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**MILITARY PSYCHIATRY: A TRI-SERVICE
PERSPECTIVE**

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Robert J. Ursano, Colonel, USAF, MC

January 1987

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USAF SCHOOL OF AEROSPACE MEDICINE
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NOTICES

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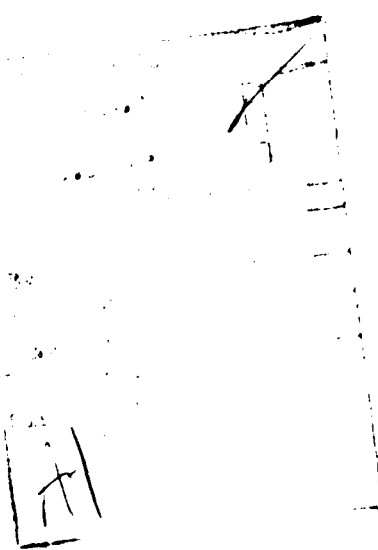
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This report has been reviewed and is approved for publication.

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<p>The term "military psychiatry" defines a particular discipline, with identifiable knowledge and skills, which includes both those of the military and those of psychiatry, but which goes beyond those two and other areas. These areas include an "industrial medicine" appreciation of the requirements of military duty, a "community public health" understanding of life in a military family, an education in such subspecialty areas as "flight medicine" or "undersea medicine" if one deals with fliers or submariners, a "travel agent" approach to life in the global village, an "epidemiologist" awareness of the diseases associated with such a life, and a number of other viewpoints. These disciplines, plus those involved in ordinary psychiatry, identify the military psychiatrist.</p> <p>This report reviews the subject and underscores the requirements for expertise from all these areas, necessary for the training and practice of military psychiatry.</p>						
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MILITARY PSYCHIATRY: A TRI-SERVICE PERSPECTIVE

Military psychiatry is an oft abused term. As in other medical areas within the armed forces, one is frequently asked the question whether or not there is a difference between psychiatry in the military and military psychiatry. Is there a discipline area which is identifiable as military psychiatry, one which requires particular levels of expertise, knowledge, and skills? Can we identify military psychiatry as a distinct area similar to child psychiatry, adolescent psychiatry, geriatric psychiatry, or administrative psychiatry? I will begin by stating the conclusions of my paper: there is a discipline identifiable as military psychiatry and this discipline requires particular knowledge and skills. Within the discipline of military psychiatry, there are both requirements for and the need to have subspecialty expertise from a number of additional areas to enrich military psychiatry.

What is military psychiatry? Clearly, it should be related to what we do. Over the recent months, I can observe my case load, my activities, and those of my colleagues. I invite you to join me on an "adventure" through these problems confronting military/USAF psychiatry. On this adventure, I hope we can have some fun and derive the answer to our initial question. Recently, I was referred a case of a health worker who began to feel anxious while in training. I evaluated a sergeant with alcoholism who had been a helicopter gunner in Vietnam. I recently interviewed an enlisted Navy man referred by his commander. Shortly after entering the Navy, he had begun to hear voices, which he described as pejorative. I have interviewed a young marine corporal who began to have thoughts of God while pursuing his training at one of the only arms manufacturing units within the military. I saw a young enlisted woman who, following an abortion, became seductive with all of the men around her and described a rotten core inside of her which she felt needed to be taken out. I saw an officer who was having marital problems and became increasingly depressed recalling his experience of separations growing up as a child in the military. A woman in analysis recalled her inability at age 4 to understand why her Navy father could not speak Italian. "I could always speak Italian, there just were no Italians in Texas," she said. A patient recalled his panic hearing Eisenhower giving a speech on TV and thinking his father had to leave again for a war.

I saw a woman on the surgical unit who developed abdominal pain just before her husband's move to an isolated assignment. I saw a woman with severe diabetes who had been raped. I saw a young man who had been hearing voices and said it was all a mistake, he really just wanted out of the service. I evaluated a pilot who developed tachycardia whenever he approached a plane, and I saw a crew maintenance noncommissioned officer in charge (NCOIC) who had served the U. S. Air Force well for many years but developed marital problems and, in response to his wife's threat to leave, had become like a young child requiring attention. And, finally, I heard a case discussed of a young enlisted Army soldier who became panicky when he saw his friend run over by a tank.

What in these cases is representative of military psychiatry? What is it in these cases that would define an area of military psychiatry? The models for military psychiatry have been somewhat vague and poorly articulated. The model people frequently assume is that military psychiatry is the lining up of patients and the exercising of power over them in the service of the group, that is, "You stay, you go, you stay, you go." In this model, it is unclear who is in fact the benefited party, the one who leaves, the patient who is sent home, or the patient who is kept in the service. This power becomes a particular concern during times of war. In another model of military psychiatry, the term stands for psychiatry in the military. In this model, one is merely a psychiatrist who happens to be practicing within the military. There are no unique demands, requirements, or skills. In the first model, the psychiatrist is seen as an extension of command authority. In the second model, there is an attempt to keep him totally distinct from command and group responsibility. Neither of these models seems appropriate to my cases nor to the other issues confronting military psychiatrists. Are these issues inherently different from what we see in our offices? And, what model can encompass our concerns with combat and mission readiness as well as provide a framework for these cases?

OPERATIONAL ENVIRONMENTS: ADAPTATION, ILLNESS, AND PERFORMANCE

To answer our questions on what is military psychiatry, let's examine some of the information on operational environments in which questions of adaptation, illness, and performance become critical. This information will lead us on a broad path, but eventually, we will return to answer our original question. I hope not to bore you with the details of this information nor to overwhelm you with its volume. Rather, sit back and look at it with the low-power scanning lens of your microscope as we try to listen to it from the perspective of defining the role, functions, skills, and knowledge areas necessary to the military psychiatrist.

