitor and maintain the mental health of deployed personnel might be given as: Train individuals to monitor and intervene with other individuals, groups of individuals, or themselves, at specific points in time and using specified sets of tools, to mitigate stress and promote recovery from stress problems, in the service of both Force Preservation and the Indicated Prevention of mental disorders like PTSD. Based on this formula, we take the following to be the principal dimensions of Forward Mental Healthcare:

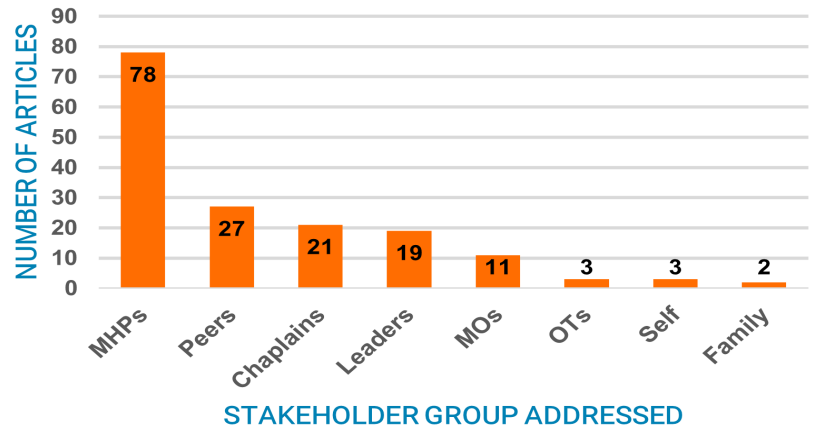
- Who is trained to monitor personnel and deliver various mental health interventions? If several groups of stakeholders are trained to perform various aspects of Forward Mental Healthcare, how do they coordinate and share responsibility? Who bears ultimate responsibility?
- What are various stakeholders in Forward Mental Healthcare trained to do? How do they recognize acute stress reactions or other incipient mental health problems, and then what are they trained to do once they identify a person having problems?
- When are stakeholders in Forward Mental Healthcare expected to perform their monitoring and intervening functions? Are these functions intermittent — only occurring at specific points in time — or do they occur continuously over time?
- Where do monitoring and intervening occur — in what setting and at what echelons of care?

In the next section, we use this framework to make sense of the scope and diversity of national and international approaches to Forward Mental Healthcare.

1. Who: Personnel Groups Trained to Participate in Forward Mental Healthcare

Figure 3-3, below, shows the number of published articles we found, drawn from our sample of N = 114, describing national or international programs to train specific personnel groups to monitor and intervene to maintain the mental health of deployed members of military units.

Figure 3-3. Numbers of Published Articles Addressing Training of Various Personnel Groups in Forward Mental Healthcare, from N = 114



Not surprisingly, the personnel group with the greatest involvement in Forward Mental Healthcare is mental health professionals (MHPs), a large group comprising psychiatrists, psychologists, psychiatric nurses, social workers, mental health counselors, and mental health technicians, and others. Of all stakeholders in Forward Mental Healthcare, mental health professionals have the most training and the broadest skillsets, but they are also, by far, the scarcest in deployed settings. Because of this, many nations have invested in training other personnel groups to recognize and respond to stress problems wherever they occur, including peers in uniform, chaplains and other religious ministers, small unit leaders, and general medical officers (MOs). Occupational therapists (OTs) are medical professionals with training and experience in post-injury rehabilitation, and hence are important members of some forward mental healthcare teams. So far, only a few publications have addressed training individual unit or family members to monitor and manage their own or each other's deployment-related stress.

2. What: Specific Interventions Used to Monitor and Maintain Mental Health During Deployments

From the broad landscape of activities designed to monitor and maintain the mental health of deployed military and police personnel, reported in our N =114 sample of the literature, we extracted eleven categories of such activities, listed in Figure 3-4, below.

Figure 3-4. Categories of Selective and Indicated Prevention Activities Drawn from N = 114 Published Research Papers

INTERVENTION CATEGORY	DEFINITION
PIES/BICEPS	Individual Indicated Prevention interventions explicitly including and based on WWI Forward Mental Healthcare principles represented by the acronyms: PIE, PIES, and BICEPS
Psychological Debriefing (PD)	Structured, usually group Selective Prevention interventions based on the hypothesis that orally recounting traumatic events and one's reactions and symptoms in their aftermath can promote recovery and reduce risk for PTSD
Combat and Operational Stress Control (COSC)	An historical synonym for Forward Mental Healthcare in its entirety, often including many other categories of specific interventions

Social Support	The perception and actuality that one is cared for, has assistance available from other people, and that one is part of a supportive social network; includes emotional, informational, tangible, and intangible forms of assistance
Counseling	Individual Indicated Prevention interventions involving education and social support delivered by trained and certified professionals
Psychological First Aid (PFA)	A diverse set of Indicated Prevention interventions that can be practiced by anyone in any setting designed to restore resources and functioning through safety, calming, connectedness, self-efficacy, and hope
Pastoral Care	Spiritual and social support, counseling, and religious practice to reduce distress and improve well-being and functioning
Leadership	All actions taken by members of an individual's chain of command to reduce risk and promote recovery from stress problems of all kinds
Cognitive-Behavioral Therapy (CBT)	Psychological therapy based on the Stress-Appraisal-Coping model of Lazarus and Folkman (1984), used mostly for clinical care of mental disorders but also for Indicated Prevention
Medications	Psychotropic medications prescribed for disabling stress symptoms and to promote recovery, used mostly for clinical care of mental disorders but also for Indicated Prevention
Smartphone App	Selective or Indicated Prevention delivered through a smartphone application connected to the Internet

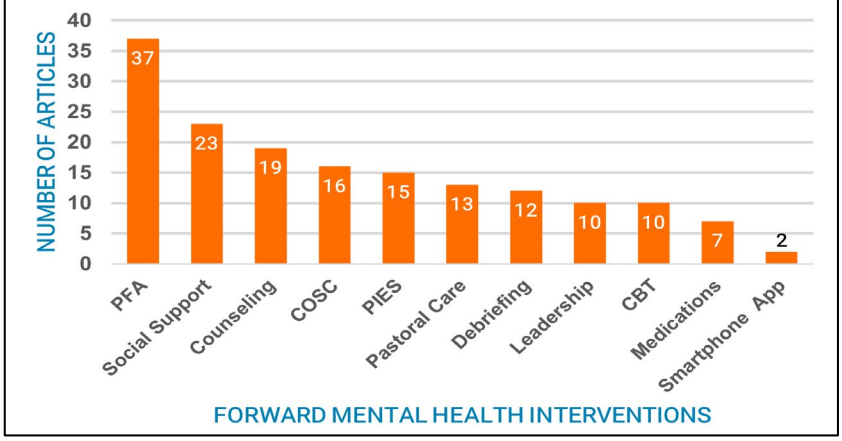
These categories of prevention interventions are not mutually exclusive, either in practice or as components of national approaches to mental disorder prevention. The most inclusive category in this list is Combat and Operational Stress Control (COSC), a synonym for Forward Mental Healthcare encompassing all possible approaches to monitoring and mitigating acute stress problems in operational environments. We included in this category only articles which employed the terms, "Combat and Operational Stress Control" or "Operational Stress Control," or the acronyms, "OSC" or "COSC" in their self-description.

Social Support is also a very broad category of interventions for Forward Mental Healthcare that are deliverable by nearly anyone, and that underpin many established and emerging approaches to monitoring and mitigating occupational stress problems, including emotional and practical assistance delivered by chaplains, peers, leaders, and many other types of welfare officers, as well as the many emerging approaches to psychological first aid (PFA), which we describe below.

At the other end of the intervention spectrum lie activities that are more narrowly practiced only by trained and certified healthcare professionals, and thus lie at the broad boundary between Indicated Prevention and clinical treatment. Cognitive-behavioral psychotherapy and the prescribing of psychotropic medications, for example, are two categories of such activities we found in our search of the literature.

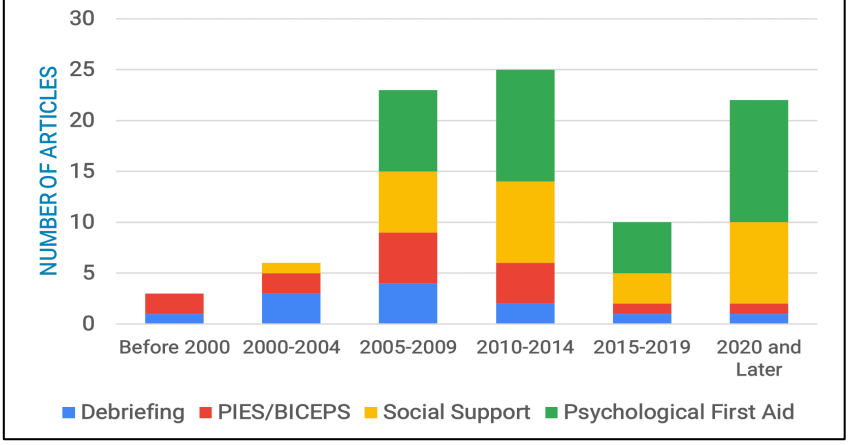
Figure 3-5, below, displays the number of published articles we found, from our sample of N = 114, addressing each of the 11 specific interventions for the monitoring and maintenance of the mental health of deployed members of military units we listed above. Once again, these categories are not mutually exclusive so many articles were included in more than one category, depending on how researchers described their approaches to mental disorder prevention.

