CONTACT

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THE SOCIETY OF U.S. NAVAL FLIGHT SURGEONS
P.O. BOX 33008
NAS PENSACOLA, FL 32508-3008
www.aerospacemed.org

The Society of U.S. Naval Flight Surgeons is a nonprofit organization. Its purpose is to advance the science, art, and practice of aerospace medicine and the mission of the U. S. Navy and the U. S. Marine Corps; to foster professional development of its members; and to enhance the practice of aerospace medicine within the Navy and the Marine Corps.

Membership is open to all Flight Surgeon graduates of the Naval Operational Medicine Institute. Subscription memberships are available. Dues are $20.00 per year, or $300.00 for a lifetime. Contact the Secretary or Treasurer for more information or a membership application form.

Cover Photo

Blue M

December 17, 1980, pierside at Naval Station, Alameda, CA, Commander William A. Buckendorf, MC, USN, Senior Medical Officer of "San Francisco's Own", the aircraft carrier USS Coral Sea (CV-43), proudly paints the AirPac 1980 Blue M on her stack after the Coral Sea Medical Department was named top performer in the U.S. Pacific Fleet Carrier Force. The award came as the result of a series of annual competitive inspections performed on all carriers. Areas examined included; the Sickbay administrative performance, clinical care as reflected in standard-of-care audits of Sick Call Health Record entries and inpatient charts, and the results of a realistic mass casualty exercise conducted during the ship's Operational Readiness Evaluation. The official photo was taken by PH-3 Napoli and submitted by CAPT Frank Dully (retired).

Now RADM Buckendorf (retired), echoed many other Flight Surgeons feelings when he reminisced about his aerospace medicine days:

I was Senior Medical Officer on CORAL SEA during an extended WESPAC cruise after the fall of Iran. Few of our colleagues can boast that they spent two beer calls (104 days continuously on station) in the North Arabian Sea and in the Persian Gulf ten years before Desert Shield/ Desert Storm. Of my "not just a job but a series of adventures" in the Navy, my most cherished moments are those I spent as the "Fighter Quack" on two CVA's (USS TICONDEROGA—no, not CG-47—and USS HANCOCK) during Viet Nam and, perhaps more so, as SMO on USS CORAL SEA. In a New York minute, I'd trade the two stars for another chance to serve as a SMO, or, for that matter, as an Airwing Flight Surgeon deployed with the Fleet.

The history of the Blue M is presently unknown. Preliminary information thought it came out of the Atlantic Fleet around the time of CAPT Dick Seeley and then spread over to the Pacific and was quickly accepted by the Line. However, CAPT Seeley wrote to say that it was already present during his tenure. Any help on tracking down the origin of the Blue M would be wonderful. Please let the Historical Committee Chairman, CAPT Dully at frank@dully.com, if you have any information.

President's Column

One of the great things about my job is the opportunity to teach aeromedical accident investigation and human factors to each new class of Flight Surgeons. This past week I have been working on my lectures for our most recent starting class and have been reminded of what our Naval Aerospace Medicine community is all about. I have been thinking about what I would like to say to my new aeromedical shipmates as well as to those more seasoned shipmates that have been around a while.

For those folks that are just starting their Flight Surgeon training and are new to this band of brothers and sisters represented by SUSNFS, welcome. We are honored and privileged to have you join us. You are entering into a great fellowship of men and women committed to their country and dedicated to the health and safety of the folks we serve. Naval Flight Surgeons are found throughout the world, wherever their Nation's interests send them, forward deployed, at sea, on remote shores, or sometimes directly in harm's way in order to ensure that our warriors receive nothing less than the very best.

For those of us that have been in uniform for a while, we need to take it upon ourselves to serve as mentors and role models for our new Flight Surgeons. They are looking to us for the leadership and guidance that only we can provide. Our experience, counsel, and advice are essential. We have been where they are now, and we have the responsibility to help them along. Such are the obligations we have to each other, firmly rooted in the camaraderie of our calling and our service: a calling and service unmatched anywhere. We are U.S. Naval Flight Surgeons.

In May of this year, the Secretary of Defense authorized the reissuing of the National Defense Medal for military members on active duty since 11 September 2001. Do not underestimate the significance of this award. It has been issued only three times previously; during the Korean War, during the Vietnam era, and during the Gulf War. The reissue of it now is yet another affirmation of the new war we are fighting. This is a war that speaks to the very heart of Americans, a war against a determined foe that hates us and hates the values of liberty, freedom and opportunity for which we stand. I don't know of anyone who thinks it's a matter of "if" they will strike again. Everyone I know thinks it's only a matter of "when". This war is just as real and requires just as much of us as any war in our history.

When we raised our right hands and swore to protect and defend the constitution of the United States,

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we were saying that we were ready and willing to place ourselves at the disposal of our Nation, and that we were ready and willing to do our part in freedom's fight. Heroes are made by the extraordinary times in which they find themselves, and now, present times demand the very best of us. We have risen to the National Defense, and it is that rising up that is being recognized by this award. The ribbon on your chest places you in a special category. You are standing amongst virtuous men and women who have served America in difficult times before, are serving her now, and will serve her in the future. Many have served in a time of peace, and their service was honorable, but you are serving in a time of war and so your service is endowed with a special distinction. This is the message that goes with this award. Wear it proudly Shipmates.

Your dedication, your willingness to go where others fear to tread, your focus on service above self, your investment in the welfare of others; these are the substance and evidence of greatness. Thank you for the great service you provide. Thank you for going above and beyond. Never forget how valued you are in the lives of the people you touch every day.

Thank you for the opportunity you have given me to be your President. I am honored beyond words to serve with you and to be counted among your number as a Naval Flight Surgeon.

Keep 'em Flying SAFELY

CAPT James R. Fraser, MC, USN
Naval Safety Center
jfraser@safetycenter.navy.mil
(757) 444-3520 x7228 DSN 564

(USS Abraham Lincoln CVN-72)

From the Secretary

FINALLY… back home in Pensacola! It seems like years and years! Actually, if it weren't for the fact that my beautiful bride has been waiting for me here, I would have loved to remain the SMO of the greatest warship in the USN! It was indeed the most gratifying experience of my life. I was truly blessed! I would have also liked to have attended AsMA this past May, but the skipper thought that my presence on the ship was more important during JTFEX, Northern Edge and our ORSE.

CDR Gerry Goyins is now the SMO of CVN 72 and our prayers are with them as they in-chop the 5th Fleet. With world events being what they are right now, it may end up to be a VERY exciting cruise. In case you didn't see it, on the front page of the Gosport this last Friday there was an aerial shot of ABE and the sailors had spelled out "READY NOW". This was in response to President Bush's message to the military to "be ready".

So… here I am, trying to get the hang of M3F83 (Code 42). Attempting to understand the "reviewer" program and pushing as many waiver packages as possible. I couldn't have better teachers than Jeff, Mary, Rick and Fritz, though. Maybe after a couple of years I will figure out what the HECK I am doing!

My sincere thanks go to Bill Padgett. What he has done to keep the secretarial duties going while I was doing the SMO thing and PCSing was TRULY above and beyond the call of duty. I just hope that I can fill his shoes in the Society. He has been gracious enough to put together this issue of "CONTACT" and CC'd me on all the articles that have been submitted via email. Some great stuff in this issue and I would ask that ya'll KEEP IT COMING!

I am looking forward to working with the other officers of the Society to work for YOU, the membership. Please keep me informed of your change of addresses and any other pertinent information.

CDR Louis E. Valbracht, MC, USN
Physical Standards (Code 42)
levalbracht@nomi.med.navy.mil
(850) 452-2257 ext. 1074

From the Treasurer

Greetings fellow Naval Flight Surgeons! My first order of business as Treasurer of this Society is to applaud the efforts of my predecessor Dave Kleinberg. Dave held the treasurer's position for an incredible three years and deserves a big old "good on ya" if you see him out in the fleet. Keep an eye out for him if you are going overseas, last I heard he was heading for the desert as senior medical officer aboard the USS NASSAU (LH-4). Fairwinds and Following Seas LCDR Kleinberg.

As for our financial status…. last May and June were record setting months for the Society in terms of sales. Do in large part to our new Mishap Guide, the society garnered well over 5000 dollars of business during these two months and sales are still brisk. A Bravo Zulu, to CAPT Nick Webster and the gang at the Safety Center for helping put this fabulous reference together.

Membership is at an all time high for SUSNFS, but we can always do better. One way I propose doing this is to have real-time online status check of your membership. That way you will know if you're up to date on your dues, as well as be able to keep in touch with other colleagues in our community. I am currently working out the security issues as we speak to propose this to the Board of Governors this fall. Look for more on this in your next issue.

Finally, we will be getting rid of some old inventory at bargain basement prices sometime in late October to make room for new merchandise during the holiday season. If you are interested in purchasing items such as sweatpants, sweatshirts, and T-shirts, please let me know so you can get in on the deal while we have the items still in stock. Have a great fall and keep'em flying!

LCDR G. Merrill Rice, MC, USNR
Naval Aerospace Medical Research Lab
gmrice@namrl.navy.mil
Phone: (850) 452- 3287 ext. 1168

Specialty Leader (MED-23)

Navy Medical Department Officer Learning Continuum

As we look at our careers in Navy Medicine, one of the most frustrating aspects for many was probably trying to get a quota to one of those "courses" that we were told would be important for our future progression in Navy Medicine. The opportunity to go to a MANDEV or a SMRCC was and is often based on the luck of the draw and the mission requirements of your particular command. So, in many respects, medical department officer development has been very non-standard – a collection of "hit or miss" opportunities throughout a military career.

Over the last two months, I have been involved on a working group at the Navy Medical Education and Training Command (NMETC) whose objective is to formalize and standardize the training that a Naval Medical Department Officer needs as he/she progresses through their Navy careers. The purpose of this working group is to develop a continuum of learning that ensures the opportunity for Naval Medical Department Officers to receive a standardized spectrum of professional military education that prepares them for increased responsibilities as senior officers and leaders. This continuum provides a challenging and supportive academic environment where officers may mature professionally and intellectually with a focus on developing a Navy Medical Department Officer who understands the practice and the business of Navy Medicine in both the operational and the MTF settings. Training must provide the Medical Department Officer basic background knowledge and skills necessary to function in either setting.

The process for this career-training continuum will require the individual officer to complete training objectives in various competency areas. These competency areas will focus on skills development in Communication & Team concepts, Leadership & Supervisory concepts, Resource Management concepts, and Administrative concepts pertinent to becoming a better Naval Officer and Medical Department Officer in the Navy and the Marine Corps. In addition, the

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Medical Department Officer will gain knowledge on Warfighting Strategy for the Navy and Marine Corps, Medical Strategy for the Navy and Marine Corps, Organizational Structure for the Navy and the Marine Corps, Heritage and Historical Perspective for the Navy and Marine Corps, and issues pertinent to Operational Medicine that are key to practicing the "business of medicine" on board ship or in the field with the Navy and Marine Corps. The training objectives for each of the competency areas will be categorized to a specific stage in a Medical Department Officer's career where that training needs to be successfully completed, with advancement to particular ranks linked to completion of required objectives. This is very similar to the way the Army and the Air Force currently develop and promote their medical department officers.

This endeavor is consistent with the approach of Task Force EXCEL and its new way of thinking about Navy training with its focus on performance improvement, learner centricity, and continuous learning. In the Task Force EXCEL approach, training is looked at along five vectors - professional development, personal development, professional military education and leadership, certifications and qualifications, and performance. The Learning Continuum being designed by NMETC for Navy Medical Department officers will focus primarily on the Professional Military Education and Leadership vector. Career planners and specialty leaders can then concentrate on the professional development and personal development of the various officers in their communities.

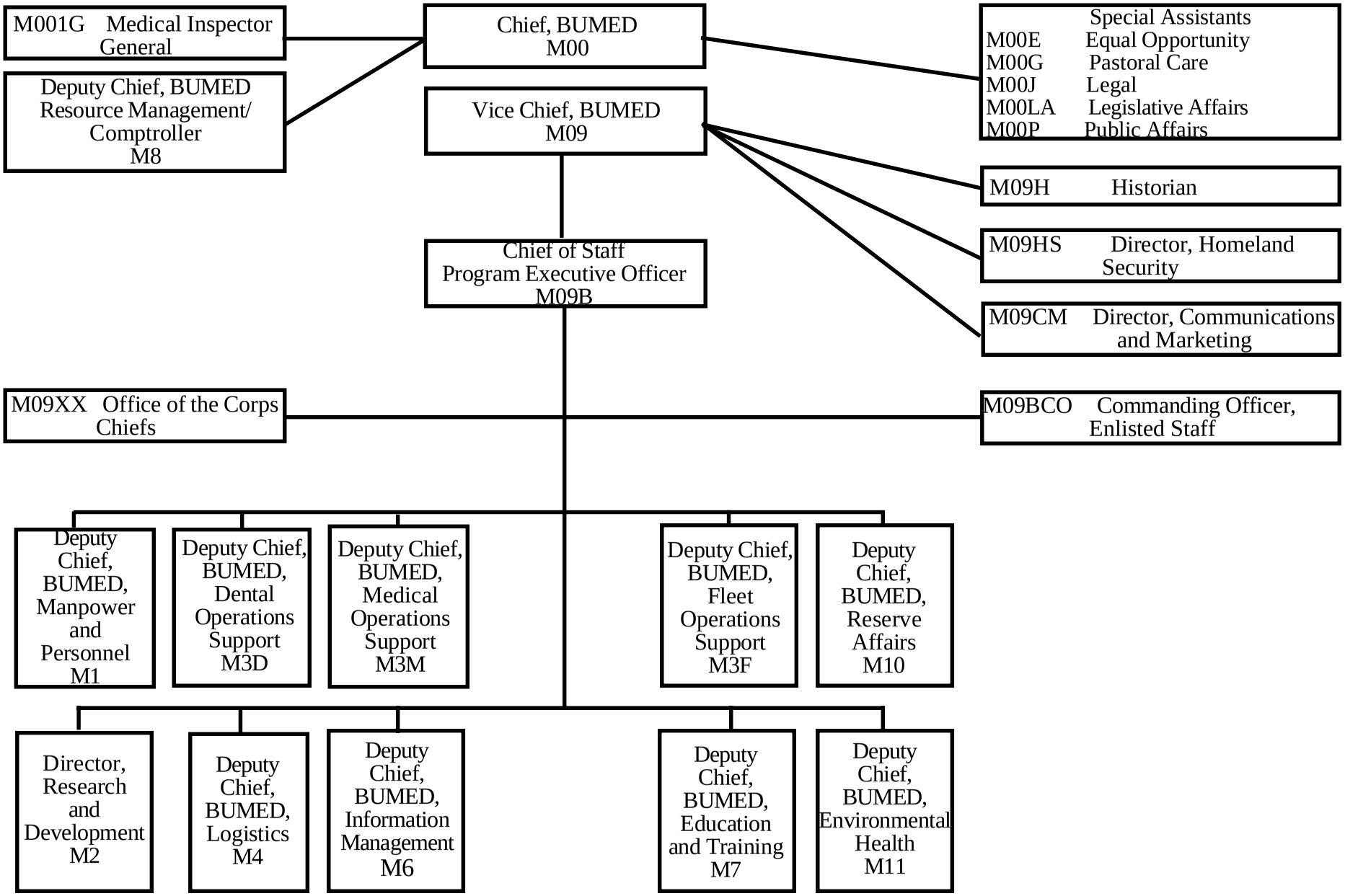
It is anticipated that a varied menu of learning approaches (on-line training, classroom training, etc.) will be developed or incorporated to carry out the required training. But, whatever learning approach is used, the intent is to give the medical department officer the tools, knowledge, skills, and ability to be successful in his/her career and to serve effectively for the Navy and Marine Corps in senior operational and senior MTF leadership positions. This Learning Continuum also improves training and resource efficiency such that all officers in Navy Medicine are afforded the opportunity to get the same standardized training.

The goal of the Learning Continuum Working Group is to have a program designed and implemented by the summer of 2003.

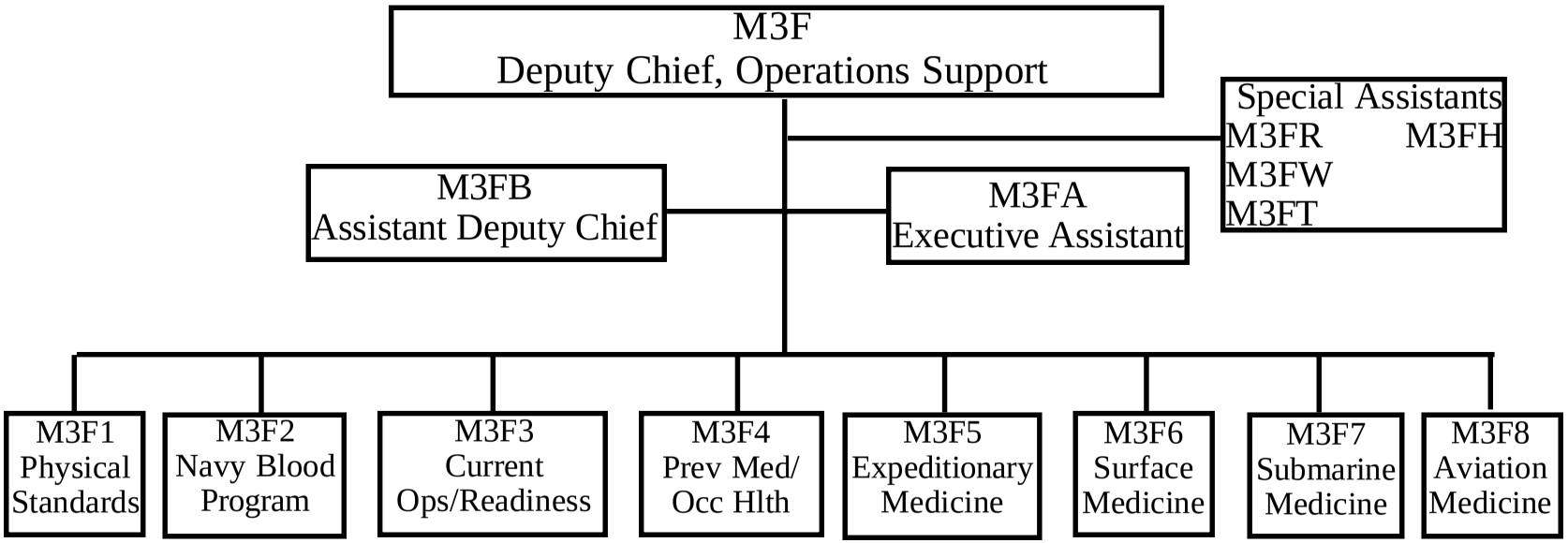
As you know, BUMED recently went through a realignment that was designed to eliminate stovepipes and create a matrix organization aligned according to the functional roles of each code. This was done in an attempt to create better communication and better interaction between the various codes at BUMED on issues that affect both the practice of medicine in the MTF and the practice of medicine in the operational arena. Included in this issue are two organizational charts. One shows the single digit codes as they are currently aligned at BUMED after implementation of the realignment and the other shows the organization of the renamed operational code, M3F (formerly MED-02). Note that Aerospace Medicine is now M3F8 and not MED-23. (Not shown is the fact that NOMI now falls organizationally under the new Navy Medical Education and Training Command (NMETC, M7) and not under M3F.) Please feel free to contact me with any questions regarding the learning continuum or the realignment.

