

Society of U. S. Naval Flight Surgeons



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NEWSLETTER

JULY 1990

PRESIDENT'S COLUMN

This is my first newsletter as President of the Society of U.S. Naval Flight Surgeons. I am honored to serve for one year. First order of business is a hearty "Bravo Zulu" to our outgoing officers for a job well done. They are:

CAPT George Hill, President
CAPT Conrad Dalton, Vice President
CDR Mike Valdez, Secretary-Treasurer
CAPT Don Angels (Ret), Emeritus Member
CDR Steve Hart, Senior Member-at-Large
LCDR Dave Shiveley, Junior Member-at-Large

Congratulations are also in order for our newly elected officers for FY 90-91. They are:

CAPT Dick Weaver, Vice President
LCDR Dave Shiveley, Secretary-Treasurer
CAPT Frank Dully (Ret), Emeritus Member
CDR Mike Valdez, Senior Member-at-Large

The Society Meeting on Sunday was quite informative with the key players in our Community discussing current issues. Several of the recurring issues were addressed, i.e., manning problems and the "VD" Alcohol Rehab Program. BUMED and some power players in the Line are involved in the manning issue and improvements should be forthcoming. CAPT Bob Hain (BUMED-023) is busily massaging this. On the alcohol rehab front, our NAMI graduating Flight Surgeons sorely need this training **prior** to reporting to their squadrons. RADMLestage stated at the meeting that he and influential other players hope to "make that happen" in the near future.

The Naval Flight Surgeon luncheon on Monday was well attended and CAPT Bob Hain did a superb job in

orchestrating it. It was my honor to acknowledge all past presidents of our Society with plaques. Vice Admiral Dunlevy gave a dynamite talk that was right on the money.

The Luehrs Award winner was COR Joel A. Lees. He is a Stellar Flight Surgeon who "does it all." The other nominees were uniformly exceptional.

The involvement of our Community at the Aerospace Medical Association Scientific Meeting was encouraging. To obtain a greater voice, we should strive to be more involved, i.e., encourage other Flight Surgeons to attend, volunteer for committees, apply for Associate Fellow, become Fellows, and get on the Scientific Program as presenters." Following this column is printed a letter that was mailed to 800 Army Flight Surgeons who are not members of AsMA. As members of SUSNFS, we are members of AsMA, but you may show this letter to some of your colleagues that are not members. The next AsMA meeting is in Cincinnati. The people in the know say that the area is !great for meetings.

The U.S. Navy Aeromedical Problems Course is just around the corner. A message is on the street. CDR Gary Reams (NAMI-324), assisted by CDR Jim Fraser (RAM), are putting together a super program. Be there and be square! Additional bennies (cross your fingers) are receiving a fresh copy of the new U.S. Naval Flight Surgeons Manual and the Flight Surgeon Handbook.

A noteworthy event occurred at our premier Aeromedical Command in that CAPT Bercier assumed the reins from CAPT Ohslund. Fair winds and following seas to Ron. I'm sure that NAMI will continue to be a superb command under CAPT Bercier's strong leadership.

Keep 'em flying.

CAPT C. I. DALTON, MC, USN

Aerospace Medical Association



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Dear Colleague:

The very best investment opportunities in the world will pay you nothing at all unless you make a commitment up front with your resources. Professional organizations are much the same way. Unless you invest something in them, they are of little or no value to you - only an untapped gold mine of professional wealth.

In our business of aviation/aerospace medicine, the only show in town is the Aerospace Medical Association. Fortunately, it is a good show. But, you'll never see the show unless you pay the price of admission, and that is the membership dues to join the Association. Without that, you are just an outsider, with a glance through the doorway at best. As a professional in your field, there are few things more valuable than exchange of information and establishing and maintaining relationships with professional colleagues. That is what the Aerospace Medical Association is all about.

In our free society, it is your choice whether to remain an outsider or to come on in to the organization and enjoy the benefits of membership. Once a member, you can decide how much you want to be involved. You can be a passive participant only, attending the scientific sessions or reading the journal, or you can become an active participant, looking and listening for opportunities to do things for and with AsMA for the benefits of you and your colleagues. The old adage that you get out in relationship to what you put in is never more true than here. We strongly encourage you to put something into this great organization so that you will get something in return. That only happens after you make a start, and so we strongly encourage you to start by joining this strong and growing professional organization, and to do it today. You'll be glad you did!

