Society of U. S. Naval Flight Surgeons

Naval Aerospace Medical Institute, Code 10
Naval Air Station, Pensacola. FL 32508

NON-PROFIT
ORGANIZATION
U.S. POSTAGE
PAID
PERMIT NO. 459
Pensacola, FL

Address Correction Requested
Return Postage Guaranteed

VOL. VIII, NO. 4 NEWSLETTER OCTOBER, 1984

-PRESIDENT'S COMMENTS-

The Omaha World-Herald, on 16 August 1984, reported on an ingenious method used by their St. Joseph Hospital Life .Flight helicopter aircrew during an emergency medevac of a high school football player who collapsed from heat stroke. Through the kindness of a former (1961) Navy flight surgeon and now Assistant Chief of the Psychiatry Service at the Omaha VA Medical Center, Dr. James W. Wengert, I can pass it on because he correctly could "... see a similar thing perhaps being done right on the deck of a carrier in the Middle Easrern waters."

The article describes a comatose hyperpyrexic (107.2^0) victim who was first stabilized inside the ER with an IV in place, and effective cardiorespiratory support functioning. Quote:

> "Then he was wheeled on a cart out to the helipad on the roof of the hospital and positioned so he was in the maximum downdraft from the helicopter.
>
> He was fitted with protective ear gear and wore an oxygen mask so he would not inhale fumes from the helicopter.
>
> Emergency department personnel used hoses to spray him with water as the whirling helicopter blades fanned him ...
>
> After 20 minutes in the helicopter's downdraft, his temperature had dropped to 103 degrees and in another 20 minutes it was normal."

The attending physician remarked that treating a 230-pound, 5-foot-9 offensive center and off-season weightlifter was substantially simpler than the usual ice water immersion therapy ordinarily used there. Though, not surprisingly, the patient was in "critical" condition until the next day, he reportedly survived, was upgraded to "good" condition by the next day, and was expected to be discharged on the third day.

Being a firm believer in "hangar flying", wherein options for use in future situations get categorized and neatly filed away. this is offered for your cerebral files.

Frank E. Dully, Jr.

-NAMI NOTES - PINGUECULA OR PTERYGIUM?

Many physicians are unsure of the difference between a pinguecula and a pterygium. A pinguecula is a benign, yellowish-white and slightly elevated conjunctival mass located on the bulbar conjuctiva. The lesions are usually bilateral and located nasally. While they are increasingly common with advancing age and they may, at worse, cause a cosmetic defect, they do not interfere with vision.

A pterygium is a pinguecula which has grown onto the cornea. It is a yellowish-white fibrovascular mass which tends to grow medially on the conjunctiva. Since it is stimulated to grow by sunlight, people who have them should wear sunglasses.

A pterygium is a disqualifying defect for is student aviator because if it gets large enough it interferes with central or peripheral vision. Also. a pterygium tends to grow back on surgical removal approximately 30% of the time.

-"WHICH DRUGS MAY BE USED IN AVIATORS?"-

This question is heard often at NAMI. i'he answer is not simPle, though guidance is provided from several sources. The General NATOPS (OPNAVINST 3710.7K) defines drugs as "any chemical which when taken into the body causes a physiological response." It further states that the taking of all drugs (prescription and over-the-counter) shall be considered sufficient cause for grounding unless approved by a Flight Surgeon or Aviation Medical Officer. The Manual of the Medical Department in section 15-70 (3) states: "In general, individuals requiring therapeutics or whO have observed lowering of general fitness which might affect their flying proficiency shall not be found qualified for duty involving flying,"

To further clarify the guidance given in the NATOPS and ManMed, the NAMI Aeromedical Advisory Council has formulated the following recommendations:

1. In general, the underlying conditions being treated will often determine the aviator's fitness for flight status rather than the potential side-effects of a particular agent.
2. If in doubt, be conservative. Drug effects may be subtle and last 24-48 hours after termination of the agent.
3. Medications which can be used on a short-term basis (No waiver required):
   a. Analgesics: Occasional acetaminophin or aspirin is authorized. Narcotic or non-steriodal analgesics are not authorized for flight personnel.
   b. Topical preparations.
   c. Inhaled beclomethasone: For seasonal rhinitis, allergy or mild short-duration asthma is permissible.
   d. Decongestants: Generally, low dose pseudoephedrine is safe. Be aware that all decongestants are not alike. Phenylpropanolamine (Entex ^{R}), a popular agent found both in prescription and OTC preparations, can cause serious CNS and hypertensive side-effects.
   e. Transderm^R: Limited to training phase, special operations and very short-term situations.
   f. Cimetidine: Used for prophylaxis after ulcer therapy for generally not more than six months and as h .s. dosage only.
4. Antibiotics: Generally are safe for use in aviators who are not allergic to the specific agent though, again, the underlying condition often determines the flight disposition. In addition, some agents deserve special consideration:
   a. Nitrofurantoin: Long-term usage has been associated with interstitial pneumonitis and peripheral neuropathies. Long-term administration, therefore, requires a waiver.

b. Griseofulvin: Long-term usage has been associated with bone-marrow suppression, therefore, use longer than 30 days requires a waiver.

c. Antibiotics with serious side-effects (ie, chloramphenicol, clindamycin, gentamicin, etc.): These agents would ordinarily only be administered to patients on the sick list. Therefore they are not approcriate for persons on flight status.

d. Isoniazid: When used for tuberculosis prophylaxis, it can be given by the local Flignt Surgeon as long as the patient has no adverse side-effects. The treatment of active tuberculosis requires (OPNAVISNT 6224.1D) that the individual be placed on limited duty, hence off flight status.

e. Malaria prophylaxis: Specific guidelines are covered in BUMEDINST 6230.11G and no waiver is required for malaria prophylaxis. The agents chloroquine, primaquine and pyrimethamineJsulfacoxine (Fansidar^{R}) appear generally safe for aviators. Quinine derivatives are not approved for use in aviators.

5. Medications which can be used on a long-term basis (No waiver required):

a. Hydrochlorothiazide: When used for the treatment of hypertension.

b. Birth control pills: If after three cycles, the patient is free of side-effects, the local Flight Surgeon may authorize flight status on BCP's. Notation should be reported on the SF 88.

6. Medication used on a long-term basis (WAIVER REQUIRED FROM NAMI):

a. HCTZ: When used for treatment of hypercalcuria.

b. Probenecid.

c. Allopurinol.

d. I-Thyroxin.

e. Tetracycline: When given chronically in low dose for acne.

f. Beta blockers: At this time, atenolol is favored over propranolol due to its lower incidence of CNS side-effects. The following restrictions apply to the use of beta blockers:

(1) Non-Class I, non-NFO personnel: After a stable dosage and clearance of side-effects by the local Flight Surgeon, a waiver may be requested.

(2) Senior SG-III pilots and non-tactical NFO's: After a stable dosage and clearance of side-effects by the local Flight Surgeon, a waiver may be requested on a case-by-case basis.

(3) SG-I or II pilots and tactical NFO's: Beta blockers are not authorized and no waiver will be granted.

g. Azulfidine: When used for treatment or prophylaxis of well localized (less than 25 cm) ulcerative proctitis in doses of 2 Grams per day or less.

7. Illicit drugs: The use of illicit drugs is strictly prohibited by General NA TOPS, and is cause for immediate grounding and administrative disposition.

Remember that though a particular drug has rare side-effects on terra firma, it may still have significant adverse effects in the specialized flight environment (ie. affect G tolerance, recovery from vertigo, mental alertness, susceptibility to hypoxia, etc.). Uncontrolled, empiric, single-investigator drug studies utilizing fleet aircraft is a hazardous and expensive way of testing for subtle adverse effects of medications. If in doubt, be conservative and BE SAFE.