CAPT Dwight C. Fulton, MC, USN
Director, Aerospace Medicine (M3F8)
dcfulton@us.med.navy.mil
(202) 762-3451 DSN 762

BUMED Organizational Structure



Fleet Operation Support Alignment Plan



Cases from the I-Philes (NAMI Ophthalmology)

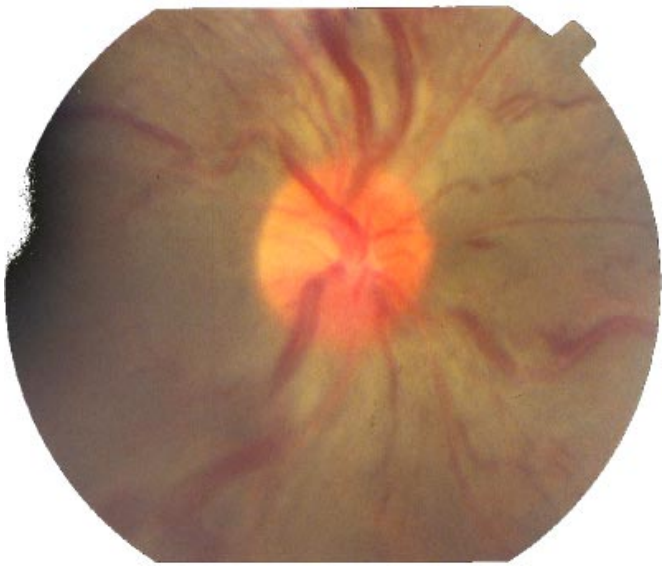
Special Board of Flight Surgeons

Case Presentation:

A 37-year-old prior service NFO on a first operational tour in the maritime community with over 1,000 hours in type complained of sudden painless decreased central vision in the right eye. The best corrected distant visual acuity (BCDVA) was 20/30-2 OD, 20/20-2 OS. Initial examination recorded macular edema, arterio-venous crossing changes and macular and extra-macular hemorrhage. Intravenous flourescein angiography (IVFA) was performed a week later and revealed increased multiple areas of hemorrhage, a slow venous phase and cystoid macular edema (CME). Lab tests were ordered. Five weeks later the BCDVA was 20/50-1 OD and there were tortuous engorged retinal venules, widespread retinal hemorrhage, cotton wool spots (CWS), and persistent CME (Fig. 1). The optic disc was hyperemic and portions of the retinal vasculature obscured by edematous retina (Fig. 2). Four weeks later, the BCDVA had decreased to 20/200 OD, the previously normal intraocular pressure (IOP) was elevated to 27 mm Hg OD compared with 12 OS, the fundus was unchanged in appearance and gonioscopy of the anterior chamber angle was normal. At ten weeks after presentation the IOP was 30 OD, 12 OS and neovascularization of the iris (NVI, rubeosis iridis)

(**Figure 1.** Classic fundus appearance OD at 5 weeks showing dilated and tortuous retinal venules, intraretinal hemorrhage, CWS and CME)

(**Figure 2**. Optic disc OD is swollen with hyperemia and indistinct margins. Venules are segmentally obscured by hemorrhage and retinal edema.)



was noted; there was no relative afferent pupillary defect (RAPD). He underwent a laser surgical procedure. Neovascularization resolved and the IOP normalized. His final outcome was BCDVA 20/100 OD due to chronic CME; the peripheral visual field was significantly restricted as well. Past ocular, family ocular, and medical histories were significant only for untreated borderline systemic hypertension for five years and a body mass index (BMI) of 31-33 since age 22 (25-29: overweight; 30 and above: obese). There was no tobacco use.

What is the diagnosis?

What laboratory evaluation is important with this condition?

Why did the intraocular pressure rise?

What was the laser surgical treatment, and what are the functional consequences of this procedure?

What issues are important in considering his aeromedical disposition?

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Diagnosis: Central retinal vein obstruction (CRVO) has a characteristic dramatic "blood and thunder" appearance of dilated and tortuous retinal veins, a swollen optic disc, intraretinal hemorrhage, retinal edema—manifested in the surface nerve fiber layer as "cotton wool spots" or "soft exudate" and in deeper neural layers as opacification of the normal transparency—and CME. CRVO is not rare with a four-year incidence of 2.14 per 1,000 over age 40 and 5.36 per 1,000 over age 64; the prevalence increases from 2.1 to 12 per 1,000 as age increases from 49 to 80. The mean age of presentation is 62 and only 10% are younger than 51. There is a slight male predominance.

CRVO is caused by thrombosis of the central retinal vein at or posterior to the lamina cribosa where the sclera transmits the optic nerve. Elevated venous and intracapillary pressure slows the retinal arterial blood flow resulting in capillary endothelial damage with serous exudation and extravasation of erythrocytes as well as ischemia of the metabolically active neuroretina. Visual defects and permanent retinal damage depend on the rapidity of onset and degree of obstruction and the development of collateral outflow pathways.

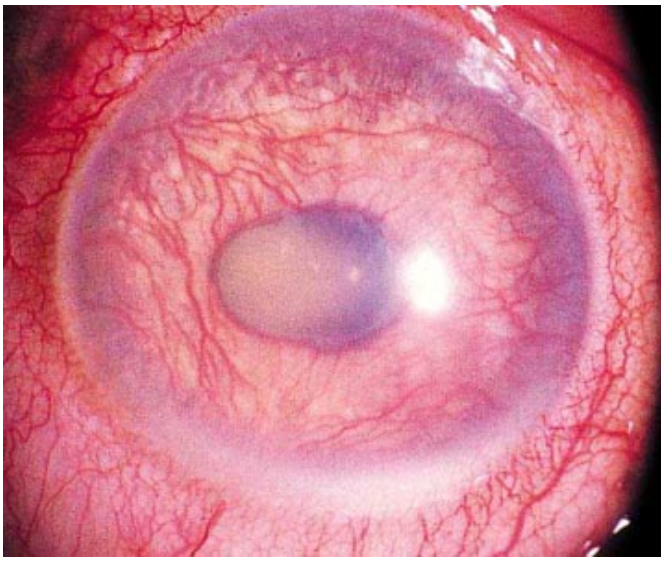
The spectrum of disease includes 1. nonischemic (partial, perfused, impending); 2. ischemic (nonperfused, complete, hemorrhagic); and 3. intermediate/indeterminate, 80% of which progress to the ischemic form. The clinical course is highly variable and cannot be predicted from initial visual acuity or fundus appearance. Ischemic CRVO is defined as greater than 10 disc areas of non-perfusion on IVFA and is predicted by presence of an RAPD. Visual prognosis for ischemic CRVO is poor with only 10% ultimately achieving better than 20/400 vision.

Risk factors for CRVO include central retinal arteriolar atherosclerosis; systemic arterial hypertension and hyperlipidemia; diabetes mellitus; increased IOP; increased intraorbital pressure; abnormal endothelium as in vasculitis, thrombophilia, and increased blood rheology; and oral contraceptive and diuretic use. There is an increased relative risk of cardiovascular mortality in young patients with CRVO.

Sequelae of CRVO range from none with excellent recovery of vision to severe complications including NVI and neovascular glaucoma; CME; macular hole; retinal pigment epithelium atrophy and proliferation; epiretinal membrane; and tractional retinal detachment. Central vision loss can be caused by hemorrhage at the fovea or in the vitreous; acute, subacute and chronic retinal swelling; and postischemic cystoid degenerative changes. Final acuity is correlated with initial measurement: better than 20/40 is likely to stabilize, while with 20/50 or worse, only 20% improve, 30% worsen and the remainder don't change.

Laboratory evaluation: IVFA is a benign fundus photographic office procedure which was diagnostic in this case and critical for differentiating ischemic from non-ischemic CRVO. Physical examination and laboratory investigation of potential treatable causes of CRVO are important. Recent evidence supports an extensive panel of hypercoagulability testing in patients under age 56 with a 27% chance of identifying an otherwise unsuspected thrombogenic condition.

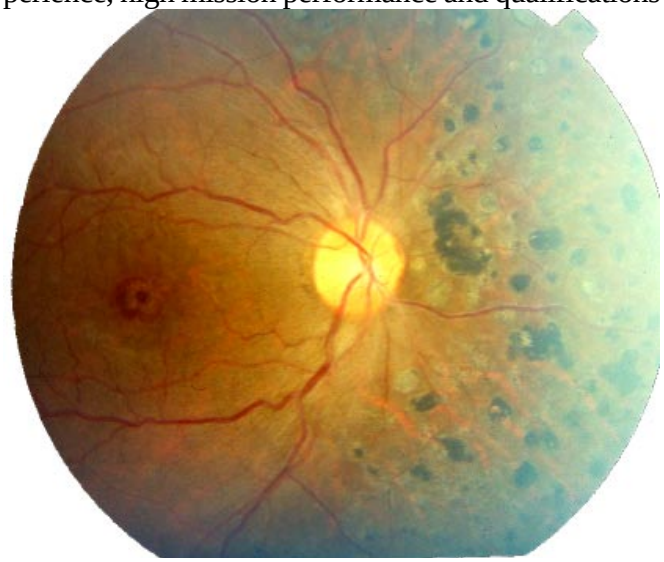
Neovascular glaucoma: With a mean onset of three to five months, about 60% of ischemic CRVO develop NVI due to angiogenic factors released by a large area of ischemic retina. Careful serial exams of all CRVO including gonioscopy are required to detect NVI at an early stage before new vessels and scar tissue block the chamber angle trabecular meshwork and cause increased IOP. NVG is extremely difficult to treat without attacking the root cause of neovascularization. Otherwise, intractable glaucoma with a painful eye and loss of vision results (Fig. 3).



(**Figure 3.** Severe example of advanced NVG with extensive NVI, inflamed globe and edematous cornea and cataract from high IOP)[1]

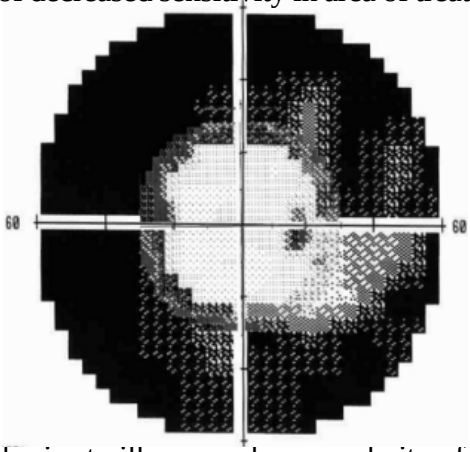
Treatment and consequences: General treatment of CRVO includes identification and correction of any underlying condition. Routine aspirin and dipyridimole are of unproven value; systemic anticoagulation is not recommended. There is no proven treatment of secondary CME to improve visual acuity. Ischmic CRVO is closely followed and specifically treated only once early NVI develops. Ischemic retina cannot be revascularized with current technology and must instead be destroyed to eliminate production of the angiogenic stimulus for neovascularization. Pan-retinal photocoagulation (PRP) using a slit lamp mounted laser is used to place up to 2,500 500 micron retinal burns peripheral to the macular vascular arcades in one or more outpatient sessions (Fig. 4). The burns both decrease retinal oxygen demand and perhaps increase supply through enhanced choroidal permeability. The side effects of PRP include decreased peripheral (Fig. 5), night and color vision; occasional loss of one to two lines of central vision; and temporary loss of accomodation.

Aeromedical disposition: This member's disqualifying defects included history of ischemic central retinal vein occlusion OD, s/p panretinal photocoagulation, with residual visual field constriction and macular edema resulting in BCDVA 20/70. Waiver was requested but not recommended. At Special Board of Flight Surgeons (SBFS), particular weight was given to the member's experience, high mission performance and qualifications attained prior to illness, and monocularity of mission tasking. Particulary helpful and commendable was extensive local occupational and functional testing of the member's impaired vision by the squadron flight surgeon, safety officer and aeromedical safety officer. In trainers and aircraft on the ground the member demonstrated high competence in mission procedures and individual and crew safety and rescue. The SBFS recommended waiver to continue duty involving flight as NFO in the maritime community only; flight deck duty was not recommended in light of the constricted visual field and limited acuity in the affected eye.



(**Figure 4.** Fundus OD after PRP shows retinal pigment epithelial reaction to burns nasal to disc and peripheral to macular arcades. Acute vascular changes, hemorrhage and edema have resolved, but CME and postinflammatory venous sheathing persist.)

(**Figure 5.** Composite central and peripheral automated perimetry OD after PRP demonstrating dense ring scotoma of decreased sensitivity in area of treatment)



Discussion: In general, any identified disease causative conditions must be treated. The member's blood pressure was controlled and weight loss initiated. The four-year risk of recurrence of CRVO in the same eye is 2.5% and risk of occurrence in the fellow eye is 11.9% No proven hazards of exposure to the aviation duty environment have been identified although one might speculate that dehydration, temperature extremes, stress and hypoxia might increase risk of exacerbation or recurrence. Sudden incapacitation adversely affecting this community's NFO mission or safety is unlikely. There is no requirement for immediate specialty care with this condition if the individual can reach definitive evaluation and management within weeks.

Reference:

1. Weinberg DV: Venous occlusive diseases of the retina. In Albert DV and Jakobiec FA (ed): Principles and Practice of Ophthalmology, 2nd ed, vol 3. Philadelphia, WB Saunders, 2000, pp 1187-1893.

CAPT W. Anderson, MC, USN (FS)
Head NAMI Ophthalmology
wanderson@nomi.med.navy.mil
(850) 452-2257 x1020 DSN 922

Doctor Death

Os vs Es

Greetings once again from the Psychiatry Department here at NAMI. This is my third article for CONTACT that is based on both my experience as a Flight Surgeon and from closely following Navy and Marine Corps active duty fatalities since May 1994.

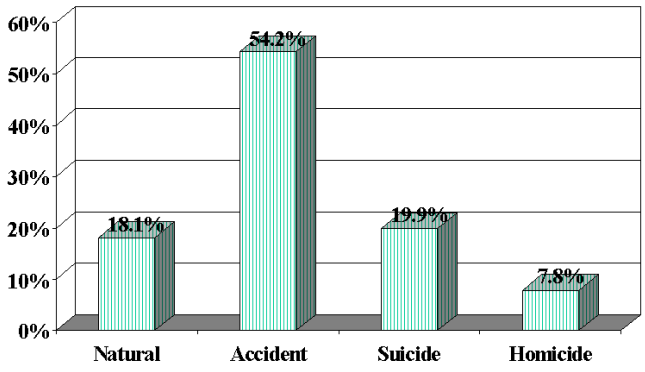
As in the previous articles ("Suicides At Sea" and "Drinking Yourself To Death") - I would like to discus active duty Navy and Marine Corps deaths over the last several years – this time looking at **populations** (specifically officers compared to enlisted) instead of considering a specific cause of death.

The information in this article is from a personal study of all Navy and Marine Corps active duty deaths between 01Jan1995 and 31Dec2001. It is not official Navy or Marine Corps data.

For the purpose of this article – I will not attempt to calculate "rates" or "statistical significance" to the various causes of death and it may generate "more questions than answers." Nevertheless, I hope it will be useful to look at the overall causes of death of enlisted personnel compared to officers during that 7 year period.

During the period 1 Jan 1995 to 31 Dec 2001 – 2,670 active duty Navy and Marine Corps personnel died from all causes. Figure 1 illustrates the distribution of those deaths into the traditional causes of Natural, Accident, Suicide, and Homicide. As might have been anticipated – the largest percentage of deaths from this relatively young and healthy population was from potentially preventable accidental causes (1,447 deaths or 54.2%). (More about "accidents" later).

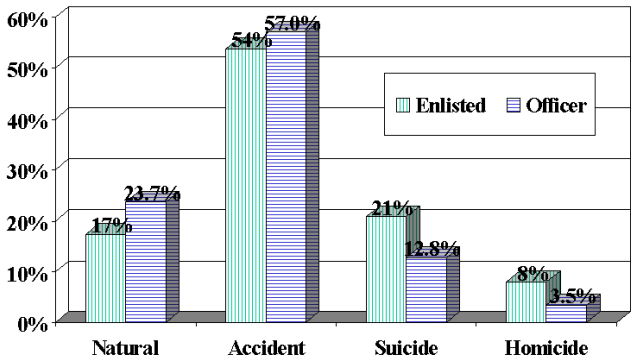
Figure 1



During this seven year period Suicide was the next leading cause of death (530 deaths or 19.9%) for the total Navy / Marine Corps population followed closely by Natural (484 deaths or 18.1%) and Homicide (209 deaths or 7.8%). (For the purpose of this review – I included personnel killed by terrorist at the Pentagon and at Yemen in the category of Homicide).

Let us now look at those 2,670 active duty fatalities from 1995 to 2001 and break them down into Enlisted (2,349) and Officers (321). Referring to Figure 2, Officers had a higher percentage of Natural deaths (23.7%) compared to Enlisted personnel (17%) – which could be explained by the overall older officer population. The percentage of Homicide and Suicide deaths are lower for officers compared to enlisted which could be associated with numerous differences in the population (age, marital status, education, etc).

Figure 2

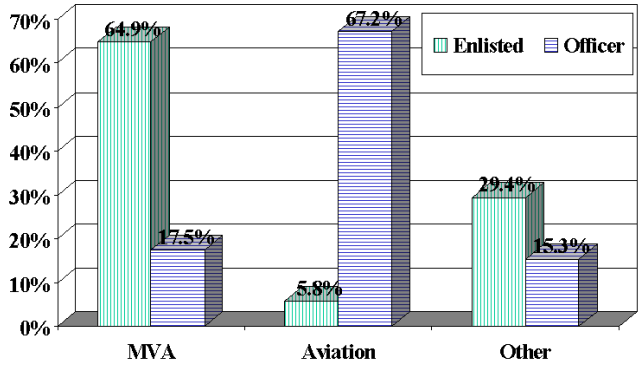


It is noteworthy to me that the percentage of accidental deaths in officers (57%) is actually higher than the percentage of accidental deaths in enlisted (54%). One might have anticipated a higher percentage of accidental deaths in the relatively younger and thus potentially more "risk taking and impulsive" enlisted population.

Looking at "accidents" more closely (Figure 3) – I divided all accidental deaths into those associated with motor vehicles (MVA), those associated with Navy and Marine Corps operational flying (AVIATION), and all other accidental deaths that were not MVA or AVIATION (OTHERS).

Referring to Figure 3 – for Enlisted personnel, 64.9% of their total 1,264 accidental deaths during 1995-2001 were Motor Vehicle Related. For Officer Personnel, however, 67.2% of their total 183 accidental deaths during 1995-2001 were AVIATION re-

Figure 3



lated. There are obviously many confounding variables when making this comparison in that the relative percentage of enlisted that fly operationally (and are thus "exposed" to this form of accidental death) is less than Officers. Additionally, the rate of motor vehicle fatalities in Officers is lower – so the percentage of deaths from other means (e.g. aviation) will be higher. Nevertheless it should be noted that of the 321 total Navy / Marine Corps officer deaths during CY 1995-2001 – 123 of those (38% of all Officer deaths, and 67% of all accidental officer deaths) were associated with operational flying. Similarly, for the Navy/Marine Corps enlisted population during CY1995-2001 – of 2,349 total enlisted deaths over that period – 820 of those (35% of all enlisted deaths, and 65% of all accidental enlisted deaths) were associated with Motor Vehicle Accidents.

