

# Chapter 19

## SUMMATION

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Michael Pala

*Sentinel*

1968

Michael Pala was a member of Combat Artist Team #6 in Vietnam during February and March of 1968. His serene painting depicts the individual soldier, on sentry duty, alone with his thoughts. It is the goal of combat psychiatry to provide that soldier with every possible psychological defense against the horrors of the battlefield, and should those defenses fail, to provide him with the timely, caring treatment necessary for his recovery.

Art: Courtesy of US Army Center of Military History, Washington, DC.

## LESSONS OF WAR

### Role of the Military

The study of civilization is the study of war, preparation for war, and recovery from war. While a few fortunate nations have been spared from the direct ravages of war for a few centuries, most countries have almost continuously been in one of war's stages. Theories of war have considered individual leaders' ambitions, instinctual behaviors, economic forces, religious forces, and cultural forces<sup>1,2</sup> in attempts to understand and control what has largely become not only human but also economic waste. Although in the distant past, wars may have served the winnowing purpose of evolution, most thinkers believe that the few things solved by war are better solved by peace. Furthermore, with the development of atomic weaponry, the existence of humankind itself is threatened. Prevention of war, therefore, is the paramount role of modern military forces.

The authors take the position that the foreseeable future includes the potential for conflict, that preparation for war is paradoxically more likely to result in peace, and that the medical role in this endeavor is critical to its success. For the mental health disciplines, this role encompasses identification and elimination of unfit personnel, improvement of marginal personnel to standards of acceptability, prevention of psychiatric casualties, and treatment of casualties when prevention fails. All of these efforts must be guided by past experience and sound principles of human behavior. Failures have occurred in all of these categories.

### Selection of Personnel

Many studies reviewed by Arthur<sup>3</sup> reveal that mass psychiatric screening of personnel for induction into the military beyond minimal testing for normal intelligence, absence of psychotic disorders, and absence of significant criminal behavior is markedly inefficient. Following World War I, which had resulted in large numbers of psychiatric casualties, an attempt was made at the beginning of World War II to reject draft registrants who might break down in combat.

The identification and elimination of allegedly mentally unfit personnel threatened the war effort early in the United States' entry into World War II. Guided by the theory that soldiers who had exhib-

ited any prior symptoms of anxiety would be prone to breakdown, medical personnel were at one point eliminating almost as many soldiers as were being recruited.<sup>4,5</sup> By contrast, the less stringent screening of soldiers in World War I resulted in adequate soldiers for the fight. Furthermore, review of casualty breakdown in World War II<sup>6</sup> revealed that breakdown was largely related to unit and battle conditions rather than predisposition, while studies of casualties from World War II<sup>7</sup> and the Arab-Israeli wars<sup>8</sup> revealed that soldiers who had broken down in combat, when properly treated, were at no greater risk of another breakdown than their cohorts who had not broken down.

Menninger<sup>9</sup> reviewed World War I and World War II statistics and showed that the liberal selection policy of World War I resulted in the rejection of about 2% of soldiers at induction for neuropsychiatric reasons and about 2% breakdown of the total, while the more stringent policy of World War II resulted in the rejection of 11% of inductees but a higher rate of breakdown of 12% of the total.<sup>9</sup>

Although about 1,600,000 registrants were classified as unfit for induction during World War II because of mental disease or educational deficiency (a disqualification rate about 7.6 times as high as in World War I), separation rates for psychiatric disorders in World War II were 2.4 times as high as in World War I.<sup>6</sup> Not only was screening ineffective in preventing breakdown, but also the liberal separation policy for those presenting with neurotic symptoms threatened the war effort.<sup>6</sup> For instance, in September 1943 almost as many soldiers were being eliminated from the U.S. Army as accessed; most of those separated were for psychoneurosis (35.6/1,000/y).<sup>6(p740)</sup>

Studies attempting to find predisposition to psychiatric breakdown in combat have revealed more similarities between psychiatric casualties and their fellow soldiers than differences. For example, in a comparison of the combat records of 100 men who suffered psychiatric breakdowns requiring evacuation to a U.S. Army hospital in the continental United States and an equivalent group of 100 surgical casualties, Pratt<sup>10</sup> found no significant difference in numbers of awards for bravery. Glass remarked, "Out of these experiences came an awareness that social and situational determinants of behavior were more important than the assets

and liabilities of individuals involved in coping with wartime stress and strain."<sup>7(p1024)</sup>

Improvement of marginal personnel to meet standards has been successful in at least two conflicts. During the Vietnam conflict, Secretary of Defense McNamara ordered the recruitment of soldiers with minor unfitting conditions (most were slow learners or soldiers with personality disorders) who were to be given special training and to serve in combat (Project 100,000). While a higher percentage of these soldiers had to repeat basic training and had general discharges for unfitness, the great majority served in a satisfactory fashion. The program was successful enough that the number of drafted lower-functioning soldiers exceeded the original 100,000 planned: 320,000 were inducted. While many low-aptitude veterans did well in the military, their postmilitary civilian adjustment was not as good as that of a comparable nonveteran civilian comparison group, being disproportionately unemployed, unmarried, underpaid, and undereducated.<sup>11</sup>

Israel has developed special programs to train soldiers who otherwise could not serve. Most of these men are from families displaced from Arabic countries. They are often illiterate and don't speak Hebrew. Also they are often poorly motivated. The program utilizes women drill sergeants to inspire the soldiers' best efforts. The training includes also a basic education in Hebrew literacy and Israeli cultural values. These soldiers have acquitted themselves well in Israel's ongoing conflicts with Arab neighbors. An important aspect of soldier support is the family. It is known that family stress can adversely affect a soldier and lead to combat breakdown.