Combat

On this field the regular division of four or five thousand men lost 1400 killed and wounded: our (Chapman's) brigade lost 400 out of the 1400 men it contained. You can perhaps imagine but never realize the scenes upon the field, a railroad accident is slight compared with it, the horrors of sudden accidental bloody death are here so much augmented and multiplied. The worst of nightmares, if you were to wake up suddenly and find it all true is not so bad, it haunts me like a nightmare yet. I can see now and every night a Zouave with his arm round the waist of a tall man, with ashy leaden face, eyes half closed and glazed, mouth partly open, death in his hands hanging so loosely, death certainly in his white face, death in everything but his weakly tottering steps, fairly a dead man walking in his living friend's support. I can see a man with a wounded leg lying near our right, a large man with a red head, and

pain in his face and blood on his clothes. In the dust and smoke the battery horses come rattling by, and he lifts his hand imploringly and rises on his elbow. On comes the battery with rattle and jar and thundering speed, and the heavy gun and the iron wheels pass over and crush to undistinguishable ruin this human form. It stains the dust and fairly daubs the wheels of the cruel gun. And a hundred other such sights and memories I have of that field, but it is all worse now than it was then. I suppose the fever and excitement of action made me look lightly on those things then, but through it all I never had a sense of personal danger or realized at all that I might win that fate. It all seemed easy and safe, to march up the hill, to keep the men in the ranks and at work, and to give the commands. (Letter from a Union officer, courtesy of C. F. Wunderlich)

Wars are, by their nature, complex events. For the young service person in late adolescence or early adulthood, separation from home, living in a foreign culture, and being subject to the rigors of war constitute an important and sometimes decisive developmental event. For some, this event is further complicated by the experience of battle. Such individuals, men and women, experience potentially painful, poignant, boring, moving, terrifying, rewarding events which undoubtedly affect their lives.

As we consider combat casualties, we must separate what constitutes the onset of these conditions from what may lead to recovery from them. Although individuals with personality disorders do not appear to be subject to a greater rate of combat exhaustion or psychological impairment as a result of combat, since World War II there have been suggestions that the personality disorder is less prone to recover once having developed a combat disorder. Israeli studies show no relationship between intensity of combat and recovery.

Symptoms reported by casualties tend to be somewhat similar through different wars although there are fads.

I was now Captain and First Lieutenant and had not a soul to help me on the ship as Stodder was injured, and Webber useless. I had been up so long, had had so little rest, and been under such a state of excitement, that my nervous system was completely run down. Every bone in my body ached, my limbs and joints were so sore I could not stand, my nerves and muscles twitched as though electric shocks were continually passing through them, and my head ached as if it would burst. Sometimes I thought my brain would come out over my eyebrows. I lay down and tried to sleep, I might as well have tried to fly. (Letter from a Union officer serving aboard the U.S.S. Monitor, courtesy of C. F. Wunderlich)

Although sleep disturbances, fear, and a sense of detachment are major factors leading to battlefield breakdown, anxiety remains the highest

reported symptom with depression not far behind. Behavioral and psychophysiological manifestations of the combat casualty are protean. Psychiatric combat casualties may demonstrate symptoms of hysterical paralysis, anxiety, dissociation, or physical illness. During World War II, some flight personnel in North Africa presented with paralysis of the fine movements of their hands. In the cold Korean winter of 1951, psychiatric combat casualties presented with numb feet and symptoms that mimic frostbite. In Vietnam, a common presenting sign was hyperventilation. All these conditions have one thing in common: they can potentially remove the individual from combat. Because of this potential, they may be considered evacuation syndromes. The importance of the individual's relationship to his group, his wish to be a member of or be separate from an organization, a sense of family and a sense of community, all must be examined in the context of presenting symptoms in combat. We will discuss these factors somewhat further when we address social cohesion.

The role of predisposition to psychiatric disease versus the stress of combat in the causation of combat casualties has been examined. If you examine a graph of 5th Army combat casualties in Europe in World War II comparing rates for wounded in action and combat neuropsychiatric casualties, you will notice the parallel patterning evident in these two groups. Psychiatric combat casualties occur at a rate directly proportional to the rate of wounded in action. These data support the importance of the stress of combat in the development of the psychiatric diseases of combat. There are further data that relate to this question.

In the Israeli war in Lebanon in 1982, 75% of wounded in action were beyond help even with the most vigorous medical and surgical intervention. The ratio of psychiatric casualties to wounded in action in this war was 23:100; for every 100 wounded in action, there were 23 psychiatric casualties. Ten percent of all psychiatric casualties occurred among wounded soldiers. Needless to say, such a large number would overwhelm any triage station if not dealt with. Shabatni Noy has presented his work examining the Israeli defense forces in the Israeli-Lebanon war of 1982. He asked raters to blindly rate the degree of battle stress; he then looked at the rate of psychiatric casualties. He identified a rate of casualties which correlated highly with the degree of battle stress—the greatest degree of battle stress showed the greatest rate of psychiatric casualties (Table 1). Note the interesting finding here that with increasing battle stress, there was an increasing rate of psychiatric casualties as compared to wounded in action. That is, the rate of psychiatric casualties went up faster than the rate of physical casualties. One could posit from these data that there may be a threshold prior to the occurrence of psychiatric casualties related to battle and once this threshold is reached, there tends to be a rapid rise. These observations need further consideration as we think about the difference between low-intensity and high-intensity war and the impact of arousal versus boredom as stressors.

TABLE 1. ISRAELI: FORCES IN LEBANON
JUNE-SEPTEMBER 1982

Degree of battle stress	Physical casualties (KIA + WIA)	Psychiatric casualties	Psychiatric casualties 100 wounded
1 (high)	36	31	86:100
2	23	9	39:100
3	10	1	10:100
4 (low)	12	0	0:100

Source: Data reported by G. Belenky, Walter Reed Army Institute of Research

What predicts who will become a casualty? Again referring to the Israeli data (Table 2), one can observe that age is a significant predictor for the occurrence of psychiatric casualties termed battle shock in the Israeli forces. Note that there is a peak in the 26-30 age group. Soldiers in the 18-21 age group appear to be the least vulnerable. Low education, low motivation, low-performance predictor score, being a reservist, and being a member of a support unit, also all predict breakdown. To a degree, these factors are interrelated because in the Israeli defense forces, low education, low motivation, and low intelligence lead to assignment in a support unit. Thus, these findings, with the exception of those related to age, are provisional and require comparison with other groups.