So "where's the beef?" – or what can one take away from this discussion?

1) There is a real risk of death for active duty Navy and Marine Corps personnel. Over the 7 year review discussed above 2,349 enlisted (about one per day) and 321 officers (about 1 per week) died. This turns out to be a risk of dying that is about 5,000 times higher than winning a typical state lottery. Perhaps information such as this could be useful in putting a small crack in the wall of "denial" in active duty personnel that "it will never happen to me."
2) For this population, ACCIDENTAL death continues to be the leading cause of death. Although "prevention" has traditionally been applied only to accidental causes of death, I would submit that readers of this article have many "tools" with which they could help prevent (or in the case of natural death – delay) all causes of death in active duty Navy and Marine Corps Personnel.
3) Finally, Motor Vehicle Accidents (Enlisted) and Operational flying (Officers) are the highest categories of accidental deaths and are in fact the leading cause of all deaths in their respective communities.

If you would like to discuss naval active duty mortality patterns further please give me a call (DSN 922-2257 ext 1081) or email me at mdalmond@nomi.med.navy.mil. If your command is interested in having me present a multimedia presentation on the "top ten" causes of death at a safety standdown - please contact me.

CAPT Myron D. Almond, MC, USN
NAMI Psychiatry
mdalmond@nomi.med.navy.mil
(850) 452-2257 x1081 DSN 922

(CAPT Dully and RADM Buckendorf painting on the Blue M 1980 aboard the USS Coral Sea)

Eczema

Background: This study examines the US Naval Aviation policy with regards to eczema.
Methods: The Biomedical Database of the Naval Aerospace Medical Institute was searched for waiver requests for atopic or contact dermatitis. Microfiche records were then reviewed.
Results: Fifty-seven aviation personnel submitted waiver requests for either atopic or contact dermatitis. Forty-six (81%) of these received recommendations for waiver of their eczema. All personnel who had completed training were granted waiver recommendations. Waivers were denied for severe or poorly controlled disease, comorbid conditions, or insufficient clinical information regarding their disease. None of those who received waiver recommendations later had their waivers rescinded.
Conclusions: Current naval aviation policy allowing waiver of the physical standards because of well-controlled eczema is appropriate. Naval aviation personnel who receive waiver recommendations for eczema as evidenced by diagnoses of atopic or contact dermatitis have not had their waivers revoked because of their disease.

Introduction

Eczema is a term that describes acute or chronic inflammation conditions of the skin. It come from the Greek ekzein, "to boil out." Eczema is the final common manifestation of many disorders. Dermatitis is the term for inflammation of the skin. Eczema and dermatitis are often used interchangeably to describe any itchy rash. Eczema lesions include papules, erythematous macules, and vesicles, which often coalesce to form patches or plaques. These lesions are pruritic, and secondary infection is not uncommon. Long-term scratching of eczematous areas can result in lichenification. The two major categories of eczema are contact dermatitis and atopic dermatitis. Other types of eczema exist including lichen simplex chronicus, nummular eczema, seborrheic dermatitis, dyshidrotic eczematous dermatitis, and asteatotic dermatitis.

Contact dermatitis refers to acute or chronic inflammatory reactions. The inflammation may be caused by a chemical irritant (irritant contact dermatitis) or by an allergen that elicits a type IV cell-mediated delayed hypersensitivity (allergic contact dermatitis). The prevalence of contact dermatitis may be 5 to 20%, with the irritant form more common than the allergic form, and the hands the most commonly affected body part. Irritants directly exert damage to the skin. Common irritants include hydrocarbons and detergents, frequently a result of occupational exposure. In allergic contact dermatitis, Langerhans cells in the epidermis take up the antigen. The Langerhans cells migrate to lymphatics and present the processed antigen in conjunction with the major histocompatibility complex to T cells. The T cells produce and mediate release of cytokines, resulting in inflammation. The dermatitis resulting from poison ivy, oak, or sumac is an example of allergic contact dermatitis.

Atopic dermatitis is usually a chronic, pruritic inflammation. It is known as the "itch that rashes." The atopy triad includes atopic dermatitis, allergic rhinitis, and asthma. There is often a family history of atopy. Twelve to fifteen percent of American children suffer from atopic dermatitis, and of these, thirty to fifty percent will have respiratory illness as well. Fortunately atopic dermatitis often improves around puberty.

A sequela of chronic dermatitis, especially atopic dermatitis, is lichen simplex chronicus. It resembles lichens growing on rocks and is a consequence of constant rubbing and scratching. Nummular eczema is also often seen in atopic individuals. It is a chronic, pruritic dermatitis that occurs in coin-shaped plaques.

Treatment of eczema involves identifying and avoiding any etiologic agent. Wet dressings are used for contact and atopic dermatitis whereas occlusive dressings are used for lichen simplex chronicus. Greasy moisturizers are also helpful. The mainstay of treatment is a topical steroid. Newer non-steroidal topical medicines, tacrolimus and pimecrolimus, are approved for the treatment of eczema. Both inhibit T cell activation and cytokine production. They have minimal systemic absorption, and no skin thinning in trials to date, although it has only been studied a few years. Side effects include burning, pruritus, and erythema. In trials with tacrolimus, there was a 90% improvement in 30% of the patients, and a greater than 50% improvement in 70% of the patients. In trials with pimecrolimus, 35% of patients were clear or almost clear of atopic dermatitis versus 18% of vehicle only controls.

Systemic treatment includes antihistamines, primarily for the soporific effect to relieve itching. The newer non-sedating antihistamines are helpful in those with concurrent allergic rhinitis. Systemic steroids may be required for severe eczema outbreaks. Topical or systemic antibiotics are used for bacterial su-

perinfection of eczematous areas.

Eczema is of concern aeromedically for several reasons. The itching may be distracting in flight. Eczematous skin may interfere with the proper wearing of flight gear. The aeromedical environment can exacerbate eczema. Aviation personnel are often exposed to hot and humid conditions. Dehydration and perspiration both aggravate eczema. Hydrocarbons such as fuel and hydraulic fluid are known irritants. Medications used to treat eczema may have side effects, such as drowsiness, that are incompatible with aviation. Asthma and allergic rhinitis, both of which can severely affect flight status, are often found in conjunction with atopic dermatitis. Because of these concerns, the United States Navy, Air Force, and Army all consider eczema disqualifying for flight duties.

All three branches, though, will consider a waiver of the standards for eczema under similar conditions. The dermatitis must not interfere with flight equipment or duties. Those requiring topical medications for control will be considered. Consults are required to rule out asthma and/or allergic rhinitis. Both the army and air force require dermatology consults as well.

The Federal Aviation Administration has no specific guidance on eczema. It falls under the general provision in the code of federal regulations that "no.. disease.. that the Federal Air Surgeon.. finds.. makes the person unable to safely perform the duties or exercise the privileges of the airman certificate applied for or held." A similar section of the code applies in general to medications that interfere with flying.

I reviewed data collected at the Naval Aerospace Medical Institute (NAMI) for the experience of students and naval aviators with eczema. This review was conducted to update the Navy's aeromedical waiver guide.

Methods

The NAMI Biomedical Database (Access, Microsoft Corporation) was searched for waiver requests for ICD9 codes for atopic dermatitis (691) and contact dermatitis (692) in August 2000. I then reviewed the microfiche copies of medical records for the personnel found with the above diagnoses. I determined the outcome of the waiver request.

Results

The search of the NAMI database revealed 57 separate naval aviation personnel who had submitted waiver requests for eczema. Twenty-two had the diagnosis of atopic dermatitis, 34 had the diagnosis of contact dermatitis, and one had both diagnoses.

Waivers were recommended or had been previously granted to 46 (81%) of the aviation personnel with eczema. (Table 1.) Of the two aviators, six flight officers, and three aircrewmen who had completed training and were already designated, all received waiver recommendations. Waivers were not recommended for 11 (19%) because of insufficient information, severe eczematous disease, or other disqualifying conditions. Six student naval aviators, four student naval flight officers, and one naval aircrew candidate did not receive waiver recommendations. Both air traffic controllers received waiver recommendations. Waivers were recommended for 20 (87%) of those with atopic dermatitis and for 27 (77%) of those with contact dermatitis. No personnel who were recommended for a waiver later had a waiver request denied.

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Table I. WAIVER RECOMMENDATIONS FOR NAVAL PERSONNEL WITH ECZEMA

	SNA	SNFO	NA	NFO	NAC	ATC	Total
Waiver	15	8	2	6	13	2	46
No Waiver	6	4	0	0	1	0	11
Total	21	12	2	6	14	2	57

SNA=student naval aviator, SNFO=student naval flight officer, NA=naval aviator, NFO=naval flight officer, NAC=naval aircrew, ATC=air traffic controller

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Discussion

In this retrospective study, only fifty-seven naval aviation personnel with eczema, as evidenced by a diagnosis of contact dermatitis or atopic dermatitis, were found in the NAMI database. However, two limitations of the database are that it contains records only since 1987 and that it requires submissions for completeness. If the appropriate procedures regarding aircrew standards and waivers were not followed, however, the personnel will not appear in the database. The majority of naval aviation personnel with eczema received waivers. Again, though, if an aviator was grounded for worsening eczema and this information was not forwarded to NAMI it would not appear in the database.

Eighty-one percent of those with eczema received waiver recommendations. This is similar to the US Air Force and Army experience. According to the Air Force online waiver guide, 162 of 174 (92%) of those aviation personnel evaluated for chronic dermatitis received waiver recommendations as of July 1999. Based on unpublished Army data as of June 2001, 70% of aviation personnel with eczema had received waiver recommendations. None of the aviation personnel who received waivers for eczema later had them rescinded. This study therefore supports current policy recommending waivers for aviation personnel with mild, well-controlled eczema.

These results were presented to the NAMI Aeromedical Advisory Council on 15 June 2001. The council decided that current naval aviation policy is appropriate and no changes were made to the US Navy aviation waiver guide. Because the waiver guide already allows the use of topical agents for the treatment of eczema, the new topical agents tacrolimus and pimecrolimus can be used without modification of existing policy. As mentioned in the introduction, these drugs to date have not demonstrated any adverse side effects that would be of concern in aviation.

Acknowledgements

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LCDR Chris C. Lucas, MC, USN
NAMI Physical Qualifications (Code 26)
cclucas@nomi.med.navy.mil

Pericarditis in Aviation

Pericarditis was a disease recognized in antiquity. Hippocrates in 460 BC described the anatomy as "a smooth tunic which envelops the heart and contains a small amount of fluid resembling urine." We now know the pericardium consists of two layers. The outer layer or "parietal" pericardium is a tough, fibrous and inelastic layer completely enveloping the heart and major vessels. The inner "visceral" or epicardial layer is grossly indistinguishable from and adherent to the myocardium, coronary arteries and major vessels. Between these two layers is a "potential space" generally filled in health with 15-40 ml of a viscous pericardial fluid.

Any number of etiological agents is capable of causing an inflammatory response in the pericardium, and a partial list is given in Table 1. Of these, the "Idiopathic" category is by far the most common diagnosis in acute pericarditis. These are generally assumed to be secondary to a viral etiology, but in the past the pursuit of a viral etiology was time-consuming, expensive, and generally in the realm of a research lab only; recent advances in PCR and DNA amplification techniques may make viral diagnosis less expensive and more readily available.

Clinical Features

Because pericarditis is difficult to diagnose, and is commonly overlooked, the epidemiology is imprecise at best. Data shows that about 1 out of 1,000 hospital admissions are for acute pericarditis, although military hospitals may have a slightly higher number because of the populations served. The disease has a 3 or 4 times more common in males, and is much more common in adults than in pediatric ages.

Differential diagnosis includes some important entities, including MI, pulmonary processes such as PE, pneumothorax and pneumonia, and the EKG findings of early repolarization.

Clinical features that help differentiate pericarditis include pleuritic pain of variable severity exacerbated by cough, deep breathing, and swallowing. This pain is characteristically positional, worse in the re-

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Table 1 Etiology of Pericarditis

Viral
- Coxsackie (B>A)(*)
- Echovirus
- Epstein-Barr
- Influenza
- HIV
- Mumps

Bacterial
- Staphylococcus
- Hemophilus
- Pneumococcus
- Tb
- Meningiococcus
- Syphilis

Miscellaneous
- Fungal
- Rickettsial
- Amebic
- Radiation Therapy
- Myxedema
- Uremia (*)

Rheumatologic
- Lupus (*)
- Sarcoidosis
- Rheumatoid Arthritis

Cardiac
- Aortic Dissection
- MI (*)
- Post-MI Syndrome (*)
- (i.e., Dressler's Syndrome)
- Postpericardiotomy (*)
- Chest Trauma

Drugs
- Hydralazine (*)
- Procainamide (*)
- Minoxidil, INH, Phenytoin
- Penicillin, Cromolyn

Immunologic
- Celiac Sprue
- Inflammatory Bowel

Metastatic Tumors
- Breast
- Lung
- Lymphoma
- Melanoma
- Leukemia
- Primary
- Sarcoma
- Mesothelioma

Idiopathic (**)

(*) Denotes common etiologies

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clined position and improved sitting up and leaning forward. The pain may radiate to the trapezius ridges, which is "highly characteristic" for pericardial processes. Dyspnea may be present, and is described as an inability to take a deep breath with pain, but without shortness of breath or wheezing. Pericardial inflammation may occur concomitantly with the fever, cough, vomiting and general malaise of a viral illness, but commonly follows the systemic manifestations by 1 to 3 weeks.

Laboratory values may add to the clinical picture with acute phase reactants (ESR, C-reactive protein) should be elevated acutely. Using enzyme markers of myocardial damage to help distinguish pericarditis from acute myocardial infarction can lead to some confusion, as they can be elevated with increasing amounts of myocardial inflammation involved with the pericarditis. In particular, Treponin I was detectable in the serum of 49% of pericarditis patient in one series, with 22% being over 1.5 mcg/dl (usually associated with myocardial infarctions in most labs).

Two nearly pathonomonic features help in making the diagnosis. The first is the pericardial friction rub. Classically described as triphasic, it is likened to a "scratchy" or "velcro" sound, best heard from the mid or lower left sternal boarder to the apex with the stethoscope diaphragm and the patient in the left lateral decubitus or forward leaning position. This rub is notoriously episodic, varying with position, respiration cycle and time of day; if heard, it is very good evidence, but repeated auscultation over time may be required. The other feature always sought is the EKG, which is abnormal in over 90% of cases. ST segment elevation is said to be the most sensitive finding, usually concordant with the T-wave direction in most or all limb and precordial leads (ST depression and inverted T-waves in aVR and V1 are common). The most specific EKG abnormality is PR segment depression, although it is often not present. The EKG in pericarditis evolves through 4 distinct stages over the course of hours to days to several weeks, eventually returning to normal.

One note on the previously mentioned Early Repolarization, which can be confused with pericarditis changes. This is most often seen in young and healthy patients, especially black males. ST segment elevations are usually limited to the precordial leads, they return to baseline with exercise, and they do not evolve through stages as acute pericardial changes will.

Once serious causes of chest pain are excluded, treatment of idiopathic pericarditis is supportive. Non-steroidal anti-inflammatory medications are the cornerstone of therapy. Aspirin, ibuprofen and indomethacin are all used, and probably equally efficacious. Colchicine is second-line for recurrences and failed NSAID's. Steroids should be avoided whenever possible. With adequate dosing, symptomatic relief should start soon after initial dosing, and significant to complete relief within several hours. Recurrences are common in up to 50% of all cases, with 1 to 3 recurrences for up to 8 months; recurrences typically are less intense and of shorter duration than the original presentation.

Aeromedical Concerns of Acute Idiopathic Pericarditis

Acute pericarditis is a self-limited condition that completely resolves within a couple weeks of onset. Treatment relieves symptoms markedly, and there are rarely any sequelae. Recurrences are common, but mild, readily treated and quickly resolving. Having had acute pericarditis does not preclude a complete return to normal function. Other common etiologies for non-idiopathic (viral) pericarditis almost always have other systemic manifestations of the disease process that are readily identified by the austute clinician. Minimal pericardial effusion is an abnormality on echocardiogram only, rarely becoming symptomatic. Indications for more in-depth investigation include symptoms related to pericardial tamponade (a clinical diagnosis and medical emergency), and unresolving pericarditis.

Review of the Navy database revealed only 6 cases of acute pericarditis for which waivers had been requested, and no cases of non-idiopathic (non-viral) pericarditis. This paucity of submissions is interesting for two reasons. First, the very population that should be manifesting acute illness are apparently not, either through a lack of recognition of the disease (quite possible) or ignoring the waiver requirement in completely resolved cases (unknown frequency). Second, recent experience at NAMI showed 4 cases in 3 individuals from the local area in the past 8 months, half of the total Navy experience in the past 15+ years of accumulated database. The Army has

had similar experience in their database, with 63 cases mentioned but only 6 cases submitted by their flight surgeons for waiver consideration (2 of 6 not waived). The others were not felt to require waivers, although like the Navy, the Army policy is that acute pericarditis is disqualifying.

Navy Policy

Current waiver guidelines for the Navy include the following:

1. Grounded for acute illness, with no required time before waiver can be considered.
2. Idiopathic pericarditis waiver considered after acute illness resolves, no recurrence or sequelae
3. Required work-up: Cardiology consultation to rule-out MI, connective tissue disease, neoplasm, and Echocardiogram to document any effusion is resolved.

Use of echocardiogram is of particular interest. The American College of Cardiology, in their Practice Guidelines, feels echocardiogram is justified acutely to exclude pericardial disease, constriction, or effusive-constrictive processes, but is not needed for routine follow-up of small pericardial effusions in stable patients.

Recommended Policy

In light of the above discussion, the following recommendations were forwarded for change of Navy Aeromedical Waiver policy for Acute Idiopathic Pericarditis:

1. Grounded for symptomatic illness
2. Required work-up:
   - Primary care consultation (Family Practice, Internal Medicine, or any primary care specialist experienced caring for pericarditis)
   - One-time echocardiogram
   - Additional work-up as felt appropriate by the primary care consultant
   - Returned to full duty by primary care specialist
3. Evaluated and returned to flight status by the flight surgeon
4. Acute pericarditis not considered disqualifying, and waiver for acute pericarditis not required
5. Recurrent pericarditis:
   - Same work-up as for the acute episode (grounded, primary care consultation, one-time echocardiogram)
   - Addition of blood tests for ANA and Rheumatoid factors
   - Returned to full duty
   - Returned to flight status by the flight surgeon
   - This work-up is repeated for each separate episode of recurrence.

Any cases of non-idiopathic (non-viral) pericarditis, complicated pericarditis, or pericarditis with echocardiographically significant effusions, are still Considered Disqualifying, and will require a case-by-case review for waiver consideration.

