



## II. READINESS

Thank you for the 2002 Edition of the USU Journal. Your record of accomplishments is truly impressive. Never has the need been greater to provide top quality professionals for our Military Health System. The men and women serving in Iraq and in other challenging assignments around the world are in good hands... What you do is so important to the future of our nation.

- Kenneth A. Goss, Director, Government Relations,  
Air Force Association, Letter dated November 3, 2003.

As Army Nurse Corps officers in the USU Master Degree Family Nurse Practitioner Program, our education further prepares us to live out our motto - Ready, Caring, Proud.

Operation Bushmaster provided a scenario portraying a hostile environment. The week-long exercise (conducted in San Antonio, Texas) allowed for Advanced Practice Nursing and School of Medicine students to work together in a field environment under simulated battlefield conditions. We students found ourselves triaging and aggressively maintaining patient care as second nature. Biological and chemical agents played a much bigger part in our scenarios than we had experienced in previous training. The threat of these weapons was ever-present and a time consuming enemy tactic for all medical personnel that required proactive planning. At other times, both nurses and medical students racked their brains attempting to diagnose infrequently seen diseases, such as meningitis and malaria... Exotic diseases were present in our training scenarios as well. With the assistance of battlefield telemedicine and satellite communication with stateside facilities, such as the Walter Reed Army Medical Center in Washington, D.C., we were able to describe afflictions and send photos of patients for consultation, diagnosis, and treatment.

- Nursing Spectrum, *Caring for Those in Harm's Way*,  
Volume 13, No. 6DC, March 24, 2003, pages 8-9.

The military unique curricula and programs of the Uniformed Services University, successfully grounded in a multi-Service environment, draw upon lessons learned during past and present-day combat and casualty care to produce career-oriented physicians, advanced practice nurses and scientists with military unique expertise.

Four USUHS activities, internationally recognized by the emergency responder and health care communities, stand by ready to provide cost-effective, quality-assured WMD-related training and consultation. The USUHS Casualty Care Research Center, the Center for Disaster and Humanitarian Assistance Medicine, the Center for the Study of Traumatic Stress, and the Armed Forces Radiobiology Research Institute have established credibility in providing military unique expertise covering four areas of WMD-related concerns: 1) the preparation of emergency responder communities; 2) ensuring communication and assessment of military medical humanitarian assistance training; 3) addressing traumatic stress of both civilian and uniformed communities during WMD-related incidents; and, 4) the development of medical radiological countermeasures to include the provision of unique training for the response to radiological emergencies.

- Vice Admiral Michael L. Cowan, Surgeon General of the Navy, Testimony before the Senate Appropriations Committee, Defense Subcommittee on Defense Health, April 30, 2003.

The combination of DoD's expertise in the field treating casualties from unconventional attacks and the VA infrastructure of medical centers, clinics, satellite broadcast capabilities and affiliations with medical schools will enable U.S. medical professionals to become knowledgeable and medically competent in dealing with future attacks. Content for the training sessions would be based on programs established at the USUHS School of Medicine, the nation's only federal medical school. Sometimes referred to as the "West Point for Doctors," USUHS offers an education in military medicine, preparing graduates to handle "real world scenarios that most doctors are ill-equipped to face. Students would learn how biochemical and radiological agents act on the human body and how to handle a suspected exposure - from the point of detection through to decontamination and medical countermeasures," according to information from Congressman Buyer's office.

- *Washington Fax, VA bills would offer treatment, research and physician training to fight chemical, biological and radiological attacks*, April 9, 2002.

Recent tragic events and the current Global War on Terrorism clearly show the benefits of preparedness and training. It is gratifying to know USUHS is leading the way in preparing military health care professionals to meet current and future challenges. Please accept my appreciation and pass on a hearty "Well Done!" to your colleagues and the students for their dedicated efforts in support of our men and women in Uniform.

- General Richard B. Myers, Chairman of the Joint Chiefs of Staff, Letter to USU, March 29, 2002.

These graduates leave USUHS trained to provide continuity in ensuring medical readiness and the preservation of lessons learned during combat and casualty care. This critical role is, in fact, the significant factor that led the Congress to establish USUHS in 1972.

- The Honorable Paul S. Sarbanes, United States Senator from Maryland, *Congressional Record, Tribute to Val G. Hemming, M.D.*, May 17, 2002, page S4533.

The Graduate School of Nursing (GSN) is successfully preparing unique advanced practice nurses to deliver care for the Uniformed Services during disaster relief and humanitarian interventions and, by doing so, ensures military readiness.

- The Honorable Daniel K. Inouye, United States Senator from Hawaii, *Congressional Record, Tribute to Dr. Faye Glenn Abdellah*, May 15, 2002, pages S4488-S4489.