LCDR Kenneth Haskin, MC, USN
NAMI Department of Internal Medicine

-DETATCHMENT ROSTER -

STUDENT FLIGHT SURGEON CLASS 84002
05 MARCH 1984 - 23 AUGUST 1984

GODFREY. Larry James
MAJ, MC, USA
AFIP, Washington, DC
CPL-A

RAFF, John Bourke
LT, MC, USNR
Training Air Wing Two
Kingsville, TX

MICKLESON, Dennis Lynn
LT,MC,USNR
NAS
Key West, FL

SMITH, Dana Jean
LT,MC,USNR
VP-31
Moffett Field, CA

MARROCCO, William A.
LT, MC, USNR
3rd Marine Aircraft Wing
Yuma, AZ

STEWART, Frank Crawford
LT, MC, USNR
Naval Support Facility
Diego Garcia (FPO SF)

NICKLE, Carroll John
LCDR, MC, USNR
Marine Aircraft Group 26
New River, Jacksonville, NC

TIDWELL, James Llewellyn
LT, MC, USNR
MCAS
EI Toro, CA

PELLOSIE, Carmine John
LT, MC, USNR
NAF, Detroit
Mt. Clemens, MI

WOOD, Willian, Stuart
LT, MC, USNR
HSL31 RAG
San Diego, CA

THE FOLLOWING FOREIGN FLIGHT STUDENTS RETURNED TO THEIR RESPECTIVE COUNTRIES

BEHZAD, Khalid Qassim
CAPT, MC
Bahrain Defense Force

GOMMEAUX, Herve-Yves
LT, MC
French Navy

BUETTNER, Cristoph
LCDR, MC
German Navy

ROMSWINCKEL, Emond Henri Diederik, LCDR, MC
Royal Netherlands Navy

GERRETSE, Dirk Steven
LT, MC
Royal Netherlands Navy

YOESYANTO, Ronny
LTJG, MC
Indonesian Navy

STUDENT AEROSPACE PHYSIOLOGIST SFS CLASS 84002

KRITSELSIS, Andrea Jane
ENS, MSC, USNR
Naval Aerospace Med. Inst.
NAS Pensacola, FL

SCHUYLER, Christopher L.
LT, MSC, USNR
Aviation Physiology Training Unit, NAS Cecil Field, Jax, FL

LUZ, James Travis
LT, MSC, USN
Aviation Physiology Trn.Unit
NAS Mirimar, CA

SMITH, John David
LTJG, MSC, USNR
Aviation Physiology Trn.Unit
NAS Corpus Christi, TX

STUDENT AEROSPACE EXPERIMENTAL PSYCHOLOGISTS SFS CLASS 84002

GIBB, Gerald David
LT, MSC, USNR
Nav. Aerospace Med. Research Lab., NAS Pensacola, FL

HOLCOMBE, Forrest Douglas
LT, MSC, USNR
Naval Aerospace Med. Inst.
NAS Pensacola, FL

STACK, Michael Eugene
LTJG, MSC, USNR
Naval Aerospace Med. Research Lab
NAS Pensacola, FL

EDITORIAL POLICY: The views expressed herein are those of the individual authors and not necessarily those of the Society of U.S. Naval Flight Surgeons. This Newsletter is published quarterly by the Society on the first of January, April, July, October. Material for publication is solicited from the members and should be typed double space, reaching the Editor at least one (1) month prior to scheduled date of publication. Unsigned material will not be considered. Correspondence should be addressed to:
CAPT D.S. Angelo, MC, USN * Editor, SUSNFS Newsletter * Naval Aerospace Medical Institute, Code 10 * NAS, Pensacola, FL 32508

ACCUTANE (isotretinoin)

Recently, several applications for SNA were received at NAM I stating the subject "was only taking Accutane for acne." We also received a request for waiver from a designated naval aviator on Accutane. These treatments seemingly do not concern the dermatologists. A quick review of PDR and medical letter revealed "this drug is reserved for severe recalcitrant cases of cystic acne and it should only be used in patients unresponsive to conventional therapy." In fact, the listed side effects of this potent keratinization inhibitor are numerous and include: teratogenicity; cheilitis in 90%; conjunctivitis in 38%: musculoskeletal symptoms in 16%; elevated liver functions in 14%; myocardial and arterial changes in dogs/rats. hematuria, and corneal opacities in 5 of 72 patients taking Accutane.

