

# U.S. NAVY MEDICINE

November-December 1985



**Yangtze Patroller—Bilibid POW**

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**COVER:** This month's cover story is dedicated to the memory of LT George T. Ferguson, MC, Yangtze Patroller, defender of Bataan and Corregidor, and prisoner of war. Photo courtesy of Mrs. Lucille Ferguson.



# Corpsmen Jump With ANGLICO

When would you find a Navy hospital corpsman performing parachute operations with Army units such as the 82d Airborne or pulling duty with the Turkish Marines? Normally you wouldn't, but if the corpsman is part of the 2d Air and Naval Gunfire Liaison Company (ANGLICO) then those duties would be merely routine.

ANGLICO is a joint Navy/Marine Corps unit based at Camp Lejeune, NC. The company is made up of personnel who are experts at calling in close air support, naval gunfire, and artillery. Sometimes described as "the most destructive force on the battlefield," ANGLICO teams control firepower ranging from the 16-inch guns of a battleship to the 2,000-pound bombs delivered by Navy/Marine Corps aircraft.

What sets the unit apart is their mission. ANGLICO is tasked with supporting U.S. Army groups and military organizations of allied countries. At anytime of year teams may be found scattered from Turkey to Norway to South or Central America. Their unique mission, special training, and rigorous demands make them truly elite.

Supporting ANGLICO, and traveling with them to remote locations of the world, is the unit's Navy medical department. Made up of one chief hospital corpsman and three petty officers this highly trained group meets challenges seldom faced by corpsmen.

ANGLICO is an airborne unit which places special demands on the corpsmen. They must be prepared to jump with what they need attached to their bodies. Resupply is dependent upon the vagaries of weather and easily disrupted by enemy forces. The corpsmen must therefore carry suffi-



*Left to right: HM2 Smith, HMC Thurman, HM2 Williams, and HM3 Burns prepare for a jump.*

cient medical supplies for sustained operations. This is accomplished by using larger medical kits normally used by FMF corpsmen. The kits allow ample room for medical supplies and when stocked may weigh as much as 30 pounds. Combine this load with an Alice Pack weighing 50 to 60 pounds, and the necessity for the corpsmen to be in excellent shape is readily apparent.

"Forced marches are a regular part of our training," said HMC Terry Thurman, who heads the medical team. "Running is good for conditioning, and we do a lot of it, frequently up to 10 miles a day. Nothing, however,

can better prepare a person for the physical demands of combat than forced marches with a full combat load."

Parachuting is a skill that must be practiced constantly to insure safety. The corpsmen are always involved in weekly jumps. Additionally they will be found jumping with the U.S. Army's 82d Airborne Division or gaining added experience jumping with Air Force units. ANGLICO corpsmen learn parachuting at the strenuous 3-week airborne school at Fort Benning, GA.

"It's a lot of work in this unit," explained HM3 Matthew Burns. "Par-

achuting is one of the fun things that makes it worthwhile."

Parachuting also dictates part of their medical training. "ANGLICO has one of the best parachute safety records of any airborne outfit in the military today," said HM2 Robert Williams. "Still the potential for injury exists. We spend a lot of time practicing treatment for injuries peculiar to parachuting."

No medical officer serves with ANGLICO and the unit is routinely deployed far from medical assistance. As a result the corpsmen have to be proficient in handling every type of emergency.

"You're damn lucky to have the corpsmen you've got," said MAJ Joseph Rogish, the XO. He was speaking before a special company formation held to honor the unit's corpsmen on the occasion of the 89th birthday of the Navy Medical Corps. "I saw our ANGLICO corpsmen save men in Grenada who, by all rights, should be dead. When others were losing their heads our corpsmen calmly and professionally did exactly what was needed to get their comrades back home in one piece."

ANGLICO's unique mission dictates that wherever trouble may break out they will be involved. Grenada and Lebanon are the two most recent examples. "Knowing we will be among the first to go is a real motivator," said HM2 Robert Smith. "When we train it is with the knowledge that we could be deployed at any moment. If we don't stay ready every minute one of our buddies may pay the price of our negligence with his life."

"Assignment with ANGLICO isn't for everybody," said LCOL James Lucey, the CO. "It's tough, potentially dangerous, and means a lot of travel. The rewards, however, are more than worth the effort. Our corpsmen experience adventure, professional growth, and the respect of their comrades that can't be found with any other unit." □

—LT(JG) Michael Anderson, USNR, 2d Air and Naval Gunfire Liaison Company, FMF, Atlantic, Camp Lejeune, NC 28542.

## Keeping the 'Medical' in Medical Facilities

CDR Robert S. Bolshazy, MSC, sits in his office in Alexandria, VA, enjoying a spectacular view of very un-Navy looking rail yards. As the medical equipment specialist for the Naval Facilities Engineering Command's (NAVFAC) medical facilities design office, Bolshazy is an anomaly in a command filled with engineers, architects, and construction and maintenance specialists.

NAVFAC is responsible for the planning, design, and construction of shore-based naval facilities worldwide, as well as the acquisition and disposal of real estate, management of family housing, and the repair and upkeep of all public works, public utilities, and housing for the Navy. But it is the planning and design phases where Bolshazy makes his mark.

Bolshazy, who arrived at NAVFAC in October 1983, acts as the medical equipment advisor to the planners and designers of medical facilities for the Navy and for some Air Force projects. While his office mates insure that the structures are physically sound from an engineering and design point of view, Bolshazy's role is to insure that they are also medically sound—that is, all equipment requirements of the future patients and professional staff are met.

"Our goal in this office is to assure that the most appropriate health care is provided to the patients by providing the best facilities for health care professionals to use," Bolshazy explained.

The Army and Navy have primary responsibility for medical facilities design within the Department of Defense, and the Naval Medical Command (NAVMEDCOM) is the pri-



*CDR Bolshazy, medical equipment specialist for NAVFAC's medical facilities design office*

mary client of NAVFAC's medical facilities design office. Each fiscal year, NAVMEDCOM lists its needs for new, expanded, or renovated medical facilities required to complete its mission.

Before NAVFAC can initiate design of the construction or renovations, the Director of Navy Medicine and the Assistant Secretary of Defense for Health Affairs must review the NAVMEDCOM list. Once the list is approved by Congress, NAVFAC goes to work to manage design—usually a 2-year process—and construction of individual projects.

After a project is programmed for a particular fiscal year's military construction budget and assigned to NAVFAC's cognizant engineering field division, the headquarters medical facilities design office joins the field



division in preparing the design and cost requirements and selecting an architect and engineer firm. Under a government contract, the architect and engineer firm will prepare the working plans and specifications for the project.

The medical facilities design office conducts a predesign conference and schedules the progress of the project's design, step by step. The office works with the architect and engineer firm in developing design concepts. These concepts are submitted to the Assistant Secretary of Defense for Health Affairs for approval.

The last step is the development of working drawings. The architect and engineer firm, under the watchful eye of the medical facilities design office, translate all the concepts and requirements into final working blueprints and artist's renderings. When that is completed, the design phase is over and the construction phase begins.

The task of the medical facilities design office is far from over. During the construction of medical facilities, the office serves as a consultant. After the facility is completed and occupied, the office conducts an evaluation to determine if any deficiencies exist with Department of Defense medical facilities standards. If any design problems are found, they are entered in the "lessons learned" file for application in future design requirements.

From design through occupancy the medical facilities design office works to insure that Navy medical facilities reflect state-of-the-art technology. The NAVFAC medical facilities design office is unique in a number of ways. It is the only office within the command with a Medical Service Corps officer and it is attached to NAVFAC as a naval operations support unit, not a component of NAVFAC. The office designs only medical projects and works directly with the Department of Defense. In addition, the office's staff members are all specialists in medical facilities design.

Bolshazy's civilian boss is an architect, an unlikely profession for a MSC officer's supervisor. There are four

other architects, an electrical engineer, a mechanical engineer, and a computer technician whose primary duty is to maintain medical equipment outfitting lists. The outfitting lists organize medical equipment required for certain types of medical facilities—clinics, hospitals, medical centers, and the like—so the design process is streamlined, and each facility is assured of having the equipment it needs.

Projects on the drawing board for FY86 include a 140,000-square-foot addition at the Jacksonville hospital, a new 20-bed hospital at Annapolis, a hospital expansion at Whidbey Island, and a replacement hospital at Terminal Island near Long Beach.

The son of a retired Navy chief gunner's mate, CDR Bolshazy graduated from high school in the San Diego area. He joined the Navy 26 years ago to gain social service experience in the Hospital Corps as preparation for the Catholic seminary. But he was soon absorbed by hospital life and his clerical ambitions faded.

As a hospital corpsman, Bolshazy trained to attend surgeons in the operating room, and he also worked in an eye, ear, nose and throat clinic. He was

later rated for independent duty at sea, which he performed aboard a mine sweeper. After becoming a first class petty officer, he was selected by in-service procurement to the Medical Service Corps.

As an MSC officer, he has served in Bremerton, WA, aboard the USS *Constellation*, and at Naval Hospital, Bethesda, MD. He has also worked in NAVMEDCOM's facilities division, was medical construction liaison officer at Naval Hospital, Bremerton, overseeing its design through initial operation, and was assigned to the Naval Surface Force, U.S. Pacific Fleet at San Diego.

CDR Bolshazy is enthusiastic about the Navy and about his work at NAVFAC. He also recognizes the impact this job will have on the rest of his career.

"This billet will definitely benefit my career as a Medical Service Corps officer," he explained. "I've developed a rapport within NAVFAC and the Civil Engineer Corps, and I have avenues of access that I'll be able to use in later assignments." □

—Story by Lallie P. Dawson, Public Affairs Office, Naval Facilities Engineering Command. Photos by JO2 Katherine Liuha



CDR Bolshazy and Surinder Sharma, a design manager at NAVFAC, look over plans for a medical facility project.

# Spatial Disorientation in Aviation

Aircraft mishap reports are full of unexplained tragedies: the aircraft which takes off on a moonless night and silently plunges into the ocean less than a mile from the end of the runway; the F-4 which departs formation flight, exhibits erratic maneuvers, and dives into the sea under full power; a fatally late pull out from a practice bombing run; or the sudden loss of controlled flight at the 90. One of the leading factors cited in incidents like these is spatial disorientation.

The ordinarily fine balance among the organs which allows us to maintain equilibrium and stability can be disrupted by the unusual attitudes and accelerative forces encountered in naval aviation. Although the medical community uses the term *vertigo* only to describe the sensation of spinning (either the person or the environment appearing to spin), aviators describe nearly *any* type of disorientation as vertigo, including directional confusion. Since the term vertigo can be misleading, we should try to restrict references to vertigo to those circumstances which result in a spinning sensation.

Pilots are most susceptible to disorientation when busy, anxious, unusually stressed or fatigued, hypoxic, or under temperature or emotional stress. Medications and G stresses can also impair the pilot's ability to resist disorienting sensations. Critical times occur when transiting from VMC (visual meteorological conditions) to IMC (instrument meteorologic conditions), night flight, in unusual or rapidly changing weather conditions, entering or recovering from unusual attitudes, and during formation flying. Pilots with less instrument time are also more susceptible to disorientation.

Spatial orientation is provided by input from the inner ear (called the vestibular system and includes the semicircular canals), vision, and other body position sensors called proprioceptors. The inner ear has two components which are stimulated by either rotary or linear acceleration. Approximately 20-30 seconds after a constant velocity is established, as in a constant rate of turn, these organs become accustomed to the new orientation and register it as the new norm—reset to receive new input. In addition, there is a threshold for stimulation of these organs, and accelerations below a threshold value will not be registered. Proprioception is a term used to describe an appreciation of position based on the relative forces sensed by body surfaces and joint movements. This input can be deceiving in aviation since force vectors are modified by acceleration and gravity vectors.