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TABLE 2. RATIO OF BATTLE SHOCK TO WOUNDED BY AGE IN ISRAELI FORCES IN LEBANON—JUNE–SEPTEMBER 1982

Age	Battle shock: wounded
18-21	10:100
22-25	22:100
26-30	38:100
31-35	29:100
36-55	28:100

By chi square on actual numbers, groups differ ($p < .01$)

Other factors predicting breakdown (battle stress held constant; wounded soldiers as the control group):

Low education

Low-motivation score (personality characteristics and attitude toward military service)

Low-performance predictor score (intelligence, motivation, knowledge of Hebrew)

Reservist

Support unit

Low rank

Source: Data reported by G. Belenky, Walter Reed Army Institute of Research

The correlation between wounded in action rates and neuropsychiatric casualties in World War II was between 0.7 and 0.9. Interestingly, in follow-ups of World War II combat casualties, in only 21% of these cases did compensation have any ill effect — a factor which we should keep in mind as perhaps we too often relate to worries of secondary gain following the return of individuals with significant degrees of symptomatology. Units with good discipline and leadership have lower casualty rates. Combat support units whose involvement in combat may fluctuate from boring safety to terrifying attack are at higher risk. Twenty-three percent of all evacuations during World War II were for psychiatric reasons compared to 6% in Vietnam. However, this 6% figure must be taken with some caution since the rate of evacuation fluctuated greatly—particularly toward the end of the war—as drug dependency and evacuation syndromes increased. Psychiatric casualties among fighter and bomber pilots during the Vietnam

conflict were virtually unknown, a contrast to World War II. Three percent of U. S. Air Force, 5% of U. S. Army, and 15% of U. S. Navy psychiatric casualties represented "combat fatigue," while 40% or higher were classified as character and behavior disorders.

In his role as consultant to command, the military psychiatrist establishes the conditions under which treatment and maintenance of the fighting force can be accomplished. Such consultation encourages immediacy, proximity, centrality (central control over the process of treatment), and simplicity. These organizational principles lead to treatment opportunities and a milieu which maximizes our patients' chances of recovery from the intense assault of combat.

Treatment of the combat casualty is well known. Expectancy maintains the anticipation that the individual will return to his combat unit and prevents unwanted degrees of regression and separation from his task and group. Hypnosis and antipsychotic agents appear to be of little use in treatment. Hypnosis deprives the individual of a sense of control although it may be helpful when used in an authoritarian manner through which the individual can invest a sense of power in the physician. Short-acting sedatives may be useful; relaxation and autogenic self-control may also be of use. Intravenous barbiturates or other agents to achieve abreaction are rarely necessary and are disabling. Israeli military psychiatrists have informally noted that about 50% of psychiatric casualties identified at the battalion level were "chicken soup casualties." The casualties could return to duty 12 hours after restoring their fluid loss and taking a brief rest. Experienced psychiatrists speak of 80-90% of psychiatric casualties returning to duty within 72 hours.

The returning psychiatric combat casualty has little or no increased risk of becoming a psychiatric casualty again. During Korea, it was shown that only 10% of returned combat casualties required further psychiatric evaluation. Similar figures are available from the Israeli-Lebanon war. Table 3 examines the Israeli experience with the recurrence of combat breakdown. The Israeli defense forces identified 600 individuals who had had battle shock, 40% of whom were combat ready at the time of the Lebanon war; in the control group of nonpsychiatric casualties, 75% were ready. Thus, the occurrence of battle shock led to a decreased probability of being available for future combat. However, of those who recovered, the rate of occurrence of battle shock is essentially no different in the control group than in those individuals who had experienced battle shock in 1973. The Israeli defense forces concluded that if a soldier is fit for combat duty by normal criteria, a history of battle shock does not place him at increased risk for future combat-related psychiatric breakdown. One other study of NATO troops in the Congo can address this question. In this group, individuals suffering essentially combat exhaustion were examined 5 years later. This is a small group and the follow-up was only for 5 years; however, there was no increased rate of psychiatric disease among those individuals who had been diagnosed as combat exhaustion, treated, and returned to duty. Therefore, we must be cautious in using the occurrence of psychiatric symptoms and psychiatric casualties under battlefield conditions as a predictor of long-term psychopathology.

TABLE 3. RECURRENCE OF BATTLE SHOCK IN ISRAELI FORCES IN LEBANON—JUNE-SEPTEMBER 1982

After initial psychiatric breakdown in the 1973 Arab-Israeli War

By June of 1982, battle shock cases from the 1973 Arab-Israeli war still on record	600
Combat ready by profile	40%
Recovered battle shock cases from 1973 serving in Lebanon	200
Recurrence of battle shock in Lebanon in battle shock cases from 1973	1%
By June 1982, of the control group of 1973 Arab-Israeli war veterans:	
Combat ready by profile	75%
Occurrence of battle shock in the control group of 1973 Arab-Israeli war veterans	0.5%
Overall risk of occurrence of battle shock for all Israeli reserve forces in Lebanon	0.67%

Source: Data reported by G. Belenky, Walter Reed Army Institute of Research

The consequences of chemical and biological warfare (CBW) raise new areas of psychiatric concern. With the suspected use of CBW by the Soviet Union in Vietnam and Afghanistan, increasing concern has been present among the U.S. military forces. A recent study, using a training exercise with appropriate conditions to mimic reality, indicated a 20% psychiatric casualty rate during a chemical warfare (CW) attack. In World War I, such cases were called "gas mania" or "gas neurosis." Hysterical symptoms developed that were associated with choking, chest pain, shortness of breath, and aphonia. The British and French, at that time, trained in their gas masks. For every one case of exposure to gas warfare, they found two people believing they had been gassed. Eventually, a specific individual was assigned to units to teach the troops, brief command, and serve as evacuator interrupter in combat to delay the "gas neurotics" from being evacuated. Phosgene (a suffocant smelling like new mowed hay) was hard to detect. Mustard gas had a delayed action and caused blisters, burns and was highly persistent. In areas in France, it is still difficult to till the soil because of residual mustard gas. By the end of World War I, "gas neurotics" blended with other exhaustion casualties.

Nerve agents require troops to "discriminate between the indiscriminable." There is no way to easily identify the agents other than by the

onset of symptoms. By the time symptoms begin, there are only a few seconds for the soldier to administer the antidote. The antidotes to nerve gas (atropine and 2PAM chloride) can produce delirium, while the nerve gases themselves (cholinesterase inhibitors) produce psychosis in low doses.

