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OUTLINE FOR INTRODUCTORY CHAPTER

(Vince D. ...)

I. PURPOSE

- A. This report introduces the Army officer to the uses of drugs in enhancing military performance and managing psychiatric casualties.
- B. Four aspects of performance are covered:
  - 1. Physical
  - 2. Cognitive
  - 3. Emotions
  - 4. Sleep/awake
- C. The report describes general issues that the combat commander must evaluate in considering the use of performance enhancing drugs.
- D. The report describes the actions of some specific drugs to illustrate these general issues.

II. WHY IS THERE A CURRENT INTEREST IN PERFORMANCE ASPECTS OF DRUGS?

- A. Stresses of modern battlefield
  - 1. Sustained operations.
  - 2. Increased information input.
  - 3. Sensory overload.
  - 4. Independent operations.
  - 5. Emotional impact of modern weapons systems.
- B. The precision and operator demand of high tech weapons systems is such as to make performance changes of the soldier a major source of error variance in the effectiveness of the weapons systems.
- C. Advances in psychopharmacology:
  - 1. New drugs to enhance performance in ways that could not previously be done.
  - 2. Better understanding of how drugs work enabling:
    - a. safer management of drug use
    - b. more accurate specification of what the drugs will do
- D. The increased use of drugs for recreation and self-medication in our society increases the probability of self-medication by soldiers in combat. Besides illicit drugs, our culture

makes frequent use of performance-enhancing drugs such as caffeine, nicotine, and alcohol in socially approved ways. It is important for the Army officer to understand the impact of such self-medication.

- E. Prescribed medications for psychiatric and physical illnesses are now known to produce alterations in performance.

### III. IN WHAT GENERAL WAYS MIGHT BEHAVIORALLY ACTIVE DRUGS BE HELPFUL?

#### A. Management of psychiatric casualties

1. The stresses of the modern battlefield and the potential use of psychoactive chemicals by threat forces produces the likelihood that major conflicts will result in heavy numbers of psychiatric casualties.
2. The demands of future conflict will require that wherever possible, psychiatric casualties be returned to a useful role in a timely manner. At a minimum, such casualties must pose minimal management problems and resource consumption to the combat commander. Advances in psychotropic medication make feasible the management of large numbers of psychiatric casualties. However, the capability of a treated individual to perform his mission requires examination.

#### B. Degredation countermeasures

1. To enable an individual to perform at his normal level in the face of such aversive conditions as sleep loss, sustained vigilance requirements, fear provoking stimuli, physical exhaustion etc.
2. Note interactive effect of stressors on multiple dependent variables. We have categorized for understanding, but actual effects of stressors, drugs and performance will cut across categories. (Examples).

#### C. Enhancement of normal abilities, the Superman effect

1. To enable an individual to perform at higher than normal levels of function for a brief period of time to accomplish a mission.
2. Examples:
3. Less likely to be of benefit due to inherent limits of system, general failure of such drugs in the past, and due to problems listed in next section.