Figure 3-5. Numbers of Published Articles Addressing Specific Interventions for Forward Mental Healthcare, from N = 114



By sorting the N = 114 articles we found by demi-decade, from before 2000, when our earliest articles were published, to those published since 2020, the current demi-decade, we can find potential patterns of change in approaches to Forward Mental Healthcare over time. As diagrammed in Figure 3-6, below, publications addressing two historical approaches to occupational mental disorder prevention — PIE(S) or BICEPS principles for Indicated Prevention in individuals, and Psychological Debriefing for Selective Prevention in groups — have declined sharply in recent years, while those addressing Social Support and

Figure 3-6. Numbers of Published Articles Addressing Four Categories of Prevention Intervention, By Demi-decade, from N = 114



Psychological First Aid (PFA) have increased in prevalence. This finding highlights PFA and Social Support as two emerging best practices for the prevention of PTSD in operational environments. The reasons for these global shifts in prevention practice will become apparent when we describe best practices, below.

3. When: Timing of Interventions to Monitor and Maintain Mental Health During Deployments

We found much less variation in the timing of when interventions for Forward Mental Healthcare were delivered. Uniformly, interventions for Indicated Prevention (such as PIES or PFA) are implemented as soon as practicable once a stress problem is identified in an individual, following the Immediacy principle

established in 2017. And uniformly, interventions for Selective Intervention are delivered to sub-groups within a deployed population as soon as practicable once a collection of persons is recognized to be at elevated risk for PTSD and other mental health problems, usually because of their recent exposure to potentially traumatic events (PTEs).

Increasingly, approaches to Selective and Indicated Prevention practiced during operational deployment are continued post-deployment and while preparing for the next deployment, given the reality that serving in uniform can be stressful and traumatic during training and garrison duties as well as during deployment.

4. Where: Environments in Which Prevention Interventions Are Delivered

Increasingly, deployed military and police personnel are monitored for stress problems everywhere they live, work, and experience stress, and increasingly, interventions are offered to mitigate stress and restore functioning and well-being at every level of care, from first-line self- and buddy-care to Level III field hospitals. Increasingly, unit-level programs for monitoring and maintaining mental health are begun in garrison during training and preparation for deployment, and continue long after repatriation, given the reality that stress problems can arise before or after deployment, as well as while trying to adjust to being back home again.

One difference we found regarding the environments in which prevention interventions are offered to deployed military or police personnel is in the use of *Third Location Decompression (TLD)* sites as locations where repatriating personnel stopped to relax and unwind before returning home to friends and family. A number of nations, but not all, in the European and North American group utilize brief stays at TLD sites interposed between the stress of deployment and the stress of returning home.[7]

D. Global Best Practice: Peer Support

Our search of the scientific literature returned N = 27 articles describing and evaluating military peer support programs from the following nations and international organizations: Australia, Canada, Israel, NATO, Ukraine, U.K., and U.S. It is highly likely that many more nations than these field military peer support programs, even if not yet described in a scientific report, both for their serving military and police personnel and their veterans, given the rapid global proliferation of such programs. In addition, police organizations around the world have long employed trained Peer Support Persons (PSPs) to provide emotional and tangible support for peers through times of personal or professional crisis and to help anticipate and address potential difficulties, to augment other existing employee-assistance and health and well-being programs.[8]

In this section, we review the rationale and evidence basis for peer support as an approach to Selective and Indicated Prevention, and we compare the features of a cross-section of established military peer support programs.

1. Rationale for Peer Assistance and Peer-Delivered Care in Uniformed Populations

[7] For a review of TLD practices, See Vermetten et al. Deployment-related mental health support: Comparative analysis of NATO and allied ISAF partners. *Eur J Psychotraumatol.* 2014;5:https://doi.org/10.3402/ejpt.v5.23732

[8] E.g., see the International Association of Chiefs of Police (IACP) Peer Support Guidelines. 2014; available online at https://www.theiacp.org/sites/default/files/2018-09/Psych-PeerSupportGuidelines.pdf.

Training members of a community to provide emotional support and practical assistance for peers struggling with life problems has been an important component of community mental health programs worldwide since the 1970s, where they have been found to improve access to and coordination of care as well as adherence with treatment recommendations.

From the perspective of General Systems Theory, a Peer Support Person (PSP) is a *coordinating interface* between the overlapping but often discordant social systems in which the person having problems lives and works, on one hand, and in which personnel support and mental healthcare systems operate.[9] Effective PSPs serve in a wide variety of roles, including as advocates, companions, encouragers, and explainers and translators of medical jargon, and are effective to the extent they are well-grounded and up-to-date, simultaneously, in both the culture of the community member and the culture of heathcare.

The following are reasons given in the literature we reviewed for the proliferation and popularity of peer support programs in military and police organizations around the world.

- The globally most popular professionally-delivered intervention for Selective PTSD Prevention in first-responder populations, psychological debriefing (PD) — also known as Critical Incident Stress Debriefing (CISD) — was determined by systematic review of outcome studies to not only be largely inert, failing to lead to better mental health states, but also be potentially harmful for a subset of participants for whom forced recall of a traumatic experience in a group of coworkers may be retraumatizing.[10]
- Because of their frequent occupational exposures to potentially traumatic events (PTEs), military and police personnel are more likely than comparable civilian populations to experience serious acute stress reactions (ASRs), especially during deployments.
- The settings in which ASRs occur are often far removed from the nearest healthcare facility, except for Level I self and buddy care delivered in small units.
- Even if there didn't exist a global shortage of mental health professionals, especially at the doctoral level, there would never be enough mental health professionals in any military or police organization to be the first line for recognizing and managing ASRs.
- Military and police cultures are often based on values and expectations that may be alien to members of mental healthcare systems, and vice-versa. In uniformed first-responder cultures, a breakdown under pressure may more likely be seen as evidence of weakness of character or deficit of motivation rather than as the inevitable consequence of exposure to overwhelming stress that increases risk for subsequent mental disorders such as PTSD.[11]
- Perhaps most importantly, peers and small-unit leaders may be most likely to witness an ASR in another member of the team, and therefore, in the best position to initiate first-level interventions to ensure safety and mitigate stress[12]

2. Example Programs for Peer Support in Military and Veteran Populations

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[9] Ullman M. A unifying concept linking therapeutic and community process. In Gray W, Duhl FJ, & Rizzo ND, Eds. *General Systems Theory and Psychiatry*. Boston, MA: Little Brown and Company: 1969;253-267.

[10] Greenberg, Langston, & Scott, 2006, p. 35-1.

[11] For a discussion of military cultural perceptions of stress, see Nash, WP. The stressors of war. In Figley CR & Nash WP, Eds. Combat Stress Injury: Theory, Research, and Management. New York: Routledge: 2006.

[12] In their survey of soldiers who had deployed to combat, Adler et al., 2022, found that although only 17% reported experiencing significant ASR symptoms, themselves, 51% reported witnessing a disabling ASR in someone else during deployment.

Figure 3-7, below, lists several military peer support programs that we drew from our search of the recent scientific literature. Of these, the most widely studied and well-developed may be the TRiM program, developed in the Royal Marines but now used in many first-responder populations in the U.K.; articles about TRiM accounted for 9 of the 27 we found addressing peer support of any kind.

Many of these peer support programs incorporate training in Indicated Prevention, most commonly a form of psychological first aid (PFA), as one of the tools at the disposal of PSPs who become aware of an ASR in a deployed individual. We will review approaches to PFA in the next section.

Figure 3-7. Examples of Peer Support Programs from the Published Literature

PEER SUPPORT PROGRAM	NATION / SERVICE	DESCRIPTION	KEY REFERENCE
TRiM (Trauma Risk Management)	U.K.	"TRiM is a proactive, post traumatic peer group delivered management strategy that aims to keep employees of hierarchical organizations functioning after traumatic events, to provide support and education to those who require it and to identify those with difficulties that require more specialist input."	Jones N, Roberts P, & Greenberg N., 2003,
OSCAR (Operational Stress Control and Readiness)	U.S. Marine Corps	OSCAR is a program of embedding mental health professionals in operational units and training a subset of Marine peers and leaders in operational units to recognize stress injuries and promote recovery through the delivery of a seven-step approach to stress first aid.	Nash, 2006.
OSISS (Operational Stress Injury Social Support)	Canada	OSISS trains military and veteran individuals who, themselves, are recovering from an Operational Stress Injury (OSI), to augment systems of care by providing peer support to other military personnel, veterans, and their families, with the goal to reduce OSI symptoms and improve functioning and quality of life.	Richardson et al., 2008
YaHaLOM	Israel	YaHaLOM trains members of operational units to recognize acute stress reactions (ASRs) in themselves and their peers and subordinates, and to provide first-line assistance through a five-step approach to psychological first aid.	Svetlitzky et al., 2020
iCOVER	U.S. Army	iCOVER is a curriculum based on Israel's YaHaLOM that trains members of operational units to recognize acute stress reactions in peers, and to intervene quickly using a six-step approach for psychological first aid, to mitigate stress, to restore functioning and wellbeing.	Adler et al., 2020

3. International Consensus Guidelines for Peer Support Programs

Figure 3-8, below, summarizes the key findings and consensus recommendations for peer support resulting from an international Delphi Study recently conducted by the Australian Centre for Posttraumatic Mental Health, in which a panel of 92 experts on and practitioners of peer support were asked their experiences and opinions about four aspects of peer support programming:

1. Defining peer support and its goals and principles
2. Selecting, training, and supervising peer support personnel
3. Models for the delivery of assistance through peer support
4. Evaluating the effectiveness of peer support

Figure 3-8. Consensus Recommendations for Peer Support in High-Risk Organizations