Sincerely,

N. Bruce Chase, M.D.
Colonel, MC, U.S. Army

Royce Moser, Jr., M.D.
President, AsMA

SECRETARY-TREASURER NOTES

HEY HOWDY! This is your newly elected Secretary-Treasurer coming at you for the 1st of four Newsletters for the Society's fiscal year. I'm really looking forward to this year and hope y'all are in a good "**DUES PAYING**" mood. SUSNFS held its annual meeting on Sunday, May 13th, during the AsMA Annual Scientific Meeting in New Orleans. Attendance was very high which indicates two things to me. First, the ever-increasing interest in our Society, and second, the increased popularity of the AsMA Annual Meeting where great **CME** credits are had. Speaking of which, next years meeting is in Cincinnati, Ohio. It's never too early to start thinking and planning. Put it on your schedule! It's a great way to see SUSNFS at work, sit in on some great lectures, grab some CME, and maybe even take in a Red's Game. They're not bad even if Bench is benched.

The Fraternity of SUSNFS Secretary-Treasurers has a tradition which I am sworn to uphold. And that is to remind y'all to **PAY YOUR DUES**. Many of you are very faithful in this and your timeliness is much appreciated. After all, it is mainly your dues that keep this Newsletter in print. We do have other minor revenue and a positive cash flow was reported again this year, but your **dues** are the key to keeping this informative letter solvent. So, for the other approximately 60% of you who have "forgotten" your dues, please. **..PLEASE** look at the first line of your address label. The number to the right is the year that your dues are good to. Our fiscal year ends April 30th, so if your number says 90, then your dues **were good** until 30 April 1990. I must remove you from the rolls if you are in arrears by a year. Some of you will notice a **RED STAMP** on the inside of your Newsletter which reads "Please Pay Dues Now" or "Dues in Arrears". This is an extra reminder and should be self-explanatory. I must politely remind you that if you see the "Dues in Arrears" stamp, this means that you are over the one year limit and have 3 months to square your account. **SHOOT** a check off to me today made out to SUSNFS, and let's keep this Newsletter and Society flying (\$10/yr for both membership or subscriber and \$200 for Lifetime Membership).

Popular items still for sale through the Society are:

- Gold (14K) Mess Dress FS Wings -Plain.....\$100
- w/Diamond Chip.....\$130
- Gold Lapel (or tie tack) FS Wings -Plain..... \$40
- w/ Diamond Chip..... \$70
- Newsletter reprints, all thirteen volumes.....\$25
- w/binder\$35

(Please allow several weeks for delivery and orders must be paid for in advance.)

Have a Mach 1 year and don't forget the Navy Aero-medical Problems Course **16-19 October 1990!** Oh, and as if I haven't said enough, please get me **your ADDRESS CHANGES**. Thanks for your support, and no, I'm not sitting next to my brother Burtles holding up a fruity tasting "beverage".

LCDR DAVE SHIVELEY
MC USN
NAMI (Code 32R)



WHAT - NEW VISION STANDARDS?

As of 1 July 1990, the entrance standards for Student Naval Aviator (SNA) will change from the familiar 20/20 unaided visual acuity, to acceptance of applicants having unaided vision of 20/30 in each eye, correctable to 20/20 in each eye. The refractive limits have been altered to meet the 20/30 minimum. In place of having no greater than -0.25 diopter of myopia in any meridian, the maximum amount of minus power an applicant can have in any refractive meridian shall not exceed -1.00 diopter. The amounts of plus power and cylinder will remain at +3.00 and +/-0.75, respectively.

In order to facilitate a smooth transition into the new standards, it is important that all parties performing physical examinations fully understand the "ground rules" for testing. First of all, to determine if an applicant has 20/30 unaided visual acuity, it is necessary to use the Goodlite style visual acuity charts which can be changed on a daily basis utilizing their magnetic boards and interchangeable letters. If a candidate is to be classified as having 20/30 vision, they must read 10 out of 10 consecutive 20/30 size Goodlite letters in a row, without misses, in each eye. If the candidate misses one or more letters, they will be asked to read another 10 letters. Only if they are able to read the 10 out of 10 consecutive letters correctly, in 1 of 2 tries, can their vision be classified as 20/30. If the candidate misses 1 or more letters, they do not have 20/30 vision for our purposes, and should be tested on either a Snellen or equivalent chart to determine their maximum acuity.