The following is a summary of the most common types of spatial disorientations encountered in military aircraft:

**The Leans** is the most common flight illusion and is caused by reversal of a flight attitude to which the pilot has become accustomed. That is, if one were to maintain a constant 30° angle of bank turn for several minutes, the vestibular system would become accustomed to the turn and view it as the new norm. Once the turn is discontinued in favor of level flight, the vestibular system now perceives a 30° angle of bank turn in the *opposite* direction (a 30° deviation from the new norm). If the pilot has no visual or instrument cues to guide him, he may follow the natural tendency to reassume what the vestibular system thinks is a normal attitude: the original

30° angle of bank turn. Even with visual or instrument references, the pilot will feel as if he should lean in the direction of the original turn. A variation on this theme occurs when a pilot initiates a turn which is imperceptible to the vestibular system because the roll rate is insufficient to cause vestibular stimulation (less than threshold). If the pilot then corrects with a more rapid roll in the opposite direction, since the original turn was too slow to register, the perception will be that there was only one turn—the rapid one—and the pilot will tend to lean in the direction of the original (slow) roll which is perceived as level flight.

**The Graveyard Spin** is another variation of the leans in which the pilot enters a spin which lasts longer than 20-30 seconds. Initially, the fluid in the semicircular canals accelerates, giving the correct input of spin direction and speed. After a few seconds the fluid movement reaches a new equilibrium and the spinning sensation is replaced by a feeling of no movement even though the spin continues. If the spin is then corrected and level flight is resumed, a reversal of the semicircular canal fluid movement will (falsely) tell the pilot that he has entered an equal but opposite spin. The natural reaction is for the pilot to attempt to correct by putting the aircraft back into the original spin.

**The Graveyard Spiral** is very similar to the graveyard spin except that the pilot unknowingly assumes a descending turn rather than a stalled spin and his vestibular system becomes accustomed to the turn. When the pilot notices a loss of altitude and either pulls back on the stick or adds power without first correcting the nose-down attitude, the spiral will tighten and the rate



of descent will increase. Once the spiral is established, the vestibular system will become accustomed to the spiral as the new norm and, when the pilot returns to level flight, he will suffer the illusion of turning in the opposite direction and may compensate by reentering the spiral.

**The Coriolis Effect** is another illusion caused by the vestibular system becoming accustomed to turning. During a prolonged coordinated turn, the fluid in the semicircular canals which are initially stimulated attains a constant speed and the sensation of motion ceases. If the pilot then moves his head so that he places the semicircular canals in a different orientation, he will sense rotation or movement in a different spatial plane. This effect of combined turning sensations can be overwhelming and result in unpredictable maneuvers to correct what is perceived as uncontrolled rolling, turning, or spinning. Since the Coriolis effect can be overwhelming and most often occurs close to the ground (e.g., when looking at one's kneeboard in break or turn to final), it is one of the most dangerous illusions.

**The Oculogravic Illusion** usually occurs during level forward acceleration and is the false sensation of a nose-up attitude. The horizontal acceleration vector is shifted by the vertical gravitational vector so that the net seat-of-the-pants feeling is a slightly nose-up rather than directly forward. This illusion can be dangerous when taking off in conditions of low visibility (e.g., a moonless night without a good horizon) and has accounted for many accidents within a mile after take off as the pilot attempts to correct for the feeling of a nose-up attitude by pushing the nose over. Another variation of this illusion is created during a pushover from a climb to level flight. The resultant vectors create the feeling of backward rotation and the natural tendency is to push the nose further over to stop the perceived backward motion, thereby increasing the vectors and intensifying the illusion.

**The Elevator Illusion** is interesting because it results from one of the

body's normal compensatory mechanisms. During unexpected upward accelerations (as in an updraft), the vestibular organs tilt the eye with a compensatory downward tracking movement designed to follow objects as the body rises. Because the instrument panel remains fixed in front of the pilot, the tracking reflex causes the illusion of the panel rising. The pilot then feels that a nose-down correction is appropriate.

**False Vertical and Horizontal Cues** often cause problems when flying over a sloping cloud cover or gently sloping terrain. The pilot may feel compelled to adjust his wing attitude to match the sloping horizon. A similar reaction occurs in northern regions when slanting aurora borealis lights give the pilot a false sense of the vertical plane.

**Blending of the Earth and Sky** often occurs on especially dark nights when lights from the stars are indistinguishable from those of the earth or on overcast nights when there are no ground lights (e.g., over ocean) to help gain a horizontal orientation.

**Relative Motion** is a common illusion in formation flying and is similar to the feeling of motion produced by an adjacent car creeping forward at a stop light. This illusion is even more pronounced in aviation since there are few stable external reference points.

**Autokinesis**, the false perception that a small stationary, steady light is moving, is another illusion which can cause problems in formation flying. This effect can be diminished by occasionally redirecting one's gaze or looking at a reference object, increasing the size, brilliance, or number of lights, or by changing from a steady to a blinking light.

**Flicker Vertigo** (not true vertigo) has been reported by many helicopter and fixed wing propeller aircraft pilots. The flickering of the anticollision lights or direct sunlight through helicopter blades or slowly rotating propeller blades during taxiing can cause disorientation, in rare cases, seizures.

**Rotor Downwash** in a low hover over water can give the impression that

the helicopter is rising. Inattention to instrument input might lead the pilot to succumb to the natural tendency to compensate by inappropriately descending.

**Target Fascination**, although not strictly an illusion, is a form of disorientation since the pilot's attention is diverted to task performance unrelated to flying—occasionally to his detriment. The low altitude bombing run is the classic example: the pilot concentrates on the target so long that his pull up is initiated too late to clear obstacles.

Prevention of disorientation must be a conscious effort: early transition to instruments when visibility diminishes, not relying on the seat-of-the-pants sensory input, not mixing instrument flying with external visual cues, avoiding head movements which can cause disorientation (especially during turns), being particularly vigilant during high risk conditions such as darkness and low visibility, maintaining instrument proficiency, and not flying with an upper respiratory infection, when under medication, or when emotionally stressed.

Overcoming disorientation requires concentration, composure, and intellectual command of the aircraft despite the distractions. Persistent minor disorientation (e.g., the leans) may be quelled by redirecting one's attention. More compelling disorientation requires greater concentration and dependence on instruments, maintaining proper scan, and not mixing visual with instrument references. Head movements should be minimized and, in multi-seat aircraft, the copilot should assume control if he is unaffected. Lastly, the aircraft should be abandoned if control and orientation cannot be regained.

**Remember:** All these effects are normal body responses to confusing sensory input and under the right conditions can be experienced by anyone with any experience level. Your flight surgeon can give you more details about these illusions and their application in your aircraft. □

# Role of the Family Advocacy Representative

LT Joseph Di Paolo, MSC, USN

On any given day or night in a naval medical treatment facility, immediate medical attention is administered to family violence victims whose traumatic injuries are all too familiar to emergency room medical staff. Representing a cross section of the Navy family population, the victims might include an 8-year-old boy kicked in the head by an angry mother, a 6-year-old girl sexually traumatized by her stepfather, or a 22-year-old spouse who was beaten by her husband with a baseball bat and is suffering from multiple facial and head injuries.

In the recent past, these victims received emergency medical care and emotional support from genuinely concerned, empathetic, compassionate, and caring nurses, physicians, corpsmen, chaplains, and American Red Cross volunteers. However, because of their limited training in evaluating the dynamics of family violence and the emotional impact on the victim's life and family, psychosocial and environmental needs were not fully understood and addressed. In addition, a lack of training affected their ability to make appropriate referrals to existing community services agencies. The uncertain handling of family violence perpetrators was also a reflection of staff limitations. The abusers were frequently unreported and unidentified, and counseling services for them were almost nonexistent.

LT Di Paolo is head, Family Advocacy Program (MEDCOM-343) at the Naval Medical Command, Washington, DC 20372-5120.

In 1976 widespread public concern regarding child abuse in both the military and civilian communities provided the impetus for the then Bureau of Medicine and Surgery to establish the Child Advocacy Program. This program was later expanded in 1979 with the publication of BUMEDINST 6320.57 (Family Advocacy Program (FAP) Instruction) which outlines policies regarding identification, treatment, intervention, and prevention of child and spouse abuse, neglect, and sexual assault and rape.

To support these policies in its claimancy, the Navy Medical Department allocated the necessary manpower resources. Currently, 38 social workers including 16 in the Medical Service Corps are rendering much needed clinical and administrative ser-

vices in this program. At smaller medical facilities there are other professional specialists serving as Family Advocacy Representatives (FAR's) on a collateral duty basis.

Although multiple military and civilian organizations and personnel play significant roles, no one is more crucial than the FAR. This individual, designated by the naval medical treatment facility's commanding officer, is the principal coordinator of this highly visible and sensitive program. Usually, a FAR is a military or civilian social worker with a master's degree and is frequently the sole provider of a broad base of clinical services to family advocacy clients.

In examining the magnitude of the program, it is interesting to note that in 1984, 4,344 established family vio-



*An example of physical child abuse*





*LTJG (now LT) Pamela Waterman, MSC, USNR, a social worker at Naval Hospital, Bethesda, interviews two child abuse/neglect victims.*

lence cases were processed in naval medical facilities and reported to the Naval Medical Command (NAVMEDCOM) Family Advocacy Central Registry. In addition, over 2,000 suspected cases of child abuse, neglect, sexual maltreatment of child, and spousal assault were entered into the central registry. Suspected cases are reported for statistical purposes and the names of perpetrators are not identified to the central registry.

In order to gain a greater awareness of the FAP and an appreciation for the FAR's role, this article reviews pertinent directives, Navy policy, and the central role of the FAR in the management of the hospital-based portion of the program.

Family advocacy is a "systems" program requiring concentrated, cooperative, and coordinated efforts from a variety of military and civilian agencies. It is a program addressing prevention, identification, intervention, treatment, followup, and reporting of child maltreatment, spouse abuse, sexual assault, and rape. For the purpose of this article, maltreatment is defined as a general diagnostic term referring to abuse and/or neglect.

Specific types of maltreatment as defined by the Department of Defense (DOD) Directive 6400.1 include physical abuse, sexual abuse, emotional maltreatment of child, child abuse/neglect, death of child, spouse abuse, and death of spouse. This DOD directive, dated May 1981, established a DOD-wide Family Advocacy Program and encouraged each service to develop specific programs to promote healthy families. In addition, it required each service to develop a method for identifying abusers and neglectors, prevent injuries, institute therapy for dysfunctioning family members, and to coordinate management of the FAP with similar medical and social programs.

In January 1984 the Secretary of the Navy published SECNAVINST 1752.3 which instituted Navy policy on family advocacy. This instruction states that family violence can detract from military performance and the efficient functioning of military units, and diminish the reputation and prestige of military service within the civilian community. Family violence is incompatible with the high standards of professional and personal discipline

required of members of the naval service. Navy policy requires the identification of abusers and/or neglectors, and the application of disciplinary or administrative sanctions for maltreatment when appropriate.

Navy policy also addresses breaking the cycle of abuse and neglect through identification and treatment. In support of this policy, the Medical Department has responsibility for the health care aspects of the program and for providing resources, professional services, and the technical assistance to facilitate the health care requirements of the Navy and Marine Corps Family Advocacy Programs.

In addition, NAVMEDCOM maintains the Department of the Navy's central registry for collecting and analyzing domestic violence data concerning established and suspected cases. Central registry information pertaining to established cases is shared with the Naval Military Personnel Command (NMPC) for assignment control purposes. Data is also furnished to the Marine Corps Family Advocacy Program Manager. An illustration of assignment control and central registry functions is discussed later in this article.