## *Preservation of Lessons Learned During Combat and Casualty Care*



**OPERATION BUSHMASTER**

## **II. THE F. EDWARD HÉBERT SCHOOL OF MEDICINE**

**As the Executive Agent of the Uniformed Services University of the Health Sciences (USUHS), I would like to comment on the extraordinary achievements of the University... USUHS SOM graduates, with retention averaging twenty years of active duty service, now represent over 22 percent of the total physician officers on active duty in the Armed Forces. USUHS graduates are exceeding the original expectations of Congress when the University was established, thus ensuring continuity and leadership for the Military Health System.**

- **Vice Admiral Michael L. Cowan, Surgeon General of the Navy**, Testimony before the Subcommittee on Total Force, House Armed Services Committee, March 27, 2003.

### **ESTABLISHMENT**

**Background.** From 1945 to 1950, there was an acute deficit of medical experience resulting from the rapid downsizing after World War II. The loss of physicians was so acute, and retention so poor, that the Army and Navy medical departments began residency programs as a recruitment and retention device. In 1950, the physician shortages forced the involuntary recall of reservists and also forced the retention of those eligible to retire.

After the Korean War, the United States, for the first time in peacetime, maintained large, active-duty military forces through conscription and allocated significant resources to build and maintain a world-wide military presence. The medical departments of the Army, Navy, and Air Force participated in this expansion and relied on conscription. During this time, over 90 percent of all graduating physicians and dentists served on active duty for an average of two years.

During the conflict in Vietnam, from 1964 to 1972, medical support of a sophisticated nature was deployed in fixed facility hospitals with staff and equipment equal to those of academic medical centers in America. The helicopter essentially replaced the motor ambulance for evacuation; and, air evacuation to the United States became routine. Capitalizing on the lessons learned in past wars, preventive medicine kept the infectious disease and non-effectiveness (*inability of the forces to participate in combat activities*) rates at the lowest levels of any war, while rapid evacuation and advanced surgery reduced the died-of-wounds rate.

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**The Uniformed Services Health Professions Revitalization Act of 1972, Public Law 92-426.** The conscription of physicians, which began in 1950, ended in 1973 when the draft law was repealed. In anticipation of this, both a military medical school, the Uniformed Services University of the Health Sciences (USU), and a Health Professions Scholarship Program (HPSP) in civilian medical schools were

established by Congress in 1972 to provide physicians for the Armed Forces. The Uniformed Services Health Professions Revitalization Act of 1972, Public Law 92-426, established the HPSP Program to be a flexible source for the *quantity* of physicians required by the Armed Forces; USU was established to provide a cadre of military medical officers who would serve as *career officers*, providing continuity and leadership for the Military Health System.

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**USU's First Academic Program.** The F. Edward Hébert School of Medicine was established by Congress as part of Public Law 92-426 in 1972, with its first class graduating in 1980. The early development of the University concentrated on USU's first academic program, the School of Medicine (SOM). **Anthony R. Curreri, M.D.**, was appointed as the University's first President in 1974. **Jay P. Sanford, M.D.**, joined **Doctor Curreri**, at the USU President's request, and was later appointed as Dean, SOM, in May of 1975; he served as Dean through 1990.

The initial development of objectives for the SOM was accomplished through the combined efforts of the Board of Regents (BOR), the BOR Educational Affairs Committee, Doctors Curreri and Sanford, and special working groups. Activities used to develop these objectives included committee meetings, retreats, and consultation with a variety of experts from military medicine and civilian medical organizations and institutions. Individuals and groups consulted included: *the Surgeons General* of the Army, Navy and Air Force; *Chiefs of the Medical Departments/Services* of the Army, Navy, and Air Force; *physicians from* the Walter Reed Army Medical Center, the National Naval Medical Center at Bethesda, the Malcolm Grow Air Force Medical Center at Andrews Air Force Base, the Wilford Hall United States Air Force Medical Center, the United States Army Academy of Health Sciences, Sheppard Air Force Base Academy of Health Sciences, Brooke Army Medical Center, and the Armed Forces Institute of Pathology; *the Service Secretaries* from both the Air Force and Navy; the Association of American Medical Colleges (*AAMC*); the American Medical Association (*AMA*); the Liaison Committee on Medical Education (*LCME*); the Department of Health, Education, and Welfare (*HEW*); the National Institutes of Health (*NIH*); and, the following *Universities*: George Washington, Georgetown and Howard.