Once it has been established that the candidate has 20/30 unaided vision in each eye, then, it must be determined if they are correctable to 20/20 in each eye. This is accomplished by performing a manifest refraction, first to 20/20, and then to best visual acuity. 20/20 is defined as reading 10 out of 10 consecutive Goodlite letters. If candidates are not correctable to 20/20 in each eye, following manifest refraction, they are not physically qualified (NPQ). Following a manifest refraction, using the appropriate spectacle prescription, stereopsis (util-

izing the Verhoeff Stereopter), color vision (utilizing the Farnsworth Lantern), and ocular motility (utilizing the Armed Forces Vision Tester) should be tested. Intraocular pressures shall be measured, without spectacles, following these tests. A cycloplegic refraction must be performed following all the other entrance tests, utilizing 1 drop of 1% cyclopentolate HCL (Cyclogyl) in each eye, followed by a second set of the cycloplegic drops 5 minutes later in each eye. After waiting from 30 minutes to 1 hour, a cycloplegic refraction, utilizing maximum plus power to 20/20 in each eye, shall be performed ensuring that candidates fall within refractive limitations. Remember, the refractive limits are no more than -1.00 diopter of myopia or +3.00 diopters of hyperopia in any meridian or no more than +/-0.75 diopters of astigmatism. If any of these limits are exceeded, the candidate is NPQ. 20/30 Goodlite style charts can be ordered from the following address:

Kopidlansky and Associates
721 North Addison Road
Villa Park, Illinois 60181

They cost approximately \$92.00 each.

If you have any questions concerning the new vision standards, please feel free to call the NAMI Ophthalmology Department at autovon 922-4558.

LCDR MICHAEL MITTELMAN
MSC USN
NAMI OPHTHALMOLOGY DEPT.

FROM THE FLEET

DIARRHEA ON DEPLOYMENT

Gastroenteritis can have a significant impact on battle readiness of a deployed aircraft carrier. A carrier operational tempo cannot be safely sustained without nearly 100% of the crew healthy. This article will discuss the incidence rate of gastroenteritis on a recent 6 month carrier Med/IO deployment, probable etiology, therapy utilized and a recent Journal of the American Medical Association (JAMA) article that reviews anti-motility and antibiotic therapy for diarrhea.

USS AMERICA (CV 66) completed a rigorous Med/IO deployment in 1989 covering 30,000 miles, seven port visits and 20,000 flight hours. An additional statistic was 1400 patient visits for gastroenteritis (GE) for an estimated 2,000 man days of lost work time. While no operations were curtailed nor increased incidence of mishaps evident, the number and type of personnel "down" during epidemic times required manning adjustments and given a wartime scenario, could likely have diminished optimum fighting performance.

The histogram, figure 1, displays prevalence per day based on a 3 day duration of symptoms.

Case definition was three or more unformed stools in a 24 hr period accompanied by abdominal cramping and/or urgency. Symptomatology ranged from the definition minimum to multiple watery stools greater than seven days and prostration with dehydration. Febrile (greater than 100°F) cases were rare and were all seen by a medical officer and treated on a case-by-case basis. They are not included for the purpose of this article as "GE cases".

Laboratory investigation consisted of CBC, fecal leukocytes, salmonella/shigella culturing and microscopic examination for ova and parasites. This investigation was done 1) on clinician request, 2) on all febrile cases and 3) during one sampling period of 20 cases when incidence seemed particularly high. Table 1 displays laboratory findings.

Therapy at the beginning of the cruise consisted of the "usual" hit and miss process of maybe antibiotics, maybe not, maybe antimotility agents maybe not, sometimes PO hydration sometimes IV, and an occasional IM injection of Compazine for good measure.

Eventually, driven by volume of patient contacts, protocols were established that both streamlined care delivery and reflected our observations of what seemed to work best with minimal patient side effects and minimal lost work time.

Intravenous hydration with two liters of Lactated Ringers was deemed by providers and patients alike to give the greater symptomatic relief from abdominal cramping and malaise and diminished the subsequent frequency of unformed stools. Meeting the criteria for IV hydration was not difficult. Essentially, if the patient met the case definition and displayed any evidence of orthostatic hypotension such as a drop in diastolic pressure of 10mm Hg and increase in pulse rate of 10 beats per minute on tilt, he was given an infusion. Lost work time prior to the institution of routine IV hydration was at least 24 hours longer than when such therapy was given (no documentary basis for this statement).