Obviously, this is a drug that should be used with great caution and under close observation in severe cases of cystic acne only. Accutane therapy with the aforementioned side effects has no place in personnel on flight status. If used previously by aviation personnel, a thorough flight physical to include ophthalmology consult/slit lamp examination and laboratory studies should be accomplished following the normal six month course of treatment, prior to returning an aviator to flight status.

A final note might include: severe cystic acne may be considered disqualifying for aviation candidates when you consider the requirement of wearing face masks, torso harness and other survival gear in aviation environment. Man Med CH 15-24(2)(a) agrees, but dermatology says "it's only acne."

J.C. EMERY

-OPERATION DEEP FREEZE-

Adherence to the Operation Deep Freeze medical guidelines in Chpater 15, article 37 of the Naval Manual of the Medical health and safety of personnel deployed to Antarctica. Non compliance with these guidelines has occured causing loss of time, expense and planning for involved personnel mainly as a result of one of three problems:

a. The examiner was not fully aware of the Antarctic medical guidelines provided in the Manual of the Medical Department.

b. The examiner did not realize that the individual undergoing the examination is a planned transfer to an Antarctic command. This has not been a problem with personnel transferring to the Naval Support Force Antarctica (NSFA) but has occured with individuals transferring to the Naval Antarctic Development Squadron Six (VXE-6). It is frequently only referrenced as VSE-6 without reference to Antarctica.

c. The examiner notes medical conditions that are disqualifying for Antarctic duty but considers the individual to be doing well (asymptomatic) at the time of the physical thus satisfactory for transfer. Common conditions missed include valvular heart disease including mitral valve prolapse, colitis, spastic colon, recurrent upper respiratory problems and obesity.

Caution during the above three instances allows for proper Antarctic physicals, thus saving time, money and unprogrammed losses by giving due consideration to these problems before transfer. Dental screening should document the examinee to be Class I (no problem). Once physicals are completed they should be referred to the Medical Department of the Naval Support Force Antarctica at the following address for verification of qualification for transfer:

NAVAL SUPPORT FORCE ANTARCTICA
BOX 100 CODE 60
FPO SAN FRANCISCO 96601

Ques:ions can be directed to the following numbers:
Commercial (805) 982.5712 or
Autovon 360-3110 or
FTS 799-3110

CDR R.D. Skipworth, FS
Force Medical Officer
Naval Support Force Antarctica

-"SIMULATOR INDUCED SYNDROME" (SIS)-

There is a growing awareness in the aviatior community of adverse physical and psychological side effects after exposure to simulated flight. This phenomenon has been tagged (SIS), the so called. "Simulator Induced Syndrome." For years flyers have noticed these episodes of visual or spatial disorientation, but refrained from discussing any symptoms since a misinterpretation by peers could jeapordize their aviation career. Due to the appreciation of the potenial for a mishap related to the effects of SIS, enlightened pilots are coming forward with valuable information in spite of the old stigma. In addition, commands are beginning to recognize the importance of collecting this data to help understand and resolve the problem. Hopefully, individuals will continue to be encouraged to share their personal experiences without trepidation.

Investigations have revealed that not only do some people experience immediate post flight symptoms such as general malaise, nausea, vomiting, or instability, but there are a few documented complaints occuring many hours after their exposure to the device. These latent effects vary from fatigue, irritability, and lack of attention to visual disturbances producing vertigo or errors in depth perception. Fortunately, these delayed symptoms are rare. On occasion they have forced some pilots to pull off the road because they feel unsafe at judging distances in traffic, and others to feel as though they were the only ones in a room full of people to feel a tremor. Some additional latent effects are flash backs, a whirling sensation while lying in bed and visual disturbances to the point of difficulty in focusing or even inverted vision. With this in mind, I feel it's time to recognize the impact on safe aviation and initiate studies to understand the problem.