1. GOALS OF PEER SUPPORT
   - Provide an empathic listening ear
   - Provide low-level psychological interventions
   - Identify colleagues who may be at risk
   - Facilitate pathways to professional help
2. SELECTION CRITERIA FOR PEER SUPPORT PERSONS
   - Must be a member of the target population, with significant experience in its field of work
   - Must be respected by their colleagues
   - Should be interviewed by an appropriately constructed panel
3. TRAINING AND ACCREDITATION
   - Initial training in (a) basic listening skills, (b) psychological first aid, and (c) local options for mental health referral
   - Meet accreditation standards for their intended role
   - Participate in ongoing training, supervision, review, and accreditation
4. MENTAL HEALTH PROFESSIONALS
   - Should direct clinical operations and be involved in training and supervision of peers
5. ROLE
   - Not just for crisis response, but be part of routine employee health and welfare
   - Generally not engage in ongoing counseling, but seek specialist advice for complex cases
   - Maintain confidentiality within the limits of the law
6. ACCESS TO PEER SUPPORTERS
   - When possible, a peer supporter should be offered as an initial point of contact
   - When possible, employees should be able to self-select a specific peer supporter
7. LOOKING AFTER PEER SUPPORTERS' WELFARE
   - Peer supporters should not be available 24 hours per day
   - Peer supporters should have ready access to mental healthcare for themselves, if desired
8. PROGRAM EVALUATION
   - Program goals should be linked to clear and measurable outcomes
   - Program effectiveness should be evaluated by an independent agency

Source: Creamer et al. Guidelines for Peer Support in High-Risk Organizations: An International Consensus Study Using the Delphi Method. *J Trauma Stress.* 2012;25:134-141.

E. Global Best Practice: Psychological First Aid (PFA)

1. Definition of PFA

The term Psychological First Aid was first used in the mid-twentieth century to describe informal first-line interventions for assisting others experiencing symptoms of a disabling psychological injury.[13] In more recent years, PFA has been formalized as a set of tools taught to the entire spectrum of stakeholders in Forward Mental Healthcare, which has become the international standard for Indicated Prevention of mental disorders in any population, including survivors of civilian disasters and mass violence as well uniformed public support personnel serving in operational settings. Figure 3-9 is the simple definition given in the WHO's 2011 guide for PFA.

[13] See, for example, Gillespie DK. Psychological first aid. *J School Health.* 1963;391-395.

Figure 3-9. Psychological First Aid (PFA) Definition
Psychological First Aid is the provision of humane, supportive and practical help to fellow human beings suffering serious crisis events. It is a framework for supporting people in ways that respect their dignity, culture and abilities. Despite its name, psychological first aid covers both social and psychological support.
Source: WHO. Psychological First Aid: Guide for Field Workers. 2011.

2. Rationale for PFA

The following are reasons given in the scientific literature for the rapid emergence of Psychological First Aid as a global best practice for Indicated Prevention of mental disorders in any population exposed to potentially overwhelming stress.

- Twentieth-century approaches to Selective Prevention like psychological debriefing, and Indicated Prevention like PIES or BICEPS, were found to not only be ineffective at reducing risk for subsequent mental health problems after exposure to a potentially traumatic event (PTE), but to possibly be harmful for some participants.[14]
- The relative weakness of models of psychological injury conceived to represent ineffective coping with experiences of fear shifted attention to competing models of psychological injury as the loss of essential social and spiritual resources, such as Hobfoll's (1989) Conservation of Resources (COR) Theory.
- The U.S. National Institute of Mental Health (NIMH) convened an international conference in October 2001 to develop consensus evidence-based recommendations for psychological interventions with survivors of mass violence. Even though evidence of its effectiveness was lacking, 58 workshop participants from six nations concluded that psychological first aid should be one of the key components of early intervention after exposure to potentially traumatic events in every setting. Appendix A of their final report defined PFA as comprising four types of assistance: (a) Protecting survivors from further harm; (b) Reducing physiological arousal; (c) Mobilizing social emotional support, including from contact with family members; and (d) Providing information and fostering communication and education.[15] Many participants in this conference were also leading experts in occupational mental health.
- Another international panel of experts on disaster mental health, funded by NIMH, reviewed the emerging evidence for various specific approaches to early intervention to prevent mental health problems following disasters and mass violence. Hobfoll et al. (2007) identified five empirically-supported principles for early intervention after exposure to potentially traumatic events; these five objectives of early intervention are: (1) Safety, (2) Calming, (3) Self- and community-efficacy, (4) Connectedness, and (5) Hope.
- In the early 2000s, a number of manuals were published detailing comprehensive approaches for the delivery of psychological first aid, many based on Hobfoll et al.'s (2007) principles, in both

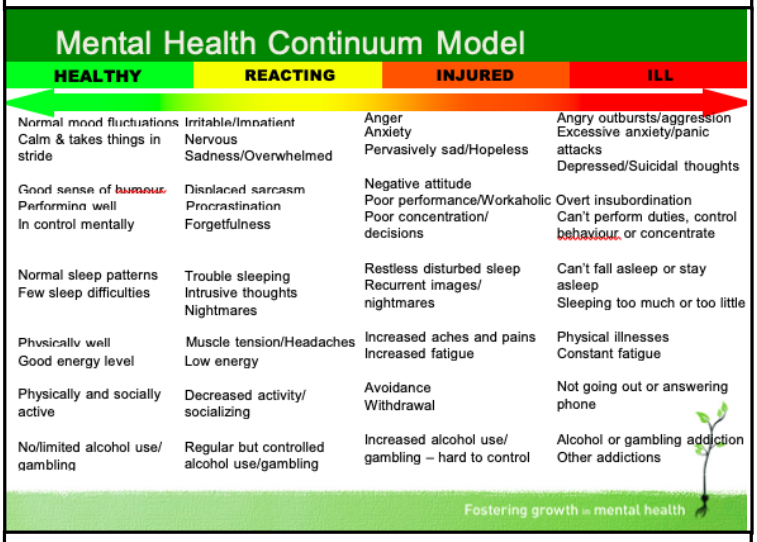
[14] See, e,g., Rose SC, Bisson J, Churchill R, & Wessely S. Psychological debriefing for preventing post traumatic stress disorder (PTSD). Cochrane Database of Systematic Reviews 2002, Issue 2. Art. No.: CD000560. DOI: 10.1002/14651858.CD000560.

[15] National Institute of Mental Health (NIMH). Mental Health and Mass Violence: Evidence-Based Early Psychological Intervention for Victims/Survivors of Mass Violence. A Workshop to Reach Consensus on Best Practices. NIH Publication No. 02-5138, Washington, D.C.: U.S. Government Printing Office; 2002.

occupational public support settings, such as military, police, and fire services, and civilian disaster and mass violence settings. Although approaches to PFA in occupational (e.g., military or police) and civilian disaster settings have much in common, they differ significantly in one key feature: PFA in civilian disaster settings is usually a one-time intervention by mental health professionals who were mobilized to meet the mental health needs of a group of survivors who are unknown to the mental health professionals and whom they will likely never see again,[16] whereas PFA in occupational settings tends to be ongoing rather than one-shot, and carried out by leaders, peers, and support persons who already have a defined relationship with one another, and share a responsibility for each other's welfare.

- In September, 2007, the operating forces of the U.S. Marine Corps convened a Combat and Operational Stress Control conference, at which Marine operational leaders and Navy mental health and religious ministry experts collaborated to develop the *Stress Continuum Model*, a framework for non-mental health professionals to assess their own or others' stress levels across four color-coded stress zones: Ready (green), Reacting (yellow), Injured (orange), and Ill (red).[17] The stress continuum model drew attention to the crucial orange zone of stress injuries, which as intermediate states between wellness and disease, are important targets for early prevention interventions, and gave members of an occupational community a language with which to think and communicate about stress and stress problems. The Stress Continuum Model has since been modified and disseminated as the Mental Health Continuum, Figure 3-10,[18] now an emerging element of approaches to psychological first aid because it facilities the recognition of acute stress reactions by all stakeholders so they can be appropriately managed and mitigated.

Figure 3-10. Mental Health Continuum Model



Source: NATO Standard AMedP-8.6., Forward Mental Healthcare; 2019

[16] E.g., Brymer et al. (National Child Traumatic Stress Network and National Center for PTSD). Psychological First Aid: Field Operations Guide, 2nd Edition; July 2006.

[17] Nash WP. The Stress Continuum Model: A tool for leaders. In Ritchie EC, Ed. *Combat and Operational Behavioral Health*. Washington, DC: Borden Institute; 2011.

[18] E.g., NATO Standard AMedP-8.6, Forward Mental Healthcare, Edition B, Version 1; October 2019.

- The contemporaneous emergence of the concept of moral injury has provided an explanation for how potentially traumatic events can inflict literal and enduring harm to anyone, without the requirement for a pre-existing vulnerability, and it has drawn attention to some of the specific social and spiritual resources depleted by trauma, especially those involving trust in social institutions, other persons, and oneself.

3. Examples of PFA in Military, Police, and Veteran Organizations

Figure 3-11, below, lists several occupational psychological first aid (PFA) programs that we drew from our search of the recent scientific literature. We arranged them in more-or-less chronological order, since the sequence of their emergence may be useful information.

Although obvious differences exist between these specific national or service-branch approaches to PFA, they share many common features.

- All target the symptoms of acute stress reactions, including acute emotional distress and partial loss of control over one's emotions, behavior, and body caused by one or more potentially traumatic events.
- All harness the healing power of social and spiritual connections; most appeal especially to those connections that already exist between members of military and police units, long before they face traumatic stress together.
- All use a stepped approach to assistance, progressing as needed from ensuring physical safety to reducing levels of physiological arousal to restoring focus and authority over one's own thoughts, emotions, and behavior.
- Like physical first aid, all approaches to PFA include an assessment of need for higher levels of care, and encouragement or help in accessing that care.