Preventive medicine measures were aggressively undertaken but the effect, as with many such endeavors was uncertain. Food service workers were the focus of attention. During the course of 6 months, food service workers presented to sick call with diarrhea of 2-3 hours to 2-3 days. One food service worker had diarrhea for 6 days before presenting. Measures undertaken included 1) personnel inspections of skin, particularly hands, 2) education in communicable gastrointestinal disease and **hygiene**, 3) increased food and sanitation inspections with attention to fresh produce. 4) emphasis on use of hand washing facilities at every entrance to food prep areas.

Conclusion

1. USS AMERICA's Med/IO deployment saw a constant background level of gastroenteritis averaging 10 active cases per day (prevalence) with two 3 week inter-

vals of minor epidemic proportions averaging 40 active cases per day.

2. Laboratory investigation of cases during each time of peak activity did not influence therapy nor point to an etiological source.

3. Fresh produce and person-to-person transmission were the focus of preventive medicine attention.

4. Most efficacious therapy across the spectrum of clinical presentation was IV hydration with Lactated Ringers.

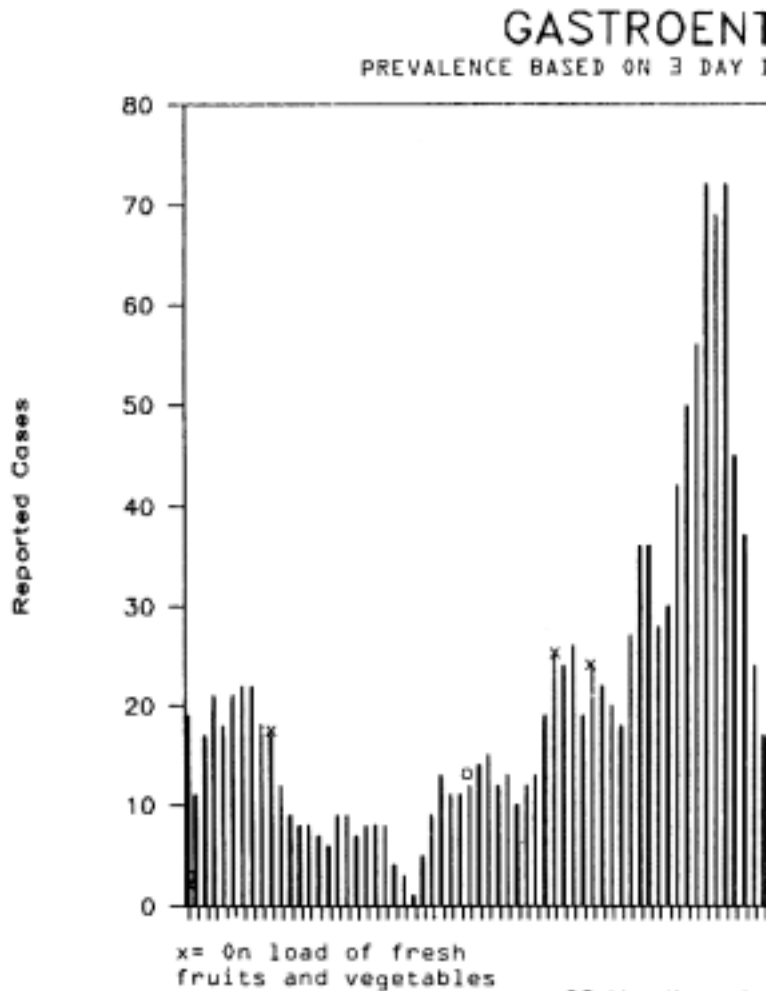
Addendum

A therapeutic regimen presented in a recent JAMA article is worth consideration for both shore and afloat commands. The regime promoted is Imodium and Septra, regardless of etiology. Imodium 2 stat and one after each loose stool to max of 6 tabs, and septra D.S. one twice per day. While not new, this regime, in the study presented, very significantly reduced "down time" when

compared with placebo, Imodium alone, Septra alone and other dosage combinations. Referral to this article is encouraged.

Ericsson CD, Dupont HL, **et al.** Treatment of Traveler's Diarrhea with sulfamethoazole and trimethoprim and loperamide. **JAMA.** 1990; 263: 257-261.