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PROPOSED
Navy Dietary Supplements Policy

CPT Daniel Johnston presented the following at an AAC on 6 Sep 2002. These recommendations led to a lively debate and are **NOT POLICY** *at this time. However, CPT Johnston does provide us with a well thought out set of guidelines that the Flight Surgeon can refer to until the waiver guide is officially updated.*

GENERAL SUPPLEMENTAL ADVICE

Congress defined the term "dietary supplement" in the Dietary Supplement Health and Education Act (DSHEA) of 1994. A dietary supplement is a product taken by mouth that contains a "dietary ingredient" intended to supplement the diet. The "dietary ingredients" in these products may include: vitamins, minerals, herbs or other botanicals, amino acids, and substances such as enzymes, organ tissues, glandulars, and metabolites. Dietary supplements can also be extracts or concentrates, and may be found in many forms such as tablets, capsules, softgels, gelcaps, liquids, or powders. They can also be in other forms, such as a bar, but if they are, information on their label must not represent the product as a conventional food or a sole item of a meal or diet. Whatever their form may be, DSHEA places dietary supplements in a special category under the general umbrella of "foods," not drugs, and requires that every supplement be labeled a dietary supplement. This Act, passed during the Clinton administration, shifted the burden to the FDA to prove that dietary supplements pose a significant or unreasonable risk rather than have the manufacturers bear the responsibility to establish the safety of the products they sell. A dangerous loophole considering many of the "supplements" have known pharmacoactive properties and the fact the FDA often has few or inadequate date to evaluate, unless a group of investigators decides to independently conduct studies. Dr. Kessler from the Yale University School of Medicine has said, "Without a systematic review of safety and an adequate data base on safety, the American public remains at risk."

Points to Remember:

- Harmful effects often associated with use in very high doses or in non-standard manner
- The U.S.P. notation indicated that a manufacturer has followed standards established by the US Pharmacopoeia and without it, one is essentially playing "Russian Roulette" with respect to bottle contents.
- Just because it might be "natural" doesn't mean it is safe
- Many may have beneficial effects in some users when used in moderation
- No method to test for most substances by urine or blood tests
- Flight Surgeons and other medical providers must be armed with "tools" to make informed decisions
- Aviators must be confident of accurate and informed counsel
- This list will require revision at least annually
- Must compel Flight Surgeons to discuss and document use of supplements and tonic water at least annually. **Should be specific questions about nutritional supplements/tonic water SF form.
- Forms referring to "Medication" should be revised to read "medications or supplements"
- Education
- Flight Surgeons, dietitians and healthcare providers engaged in care of special operational personnel should be offered educational blocks covering dietary supplements
- Possible venues include:
  - Flight Surgeon Primary Course
  - Entry level training
  - Continuing Education
- Studies may include performance enhancement qualities, specific aerospace effects (e.g. effects on G-tolerance), or literature base study of overall health effects
- As no current venue for aeromedical research into this area currently exists, cooperative study with civil and sister services may be considered
- FDA desires to have many supplements recommended or not recommended by 2010.

Resources that may be helpful:

-U.S. Army Center for Health Promotion and Preventive Medicine
chppm-www.apgea.army.mil/dhpw

-The Center for Food Safety and Applied Nutrition
vm.cfsan.fda.gov

-Office of Dietary Supplements
odp.od.nih.gov/ods
-US Air Force
www.brooks.af.mil/web/af/altmed/HOMEFRAME.htm

CLASS A SUPPLEMENTS

(Use requires only documentation at annual physical for Class I,II, and III)

Substances for which there is strong evidence of safety and/or efficacy. Limitations on quantity and type supplement shall be discussed **and documented** at time of annual physical.

1. Sports Drinks without Creatine, Ephedra, or Herbal Supplements

Background: Sport drinks not containing any of the compounds listed in Class B or Class C (i.e. ephedra, herbal compounds, glycerol, creatine) and containing only a mixture of carbohydrates, vitamins, and minerals, are allowed. These have been shown to help performance of continuous activity lasting longer than 90 minutes. However, they are not necessary if water is available. They are absorbed faster than water because of the added sugar and electrolytes and have added sodium, which stimulates thirst, stimulates drinking, and helps retain water.

Educating the aircrewmember about the type of safe and allowable sports drinks is essential. **Many sports drinks found at fitness centers and nutrition stores contain ephedra alkaloids (Class C) which have been strongly associated with adverse cardiovascular and central nervous system events including: seizures, strokes, hypertension, arrhythmias, myocardial infarction, and death.** Sports drinks containing caffeine are allowed, but should be strongly discouraged for their propensity to dehydrate and increase blood pressure and heart rate to potentially dangerous levels during exercise.

Use in Aircrew: Sport drinks found in nutritional stores, gyms and other sources containing only carbohydrates, various mixtures of proteins, minerals/electrolytes and no compounds in Class B or C are allowed.

2. Protein Supplementation

Background: (form of shakes, capsules, nutrition bars) A considerable amount of research has evaluated dietary protein needs of athletes. Although there is some debate, most studies indicate that in order to maintain protein balance during intense resistance and/or endurance training, athletes should ingest approximately 1.3 to 1.8 g protein per kg body mass per day. Athletes training at high-altitude may need as much as 2.2 g protein per kg per day in order to maintain protein balance. This protein intake is about 1.5 to 2 times the recommended dietary allowance (RDA) for the normal adult. In most instances an iso-energetic diet can provide the required protein, but athletes who maintain hypo-energetic diets, do not ingest enough quality protein in their diet, and/or train at altitude may be susceptible to protein malnutrition. In theory, this state could slow tissue growth and/or recovery from training. **On the other hand, ingesting more protein than necessary to maintain protein balance during training (e.g., > 1.8 g/kg/d) does not promote greater gains in strength or fat-free mass.** These findings indicate that athletes typically do not need to supplement their normal diets with protein, provided they ingest enough quality protein to maintain protein balance. **Excessive amounts of protein intake can cause nausea, vomiting, and ultimately death in adults.**

Use in Aircrew: Aircrew may supplement their diet with protein in the form of protein shakes, protein bars, or capsules, provided that the protein supplement does not contain supplements listed under Class C and the TOTAL amount of protein the aircrewmember consumes does not exceed 2 times the RDA value (1.58g/kg or .72 g/lb per day). Physicians must take into account the amount of protein coming from normal dietary sources (usually 12-15% of total calories comes from protein).

3. Vitamins/Minerals

Background: "Healthy adult men and healthy adult nonpregnant, nonlactating women consuming a usual, varied diet do not need vitamin supplements. Infants may need dietary supplements at given times, as may pregnant and lactating women. Occasionally, vitamin

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supplements may be useful for people with unusual lifestyles or modified diets, including certain weight reduction regimens and strict vegetarian diets."-*The American Medical Association.* Healthy children and adults should obtain adequate nutrient intakes from dietary sources. **Meeting nutrient needs by choosing a variety of foods in moderation, rather than supplementation, reduces the potential risk of both nutrient deficiencies and nutrient excesses.** Individual recommendations regarding supplements and diets should come from physicians and registered dietitians. Nutrients are potentially toxic when ingested in sufficiently large amounts. Safe intake levels vary widely from nutrient to nutrient and may vary with age and health of the individual. In addition, high dosage vitamin and mineral supplements can interfere with normal metabolism of other nutrients and with the therapeutic effects of certain drugs. The Recommended Daily Allowances represent the best currently available assessment of safe and adequate intakes, and serve as the basis for the U.S. Recommended Daily Allowances shown on many product labels. There are no demonstrated benefits of self supplementation beyond these allowances." *The American Institute of Nutrtion, The American Society for Clinical Nutrition, The American Dietetic Association, and The National Council Against Health Fraud.* "A large percentage of people in the United States take dietary supplements, but not necessarily because of nutrient needs. The adverse effects of large doses of certain nutrients (e.g., vitamin A) are well documented. There are no documented reports that daily multiple vitamin-mineral supplements equaling no more than the RDA for a particular nutrient, are either beneficial or harmful for the general population. The potential risks or benefits of the long-term use of small doses of supplements have not been systematically examined." *Committee on Diet and Health, National Academy of Sciences, National Research Council.*

The best advice is to obtain vitamins and minerals by eating a wide variety of foods. If an individual chooses to take a multivitamin-multimineral supplement, a balanced diet also should be consumed. This is because knowledge is inadequate as to all of the essential nutrients needed by adults — all required nutrients may not be present in the supplement. Many multivitamin-multimineral supplements containing 100 percent U.S. RDA levels are on the market. The consumption of this level of supplement will not be harmful to health and may or may not be helpful. Taking high doses (1gram) of Vitamin C does not appear to prevent URIs in healthy subjects but may shorten the duration of the common cold to a small extent.

> **Use in Aircrew:** Educate the aircrewmember. If a healthy adult wants to take a vitamin/mineral supplement, that supplement shall be a once-a-day multivitamin-multimineral from a USP labeled bottle.

4. Tonic Water

Background: Cinchonism is the well-known syndrome of quinine overdose involving disturbances of vision, hearing, and balance, which has occasional importance in aviation pathology, usually related to ingestion of tonic water. Ordinary social drinking of tonic water may lead to appreciable amounts of quinine in the body, although the levels are far lower than those commonly used in the treatment of malaria. The Armed Forces Institute of Pathology (AFIP) in Washington, DC, found levels of 0.2mg/L in pilots in 3 fatal accidents in which positional cues seemed to be important. AFIP results show that commercial tonic water can contain 5.5-6.8 mg/dl. In the late eighties and early nineties, the Surgeon General of the Army medically restricted regular users of tonic water from flying and advised all aviators not to use it. Army aircrews were restricted from flying for 72 hours after ingestion of tonic water. It has been suggested that a chronic low-dose intake of quinine may accumulate in the endolymph of the human vestibular system and this accumulation could produce vestibular effects equivalent to a unilateral labyrinthectomy (see "The Bite of Jesuits' Bark", Aviation Space and Environmental Medicine, July, 1989).

> **Use in Aircrew:** Educate the aircrewmember about the risks associated with drinking tonic water regularly. Drinking more than three 12oz drinks per day (36 oz total) of tonic water is not authorized. Because tonic water is not classified as a supplement, it is important to ask at annual physical examinations if the aircrewmember drinks tonic water.

CLASS B SUPPLEMENTS

(Use Not prohibited but information required for Class I, II, and III)

Substances for which evidence of risk is minimal. Use requires consultation with Flight Surgeon and documentation of use in medical record. In addition, documentation must be in the medical record that specific guidelines of dosages, risks, benefits and side effects were discussed with aircrewmember. Supplements with the "USP" label are highly encouraged. Additional documentation needed is listed below for various supplements. Overall, the importance of educating the aircrewmember with some of the background information given below cannot be overstated.

1. Glucosamine With or Without Chondroitin

Background: Glucosamine(with or without chondroitin) may have some beneficial effect on osteoarthritis, and studies up to 3 yrs in duration have found no more adverse effects than with placebo, but most physicians are skeptical. Whether glucosamine offers any advantages over better-established drugs such as acetaminophen, traditional NSAIDS or selective COX-2 inhibitors remains to be determined. As with other dietary supplements, the quality and purity of the ingredients may vary (The Medical Letter, Vol 43, Dec 20, 2001). The American College of Rheumatology states it is too early to recommend its usage for osteoarthritis. A NIH-sponsored randomized con-

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U.S. Recommended Daily Allowances, U.S. RDAs, for Adults and Children 4 or more Years of Age

Nutrient	Other Names & Usual Forms in Supplements	Amount of100% U.S. RDA
Vitamin A	Vitamin A acetate; Beta-carotene	5000 IU
Vitamin D	Vitamin D; Cholecalciferol	400 IU
Vitamin E	Alpha tocopherol acetate	30 IU
Vitamin C	Ascorbic acid; Niacinamide ascorbate	60 mg
Folic acid	Folacin	400 mcg
Thiamine	Vitamin B-1; Thiamin; Thiamine mononitrate	1.5 mg
Riboflavin	Vitamin B-2	1.7 mg
Niacin	Niacinamide; Niacinamide ascorbate	20 mg
Vitamin B-6	Pyridoxine hydrochloride	2.0 mg
Vitamin B-12	Cyanocobalamin	6.0 mcg
Biotin	Biotin	0.3 mg
Pantothenic acid	Calcium pantothenate	10 mg
Calcium	Dibasic calcium phosphate; Elemental calcium	1000 mg
Phosphorus	Dibasic calcium phosphate	1000 mg
Iodine	Potassium iodide	150 mcg
Iron	Ferrous fumarate; Ferrous sulfate; Elemental iron	18 mg
Magnesium	Magnesium oxide; Magnesium sulfate	400 mg
Copper	Cupric oxide; Cupric sulfate	2.0 mg
Zinc	Zinc oxide	15 mg

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trolled trial (www.clinicaltrials.gov) is currently in progress. Because of concerns regarding infectious contamination of chondroitin (a derivative of shark cartilage), glucosamine sulfate or glucosamine hydrochloride is recommended over glucosamine/chondroitin combinations.

Use in Aircrew: Aircrewmember must be evaluated by the flight surgeon and diagnosis of osteoarthritis established. Educate the aircrewmember about the questions regarding the efficacy of these compounds vs. traditional anti-inflammatories and the lack of evidence demonstrating a structural modifying relationship. Dosage must not exceed 1500mg per day.

Grounding: 24 hour local grounding after first dose.

Waiver: Not required

2. Saw Palmetto *(Serenoa repens)*

Background: A standardized liposterolic (fat-soluble) saw palmetto berry extract has demonstrated numerous pharmacological effects relating to is primary clinical application in the treatment of benign prostatic hyperplasia (BPH), a disorder caused by accumulation of testosterone in the prostate where a conversion to dihydrotestosterone (DHT) takes place. The primary therapeutic action of saw palmetto extract in the treatment of BPH in thought to be a result of inhibition in the intraprostatic conversion of testosterone to DHT and inhibition of its intracellular binding and transport. However, more recent research has suggested other mechanisms including anti-estrogenic and receptor site-binding effects. In the United States, between 50 to 60% of men between the ages of 40 and 59 years have BPH. This disorder is characterized by increased urinary frequency, night-time awakening to empty the bladder, and reduced force and caliber of urination. These major symptoms have been shown to be significantly improved in over dozen double-blind, placebo-controlled clinical trials. In one of the larger studies involving 110 patients with BPH, impressive clinical results were reported: nocturia decreased by over 45%, flow rate (ml/s) increased by over 50%, and post-micturition residue (ml) decreased by 42% in the group receiving the serenoa extract. In contrast, those on placebo showed no significant improvement in nocturia or flow rate, and post-micturition residue actually worsened. Significant improvements were also noted in self-rating by the patients and global rating by the physicians. Of the 50 treated subjects completing the 30 day study, physicians rated 14 greatly improved, 31 improved, and only five unchanged or worsened. In contrast, no subjects in the placebo group had greatly improved, 16 showed some improvement, and 28 remained unchanged or worsened. No significant side-effects have been reported in the clinical trials of the saw palmetto berry extract or with saw palmetto berry ingestion. Long term studies (3 years) have also failed to show any significant adverse effects other than gastric irritation.

Use in Aircrew: Provided the aircrew member has been evaluated by the urologist who recommends the use of saw palmetto, the dosage for the liposterolic extract of saw palmetto berries (containing 85–95% fatty acids and sterols) is 160 mg twice daily. A similar dose using fluid extracts and tinctures is not authorized.

Grounding: 24 hours after first dose

Waiver: Not required.

CLASS C SUPPLEMENTS

(Not authorized for use by any Class)

Dietary supplements, nutritional supplements, and other preparations containing the following incapacitating /dangerous substances shall not be used by personnel in above categories. Many of these substances have either proven to be hazardous or have not been proven to be safe. Personnel taking these substances should be removed from aviation duty for a minimum of 24 hours after the last dose of the substance.

Herbal Supplements

- *Aconitum napellus (wolfsbane)*
- *Adonis vernalis (Pheasant's eye)*
- *Atropa belladonna (Deadly Nightshade)**
- *Cantharanthus roseum (Periwinkle)*
- *Chelidonium majus (Celandine)*
- *Conum maculatum (Hemlock)*
- *Convallaria majalis (Lilly of the Valley)*
- *Corynanthe yohimbe (Yohimbe bark)*
- *Cystisus scoparius (Broom)*
- *Datura stramonium (Jimson weed)**
- *Datura stramonium (Thorn Apple)*

- *Digitalis lanata (Yellow foxglove)*
- *Digitalis purpura (Purple Foxglove)*
- *Ephedra species (Ephedra)*
- *Exchscholzia californiica (California Poppy)*
- *GHB (Gamma Hydroxy Butyrate) or GBL (Gamma-Butyrolactone) (may be known as Renewtirent, Revivarant, Blue Nitro, GH Revitalizer, Gamma G, Remforce)*
- *Humulus lupulus (Hops)*
- *Hypericum (St. John's Wart)*
- *Hyoscyamus niger (Henbane)**
- *Lactuca virosa (Wild lettuce)*
- *Lycopodium serratum (Jin Bu Huan)*
- *Mandragora officinarum (Mandrake)*
- *Myristica fragrans (Nutmeg)in large quantities*
- *Papaver somniferum (Opium poppy)*
- *Passiflora incarnata (Passion flower)*
- *Piper methysticum (Kava-Kava)*
- *Psilocybe semilanceata (magic mushrooms)*
- *Rauwolfia serpentina (Indian snakeroot)*
- *Rauwolfia serpentina (Indian Snakeroot)*
- *Scilla maritima (White Squill)*
- *Scopolia carniolica (Scopolia)**
- *Scutellaria laterfoloia (Skullcap)*
- *Strophanthus kombe (Strophanthus)*
- *Urginea maritima (Squill)*
- *Valeriana officinalis (Valerian)*

Anabolic Steroids

- *Zeranol*
- *Testosterone(Malogen, Malogex, Delatestryl)*
- *Stanozolol(Winstrol, Stromba)*
- *Oxymetholone(Anadrol, Anapolon 50, Adroyd)*
- *Oxandrololone(Anavar)*
- *Norethandrolone(Nilevar)*
- *Nandrolone(Durabolin, Deca-Durabolin, Kabolin, Nandrobolic)*
- *Methyltestosterone(Android, Estratest, Metandren, Virilon, Oreton Methyl, Testred)*
- *Methandrostenolone(Dianabol)*
- *Metenolone(Primobolan, Primonabol-Depot)*
- *Metandienone(Danabol, Dianabol)*
- *Mesterolone(Androviron, Proviron)*
- *Human Chorionic Gonadotrophin*
- *Growth Hormone*
- *Fluoxymesterone(Android F, Halotestin, Ora-Testryl and Ultradren)*
- *Dihydrotestosterone(Stanolone)*
- *DHEA*
- *Dehydrochlormethyl Testosterone(Turinabol)*
- *Danocrine*
- *Danazol*
- *Clostebol(Steranobol)*
- *Clenbuterol*
- *Boldenone(Equipoise)*
- *Bolasterone(Vebonol)*
- *Androstendione(Androsten and others)*

Glandular Extracts

- *Teucrium spp.(Germander)*
- *Testicular extracts*
- *Symphytum officinale(Comfrey)*
- *Senecio spp(thread leafed groundsel and Life root)*
- *Larria tridentata(chaparral)*
- *Aortic extracts*
- *Adrenal Extract*

Other Compounds

- *Pangamic Acid (Vitmain B15)*
- *Echinacea species*
- *Creatine*
- *Amino Acid Supplments (Anabolic and Branched Chain), Beta-Hydroxy-Beta Methylbutyrate (HMB)*
- *Conenzyme Q (CoQ10), Choline, L-Carnitine, Chromium Picolinate, Phosphate salts, vanadyl sulfate*
- *Glycerol*

Any supplement not listed in this policy is considered Class C, until further research indicates otherwise.