### Training of Personnel

Training of personnel involves several important dimensions: technical proficiency, personality characteristics, strength and endurance, group cohesiveness, and stress inoculation. There is considerable overlap in all of these areas; for example, technical proficiency, which may require strength and endurance, leads to the personality characteristic of self-confidence, which, along with technical proficiency, produces a sense of mastery and value to the group, promoting group cohesion. All of these characteristics are positively associated with the ability to withstand combat stress.

Much of military training addresses all of these dimensions. Shared vigorous training not only increases strength and endurance and builds self-confidence, but also increases group affiliation and

cohesion.<sup>12</sup> Aware of the importance of cohesion, the military has kept personnel together in cohort units from basic training to deployment. In addition, efforts have been made to keep commanders with the same unit for longer periods of time to enhance not only horizontal (peers) but also vertical (hierarchical) cohesion.

An important aspect of combat training is the need for realism. Troops new to combat are known to be more vulnerable to combat stress reactions than experienced troops. Realistic training with live ammunition and actual danger is believed to act as an "inoculation" against battlefield stress. Unfortunately such training inevitably results in an irreducible small number of casualties. Technical proficiency is increasingly being accomplished with computer simulations. With technological innovations involving "virtual reality," perhaps the desired realism in combat simulations is on the horizon. Or could training with no element of real fear and physical discomfort lead to a false sense of confidence which shatters in the face of imminent life threat? Some combination of "live" and "virtual" reality may be needed.

### Rediscovery and Extensive Application of Principles

The United States became involved in World War II (1939–1945) 2 years after its outbreak. Over 20 years had passed since the end of World War I, and at the onset of American involvement in World War II, military medical personnel were unprepared to carry out the program of forward psychiatry that had been devised by World War I psychiatrists.<sup>9</sup> No psychiatrists were assigned to combat divisions and no provisions for special psychiatric treatment units at the field army level or communications zone had been made.<sup>6</sup> American planners had believed that potential psychiatric casualties could be screened out prior to induction.

World War I style forward treatment was relearned during two battles of the Tunisian Campaign in March and April 1943.<sup>13</sup> Captain Fred Hanson avoided evacuation and returned more than 70% of 494 neuropsychiatric patients to combat after 48 hours of treatment, which basically consisted of resting the soldier and indicating to him that he would soon rejoin his unit.<sup>13</sup> General Omar Bradley issued a directive that established a holding period of 7 days for psychiatric patients and further prescribed the term "exhaustion" as the initial diagnosis for all combat psychiatric cases. The World War I principles had been rediscovered!

## Discovery of Mediating Principles

In addition to rediscovering the principles of treatment applied so effectively in World War I, and the ineffectiveness of large-scale screening, World War II psychiatrists learned about the epidemiology of combat stress casualties (direct relationship to intensity of combat, modified by physical and morale factors) and the importance of unit cohesion both in preventing breakdown and in enhancing combat effectiveness.

Another finding during World War II was the chronology of breakdown in combat. It had long been recognized that “new” and “old” men in combat units were more prone to breakdown. “New” or inexperienced troops were more likely to become stress casualties and have usually accounted for over three fourths of stress casualties; however, with increasing exposure to combat after 1 or 2 combat months, an increasing rate of casualty generation also occurs.

From studies of cumulative stress such as these as well as observations of the efficacy of a “point system” (so many points of credit toward rotation from combat per unit of time in combat or so many combat missions of aircrews) used during World War II, the value of periodic rest from combat and of rotation came to be understood and applied in the Korean and Vietnam conflicts with fixed combat tours. The final and perhaps most important lesson of World War II was the importance of group cohesion not only in preventing breakdown, but also in producing effectiveness in combat.<sup>7</sup>

## Prevention of Psychiatric Casualties

Prevention of psychiatric casualties must address the factors known to be important in soldier efficiency and breakdown. These can be grouped into biological, interpersonal, and intrapsychic factors. In terms of biological factors, commanders must enforce salt and water discipline to avoid dehydration and sleep discipline to prevent exhaustion and to counter time-zone dislocation. During the U.S. invasion of Grenada, dehydration and accidents accounted for a majority of U.S. casualties.<sup>14</sup>

Interpersonal factors may be the most critical in terms of preventing psychiatric casualties. Soldiers living and working together in conditions of shared danger and hardship will foster unit cohesion. During the 1973 surprise attack by Arab forces, the Israelis had to be quickly mobilized. This resulted in some tank crews going into battle with teammates who were strangers. Such crews, who obvi-

ously lacked cohesion, had far higher psychiatric casualty rates than those in which soldiers had trained together, sometimes for years. The leader must partake of these dangers and hardships, display concern for his soldiers, and demonstrate expertise in battle. In a survey of Israeli soldier factors in morale, the commander’s battle competence was the most highly rated attribute.<sup>15</sup>

When combat is imminent, the commander should brief the small unit on what is to be expected. This briefing should be realistic but not pessimistic. After combat, the commander should lead the small group in a debriefing in which each combatant has an opportunity to describe the action. This group debriefing allows correction of misinterpretations, recognition of individual performance, and consolidation of lessons learned. It also strengthens cohesive bonds.