Other primary functions of the Medical Department are identifying victims, perpetrators, suspected incidents, and high risk families involved in family violence; protecting abused/neglected victims; and providing direct care, treatment, and referral services.

While the existing directives are being revised and additional instructions are proposed to reflect changing policies and procedures in the "state of the art" in family violence, all have at least one pertinent point in common: the role and responsibilities of the FAR. To better acquaint the reader with an understanding of the role of the FAR, the following scenario is presented:\*

\*While it is recognized that women may also be batterers in spousal assault, data reported to central registry clearly suggest that men are more likely to be abusers and for this reason the pronoun "his" is used when discussing the spouse abuser.

Mrs. Jones, spouse of Petty Officer 2nd Class Jones is seen in the naval medical facility emergency room following an argument at home during which her husband hit her with his fist several times in the face. The attending physician, after providing medical care, contacts the FAR for assistance. The FAR verifies the injuries with the patient and initiates a family advocacy case file separate from the patient's medical record.

The FAP file is maintained and transferred in accordance with BUMEDINST 6320.57 and safeguarded in accordance with the privacy act of 1974. In addition, the FAR conducts an interview in which survival needs and plans may be discussed (i.e., the victim decides to press charges of assault, return home, stay overnight with relatives or friends, be temporarily admitted to the hospital, or referred to a shelter for battered women).

Inquiry will also be made regarding childrens' (if any) whereabouts and safety. Should children be at home and in danger of abuse, the FAR contacts the local Child Protective Services agency for investigation and possible removal of the children from the home.

In overseas locations, the base commanding officer may exercise his or her authority in this type of situation. Subsequent to the victim's interview, the FAR notifies the perpetrator's commanding officer and informs him or her of the incident and requests an interview with the abuser.\*

The perpetrator may be very resistant, hostile, uncooperative, and



*Mr. Ralph Biase, social worker and Family Advocacy Representative (FAR), comforts a victim of family violence.*

guarded during the initial clinical interview. However, the FAR, utilizing clinical skills, is normally able to penetrate these barriers by explaining the role of the FAR and purpose of the FAP. A typical interview may include a social history and analysis of the dynamics of an abusive relationship and behavior. The perpetrator will frequently admit to abusing his spouse physically and in many instances actually experiences relief that his inappropriate behavior is "out in the open." The availability of assistance is then most welcome.

During the initial or subsequent interviews, the FAR may focus on the abusive behavior and assist the perpetrator to evaluate the violent act and the consequences of this type of behavior. The objective of the counseling session, is that the abuser learn his abusiveness was not provoked, justified, or condoned, and that he is solely responsible for the violent episode. Attempts at behavior modification and other alternate treatment methods to correct abusive behaviors are usually deferred to subsequent sessions, as

these approaches are more successful in conjunction with structured group counseling.

Following the interview, the FAR may refer the client to legal services, especially if criminal charges are pending or imminent, or to other appropriate agencies until the case can be reviewed by the subcommittee of the Family Advocacy Committee (FAC). The FAR may also contact other individuals associated with the perpetrator for additional information. These may include: the individual's command, law enforcement agencies, social services, and family. Subsequent to this "leg work," the FAR refers the case to the spouse abuse subcommittee of the Family Advocacy Committee. This subcommittee, made up of line, medical, and other personnel, determines the status of the case (established, suspected, or unfounded).

The subcommittee also makes treatment recommendations. Assuming that the case is determined to be "established" by the spouse abuse subcommittee, a Family Advocacy Re-

\*Military members who are suspected of abuse or neglect cannot be interviewed (except for clinical information) without proper warning under article 31 UCMJ. It is recommended that someone other than the FAR read the article 31 warning to the alleged offender since it is crucial that the FAR be perceived by the abuser as a helping person. When "law enforcement" duties are added to the FAR's clinical responsibilities, the rapport between the provider and perpetrator which is crucial to treatment success is placed in jeopardy.



port (NAVMED 6320/25) is completed and forwarded to NAVMEDCOM central registry. NAVMEDCOM subsequently notifies NMPC and the perpetrator is placed under assignment control.

Prior to his reassignment, NMPC must get clearance from NAVMEDCOM with the exception of incest perpetrators, whose cases are controlled and managed by NMPC's Family Advocacy Branch. The purpose of assignment control is to track and monitor treatment and insure families are not reassigned to areas without adequate resources.

Victims, abusers, and their families are afforded a variety of counseling services from available military and civilian agencies. Based on the subcommittee recommendations, these services may include individual, group, or family counseling, stress management, or marital counseling. Treatment for family advocacy clients as directed by SECNAVINST 1752.3, is for 1 year, and military members who refuse treatment or are unable to modify their abusive behaviors during the 1-year treatment program are processed for administrative separation

from the service for the military offense committed. When perpetrators' military records merit consideration and when recommended by the parent command in consultation with family advocacy personnel, they may be continued in treatment longer than a year.

A number of Navy facilities offer group education/counseling programs (Anger Control Groups) for battering spouses and violent behavior. These groups may be based in naval medical facilities, Family Service Centers, or in the civilian community. Counseling services for victims are either provided or coordinated by the FAR with other agencies (i.e., Family Service Centers, women's shelters, Child/Family Service agencies, Child Protective Services, and other civilian and military organizations).

It is imperative that in the management of the Family Advocacy Program, the FAR "network" with other agencies (Naval Investigative Services, legal, Family Service Centers, Child Protective Services, and law enforcement), provide consultative services to medical and line commands, serve as a

change agent, and advocate for both victims and perpetrators of family violence.

Despite increasing case loads each year, and the growing demands placed upon them, the FAR's have been able, especially in smaller areas, to gain visibility in the community and develop linkages with community organizations in support of the reporting and treatment system. FAR's, in concert with other health care providers and community agency personnel, have developed well organized procedures for the Family Advocacy Program. In addition they have been instrumental in either developing and/or assisting Family Service Centers in creating community awareness regarding family advocacy. This demonstrated cooperation between medical and line personnel significantly facilitates program implementation and the rendering of services to beneficiaries.

In summary, the FAR is the central figure of this highly critical program. FAR's work long hours and are constantly on call to respond to emergency situations. Their dedication, competence, and commitment to improving the quality of life is unsurpassed. The Family Advocacy Program, while still undergoing evolution, is considered a major Navy program in stopping abusive behaviors. The success of this program is contingent upon command involvement and coordination with principal line, medical, and civilian activities. The Family Advocacy Representatives, often unsung heroes and heroines, play crucial roles in coordinating these efforts and meeting the Navy's goal.

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Photos by the author



Social worker Cindi Beach counsels family violence victims.

# Occupational Health: The Long Beach Story

CAPT Thomas W. Henn, MC, USN

LT Michael J. Smith, MSC, USN

Jean Spencer Felton, M.D.

The development of the Occupational and Environmental Health Program in the Long Beach area is a dynamic and interesting story. Since the Long Beach Naval Shipyard was completed in 1943 to repair, overhaul, and re-deploy ships engaged in the Pacific theaters of World War II, there has been a medical service for the civilian employees. The sites varied from the makeshift structures of expedient wartime construction, to a hospital ship long tied to an adjacent pier, to a permanent building.

Personnel staffing the dispensaries over the decades were mainly Medical Department personnel with an occasional civilian having occupational health or industrial hygiene credentials. In 1973 the total concept of medical support changed with the creation of naval regional medical centers. The effort removed the health facilities from local commands, placing them as outlying facilities of the hospital-based regions. The separation of the units from the individual activities was not greeted favorably by commanders, many of whom responded with "I lost my doctor."

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When this article was written Dr. Henn was head, Occupational Health/Preventive Medicine Department, Naval Hospital, Long Beach, CA. He is currently director of Occupational and Environmental Health at Naval Hospital, Bremerton, WA 98314. LT Smith was medical department head, USS *Peleliu* (LHA-5). Dr. Felton is clinical professor, Department of Community and Environmental Medicine (Occupational Medicine) at the University of California, Irvine, CA 92717.

By late 1974, after a period of relative contempt on part of workers for the medical operation, changes began taking place with the addition of board-certified physicians. The elements of a true preventive medical program were introduced and close ongoing contact was initiated and maintained with the shipyard command and departmental superintendents and executives. A liaison was also established with the Metal Trades Council, which led to a 4-year period of freedom from medically-based grievances, in contrast to a regularly occurring, twice-monthly filing.

In 1975 the separate civilian and military dispensaries were consolidated and the wartime two-tiered barracks building, which had provided examinations and care to the workers, was razed as part of yard modernization. The increased distance to the permanent building added personnel travel time but did provide room for program expansion.

Because of apparent need and with a greater awareness of the potential health hazards present in yard operations, an industrial hygiene laboratory was established in a building adjoining the Branch Clinic. It provided both analytic and computer capabilities for environmental surveillance.

By mid-1977 there was increased concern regarding exposure to asbestos, especially related to the removal of old insulating material in the ships' piping systems. After a pilot radiographic examination of 500 production workers, chest films were taken of



*Long Beach Naval Shipyard*

all shipyard personnel and an educational program was instituted both to apprise examinees of the characteristics of asbestos-related disease and to discuss the findings of the study.

The Branch Clinic, although a stepchild of the Naval Hospital, had a sufficiently commendable program to warrant its description in various scholarly journals. It also served as a training facility for visiting graduate students in preventive medicine, occupational health nursing, and occupational optometry.

With changes in leadership, the growing program remained at a plateau until the office of the CNO determined that local installations must have the facilities and personnel





needed to meet the mandates of the Occupational Safety and Health Act (OSHA) of 1970. In 1982 occupational health underwent a rebirth and began to grow at a rate never before possible with earlier budget constraints.

As we approached the 80's it became apparent that the program had to be upgraded. Suddenly, legislation and public awareness mandated that the civilian worker and the active duty participant had to be protected from hazards of his environment.

\* \* \*

What does it take to make a comprehensive occupational health program cost-effective when the Navy's share of

the Defense Department's budget is being funneled into a 600-ship Navy, and the Medical Department is forced to compete with other activities for the remaining resources. A program designed to implement Navy policy to the fullest extent will ultimately reduce compensation costs for work-related injuries and illnesses. Wherever it is demonstrated that workers' compensation spending can be reduced over time, then evidence will show a cost-effective occupational health program.

Workers' compensation costs measure an organization's success or failure in providing safe and healthful work environments for employees. Whether the injuries and illnesses are actual, alleged, or contrived, makes little dif-

ference in this instance. When costs are exorbitant, success cannot be claimed. The Navy Department does have a lion cub's share in reducing the Navy's \$130,000,000 annual workers' compensation bill. Medical Department responsibilities are clearly defined in the Navy Occupational Safety and Health (NAVOSH) Program.

### **Commitment**

In the past, many Medical Department commands were slow in developing comprehensive occupational health programs. Prior to 1982, Naval Hospital, Long Beach was little different from medical commands at other localities in providing occupational health services to industrial/opera-

tional activities in the area. Medical managers wallowed in a plethora of NAVOSH and OSHA directives that confused more than solidified their thinking and actions. In 1982 Naval Hospital, Long Beach committed itself to the creation of a comprehensive occupational health program that clearly fulfilled NAVOSH responsibilities. Commitment was the first step.

### **Communication**

Communication was the second step. The industrial/operational activities in the Long Beach vicinity provide one of the richest varieties in workplace stressors that challenge the ingenuity of occupational medicine professionals. Long Beach Naval Shipyard, where USS *New Jersey* (BB-62) was made ready for recommissioned service, is the largest industrial activity operated by the Navy in the area. It has the largest number of employees and the greatest variety of physical and chemical hazards to which employees are exposed.