Background:

Plant Products (Herbs)

– Psychiatric effects

— Sedation

– Some substances used in "medicinal" doses (exceeding sprinkled on spices) are known to have sedative properties.

– Their effects may be additive with other over the counter or prescription agents with sedative properties.

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- The duration of action is unpredictable
- Research into their effects on specific areas of concentration and tracking tasks is lacking.
- Plant products known or likely to be sedatives:
  - *Valeriana officinalis (Valerian)*
  - *Rauwolfia serpentina (Indian snakeroot)*
  - *Atropa belladonna (Deadly Nightshade)**
  - *Chelidonium majus (Celandine)*
  - *Humulus lupulus (Hops)*
  - *Conum maculatum (Hemlock)*
  - *Lycopodium serratum (Jin Bu Huan)*
  - *Papaver somniferum (Opium poppy)*
  - *Passiflora incarnata (Passion flower)*
  - *Scutellaria laterfoloia (Skullcap)*
  - *Lactuca virosa (Wild lettuce)*
  - *Aconitum napellus (wolfsbane)*
  - *Hyoscyamus niger (Henbane)**
  - *Datura stramonium (Jimson weed)**
  - *Scopolia carniolica (Scopolia)**

    *** anticholinergic actions**
- Synthetic Agents known or likely to be sedatives
  - *GHB (Gamma Hydroxy Butyrate)*

    Renewtirent, Revivarant, Blue Nitro, GH Revitalizer, Gamma G, Remforce

    - CNS depressant associated with several deaths especially if used with EtOH

    Pure form experimentally used for some sleep disturbances (controlled drug)

    - Marketed as agent to enhance fitness, reduce stress and enhance sex drive

    Precursor agents (GBL) marketed openly (although illegally in most states)

    - FDA has issued "DO NOT USE" warnings.

— Hallucinations
- Some plants, sometimes smoked to release high concentrations of volatile oils, are capable of causing hallucinations or altered sensorium
- These are not widely marketed by mainstream companies, but are often available through other sources
- Plant products known or suspected to cause hallucinations or altered sensorium:
  - *Psilocybe semilanceata (magic mushrooms)*
  - *Exchscholzia californiica (California Poppy)*
  - *Piper methysticum (Kava-Kava)*
  - *Mandragora officinarum (Mandrake)*
  - *Myristica fragrans (Nutmeg)in large quantities*
  - *Cantharanthus roseum (Periwinkle)*
  - *Datura stramonium (Thorn Apple)*
  - *Corynanthe yohimbe (Yohimbe bark)*

– Cardiovascular effects

— Cardiac glycosides
- Cardiac glycosides may precipitate dysrhythmias; especially when found in association with electrolyte abnormalities such as would occur with poor hydration status (digitalis family).
- Plant products known to contain cardiac glycosides or cardioactive substances
  - *Digitalis purpura (Purple Foxglove)*
  - *Urginea maritima (Squill)*
  - *Cystisus scoparius (Broom)*
  - *Convallaria majalis (Lilly of the Valley)*
  - *Adonis vernalis (Pheasant's eye)*
  - *Strophanthus kombe (Strophanthus)*
  - *Scilla maritima (White Squill)*
  - *Digitalis lanata (Yellow foxglove)*

– Vasoactive substances
- Stimulant (s)
  - Contain powerful sympathomimetic agents that directly stimulate the heart and blood vessels.
  - Have been implicated in deaths due to stroke or heart attack attributed to massive increases in pulse and blood pressure, and have been responsible for mission failure due to palpitations.
  - Substances known to be potent cardiovascular stimulants

    Ephedra species (Ephedra)

– Hypotensive Agent(s)
– These plants elaborate substances that relax blood vessels lowering blood pressure.
Such products would potentially affect Gz tolerance
– Plant products known to contain substances with cardiovascular activity:
Rauwolfia serpentina (Indian Snakeroot)

– Specific Therapies Felt To Pose A Risk to Overall Health
– Liver Toxins
– Pyrollizidine Alkaloids
– A number of plants elaborate pyrollizidine alkaloids, known to cause harm to the liver
– Such damage is often irreversible, and may result in permanent disability or death.
– Reaction to these alkaloids is poorly understood, and may not be totally dependent on dose
– Substances known or believed to be toxic to the liver
– *Senecio spp (thread leafed groundsel and Life root)*
– *Larria tridentata (chaparral)*
– *Symphytum officinale (Comfrey)*
– *Teucrium spp. (Germander)*

Anabolic Steroids
– Many synthetic agents are currently available as dietary supplements. Most are steroids marketed for body builders. Adverse effects of anabolic steroid use include behavioral changes, testicular atrophy and reduced sperm production, gynecomastia, and baldness.
– Long-term effects include increased atherogenesis; increased risk of stroke or heart attack due to increased platelet aggregation, and direct damage to the heart and liver

Glandular Extracts
– A wide variety of animal tissues have been processed to provide various health effects primarily related to their retained hormone effects.
– Content of these extracts may be lost during digestion
– Some appear to retain their biological activity although to what degree is unpredictable
– All carry with them some risk of infectious transmission (especially prions and viruses)
– Commonly used glandular extracts include
– *Adrenal Extracts*
– *Testicular extracts*
– *Aortic extracts*

Other Compounds (Pangamic Acid or Vitamin B15)
- Although claiming to be a vitamin, this is not a true vitamin and is a mixture of a calcium compound and gluconate. It may contain a variety of compounds. There is no evidence to support the claim that it improves endurance and several of the compounds marketed under this name are potentially hazardous.

Echinacea products
- Several well-documented reports of allergic skin reactions and anaphylaxis are associated with these plant products. There is no convincing evidence that echinacea decreases the severity or shortens the duration of upper respiratory infections and the purity and potency is highly variable as with other dietary supplements. In the studies where a significant effect was seen, there are several concerns methodologically speaking on how the studies were conducted.

Creatine
- Although creatine burst on to the scene as a performance promoter for the physically active individual, there are several questions about performance gains and safety that preclude it being authorized for general use in aircrew at this time. The benefits of supplementation on performance are limited to specific types of activities. Preliminary information suggests that high-intensity, short duration activities may benefit from creatine supplementation. Some examples include weight training, baseball, sprinting, throwing, jumping, football, and soccer. However, only people with low levels of muscle creatine will benefit from creatine supplementation. Testimonial reports imply that creatine supplementation can cause nausea, vomiting, diarrhea, kidney and liver problems, high blood pressure, and muscle cramps/strains/

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pulls and no safety for long-term use has been shown. As a testimony to its medicinal properties, creatine supplementation has been carefully prescribed in the medical community and used with success in various mitochondrial and neuromuscular disorders to increase muscle function and strength.

France actually forbids the sale of any products containing creatine and Italy allows its use but only under the strict supervision of a physician and only for certain pathological conditions. Furthermore, because of poor manufacturing processes and lack of stringent quality control here in the US, various contaminants present in creatine products (such as dicynadiamide, creatinine, etc.) may pose a health risk and also precludes recommendation at this time. Creatine should always be avoided by those who seek to lose weight while exercising heavily in hot and humid conditions. Preliminary findings indicate that creatine supplements may selectively reduce plasma volume which impairs the capacity to sweat and thus decrease the ability to maintain a normal body temperature during exercise in hot, steamy conditions. In contrast to high-intensity or anaerobic activities, creatine supplementation does not improve, and may even worsen, endurance performance. One study found that marathon runners had poorer performances after creatine loading. There is one consistent side effect of creatine supplementation - a small weight gain, most likely from water accumulation and the effect of this in the aviation environment has not been studied. Future studies need to address some practical issues. These issues include development of safe and effective programs to maximize muscle creatine accumulation and to maintain elevated creatine stores, determination of long term side effects of creatine supplementation, and assessment of its effects in women and the elderly. In time, as more studies focus on long term safety issues and quality issues are addressed by the FDA (FDA hopes to have a formal recommendation by 2010), a safe recommendation on use and dosages might be possible. As mentioned above, the one promising area at this time is the use of creatine supplementation to restore muscle function in patients with muscle loss and specific types of nerve and muscle diseases. Creatine "loading" (20-30 grams/day) has been a common practice among a variety of athletes. More recent research indicates, however, that much smaller doses of creatine (3 to 5 grams daily or 1 pound of beef) in excess of the usual intake of 2 grams are equally effective in elevating muscle creatine and phosphocreatine.

Amino Acid Supplments (Anabolic and Branched Chain), Beta-Hydroxy-Beta Methylbutyrate (HMB*)*

- There is some evidence from clinical populations that certain amino acids (e.g., arginine, histidine, lysine, methionine, ornithine, and phenylalanine) may stimulate the release of growth hormone, insulin, and/or glucocorticoids and thereby promote anabolic processes. However, there is little evidence that supplementation of these amino acids provides ergogenic benefit for athletes. Branched-chain amino acids and glutamine have been hypothesized to affect central fatigue and exercise-induced immune suppression, but their ergogenic value during prolonged exercise is equivocal at present. Furthermore, published studies of safety have not fully taken account of chronic consumption by healthy subjects of all age groups. Side effects seen with intake of individual amino acids were mostly neurological in nature. Because glutamine is metabolized to glutamate and ammonia, both of which have neurological effects, psychological and behavorial testing may be appropriate if adverse effects are suspected in any patient. Human studies are inconclusive about the effectiveness of HMB, a breakdown of leucine, and more research is needed.

Conenzyme Q (CoQ10), Choline, L-Carnitine, Chromium Picolinate, Phosphate salts, vanadyl sulfate

- Carnitine is involved in the metabolism of fats and is prevalent in a variety of animal products. It is claimed to increase aerobic power and energy level as well as decrease body fat. Some performance benefit is seen with repeated, very intense exercise, but there is no evidence it decreases body fat. The body generally makes adequate amounts. Choline is a constituent of

cell membranes and is promoted to decrease body fat, delay fatigue and promote faster recovery. There is NO evidence it improves performance or reduces body fat. Supplements may cause diarrhea, foul smelling intestinal gas, and may cause a "fishy" body odor. Found in egg yolks and meats and deficiencies are very uncommon. Coenzyme Q, or CoQ10, is an enzyme component found in mitochondria of cells. It is a potent anti-oxidant and is claimed to increase energy and cardiac performance. NO benefits have been reported in athletes. It has been used with therapeutic success in patients with heart disease to increase oxygen utilization and exercise performance and has also been shown to increase submaximal and maximal exercise capacities in sedentary men. With regards to chromium picolinate, phosphate salts, and vanadyl sulfate, research is either ambiguous or inadequate to support performance enhancement. Long term safety cannot be assumed or expected. Because of this, and the lack of proven benefits, they are not authorized at this time.

Glycerol

- Some studies have shown glycerol to be an effective ergogenic aid, most of these have methodological problems. Data and reviews from USARIEM (US Army Research Institute of Environmental Medicine) do not support the use of glycerol as an ergogenic aid (see Latzka and Sawka, Can J Appl Physiol, 25 (6): 536-545, 2000). More importantly, the clinical use of oral glycerol in reducing intraocular pressure and other medical anomalies (0.25-2g/kg) is effective because , although acute glycerol administration results in increased total body water (hyperhydration), it then turns into a potent osmotic dehydrating agent. This can be potentially dangerous in the post-exertion period as diuresis coupled with exercise dehydration could produce volume/ electrolyte abnormalities. Also, at doses around 1g/kg, many people experience nausea/vomiting from glycerol.

CPT Daniel T. Johnston, MC, USA
Resident in Aerospace Medicine
dtjohnston@nomi.med.navy.mil

Department of the Navy Civilian Air Traffic Controllers

Physical Qualifications

Confusion sometimes exist as to which physical standards Department of the Navy Civilian Air Traffic Controllers (DON civilian ATCs) are held to. These controllers may be found at just about any Navy or Marine Corps Air Station. They are often directly involved in training of new military air traffic controllers following their initial training at the Naval Air Technical Training Center at NAS Pensacola, FL. They are usually retired military personnel who worked as air traffic controllers when they were on active duty. They are employees of the Department of Defense (DOD) and not the Federal Aviation Administration (FAA).

The issue of physical standards for DON civilian ATCs is addressed in several different guides, orders, and manuals. The following is a summary of the pertinent publications and what they state regarding physical standards for DON civilian ATCs.

The Department of the Navy's instructions for air traffic controllers, the Naval Air Training and Operating Procedures Standardization Program (NATOPS), and the Manual for Air Traffic Control Facilities Officers (NAVAIR 00-80T-114), state the following:

> *All air traffic control personnel (Navy, Marine, and civilian (DON)) must maintain a current annual physical in accordance with physical standards established in Manual of the Medial Department, Chapter 15.7, and must have current NAVMED 6400/2 Clearance Notice (Aeromedical) or civilian equivalent (for nonmilitary personnel) on file when providing or supervising ATC services.*[1]

The Manual of the Medical Department (MANMED) states the following:

> ***Authorized Examiners**. The aviation medical examination shall be performed by an aviation designated medical officer who is authorized by the Navy Personnel Command (NAVPERSCOM), or by proper authority of the Army or Air Force to conduct such examinations.*[2]

Specifically, with regards to DON civilian ATC standards and documentation requirements, MANMED states the following:

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(a) *No specific height/weight/body fat requirements for civilians.*

(b) *When a civilian who has been ill in excess of 30 days returns to work, a formal Flight Surgeon's evaluation will be performed prior to returning to ATC duties. NAVMED 6410/2 will be used to communicate clearance for ATC duties to the commanding officer.*

(c) *Waiver requests for disqualifying defects will be completed per section V of this chapter. The action addressee for Marine Corps civilians is CMC (Code ASA) and for Navy civilians is OPNAV (OP-554). All waivers will be forwarded via NAVAEROSPMEDINST (Code 42) for endorsement. The inclusion of medical records from civilian sources is encouraged to assist in making a medical recommendation and to avoid redundancy of clinical studies.*[3]

Thus, in both NATOPS and MANMED, it states that DON civilian ATCs are to receive flight physicals annually from an authorized military provider, usually a U.S. Naval Flight Surgeon.

What does the FAA have to say about the physical standards for air traffic controllers? With regards to the FAA and physical exams for ATCs, the Federal Air Surgeon's Medical Bulletin states the following:

> *It is important for aviation medial examiners (AMEs) to recognize that FAA controllers are medically certified through a separate internal Agency process that is not under 14 Code of Federal Regulations (CFR), Part 67. As such, FAA controllers do not receive a first-, second-, or third-class airman medical certificate to perform their duties. Examinations on these controllers are performed by AMEs selected by their respective Regional Flight Surgeons and are evaluated by criteria that are different from those required of individuals under Part 67.*[4]

The question of physical standards is important if an air station has entered into a contract, or "collective bargaining agreement," with a union representing the air station's DON civilian ATCs. The union is the National Air Traffic Controller's Association (NATCA). Provisions of those agreements may allow the controllers to obtain their annual flight physicals from either an FAA Aeromedical Examiner (FAA AME) or from a U.S. Naval Flight Surgeon at the local Military Treatment Facility (MTF). The controllers receive a Class II certificate from the FAA AME.

What takes precedence, a collective bargaining agreement or established policy of the Department of the Navy? The collective bargaining agreement is binding. The controllers are only "bound" by change in "government wide regulations" or "law." The DON standards are not government wide, nor are they DOD wide. In order for the controllers to fall under Navy standards with regards to their contract, a procedure known as impact and implementation (I&I) must be done. This is a process of negotiation to determine what the effects will be of mandating the controllers to fall under Navy standards, essentially, what effect will it have on the controllers individually or as a collective group, and what effect it will have on the air station. These issues concern duty to bargain in good faith, to the extent not inconsistent with any Federal law or government-wide rule or regulation. These are addressed in U.S. Code Title 5, Part III, Subpart F, Chapter 71, Subchapter II, Section 7117. Unfortunately, with the signing of a collective bargaining agreement and the relinquishing of mandatory Navy flight physicals, it becomes the air station's task to get back what it gave up which could be a difficult and long process.

Military air stations with DON civilian ATCs need to be aware that for practical reasons, these agreements may severely limit, if not eliminate, the ability of the Naval Flight Surgeon to properly advise the ATCFO on medical matters that could affect work schedules, planning and manpower issues. Department of the Navy Civilian Air Traffic Controllers are employees of the Department of the Navy, not the Federal Aviation Administration and probably should be receiving their annual flight physicals under standards set forth in the NAVAIR 00-80T-114 and the Manual of the Medical Department by a designated U.S. Naval Flight Surgeon.

(1) NAVAIR 00-80T-114, 3.3.1.3, page 3-9.

(2) Manual of the Medical Department, Change by BUMEDNOTE 6410, 23 Jul 2001, page 15-39.

(3) Manual of the Medical Department, Change 107, 29 Oct 92, page 15-48.

(4) Spring 2000 Federal Air Surgeon's Medical Bulletin: Aeromedical Concerns of the Air Traffic Controller.

LT Jonathan L. Bingham, MC, USNR
Department Head, Aerospace Medicine
Naval Hospital Cherry Point
(252) 466-0171 DSN: 582-
JLBingham@nhcp.med.navy.mil

Flight Surgeon Poetry

Carrier Song

Cacophony resounds and builds
Then fades down the lee
The mighty crashing concert
Of a Carrier at sea.

Tangled snarls of avionics
Long antenna masts galore
Raised in prayer and supplication
To the frowning gods of war.

Combined with singleness of purpose,
Wild and fervent ecstasy
Gigantic cleaving bows plough onward
Through a cruel and sullen sea.

In her hull, a floating city
A restless spirit grips her soul
A team is formed of men and metal
Each contributes to her goal.

Foxtrot flag flies at her yardarm
Howling winds flee down the slot
Screaming frenzied aircraft engines
Signal ":Ready for the shot".

(DVIC Photo USS Enterprise on Southern Watch 22 SEP 1996)

Pilots bet their lives each mission
On their knowledge, art and skill
Their ability, precision
Their resourcefulness and will.

Exultation, pride and wonder
Is imbued in every mind.
Humility with deepest sorrow
For the ones she leaves behind.

Threats to life assail each member
Danger, hazards by the score.
Their great fear: Orders off the ship
To return to sea no more.

by
CAPT Richard E. Luehrs, MC USN
Senior Medical Officer
USS Enterprise CVAN-65
25 Nov 61 – 14 July 63

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Submitted by CAPT Frank E. Dully (retired)
frank@dully.com

The Origin of the Flight Surgeon Wings

As part of our latest RAM Winging and Graduation Ceremony on 31 May, MAJ Sam Sauer, one of the Army graduating seniors and the RAM organizer of the evening's events, invited me to speak briefly on the origin of our Navy Flight Surgeon Wings. I was happy to do so, and suspected I might learn something interesting about the wings we wear. The last time I had studied my FS Wings closely was in 1982, when they were lying at the bottom of a pitcher of beer at the O'Club following our FS graduation. I knew our Navy medical officer's symbol, the acorn and oak leaf, lay on an oval, which was superimposed on the same wings that Naval Aviators wore, but not much else. This would require a bit of research.