Figure 3-11. Examples of Occupational Psychological First Aid (PFA) Programs from the Literature

PFA PROGRAM	NATION / SERVICE	CORE STEPS OR ELEMENTS	KEY REFERENCE
Mental Health First Aid (MHFA)	Australia	• Five Steps: (1) Assess risk for suicide or harm; (2) Listen non-judgmentally; (3) Give reassurance and information; (4) Encourage appropriate professional help; (5) Encourage self-help strategies	Kitchener BA, & Jorm AF. Mental health first aid training for the public: evaluation of effects on knowledge, attitudes and helping behavior; 2002
Psychological First Aid (PFA)	U.S. National Child Traumatic Stress Network	• For post-disaster assistance • Core actions: (1) Contact and engagement; (2) Safety and comfort; (3) Stabilization; (4) Needs assessment; (5) Practical assistance; (6) Connection with social supports; (7) Information on coping; (8) Linkage with collaborative services	Brymer M, Jacobs A, Layne C et al. (National Child Traumatic Stress Network and National Center for PTSD), Psychological First Aid: Field Operations Guide, 2nd Edition; July, 2006.
Stress First Aid (SFA)	U.S. Navy, Marine Corps, and National Center for PTSD	• Stress Continuum Model for assessment • Seven Steps: (1) Check (observe for stress injuries); (2) Coordinate (let others know, get help); (3) Cover (make safe); (4) Calm (reduce arousal); (5) Connect (provide emotional support); (6)	Nash, Westphal, Watson, & Litz. Combat and Operational Stress First Aid: Caregiver Manual; 2010; www.ptsd.va.gov

		Competence (restore lost functioning); (7) Confidence (restore hope)	
Cognitive Psychological First Aid	Israel	• Six Steps: (1) Commitment (to other's welfare); (2) Communication (share information); (3) Cognition (focus on thoughts rather than feelings); (4) Continuity (help re-orient); (5) Challenge (give simple tasks); (6) Control (offer chance to make simple decisions)	Farchi M, Ben Hirsh-Gornemann M, Levy TB, et al. The Six Cs model for immediate cognitive psycho-logical first aid: From Helplessness to active efficient coping; 2018.
YaHaLOM	Israel	• Five Steps: (1) *Yetzirat kesher* (Ya, connect); (2) *Hadgashat* (Ha, emphasize commitment to individual); (3) *Levarer* (L, inquire, asking simple questions); (4) *Vidu* (O, confirm the sequence of events); (5) *Matan* (M, give an order for prompt deliberate action)	Svelitzky V, Farchi M, Ben Yehuda A, et al. YaHaLOM Training in the Military: Assessing Knowledge, Confidence, and Stigma; 2020.
Psychological First Aid (PFA)	Ukraine	• Seven Steps: (1) Assess the situation; ensure physical safety; (2) Assess the mental status of the individual; (3) Meet basic physiological and informational needs; (4) Provide emotional and social support; (5) Give clear and calm practical guidance; (6) Maintain casualty's self-esteem; (7) Assess need for further care.	Prykhodko I, Matsehora Y, Kolesnichenko O, et al. Psychological First Aid for Military Personnel in Combat Operations: The Ukrainian Model; 2020.
iCOVER	U.S. Army	• Six Steps: (1) Identify a buddy in need; (2) Connect; (3) Offer commitment (to their welfare); (4) Verify facts; (5) Establish order of events; (6) Request action.	Adler AB, Start AR, Milham L, et al. Rapid response to acute stress reaction: Pilot test of iCOVER training for military units; 2020.

F. Outcomes of Studies of Effectiveness for Approaches to Forward Mental Healthcare

Of our sample of N = 114 articles addressing various aspects of Forward Mental Healthcare, we found N = 33 articles that reported or reviewed data on the effectiveness or acceptability of one or more categories of approaches to Selective and Indicated Prevention of PTSD and other deployment-related mental health problems. Figure 3-12, below, lists the numbers and types of outcome studies we found for each of seven common categories of prevention activities.

Figure 3-12. Numbers and Types of Studies of Effectiveness of Categories of Prevention Approaches

Category of Prevention Intervention	Reviews	RCTs	Other Quant. Studies	Qual. Studies	TOTALS
Psychological First Aid (PFA)	3	-	5	1	9
Peer Support	1	2	3	2	8
Combat and Operational Stress Control (COSC)	2	-	4	-	6
Religious Ministry Support	-	-	3	1	4
Cognitive-Behavioral Therapy (CBT)	-	-	1	-	1
Eye-Movement Desensitization & Reprocessing (EMDR)	-	-	-	3	3
Psychological Debriefing (PD)	-	1	1	-	2

We now review the findings of these N = 33 outcome studies in order of their scientific merit, beginning with reviews or meta-analyses of other outcome studies and random controlled trials (RCTs).

1. Systematic Reviews of Outcome Studies of Categories of Prevention Interventions

a. Reviews of Psychological First Aid

- Bisson & Lewis (2009) conducted the earliest review of existing outcome studies of PFA, requested by the WHO prior to its implementation of PFA as its preferred approach to managing public mental health in the aftermath of disasters and mass violence. From a systematic search of the scientific literature, they downloaded and reviewed N = 74 citations that pertained in any way to PFA. Although many papers reported that PFA was well-accepted by the personnel groups trained in its use, none reported any outcome data. They concluded that PFA should then be considered an evidence-informed, but not evidence-based, intervention.
- Fox, Burkle, Bass, et al. (2012) reviewed N = 50 articles from peer-reviewed journals as well as N = 8 organizational publications pertaining to PFA in acute disaster settings, from the period 1990-2010. They found that PFA appeared to be well grounded in scientific evidence regarding the nature and course of acute stress reactions, the primary target of PFA, but could find no evidence that delivering PFA to survivors of mass-casualty situations actually improved their mental health or functioning.
- Hermosilla, Forthal, Sadowski, et al. (2022) reviewed N =12 studies from 2010 to 2021 that reported outcome data for PFA on mental health and wellbeing in a variety of civilian settings, including adult crime victims, asylum-seeking children, students, and hospital staff during the COVID-19 pandemic. They found small positive outcomes in a number of studies, including reduced symptoms of anxiety, posttraumatic stress, and distress, as well as improved ratings of mood, the experience of safety, connectedness, and a sense of control, in both children and adults.

b. Reviews of Combat and Operational Stress Control (COSC) as a Broad Group of Interventions

- Cooper, Campbell, Baisley, et al. (2021) reviewed N = 36 published studies of N = 19 global military COSC programs and interventions, and found that N = 13 of the COSC programs reviewed reported outcome data. All of the COSC approaches they reviewed focused on Universal Prevention in military populations (largely through organizational policies and training) or Selective Prevention in high-risk subgroups, particularly military units returning from deployment to a combat or peace operation. None reported outcomes of Indicated Prevention of acute stress reactions or other mental health crisis during deployment. Nevertheless, several studies they reviewed reported slight positive benefits in mental health status and social and occupational functioning in service members.
- Maglione, Chen, Bialas, et al. (2022) conducted a systematic review of stress control interventions of many kinds, specifically comparing the size of their effects on PTSD symptoms measured before and after each intervention. They found N = 29 studies of COSC interventions that reported PTSD symptom score outcomes, and N = 7 studies that provided data to allow comparison of effect sizes. Although some studies they reviewed reported significant reductions in PTSD symptoms post-intervention, the authors concluded that we do not yet have evidence that COSC programs actually reduce the incidence or severity of PTSD or other mental health problems in operational uniformed personnel.

c. Review of Peer Support Programs

- Anderson, Di Nota, Groll, et al. (2020) reviewed N = 8 studies of peer support programs in police, fire, and healthcare workers. All studies reported small positive benefits, including fewer sick days, less mental health stigma, and increased use of peer support services, but none reported reduced PTSD or other mental health symptoms in program participants.

d. Review of Resilience-Building Programs

- Because our keyword searches of the scientific literature on Forward Mental Healthcare returned no articles on military or police resilience-building programs, despite the fact that such programs are in broad use as a universal approach to mental disorder prevention (i.e., not just for people in high-risk groups or already experiencing stress symptoms), we elected to include here the results of the recent systematic Cochrane review of pre-deployment programmes for building resilience in military and frontline emergency service personnel (Doody et al., 2021). Resilience is hypothesized to represent a process in which an individual displays positive adaptation despite the experience of significant stress in adverse situations. So far, researchers have found no significant correlation between participation in pre-deployment resilience training and later mental health problems, but even more fundamentally, the science of resilience-building programs has been limited by the lack of ways to operationally define or measure resilience in a given person at a given point in time, and the lack of valid ways to quantify each individual's current and recent stress load, since resilience to the adverse effects of operational stress can only be inferred if the magnitude of each person's acute and chronic (allostatic) stress load is controlled for.

2. Randomized Controlled Trials (RCTs) of Prevention Interventions

a. RCTs of Peer Support Programs

- Greenberg, Langston, Everitt, et al. (2010) reported the results of a cluster randomized controlled trial of Trauma Risk Management (TRiM) training in 6 of 12 Royal Navy warships, the remaining 6 serving as a control group. Follow-up after 12-18 months revealed no significant changes in psychological health or stigma scores, but also very low rates of exposure to potentially traumatic events (PTEs) during operations at sea. Because of observed slight improvements in measures of organizational functioning, the authors conclude that TRiM may be beneficial as an instrument of cultural change.