Psychological psychiatric problems under CBW include the problems of the protective gear itself as well as the agents. The current gas mask and ensemble (mission oriented protection posture (MOPP) gear) was developed in the early 1950's. The ability to administer medical support while in MOPP gear is a major concern. Hyperthermia is a significant problem of MOPP gear and may present as a mental disorder—confusion, disorientation, hyperactivity before the onset of seizures and death. A heightened sense of social isolation, decreased ability to communicate and to maintain visual contact with one's unit are also consequences of working in the protective gear. Sounds are muffled and distorted and tactile perception is blocked. Fine movement is impaired and increased physical effort is required to accomplish any task. This impairment quickly leads to frustration and fatigue and can give paranoid reactions due to decreased peripheral vision and muffling of sound. All individuals look the same. In this setting, troops become increasingly concerned about infiltration by the enemy and can get jumpy. A sense of claustrophobia can create panic and premature unmasking which may be imitated by other troops if the leader is the one to unmask, thus leading to mass casualties. The social impact centers around the difficulty of recognizing comrades and others. Conventional social interaction is difficult. People tend to withdraw into themselves which decreases unit cohesion. There is an increased sense of isolation and fatigue. Physical discomfort contributes to these problems: there is an inability to wash; soiling may be present; the heat and moisture make an excellent culture medium; and it is difficult to sleep in MOPP gear. These discomforts have a negative impact on morale and health.

The sense of isolation, anxiety, and fear are decreased by establishing a decentralized mechanism of decision making, in which small units decide on the necessity of MOPP gear. A chemical "overwatch" allows an individual in the unit to monitor the need for CBW protection, while others continue to work. The establishment of strict levels for when to remove protective gear is necessary. Training in the gear itself increases the service members' sense of responsibility for its care and function, as well as their comfort. The seemingly trivial addition of unit and individual identifiers to the outside of such protective gear can increase the sense of social cohesion and maintain contact among buddies.

What combat reactions correlate to the late onset post-traumatic stress reactions? Presently, there is no data to indicate that acute combat reactions correlate with the late onset of post-traumatic stress reactions. Although this assumption may seem intuitively obvious, I would caution against such an assumption for there are many factors, other than combat stress, that may be related to the late onset of post-traumatic disorders. Medication may or may not increase the risk for late onset disorders because it blurs and/or slows down the ability of the individual to process and integrate the overwhelming degree of stimuli in the combat setting. In fact, from the vantage point of late onset disorders, whether

the primary precipitant is the stress of combat or the absence of others with whom to process and integrate the experience is open to study.

Among active duty troops, there is a low rate of post-traumatic stress disorders related to the Vietnam experience (less than 1% of psychiatric diagnoses going to Medical Boards). These disorders occur in this population at a time of loss of psychosocial supports, during or after divorce, diagnoses of cancer, marital problems, and deaths. In these settings, the recall of the trauma of the combat experience appears to serve as a symbolic vehicle to express the present pain. Regardless of his relationship to Vietnam, the veteran selects symbols which are appropriate to his experience and acceptable to the community, society, and group in which he lives to express and encode his present pain and suffering. Remembering from this perspective is an active reconstruction using bits of past experience to describe a present state.

The prisoner of war (POW), who has been studied after all previous conflicts, represents a unique concern to the military psychiatrist. In Vietnam, the POWs suffered isolation, deprivation, torture, and maltreatment. The study of these individuals leads one to look again at questions of stress, adaptation, predisposition to disorder, and the role of social supports. In studies my colleagues and I have conducted at the USAF School of Aerospace Medicine we showed that individuals from the maximum stress group (the pre-1969 shutdown group) experienced a greater rate of psychiatric disorder, not at repatriation but over the subsequent 5 year follow-up, than did the post-1969 shutdown group. These diagnoses ranged the entire gamut of psychiatric disorders. The occurrence of late-onset disturbances related to high-stress environments cannot be thought of only as related to one syndrome, post-traumatic disorder. These data support the idea that high levels of stress lead to an increased risk of psychiatric disorder regardless of predisposing personality. In these two groups of individuals, there was no reason to believe that one group had a higher level of predisposition than the other. However, it was clear that the pre-1969 group who suffered significantly higher rates of maltreatment and deprivation also had higher rates of psychiatric distress.

In another look at the POW population, we addressed specifically the role of predisposition to psychiatric disease. We were able to identify a group of six POWs who had coincidentally been seen before being shot down in North Vietnam. They experienced significant amounts of stress in terms of length of captivity and as measured by the pre- versus post-'69 dichotomy. The presence or absence of psychiatric disease before being shot down was neither necessary nor sufficient to the diagnosis of psychiatric disease postrepatriation. Thus, both in a large epidemiologic look at repatriated POWs and in a single case design study, the role of stress as a precipitator for psychiatric disease is highlighted.

The Community: Garrison

Our adventure is not to study combat disorders. We are, after all, interested in developing a perspective on military psychiatry and the military psychiatrist. Combat, although of utmost importance, requiring that all of us be trained to handle its casualties, is not the only job for

the military psychiatrist. Training periods, times of peace, times of encampment, and garrison, represent significant portions of our patient population's lives. It is not unusual for young service members to organize their lives around drinking, use of illegal substances, and various sorts of sexual experimentation. In this setting informal ethnic and racial segregation frequently develops in ways that mirror the civilian community. These informal segregated arrangements may provide considerable social support, but in times of stress may produce decreased work-oriented cohesion.

In the United States or overseas, military members usually live in a relative cultural isolation frequently living on their military installation or in close proximity to it. The military attempts to provide an inclusive environment with schools, recreation facilities, clubs, youth groups, officers and noncommissioned officer social clubs, wives' clubs, and various ethnic and special interest groups. Formal and informal social systems separate officers and enlisted members and in some ways their families. In schools and, in particular, churches, the caste system is circumscribed. For the uniformed member, the community tends to be organized according to rank, military specialty, unit membership, place of residence in the barracks, or housing on or off post. In overseas assignments, the service member's life and family are even far more likely to center upon institutions associated with the military. This increased sense of community is purchased at some cost to privacy.