Presently the scientific community is involved in research to determine if SIS can be prevented, or if it is an inherent function of the body to the man-machine interface. The most plausable theory to date seems to be that the sophistication of the new generation of simulators is causing a mismatch of neurological input between the visual and the vestibular senses. It is now known that the human being gains knowledge by repetitive exposure to the world through his senses. Speculation is that through experience the cognitive portion of the brain has learned what to expect in a normal maneuver, and that it suppresses data which may conflict with a planned response. The problem arises when the suppressed stimuli accumulates to threshold levels and eventually affect the organisrrl by disrupting normal circuitry. More accurately, the pressure of the real information on defense mechanisms may acutally impede normal neuron progression, or facilitate synaptic junctions to transmit subliminal charges. This subconscious discrepancy then can not be correctly sorted out to the normal feel or flight, hence the mismatch. The disorganization of alternate pathways in the sensory system then produces the immediate post flight disequilibrium. The latent signs, which are usually displayed when the individual is resting, may represent the brain's attempt to "Re-cage" itself at a point when it's defense mechanisms are relaxing.

To date, SIS is running the gamut of all visual simulators, all ages, and all experience levels: but with a trend toward the fixed base, more realistic wide visual displays, violent manuevering and individuals with higher flight time. With this in mind, and until the data is in, it would be good sense to avoid actual flight for 12 hours after a simulator hop. This recommendation has been echoed by the Naval Safety Center in the, "Aeromedical Safety News," 01-84, which offers a good synopsis of the present SIS situation.

Pilots using selected sites will be seeing a questionnaire which is intended to document any side effects subsequent to simulated flight. It is important that individuals try to accurately record each occurence in order to augment the program. In particular, if anyone has heard of an unusual experience which may be in question, please notify a flight surgeon. If a valid SIS is suspected it is now SOP to fill out a hazard report and send it up the chain of command for review.

LCDR T.A. Binks F/S
MCAS (H) NR, JAX, NC

-MOTION SICKNESS AND NAVAL AIR-

Motion sickness can be an extremely perplexing problem to flight personnel and flight surgeons alike. Given a healthy individual and a sufficiently strong stimulus of adequate duration everyone will experience symotoms of motion sickness. It is those who cannot be made motion sick at any price who are the abnormals.

Approximately 90% of the general population has experienced motion sickness at some time. Past studies have confirmed that motion sickness also takes a heavy toll in the early phases of military aviation training. From 1980 to 1981 data collected on Student Naval Flight Officers at NAMRL in several studies indicate that from 70 to 83% reported being airsick on one or more training flights, 36 to 53% were symptomatic to the point of vomiting, and from 41 to 67% felt their flight performance to have been degraded by airsickness on one or more flights. Other investigators have estimated that from 10 to 39% of student pilots suffer from motion sickness.

Current theory suggests motion sickness is induced when the sensory inputs from the eyes, proprioceptors, and the vestibular apparatus are in conflict with expected inputs based on recent memory. When a person is exposed to a new motion environment, motion sickness is likely to result until a new memory pattern has been processed. Once the new memory pattern is imbedded, adaptation has occured, and motion sickness is no longer a problem in that motion environment. Adaptation is highly specific, however, and the movements of different aircaft or ships may again cause a problem. After adaptation to constant motion environments such as ships or space craft, motion sickness may recur on return to a normal stable environment.