Another important aspect of prevention is arranging for rest from battle, preferably on a unit basis. During World War II, aircrews were relieved of duty after a fixed number of combat flights, roughly the number at which on a statistical basis there was a better than 50% chance of survival. During the Korean conflict the combat tour was 9 months while the support troops served 13 months. During the Vietnam conflict the tour for all was 12 months with 4 to 6 days of “R and R” (rest and recreation) approximately midway through the tour. Unfortunately, rest from the combat zone and completion of the tour were on an individual rather than unit basis, degrading cohesion.

## Impediments to Cohesion

Among the alleged impediments to unit cohesion are race, gender, ethnicity, and sexual preference. The military has adopted policies to overcome all of these issues except the last. All units have been racially integrated since the Korean conflict. Women have entered all military roles other than ground combat and submarine warfare. Educational programs such as Black History, Hispanic History, Native American History, and Asian-Pacific History weeks are overcoming ethnic stereotypes. Homosexuality remains controversial, being viewed as detrimental to morale and discipline. Change in this area may occur through judicial or legislative action; however, President Clinton has indicated his desire to end discrimination against homosexuals in the military.<sup>16</sup> Because there is no law against homosexuality in the military, this could be accomplished by executive order; however, the Uniform Code of Military Justice

describes sodomy, homosexual or heterosexual, as a felony. Changing this would require an act of Congress.

There is speculation that the ability to bond in small groups for relatively brief periods of time for hunting or fighting is to an extent gender specific. This might explain the observation that women have never been a significant element in front line combat forces in hundreds of societies for which there are records. The female child-bearing role, leading ultimately to social role differentiation of males and females, however, does not allow the determination of whether there are any biologically determined differences between males and females in group bonding. Although averages of physical differences between males and females such as upper body strength (greater in males) and rate of secretion of medullary adrenal hormones (more rapid in males) may be significant, individuals often excel in feats of skill and strength regardless of sex.

Future wars may require the military to select individuals for roles based on innate and learned differences rather than sexual stereotypes. Such selections may place women in leadership positions that involve skills in communication and vigilance tasks as well as direct combat roles. As an example, tanks with a lower profile on the horizon are more difficult to sight and hit. The former Soviets reportedly selected short men for tank crews in order to fit them into a lower tank profile. Perhaps short women will some day fill such roles. With the expected reduction of the combat age demographic pool, the United States will be under even greater pressure to utilize women in combat roles. In the assignment of combat pilots General H. Norman Schwartzkopf, commander of coalition forces in the Persian Gulf War, has indicated that women should have been assigned combat roles.<sup>17</sup>

### Personal Factors in Combat Stress

The soldier brings with him many, sometimes conflicting, intrapsychic beliefs and attitudes that must be modified by skillful training to produce the most effective soldier. The late adolescent soldier has been a preferred recruit in the past because of malleability and certain inherent attitudes. The malleability applies to the normal lack of career definition and identity of most late adolescents. Furthermore, these older adolescents usually have a sense of invulnerability which Masserman<sup>18</sup> has termed one of the Ur-defenses (or delusions) of

humans. The first author has argued in Chapter 1, *Psychiatric Lessons of War*, that it is the loss of such defenses that produces breakdown on an individual basis. Shaw<sup>19</sup> has pointed out that the treatment of the combat psychiatric casualty near the front with replenishment of physiological deficits and expectation of return to one's unit shores up these failing defenses.

### Stress Inoculation

Another aspect of prevention is exposure to realistic combat training. It is well-known that so called "green troops" not previously in combat become stress casualties in disproportionately high numbers. This was recognized by U.S. Civil War commanders who sought to "blood" their men in combat to improve their fighting efficiency.<sup>20</sup> It was argued that this "blooding" increased feelings of comradeship and desire for revenge against the enemy. Some forms of severe stress do not inoculate but increase vulnerability to subsequent stress as seen in a study<sup>21</sup> of elderly holocaust survivors who were exposed to missile strike threats during the Persian Gulf War. This would be in consonance with the observation that repeated severe trauma leads to breakdown as seen in the "old sergeant syndrome."<sup>22</sup> As mentioned earlier, the advent of computer simulations exposing combatants to virtual reality (VR) training may be the most realistic training short of combat.

Another potent effect deriving from our current understanding of the theory of behavior therapy involves the process of habituation.<sup>23</sup> Exposure to a situation producing severe anxiety results in reduction of anxiety when no aversive stimulation occurs. This may account for the observation that combat veterans are less likely to be overwhelmed by anxiety. Paradoxically, however, repeated exposure to combat may eventually result in breakdown, presumably due to the erosion of feelings of invulnerability (loss of Ur-defenses) occasioned by the deaths of comrades. Thus an aspect of prevention is the removal of soldiers from combat periodically to prevent breakdown. A fixed tour of 12 months in the Vietnam conflict and a week of "R and R" (rest and recreation) about one half of the way through the year's tour may have resulted in combat stress casualties that were among the lowest of any conflict (11/1,000/y).<sup>24</sup> This rate was about the same as that for soldiers not in combat stationed in Korea at the same time (13/1,000/y).<sup>24</sup>

## TREATMENT OF PSYCHIATRIC CASUALTIES

The deceptively simple measures employed since World War I and embodied in Artiss<sup>4</sup> proximity, immediacy, and expectancy (“PIE”) conceptualization, broadened into D. Jones’ “BICEPS” acronym (brevity, immediacy, centrality, expectancy, proximity, simplicity as discussed in Chapter 8, U.S. Air Force Combat Psychiatry) remain the mainstay of traditional treatment of psychiatric casualties. Chapter 2, Traditional Warfare Combat Stress Casualties, has shown that the therapeutic basis of these measures is expectancy. A casualty treated briefly and immediately has less opportunity to dwell on the potential for death and maiming. Such treatment involving simple measures of replenishment of nutrition and sleep, taking place in a safe area near the battle area (and near the soldier’s own unit), produces a powerful and explicit expectancy that after a period of rest the soldier will return to his own unit for which the cohesive bonds have not been attenuated. Centrality carries the additional principle that prior to evacuation out of the combat zone psychiatric casualties are collected at a centralized location at which skilled mental health professionals are expected to return a significant portion of such casualties back to combat zone duty.