NUMBER OF PATIENTS PARTICIPATING	20
FECAL LEUKOCYTES PRESENT	2
POSITIVE OVA AND PARASITE	0
POSTIVE CULTURE FOR SALMONELLA SP.	0
POSTIVE CULTURE FOR SHIGELLA SP.	0
COMPLETE BLOOD COUNT	ALL WNL



CODE 42 SPEAKS

The revised Manual of the Medical Department Chapter 15 has gone to the printer. It should be out any time. There will be significant changes and it will behoove you and your AVTs to sit down with it as soon as it arrives (or as soon as you can get a copy of what went to the printer) and read it! It would also be helpful to compare it with the old MMD Chapter 15 to re-inforce the areas that are only subtly different.

I am furiously working to revise the Flight Surgeons Quick Reference Guide, but have come to a halt in the medication section. There have been some recent concerns raised regarding some of the medications which we have waived in the past (especially antihypertensives and lipid lowering agents). The Canadians have done some centrifuge studies on ACE inhibitors and found some decreased G-tolerance. The study was done on normotensive volunteers and was a small study, but we are discussing the implications. I will keep you posted as to the outcome.

The following are recent recommendations from the Aeromedical Advisory Council which have been approved by BUMED 02 and which might be of interest to you:

1. Standards for urine specific gravity have been changed. The new standard for urine SG is 1.003-1.040 (the old standard was 1.010-1.030).

2. Annual 24 hour urine submissions for individuals with a history of urinary tract stones who have **an initial normal metabolic workup** are no longer required. Individuals who had an abnormal metabolic workup must still have 24 hour urine chemistries reported with their annual submission.

3. Measurement of chest expansion is no longer required for aviation physicals.

We are also considering a "tiered" waiver system in which some conditions would be waived once and never require resubmission, other conditions would require submission only with the triannual physical exam, and others would still require annual submission. The concept has been approved and we are currently working on the logistics. Watch this space for updates.

As always, I welcome your comments and suggestions. Keep those cards and letters coming.

CAPT RICHARD WEAVER
MC USN, CODE 42

RAM'S CORNER

Sleep Deprivation and Fatigue

The Flight Surgeon must be concerned with how to identify, prevent and cope with deteriorating perfor-

mances, poor moods, and lowered willingness-to-work caused by fatigue and lack of sleep. He must be able to advise the operational forces when and how they will best be able to recuperate from the stress and fatigue of continuous work episodes and maintain, as an individual and as a fighting unit, combat effectiveness during a sustained operation.

Although performance depends on complex interactions between tasks, work schedule, environmental stresses and the individual, it will certainly be impaired when the aviator becomes sleepy. The disruption of the sleep-wakefulness cycle with some sleep loss is likely to be a problem in all air operations which extend beyond a single day, and sleep loss is likely to intensify as the duration of the mission increases. The need for sleep (sleep deprivation) is probably the major component contributing to operational fatigue in continuous work episodes during sustained operations.

Although fatigue and sleep deprivation can be defined as acute, chronic, or cumulative and correlated to some extent with biochemical aberrations, we are unable to determine objectively at what point an individual will experience a performance decrement. Difficulties in determining when fatigue and sleep loss result in impaired performance stem from the fact that laboratory performance tests may not be sensitive to the type of deficits which occur. In addition, the effects of fatigue and sleep loss may vary.

Variables such as extensive training, high motivation, and interest can counteract some of the effects of sleep loss and fatigue. Performance decrement is not always present in all individuals and may be intermittent. However, as fatigue and sleep deprivation accumulates, symptoms will be more prevalent and last longer. There is a point beyond which the need for sleep will overwhelm anyone. When these symptoms appear in each individual depends not only on hours of wakefulness but also on tolerance to sleep loss, type of tasks to be performed, severity of physical workload, and time of work in relation to the individuals circadian rhythm.

During operational conditions there is always doubt concerning the extent of sleep loss as it is difficult to avoid very short periods of sleep. In field studies it is difficult to suppress sleep, and total loss of sleep has probably only been achieved in laboratory experiments when the electroencephalogram has been continuously monitored. During laboratory experiments involving long periods of wakefulness, drowsiness and microsleeps readily occur. They become more frequent as the period of wakefulness continues, and if not immediately aroused the individual will rapidly fall asleep. Therefore, sleep loss is a continuum which extends from a normal sleep-wakefulness pattern to microsleeps and drowsiness and finally to total sleep loss. There is little evidence, however, that drowsiness (the transition between wakefulness and sleep) or microsleeps preserves performance in sustained wakefulness.