A basic necessity in providing such a complex activity with an occupational health program is to learn where the hazards are and the nature of their dangerous exposures. A complete industrial hygiene baseline survey meets this basic need.

From February through August 1984 the Naval Medical Command, Southwest Region contracted for a comprehensive industrial hygiene baseline survey. The contract was awarded to a Minnesota firm whose computer capability was compatible with the Navy Occupational Health Information System (NOHIMS). This survey, when complete, will contain an estimated 100,000 pages of documented hazards within the shipyard. Early in 1982 the commanding officer of Naval Hospital, Long Beach conveyed to the shipyard commander the commitment that this survey would be



completed, and that his staff would implement a full occupational health program.

Similar commitments were communicated to the other industrial/operational activities in the area. Naval Weapons Station, Seal Beach, is a weapons storage and rework facility for fleet units. Complete medical surveillance of explosives drivers, weapons handlers, and torpedo shop workers is paramount.

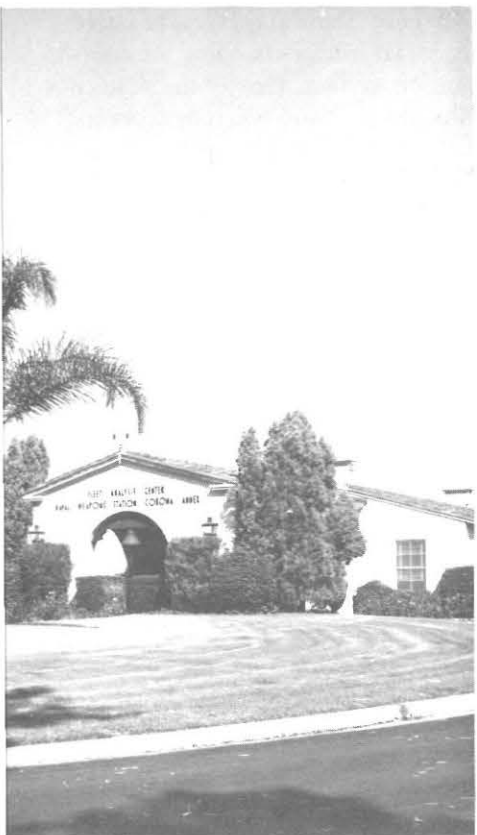
Part of the Weapons Station command are annexes at Corona and Pomona, where workplace hazards include tetrachloroethylene, trichloroethane of various molecular structures, laser operations, and elemental mercury.

Naval Weapons Center, China Lake, in the Mojave Desert, presents many hazards that are always changing owing to the constant addition of new research projects.



*Naval Weapons Station, Corona, CA*





Marine Corps Air Station at El Toro and Tustin have the stressors typically present in any major air base, e.g., noise, aircraft cleaning solutions, and jet fuels.

The Naval Station and Ships Intermediate Maintenance Activity, both in Long Beach, present a variety of respiratory hazards that require close medical surveillance.

Hazardous occupational exposures are also indigenous to the Naval Hospital environment, i.e., ethylene oxide, noise in engineering plants, and laboratory reagents. It has not been necessary to contract out comprehensive baseline surveys for these industrial/operational activities, as the Naval Hospital has the required specialized personnel to conduct such studies.

### Organization Refinement

Organizational refinement of the Occupational Health/Preventive Medicine Department was the third step. To prevent the tail from wagging the dog, as was the case prior to 1982 in the area of occupational health, Naval Hospital, Long Beach refined its organizational structure to what it is today (Figure 1). The major features of this structure are imposed by the geographic distances between the Naval Hospital and each of its branch clinics. Since the largest industrial activity is the shipyard, the main offices for the department are located at the Naval Station Branch Clinic adjacent to the yard. The distance from the hospital is 12 miles. Two other occupational medicine clinics are tenants at branch clinics—NWC China Lake and MCAS El Toro/Tustin.

The clinic at NWS Seal Beach primarily functions as an occupational health facility with an independent duty hospital corpsman attached to render care to active duty personnel.

Geographic distance requires the heads of the occupational medicine clinics to be physician specialists in the field and capable of managing a comprehensive program at their respective industrial/operational activities. Backup support in industrial hygiene,

environmental health, occupational optometry, hearing conservation, occupational health nursing, and administration is provided by the main offices, even though each occupational medicine clinic has elements of these services on a full-time basis.

This organization and its accomplishments have been evaluated by the Navy Occupational Safety and Health Inspection Program (NOSHIP) on four occasions since 1982 and have gained substantial recognition for successful performance. NOSHIP conducts oversight inspections of naval shore activities under the auspices of the Naval Inspector General. Results of inspections gain high visibility with the Chief of Naval Operations through OP-09F and OP-45. A common misconception of Medical Department personnel not actively involved in occupational health is that NOSHIP inspections of industrial/operational activities do not affect the Medical Department. It is believed that this misunderstanding originates from the idea that unless a Navy hospital is itself undergoing a NOSHIP inspection, occupational health programs are not scrutinized as reflective of the Medical Department. However, their failure to execute NAVOSH responsibilities can prevent an industrial/operational activity from meeting its safety and health responsibilities. Repercussions from NOSHIP inspection failures are serious. Medical managers should be pragmatic about this issue. Success or failure at the time of a NOSHIP inspection demonstrates an activity's level of compliance with Navy policy in providing safe and healthful work environments.

### The Future

The Occupational and Environmental Health Program at Long Beach continues to grow and improve. With the advent of NOHIMS, a computerized occupational and safety program for the area came into existence. As indicated, a baseline survey is currently being completed, and the 127,000 pages of data will be compu-

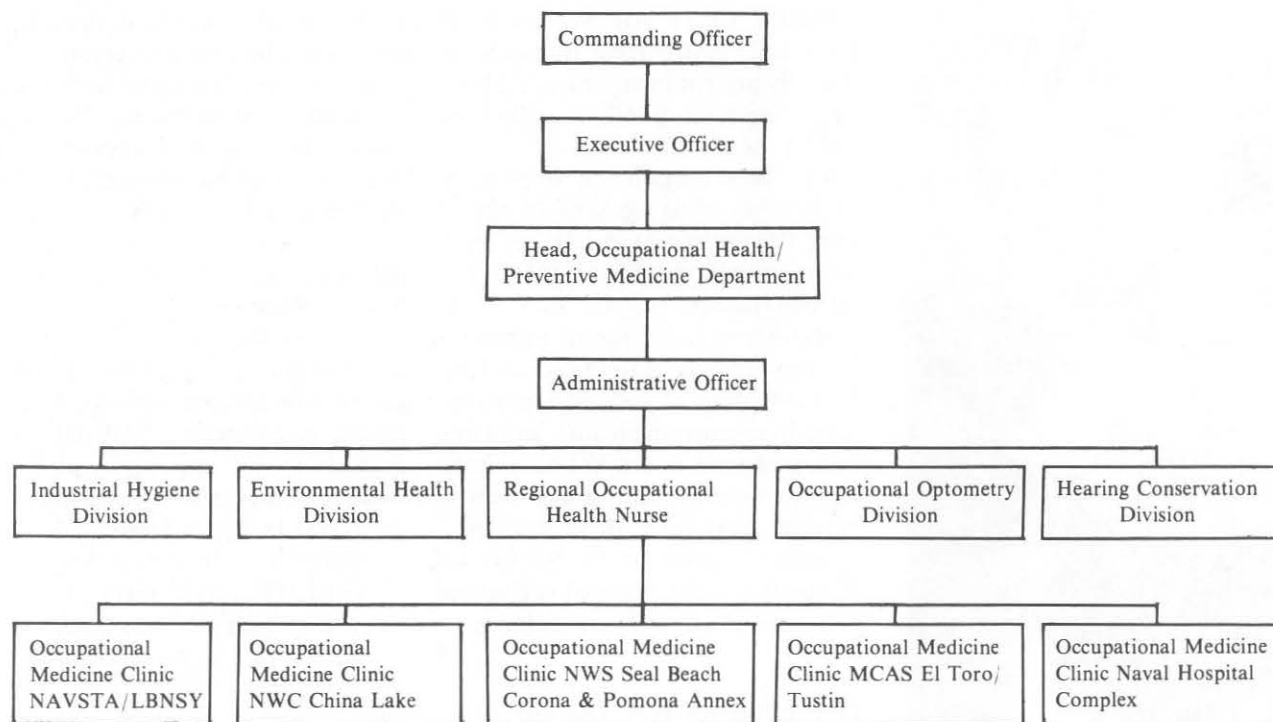


Figure 1. Occupational Health/Preventive Medicine Department, Naval Hospital, Long Beach, CA

terized for retrieval by industrial hygiene personnel during their conduct of the ongoing surveillance program at the shipyard. A similar baseline program will soon be in process for the El Toro Marine Corps Air Station. The Occupational Medicine Program is being equipped with two zenith microcomputers and is online for a mainframe computer in 1986. These additions will allow not only the retrieval and matching of surveillance and exposure data with patient records, but for the first time will also allow rapid data retrieval for epidemiologic studies. Several such studies are currently in progress concerning pulmonary function, exposure, and workers' compensation claims.

The Long Beach region is so varied that it becomes readily apparent that it is a fertile ground for field placement of medical residents. The clinical exposure would be offered on a regional basis to occupational medicine residents from the Navy who have completed their MPH didactic year and a formal residency program. In

certain circumstances it would also be offered to civilian occupational medicine residents from the University of California at Irvine and the University of Southern California. The program could also provide needed on-the-job training in occupational medicine of primary care physicians who are called upon to offer this service at their duty stations.

Because of the varied nature of the program a postgraduate system is evolving for occupational medicine clinicians who work in the Long Beach Occupational Medicine Program. A back school is in preparation because of the high cost of back injuries at the shipyard. An ongoing program of stressor exposure for discussion and evaluation will be part of the postgraduate educational system.