- Vaughan, Farmer, Breslau, & Burnette (2015) of the RAND Corporation were tasked with evaluating the effectiveness of the Operational Stress Control and Readiness (OSCAR) peer support program in U.S. Marine Corps infantry battalions deploying to Afghanistan or Iraq between March 2010 and December 2011. Although technically a quasi-experimental research design rather than a true RCT, RAND researchers compared outcomes in Marines in battalions that had received OSCAR training with those in battalions that did not receive OSCAR training, and found that although Marines in OSCAR-trained battalions were more likely to seek help for stress problems from fellow Marines, leaders, and Corpsmen, there was no evidence that OSCAR reduced risk for later PTSD. Inconsistent implementation between battalions was cited as one of the reasons OSCAR failed to yield better outcomes.

b. RCT of Psychological Debriefing

- Adler, Litz, Castro, et al. (2008) reported the results of a group randomized trial of Critical Incident Stress Debriefing (CISD) in U.S. peacekeepers after they returned from deployment to Kosovo. They found that although study participants in the most highly stressor-exposed subgroup

reported minimally lower PTSD and aggression symptoms, but increased use of alcohol after receiving CISD, overall debriefing did not differentially hasten recovery from deployment-related stress symptoms. One of the reasons more recent studies of psychological debriefing as a selective prevention intervention have not been performed has been the finding through systematic reviews, such as the Cochrane Review (Rose et al., 2002) that debriefing not only has not produced demonstrable benefits in participants, but has even caused to worsening of acute stress symptoms in a some participants.

3. Non-Controlled Trials and Other Quantitative Studies of Prevention Interventions

a. Other Quantitative Studies of Psychological First Aid (PFA): N = 5

- Kitchener & Jorm (2002) reported a trial of Mental Health First Aid (MHFA) training in N = 210 members of the public in Australia, including health services providers, mental healthcare consumers, and carers for family members with mental illnesses. They found that after 6 months, participants in MHFA training had changed beliefs about stress and mental health and an increased willingness to provide aid and assistance to others in distress.
- Lewis, Varker, Phelps, et al. (2014) evaluated the effects of participation in Psychological First Aid (PFA) training provided to N = 321 managers and N = 261 peer support persons in a high-risk organization in Australia, They found that PFA training resulted in improved knowledge about potentially traumatic events (PTEs) and acute stress reactions, increased skill in responding to a PTE in others, and an increase in confidence when responding to stress in others.
- Mohatt, Boeckmann, Winkel, et al. (2017) compared levels of mental health knowledge, mental health stigma, and confidence in assisting others in N = 176 U.S. National Guard personnel who received training in Mental Health First Aid (MHFA) with N = 107 who did not receive training in MHFA. They found that participation in MHFA training was associated with significantly higher levels of mental health knowledge, skill, and willingness to help others experiencing acute occupational stress 8 months post-training.
- Fisak, Turner, Shepard, & Convoy (2020) reported the results of training in peer-delivered Caregiver Occupational Stress Control (CgOSC), based on U.S. Marine Corps Combat and Operational Stress First Aid (COSFA), for N = 40 active-duty Navy healthcare personnel. They found that although training in CgOSC resulted in short-term improvements in perceptions of safety and symptoms of burnout, these differences disappeared at 6-months follow-up.
- Adler, Start, Milham, et al. (2020) reported the results of a pilot study of training in iCOVER, the U.S. Army's approach to PFA based on Israel's YaHaLOM program, in N = 66 soldiers in six squads prior to their participation in a live simulation of ASRs following a simulated PTE in an operational environment. They found that iCOVER training was acceptable to most participants and resulted in better management of acute stress reactions during the simulation exercise.

b. Other Quantitative Studies of Combat and Operational Stress Control (COSC, N = 4)

- Solomon, Shklar, & Mulincer (2005) reported the results of a ground-breaking 20-year longitudinal study comparing the long-term outcomes in N = 79 Israeli soldiers who had received a forward stress-control intervention after experiencing a combat stress reaction, with N = 156 who experienced a CSR during operational deployment but did not receive a stress-control intervention, and N = 194 who did not experience a CSR. Their two principal, widely cited findings remain unmatched by other researchers in occupational PTSD: (1) that experiencing a CSR during military operations significantly increased risk for disabling PTSD later in life, and (2)

that receiving an early stress-control intervention on the battlefield significantly reduced risk for later PTSD.

- Greenberg, Langston, Fear, et al. (2009) reported the results of a survey of N = 1559 Royal Navy personnel regarding their experiences of training in mental health literacy and stress management skills while on active duty. They found that the perceived quality of the training had a significant effect on later mental health symptoms; specifically, service members who received stress-control training that they considered "useful" were found to experience slightly lower levels of emotional distress and better overall mental health that those who received no stress-control training or did not recall the training they did receive.
- Potter, Baker, Sanders, et al. (2009) reported a trial of a two-day training in Combat Stress Control (CSC) in N = 38 currently deployed service members experiencing deployment-related stress problems. They found that participation in an intensive, in-theater CSC program led to slightly but significantly lower PTSD symptom scores and lower scores on the OQ-45, a broad measure of distress in three life domains: mental health symptoms, interpersonal relationships, and social role.
- Judkins & Bradley (2017) reported the results of a short-term residential stress-control treatment for combat and operational stress reactions (COSRs) in N = 37 soldiers while deployed to Afghanistan. They found that participation in the in-theater stress-control intervention resulted in short-term reductions in distress as measured by the OQ-45.2, but these benefits disappeared at 30-day follow-up.

c. Other Quantitative Studies of Peer Support Programs (N = 3)

- Jones, Burdett, Wessely, & Greenberg (2011) reported the results of a survey of N = 11,304 British troops transitioning to Third Location Decompression (TLD) in Cyprus following operational deployment to either Iraq or Afghanistan. They found that although 80% reported being ambivalent about TLD before participating in to, 91% reported it to be helpful after completion. Participants who had greater concerns about adjusting to returning to home and family were more likely to find TLD and its included stress interventions helpful.
- Jones, Burdett, Green, & Greenberg (2017) compared data regarding the receipt of peer support services through TRiM while deployed to post-deployment surveys regarding mental health symptoms in three groups: N = 328 British soldiers who were exposed to PTEs and received TRiM peer support, N = 149 who were exposed to PTEs but did not receive a TRiM intervention, and N = 161 who were not exposed to a PTE and did not receive a TRiM intervention. They found that TRiM recipients were significantly more likely to receive mental health help at some later point, but also more likely to experience significant PTSD symptoms than soldiers who were exposed to a PTE but did not receive TRiM peer support.
- Svetlitzky, Farchi, Yehuda, & Adler (2020) reported the results of a survey of N = 560 Israeli soldiers who had received YaHaLOM peer-support training prior to an operational deployment. They found that 29% of surveyed soldiers reporting witnessing a Combat Stress Reaction (CSR) in a peer, and 11% reported providing assistance to a peer experiencing a CSR. Whereas witnessing a CSR in a peer increased risk for subsequent PTSD in the witness, training in peer support using the YaHaLOM model mitigated the risk for PTSD in those who witnessed CSRs in others.

d. Other Quantitative Studies of Religious Ministry Support (N = 3)

- Cornish, Lannin, Wade, & Martinez (2017) reported the results of a survey of N = 192 U.S. Army soldiers over two time points about their experiences of combat, acute stress symptoms, and

methods of coping with stress while deployed. They found that, paradoxically, soldiers who reported using religious practices and personal spiritual faith to cope with operational stress at time point, T1, tended to also report higher levels of emotional distress at time point, T2. Combat exposure was also a significant predictor of later distress and PTSD symptoms.

- Knobloch, Owens, Matheson, & Dodson (2019) reported the results of a trial of a 12-session faith-based but peer-delivered combat trauma recovery program called REBOOT in N = 138 men and N = 116 women. They found small improvements in participants, relative to baseline, in chronic pain, fatigue, social participation, anxiety, and depression symptoms.
- Kazman, Gutierrez, Schuler, et al. (2020) reported the results of an analysis of responses to the U.S. Department of Defense's 2015 Health-Related Behavior Survey by N = 16,699 military service members. They found that 26.2% of active-duty soldiers reported receiving care for a mental health problem at some point, but almost a third of those who received MH care (8% of the total) reported receiving treatment for a mental health problem specifically from a chaplain. Mental health stigma was found to interfere less with accessing care from a chaplain than with a psychiatrist, psychologist, or clinical social worker.

e. Other Quantitative Study of Psychological Debriefing (N = 1)

- **Deahl, Srinivasan, Jones, et al. (2000) reported the results of a longitudinal trial of post-deployment psychological debriefing (PD) in N = 106 British soldiers returning from peacekeeping duties in the former Yugoslavia. All had received pre-deployment operational stress training, and a randomly selected sub-group also received post-deployment PD. Overall rates of exposure to PTEs and subsequent PTSD were reportedly very low, with no benefit correlated with either stress-control training or later PD. They also found increased alcohol misuse, as measured by the CAGE, in both groups, regardless whether PD was received.**

3. Qualitative Studies of Prevention Interventions

a. Qualitative Studies of Early Eye-Movement Desensitization and Reprocessing (EMDR) for Indicated Prevention: N = 3

- Russell (2006) presented a series of cases of the use of a single session of EMDR for the indicated prevention of acute stress and PTSD symptoms in battlefield casualties medically evacuated from the war in Iraq.
- Wesson & Gould (2009) presented a single case of the use of EMDR for the Indicated Prevention of an Acute Stress Reaction in a U.K. soldier who witnessed another soldier's death from an improvised explosive device (IED) explosion.
- **Toukolehto, Waits, Preece, & Samsey (2020) presented a series of cases of the use of Accelerated Resolution Therapy (ART), a modified form of EMDR, for the Indicated Prevention of acute stress and PTSD symptoms in N =8 soldiers from a single unit who experienced the same PTE.**

b. Qualitative Studies of Peer Support Programs: N = 2

- Greenberg, Langston, Iversen, & Wessely (2011) reported the results of interviews of Royal Navy personnel who had received training in Trauma Risk Management (TRiM) as part of the RCT of TRiM previously reported. They found that TRiM training was acceptable to the vast majority of participants, many of whom saw peer support as a useful complement to other military

approaches to the promotion of health and wellbeing during and after deployment to a high-risk operational setting.