A particular problem occurs in the patrol community in which crew members may be required to do meticulous eye work with no external visual reference. In this case, the person and his entire visual reference system are moving with a constantly changing velocity (air turbulence). In accordance with the mismatch theory, the eyes say stability (visual references move with crewman), but the proprioceptors and vestibular apparatus say movement. A mismatch has occurred. Voila! A set-up for motion sickness. A possible solution is to resolve the sensory conflict by allowing eye fixation outside the aircraft from the flight deck. The exterior fixation point will be steady compared to the bumpy aircraft allowing relative movement to be perceived visually. Now all sensory inputs are in agreement and motion sickness is less likely. This method has been utilized for many years and is well known to aircrew. Unfortunately, this method may not always be applicable due to weather, night operations, or duty required in the tube.

Since most indivioual adapt rapidly to a motion pattern following repeated exposure, medication will usually not be necessary. Under very limited circumstances, however, a case could be made for prescribing anti-motion sickness medication for a short period of time while adaptation is progressing. Prescription of anti-motion sickness drugs should never be considered for more than three (3) occasions and then only when the individual has no responsibility for flight safety and is working directly under the watchful eye of an onboard instructor. Under no circumstances should this medication be prescribed for Navy airmen with responsibilities for the mission or flight safety.

Medications for motion sickness have in the past been less than ideal. They are often not consistently effective and side effects are a hazard in Naval Aviation. Probably the most efficacious drugs are scopolamine, scopolamine plus ephedrine, and scopolamine plus dextroamphetamine. A recently popular drug has been transdermal scopolamine. Even transdermal scopolamine has been shown to produce one or more side effects during 60% of the test trials when the drug was used in one recent study. The side effects reported included dry mouth, headache, decreased alertness, blurred vision, drowsiness, dizziness, and mood changes. While some of these symptoms are also compatable with motion sickness, they are also very dangerous to aviation when the affect aircrew from whatever cause.

Less effective drugs which have been used prophylactically for motion sickness include meclizine, diphenhydramine, and cyclizine. These, also, are noted for their side effects of drowsiness and decreased alertness. Not side effects compatible with Naval Air.

-COLOR VISION-

NAMI was made privy to a heretofore unrecognized problem that may be more prevalent than we think. The problem is flawed color vision, but not so flawed that the aviator cannot pass the Farnsworth Lantern test.

The existence of the problem showed up in the following scenario. A former S-3 driver was in the process of an F-14 transition. There were well-documented deficiencies in his S-3 night carrier landing performance, but he managed to scrape by. Not so in the F-14. Extended FCLP's finally got him to the boat for CQ where multiple tries at qualification all ended in failure. A FNAEB was clearly on the horizon as was the potentialloss of a substantial asset.

The flight surgeon's evaluation demonstrated that the aviator met all the standards of Service Group I. Special attention to a random presentation of FALANT combinations confirmed the adequacy of color vision. The aviator stated that the contrast between the meatball and the datum lights was insufficient for him to get useful information from the lights until he was in close. Testing his color vision with pseudo-isochromatic plates (PIP) revealed a defect in his ability to distinguish shades of green. It was the opinion of our ophthalmologist that a cause-and-effect relationship existed between the color vision anomaly and the aviator's poor boarding rate. We thus have identified an aeromedical reason for poor performance that, under current standards, is not accepted. Are there others out there?

FRANK E. DULLY, JR.

-OBITUARY-

Dr. EARL H. NINOW, 59, a retired Navy captain and physician surveyor with the Joint Commission on Accreditation of Hospitals who had been chief of White House social aides during the Johnson administration, was killed Aug. 13 when his light plane crashed near Keene, N.H. He lived in Delray Beach, Fla., and Watch Hill, R.I., and is survived by his wife Harriet Behreud Ninow of Delray Beach, Fla.

A spokesman for the New Hampshire State Police said Capt. Ninow's aircraft struck some trees as he approached the Keene airport and that the accident was under investigation.

Capt. Ninow was born in Chilton, Wis. He graduated from Marquette University, where he also earned his medical degree. He received an M.A. in business administration from George Washington University and graduated from the Naval War College.

During World War II, he served in the Navy in the Pacific as a line officer in command of amphibious ships. He graduated from Naval Flight Surgeon Class 65 in Dec. 1952.