Technological advances have jeopardized the applicability of these principles in modern warfare. Sophisticated intelligence gathering (sometimes by satellites), highly mobile forces, and continuous fighting even at support levels in the battlefield may not allow for a safe forward treating area or the return of a soldier to his own unit. In such circumstances, new principles of intervention involving prevention, “buddy aid,” and possible use of medications may be required.

In summary, World War II taught combat psychiatrists that psychiatric casualties are an inevitable consequence of life-threatening hostilities; that they cannot be efficiently screened out ahead of time; that their numbers depend on individual, unit, and combat environmental factors; and that appropriate interventions can return the majority to combat duty.

### Low-Intensity vs Traditional Combat Stress

The authors have used terms such as low-, mid-, and high-intensity combat somewhat differently from many military writers. For example, high-intensity combat is restricted to nuclear and chemi-

cal/biological warfare by some writers. The authors feel that conventional warfare is of high intensity when it involves continuous or near continuous fighting with numerous pulses of battle in a 24-hour period. Similarly, the authors feel that battle is of low intensity when battles are brief and infrequent, allowing for recuperation between battles. Thus, terrorist attacks would be of low intensity even though resulting in large numbers of killed and wounded as occurred in the bombing of a U.S. Marine Corps barracks in Beirut in 1985.<sup>25</sup>

Just as in the initial battles of World War II, provisions had not been made for psychiatric casualties in the early months of the Korean conflict (1950–1953). As a result they were evacuated from the combat zone. Because only 5 years had elapsed, the lessons of World War II were still well known and the principles learned during that war were applied appropriately after the initial period of confusion, due to the efforts of Colonel Albert J. Glass, the Neuropsychiatry Consultant and a World War II veteran.<sup>26</sup> Psychiatric casualties accounted for only about 5% of medical out-of-country evacuations, and some of these (treated in Japan) were returned to the combat zone. To prevent the “old sergeant syndrome,” a rotation system was in effect—9 months in combat or 13 months in support units. Attempts were made to rest individuals (“R and R” or rest and recreation) and, if tactically possible, whole units.

In the Korean conflict many soldiers also presented with frostbite, a usually preventable disorder. These physical disorders were often actually masked psychiatric casualties. It is important to identify and avoid evacuation of hidden psychiatric casualties. Such casualties may be as transparent as one with a helmet headache or as subtle as development of malaria from failure to take chemo-prophylaxis or development of frostbite or immersion foot from failure to maintain foot hygiene.

### Low-Intensity Combat Stress Casualties

An unrecognized portent of psychiatric problems of future wars was the psychiatric problems of rear-area support troops. As the Korean conflict progressed, U.S. support troops increased in number until they greatly outnumbered combat troops. These support troops were seldom in life-endangering situations. Their psychological stresses were related more to separation from home and friends,

social and sometimes physical deprivations, and boredom. Paradoxically, support troops who may have avoided the stress of combat, according to a military historian<sup>27</sup> and a combat veteran,<sup>28</sup> were deprived of the enhancement of self-esteem provided by such exposure. To an extent the situation resembled that of the nostalgic soldiers of prior centuries. In these circumstances the soldier sought relief in alcohol abuse and, in coastal areas, in drug abuse, and sexual stimulation. These often resulted in disciplinary infractions. Except for attempts to prevent venereal diseases, these problems were scarcely noticed at the time, a lesson not learned.

The Korean conflict confirmed that the appropriate use of the principles of combat psychiatry could result in the return to battle of up to 90% of combat psychiatric casualties; however, there was a failure to recognize the types of casualties that can occur among rear-echelon soldiers. These "garrison casualties" later became the predominant psychiatric casualties of the Vietnam conflict.<sup>29,30</sup> Vietnam and the Arab-Israeli wars revealed limitations to the traditional principles of combat psychiatry.

The epidemiology of psychiatric casualties among troops in battle emphasizes those that resulted from battlefield stress (eg, anxiety, fatigue, hysterical syndromes). However, casualties resulting from less dramatic causes had been recognized since

World War I. These less dramatic casualties, more common in rear-echelon or garrison settings, presented with problems of alcohol and drug abuse, disciplinary infractions, venereal diseases, personality disorders, and "self-inflicted" medical disorders (for example, malaria from failure to use prophylaxis). Not until the Vietnam conflict were these casualties recognized as potentially serious causes of ineffectiveness.

It is not surprising then that various authors have called such casualties "garrison casualties"<sup>29,31</sup> and "nostalgic casualties."<sup>32</sup> Nostalgic casualties occur in soldiers separated from their home environment with attendant loss of social reinforcement. Rosen<sup>33</sup> has pointed out that one need not be a soldier for this to occur and that displaced persons and other groups often suffer from this "forgotten" psychological disorder. Situations such as the fighting of an unpopular war of indefinite duration are likely to increase these casualties, particularly in the absence of strong cohesive forces, which usually develop from shared hardship and danger.<sup>12</sup> In combat situations, cohesion needs little encouragement to flourish. Low-intensity warfare, often characterized by long periods of idleness without the shared experience of cohesion-building danger, should produce more nostalgic casualties. This situation probably also accounts for the higher incidence of such casualties among support than among combat troops.<sup>34</sup>

## PSYCHIATRIC SYNDROMES

Combat fatigue was designed as a nonspecific label carrying an implication that the soldier is normal and will recover with rest. It subsumes a great variety of behaviors that in modern nomenclatures might be given such labels as adjustment disorders, somatoform disorders (conversion reaction), dissociative disorders, or post-traumatic stress disorder (PTSD). Because conversion disorders and PTSD have presented in most wars and their mismanagement can be devastating, they deserve special consideration. Similarly, psychological reactions to maiming injuries and central nervous system (CNS) injuries were considered separately.