As you might suspect, although physicians have been around longer than pilots, our wings followed by some time those of the Naval Aviator wings, so we'll start with them first.

In 1909, only six years after the Wright Brothers flight, a LT George C. Sweet became the first Naval officer to fly, but it was LT T. G. Ellyson who was first officially ordered to flight duty on 23 Dec 1910 at Curtiss Camp, North Island, CA, thereby holding the title of Naval Aviator #1. Eight other aviators had joined him by 1912, and they set about demonstrating the capabilities of aircraft in supporting Navy missions. By 1914, the Secretary of the Navy pronounced "the science of aeronavigation has reached the point where aircraft must form a large part of our naval force for offensive and defensive operations." Naval Aviation was on its way. As recognition of their qualifications, and in line with other insignia used in the Navy, these early aviators wanted a device that reflected their unique skills. Naval Aviator Wings, with a shield on top of a fouled anchor as center device, were developed during 1917, and provided to Naval aviators in 19 Jan 1918. After 8 years of Naval Aviation, and 9 months of WWI, Naval Aviators had their wings. [1]

From the earliest days of military aviation, medical issues surfaced as significant contributors to mishaps, and physicians were attracted to the newly developing specialty of aviation medicine. The first Medical Officer ordered to flight duty was Army physician COL Ralph Green, in 1916. In May 1919, the Army established the School for Flight Surgeons at Hazelhurst Field, Long Island. The Navy began sending medical officers there for FS training in 1922, but it wasn't until 20 Jan 1940 that the Navy graduated it's first class of FS trained at Pensacola, in a Navy program.

Like their aviator compatriots, Navy Flight Surgeons wanted their own unique insignia. The earliest issue of Contact, published 1 Aug 1941, featured an early design on the cover meant to symbolize aviation medicine, shown below. The wings were those of the American Eagle, a banner in his beak symbolizing the participation of enlisted aviation medical technicians, and clutching the caduceus, symbol of the pharmacists mates also involved with aviation medicine. Imposed on the chest of the eagle was the Medical Corps insignia of the acorn and oak leaf, accidentally drawn upside down. [2]

The designs evolved over the next few months and by 18 May 1942, the Chief of Naval Personnel authorized FS Wings as described in a BUPERS Circular Letter listing changes to the 1941 Uniform Regulations:

> "officers of the medical corps who have qualified as Naval Flight Surgeons shall wear the following insignia on the left breast pocket. Wings, which are a modification of the Perian (sic) Feroher, with a central design consisting of a convex oval crest, with appropriate scroll and rounded edge. The central device is to be surcharged with the gold leaf and silver acorn, which serves as the Medical Corps symbol." [3]

The first Naval Flight Surgeon wings were fabricated by the Dental Department at NAS Pensacola, and given to CAPT Frederick Ceres on 19 July1942, who was the first OIC of the School of Aviation Medicine here at Pensacola, by the Commandant of the Base, CAPT Albert. C. Read. FS Wings were supplied to those flight surgeons that had been trained earlier and achieved qualification as FS. Flight Surgeons now had their wings. The design was further modified 11 Aug 1952, when the current FS wings we wear now were authorized.

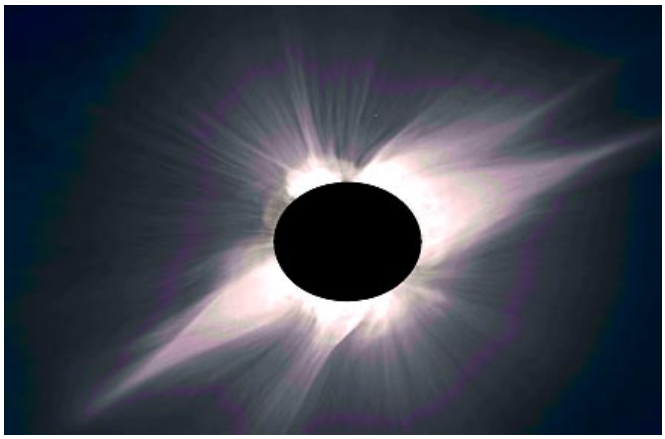
But questions remain. The acorn and oak leaf is unique to the Navy as a medical symbol, the other services rely on the more traditional caduceus. Where did it come from? And what about these 'Persian Feroher' wings? It seemed more research was in order, so I headed to the new Source Of All Knowledge (factual and/or fanciful), the World Wide Web. "Persian Feroher" went into Google™, and out came hits all over the place.

The feroher (aka: farohar; faravahar; fravahar) is a symbol found in antiquity. Robin Edgar, in his "Pedigree of the Phoenix," argues that the farohar symbol, the mythical bird Phoenix, and other Sun Bird myths originated in multiple cultures ultimately from early witnesses to solar eclipses. [4] He writes:

> "The 'winged disk' or 'ring with wings' symbol is found throughout Egypt and what was ancient Mesopotamia. It appears in Egyptian hieroglyphic inscriptions and on the royal seals and cartouches of pharaohs and Assyrian kings. This ancient religious symbol is carved onto obelisks, the capstones of pyramids, and alabaster bas-reliefs and is painted onto fading wall murals. It graces the stone lintels of the entrances to a great many temples and palaces in both Egypt and Mesopotamia. Numerous Egyptian pharaohs, as well as Hittite, Akkadian, and Assyrian kings, and Persian shahs employed this ubiquitous symbol as a royal sign of their divinely ordained status."

"Elmer G. Suhr, in his regrettably now out of print book on eclipse lore 'The Mask, the Unicorn and the Messiah', clearly recognized that total solar eclipses were the awe-inspiring celestial phenomenon that, in all probability, originally inspired not only the phoenixes of both the ancient Middle East and the Orient, but also the garuda Sunbird of Indian religion and other mythical Sunbirds."

"There was perhaps no astronomical phenomenon more startling to primitive and early civilized man than the total solar eclipse. Without any warning by way of sound or sight he noticed an eerie and untimely darkness settling over the land, and when he looked at the sun, he saw a menacingly dark circle covered the bright central area of light; from the edge of the darkness a desperate flare of shooting light heightened the dramatic effect of the experience, a flare which tended to take on a feathery texture, so much more spectacular in contrast to the dark centre; in an annular eclipse the light takes on the form of a bright ring. Since the flare of the total eclipse frequently reaches out farther on two opposite sides, the Assyrians and Egyptians pictured this effect as the wings of a mighty bird. The Chinese also developed the bird with outstretched wings in their image of the sun. Then followed the creation of the phoenix, the garuda of India and fanciful birds to represent the sun itself."



(photo by Steve Albers ©)[5]

Impressive, eh? So much for the wings, how about our Medical Corps symbol? I expected this to be easy and went back to Google, but this time – nothing.

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I e-mailed the current BUMED historian, Mr. Andre Sobocinski, asking where the acorn and oak leaf came from as a Navy medical symbol. [6] He replied:

"The question you ask is a very interesting one that doesn't seem to have an absolute answer. When the oak leaf was adopted in 1883, it was already a symbol used throughout the Navy."

"Oak was prominently used in the British ship building industry during the Elizabethan times when they built a navy that defeated the indomitable Spanish Armada. I would also like to note that the oak tree was a symbol for the god Zeus (later known as Jupiter in Roman mythology), Herakles (aka Hercules) and the Scandinavian god Thor – it has had a connotation to strength and power since ancient times."

"In the 1940s, a BUMED historian developed the notion that the Medical Corps adopted the insignia from the ancient Druids. These physician-priests are said to have lived in and worshipped oak trees. It has also been related that these Druids used the oak leaf as their medical symbol and developed a concoction of acorns, oak leaves and milk as a "cure all."

"Of course, everything we 'know' about the Druids is simply speculation since the Druids never left records of their activities. The one source that connects the Druids with the oak tree, but not the oak leaf, is Pliny the Elder, a 1st Century Roman botanist based in Gaul (France) who stated the Druids would not perform rituals without the oak tree. Whether or not the Uniform Board of 1883 was influenced by stories of the Druids it is not known." (For a more complete discussion of our Medical Corps symbol, see LT Kenneth Lankin's excellent article in Military Medicine).[7]

So now you know. Our wings are associated with celestial power, divine protection, rejuvenation, healing, and a rich symbolism extending back to the beginnings of recorded time. Wow! But it's probably safe to assume that most flight surgeons who wear the Wings of Gold are neither aware nor concerned with what the Mesopotamians or the Druids thought of their symbol. The bigger question is what do the Wings of Gold mean to us now?

At this most recent RAM graduation, the latest crop of FS Wings / Diplomas, which we pinned on our fellow Flight Surgeons, were numbered 5351 – 5357. Which indicates that a scant 5,350 other medical officers before them in the previous 80 years have gained the special wisdom combining Naval aviation and medical knowledge unique to this specialty. You have been working alongside Naval and Marine Aviators since the beginning, protecting them from the unique risks of flight, caring for their health and well being, and serving your country in a most significant way. You are members of a very select few. Wear the Wings of Gold with pride!

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CAPT Nick Davenport, MC, USN
Naval Postgraduate School Monterey
nickport@compuserve.com

USS Power (DD-839) Defenses

By late January of 1965, I was in my eighth month as the Destroyer Squadron Fourteen Medical Officer. The truth is that I was feeling like an old salt and comfortable with my new identity. I had a successful Mediterranean deployment under my belt. I was once again back to my preferred status of being the big fish in a little pond. The four ships that made up the squadron had become accustomed to having this doctor go to sea with them without regard for the importance of the mission.

USS Power, DD-839, was an updated and modernized (FRAM I) World War II destroyer. She was one of a class of so-called "long hull Gearing DD-710" Atlantic Fleet ships that bristled with specialized weapons and was considered a formidable anti-submarine platform as well as an anti-aircraft asset. She had a somewhat unusual appearance when compared to other classes of modernized destroyers in that her twin 5-inch 38 caliber gun mounts were located on the main deck only, one forward, the other aft. The other two original gun mounts had been removed in order to accommodate the weight of a new anti-submarine rocket launcher system installed between the two stacks. There was hangar space aft on the upper deck where one of the original gun mounts had been, but she did not carry a helicopter, the additional weight of which could have compromised her stability in rough seas. The hangar space was utilized for repair shops. With two boilers on the line, she could make 28 knots; with all four boilers on the line, she could make just over 32 knots, as I had discovered during a high speed dash to Aden as a result of a meningitis case aboard her in the Arabian Sea a few months prior. First launched in 1943, her modernization was completed in 1960. She carried an electronics package atop her mast that included air and surface search capabilities, plus other limited electronics packages. She was named to honor Marine pilot John Power, killed in the Pacific in WWII.

USS Power departed Mayport, Florida in mid-January of 1965 for extended solo operations in the wintry North Atlantic. Though technically I was considered a member of the Commodore's staff and therefore perhaps thought to be privy to more information about the activities of the squadron, the fact was that I functioned as a crewmember of whatever ship I rode. For all practical purposes, I was the one who made the decision as to which ship I would ride. Thus I was unaware of the purpose of the ship's deployment.

Though he was ostensibly my boss, I rarely ever saw the Commodore. My Officer's Fitness Report was written by the skipper with whom I spent the most time, which turned out to be the USS Power; the Commodore merely signed off on it. This explains how it came to be that the destroyer I was on became involved in

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(USS Power (DD-839) from usspower.com)

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biological warfare testing though her Medical Officer knew nothing of what they were doing until it was in process.

Late one afternoon, after we had been at sea ostensibly heading north for about 3 days, high line operations were conducted with another ship that transferred an officer to our destroyer. This stranger was clad in a uniform I had never seen, but he wore U.S. Naval Aviator wings on his tunic. I was to learn that the dark green rig he wore with the 3 black sleeve rank stripes were the special hallmark of naval aviation. The man was a U.S. Navy Commander, an aviator whose job it would be to coordinate with an unseen aircraft that would be working with us.

In an all-officer's meeting with the stranger in the wardroom, he described the purpose of the test. The ship was the vehicle to ascertain the effectiveness of a delivery system for an airborne slurry of a harmless bacteria that would simulate a deadly biological warfare scenario. At a specified distance in front of the ship, a solitary Douglas A-4 Skyhawk single seat jet attack aircraft would cross our intended path as it released a liquid aerosol of the germ suspension from wing tanks. The plane would never come closer than 20 miles, remaining out of sight of the bridge watchstanders and lookouts. In the ship's Combat Information Center, the radar image of a single airplane flying a non-divergent course that apparently failed to see us would alarm no one. The organism would disperse invisibly in the air ahead of us.

Would the aerosol "paint" on our radar and thus be visible? Could the ship drive into the invisible cloud and become contaminated without being aware of the hazard? Would the aerosol penetrate below-decks? Could the organism be demonstrated inside selectively buttoned-up facilities within the hull of the ship? Would our battle gear protect us in any way? Would our equipment remain a persistent reservoir after the attack was over? How long after the attack could the organism still be detected? And finally, would the ship's salt-water wash-down system that was designed to remove radioactively contaminated particles be a useful defensive option?

A secondary goal was tacked on to the study that became the primary reason for the test being conducted at least partially in freezing temperatures: what was the impact of freezing wash-down water on the stability of the ship?

I did not consider my exclusion from the advance planning to be sinister in any way. Neither did it compromise the efficiency of the plan. I had no clinical reservations about the organism, *bacillus subtilis*, being in any way harmful to the men of USS Power. I considered the organism to be an "orphan" in that it was not known to be associated with a disease. It was a well known, thoroughly researched, common, unexciting contaminant in medical laboratories. The concept of such a test appealed to me as a risk-free intellectual exercise with pretty concrete warfare utility, both defensively and offensively. I gave some thought at the time to having been snubbed by those in charge of the test but dismissed my clearly ego-based reservations as I realized how much planning and how many agencies had to have been involved. It would have been more to my liking had I been singled out for special briefings, but the logistics of the situation and the actual role I would play quickly extinguished such thoughts. I became an eager participant. I ended up in a leadership role in the collection and examination of samples for both preliminary and later examination. The results were astonishing.

We had no way of knowing that we had entered the cloud of biologic material. Nothing showed on the radar except an airplane passing upwind of us that apparently never saw us. There was no visible cloud. Nothing condensed onto the wind shields. There was no associated odor. No alarms sounded within the ship. Had we not been told that the plane had released its load, we would not have known anything untoward had happened, or that it involved us. Similarly, there was no way to determine that we had emerged from the upwind limits of the dispersed aerosol.

Sterile swabs were taken from horizontal and vertical surfaces throughout the ship before, during, and after the exposure, and for several days following the event. There was essentially no difference in the ease with which the organism was recovered in culture from exposed weather deck surfaces or from deep within the bowels of the engineering spaces. The air circulation system for the ship efficiently spread the germ to where it might not have otherwise penetrated. No space aboard USS Power remained uncontaminated within an hour. The contamination in-

cluded all food preparation areas, berthing areas, and battle stations. No surprise to me, surgical masks offered zero protection. Swabs remained positive for *b. subtilis* for several days. Had the organism been lethal, we would have been wiped out.

One conclusion that came from the study was that if the country ever really became serious about protection from biologic agents on warships, a positive pressure ventilation system would have to be maintained at all times. This frightfully expensive option would have to include a positive pressure envelope would have to be maintained at all doorways by a complicated revolving door system that limited the release of air when opened. The second conclusion concerned the water wash-down technique. It failed to sterilize the surfaces it washed. Period. A simple flow of water across a steel or aluminum surface was insufficient to remove a biologic contaminant, a conclusion that anyone who ever scrubbed for surgery could have predicted.

Then came the interface between the water wash-down and sub-freezing temperatures in the open ocean. A word or two of explanation about the washdown system will help the reader to understand it. The modernization process that took place throughout the Navy after the Korean War included the installation of one-inch piping all over the outside of every ship's superstructure in what looked like a quilt that covered the whole ship. These pipes were penetrated with innumerable sprinkler nozzles. To activate the washdown, powerful salt-water pumps drew seawater from beneath the ship, pressurizing the system. This produced a prodigious flow of rinse water that flowed by gravity downward over every exposed surface, back into the sea. As seen from a distance, when activated, the ship appeared to be contained inside a cocoon of cascading water that extended from above the level of the mast to the ocean surface. It looked like it ought to be doing a really good job of washing away radioactive contamination. In practice, however, the Navy learned that sailors in protective garb had to be sent out on deck with mops and scrubbing apparatus to dislodge recalcitrant particles that adhered. There was more than a little surprise in official quarters at how much manual labor was involved in the decontamination that all had hoped would be a hands-off process.

There was understandable reluctance on the part of the officers of the USS Power to activate the water washdown system for reasons that immediately became evident. The ship rapidly became encased in ice, from the deck to the top of the mast. Doors were frozen closed. Weather decks were rendered impassable. The big bedspring radar antenna high up on the mast was an arresting sight to behold. Countless cameras suddenly appeared among crewmembers to document these bizarre accretions. Within a short time, the ship became top heavy and began to wallow uncomfortably in the sea. The CO, fearing for the stability of his ship, stopped the wash-down process and terminated the test, much to the obvious dissatisfaction of the man in the green uniform. We gingerly proceeded into the U S. Naval Station at Argentia, Newfoundland, there to report our results to the proper authorities and to manually chip the ice off the upper works in order to regain our clearly compromised righting moment.

We remained in port for nearly a week before returning to sea and our next adventure. No sailors sought care from me related to their exposure to the test. All I saw was the usual sprains, colds and minor injuries. In fact, the most memorable part of this in-port period was our experience at the Officers' Club Bar where a shot of Jack Daniels Black Label whiskey cost a mere twenty-five cents, an opportunity not to be missed.

Frank E. Dully, Jr., MD, MPH
CAPT MC USN (Ret.)
frank@dully.com

Constellation Prepares Against Biological Warfare

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JO2 Chad Pritt

In the past , it was expected that biological warfare would be waged on a deployed warship through the use of missiles or aircraft. The appearance of anthrax-laced letters changed that thinking.

Enter enhanced Biological Warfare Agent, or BWA, detection. *USS Constellation* (CV 64) is the fourth in a five ship experiment to test carrier-based advanced BW detection.

"After 9/11, the anthrax attacks on Sen. (Tom) Daschle's office, the Navy started thinking about letters, not bombs," said Lt. Cmdr. Michael Boehm, research liaison officer from the Naval Medical Research Center.

(DVIC Photo USS Constellation in Seattle 21 AUG 1996)

BW agents include bacteria (plague, anthrax, brucella), toxins (ricin, SEB, botox), and viruses (smallpox, Ebola, Marburg).

It used to be that only commands ashore or deployed specialized laboratory units could confirm suspected BW agents. This left supposedly self-reliant platforms such as deployed aircraft carriers and other flat-tops dependent on short facilities.

The Biological Defense Research Directorate, Naval Medical Research Center in Silver Spring, Md., is currently assessing the feasibility of the fleet's ability to maintain and operate shipboard confirmatory testing technology.

"Before, if a ship got 'slimed', they'd have to call us in to identify what it was that hit them," Boehm said. "*Connie's* crew is helping find the best way to bring BW equipment into a shipboard environment."

There are three levels of BW detection.

The first level is presumptive, which used Hand-Held Assays, or HHA, to determine if there is an exposure of any kind. Similar to a home pregnancy test, the HHA will tell the user whether there is a BWA in the area or not, but cannot distinctly identify the type.