- Pfeiffer, Blow, Miller, et al. (2012) reported the results of interviews of N = 30 U.S. National Guard soldiers with prior deployments to Iraq or Afghanistan regarding their experiences with peer support networks. They found that some, but not all, peer support networks increase access to mental healthcare by reducing mental health stigma. They concluded that selection, training and supervision of peer support personnel was crucial to their effectiveness.

c. Qualitative Study of Psychological First Aid (PFA) for Indicated Prevention: N = 1

- Prykhodko, Matsehora, Kolesnichenko, et al. (2022) described a pilot of the Ukrainian model of PFA in soldiers deployed to the Donbas region of Ukraine to counter the incursion by hostile forces. They described a stepped system of Forward Mental Healthcare in which PFA served as the first-line intervention delivered by peers before they accessed the second level of care, an assessment by small unit leaders. They proposed that measures of effectiveness of PFA in forward-deployed settings should include rates of return to duty after an ASR, as well rates of later mental health problems like PTSD.

d. Qualitative Study of Religious Ministry Support for Indicated Prevention: N = 1

- Hodgson, Carey, & Koenig (2021) interviewed a series of Australian veterans about their experiences of potentially morally injurious events (PMIEs) while deployed. After identifying a number of themes for moral injury traumas, the authors propose that chaplains may be ideally suited to deliver Indicated Prevention of moral injuries in deployed settings.

G. Gender Differences in Forward Healthcare

We found very little directly addressing gender in our search of the scientific literature on Forward Mental Healthcare. Only one pilot study of a faith-based peer support program called REBOOT (Knobloch et al., 2019) reported enrolling women in their trial. We could find no reports of outcomes of interventions for the monitoring or mitigation of stress during deployment in female military or police personnel, and no comparisons between genders in social and spiritual resource needs in the throws and aftermath of an acute stress reaction during deployment.

We did find one interesting recent dissertation by Hall (2022), entitled “Prevention of Combat and Operational Stress Reactions in Female Active Duty Service Members: A Literature Review,” which we will review in the following section on gender.

VII. DISCUSSION AND CONCLUSIONS

Much progress has been made over the past century toward understanding the nature of the problem of stress in uniformed peace or combat operations, and devising scientifically and culturally valid methods of mitigating stress to keep deployed personnel from becoming stress casualties, and to prevent them from developing a later mental health problem like PTSD. Yet much remains unclear or, as in the case of gender differences in Forward Mental Healthcare, nearly completely opaque. The following are conclusions we drew from our review of global practices and outcomes research, about both what we have learned that may inform future action, and what we have yet to learn but need to study.

1. Uniformed military and police personnel are at elevated risk for acute stress reactions (ASRs) while deployed to a peace or combat operation.

Even though few studies have reported prevalence rates for ASRs in deployed personnel, global experience over more than a century has firmly established the risk for abrupt, stress-related losses of wellbeing and functioning in direct proportion to the rate at which potentially traumatic events (PTEs), including potentially morally injurious events (PMIEs), are experienced. In lower risk operations or routine training, personnel may experience few PTEs and therefore have little risk for an occupational stress-related mental health problem. But the incidence of ASRs in a deployed cohort almost certainly increases as the frequency and severity of the PTEs they experience increase.

2. ASRs and other adverse stress-related mental health states increase risk for both role failure in the short term and stress-related mental illnesses such as PTSD in the long term.

The strongest evidence yet collected for the causal link between ASRs and subsequent PTSD was provided by Solomon, Shklar, & Mulincer (2005), who by following a cohort of Israeli soldiers over 20 years, was able to document an increased incidence of PTSD in those who had experienced a Combat Stress Reaction (CSR) during a warzone deployment, compared to soldiers who had not experienced a CSR. Many other studies have also found correlations, if not causal links, between ASRs and stress-related mental illnesses like Acute Stress Disorder (ASD) and PTSD, which is why the WHO (2023) included ASR in its ICD-11.

Not everyone who develops PTSD experienced an ASR at the moment of trauma, and not everyone who experiences an ASR will develop chronic PTSD, but ASRs are useful markers of imminent risk for developing a mental disorder.

3. Unless they can no longer function — or are seeking an early repatriation or discharge — military and police personnel deployed to a peace or combat operation may be unlikely to seek medical or mental health assistance for acute or chronic stress problems.

Unless they had previously experienced an ASR caused by a traumatic event, they may not have any idea what had just happened to them, and they would almost certainly feel ashamed for breaking down under stress, especially if others were counting on them. Another, more reliable way of identifying stress problems in deployed personnel, not relying on voluntary self-report, may be helpful in recognizing problems early so they can be dealt with quickly and effectively. This is the rationale behind the emerging global best practice of training as many members of military and police organizations as possible — including especially frontline medical and religious ministry personnel, small unit leaders, and rank-and-file members of operational units, themselves — in mental health literacy, including how to recognize potentially serious stress problems, and what to do once those problems are identified in themselves or someone else.

4. Psychological first aid (PFA) is a rapidly emerging global best practice as a toolset for frontline personnel throughout military and police organizations to manage and mitigate stress problems once they are recognized.

Even though strong evidence of effectiveness is still lacking, especially as a means to prevent later PTSD, PFA has disseminated and supplanted other approaches for Forward Mental Healthcare in military and police settings — and for emergency mental health responses in civilian situations of disaster or mass violence — because of a convergence of factors cited in the literature. Most fundamentally, PFA's logic model is well supported by available evidence, including biological stress science, emerging models of psychological trauma as literal and enduring social and spiritual harm, and what we have learned about

what people need, at any age and in any culture, to get through a crisis and recover from psychological injury. People in crisis need to get to physical and moral safety, first and foremost. They need to reduce their levels of physiological arousal so their brains can return to more normal functioning. And they need to assess their situations to decide whether additional help is needed, and if so, what kind. These are very similar to what people need to manage a physical injury: they need to limit further harm, promote healing to extent possible, and decide whether to call an ambulance.

PFA differs from physical first aid, though, to the extent it intentionally harnesses the powerful effects of social and spiritual connectedness that can accompany the compassionate assistance of one trusted person by another, as an important agent of healing. All military and police PFA programs we reviewed incorporated intentional emotional connectedness based on genuine concern and trust, as one of their components. Military and police organizations implementing PFA benefit from the vertical and horizontal social cohesion, trust, and mutual responsibility that may be central to their cultures.

PFA has largely replaced psychological debriefing for selective prevention in military and police personnel because of the finding of systematic reviews that debriefing yields no measurable benefit and can cause the worsening of acute stress symptoms in a subset of participants (Rose et al., 2002). For this reason, debriefing is no longer endorsed for use by NATO and other well-developed military organizations.

5. NATO's current Mental Health Continuum model (Figure 3-10, above), and the U.S. Marine Corps Stress Continuum model on which it was based, are emerging as best practices for the recognition of adverse stress states during uniformed operations, especially to identify when someone has been injured by stress that is too intense or too long-lasting.

Before peers, chaplains, small unit leaders, medics, nurses, or doctors can offer assistance for a stress problem arising during deployment, someone must first recognize that a potentially serious problem exists and that assistance is needed. Crucially, the Mental Health Continuum and Stress Continuum models both discriminate between Yellow-zone stress reactions — comprising normal experiences of life and work in challenging environments, which always resolve completely with rest — and Orange-zone stress injuries, characterized by both more serious and persistent distress and loss of functional capacity.

No studies have yet documented the utility of either of these nearly identical stress-zone recognition tools. Potential benefits of their use include providing a language for thinking and talking about stress injuries as important targets for Indicated Prevention interventions, teaching skills at discriminating normal everyday stress from stress injuries, and encouraging compassion while discouraging stigmatizing attitudes toward stress-related mental heal.th problems (Nash, Silva, & Litz, 2009; Nash, 2010).

6. Frontline approaches to recognizing stress injuries like the Mental Health Continuum model, and frontline approaches to their mitigation like PFA, may be most effective if they are embedded in a comprehensive system of mental health care that securely links frontline peer, chaplain, and small-unit leader actions with medical and mental health services in healthcare clinics and hospitals supporting each Mission.

What happens to each uniformed person who is identified as suffering an acute stress reaction during a UN peace operation will either encourage or discourage other deployed military and police members in the future from telling anyone about their stress problems and risking a similar fate. If being identified as having a stress problem turns out to do more harm to the individual than good, others may be discouraged from seeking help.

7. As women comprise greater fractions of units deploying to global peace operations, the need for gender-specific information about risk for stress injuries during military or police operations, and needs for recovering from stress injuries, becomes increasingly imperative.

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Section 4. Potential Gender Differences in Occupational PTSD Prevention

I. OBJECTIVE

This Section reports the results of the third systematic search of the scientific literature we conducted to meet our study objectives, this one focusing on potential gender differences in risk for, experiences of, and resources needed to recover from occupational PTSD in uniformed populations.