Early studies with sleep loss did not consistently detect impaired performance, though changes in mood were obvious. In these early studies, most subjects functioned fairly well during restricted sleep schedules, but many of the tests used did not reflect the complex tasks that are required in tactical aviation during sustained operations. Their failure to detect impairment is not surprising. Because many of the studies estimating performance decrement in sustained operations included a mixture of more or less sensitive cognitive tasks, intermittent testing, and non-demanding inter-test intervals, their estimates of expected performance degradation were felt to be conservative.

Studies providing the best estimates are those where the environmental demands are more continuous and there is more time devoted to tasks of higher cognitive demand. As the approach to measurements of performance became more sophisticated, it was found that absence or delay in response rather than accuracy was the important effect, and it was in this way that the importance of adequate sleep to sustain performance was first established. Although there are still difficulties and obvious limitations in accepting the operational relevance of much of the scientific information available on the effects of fatigue and sleep loss during sustained air operations, it would be unwise to ignore the implications of experimental findings to date.

Recent laboratory investigations of total sleep deprivation in sustained operations environments have demonstrated that substantial reductions (greater than 30%) occurred in mood and performance after 18 hours of continuous testing, and generally unacceptable performance (greater than 60% reductions) occurred following 42 hours of sustained wakefulness. Complex tasks, prolonged, repetitive and boring tasks were particularly sensitive to sleep deprivation. Similarly, tasks which involved short term memory, newly learned skills, and those skills not well practiced, were vulnerable to sleep deprivation, though self-paced tasks and feedback on performance levels were able to reduce the effect. It appears that, for some less specific skills, even shorter periods of sleep loss may impair performance. Scanning ability may be reduced, susceptibility to disorientation may be increased, and the ability to read charts may be affected. Probably most importantly, impairment of interpersonal skills and mood may result in failure of command, control and crew coordination.

Although the adverse effects of total absence of sleep, extending beyond 24 hours are well recognized, impairment related to less severe degrees of sleep loss or irregularity of sleep are equally important. The more likely sleep problems encountered by aircrews in sustained operations are fragmented sleep associated with partial sleep loss, disruption of sleep-wakefulness cycles and circadian rhythm disruption. For some individuals, the loss of only 2.5 hours of sleep each night for 2 nights has been shown to impair vigilance the next morning, and so it must be suspected that repeated partial sleep

loss will lead to impaired performance after several days of irregular work and rest. In addition, irregularity of sleep and the disruption of the normal sleep-wakefulness cycles, rather than a reduction of total hours of sleep, is also likely to disturb sleep. The factors which influence performance with total sleep loss are probably equally relevant to those which occur with partial sleep loss or disturbed sleep due to irregularity of work and rest.

In conclusion, the effects of disturbed sleep (total absence, partial loss or irregularity) will continue to be a dominant issue in sustained air operations. Sleep is essential to sustain high levels of vigilance and maintain effectiveness. Careful attention to sleep is all important because impaired performance follows sleep disturbance even though impairment may not be easy to demonstrate.

CDR JIM FRASER
MC USN
NAMI CODE 52 R

NAMI ACADEMICS (CODE 32)

A terrific group of Residents in Aerospace Medicine (RAM) just launched from NAMI. They are:

CDR Jerry Rose, MC, USN (Chief RAM, 1989)
USS ABRAHAM LINCOLN (CVN-72)

CDR Mike Valdez, MC, USN (Chief RAM, 1990)
USS NIMITZ (CVN-68)

CDR Bruce Bohnker, MC, USN
USS FORRESTAL (CV-59)

CDR Dennis Deakins, MC, USN
USS MIDWAY (CV-41)

CDR Matt Waack, MC, USN
USS SARATOGA (CV-60)

LCDR Bill Ferrara, MC, USN
USS RANGER (CV-61)

Additionally, CAPT Arch Arribas completed his two years at NAMI and is going to Tulane for his Masters in Public Health.

And, lastly, on a v'ery positive note, the floodgates opened some in Washington, and as many as 45 Student Flight Surgeons will be in the August class (vice 35).

CAPT. C. I. DALTON
MC, USN
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-- EDITORIAL POLICY--

The views expressed are those of the individual authors and not necessarily those of the Society of U.S. Naval Flight Surgeons.

This Newsletter is published quarterly by the Society on the first of January, April, July and October. Material for publication is solicited from the membership and should be typed **double spaced**, reaching the Editor at least one month prior to the scheduled date of publication. Unsigned material will not be considered.

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