The process takes about 15 minutes after exposing the HHA to the infected area and is the method used onboard carriers today.

Confirmatory, the second level of detection, is the level the Biological Defense Research Directorate is implementing for carrier use. If integration is successful, the 24-96 hour delay in indentifying BWAs will be all but extinct.

The third level is definitive, and is a full-scale analytical work up by the experts at Biological Defense Research Directorate.

Once the confirmatory testing capabilities are in place, the entire 44-cycle process of determining the identity of a BWA will take only 45 minutes. Within an hour of a shipmate falling mysteriously ill, or a BWA-infested explosive detonation, *Constellation's* doctors will be able to know how to treat individuals.

As with any new technology and system, the knowledge of how to use it must be in place before it can be used. "We're training two Sailors from each ship on how to identify BWAs," Boehm said. The two lab technicians will attend a two-week class at the Biologic Defense Research Directorate.

At a cost of about $110,000 annually for equipment, temporary assigned duty (TAD) funding for site visits, and training, the cost of operating the system is minimal compared to the lives it can save.

Boehm will return in September to further test the feasibility of confirmatory testing onboard *Constellation.* It's only a matter of time before each carrier and amphibious assault ship in the fleet will be able to confirm the presence of BWAs, making them more capable to fight the enemy and complete their missions.

Screening for Alcohol

Many of you use the CAGE screening test during your PE's and when you are doing an alcohol assessment. This is a quick screening test to pick up moderate-severe problems with alcohol; if the person answers yes to 2/4 questions, you probably have a diagnosis of alcohol dependence. Of course, in our population, we are frequently assessing people more at the earlier end of the alcohol misuse scale and if they answer 2/4 on the CAGE, they are willing to admit they have a problem and the diagnosis doesn't require rocket science anyway.

I'd like to introduce you to another short screening tool for the assessment of alcohol/drug misuse called the **UNCOPE.** This was developed in 1999 by N. Hoffman, PhD. He has authorized the use of this tool for oral administration during your clinical interviews.

As you can see, it is only slightly more in depth than the CAGE (**C**-Have you ever felt you should cut down on your drinking?/**A**-Have people annoyed you by criticizing your drinking?/**G**-Have you ever felt bad or guilty about your drinking?/**E**-Have you ever had a drink first thing in the morning or to get rid of a hangover [eye-opener]).

The one question I like is the "**O**." If I had a quarter for every time someone has told me that, "Yes," someone has **objected** to their drinking (will trigger a point on the UNCOPE), but "No," it didn't **annoy** them (doesn't get a point from the "A" on the CAGE), I'd be a mildly wealthy person by now! Also, the "E" can be a segue into another line of questioning.

(Aerial of NAS Brunswick from www.nasb.navy.mil)

Additionally, check out the sensitivity and specificity stats below:

U "In the past year, have you ever drank or used drugs more than you meant to?"

Or "Have you spent more time drinking or using than you intended to?"

N "Have you ever neglected some of your usual responsibilities because of using alcohol or drugs?"

C "Have you felt you wanted or needed to cut down on your drinking or drug use in the last year?"

O "Has anyone objected to your drinking or drug use?"

Or, "Has your family, a friend, or anyone else ever told you they objected to your alcohol or drug use?"

P "Have you ever found yourself preoccupied with wanting to use alcohol or drugs?"

Or, "Have you found yourself thinking a lot about drinking or using?"

E "Have you ever used alcohol or drugs to relieve emotional discomfort, such as sadness, anger, or boredom?"

When using the UNCOPE as a screen, a score of 2 or more indicates abuse or dependency with a specificity of 97 and sensitivity of 93.

As with any tool, if you suspect an alcohol misuse problem, please collect as much collateral data as is available (e.g. What *was* that BAL when they were arrested for the DUI?) and don't hesitate to refer the member to CAAC for a full assessment even if you don't make an abuse or dependence diagnosis. Identifying those with an alcohol problem is crucial for safety of flight.

CAPT D. J. Wear-Finkle, MC, USN
Head, Clinical Ops, BMC Brunswick
Flight Surgeon/Forensic Psychiatrist
DJWear-Finkle@US.MED.NAVY.MIL

Good Deal

TOP KNIFE

What's a Navy Flight Surgeon doing flying off into the wild blue yonder aboard an Air National Guard F-15 Eagle? Attending "Top Knife," of course. According to the official Top Knife description:

> This course provides post-graduate training in the unique aeromedical aspects of fighter aviation to qualified Flight Surgeons. It combines fighter aviation specific medical academics and aerospace flight surgeon training in the F-15. At the conclusion of this course, the successful graduate will have a thorough comprehension of the medical and physiologic aspects of flying high performance fighter aircraft in the air-to-air combat environment.

173rd Fighter Wing and 114th Fighter Squadron at Kingsley Field, Klamath Falls, Oregon, host Top Knife. This former naval air station is now home to approximately four hundred full-time active duty guardsmen and many civilians who comprise the support facilities and training squadron for all Air National Guard F-15 pilots, and some Air Force pilots, too. Although Top Knife is open to all Flight Surgeons, preference is given to Guard Flight Surgeons who are stationed with fighter squadrons.

The two-week Top Knife course consists of lectures, computer-based training, simulator training, and best-of-all, flying in the F-15. There is only one student at a time. There are lectures on the F-15 and its systems, flight profiles, and air-to-air combat. The exceptional staff of Lockheed Martin gives these lectures. Several modules, including egress procedures, emergency procedures, and the entire aviation medicine section, are taught via computer-based instruction. The aviation medicine topics included:

- Intro to Fighter Medicine
- Clientele Awareness
- Physical Conditioning
- Acceleration Physiology
- Spatial Disorientation
- Night Operations
- Psychological Factors
- Thermal Stress
- Toxicological and Radiation Hazards
- Operational Hazards
- Role of the Flight Surgeon
- Deployments
- Mishap Investigation
- Medical Screening

Many of these were very similar to the Navy's flight surgeon lectures. Unfortunately, each academic phase is evaluated with a computer-based examination. Eighty-five percent is considered passing.

After completing the F-15 lectures, the real fun begins. Two orientation flights are scheduled in the simulator. One is for orientation to the flight controls, and the other for orientation to the weapons systems. You can bag as many additional simulator flights as you wishes. Then, after ground and in-flight egress training and flight equipment issue and fitting, it's up, up, and away in the Eagle. Each Top Knife attendee is scheduled one dedicated hop aboard the F-15 for aircraft and local area familiarization. If you don't G-LOC or dirty their aircraft with vomitus, you will be scheduled as much as possible on a non-interference basis on any flights the rest of your stay. Such flights can include one-ship proficiency hops to multi-aircraft engagements. Almost all include tanking. So you'll likely end up with one to five flights aboard the Eagle.

But, what is the REAL reason for Top Knife? Those four hundred or so active-duty guardsmen have some very talented full-time medics, but only three part-time Flight Surgeons. So guess who staffs sickcall everyday from 0700-0830 and 1300-1430? The Top Knife doc, that's who! The clinic at Kingsley is well equipped and well run by an independent duty medical technician. And, the friendly Flight Surgeons, nurses, and medical service corps officers attached to Kingsley are often around. It is a great opportunity to learn about Air Force and Air Guard medical forms, up-chits, waiver guides, and procedures.

Remember that local area fam flight? What a local area! Crater Lake National Park is a short drive to the north. Or even a shorter flight to the south is Mt. Shasta and Lava Tubes National Monument. From fishing to hiking, there is plenty to keep you occupied on the one weekend at Top Knife.

For more information on Top Knife contact MSgt Doreen League (or her replacement) at DSN 830-6139, COMM (541) 885-6139, FAX DSN 830-6608, or E-mail Doreen.League@ORKLAM.ANG.AF.MIL. The F-15 Schoolhouse Registrar can be reached at DSN 830-6684, COMM (541) 885-6684, or E-mail Schoolhouse.173FW@ORKLAM.ANG.AF.MIL. You'll need a credential transfer brief so you can see patients, secret clearance, proof of physiology and centrifuge training (Air Force centrifuge training is highly preferred), and your up-chit. Two-week classes are given throughout the year. The Air National Guard, Air Force, and Lockheed Martin are very gracious hosts. What a great way to learn more about aviation medicine and our sister services! Apply now.

LCDR Chris C. Lucas, MC, USN
NAMI Physical Qualifications (Code 26)
cclucas@nomi.med.navy.mil

Musings from Maine

The Short Form Physical:
how do you ask all the right questions
to ensure you get the relevant info?

Until very recently, I thought that I did a decent job in this admittedly superficial screening process. You check for any "yes" blocks, review the record to see if they *should* have checked yes to anything, personally review the record for any past waivers (rather than take their word for it), and do a cursory query about any interval problems. I've now got something new to add to the list:

"Um, excuse me but have you been through a courts-martial in the past year?. . . . ."

Okay, a bit tongue in cheek, but this one pulled me up short. I was about to sign off on the short form and just happened to ask the person if they were enjoying Maine (by way of making simple conversation). He said, "Well, OK, but it's been a bit of a rough year..." Of course this opened the door and I just had to ask what he meant (yeah, silly me).

Turns out he was just back from doing his three months in the brig having been found guilty at courts-martial of a significant offense. Those who know me, know that I don't shock easily, but this one had the jaw dropping, "Excuse me?" I said, as if I hadn't heard him correctly (as am now trying to figure out what the heck he is doing here for a flight PE).

Without revealing more that is appropriate for confidentiality purposes, he had been found guilty of something pretty serious, but not quite serious enough for him to chip rocks for very long or get kicked out of the Navy.

So now what? Although he denied any symptoms of *anything*, there is something that seems inherently wrong with giving a guy (or gal) an up chit who has just revealed this info. So one punts. I told him that I would have to check with NAMI on this one. Of course NAMI said thank you very much. . . they had never heard of this sort of situation, so a few of us put our heads together and we applied the same logic that we teach all of you out there to use. Here is what we did and you can do the same thing on any "weird stuff" that comes up.

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It is very important to *always* separate out the medical from the administrative issues. Don't fall for having folks want to "medicalize" a line administrative issue. In a case like this, one first looks at the underlying diagnosis/condition. In this case there was none. However, if the jury was even half right, the verdict would indicate some adult antisocial behavior. Of course the case is under appeal and in a "he said/she said" situation, there was no firm data to submit as evidence. So, I checked with his supervisor and there was no prior pattern of any antisocial behavior (eg. deceitfulness, disregard for rules and safety of others, unlawful behaviors, irresponsibility, or other good traits). He had an excellent track record and recommendations re. work performance. Also, all of those things we look at when considering AA/NAA determinations (any evidence of personality d/o or traits that may negatively affect mission execution, aircrew coordination, and safety of flight) were not present.

Therefore, and still not with any sort of warm fuzzy about this, the decision is that the member can get an up chit. However, the command has revoked his aviation status (for trust and confidence concerns – funny how conviction of a felony does that!). This is the right way to go; ensure the issue is addressed administratively properly and then do the medical assessment.

And no, as a matter of fact, I don't recommend asking the query of each person there for a short form. Have a good one!

PS - lobster is $3.79 in the Commissary in Brunswick - drop on in!

CAPT D. J. Wear-Finkle, MC, USN
Head, Clinical Ops, BMC Brunswick
Flight Surgeon/Forensic Psychiatrist
DJWear-Finkle@US.MED.NAVY.MIL

(www.mainelobstershop.com)

Western Pacific Deployment Gouge

A six-month deployment to the Western Pacific can be a very challenging experience for the medical department of Marine aviation squadrons. Flight Surgeons need to be prepared for all potential issues.

Pre-deployment:

Begin planning for your Western Pacific deployment three months prior to departure. Medical readiness is the most important issue. Items like immunizations and HIV testing are extremely important and need to be tracked with the assistance of your corpsmen. In particular, the Japanese Encephalitis Virus is a three shot immunization required for all personnel if your unit is going to Okinawa or mainland Japan. The schedule for the JEV vaccine is 0-7-21 days. If you do not plan ahead, your Marines may not get all the vaccinations at the required times. Once at your deployment site, trying to finish immunization schedules may be delayed due to operational tempo or transportation issues. Regarding HIV testing, Flight Surgeons should insure that all results are entered in the health record. Just because the HIV has been drawn and entered in SAMS does not mean the test was completed. The same is true with PPD's. It may be over looked that the member never came back to get the test read. Dental is an important issue especially with your aircrews. Aircrews are required to get an annual physical. If their annual physical does not coincide with their dental exam, they might be due for a dental exam in an area without dental facilities. It is advisable to screen those records and get those members to dental before deployment. Marines on Limited Duty Boards can be troublesome to handle and LDBs can become big issues if you have not diligently recorded the Marine's progress and kept your commanding officer informed. Your CO needs prompt information on who can be deployed so other arrangements can be made if required.

Pre-deployment Medical Readiness Items
• Immunizations
• HIV
• PPD
• Dental
• Limited Duty Boards

(DVIC Photo DDSD9903308 28 DEC 1985 VMFA(AW)224 at Aviano)

Medications:

Flight Surgeons should plan to bring some medications. In some instances it is prudent to bring up to a six-month supply. This will help when a medical facility is not available or not easily accessible. In addition, Flight Surgeons should meet with the squadron operations department to obtain information on the potential destinations during the deployment. There are some areas identified by the Center for Disease Control as malarial regions. Flight Surgeons must be prepared by bringing along the necessary prophylaxis. Furthermore, if your travels include Australia, it will be necessary to contact the Australian Therapeutics Drug Administration prior to departure. You are required to prepare a list of all medications you plan on taking into the country and mail that list to the agency about three months prior to departure. They will mail a letter back to you that you must show to customs upon entering the country. In addition, bring along a supply of small plastic bags and labels to dispense medications. You must maintain a logbook of all medications dispensed and also make appropriate health record entries. All medical information/activities must be included in after-action report to the Wing Commanding General at the end of the deployment.

Examples of Medications To Bring:	
• Motrin	• Allegra
• Polymixin B	• Azithromycin
• Tylenol	• Albuterol
• Ilotycin	• Tetracycline
• Flexeril	• Flonase
• Bactim DS	• Zantac
• Sudafed	• Saline Nasal Spray
• Amoxicillin	• Imodium
• Afrin	• Cortisporin Otic
• Keflex	• Phenergan

Therapeutics Drug Administration
PO Box 100, Woden ACT 2606, Australia

Deployment:

At the deployment destination, hopefully there will be a designated medical office space to perform exams and conduct medical business. However, be able to improvise if you are sectioned in the corner of the hanger. If you are going to be at a site without a clinic available, you should plan to pack a small collapsible examination table and make sure you have good basic diagnostic equipment (ophthalmoscope, otoscope, stethoscope, BP cuff, etc.). Furthermore, you should make appropriate health record entries and keep excel-

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lent notes of your patient encounters. It is very difficult to remember every thing you have done over six months when you are preparing the after action report. It is recommended to keep all encounters in a logbook or in a word document so that you can cut and paste information into your after-action report.

All Flight Surgeons should make contact with medical treatment facilities in their operating area. If deployed to a remote area, it is good to know ahead of time what kind of care can be expected from the local hospital. In addition, have a good medevac plan if the situation should arise. Furthermore, all Flight Surgeons should contact the MAG Flight Surgeon or Senior Flight Surgeon in their squadron's potential operating area before leaving on deployment. Some excellent contact information is listed in the table below.

Guam

Branch Medical Clinic
Anderson Air Force Base, Guam 96542
Phone: (Com) 671-339-7118
DSN 336-2275

Japan

Yukoska Naval Hospital
PSC 475, Box 1
FPO AP 96350-1600
COM 011-81-6160-43-7144
DSN 243-7144

BMC Iwakuni
DSN (315) 253-5571
COM 011-81-6160-53-5571
POC: WilsonC@nhyoko.med.navy.mil

Okinawa

US Naval Hospital Okinawa
Commanding Officer
PSC 482
FPO AP 96362-1600
pao@oki10.med.navy.mil

Prior Planning is the key to a successful deployment. Do not assume anything and check everything well in advance of your trip. Your deployment will be a success medically and your Commanding Officer and Marines will be better off for it.

LT Walt Kucaba, MC, USNR
FS/DMO VMFA 224
kucabawd@1mawmag12.usmc.mil

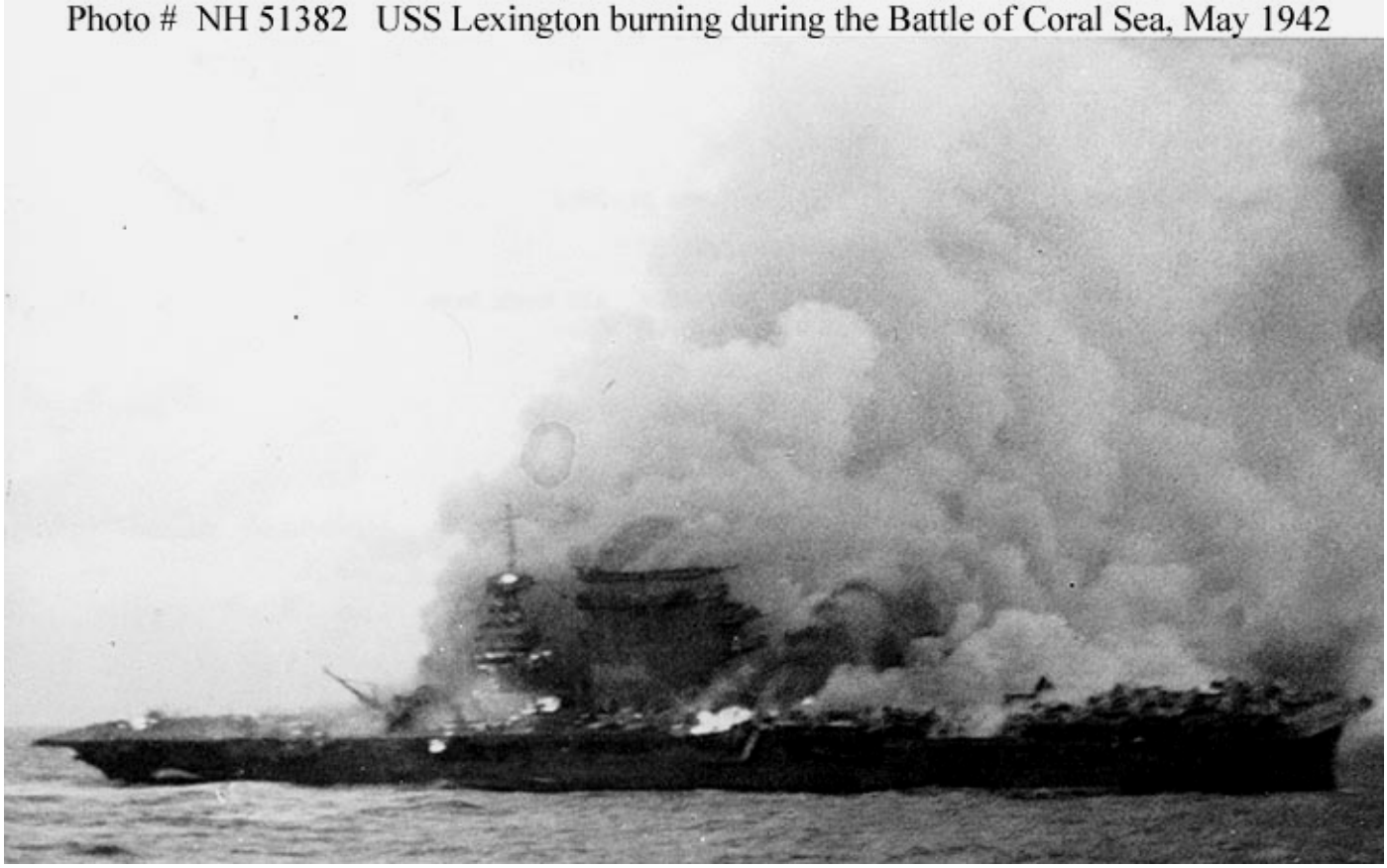
Aircraft Carrier History from the National Archives

The sinking of the USS Lexington (CV2) from the perspectives of the ship's deck logs

A few years ago Captain Frank Dully started on a campaign to record before they were lost forever the names of Flight Surgeons that served as Senior Medical Officers aboard our Aircraft Carriers along with the dates they served. It was an enormous undertaking involving the perusal of old carrier cruise books, copious phone calls and abundant written correspondence with former SMOs, and review of publications from numerous Naval Aviation oriented organizations.. The result of that effort is well documented in the Carrier SMO section on the SUSNFS web site. I think no one can argue that his Herculean effort did not add greatly to our Naval Aviation Medicine recorded history. For this and his ongoing efforts as Head of the History Committee we owe him a huge debt of gratitude.