II. BACKGROUND

Gender is one of the sociodemographic factors that has been found globally to slightly increase risk for PTSD. For example, Figure 4-1, below, taken from analyses of 26 global population surveys from WHO World Mental Health Surveys, lists the odds ratios for lifetime PTSD among trauma-exposed individuals who shared each sociodemographic correlate.[1]

Figure 4-1. Global Sociodemographic Correlates of Higher Risk for Lifetime PTSD Among Trauma-Exposed Persons

SOCIODEMOGRAPHIC CORRELATE	ODDS RATIO (OR)
Female gender	2.6
Young age	2.5
Unemployed	1.7
Divorced or widowed	1.7
Primary education only	1.7
Low household income	1.7

Source: Koenen et al., 2017, Table 4

Similarly, one of the findings of the Phase 1 PTSD Study, from reviewing research on the epidemiology of PTSD in military and police populations, was a marginally higher rate of PTSD both in women members of military or police organizations, overall, and in women who had deployed to a peace or combat operation. For example, Sareen et al., 2008, reported rates of PTSD of 3.3% in 2,592 active military women and 2.2% in 5,849 active military men in the Canadian Forces, and Jacobson et al., 2015, found PTSD rates of 6.7% and 6.1% for 2,342 active U.S. military women and men combat veterans, respectively, who were matched for their deployment roles and other risk factors other than gender.

The PTSD Study also found that researchers in the rapidly emerging area of gender differences in occupational PTSD have suggested that women in uniform may have slightly higher rates of PTSD than

[1] Koenen KC, Ratanatharathorn A, McLaughlin KA, et al. Posttraumatic stress disorder in the World Mental Health Surveys. Psychol Med. 2017 October; 47(13): 2260–2274. doi:10.1017/S0033291717000708.

men in uniform simply because of their much greater exposure to military sexual harassment and assault than their male peers and superiors, who instead, may be the perpetrators of their military sexual trauma (MST).

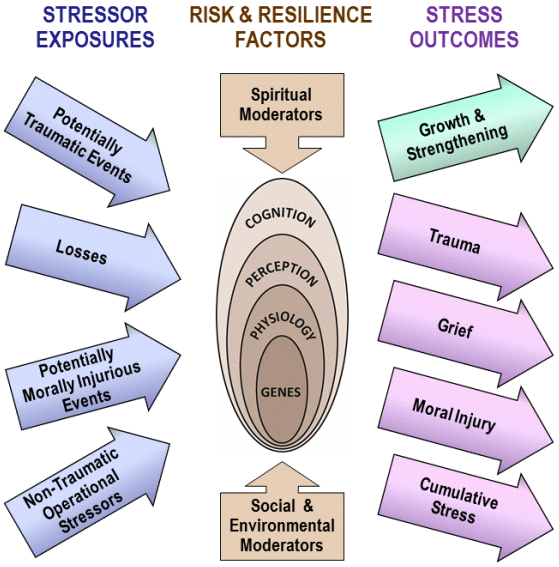
Given these findings of the Phase 1 Study, along with the fact that we found very few research papers addressing gender differences in approaches to PTSD screening, monitoring, or early intervention in the first two systematic searches we conducted of the medical and mental health literature in this study, we elected to conduct a third literature search focusing solely on issues related to potential gender differences in the prevention of PTSD in military and police populations.

III. METHODS

A. Framework for Identifying Ways in Which Gender May Be Relevant to PTSD Prevention

To decide which questions to pose when searching the medical and mental health literature for potential gender differences in risk for, experiences of, or resources needed to recover from operational PTSD, we elected to utilize as our starting point the Operational Stress Model, reproduced in Figure 4-2, below, from Nash et al., 2010, in their report of a U.S. DoD-VA-NIMH working group to develop consensus recommendations for common data elements for operational stress research and surveillance.

Figure 4-2. Operational Stress Model Linking Stress Outcomes with Stressor Exposures and Internal and External Stress Moderators



Source: Nash et al. Consensus recommendations for common data elements for operational stress research and surveillance: Report of a federal interagency working group. Arch Phys Med Rehabil 2010; 91:1673-83.

The Operational Stress Model draws attention to three major categories of potential gender differences that may exist with respect to the prevention of PTSD in military and police personnel, suggesting three broad questions to ask of the medical and mental health literature:

1. What are the gender differences in STRESS OUTCOMES? Which stress-related mental health problems do women in military or police occupations tend to acquire more or less often than men in similar roles? What are the comparable rates not only of PTSD but also of moral injury, grief, and the cumulative effects of chronic, unremitting operational stress?
2. What are the gender differences in STRESSOR EXPOSURES? Are women in military or police occupations exposed to more potentially traumatic events (PTEs), potentially morally injurious events (PMIEs), or the losses of cherished people or things than men in similar roles?
3. What are the gender differences in RISK AND RESILIENCE FACTORS? What are the differences between women and men in uniform in the internal and external resources available to them to manage their occupational stress and mitigate the adverse stress states that emerge?

The largest and most diverse group of potential predictors of PTSD and other stress-related mental health problems in either women or men are those in the broad group of stress moderators interposed between stressor exposures and stress outcomes in the Operational Stress Model. Included are internal moderators of risk like genetics, physiology, health and fitness, personality style, intelligence, education, success experiences, competence, and self-confidence, and external moderators of risk supplied by social and spiritual environments. Interventions made by military or police organizations to prevent or mitigate PTSD in operational settings — and individual responses to those interventions — are all included in this category of predictors of PTSD for which gender differences may exist.

B. Search Strategy

In search of potential gender differences in the prevention of PTSD in military and police populations, we conducted a series of keyword searches of PUBMED, PsycInfo, and Google Scholar combining the terms "Women," "Gender," "Peacekeeping," "Deployment," "Combat," "Military," "Police," "Stress," "Stress Control," "Trauma," "Sexual harassment," "Sexual assault," "Military sexual trauma," "Monitoring," "Psychological support," and "Psychological intervention."

These searches returned N = 108 unique English-language articles specifically addressing the relationship of gender to operational stress, which we downloaded in their full text and read. We included all 108 articles in our analyses.

Our sample of N = 108 articles were published between 1995 and 2023 by researchers from the following 17 nations: Australia, Belgium, Canada, France, Hong Kong, Iceland, India, Iran, Namibia, Netherlands, Norway, Portugal, South Africa, Taiwan, Turkey, U.K., and U.S. They are all included in the References at the end of this Section of the report.

IV. FINDINGS FROM REVIEW OF THE SCIENTIFIC LITERATURE

A. Gender Differences in Operational Stress Outcomes

1. PTSD

Of the 108 articles we reviewed, many of them directly relating to peacekeeping, we found N = 26 that compared rates of PTSD in military or police women and men. The results were mixed. Of these 26 studies:

- 17 studies reported higher prevalence or incidence rates of PTSD in women in uniform compared to men (Chaumba & Bride, 2010; Cohen et al., 2016; Crum-Cianfione & Jacobson, 2013; Kelber et

al., 2021; Kline, Ciccone, & Weiner, 2013; Levine & Land, 2014; Macera et al., 2014; MacGregor et al., 2017; Moreau et al., 2022; Sareen et al., 2008; Skopp et al., 2011; Street, Vogt, & Dutra, 2009; Tannahill et al., 2020; Wolfe et al., 1999; Zinzow et al., 2007; Ziobrowski et al., 2017; Yaeger et al., 2006)

- 9 studies reported no differences in PTSD rates between women and men in uniform (Fontana, Litz, & Rosenheck, 2000; Greenberg et al., 2008; Hourani et al., 2016; King et al., 2013; Litz et al., 1997; Maguen et al., 2012; Peterson et al., 2018; Street et al., 2013; Yasan et al., 2009)

2. Depression

We found N = 6 studies that compared rates of depression in women and men in uniform; all found that women had slightly higher rates of prevalence or incidence than men (**Gibbons Hickling Barnett 2012; Haskell Gordon Mattocks 2010; Peterson et al., 2018; Street et al., 2013; Tiet et al., 2015; Ziobrowski et al., 2017).**

3. Anxiety

We found one study (Sareen et al., 2008) that reported higher rates of generalized and panic anxiety in women in the Canadian Forces compared to men.

4. Alcohol Misuse

Most of the epidemiological studies we reviewed for this section also compared rates of alcohol use problems in men and women. All found significantly lower rates of alcohol use problems in women compared to men in unform. As we noted in the section on screening, the lower base rates of alcohol use problems in women in uniform compared to men is the reason for a lower cut score in the Alcohol Use Disorder Identification Test (AUDIT) for women compared to men.

5. Violence

We are aware of one large program of military mental health research — the U.S. Study to Assess Risk and Resilience in Servicemembers, Longitudinal Study (STARRS–LS)[2] — that has published a number of large-scale epidemiological studies reporting rates of aggression problems in women and men in the U.S. military. Women consistently have significantly lower rates than men of social problems caused by violent behavior and rates of Intermittent Explosive Disorder (IED), a chronic mental disorder characterized by episodic loss of control over aggressive impulses, even while sober. IED often co-occurs with PTSD in men.

B. Gender Differences in Operational Stressor Exposures

1. Military Sexual Trauma (MST)

The type of stressor for which gender differences have been most widely studied in uniformed military and police populations is Military Sexual Trauma (MST), a term coined by the U.S. DoD and VA to apply to any form of physical or verbal sexual harassment or assault by another member of a military or police organization, including peers or superiors, in any setting. N = 20 of our 108 articles focused specifically

[2] Publications by STARRS-LS can be found online at: https://starrs-ls.org/.

on aspects of MST and its relationship to PTSD and other adverse stress outcomes. Since all 20 articles we found focusing on MST were published by researchers from the U.S. or U.K., we cannot say to what extent these findings regarding MST may apply to other nations.