Around bases and posts there are frequently various nightclubs, stores, bars, laundromats, dry cleaners, motels, and other establishments that offer legal and illegal services. Frequently these communities provide a substantial part of the community support to young military wives, particularly of lower ranking enlisted persons. These communities are also a part of the milieu for adolescents growing up in the military family. Going "off post," beyond the gate, is a normative developmental event for the adolescents of our community.

There are 2.1 million children, having a median age of 5.3 years, living in the military community. Ninety percent of this population is under 13 years of age, with one or both of their parents on active duty. Adolescents in the military family have experienced 5.8 family moves by this stage of their lives. As we know, the military family is confronted with particular stresses—moves, separations, potential loss of a family member in war or training for war. A good friend, a former flight surgeon, once described how his adult daughter told him that during high school she would become frightened whenever friends whose fathers were also in the U. S. Air Force were called out of class. She dreaded these loudspeaker summonses, fearing she would be called because her father had been killed in a plane crash. When the chaplain's and wing commander's cars go through the housing area, everyone feels frightened and wonders where they will stop. A submariner's wife described coping with the frequent separations from her husband by assuming he was dead whenever he went to sea.

The flight surgeon frequently represents the immediate entree to the community for the USAF military psychiatrist and, in particular, to that portion of the community most involved in operational duties, the flyer himself, crewmembers, support personnel, and their families. If we ask a

group of experienced flight surgeons what psychiatric skills and knowledge they feel they need to know, they are very much able to prioritize their concerns (Table 4). This table shows the items that experienced flight surgeons ranked as of most concern to them out of 30 items of psychiatric skills and knowledge. The number in parentheses is how this same item was ranked by student flight surgeons. First and foremost is the ability to talk to flight personnel about their personal problems. Note that high on the list is the ability to talk with the families of flight personnel. The ability to recognize the "chief complaint behind the chief complaint," to understand the meaning and symbols used by his/her patients is also high on the list. This study also showed that it was the more experienced clinician—more years of experience and longer out of training—who had a greater interest in and thought of greater importance the psychiatric understanding of his fliers and his fliers' families.

TABLE 4. RANKING OF KNOWLEDGE AND SKILL AREAS FOR PSYCHIATRIC EDUCATION OF FLIGHT SURGEONS

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|----|------|--|
| 1. | (1) | Ability to talk with flight personnel about their personal problems. |
| 2. | (2) | Ability to evaluate suicidal/destructive behavior. |
| 3. | (11) | Understanding of flying personnel's way of life. |
| 4. | (9) | Ability to talk with families of flight personnel. |
| 5. | (3) | Understanding of the social and organizational environment of the flyer. |
| 6. | (4) | Ability to recognize the "chief complaint behind the chief complaint." |
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Numbers in parentheses are for student flight surgeons.

From a factor analytic study of the 30 different questions to which this group responded, a list of 7 factors emerges. These factors include diagnosis, management, administration, doctor-patient relationship, organism/ biological system, personality system and sociocultural system. These factors represent areas which one might call skills such as diagnosis and management and areas called knowledge which include the knowledge of the personality system and the sociocultural system. The data indicate that the young flight surgeon feels a need to know about administration as it relates to psychiatric care; that does not seem unusual. But, it also shows that the experienced flight surgeon rates psychiatric diagnosis and knowledge of the personality system very highly. Similarly, if one asks what are the most useful pieces of information to the flight surgeon, knowledge of the doctor-patient relationship which we, in technical language, might understand as related to the therapeutic alliance, transference, countertransference, and meaning, as well as the understanding of psychopathology and the understanding of the sociocultural

system—group, family, community—rate high in the areas which our flight surgeons say they need to have skills.

Aerospace Operations

Again, our goal is to survey these items with a perspective to what constitutes military psychiatry, what is being asked of us, and what skills and knowledge we need to address these problems. Clearly, an area of particular concern to the U. S. Air Force and to the military psychiatrist in all services is that of aerospace operations. The psychiatric assessment of the flier—pilots, navigators, aircrew members, and air traffic controllers—requires an understanding of the interaction of the mind, body, and environment. Combat aircraft and the type of flying required in times of war are demanding, both physically and emotionally. It has been estimated that if a carrier pilot flew for an entire career, he would have a 1 in 5 chance of dying in an aircraft mishap. The requirement to fly upside down over a ridge at treetop level at 600 knots in a combat maneuver will not appeal to everyone. Similarly, flying in a helicopter a few feet off the ground, while being fired upon from the trees and bushes, places unique stresses and demands on aircrew. Everyone cannot successfully accommodate to the neuro-psychological demands of these tasks. Until recently, this population has been all male. Little information is available on the psychiatric strengths and weaknesses of female fliers.

The psychological well-being of USAF fliers has recently been examined by Dr. Wetzler and several of us as his collaborators. Several interesting and important findings are now well documented and available for further elaboration. U. S. Air Force fliers have substantially higher levels of psychological well-being than a comparable U.S. population in Alameda County, California. Although this was not a longitudinal study, it is also interesting to note that psychological well-being changes at different ages. Obviously, this study must be looked at carefully since these are different cohorts rather than one cohort studied over a long period of time. The reversal in psychological well-being in the later age group between fliers and nonfliers requires further study. Perhaps this reversal of well-being represents changes in career, movement out of the pilot seat, or increasing levels of family stresses which may be dealt with differently by the flier and the nonflier population. U.S. Air Force fliers parallel the Alameda County sample; however, there are fewer individuals at the extremes of psychological well-being, both the high levels, 6 or 7, and the low levels, 1 and 2. Further elaboration of these data indicate that active pilots in the age range between 21 and 28 may, in fact, be a unique group; they appear to be significantly different from other fliers and nonfliers. The primary difference appears to be the level of positive feelings reported in this group. We can also ask whether or not the type of aircraft flown correlates with psychological well-being. In this study, and using these measures, there was no significant difference, despite clinical folklore, among fighter pilots, bomber pilots, and transport pilots.