However, even with that effort, there are many holes left in the SMO list. I was one of the former SMOs that Captain Dully contacted. About a year after that contact, while browsing through some Naval Aviation historical web sites, I came across one that mentioned deck logs of ships generally included a monthly list of officers currently on board. Furthermore, they could be reviewed at the National Archives in Washington, D.C. At the time I was living in the state of Washington. The National Archives were a bit beyond my immediate travel reaches. This year I moved to Fredericksburg, VA, putting me within striking distance of the Archives. The purpose of this and future articles will be to pass on to the members of SUSNFS some of the things I find there and my reactions to them, starting with my first visit in July.

Bright and early on July 9, 2002, I jumped into my trusty Honda Odyssey and braved the traffic to the National Archives at College Park, Maryland. After becoming officially registered as a researcher and provided the rules of research (no pens, notebooks or outside paper allowed), I was directed to the research room where the deck logs for the USS Lexington (CV2) and USS Saratoga (CV3) for 1941 through 1943 were pulled and given to me for review. They contained the information as advertised. I was able to document



on a monthly basis the physicians on board, their arrival and departure dates, and each's duty assignment, Senior Medical Officer, Flight Surgeon, Assistant Medical Officer, etc. The log also often contained the names and addresses of the next of kin.

While obtaining the names of carrier medical personnel from a monthly roster of officers may be important in documenting our history, it is not material that makes for an interesting periodical article. Sometimes other information in the daily logs is. Those of you who have been assigned to a Navy ship know the daily log is a historical record of a ship's activity, recorded by the people who are making that history. Much of what is recorded is mundane data, course headings and changes, personnel missing from muster, Captain's masts, personnel boarding and leaving the ship, and so forth. Instructions of what to include in the log take up a full page. Mixed in with the mundane is the recording of unusual and historically significant events.

The Battle of the Coral Sea was one of those events. I have read many articles on the battle including the outstanding one by historian Captain Eliot Morison in his series, History of United States Naval Operations in World War II. Seeing the original handwritten logs of the USS Lexington for the days of May 7 and May 8, 1942, along those from the months following its sinking made the events of those days so much more real. The information they contained added a human aspect that is missing in the standard history book. In the remainder of this article, I would like as best I can in the space available to convey to you some of that information and my reactions to it.

Even recognizing the logs from those dates were written from notes prepared by someone specifically assigned to do so and after the battle while aboard another ship or even ashore, I am amazed that notes of such detail could be recorded with all hell breaking loose in all directions. Enemy planes were approaching the ship, torpedoes heading for both sides of the ship at the same time, and bombs hitting the flight deck, all duly noted. Meanwhile, normally collected data like the speed and heading of the ship, movements to avoid the bombs and torpedoes, boilers on line, etc. were recorded. After the torpedoes and bombs hit, damage control data was included. Between the battle and the subsequent internal explosions that resulted in the loss of the ship, aircraft recovery and launch activities continued, all included in the log. The log

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covered right up to the time of ship abandonment. Unfortunately, all records that were located below flight deck level went down with the ship. The logs are one of the few real time recorded historical documents from the ship now available.

The log also brought to my attention an aspect of the sinking that should have been obvious to me all along, but an aspect I had never considered before. I never thought of what happens to the crew after that time or the work that is involved post sinking. The Lexington may have been at the bottom of the Coral Sea, but the Command was still intact for quite some time thereafter. All the surviving crew, having been rescued by several different vessels, needed to be collected together at some common place on shore. Then, all the paper work involving report production and reassignments of personnel had to be completed. Killed, injured, and missing in action had to be accounted for and next of kin notified. The name of each of those individuals is a log entry. It is one thing to see mentioned in a text that X number of casualties occurred. It is another to go through a log with page after page listing them individually by Rank/rate and name. "Seaman first class Jones" became a very real person. It was like a miniature Viet Nam Memorial. Meanwhile, all the normal daily requirements of a command continued. All these activities show up in the log. It was several months before the Command was actually dissolved and the logs stopped.

Reading the log brought forth memories of a conversation I once had with Dr. J.E Roach, the assistant medical officer on the Lexington at the time of the sinking. He was head of Radiology at the Medical Center in Albany, New York when I was applying for a radiology residency there in the summer of 1972. When he discovered I was a Navy Flight Surgeon, he excitedly mention he was on the Lexington at the time of its sinking and described the events of the day including the moving of patients from sick bay because of the smoke. The thing that I remember most is his emphasis on how orderly the abandon ship was, to the point of the sailors all lining up at the deck edge, taking off their shoes, and calmly putting them neatly in a row before jumping. Somehow, I just can't imagine that degree of calmness in such a time of stress.

(uss_lexington_cv2.tripod.com/images/lexmen.jpg Copyrighted by Mitch Kirkwood. "The Men of V2" on USS Lexington (CV-2))

The reports of the activity in the Trade Center building on September 11 indicated similar control under circumstances that normally result in confusion and chaos. It would make an interesting study of why people as a group sometimes so react under trying circumstances. In other instances they end up trampling one another. I noticed in the latest issue of *CONTACT* we now have a psychologist on board at least one Aircraft Carrier. Maybe this is an issue he or someone like him would like to tackle.

Let me finish with one small less significant personal reaction. The rosters for the embarked squadrons were sometimes added to the log. The names of John Thatch and Butch O'Hare have become legendary over the years, almost bigger than life. It was eerie seeing them listed as just another squadron commander and pilot. The really were real people.

CAPT John A. Calcagni, MC, USN (retired)
jacalcag@earthlink.net

2003 Operational Aeromedical Problems Course

Call for Papers

The Operational Aeromedical Problems (OAP) Course has been set for May 12-15, 2003 in sunny San Diego, California. The course will again be held in conjunction with the Naval Environmental Health Command (NEHC) Conference at the Town & Country Conference Center.

Over the last several years, the OAP has received a suboptimal attendance of junior officers. Education of the junior Flight Surgeons is the reason this course was created! 2003 is the year where YOU are going to make the difference. The naval aerospace medical community wants to hear from YOU… the down in the trench naval Flight Surgeon doing the day-to-day work that really matters. The Naval Aerospace Medical Institute has initiated its "call for papers" to aggressively look for LCDR and LT speakers to present your issues and topics of interest, not the topics that interest a few senior officers. If we accept your speaking topic, NEHC has graciously offered to fund your travel, hotel, and per diem for the two days around your presentation!!!! If you don't have a topic you would like to personally teach, but would like a particular issue addressed ... please let me know the topic by email or on the NOMI Forum server and I will do my best to bring a subject matter expert to discuss it.

I know many of you are not planning on selecting Aerospace Medicine as a career field. I also know you are planning to use your annual command funded or BUPERS funded CME to attend your proposed specialty conference. Before you fill out that TAD/TDY request chit consider the following:

* During the Graduate Medical Selection Board (GSME) each year PGY-2 slots are selected based on a very fair and rigid point system.
* Points are routinely awarded for:
  1) prior operational assignments (your current FS tour)
  2) your letter of recommendation from your commander
  3) your personal statement
  4) papers published
  5) topics presented at a major conference (like the OAP).

So I would suggest you strongly consider either attending or speaking at this conference to advance your current aerospace medicine competencies and augment your opportunity for selection for your upcoming specialty of choice. Mark you calendars now, I've given you 9 months notice!

CAPT Jay S. Dudley, MC, USN
Director of Academics
Naval Aerospace Medical Institute
jsdudley@nomi.med.navy.mil
(850) 452-2457/2458
DSN 922-2457/2458
forum.nomi.med.navy.mil/forum.htm

74th Annual AsMA Scientific Meeting "Celebrating 100 Years of Flight"

This is the first of a series of updates designed to provide SUSNFS members with the latest information regarding the 74th Annual Scientific Meeting of the Aerospace Medical Association. It will be held on May 4-8, 2003 at the San Antonio Convention Center, San Antonio, Texas. The year 2003 will be a milestone marking a century of manned flight. Aerospace Medicine and Human Factors have played central roles in ensuring the success of this grand adventure. Thus, the theme of this years meeting will be 'Celebrating 100 Years of Flight'. The scientific sessions will cover the latest findings in the fields of aviation, space, and environmental medicine. Interested authors are also invited to submit presentations especially covering topics in the history of aeromedicine and human factors.

I am very honored and delighted to have been asked by Dr. Claude Thibeault to serve as the Chair of the Scientific Program Committee for AsMA's 74th Annual Scientific meeting. Working with me on the leadership side of the committee are a host of very talented and creative colleagues, all of whom have already given so much of their time to ensure that this upcoming annual meeting will be the biggest and best ever. My Deputy is Dr. Carol Manning, who will be the Chair of the 2004 Scientific Program Committee.

Dr. John Crowley is once again the Panels Chair. It was Dr. Crowley's splendid organization that made the panels in Montreal some of the most successful ever. Dr. Crowley's Deputy this year is Dr. Alex Wolbrink. We have already received many inquiries about panels, and I know that Drs. Crowley and Wolbrink anticipate a record number of panel abstracts.

Dr. Gabor Hardicsay and Dr. Jeff Meyers will be co-Chairing the Posters sessions this coming year. They are already hard at work putting together what we are certain will be a most informative set of poster sessions. Dr. Hardicsay's leadership role reminds us of the outstanding contributions made to AsMA by our growing international membership. I am especially eager to ensure that our scientific meeting reflects the international diversity of aviation and space medicine. In this regard, we will be working closely with members of the AsMA International Committee to expand the number and scope of our non-U.S.-sponsored presentations, posters, and panels.

Dr. Stan Mohler is also very hard at work, coordinating all of the presentations and special events associated with the historical theme of this year's meeting. He informs me that he already has papers and panels about aviation history being offered for San Antonio. Indeed, the host city is itself an historical centerpoint.not only for aeromedicine, but for the U.S. as a nation. I am certain that you will be very excited about what Dr. Mohler is planning, and we'll discuss some of these in a later e-gram.

Of course, none of this is possible without the invaluable work from our friends at AsMA HQ..so a hearty Bravo Zulu!!' to Dr. Russ Rayman, Pam, Heather, Jackie and Gloria!

Please note: Although the annual meeting is still many months away, I'd like to urge you not to wait until the last minute to submit abstracts for presentations, panels, or posters. As you may recall, many abstracts were submitted very close to the deadline, causing a backup in the ability to process the abstracts for further consideration. I therefore respectfully request that authors submit their abstracts as early as possible. This is especially critical during this centennial year of flight, as we are anticipating many more abstracts than normal. Indeed, the official Congress website has barely opened, and we have already received many abstracts for panels and presentations. The Scientific Program Committee is also planning to add a new pre-meeting workshop to those already scheduled for this year. Finally, the Scientific Program Committee will be working very closely with the AsMA Wing to coordinate special events with historical themes.

So, as you can see, the 2003 Scientific Program is already coming together very nicely. Again, please send in your abstracts and do so as early as possible after the AsMA conference website opens. Urge your colleagues to do so as well. Volunteer to help at the Scientific Program Committee meeting in Alexandria this coming November (contact AsMA HQ for more information). Volunteer to help Chair and Co-Chair scientific presentation sessions and pan-

(continued on page 52)

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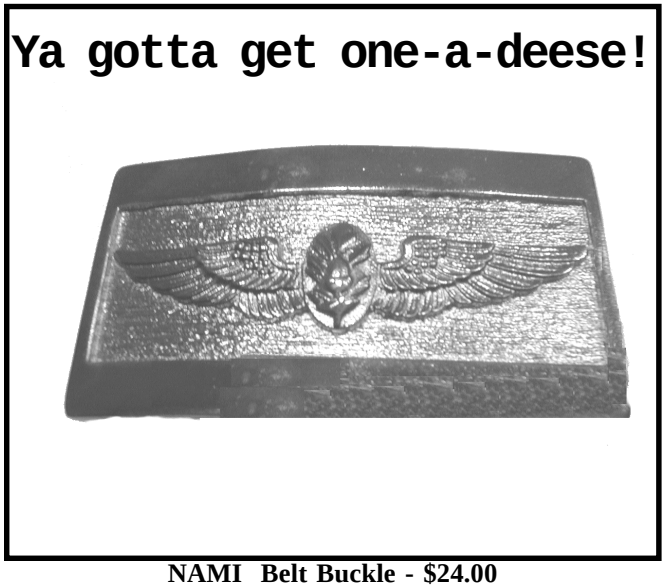

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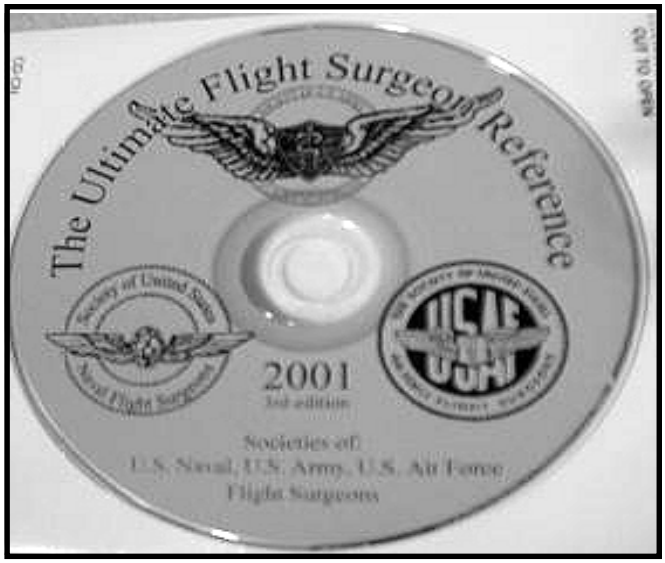

Ultimate Flight Surgeon 2001 CD-ROM

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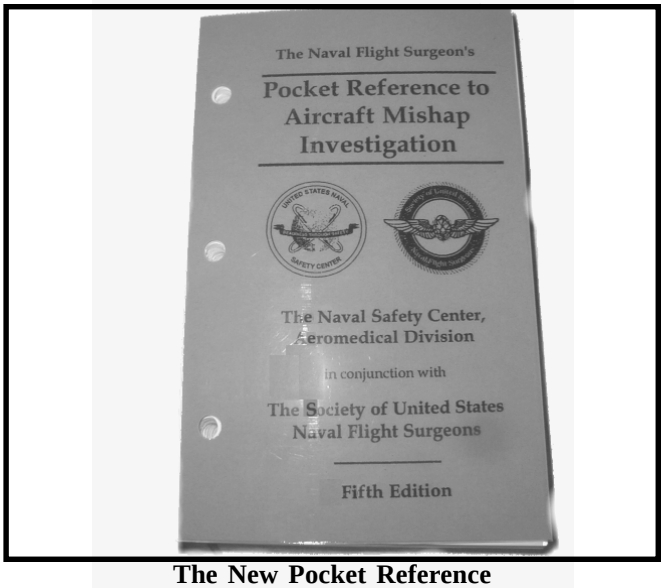
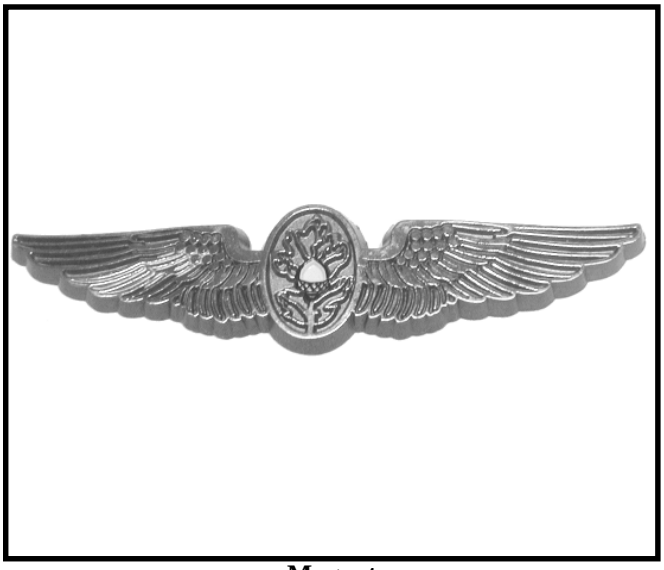


The New Pocket Reference



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Mug

Tie

Women's Bow Tie and Scrunchy

The Society of U.S. Naval Flight Surgeons

PO Box 33008
NAS Pensacola, FL 32508-3008
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gmrice@namrl.navy.mil

Address Change, Subscription/Membership Renewal, Price List, and Order Form (Jun 2002)

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Phone: Home (_____) _____ Work (_____) _____ E-mail_____

Command_____ FS Class_____RAM Class____ E-mail_____

(continued from page 49)

els. If you are loathe to present a paper, why not consider creating a poster? It's going be a grand event, and I urge all of you to participate actively to help make it happen. I look very much forward to seein' y'all in Texas next May.....ya hea?!!

If you have any questions, or require more information, please feel free to contact me at:

CDR Andrew H. Bellenkes Ph.D. MSC USN
School of Aviation Safety
Naval Postgraduate School (Code 10)
1588 Cunningham Rd.
Monterey, California USA
93943-5002

Voice: (831) 656-2581/DSN: 756-2581
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14. CHEITLIN ET AL., ECHOCARDIOGRAPHY CC/AHA Guidelines for the Clinical Application of Echocardiography Circulation Vol. 95, No. 6, March 18, 1997: 1686-1744 http://www.acc.org/clinical/guidelines/echo/ec6A.htm#pericardial

CDR G. Gerry Goyins, MC, USN
SMO USS Abraham Lincoln (CVN 72)
ggoyins@lincoln.navy.mil

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CAPT M.R. Valdez, MC, USN
Editor, SUSNFS Newsletter
P.O. Box 33008
NAS Pensacola, FL 32508-3008

FAX: COM (850) 452-5194
E-mail: mrvaldez@nomi.med.navy.mil

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