The following are the major findings reported by these N = 20 research articles.

a. Women experience MST with much greater frequency than men (Bourke, 2022; ; Fontana, Litz, & Rosenheck, 2000; Fontana, Rosenheck, & Dasai, 2010; Freedy et al., 2010; Maguen et al., 2012; Murdoch et al., 2007; Smith et al., 2017; Street et al., 2013; Vogt et al., 2005; Wolff & Mills, 2016).

b. Self-reported rates of significant MST in military women ranged from 31% (Maguen et al., 2011) **to 90%** (Wolff & Mills, 2016).

c. 50% of MST incidents involved rape (Levine & Land, 2014), **37% of women experienced MST more than once, and 14% experienced gang rape** (Sadler et al., 2003).

d. Of all studied types of potentially traumatic or potentially morally injurious events, MST was associated with the highest rates of subsequent PTSD (Goldstein et al., 2017; Kintzle et al., 2015; Levine & Land, 2014; Tannahill, 2022; Ziobrowski et al., 2017).

e. PTSD from MST was more severe than PTSD from other types of traumatic events (Kintzle et al., 2015; Murdoch et al., 2007; Sexton et al., 2017), **and associated with more comorbid mental health problems, especially depression** (Maguen et al., 2011; Sexton et al., 2017).

f. PTSD from MST is often not reported or treated within the military healthcare system because of fears of retribution and lack of trust in the organization to investigate the incident fairly (Bourke, 2022; Burns et al., 2014; Levine & Land, 2014).

2. Other Stressor Exposures

a. Gender Discrimination. Even if not sexually harassed or assaulted by peers or superiors, women in uniform report being discriminated against in assignments and promotions just because of their gender (Baumann, Williamson, & Murphy, 2022; Bell, Roth, & Weed, 1998; Benda & House, 2003; Ditcher & True, 2014; Kelly McCormack & Bennet, 2023; Street, Vogt, & Dutra, 2009; Wilen, 2020).

b. Combat. As the roles of women in peace and combat operations have evolved, women in uniform are increasingly deploying in combat roles (Chaumba & Bride, 2010; Mattocks et al., 2012; Williams & Bernstein, 2011).

c. Healthcare. Another role that women have long played in peace and combat operations is as providers of forward healthcare, a role that exposes healthcare workers to human suffering, death, and dying on a daily, if not hourly basis (Peterson et al., 2019).

d. Family. Because women tend to bear greater responsibilities for the care and rearing of children than men, family challenges caused by operational deployments and reunions tend to inflict greater family stress on women (Baumann, Williamson, & Murphy, 2022; Carter-Visscher et al., 2010; Kelly, Nilsson, & Berkel, 2014)

C. Gender Differences in Risk and Resilience Factors and Resources to Manage Stress

1. Genetics, Physiology, Perception, and Cognition

We found no studies reporting significantly increased risk for PTSD in women or men in uniform because of differences in genotype, physiological reactivity, or personality style.

2. Social Support

We found N = 10 studies reporting significantly lower levels of the critical resource of social support among women in uniform, compared to men, associated with greater distress and worse stress outcomes. Specific findings included the following:

- Women in uniform receive less emotional support from their peers and superiors than do men in uniform (Fontana, Rosenheck, & Desai, 2010; Sion, 2008; Vogt et al., 2005).
- Women often comprise a small minority in most operational units to which they are assigned, so few other women may be available to provide support (Levine & Land, 2014).
- Men may feel ill at ease with women members of their units (McGraw, 2016) or have unrealistic expectations about women's operational roles (Vogt et al., 2007).
- Social and emotional isolation within their units is one of the most significant stressors women in uniform face (Sadler et al., 2003).
- Women reported lower rates of perceived horizontal and vertical cohesion in their units (Kline et al., 2013; Rosen et al., 1999).
- Social isolation in women in uniform is associated with more severe PTSD symptoms (Tiet et al., 2015) and with increased risk for hospitalization for physical or mental health problems (Bell, Roth, & Weed, 1998; Hsieh & Tsai, 2019).
- Social support for women in operational units may worsen significantly during periods of elevated unit stress, such as during deployment (McGraw, 2016).

3. Responses to Mental Health Interventions

We found N = 16 studies comparing the responses to prevention interventions or mental health treatments in women and men in uniform, with mixed results. Although women have been found in some studies to experience greater improvements than men in PTSD symptoms from trauma-focused psychotherapy (Khan et al., 2020; Wade et al., 2016), other treatment studies reported no gender differences in outcomes (Jackson, Weiss, & Cloitre, 2019; Mouilso et al., 2016). A few studies reported poorer responses to operational prevention interventions in women compared to men.

- Military mental disorder prevention and early intervention programs are mostly designed for and delivered by men, without being tailored for use with women (Hall, 2022)
- Women experiencing acute stress symptoms during a combat deployment improved less than men from early prevention interventions (Hall, 2022; Judkins & Bradley, 2017).
- Women survivors of MST who are not assigned a same-gender mental health provider have less confidence in their mental health care and experience less improvement (McBain, Garneau-Fournier, & Turchik, 2020).
- Although progress has been made, the relative lack of gender-specific mental health interventions in military and veteran healthcare systems continues to obstruct the ability of women service

members and veterans to access appropriate mental healthcare (Baumann, Williamson, & Murphy, 2022; Chaumba & Bride, 2010; Hall, 2022; McBain, Garneau-Fournier, & Turchik, 2020; Monteith et al., 2020; Turchik, Bucossi, & Kimerling, 2014).

V. DISCUSSION AND CONCLUSIONS

Our searches of the scientific literature regarding gender differences in PTSD prevention in uniform returned a large number of high-quality studies from many world nations, mostly from the past two decades, a testimony to the large and growing interest in this crucial topic. Another indication of the importance of learning about and taking into account gender differences in operational mental health promotion emerged in recent discussions among members of the Advisory Committee on Mental Health Strategy and PTSD Implementation Plan for Uniformed Personnel, where this issue was raised more than once.

We used the DoD-VA-NIMH Operational Stress Model developed by Nash et al. (2010) to define three socio-ecological levels at which the optimal prevention of PTSD may differ between women and men in uniform: (1) Potential differences in stress outcomes, (2) Potential differences in stressor exposures, and (3) Potential differences in risk and resilience factors moderating the relationship between stressor exposures and stress outcomes. Although the results we obtained from searching and reviewing the literature were mixed, we were able to draw the following conclusions.

A. Potential Gender Differences in Stress Outcomes

- Of N = 26 studies we found reporting gender differences in rates of PTSD in uniformed personnel, 17 reported higher rates of PTSD in women compared to men, but 9 studies reported no differences between women and men in PTSD rates.
- A small number of studies found that women in uniform had higher rates than men also in experiences of depression and anxiety as stress outcomes
- But many studies have also demonstrated lower rates of problems with alcohol and impulsive aggression and violence among women in uniform compared to men

We conclude from these findings that although evidence suggests the possibility of significant differences in mental health outcomes between women and men exposed to similar levels of operational stress, more studies are needed to draw firm and actionable conclusions about gender-based risk for PTSD or other mental disorders.

B. Potential Gender Differences in Stressor Exposures

- The strongest finding from our review of the scientific literature on gender differences in risk for and experiences of PTSD in uniformed populations was the much greater rates of exposure to sexual harassment and assault reported for women in uniform, compared to men. The numbers reported by these studies are staggering, suggesting that at least in the few militaries in which this has been studied, gender-based violence is a nearly universal experience for women in uniform. Unfortunately, since the studies we found were all published by either the U.S. or U.K., it is hard to know to what extent these findings apply to other nations' militaries or police forces. Since sexual assault and rape have also been found to result in more severe stress outcomes than other stressor types — while also interfering with access to care by fostering mistrust in the organization to respond compassionately and fairly to women's distress — there seems little

doubt that gender-based violence has a much greater impact on women's mental and physical health than men in uniform.

- Evidence suggests that women in uniform may be exposed to certain interpersonal stressors other than sexual harassment or assault at greater rates than their male peers, particularly those related to family separations and reunions, given the much more central role women tend to play in the care and rearing of children.
- Several researchers have drawn attention to another type of interpersonal stressor to which women tend to be exposed to a greater extent than men, just because of the small numbers of women serving in most military and police units: social isolation. Significant and persistent social ostracization has been found to be a potent cause for a number of mental and physical health problems in both women and men of all ages, so the greater risk for social isolation for women in uniform (as for any other minority subgroup in any population) must elevate their risk for PTSD and other chronic health problems.
- Ironically, the historical policy of many world militaries to exclude women from combat roles may have added to women's risk for operational PTSD because some of the alternative roles to which women have been assigned, particularly those involving providing direct healthcare in forward-deployed areas, typically involve more frequent exposures to suffering, death, and dying than in a typical deployed infantry or aviation unit, for example.[3]

C. Potential Gender Differences in Risk and Resilience Factors

This broad category of biological, psychological, social, and spiritual moderators of stress — operating during and after exposure to stressors of any kind to either increase or decrease risk for a chronic stress-related illness like PTSD — is less well-studied than exposures to potentially traumatic or morally injurious stressor events, so firm conclusions about the role of gender in the moderation of stress cannot yet be drawn.

Nevertheless, we found many studies reporting that women in uniform experience less social-emotional support from, and therefore, less cohesive trust in members of their units, including both peers and superiors. The emergence of social support as one of the most critical needs for anyone to recover from a traumatic stressor event (Hobfoll et al., 2007) underscores the critical importance of learning more about and reducing the obstacles to perceived social support in women in uniform.

Not enough studies have been done comparing the experiences and responses of women and men in uniform to either prevention interventions or clinical treatments for stress-related problems to permit firm conclusions, but experience in the U.S. and U.K. suggests that, especially in cases of so-called Military Sexual Trauma, women in uniform too often find themselves depending for help and support on the same peers and superiors who may have perpetrated gender-based violence in the unit.

VI. REFERENCES

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