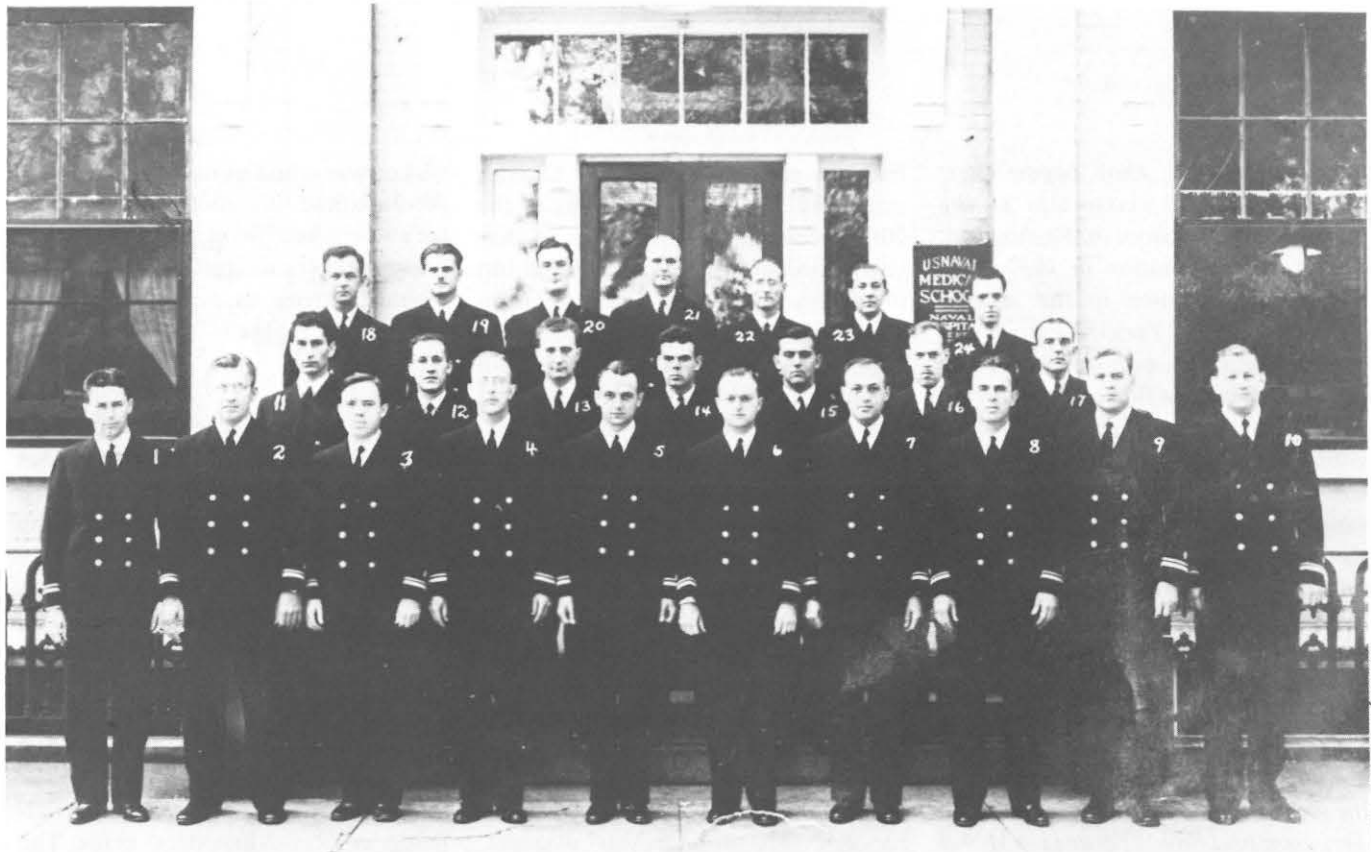
Continuing Medical Education (CME) will be sought during the coming year as the program becomes formalized. A postgraduate curriculum would include disability determination, workers' compensation, current topics in occupational medicine in the

Long Beach area, stress management, behavior modification, etc.

Currently, there are several negative factors that hinder changing the compensation system. One is the 45-day exclusionary clause whereby workers are allowed to be off work without periodic medical evaluation for 45 days before they can be reappraised. Secondly, and more importantly, is the employees' attitude toward their jobs. The common feeling in a shipyard is that it is an unsafe worksite. This point of view promotes negativity and the unconscious desire not to return any sooner than one must. We are working diligently to instill confidence in safety and health programs at the shipyard, for in the long run we feel this approach will give a positive image to one's job, and encourage an earlier return to work.

The Long Beach program is an exciting, dynamic, growing program that encompasses a large area and is indeed a fertile ground for both the study and evaluation of occupational medicine in the Navy. □





Courtesy Francis S. Williams

Naval Medical School Class of 1939. Ferguson is number 14, Smith, number 5.

Courtesy Lucille Ferguson



Yangtze Patroller Ferguson in summer uniform aboard USS Guam/Wake.

## Yangtze Patrollers— Bilibid POW's

Last September marked the 40th anniversary of the end of World War II. For most veterans who served, homecoming was a joyous occasion. They jumped back into the mainstream and picked up life where they had left it. For those who had been liberated from prisoner of war camps in the Pacific the homecoming and recovery would be long and difficult. The disease, torture, and deprivation they suffered robbed most of their health, and their lives would never quite return to normal.

Yet over four decades later survivors of Bataan, Corregidor, Camp O'Donnell, Cabanatuan, Davao, Tarlac, Bilibid, and the Japanese death ships still remember vividly the early days of 1942 when a seemingly invincible and brutal Japanese war machine

quickly extinguished U.S. power in the Pacific. With the attack on the Philippines they were among the first Americans to fight against hopeless odds until forced to give up, abandoned by a nation whose priority was liberating Europe from the Nazis.

The days, weeks, and months of starvation, forced labor, and the boredom of prison life have since become a distant blur for many, but even though the human mind might choose to sift out the horror, the survivors will remember their ordeal to their dying days. The bond forged between men in the camps is as sacred as the memory of the thousands of comrades who never came home.

This is the story of two such prisoners, LT George T. Ferguson, MC, and LT Alfred L. Smith, MC. Brother

medical officers, they began their Navy careers as classmates at the Naval Medical School in Washington, DC. Upon graduation in 1939, they were both assigned to the Asiatic Fleet. As fellow "Yangtze Patrollers," they cruised up and down China's rivers showing the flag and protecting American interests even as Japan gobbled up what remained of free China. They knew, and indeed all westerners living in China knew, they were living on borrowed time. In the fall of 1941 time ran out.

Ferguson and Smith ended up in Manila on the eve of Pearl Harbor, the former just having missed the last ship home, the latter arriving from Shanghai on 4 Dec aboard the river gunboat, USS Luzon. But suddenly the war caught up with them. On 8 Dec Ferguson told how. "Up at 11 AM and this is the day I find out if we go home to US or not. I found out . . . [We learned] that Japan had bombed Honolulu, Guam, Wake, Baguio PI and we were now at war." (1)

The two physicians practiced their noble art ministering to the wounded as the bombs fell on the Cavite Navy Yard and at Bataan. Driven by the advancing Japanese to the islands of Corregidor and Caballo in Manila Bay, they witnessed the dreadful and final siege of the last American bastions in the Far East, and they surrendered with the others.

The real ordeal had barely begun. Both were interned at the infamous Bilibid prison in Manila and Ferguson later at Cabanatuan. They would spend nearly 34 months in captivity, and then, poised on the very brink of liberation, one would die on a Japanese prison ship.

After a month of field medical training at the Quantico Marine Base, LTJG George Theodore Ferguson, a native of Missouri, looked forward to his assignment with the Asiatic Fleet in China. Being a "Yangtze Patroller" was considered by many to be the best duty in the Navy. The small fleet of shallow draft, twin-screw gunboats

had cruised up and down China's waterways since the early days of the 20th century. The instability of that vast nation brought on by domination of warloads and years of revolution and civil war required a modest U.S. Navy presence to protect American business interests, missionaries, and diplomatic personnel. With the Japanese invasion of Manchuria in 1937 and increasing occupation of China by Japan, duty on the Yangtze Patrol became riskier. The sinking of USS Panay by Japanese warplanes almost brought war between the U.S. and Japan 4 years before Pearl Harbor.

When George Ferguson and nine of his Naval Medical School classmates boarded the SS *President Garfield* at San Francisco in June 1939, the crisis in the Far East did not seem a primary concern. The voyage was pleasant. These were still the days when the slow boat to China meant comfortable staterooms, teak decks, polished brightwork, elegantly served meals, and an element of class that faded long before the jet age arrived.

It took about a month to reach China via Hawaii, Yokohama, Kobe, and Hong Kong. What Dr. Ferguson found when he arrived in the Orient was quite a contrast from what he left behind. The Shanghai of the late 1930's was a city of extremes—grinding poverty and indecent wealth. As China's largest port, Shanghai was certainly the most westernized of cities, a condition brought about by years of foreign presence. This was evident in its architecture and by the number of Americans, Russians, Germans, French, and British that resided in the "quarters" and traveled its beggar-filled streets in coolie-drawn rickshaws.

The city was divided into foreign enclaves, each immune from Chinese law and enjoying the protection of its own troops and gunboats. In the squalid Chinese quarter where the so-called "Green Gang" ruled, opium dens and houses of prostitution flourished amidst crime and the open exploitation of Chinese citizens.

Adding to the misery was the har-

vest of war—bodies of victims slain by the Japanese floated down the Yangtze and choked Shanghai's canals; destitute refugees clogged its streets and regularly froze to death during the cold winter nights.

## Good Duty

From July to September 1939 Ferguson served with the Fourth Marines at Shanghai before reporting aboard USS *Guam*. As medical officer of the 159-foot-long gunboat, there was little official to keep him busy. The crew was small and basically healthy. He administered inoculations, treated minor injuries and illness, monitored the vessel's medical supplies, inspected messing areas and the Chinese food handlers who came aboard, acted as the vessel's coding officer, and participated in "Repel-Boarders" drills. The rest of the time he enjoyed the "good duty" of golf, tennis, softball, learning Chinese, and cultivating the friendships of other foreign nationals. There were "Lots of movies, dinners, places + people. Americans, Russians, Chinese." (2) Occasionally, when *Guam* ventured upriver to Hankow and Wuhan, Ferguson was able to examine or perform surgery on patients in the many missionary hospitals.

Nevertheless, practicing medicine was an infrequent occurrence. After 21 months of general inactivity he grew more and more restless. "Man O'War," he wrote, "What a laugh, when all we do is run freight + passengers from Hankow to Shanghai. Yellow Funnel Freight Line would be more appropriate." (3)

But boredom aside, suspicions about Japanese intentions grew daily. As *Guam* rode at her mooring in Shanghai, the crew photographed Japanese vessels and noted their comings and goings. When underway, the lightly armed gunboat was "escorted" by a Japanese warship. Between medical duties, Ferguson mulled over his lot. "Personally I like the easy going life of a hospital where you work 24 a day because you like it. Maybe we'll have a war + maybe I'll get a bit more practice who can tell!" (4)





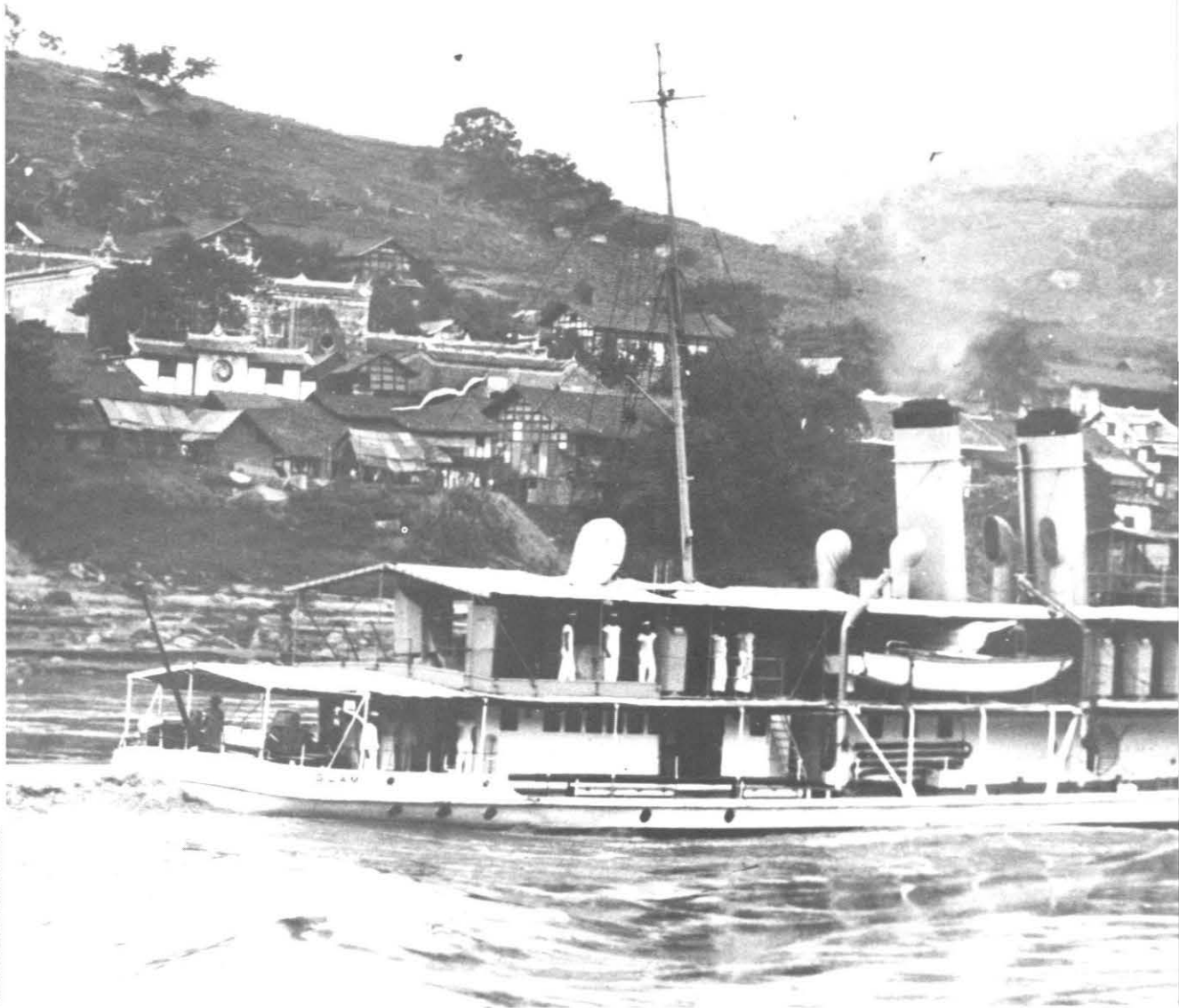
*U.S. Navy gunboats of the Yangtze Patrol occasionally traveled upriver as far as Chungking (Chongqing), some 1,000 miles from the sea.*