Fine and Hartman have described the model pilot's personality style; this individual probably both selects flying as a career and is selected by the adaptational demands of the flying environment. These studies were done at the time of the selection of Mercury and Gemini astronauts. At present,

ongoing work at the USAF School of Aerospace Medicine is examining further the role of mission scientists and engineers for the space program. The selection and maintenance of the psychological well-being of our flying personnel requires an understanding of their adaptation to military flying, space flight, and other types of stress. The usual pilot has unconflicted relationships with men; however, he is anxious when too close to women. He shows relative inflexibility of drive reduction and a low tolerance for personal imperfection. He tends to be alloplastic; that is, he is interested in changing the world rather than himself, and seeks high achievement and novelty. When nervous, he tends to look for constructive solutions, speak out and defend his position, and become quite active. It is unusual for flying personnel to become tearful, act childish, or be involved in physical fights.

When impaired, fliers usually present with adjustment disorders, anxiety, and affective disorders or psychophysiological disorders. Of aircrew members referred to the School of Aerospace Medicine for evaluation between 1975 and 1979, 13% were disqualified from flying for psychiatric reasons. Approximately 50% of these were later returned to flying duties. Being grounded psychiatrically does not mean the end of a flying career.

The flier in combat faces a wide array of stressors which puts the utmost demand upon him. Error may mean severe injury or death. Of a group of high performance jet aircrew ejecting in Southeast Asia, 50% had flown between 200 and 300 hours in their aircraft model and less than 100 missions. Nearly one-half sustained some injury and 13% had a major injury. In 12% of these cases, inappropriate or unnecessary behavior put the flier at increased risk. Survival following ejection requires an ability to perform in intimate, demanding groups. Frequently, aircrew are unprepared for the degree of physical fatigue and intragroup emotionality which they may face. Necessary survival tasks must be performed despite potentially great reluctance.

Attention Arousal and Anxiety

Then on again wearily marching, crowding past the inevitable guns and heavy wagons, halting for long lines of jingling Cavalry to press past us, always nodding and hardly able to dodge the wheels and horses' heels, so heavy are we with sleep. Why it was fairly miserable. I realized your idea of the torment of punishment by forced wakefulness. At last we seemed to be in a by-wood path, and away from the jam of guns and wagons: the tall tree trunks were spectral in the darkness and like huge architectural colonnades. There were Gothic arches of branches above us, and low wet roads under our feet: we were in the White Oak swamp. No longer kept awake by the necessity of saving myself from the jam of the great road, everything grew dreamy and indistinct, and I stumbled along badly. Finally, I slept uneasily and dreamed of other scenes and places and I awoke with a start and in bewilderment of our next halt. Where was I? But the silent woods and the tall trees brought it all back presently and I was the richer for the realization of the truth of the possibility of sleeping on the march. It can

be done for I have done it. On again, slowly, miserably, wearily, gladly dropping into soft mud and sleeping heavily at any trivial pause: but finally broad awake and all alert by panic. Ah, yes, we had the experience also. A loose mule or two scampering down the hill scatters the men like chaff from the road, and here comes a dash of rebel cavalry. I woke up, (was asleep, of course), and felt the thrill of expecting a sabre cut, got behind a tree, recovered instantly, and rallied the men and all was right again and asleep no more.

We were under the range hour after hour but only had a horse hit again, and Capt. Lawrence on the edge of his boot-sole. But the sights and horrors began to be fearful: stretchers were plying rapidly now, and bringing out men all limp and bloody, men with loosely hanging arms came by, and men with wounded legs: one fellow with head and hair all dripping wiped his sleeve across his eyes and asked us in rather a cheerful tone, "Boys, what Regiment is this? How are you getting on?" etc. Not much hurt he, in spite of his gory locks. But by and by a stretcher with an awful burden - oh! why can't we fight without seeing all this? I began to feel a sickness at the stomach, but thank Heaven! familiarity drives it off, or I never could go through with it all. But if the white canvass of the stretchers were only of another colour they would not show those terrible stains! The battery was silent at last but only because our infantry was marching down the hill into the rebel woods, and the more tremendous roar of musketry made the battle seem the fiercer. It kept swelling louder and louder. More and more regiments came up with a cheer and passed down the slope into the boiling woods. The wounded now straggled everywhere, many asked me where to go, and I no longer shuddered at the sights. (Letter from a Union officer, courtesy of C. F. Wunderlich)

The interrelationship of arousal, attention, and anxiety is of concern both in times of peace and in times of war. Demands for an instantaneous shift from almost no requirement for performance output to the requirement for maximal output creates transition states during which the risk of personal paralysis and performance failures are increased. The study of panic disorder, "soldier's heart" (mitral valve prolapse), and diver's panic are converging upon biological and psychological phenomena related to catecholamines, the locus ceruleus, and benzodiazepine receptors in the brain. The role of imipramine in the treatment of panic disorders is of particular importance because it links together the role of depression and anxiety in the production of this unique disorder. Yet to be explained is how the presence of a supportive other can decrease the arousal present in panic disorder. The relationship of this disorder to separation anxiety in children, better identified as school phobia, is under active investigation.

The physiological stresses of high G forces, high altitude - low barometric pressure, cold temperature, and required attachment to physiologic support equipment impose neuropsychological limitations as well as adaptational demands on fliers. In all aspects of combat, information overload, attentional disturbance, or decrements of memory due to a disturbance in health, fatigue, or physiological disrupting state may prove fatal. Psychiatric standards for crew selection have required modification due to the high demands of present aircraft. Psychiatric conditions which decrease muscular strength, attention, work, power, and/or endurance, even minimally, can have fatal effects in the modern battlefield environment requiring high levels of information processing and rapid problem solving.

Motion sickness is a problem which affects both the performance and health of fliers. Space motion sickness, a component of the space adaptation syndrome, is a related phenomenon but caused by the effects of zero gravity on the vestibular apparatus and body fluid distribution. Research at the USAF School of Aerospace Medicine as well as the National Aeronautics and Space Administration (NASA) and others is ongoing into this phenomenon. About 75% of airsick student pilots can be returned to flight training by using biofeedback.

Aircrew and soldiers are required to take long flights across time zones and frequently can have around the clock work-rest schedules. Psychological and physical performance show deterioration after such travel and work schedules due to circadian and transmeridian desynchronization—jetlag. Recent studies of circadian desynchronization related to affective disorders and distinguishing phase advances (eastbound flights) from phase delays (westbound flights) emphasize the role of the brain as the mediator of time events to our biological functioning. Some of the most exciting research by Pfizer, Axelrod, and Barrett relate the biological responsiveness of the brain to the behavioral history of the animal.