### Post-Traumatic Stress Disorders

Chronic PTSD has come to be recognized as a common sequel of severe stress whether experienced in combat, disasters, prisoner of war or hostage status, torture, or sexual and physical assault. Perhaps because of the potential for "secondary

gain" or inadvertent positive reinforcement of the invalid or sickness role, militaries have been ambivalent about expending medical resources for such casualties. For example, following World War I German psychiatrists gave generous treatment and pensions to psychiatric casualties and were rewarded by seeing their numbers grow. After World War II, however, and based on World War I experience, German psychiatrists did not grant pensions for nonpsychotic conditions; their numbers then were few.<sup>35</sup> Despite the potential for abuse of the PTSD diagnosis, those calculating the gains and losses from combat must include these casualties in their deliberations. Figures from World War I and World War II reveal that about one fourth of those seeking chronic care in Veterans Administration hospitals would fall into this group although they were usually given various neurotic diagnoses.

To the heterogeneous syndromes of substance abuse, indiscipline, and sexual problems found



in low-intensity wars that have been labeled disorders of frustration and loneliness or “nostalgic casualties” should be added chronic and delayed post-traumatic stress disorders (chronic and delayed PTSD). PTSD is usually and appropriately thought of in the context of acute overwhelming stress; however, the frequent morale problems of low-intensity, ambiguous wars may carry over into the postwar lives of the former combatants. The current discontents of these war veterans may find expression in the reappearance or new appearance of symptoms associated with combat: anxiety and fears, autonomic hyperactivity, reliving of psychologically traumatic events, and a variety of other malaises. Such symptoms often follow service in wars of high intensity as well, particularly when the outcome was unsatisfactory or there is psychological or financial gain from such symptoms.

### **Prevention and Treatment of Low-Intensity Combat Stress Disorders**

Although successful treatments for low-intensity combat stress casualties were developed as early as the Napoleonic Wars, circumstances can prevent the application of remedies. For example, during the Vietnam conflict the 1-year rotation policy, ostensibly for the purpose of preventing psychiatric casualties due to cumulative stress, the policy of rotating commanders out of combat units after 6 (and later only 3) months in order to give more officers combat experience, and the policy of individual replacement of losses rather than unit replacements all interacted to impair unit cohesion, which might have prevented some of the nostalgic casualties.

Vietnam revealed the limits of World War II type psychiatric treatment policy in a low-intensity, prolonged, unpopular conflict. Such conflicts, if they cannot be avoided, must be approached with primary prevention as the focus. Career soldiers with strong unit cohesion will not endanger themselves, their fellows, or their careers by abusing alcohol or drugs.

While prevention through development of unit cohesion and morale is as important for disorders of loneliness and frustration as for combat stress casualties, likewise treatment follows principles of disallowing evacuation from the combat zone, and measures to strengthen unit cohesion. A preventive measure among support troops would involve allowing them to function in combat roles. Unlike the handling of combat stress

treatment failures through medical evacuation, disorders of loneliness and frustration may be handled through administrative and disciplinary measures.

Sexually transmitted diseases (venereal diseases or VD) have been a major cause of lost soldier strength in wars of the twentieth century. While modern medicine has markedly reduced the time lost and complications of venereal diseases, it has not reduced the infection rates. Although unlikely to have immediate effects on combat efficiency, the HIV virus poses severe problems in long-term prevention. Many of the world social tensions and ongoing wars are occurring in Africa, where the HIV infection is reaching epidemic proportions. Unlike in the United States, where the populations at risk are mainly homosexuals and intravenous drug abusers and their consorts, the spread of HIV in Africa is primarily through heterosexual intercourse.

In South America, another politically troubled area with narcoterrorism, or communist insurgencies, or both, in several countries, acquired immunodeficiency syndrome (AIDS) is emerging as a difficult public health problem. Because urban areas in these third-world countries are being hit hardest by AIDS, there is concern that the professional and leadership classes of African, and to a lesser extent South American, countries could experience severe setbacks in goals of industrialization and democratic reforms. Internal unrest in Latin America frequently has led to U.S. military deployment beginning before 1900.

The main lessons from the U.S. experience in managing substance abuse in Vietnam are that treatment should be in country to prevent an evacuation syndrome and that the factors that prevent breakdown in general—cohesion, effective leadership, and good morale—may protect soldiers from substance abuse. Avoidance of idleness and medical supervision of brothels may further minimize nostalgic casualties.

The appropriate treatment of acute combat stress casualties will decrease the later development of chronic post-traumatic stress disorders. Other measures to prevent chronic PTSD include the previously mentioned combat stress debriefing (see Chapter 11, Debriefing Following Combat), which has been adapted to civilian critical incident stress debriefing. In treating the maimed or disfigured, or patients with physical losses (amputees, blinded, paralyzed), prevention of chronic PTSD is assisted by avoiding an invalid role and emphasizing what the person can do rather than cannot do.