Ferguson lived to regret that entry in his diary. By late November 1941 Japanese-American relations had reached rock bottom. *Guam*, renamed *USS Wake*, prepared to leave China with her sister gunboats. The Yangtze Patrol was being dissolved. With his asiatic tour completed, Ferguson was

to return to the States aboard the *SS President Harrison* but he never got beyond Manila, where he disembarked; the ship was diverted to north China to pick up other evacuees. The last vessel to leave for the U.S. had left several days before. Ferguson and many of his comrades were marooned.

## War

The day after Pearl Harbor, Ferguson reported for duty at the Canacao Naval Hospital near Manila. There would be ample opportunity to practice surgery. On 10 Dec 1941 high flying Japanese bombers hit the city and virtually wiped out the Cavite Navy



United States Naval Institute

Yard. "Bombs hissed down and empty AA fragments dropped all around . . . Casualties poured in so damn fast we filled Canacao Hosp. in couple of hours. Only words to describe it are '*One Bloody Mess.*'"(5)

The following day he and three other doctors set up an aid station at Sangley Point on the first floor of an old house. For the next 11 days they treated casualties as the Japanese continued to pound the area. "We scurried around like rats in a trap with the building shaking and the furniture dancing around crazily."(6) Ferguson found a trench to hide in but only after shrapnel pierced his knee. There were 13 dead and 40 wounded in that attack.

Through it all he kept his humor.

After one particularly frightening bombardment he wrote: "scared as hell but here we are again. I am beginning to wonder when they will end this diary. Stand by for sudden finis!"(7)

There was no abrupt end and the situation grew more unpleasant. The doctor led a detail to dispose of the dead at the Cavite Navy Yard where the scene was almost too horrible to contemplate. The place reeked with burned and decaying flesh. Ferguson and his detail dumped the unidentified remains into bomb craters and covered them over. Other bodies were cremated. Altogether they disposed of about 200.

Undermanned and overwhelmed with live casualties, Ferguson and his colleagues did what they could, often

dodging bombs as they worked. Conditions around Manila worsened. With American-Filipino lines stretched thin, Olongapo was evacuated and Ferguson went to the First Battalion, Fourth Marines at Mariveles on the Bataan peninsula where he became battalion surgeon. But Bataan was but a holding action. On New Years Day 1942, Ferguson and the Marines departed for Corregidor. It was his 28th birthday.

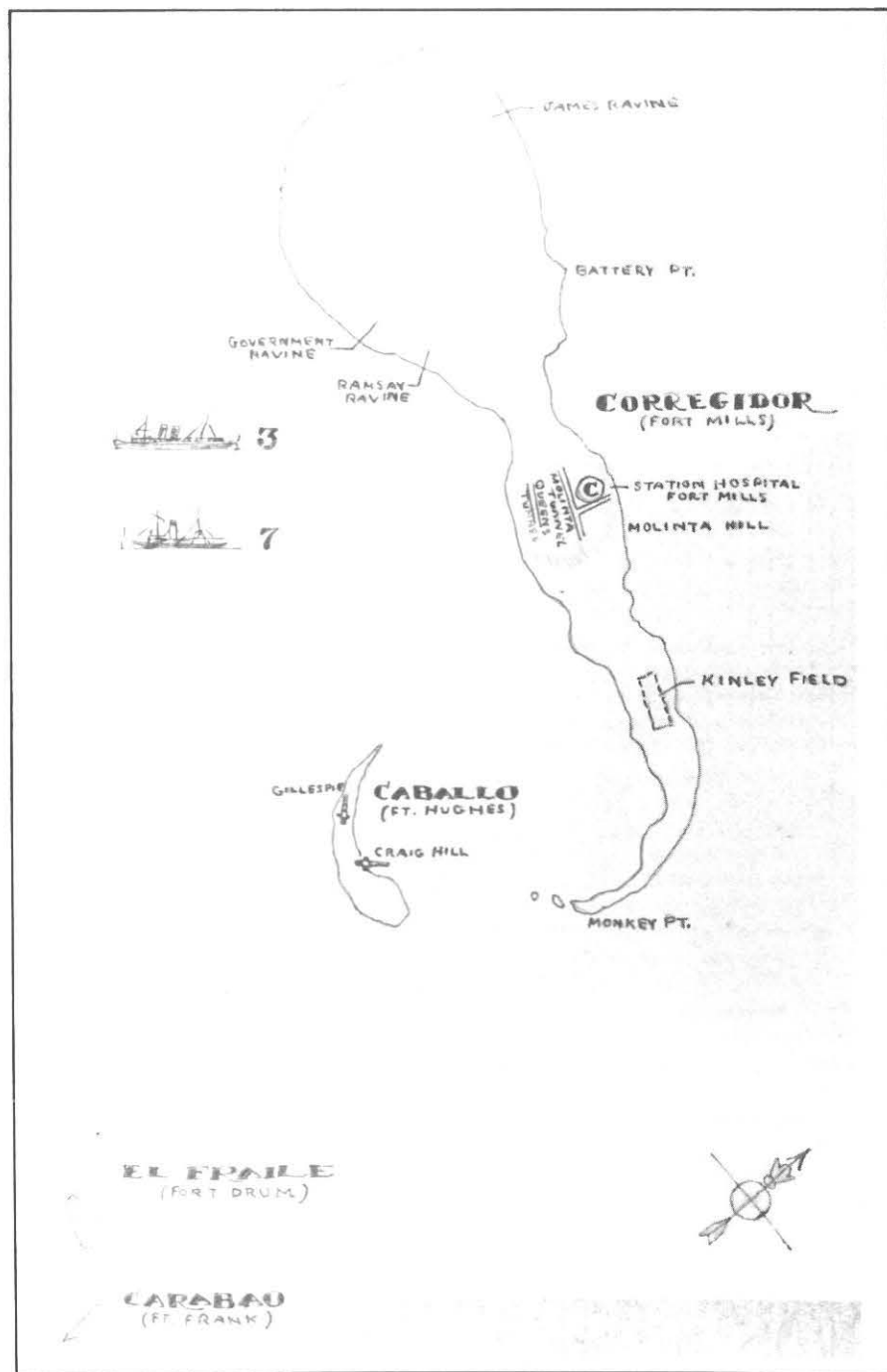
### No Place to Hide

The First Battalion's mission was defending the east sector of Corregidor, an area some 1½ to 2 miles long and 800 to 1,000 yards wide. The beaches faced both the Bataan and





Left: USS Guam cruises the Yangtze River. Below: Pencil and ink map of the Manila Bay defenses prepared by one of Corregidor's defenders.



Cavite mainlands and, when Bataan fell on 10 April 1942, the defenders faced the full fury of Japanese artillery.

With great effort and under almost constant bombardment, the newly promoted LT Ferguson and his men scratched a tunnel into a rocky cliff. When completed the "bombproof" accommodated 12 patients, medical equipment, and personnel. During the final 3 weeks of the Corregidor resistance between 3,500 and 4,000 shells per hour were raining down on this sector. LT Murray Glusman, MC, remembered the action: "When I was first assigned to George's outfit I didn't know what I was getting into. I got there at night. George showed me the fox-holes + got me a bunk. In the

morning he gave me a bar of chocolate. I said Thanks pal—when's breakfast?" He said That's it + dinner is after dark because the Nips spend all day trying to blow out our galley."(8)

As the food and medicine began to run out, casualties continued to

mount both from shellfire and disease. Malaria and dysentery were rampant, but Ferguson continued to show his mettle. Two casualties requiring immediate medical attention were out of reach as artillery and air raids forced everyone under cover. Even

though an ammunition dump was exploding nearby, Ferguson and a corpsman made their way to the wounded men, rendered emergency treatment, and got them to the safety of a dugout. That night under cover of darkness they returned and evacuated them to the hospital operating inside the Malinta Tunnel.

Good news was in short supply but occasionally American marksmanship gave the defenders something to cheer

about. One afternoon two Japanese bombers caught it from an anti-aircraft battery. "Both were hit and one had a wing blown off. It was a beautiful sight to see it spin into a 90° dive + plunge into the bay about 300 yds from USS Mindanao . . . The other plane exploded in mid air + there was nothing but a few fluttering pieces. . . The whole island gave vent to a chorus of cheers + yells + I am now hoarse."(9)

Although the end was in sight, Ferguson, near exhaustion and suffering amoebic dysentery, could still sound a defiant note. "So far the mouth of our tunnel has been very lucky but how many have come pretty close 20-25 feet. I would like to have a recorder here to send this all back for rebroadcast to U.S. defense workers, pacifists, Army, Navy + Marine commanders, Congressmen etc. Corregidor still stands . . ." (10)

Three days later, following an intense barrage and several successful Japanese landings, the white flag went up. The doctor and many of his comrades sat down and wept. —JKH

(Conclusion in the January-February 1986 issue)

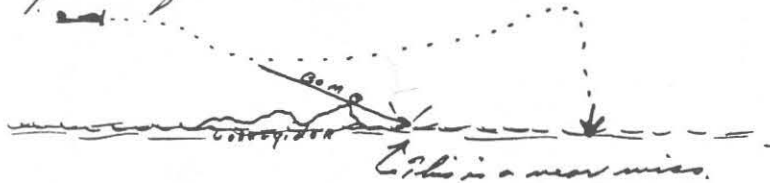
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we have a few shells. Batteries of 4 guns opened up (perhaps 3 or 4 batteries) + concentrated on Battleship, PT-43 + ships between with 4 Hugs. 1<sup>st</sup> Bn had no casualties in spite of number of shells that fell in our area. 50% at least were duds + really no military damage except one inter island ship sunk. Bombardment lasted until 5<sup>36</sup> P.M. + sporadic after that until 7 P.M. Several dive bombers entertained us for 45 min missing all their targets by several hundred yards. We got one. My opinion of Japanese dive bombers is 0. Here is a picture of me in action.



Guess I'm getting childish but so is this whole war especially the Japanese aspiration for a greater EA + Co prosperity sphere and new order etc.

20<sup>th</sup> slot is cyphilitis + maphasia the 7 am and relatively quiet day. Was malaric few acute fast enteritis and the usual

Page from Ferguson's diary (19 April 1942) in which he belittles the competence of Japanese bomber pilots.

