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Mood Altering and Antidepressant Medications: Do not Mix with Flying

Certain medications can affect the human brain and cause less-than-optimum performance in the cockpit.

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There is a proper time and place for the use of medicine by an air crew member, but caution and consultation should be accomplished prior to mixing medicine and flying. There are many medicines that might have adverse effects on pilots[1,2]. The category of medicines that includes "mood altering drugs" and anti-depressants can interfere with a pilot's ability to conduct safe flight.

The healthy pilot will generally have a feeling of well-being, and will derive satisfaction from flying as well as from personal activities when away from duty. Cockpit decisions based on clear thinking are made by individuals who are free from excessive mood swings and who are not under adverse drug effects. Mood swings may include protracted "highs," commonly referred to as mania, or protracted "lows," referred to as depression. Any drug that is taken that produces a high, or any drug that is taken to counter a low, may impair mental clarity and the powers of reason.

Normally, when a problem is reasoned through and solved, a feeling of satisfaction is experienced. If a drug-induced "satisfaction" is produced, the individual may conclude that the decisions being made are correct, even though some very bad decisions are being generated. The drug-induced high interrupts the normal feed-back mechanism that assists the individual in assessing the correctness of decisions in given circumstances.

Should mood altering or anti-depression medications be prescribed for a crew member, that crew member must not fly. Only after careful evaluation by competent medical authorities will the U.S. Federal Aviation Administration (FAA), for example, consider returning to flight duties a crew member undergoing this category of treatment. The dual priority in aerospace medicine relates to assuring safety in flight and to promoting crew member health, well-being and, to the extent feasible, long-term flight activities. Accordingly, if a crew member is under professional care for a medical condition hazardous to flight and, thus, to crew member's health, the individual must not fly until the problem has been resolved.

A recent article in the *American Journal of Psychiatry* documented six cases where depressed patients under certain anti-depressant treatment gradually became resistant to the medication and experienced the emergence of suicidal thoughts[3]. Accordingly, treatment of a patient with a specific drug for depression does not provide assurance that the depression will be controlled by that drug. There are various types of depression and it may take time to find the preferred drug for a given patient.

Many medications will impair concentration and other mental qualities necessary to safe air crew duties.

Pilots must be aware that any drug that has a mood-altering effect, or an anti-depressant effect, is potentially harmful to pilot judgment and performance. In this category of drugs, are those substances for which tests are performed periodically according to FAA requirements in regard to aircrew members. These drugs are amphetamines, opiates, cannibinals (marijuana), cocaine, and PCP.

General Principles of Medications Considered

The determination of whether or not a specific medicine is safe for use by a crew member includes (1) the nature of the condition that is being treated, and (2) the direct and side effects of the medicine given.

Nature of the condition that is being treated

Problems with "mood" and depression are located within diagnostic categories generally referred to as "affect" disorders, and include such indications as fatigue, agitation, mania, excessive anxiety, forgetfulness, lack of motivation, and a number of other conditions. These conditions will, if severe enough, impair the safety level of an air crew member's performance. The conditions interrupt concentration, produce distraction, impair quality sleep, and may impair memory, among other adverse effects.

Direct and side effects of the medicine given

Many medications will impair concentration and other mental qualities necessary to safe air crew duties. The healthy, normally functioning human brain can be compared to an integrated data processing machine that is comprised of living microprocessor elements that interact to produce the overall brain function. This over-all function may be to form a visual model of the outside environment, to recall a visual model previously stored, to process incoming information and solve a problem or a series of problems, or to perform other tasks.