## FUTURE COMBAT

Future wars may differ drastically from previous wars. Although the former Soviet nation states are mostly considered allies or at least neutral to the North Atlantic Treaty Organization (NATO) allies and NATO has overwhelming military superiority, conflicts with nations that have advanced military technology are possible. This was demonstrated in the Persian Gulf War in which Iraq launched missiles resulting in military and civilian casualties and posed the potential risk of mass casualties.

Future wars that pose the risk of use of weapons of mass destruction will require dispersion and mobility of allied forces. Furthermore, a technologically advanced enemy may possess sensors capable of detecting aggregations of materials and personnel. This scenario would severely challenge the traditional applications of the principles of combat psychiatry. Prevention and far-forward consultation and intervention must be given maximal emphasis in the future.

Combat psychiatric treatment requires a relatively safe setting near the battle area in which mental health personnel can render simple supportive treatment followed by return of the casualty to his own unit. The ability to target aggregations of personnel and equipment will mean that treatment settings must be mobile or be left far from the battlefield. The dispersion and mobility of tactical units will make it very difficult to return casualties to their own units.

Despite strenuous efforts of prevention including strengthening unit cohesion, avoiding physiological deficits, and optimizing personality variables, psychiatric casualties will occur. Treatment of these casualties requires development of new principles of management. Combatants will need to recognize combat stress reactions in themselves and their comrades and take remedial action. This may be as simple as arranging for nutritional and sleep replenishment. It may include reassurance from a squad leader, commander, or medical aidman. It is possible that a rapid-acting, non-sedating, nonaddictive antianxiety drug may be developed to treat soldiers on the battlefield.

Currently buspirone (BuSpar), an azapirone, with partial serotonin agonist actions, is a non-sedating, nonaddicting anxiolytic; however, it has an approximately 10-day latency prior to its therapeutic effects. Furthermore, buspirone's activating effects may not be desirable and may interfere with sleep. It may prove useful in returning refractory cases to duty. The recent development of a benzodiazepine

antagonist, flumazenil (Romazicon), that can rapidly reverse benzodiazepine hypnotics, may allow the use of such hypnotics on or near the battlefield. The notion that medicated soldiers would lack compassion and would release inappropriate aggression<sup>36</sup> has little basis in fact or theory.

If a combat stress casualty is evacuated and cannot be returned to his own unit, it may be possible to incorporate him into a newly created unit of such casualties under suitably trained senior leaders. This may be necessary anyway if units are markedly degraded in mass casualty actions. Creating such units would be a formidable but accomplishable task utilizing known techniques to create cohesion and morale; however, it would probably require several weeks of intensive work with mental health professionals.

### Areas of Current Study and Suggestions for Future Research

While the military has learned much about sustaining the combat member and treating those who break down, there are many areas that need clarification. Issues include not only ideal socialization of the soldier but training targeted to individual strengths and weaknesses, a full understanding of the biology at the molecular level of combat sustenance, and breakdown and ideal treatment of the ineffective combatant. Research in these areas is ongoing.

### Prevention of Combat Stress Casualties: Sustaining the Soldier in Combat

Anything that improves soldier effectiveness decreases combat stress casualties and conversely anything that degrades soldier effectiveness increases combat stress casualties. Thus, the net of prevention of combat stress casualties can be cast broadly to include almost all improvements in doctrine, command, control, communications, and intelligence (C<sup>3</sup>I), training; logistics; rations; and equipment.

In the biobehavioral area, improvements in the means of sustaining the soldier physiologically and psychologically all contribute to increased combat effectiveness and decreased combat stress casualties. Social psychological research into ways of enhancing unit morale, leadership, and cohesion could better sustain the soldier by improving his unit. Similarly, research into better ways of sustain-

ing the soldier physiologically in terms of nutrition, hydration, rest, and recuperation could improve soldier performance and thus enhance the unit. Neurobiological investigations into brain changes accompanying acute combat stress reactions and in particular those associated with the development of PTSD would be of great value in suggesting new means of prevention and treatment.

A productive area of current research in the realm of physiological sustainment is in sleep, sleep deprivation, and continuous operations. It is representative of a number of areas in which advances in biomedicine are finding application in sustaining soldiers in combat. Sleep deprivation is a frequent associated finding in cases of acute combat stress reaction. Sleep deprivation-induced decrements in performance frequently contribute to the occurrence of incidents of friendly fire. In the work on sleep, sleep deprivation, and continuous operations, experimentation and modeling are being combined to advance the understanding of the effect of sleep deprivation on performance.

Recent laboratory work has shown that caffeine is effective in sustaining performance in continuous operations and has led to the recommendation that caffeine-containing bars or tablets be added to the meal-ready-to-eat (MRE). Recent modeling of company-sized unit performance has shown that although soldiers can fight while averaging 4 hours of sleep each night, their performance degrades rapidly. For indefinite sustainability of performance without degradation over time, soldiers need 8 hours of sleep each night. This suggests that while some sleep deprivation may be inevitable in continuous combat operations, depriving soldiers of sleep should be as a result of the exigencies of the combat situation, and not a result of deliberate policy.

Work is underway to identify the physiological changes in the brain that accompany the performance degradation in sleep deprivation. These studies involve positron emission tomography (PET), fast magnetic resonance imaging (fMRI), and other physiological as well as behavioral measures. Initial findings show that the performance degradation in sleep deprivation is associated with a decrease in global brain energy metabolism. These studies of basic mechanisms will lead to the development of novel, safe, and effective pharmaceuticals to sustain soldier performance during continuous operations.