# Anesthesia for the Hypertensive Patient

LCDR Joseph P. Coyle, MC, USNR

The perioperative care of the patient with hypertension is a frequent clinical challenge for anesthesia personnel. Prior to the advent of effective drug therapy for hypertension the surgical mortality in this large group of patients ranged from 2.5 to 32 percent.<sup>(1)</sup> With thorough preoperative evaluation and preparation and cautious, appropriate intraoperative care, the risk of surgery in the hypertensive patient can be greatly reduced, if not obviated completely.

## Preoperative Evaluation and Preparation

The major emphasis in the preoperative evaluation of the hypertensive patient is to define the degree of hypertension, the etiology, the effectiveness of drug therapy, and the extent of end-organ damage.

The incidence of hypertension blood pressure (BP) greater than 160/95) in the general population is high, ranging from 15 to 20 percent with the incidence increasing as age advances. The vast majority of these patients have "essential" hypertension. However, in up to 10 percent of patients, the hypertension is secondary

to a variety of conditions such as renal artery stenosis, hyperaldosterone states, intrinsic renal disease, pheochromocytoma, or coarctation of the aorta. A thorough history and physi-

cal exam and laboratory studies including measurement of serum electrolytes, urea nitrogen, creatinine, and the performance of an urinalysis are often adequate to rule out these diag-

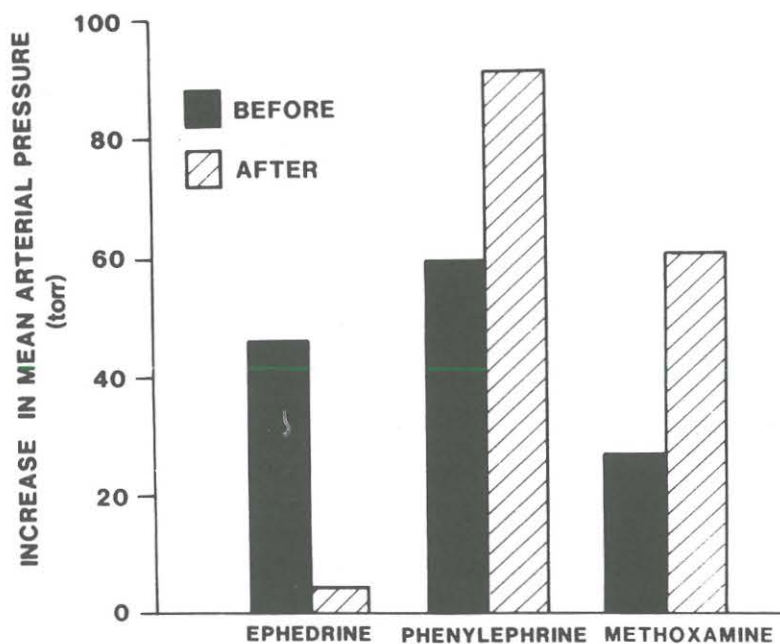
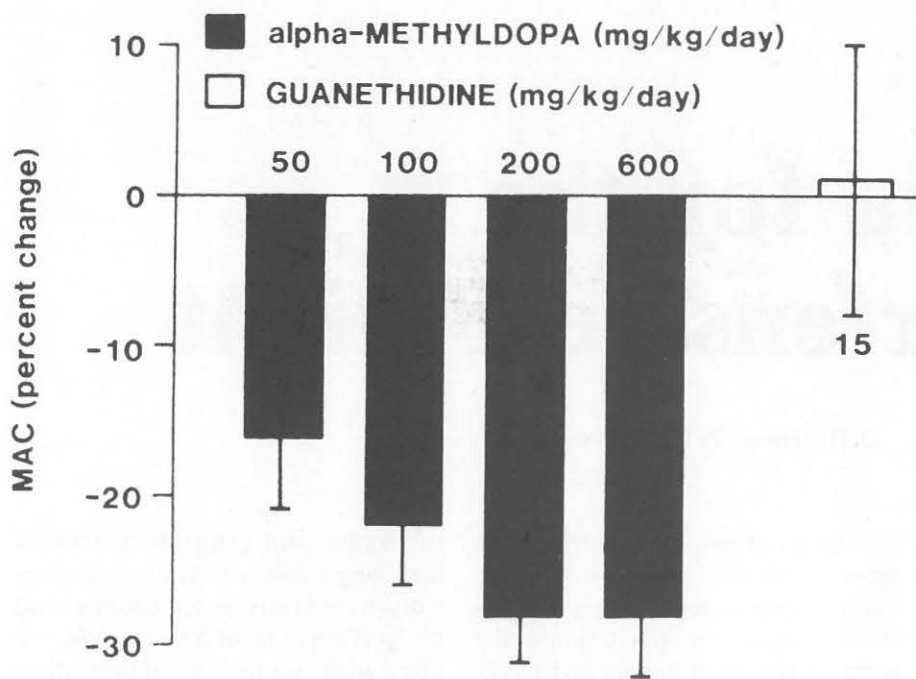


Figure 1. The increase in mean arterial pressure in response to the intravenous injection of ephedrine (0.5 mg/kg), phenylephrine (0.007 to 0.01 mg/kg), and methoxamine (0.125 mg/kg) was determined before and after the administration of reserpine to dogs anesthetized with pentobarbital. Reserpine attenuated the blood pressure response produced by the indirect-acting sympathomimetic, ephedrine. Conversely, the blood pressure responses produced by the direct-acting sympathomimetics, phenylephrine and methoxamine, were exaggerated following the administration of reserpine. (Data adapted from Eger EI, Hamilton WK: The effect of reserpine on the action of various vasopressors. *Anesthesiology* 20:641-645, 1959.)

Dr. Coyle is associated with the Departments of Anesthesiology and Critical Care Medicine, Naval Hospital, Bethesda, and the Departments of Anesthesiology and Medicine, Uniformed Services University of the Health Sciences, Bethesda, MD 20814-5011.





**Figure 2.** The effect of alpha-methyldopa (50 to 600 mg/kg/day for 3 days) and guanethidine (15 mg/kg/day for 3 days) on the minimum alveolar concentration of halothane (MAC) (mean + SD) was determined in dogs. Alpha-methyldopa produced a dose-related reduction in MAC with a plateau effect reached at a dose of 200 mg/kg/day. Conversely, guanethidine, which does not cross the blood brain barrier, did not alter MAC. (Data adapted from Miller RD, Way WL, Eger EI: The effects of alpha-methyldopa, reserpine, guanethidine, and iproniazid on minimum alveolar anesthetic requirement (MAC). *Anesthesiology* 29:1153-1158, 1968.)

noses. The younger hypertensive, those with severe or labile blood pressure and those not responding to therapy may require further evaluation.

Classic studies about anesthesia and hypertension performed by Prys-Roberts, et al. in the 1960's demonstrated that the major risk in these patients was myocardial ischemia. The intraoperative course of the hypertensive subjects was characterized by wide fluctuations in arterial blood pressure (a "roller-coaster ride" familiar to all anesthetists) with myocardial ischemia occurring in 5 of 7 untreated patients and 3 of 15 partially treated patients with no ischemia in the control group. (2) Based on these studies and overall clinical experience it was concluded that patients with untreated or inade-

quately treated hypertension were at increased risk of myocardial ischemia in the perioperative period. A subsequent study in a large number of patients with mild-to-moderate hypertension (diastolic less than 110 mmHg) with careful intraoperative management showed that there was no increased risk in this group. (3) Based on available information it probably is best to institute drug therapy whenever possible to maintain diastolic blood pressure consistently below 110 mmHg to minimize perioperative risk.

Chronic hypertension is a multi-system disease affecting the heart, brain, and kidney; it is this systemic involvement that imparts the added perioperative risk. The cardiovascular changes associated with chronic

hypertension include diffuse atherosclerosis, elevated systemic vascular resistance, concentric left ventricular hypertrophy, and the presence of associated coronary artery disease or cerebrovascular disease. Renal function is frequently impaired in chronic untreated hypertension, and postoperative renal failure resulting from intraoperative hypotension poses an important risk. In addition to a complete history and physical examination, laboratory studies to assess the extent of disease should include an ECG, chest roentgenogram, serum creatinine, and urinalysis at the minimum. When more extensive disease is suspected, further evaluation and more extensive perioperative monitoring may be indicated.

Considerable debate has centered in the past on perioperative management of antihypertensive medications. It was thought that sympatholytic drugs such as reserpine and beta-blockers interfered with the physiologic responses to the stress of anesthesia and surgery. (4) Subsequent experience has shown that, although autonomic control is impaired, maintaining antihypertensive therapy up to and including the day of surgery allows for a smoother perioperative course.

The anesthetist must understand the impact of antihypertensive therapy on many aspects of perioperative care. Sympatholytic drugs blunt the usual compensatory responses to hypovolemia and anemia making the diagnosis of these states difficult in the operating room. Depending on the mechanism of action, sympatholytics may either blunt or exaggerate the response to exogenous sympathomimetics (Figure 1). The lysis of sympathetic tone results in a predominance of parasympathetic output when the autonomic system responds to noxious stimuli. Thus the patient on beta-blockers may become profoundly bradycardic in response to laryngoscopy, particularly in the presence of anesthetic agents such as narcotics, succinylcholine, and halothane, which increase vagal tone. Centrally acting agents such as clonidine and alpha-methyldopa can poten-

tiate volatile anesthetics, leading to decreased inhaled concentration necessary to maintain anesthesia (Figure 2).<sup>(5)</sup> Both clonidine and beta-blockers have been implicated in inducing a withdrawal phenomenon characterized by elevated catecholamines and severe hypertension.<sup>(6)</sup> When possible these medications should be maintained through the perioperative period. In patients with postoperative ileus, careful monitoring and early institution of parenteral sympatholytics is indicated.

Most hypertensive patients are receiving some form of diuretic therapy. The major problems posed by these agents are intravascular volume depletion, potassium imbalance, metabolic alkalosis, and the loss of urine output as a monitor of intravascular volume status. The anesthetist may elect to withhold diuretics on the day of surgery to avoid these problems in certain patients. Hypokalemia, which frequently accompanies the use of thiazide diuretics, and furosemide, should be corrected before surgery to minimize the risk of dysrhythmias. Chronic hypokalemia is a manifestation of large deficits in total body potassium stores and may require more than just overnight replacement for safe correction. The acute replacement of potassium may actually transiently increase the risk of dysrhythmias.<sup>(7)</sup> The metabolic alkalosis, which can potentiate neuromuscular relaxants, usually is corrected with adequate potassium replacement.

### **Intraoperative Care**

The major goal in intraoperative care of the hypertensive patient is to avoid extreme variations in blood pressure. Hypertensive episodes can greatly increase cardiac work resulting in ischemia or failure, and severe elevations of blood pressure may result in hemorrhagic cerebrovascular lesions. Hypotension can result in myocardial ischemia and can impair blood flow to highly autoregulated vascular beds such as the central nervous system. Higher than normal pressures may be

required to maintain adequate cerebral blood flow in the chronic hypertensive.<sup>(8)</sup>

The primary physiologic derangements which precipitate the wide swings in BP are a contracted intravascular volume and a smaller vascular caliber. Studies have repeatedly demonstrated that hypertensive patients have a 10-15 percent decrease in plasma volume,<sup>(9)</sup> and as hypertension is controlled, the plasma volume normalizes. As a result when sympathetic tone is decreased and vasodilation is induced by anesthetic agents blood pressure can fall precipitously as the contracted intravascular volume is inadequate as vascular capacitance increases. As a result of medial hypertrophy and luminal narrowing, small degrees of vascular smooth muscle

shortening can lead to much larger increases in vascular resistance than would occur in normals.<sup>(10)</sup> This physiologic alteration results clinically in an exaggerated pressor response to noxious stimuli such as laryngoscopy and surgical incision. The presence of associated cardiovascular disease further complicates these physiologic derangements.