Social Networks and Unit Cohesion

This subject leads us to our last area of consideration: social networks and unit cohesion, the interpersonal relatedness of the individual. It is always worth underlining that our body is connected to the outside world; this connection is mediated by the brain, the organ through which what is outside gets inside. The brain is the target organ through which perceptual phenomena can be translated into chronic and enduring patterns of behavior and state dependent biological changes. Our attachments to individuals and groups have major effects on our ability to function as a biological organism. Spiegel was the first psychiatrist to observe the importance of group cohesion to the prevention of psychiatric casualties in World War II. These observations laid the basis for the community mental health movement which followed the war.

The disruption of the organized pattern of a unit and its emotional bonds is a primary factor in performance failure and the development of psychiatric disease. Under the pressures of battle, the individual soldier cannot endure long out of sight and voice contact with his fellow soldier. In the Korean War, the buddy relationship was identified and studied as a component of the structure in the development of unit cohesion. Harry

Stack Sullivan spoke of the importance of a preadolescent chum between the ages of 8 1/2 and 11 (a childhood friend with whom one shares secrets which one could tell no one else) to the development of a sense of self-esteem, well-being, and belongingness to the group. Recent work by my colleagues and myself shows the presence of a preadolescent chum to be a predictor of the young adult's (ages 18 to 22) ability to establish social supports. A wide range of literature supports the importance of social supports in the buffering of environmental stress. Research on social support networks shows an increased morbidity and mortality for individuals who have low levels of social support. Studies replicated numerous times since 1969 show that the death of a spouse leads to substantially increased risk of cardiovascular death over the following 6 months for the surviving spouse. More recently, alterations in lymphocyte function have been shown.

Israeli studies (Table 5) have shown a number of factors of importance to the development of company and unit morale. Clearly, this is a complex variable which involves us in the study of group performance and factors which facilitate or decrease bonding to the group, the family, and the larger community.

The risk of becoming a combat casualty is lower in units with high cohesion and high morale. During World War II, neuropsychiatric casualties in elite airborne units never exceeded 5.6% of all casualties. Approximately 1 in 5 World War II casualties were neuropsychiatric. In addition, Israelis have reported that family disruption - the presence of marital conflict - increases the risk of becoming a combat casualty. The new guy in a unit, the one who is least bound to the group, is at heightened risk of becoming a combat casualty. In studies of U. S. Air Force POWs, those individuals who were least like the rest of the group—lower in rank, lower in education—were more likely to become psychiatric casualties after repatriation. Shaw has discussed the important role of narcissistic defenses in establishing identification with the combat group, and the service members' attachment to the leader. Shaw quotes William Manchester's memoirs of serving as a Marine in the Pacific in World War II:

It was an act of love. Those men on the line were my family, my home. They were closer to me than I can say, closer than any friends had been or ever would be. They had never let me down, and I wouldn't do it to them. I had to be with them rather than let them die, and me live with the knowledge that I might have saved them. Men, I now know, do not fight for flag or country, for the Marine Corps or the glory or any other abstraction. They fight for one another.

Our treatment programs for combat casualties are directed at forward treatment. The Israelis, through an "experiment in nature" caused by random evacuation, have again shown forward treatment to produce the lowest rate of casualties (Table 6). Forward treatment maintains the bonds with the fighting unit which facilitates recovery from breakdown. This is a common observation not limited to combat. When the hospitalization reaches a point of interfering with the bonds to the primary group with which the individual is identified—usually the family—a significant alteration in the patient's ability to operate psychologically and biologically can be identified.

TABLE 5. CORRELATIONS BETWEEN MORALE AND OTHER
VARIABLES IN ISRAELI FORCES—MAY 1981

Personal morale	.55	Perceived company's morale
	.32	Relations with commanders
	.36	Unit's cohesiveness
	.24	Trust in company commander
	.27	Comrades' readiness to fight
	.28	Legitimacy of war
	.34	Trust in one's self
	.24	Trust in weapons
	.23	Personal competence
Perceived company morale	.55	Personal morale
	.47	Relations with commanders
	.41	Unit's cohesiveness
	.27	Trust in company commander
	.20	Comrades' readiness to fight
	.09	Legitimacy of war
	.21	Trust in one's self

N = 1200; all correlations are significant ($p < .05$)

Source: Data reported by G. Belenky, Walter Reed Army Institute of Research

TABLE 6. RESULTS OF TREATMENT OF PSYCHIATRIC CASUALTIES IN ISRAELI FORCES IN LEBANON—JUNE-SEPTEMBER 1982

	Returned to unit	Not returned to unit
<u>Forward treatment</u> 2-5 km from the front: or on the border		
Break occurred at the front	60% (66%)	40% (34%)
<u>Rearward treatment</u> (Central and Northern Israel)		
Break occurred at front	40% (46%)	60% (54%)
Break occurred at home following demobilization or while on pass	16% (11%)	84% (89%)

By chi square on actual numbers, groups differ ($p < .001$)

Note: First number in each pair are total psychiatric casualties; numbers in parentheses are pure battle shock casualties.

Source: Data reported by G. Belenky, Walter Reed Army Institute of Research

In studies of POWs from the Korean War, resistance stance and the ability to sustain adequate coping were related to the maintenance of group ties. Margaret Singer was first to identify, in the Korean War population, that the difference between the high resister and the collaborator was primarily related to the group with which the individual identified. In point of fact, the resister and the collaborator were more alike than different except for their group identifications. We have made similar observations in the USAF Vietnam era POW population. In this group, coping style was not related to the presence or absence of psychopathology, but did reflect group attachment as a strong indicator of behavior during captivity including resistance stance. Studies of the POWs returning from Vietnam indicate that even individuals who have undergone this severe stress can identify themselves as having benefited from this stressful environment. Further studies of this benefited group may elucidate the group and individual factors which lead to the use of even such extreme trauma in an organized, goal-directed way.