Work is also underway to develop safe and effective sleep-inducing drugs to promote brief, recuperative sleep during continuous operations. As sleep's recuperative value depends both upon du-

ration and continuity, the hope is to find a nonaddictive, nonperformance-impairing, sleep-inducing drug that will initiate and sustain unfragmented sleep in the nonsleep conducive conditions of continuous combat operations. Work is currently underway, as suggested earlier in this chapter, to study the effectiveness of triazolam (a benzodiazepine) for initiating and maintaining sleep in combination with flumazenil (a benzodiazepine antagonist) for rapidly restoring alertness upon awakening.

As part of a broad effort to develop unobtrusive, robust, field-deployable biomedical telemetry to monitor soldier status during combat operations, work is underway on the application of artificial neural networks to the discrimination of alert from drowsy electroencephalograms, to provide an online, real-time assessment of soldier alertness for feedback to the soldier and for relay up the chain of command. These systems would be an integral part of the soldier computer, which in turn will be standard equipment for the soldier in the 21st century. Information about each soldier's status would be fed back to the soldier and shared with his comrades and his chain of command through a radio-frequency, local area network (RF-LAN).

### **Treatment of Acute Combat Stress and Prevention of PTSD**

As is clear from previous chapters, the treatment of acute combat stress casualties and the prevention of PTSD are often one and the same thing. Anecdotal accounts from World War I to the present and the few formal studies that have been conducted clearly indicate that successful brief, forward treatment of an acute combat stress casualty reduces the risk of that casualty's subsequently developing PTSD. However, soldiers develop PTSD without having an antecedent history of an acute combat stress reaction. Because traumatic events are unavoidable in combat operations, are there means of preventing the later development of PTSD in soldiers who continue to perform well during the actual events and hence do not come for immediate treatment? Here, anecdotally, the routine application of after-action debriefings and event reconstructions after every major battle, engagement, or otherwise traumatic event, appears to be useful. Carefully controlled studies of the value of after-action debriefings and event reconstructions following traumatic events in the prevention of later PTSD would confirm the value of this technique.

A further, heretofore almost untouched, area for research is the utility of psychotropic medications

in the treatment of acute combat stress reactions and in the prevention of PTSD. Anecdotally, benzodiazepines appear to delay recovery of acute combat stress reactions and to foster evolution of the stress reaction into PTSD. Benzodiazepines may be the pharmacological equivalent of evacuation to the rear in terms of their deleterious effects. Whether antidepressant drugs, especially the new

selective serotonergic, noradrenergic, and dopaminergic reuptake inhibitors, could play a useful role in the treatment of acute combat stress reactions remains to be investigated. Whether these agents alone, or in combination with after-action debriefing and event reconstruction, could be of use in the prevention of PTSD is an open question as well and one well worth investigating.

## CONCLUSION

This review of warfare reveals certain recurring themes concerning soldiers who persevere in combat vs those who break down in combat. Both groups are often quite similar as individuals (and may even be the same individuals); however, their social situations are markedly different. The social situations consist of a matrix of factors that determine whether the soldier excels or breaks down.

Thus, in adapting to combat, as in all survival-relevant activities, humans respond holistically. Their physical, intrapsychic, and social states form this matrix of factors that influences their responses to environmental danger. In combat, deep urgings for individual survival often conflict with socially conditioned expectations, requirements, and desires for "soldierly conduct," that have been embodied in ideals such as patriotism, discipline, loyalty to comrades, and identification with the leader.

To prevent combat breakdown the presence of mission-oriented small group cohesion is essential. Cohesion is fostered by good leadership and by having soldiers train, live, and experience stress together. Further preventive measures include adequate rest, sleep, and nutrition so that chronic or acute fatigue does not develop. Rest from battle should ideally occur through small group rotation so that group support is continuous. Commanders should be open and honest with their subordinates to build trust and vertical cohesion and to enhance the soldier's understanding of the importance of his contribution to the unit mission and the national interest. The soldier must believe that the entire society supports him in suffering privations and sacrifices.

Factors that foster psychiatric breakdown are the negatives of the preventive factors: poor leadership, cohesion, and training; inadequate social support; and the buildup of fatigue. Factors that emphasize perceptions of individual or collective vulnerability increase the probability of psychiatric breakdown. This accounts for the strong relationship between intensity of combat (as measured by

wounded and killed in action) and numbers of stress casualties. It also accounts for the observation that death of a comrade was the most common precipitant of breakdown during World War II. A feeling of helplessness in controlling one's fate also exacerbates stress and weakens resistance. This is seen in the increased stress casualties that occur in circumstances of indirect fire such as artillery or bombing barrages, or gas attacks compared with the direct fire situation (even though the wounded and killed rate may be the same or higher than under indirect fire).

After a soldier has become a psychiatric casualty, it is important to restore as many positive factors as possible: rest, sleep, and nutrition. Bonds to the unit are kept intact with expectation of return to the unit, hence the importance of treating as far forward and as quickly as possible. Treatment must be kept simple to emphasize the normality of the soldier's experience rather than give an imputation of mental illness. In garrison or rear-echelon settings, prevention is even more important because the disorders that occur (alcohol and drug abuse, character disorders, and sexual problems) are even more difficult to treat than combat stress disorders. In rear-echelon settings, attention should be paid to discipline, morale-enhancing activities, and recognition of the critical role played by support troops. Communication between support troops and those they support should be encouraged. Temporary assignment to combat units should be available. Infractions should be dealt with through forward rather than rearward evacuation to minimize secondary gain from misbehavior.