The keys to a smooth intraoperative course are adequate preparation, careful monitoring, adequate volume replacement and a gentle, skillful administration of anesthesia (Table 1). The choice of anesthetic agent is not as important as the skill with which it is administered.

A preoperative visit by the anesthetist where procedures are explained and questions answered can greatly

**TABLE 1. Anesthesia Care of the Hypertensive**

#### *Evaluation*

- Degree of hypertension
- Effectiveness of therapy
- Implications of therapy
- Etiology of hypertension
- Associated end-organ damage—cardiac, cerebral, renal

#### *Preparation*

- Continue antihypertensives
- Allay anxiety visit, premedication
- Selection of monitors
- Volume loading

#### *Intraoperative*

- Regional when feasible
- Slow, titrated induction
- Adequate depth of anesthesia
- Skillful laryngoscopy
  - Lidocaine spray or I.V.
- Monitor for ischemia

#### *Postoperative*

- Reinstitute anti-HTN drugs
- Good pain control
- Continued monitoring
- Treat accordingly



allay patient anxiety. This visit in combination with judicious premedication and administration of antihypertensives can prevent the scenario of the hypertensive patient whose surgery is canceled because of marked elevations of blood pressure in the "holding area" prior to surgery.

Selection of monitoring for hypertensive patients depends on the degree of hypertension, the extent of associated disease, and the magnitude of the proposed surgery and therefore should be determined by the individual case rather than by fixed criteria. Certain principles should be kept in mind in the selection of cardiac monitors. Myocardial ischemia is the most common dangerous complication making five lead ECG or modified V5 monitoring a priority. Blood pressure monitoring should reflect the rapidly changing clinical situation. Mean arterial pressure can fluctuate 30 or 40 mmHg in the time it takes some automated cuffs to determine BP. The use of an arterial line should be considered in the uncontrolled hypertensive, in the patient with known cardiac disease, and in those patients undergoing extensive surgical procedures. Left ventricular hypertrophy, which accompanies long-standing hypertension, will lead to a marked reduction in LV compliance. Consequently small changes in intravascular volume can

lead to big changes in LV performance. The pulmonary artery catheter becomes particularly valuable in this group of patients when warranted by the surgical procedure.

Although there is no direct evidence in the literature, regional anesthesia should be considered when possible as it represents less of a physiologic trespass, and patient contact can be maintained as a valuable monitor for cardiac or cerebral ischemia. Adequate volume loading is essential before spinal or epidural anesthesia to prevent hypotension resulting from sympathectomy. The major problems with general anesthesia are hypotension with induction and exaggerated responses to noxious stimuli. Hypotension with the onset of anesthesia can be minimized by adequate volume loading and a slow titrated induction of anesthesia allowing time for appropriate physiologic "counter punching." The hypertensive response to laryngoscopy can be minimized by assuring an adequate depth of anesthesia, minimizing the duration of laryngoscopy, and pretreatment with lidocaine trans-tracheally or I.V. to blunt the response to intubation.

Emergence and postoperative hypertension is a common problem. It is imperative that monitoring be maintained through the recovery period to allow early detection and therefore

treatment of blood pressure variations. Good pain control and early re-institution of antihypertensive therapy can smooth the postoperative course.

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## Hospital Ship Logo Contest

The September-October *U.S. Navy Medicine* announcing the hospital ship logo contest has caused some confusion we would like to clear up.

The contest is open to **all** personnel of the Navy Medical Department including civilians. The deadline for submissions has been extended to 3 March 1986.



### The "Best" Treatment for Frostbite

Dear Editor:

I am writing to question the answer to item 27 of the EMT Test (page 8) in the May-June 1985 issue of *U.S. Navy Medicine*. The answer key indicates that frostbitten tissue should be allowed to rewarm on its own. The proper treatment consists of rapid rewarming in water with the temperature carefully regulated to 104° F. In a field environment where the equipment to perform this procedure is not available, the part should be protected from additional insult till definitive treatment can be rendered. If the tactical situation is such that there is a danger of refreezing, treatment should be delayed until the casualty can be moved to a secure area. The marines at the Chosin Reservoir re-learned the lesson that a man with a frozen foot is ambulatory, but a man with a thawed foot is a litter case. Extremities allowed to refreeze after thawing did less well than those for which thawing was delayed.

LCDR R.C. Stewart III, MC, USN  
COMNAVAIRLANT, Norfolk, VA

*Ed: Dr. Stewart's point is valid. Rapid rewarming is the optimum treatment for frostbite. The question was to choose the best treatment from those listed as choices and was intended to assess the EMT's knowledge of first aid for frostbite. The ideal treatment was not provided.*

### Call for Papers

The 1986 annual meetings of the American Military Institute and the Air Force Historical Association will be held 4-5 April 1986 at the Uniformed Services University of the Health Sciences, Bethesda, MD. The theme of the meeting is "Military, Naval, and Aviation Medical History." Those interested in presenting a 30-minute paper on these topics are asked to send an abstract of approximately 300 words to: Robert J.T. Joy, M.D., Section of Medical History, 4301 Jones Bridge Road, Uniformed Services University of the Health Sciences, Bethesda, MD 20814-4799.

Abstracts should be received no later than 28 Feb 1986. Please include a single page curriculum vitae with mailing address and telephone number. CME credit is available.

### Occupational Health Workshop

The Navy Environmental Health Center will sponsor the 28th Navy Occupational Health and Preventive Medicine Workshop 1-7 March 1986 at the Pavilion Towers Hotel, Virginia Beach, VA.

Occupational health and preventive medicine personnel

are encouraged to attend this workshop. There is no registration fee.

The workshop has been approved for CME/CEU credits and maintenance of certification points for certified industrial hygienists.

For additional information contact Dianne Best, Navy Environmental Health Center, Naval Station, Norfolk, VA 23511-6695. Telephone: Autovon 564-4657, FTS 954-4657, Commercial (804) 444-4657.

### Cytopathology Course Offered

The Johns Hopkins University School of Medicine is offering the 27th Postgraduate Institute for Pathologists in Clinical Cytopathology. The course is designed as a subspecialty residency in clinical cytopathology and is highly compressed for the busy pathologist into 152 AMA Category I credit hours in two courses, both of which must be taken:

- February to April 1986, Home-Study Course A is provided each registrant for personal reading and microscopic study in their own laboratory.

- 28 April to 9 May 1986, In-Residence Course B is an extremely concentrated lecture series, intensive laboratory study, and vital clinical experience at the Johns Hopkins Medical Institutions, Baltimore, MD.

These courses are intended solely for pathologists who are certified (or qualified for certification) by the American Board of Pathology or its international equivalent. An intensive refresher in all aspects of clinical cytopathology will be provided with time devoted to newer developments and techniques, special problems, and recent applications including immunodiagnosis and needle aspiration. Topics are covered in lectures, explored in small informal conferences, and discussed over the microscope with the faculty. Abundant self-instructional material is available to augment at individual pace.

The loan set of slides with texts for Course A will be sent to each participant within the United States and Canada for home-study during February through April before Course B in Baltimore, 28 April-9 May 1986. Participants outside the United States and Canada must make *prior* special arrangements to study Course A in adequate time before Course B.

The entire course is given in English.

Application and completed pre-registration is advised at the earliest date possible to assure an opening. Completed pre-registration, however, *must* be accomplished before 28 March 1986, unless by special arrangement.

For details write: John K. Frost, M.D., 604 Pathology Building, The Johns Hopkins Hospital, Baltimore, MD 21205.

## Medical Mobilization Publication

*Planning for the Mobilization of the Nation's Medical Resources* is a new publication now available from the National Defense University. Written by 10 Medical Department representatives at the Industrial College of the Armed Forces (ICAF), the authors are CAPT George S. Harris, CAPT John B. Noll, and CAPT L. Lance Sholdt. The document was completed as a research paper requirement for the College's Mobilization Studies Program under faculty advisor John Moscato and examines the medical resource shortfalls in DOD medical organization and contingency planning and the ability of the civilian health care industry to respond to surge requirements in support of military mobilization needs. The study focuses on five complex and interrelated areas: health care manpower, facilities, logistics (supplies, equipment, and pharmaceuticals), transportation, and preventive medicine.

The publication received the Joint Chief's of Staff Award for Research Excellence in June 1985, the top prize given for a research project completed at the university. Copies can be obtained by writing: National Defense University Press, Fort L.J. McNair, Washington, DC 20319.

## Cancer Grant Approved

Johns Hopkins University will be the site of a cancer research study to be funded by the American Institute for Cancer Research (AICR). The research project, to be conducted by Thomas W. Kensler, Ph.D., has been awarded \$96,181 by the Institute to study the role of dietary factors as protectors from environmentally occurring cancer agents.

Focusing in its research grant program on diet and nutrition as they relate to cancer causation and prevention, the American Institute for Cancer Research funds research projects at hospitals and universities in some 23 states and 2 foreign countries. The Institute's new series of research grants, including Dr. Kensler's project, totaled more than \$1.3 million and brought the Institute's total commitment to cancer research in 1985 to almost 2.6 million.

Dr. Kensler's study will focus on the use of natural chemical agents which are found in cruciferous vegetables, such as broccoli and cauliflower. These compounds have been shown to have protective abilities against certain types of cancers. Dr. Kensler will be examining their effect on cancers related to aflatoxins, a product of mold that occurs naturally in the spoilage of some foods. Since it is clear that there is no way to avoid all contact with such carcinogens, this study will attempt to understand better the protective capabilities against cancer development possible through these dietary items.

Through the funding of these research projects, the

American Institute for Cancer Research is expanding scientific knowledge about the relationship between diet, nutrition, and cancer. Current scientific estimates indicate that diet may be the most important factor in cancer, with as many as 35 percent of all cancer deaths related to diet. Research, such as that of Dr. Kensler, combined with the many educational programs sponsored by the Institute, is providing the means for the public and health professionals to begin making the dietary changes that can lead to lower cancer risk.

Further information on the American Institute for Cancer Research, or its research grants or education programs, may be obtained by writing to: American Institute for Cancer Research, Dept. GR13, Washington, DC 20069.

## Flash Sterilization Guidelines

National consensus guidelines for steam sterilization using the unwrapped method (commonly referred to as "flash sterilization") were approved by the Standards Board of the Association for the Advancement of Medical Instrumentation on 28 Oct 1985.

*Good Hospital Practice: Steam Sterilization Using the Unwrapped Method (Flash Sterilization)* (AAMI SSUM-10/85) is intended to assist health care personnel in insuring the sterility of devices and materials steam-sterilized by the unwrapped method in either gravity displacement sterilizers ("flash" sterilizers) or prevacuum sterilizers; maintaining the sterility of processed items until the point of use; and promoting good infection control and safe handling practices. The document addresses the functional and physical design of areas of health care facilities where steam sterilization by the unwrapped method is carried out. It also deals with staff qualifications, education, and other personnel considerations, sterilization processing procedures, the use and maintenance of gravity-displacement and prevacuum sterilizers for steam sterilization by the unwrapped method, and quality control. A bibliography and glossary are included.

The Good Hospital Practice was developed by the Hospital Practices Working Group of the Steam Sterilization Subcommittee under the auspices of the AAMI Sterilization Standards Committee.

The final printed version of AAMI SSUM-10/85 will be available in January 1986. Others are now being accepted. The price of the document is \$25 for AAMI members and \$40 for nonmembers. Prepayment, including \$3 for postage and handling, is required. Checks made payable to AAMI should be sent to: Dawn Boots, AAMI, 1901 North Fort Myer Drive, Suite 602, Arlington, VA 22209. Telephone: (703) 525-4890.



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