The military psychiatrist provides consultation and support to groups of people who perform arduous tasks on long ocean voyages, or sometimes deep under the sea, in remote sites like Antarctica and, in the future, space missions. In these settings, group functioning is the critical element in mission accomplishment. The technical demands and close living conditions imposed by living in an austere steel box where constant readiness must be maintained are such that aberrant behavior, performance failure, or overt psychiatric symptomatology are difficult to tolerate. Individuals in these environments are exposed to isolation and enforced physical closeness to their comrades. They also face the full force of extensive climatic conditions; extremes of noise, heat, and humidity; seasickness; and the dangers of outer space or the freezing cold of Antarctica. Lulls in the work demands may present an equally difficult low-demand stress associated with the feeling of boredom. The capacity to evaluate and replace casualties in isolated environments is limited or nonexistent.

The demands of group living aboard ships vary with the type and age of ship and the mission. The deployment, refitting, training, and redeployment cycle of a ship correlates with the identification of performance disruption and psychiatric problems both in the crew and in their families. Suicidal gestures by crewmembers increase immediately prior to putting to sea as do behavioral, psychosomatic, and affective disturbances in the spouses and children of the crew.

One area of particular interest is the selection and maintenance of the crews of nuclear submarines, especially those that carry pre-targeted missiles (Fleet Ballistic Submarines) and constitute a portion of the nuclear deterrent capability. To avoid accidental or unauthorized launch, Fleet Ballistic Submarines are designed with multiple devices to prevent unauthorized individuals from launching a missile. The purpose and responsibility that these crews embody is a stressor. Crewmembers realize that, "Should we launch, everything I love is gone."

The life of a submariner, like that of other sailors, is a cycle of training, refitting, the cruise, and return to the family, only to do it all over again. The refit period prior to the cruise is a period of intense physical activity and high stress. A cruise is 3-12 months or longer in duration, depending on the mission. Neither the submariner nor his family may know the exact dates of departure and return nor the destination and itinerary. These factors increase the sense of isolation and loss of family supports both before and during the cruise for both the submariner and his family.

These crews of about 130 men (10% officer) operate submerged for 75-90 days during which time they receive only limited messages from their families, "family-grams," and may send none. During the cruise, the crew is subject to confinement, revitalized air, interruption of diurnal periodicity, threat of hyperbaric exposure, sleep deprivation secondary to arduous work schedules, and periods of free time. Food variety becomes an important morale factor. Two weeks before the return home, a euphoric mood, "channel fever," is usually present in the crew. The threat of nuclear accident from the reactor used to drive these submersibles is low, but in the current sociopolitical atmosphere

may represent a psychological stressor. Selection for this duty requires volunteers who meet a stringent set of physical and psychiatric screening standards which involve both projective and objective personality testing.

The incidence of psychiatric problems during these cruises is low. The rate of psychiatric illness among submariners is 4 per 1,000. Given the high training and maturity of these crews, every effort is made to provide support to them and their families. Psychiatrically, such support requires a knowledgeable psychiatrist who understands the world and training of submariners.

CONCLUSION

We have traversed a broad area beginning with patients who walk to our office or who are sent by their commanders; patients who feel anxious; patients who hear voices; patients with marital problems; patients who have undergone the trauma of being raped; patients having serious disease; patients seeing friends crushed; patients who develop tachycardia when approaching a plane; and patients who say they want out of what they are doing or become like a baby crying for help. But where did we go from there? When we looked at combat, we saw, again, trauma and responses to trauma. We continually ran into the requirements to adapt to a changing world, a changing world that might include a pregnancy, a move, a separation, a new job, or shells, bullets, drugs, and prostitution. We saw the use of symbols to describe events in one's life. We focused on the difference between what causes the onset of a disease and how we go about maximizing the probability of recovery. Over and over the importance of environmental stress as precipitants to disease was identified, in World War II, in Korea, in Lebanon, in Vietnam.

In our clinics, we worry that our patients be seen quickly, that they be seen within their community, and that their treatment be understandable to them and be seen as helpful. We worry about when to medicate and when not to medicate. We worry about how chemicals may hurt and how chemicals may help. We worry about social and sensory isolation in our patients whether from combat, a recent change in station, or from schizoid withdrawal. We try to help them find a supportive person within their group—in their combat group, in their basic military training unit, or in their family. We try to become the supportive other for those who can find no one else.

We heard about children. Many of our children are adolescents. In fact, much of our active duty population is between the ages of 18 and 22. Our children undergo many moves and separations. Our population spans the entire range of age from birth to old age. We heard that people we work with want to know more about how to take care of their patients, how to understand them, and how to help them using psychiatric means whether they be techniques involved in talk, empathy, introspection, or medications.

The demands of flying and the demands upon a 10-year-old who is told he has to move from Biloxi, Mississippi to Wiesbaden, Germany, require adaptation, may lead to performance disruption, and may lead to illness. The ability to be a member of a group and which group one chooses to be a member of has a substantial impact on the ability to cope—in combat as resister or collaborator, in a family, and on the job.

Military psychiatry is defined by these unique concerns of the military community and its stressors. Some of the concerns are unique to each of the three services. The military community is set apart from the rest of the nation by its missions and its deployment in remote and foreign areas. Psychiatric illness constitutes a major source of manpower loss during peace and war. In addition, failure to perform may result in the loss of many lives. Extreme military environments and the demands of operational requirements put the service member and frequently the member's family at increased risk for disrupted adaptation and performance as well as at increased risk for disease—psychiatric and physical. Adaptation in extreme environments is an overall perspective of great relevance to the military psychiatrists. Such adaptation requires both alterations within the organism and the ability of the organism to alter his environment.

In this context we face the challenge of supporting the military mission. The military psychiatrist requires knowledge based on biological, psychological, sociocultural, and symbolic functioning. This knowledge is used both during times of peace and war. Skills and knowledge which emphasize responses to trauma (biological, psychological, and sociocultural), adaptation, group functioning, arousal, attention and anxiety, and the role of the brain as biological mediator are necessary to the military psychiatrist. This unique set of knowledge and skill areas must be maintained and developed in our career cadre. The development of the military psychiatrist does not stop with residency training. Our career force must develop the quality and quantity of specialized skills at all levels necessary for consultation to command, clinical care, administration, education, and research to address the problems confronting psychiatric care of our population of 10.5 million people and the variety of problems that confront us—from understanding the patient who develops combat dreams following the diagnosis of cancer, or the patient who develops a psychosis after administration of 2PAM chloride, and the child who must deal with father's absence, to how groups form, are held together, sometimes fight together, and sometimes must die together.

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