Prevention of combat stress casualties is primarily a command responsibility but the medical person, through consultation with command and avoidance of medical "evacuation syndromes," plays a critical role in this endeavor. The psychiatric lessons of war can profitably be applied to military communities during peacetime as well as to civilian communities.

## REFERENCES

1. Freud S. *Civilization and its Discontents* 1930. New York: WW Norton; 1962.
2. Lorenz K. *On Aggression*. New York: Bantam; 1966: 228–265.
3. Arthur RJ. Success is predictable. *Milit Med*. 1971;136(6):539–545.
4. Artiss KL. Human behavior under stress: From combat to social psychiatry. *Milit Med*. 1963;128(10):1011–1015.
5. Ginsberg E, Anderson JK, Ginsberg SW, Herma JL. *The Ineffective Soldier: Patterns of Performance*. New York: Columbia University Press; 1959: 11.
6. Glass AJ. Lessons learned. In: Glass AJ, Bernucci R, eds. *Zone of Interior*. Vol 1. In: *Neuropsychiatry in World War II*. Washington, DC: Office of The Surgeon General, US Army; 1966: 735–759.
7. Glass AJ. Lessons learned. In: Glass AJ, ed. *Overseas Theaters*. Vol 2. In: *Neuropsychiatry in World War II*. Washington, DC: Office of The Surgeon General, US Army; 1973: 989–1027.
8. Belenky GL, Tyner CF, Sodetz FJ. *Israeli Battle Shock Casualties: 1973 and 1982*. Report WRAIR NP-83-4. Washington, DC: Walter Reed Army Institute of Research; Defense Technical Information Center Document ADA133359; 1983.
9. Menninger WC. *Psychiatry in a Troubled World*. New York: McMillan; 1948: 10–12.
10. Pratt D. Combat record of psychoneurotic patients. *Bull US Army Med Dept*. 1947;7:809–811.
11. McAllister B. 1990. Disadvantaged veterans gain little in military, study finds. *The Washington Post*, 24 February 1990, pp. A1, A10.
12. Belenky GL, Kaufman LW. Cohesion and rigorous training: Observations of the Air Assault School. *Milit Rev*. 1983;63:24–34.
13. Drayer CS, Glass AJ. Introduction. In Glass AJ, ed. *Overseas Theatres*. Vol 2. In *Neuropsychiatry in World War II*. Washington, DC: Medical Department, US Army, Office of The Surgeon General and Center of Military History; 1973: 1–23.
14. Rumbaugh J. Personal Communication, 1985.
15. Gal R. Unit morale: From a theoretical puzzle to an empirical illustration—an Israeli example. *J Appl Soc Psychol*. 1986;16(6):549–564.
16. Gillman B. 1992. Clinton says he'll "consult" on allowing gays in military. *The Washington Post*. 13 November 1992: A1, A11.
17. Schwartzkopf HN. 1992. During interview by Diane Rehm on Public Broadcasting Service, 1 October 1992.
18. Masserman JH. Faith and delusion in psychotherapy: The Ur-defenses of man. *Am J Psychiatry*. 1953;110:324–333.
19. Shaw JA. Psychodynamic considerations in the adaptation to combat. In: Belenky GL, ed. *Contemporary Studies in Combat Psychiatry*. New York: Greenwood; 1987: 117–132.
20. Calhoun JT. Nostalgia as a disease of field service. *Med Surg Rept*. 1864;11:130–132.
21. Solomon Z, Prager E. Elderly Israeli holocaust survivors during the Persian Gulf War: A study of psychological distress. *Am J Psychiatry*. 1992;149(12):1707–1710.

22. Sobel R. Anxiety-depressive reactions after prolonged combat experience: The "old sergeant syndrome." Supplement on Combat Psychiatry. *Bull US Army Med Dept.* 1949;9:137–146.
23. Marks IN. Behavioral psychotherapy. *Am J Psychiatry.* 1976;133(3):260.
24. Tiffany W, Allerton W. Army psychiatry in the mid-60's. *Am J Psychiatry.* 1967;123:810–819.
25. Jenkins BM. *The Lessons of Beirut: Testimony Before the Long Commission.* Santa Monica, Calif: Rand Corporation; 1984.
26. Glass AJ. Psychiatry in the Korean campaign (installment 1). *US Armed Forces Med J.* 1953;4:1387–1401.
27. Kirkland FR. Personal Communication, July 1991.
28. Glass AJ. Personal Communication, January 1982.
29. Jones FD, Johnson AW. Medical and psychiatric treatment policy and practice in Vietnam. *J Soc Issues.* 1975;31(4):49–65.
30. Renner JA. The changing patterns of psychiatric problems in Vietnam. *Comprehensive Psychiatry.* 1973;14(2):169–180.
31. Jones FD. Combat stress: Tripartite model. *Int Rev Army Navy Air Force Med Serv.* 1982;55:247–254.
32. Jones FD. Psychiatric lessons of low-intensity wars. *Ann Med Milit Fenn [Finland].* 1985;60(4):128–134.
33. Rosen G. Nostalgia: A "forgotten" psychological disorder. *Psychol Med.* 1975;5:340–354.
34. Jones FD. Reactions to stress: Combat vs combat-support psychiatric casualties. Presented at 6th World Congress of Psychiatry; August 28–September 3, 1977; Honolulu, Hawaii.
35. Kalinowsky LB. War and post-war neuroses in Germany. *Med Bull US Army, Europe.* 1980; 7(3):23–29.
36. Gabriel RA. *No More Heroes: Madness and Psychiatry in War.* New York: Hill and Wang; 1987.