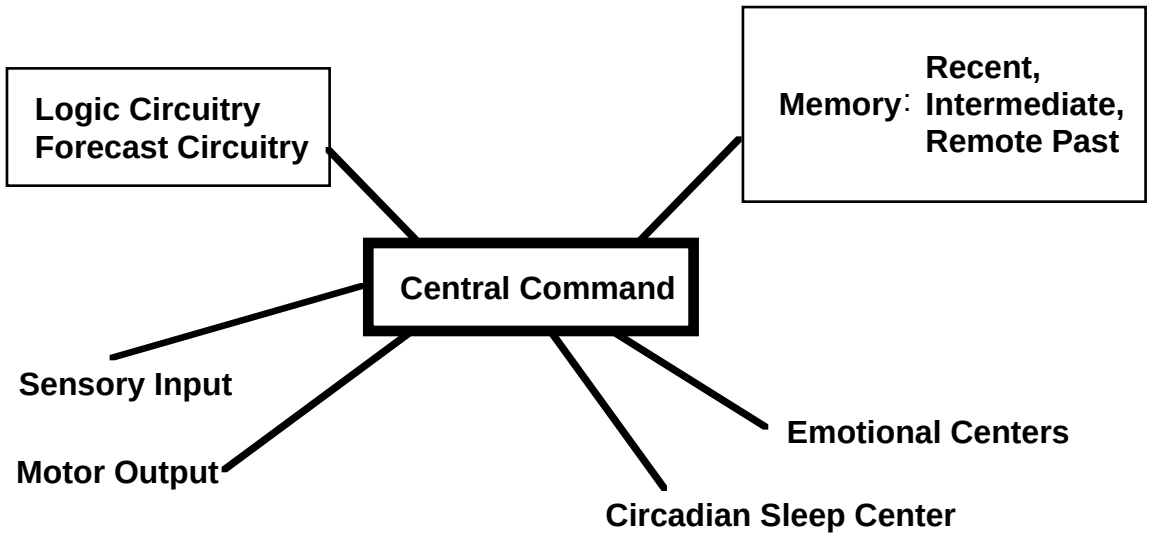
The fundamental brain element is the individual nerve cell — the neuron. As a living entity, the neuron is able to charge itself electrically and, upon adequate stimulation, to discharge a certain amount of electricity. The discharged electricity results in the liberation of a chemical molecule at the point where one end of the first nerve touches a second nerve. This chemical molecule, known as a neuro-transmitter (more than a dozen neuro-transmitter varieties have been identified), flows across the small space between the neurons to the adjoining nerve. After a certain brief time lag, the chemical stimulates the next nerve. The time lag is necessary in order that the interplay between various nerves is smoothly modulated. Without modulation, there would be too many uncontrolled nerve firings involving many nerves, and a smooth accomplishment of complex brain tasks would not be possible.

The direct neurologic effects and the side effects of drugs take place primarily at the points of contact between ends of neurons.

Common Health Sense Keeps The Brain Healthy and Prevents Trouble

The healthy functioning human brain derives its clear thinking capabilities, its satisfaction, its motivation to act, and its overall emotional stability from the electrical and chemical balance within the various sub-components that comprise it. If a person delivers to his or her brain various substances that cause an imbalance in the brain chemicals, the result will be an electrical circuit imbalance, and impairment of brain function will very likely occur. Should a brain suffer from an illness that produces a chemical imbalance in the absence of any taken chemical, a trained physician may be able to prescribe medication that will restore this imbalance. However, during this period of treatment, the pilot will not usually be considered medically safe for flight duties.

Schematic Diagram of the Human CPU (Central Processing Unit)



Medications and the Brain

Medications can affect various components of the human brain and, accordingly, influence brain-dictated behavior. For example, some medications may impair logical thought processes and bring about improper aeronautical decision making. Other drugs may cause excessive sleepiness by affecting the sleep center. Conversely, some drugs may impair sleep through the action on the sleep center. Adverse effects on the emotions of a person may bring on depression, excessive excitement or anxiety. Some medications may interfere with sensory coordinated "muscle-motor" output. Other drugs cause impairment of memory, either recent or further into the past.

In some countries, anti-depressant drugs are only available by prescription, but in other countries these drugs can be bought over-the-counter. Pilots must never self-medicate to achieve a change in their individual mental state. Similarly, pilots must never take an unknown substance in an effort to boost their mood or lift a depression.

Were it not for the centuries of cultural acceptance with respect to alcohol, this substance would fall within the above category as a dangerous, potentially addicting substance. Pilots should use alcohol either not at all or with the utmost caution. If alcohol is used, only small amounts should be taken (three drinks or fewer per week), and never in relationship to flying[4]. The use of the drugs nicotine and caffeine also are potentially detrimental to health and to safe flight, and pilots should consider avoiding all nicotine and excessive caffeine (more than 3 cups of coffee per day)[5,6].

The healthy pilot will not disturb his or her body's physiology with unauthorized medicines. Similarly, the pilot will obtain competent aeromedical advice regarding illnesses that may be present. This advice must include any possible adverse effects of the illness or the medication on safe flying duties. ♦

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