IV. WHAT SHOULD THE COMBAT COMMANDER KNOW ABOUT BEHAVIORALLY ACTIVE DRUGS?

A. WHAT ARE THE TRADE-OFFS INVOLVED IN A DRUG'S USE (THERE ARE NO MAGIC BULLETS)

1. There is a popular view that drugs are like magic bullets which seek out a particular "problem" or target and cure it without affecting other systems.
2. This view is incorrect. All drugs have an impact on a wide variety of bodily functions. Of the many changes which a drug produces, some are desirable and some are undesirable. Typically, the undesirable effects are called "side effects", implying that they are somehow less real than "main effects". In reality, the side effects are just as real. For example, several widely used major tranquilizers were initially marketed as aids in surgery to potentiate anesthetics and prevent vomiting. The behavioral changes were then regarded as side effects; now, the production of these behavioral changes is regarded as the "main effect" of these drugs.
3. The Army officer should therefore view any performance-enhancing drug as an agent which will produce a variety of effects in his troops, some of which will be desirable and others undesirable. He needs to obtain realistic information as to the "trade-offs" a drug will produce from medical and research personnel. He then integrates this information into his knowledge of the mission and tactical situation to determine whether drug intervention is appropriate. As an example, a given drug may be known to be capable of alleviating physical fatigue and also produces behavior that is uninhibited and aggressive. Both of these effects might be considered desirable for active pursuit of a retreating enemy force, but the drug would probably not be suitable for a LRRP or sniper mission. The Army officer needs to insure in this case that he makes his decision with a knowledge of the full spectrum of the drug's effects as well as with the view of the mission and tactical situation which is uniquely his.
4. It is worth emphasizing that despite remarkable advances in drug development, performance enhancement drugs will inevitably have trade-offs in terms of their military employment. The history of pharmacology is filled with examples of drugs that supposedly were free of "side effects" when marketed, but later were found to have potentially devastating effects on the users. Such drugs as Valium, anabolic steroids, thalidomide and the defoliant Agent Orange are familiar examples.

Asprin has been widely used for over a century (?) yet it has only in the last few years that its use has been implicated in the development of a serious medical disorder.

In this respect, the commander should not be concerned when he finds a detailed listing of trade-offs for a performance-enhancing compound, but should use that information to make a realistic decision. On the other hand, if the commander finds statements that a drug is "absolutely selective" or "free of side effects" he should probably take that as an indication of insufficient knowledge as to what that drug does.

#### B. WHAT OTHER PROBLEMS MAY ARISE FROM USE OF A DRUG?

Listed below are problems which can arise when drugs are prescribed for any purpose. Information on these problems in relation to a particular drug should be available from the Surgeon. Again, the commander must be prepared to weigh the potential impact of these problems against the assistance to be obtained in fulfilling a given mission.

1. **Rebound effect:** The body often adapts to the introduction of a drug into its system. When the drug is no longer taken, the body needs to readapt to normal conditions. During this readaption process, the body will again be functioning in an abnormal way and performance will be altered.  
Example:
2. **Addiction/dependency:** Familiar to all of us because of problems associated with the illicit use of recreational drugs, addiction is an overwhelming need to continue the use of a drug in order to satisfy physical and or psychological needs. In the case of many drugs such as barbiturates and heroin, the physical need for the drug is real to the point that sudden termination of drug use can result in death.
3. **Debt:** Drugs may sometimes enhance performance for a short-time by using up the bodies resources at a greater than normal rate. After continued use, not only will the drugs cease to have the same effect, but the body may also require a period of time to rest in order to return to normal levels of function. Amphetamine and some other stimulants work by "taking the brakes off" of some brain chemical systems. These systems are, however, soon depleted and overuse may result in psychotic behavior.
4. **Idiosyncratic reactions:** Some drugs may produce

unusual effects in select individuals. This may vary from unusual sensitivity to effects that are the opposite from those produced in most people. It is common knowledge that alcohol produces quite different behavior in different people. Anti-histamines generally produce drowsiness, yet some people experience arousal to the point of being unable to sleep following anti-histamine use.

5. Compliance and control: Virtually any drug which affects behavior is likely to be misused if the opportunity is presented. There is also the difficulty of insuring that drugs are taken when appropriate.
6. Circumstances of use:  
In conditions of unusual climate, dietary restriction, activity levels, restricted water intake, etc. drugs may have a different impact than if taken under normal conditions. The stresses of different duties may produce different reactions to a given drug.
7. Interaction with other medications:  
Many medications will interact with each other in a variety of ways with the possible outcome ranging from mutual cancellation to fatal reactions. With the increasing number of drugs being applied to combat situations including chemical and radiation prophylaxis and treatment, communicable disease prevention and treatment, and psychiatric treatment, the potential for both planned and unplanned drug interaction has increased enormously.

V. WHAT IS THE CURRENT MILITARY USE OF PERFORMANCE ENHANCING DRUGS?

- A. U.S.--amphetamines, others?
- B. U.S.S.R.
- C. Brief description of current RFQ's/RFP's

V. CONCLUSIONS

- A. Commanders must know what questions to ask/information to look for in evaluating advice on psychopharm drug use (as in factors above)
- B. Research must be performed to answer these questions.