Five Individuals Have Served as the Dean, SOM. The USU Board of Regents reviews the final candidates for the Dean of the SOM prior to selection by the USU President. To date, five individuals have held this position:

**Jay P. Sanford, M.D.**, was appointed as the first Dean, SOM, in May of 1975 and served through 1990;

**Harry C. Holloway, M.D.**, served as the **Deputy Dean** from 1990 through June of 1992;

**Nancy E. Gary, M.D.**, was appointed as Dean on June 28, 1992 and served through mid-1995;

**Val G. Hemming, M.D.**, served as Interim Dean from July 2, 1995 through May 3, 1996; and, following a national search, served as Dean from May 3, 1996 through May 19, 2002; and,

**Larry W. Laughlin, M.D., Ph.D.**, was appointed as Dean on May 20, 2002 and continues to serve in that position.

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## MISSION

**The USUHS shall: 4.1. Educate and train competent medical personnel qualified to serve the needs of the Uniformed Services through providing the highest quality education programs in the health sciences; 4.2. Place high priority on educating and training personnel to meet the combat and peacetime medical needs of the Armed Forces; and, 4.3. Grant applicable advanced academic degrees; establish postdoctoral and postgraduate programs, and technological institutes; conduct medical readiness training and continuing education for members of the Uniformed Services in the health professions; and prepare individuals for careers in the health professions in the Uniformed Services.**

- **DoD Directive 5105.45**, approved by the **Honorable John J. Hamre, Deputy Secretary of Defense**, dated March 9, 2000, page 2.

**Consistent Mission Direction Focused on Readiness.** USU has a thirty-two year history of guiding statements, mission direction, goals and tasking documents from the Congress, the Executive Office of the President, and the Department of Defense. From the words of the School of Medicine's "Founding Father," **Congressman F. Edward Hébert**, ... as he described how he first envisioned the University during the 1947 timeframe:

**The mission of USUHS is to produce... dedicated young officers who... will be able to mobilize and deploy rapidly... to meet military and civilian crises... The University will provide opportunities for aspiring young military officers to attain academic recognition...**" (the Life and Times of Congressman F. Edward Hébert, 1976, page 408)

to the mission statement of March 9, 2000, quoted above from the Department of Defense Directive for USU... the goals of the USU SOM have remained consistent. The USU SOM must provide: 1) a cadre of career-oriented physician officers who will provide leadership and continuity for the Military Health System (MHS) and the United States Public Health Service; 2) unique training in: combat medical care; trauma; mass casualties; the response to chemical, biological, radiological, nuclear, and explosive (CBRNE) contingencies; medical logistics; and, rapid deployment; 3) joint training in a multi-Service environment; and, 4) the opportunity for health care professionals throughout the MHS to attain academic recognition.

**Content for the training sessions would be based on programs established at the USUHS School of Medicine, the Nation's only Federal medical school. Sometimes referred to as the "West Point for Doctors," USUHS offers an education in military medicine, preparing graduates to handle "real world scenarios that most doctors are ill-equipped to face. Students would learn how biochemical and radiological agents act on the human body and how to handle a suspected exposure - from the point of detection through to decontamination and**

**medical countermeasures,” according to information from Congressman Buyer’s office** (Congressman Steve Buyer, Chairman, Subcommittee on Health, House Veterans Affairs Committee).

- The Washington Fax, *VA Bills Would Offer Treatment, Research and Physician Training to Fight Chemical, Biological and Radiological Attacks*, April 9, 2002.

Strategic Planning. A formal process of strategic planning was initiated, in 1991, to set priorities for the University. The process was conducted by an executive steering committee chaired by the USU President and included representation from the entire USU community. Mission and vision statements and guiding principles were completed in early 1992. Since that time, as part of an evolving process, specific goals, strategies, and objectives have been established for the University, to include metrics for achieving those goals.

The SOM community has been actively involved in the development of the USU Strategic Plan by: participating in the initial strategic planning training sessions during 1991; finalizing the objectives and metrics during 1999 and 2000; and, engaging in on-going strategic planning sessions held during April of 2001, December of 2002, and throughout 2003. This multi-year process has included institutional retreats, town meetings, departmental briefings, and printed and electronic updates as a means of communicating with the SOM faculty and staff.

To ensure that the SOM’s future direction is consistent with that of its chain-of-command, the SOM strategic planning process is guided by the current strategies and goals of the MHS, which reflect the strategic planning policies and guidance established by the Office of the Assistant Secretary of Defense for Health Affairs. A formal process for identifying program needs and for submitting increased budget requests tied to the Strategic Plan has been established at USU. The individual SOM Departments must show a direct relationship with the University’s overall Strategic Plan when submitting their requests for future budgets. In addition, a School of Medicine Strategic Plan has been written that is in compliance with the University’s current strategies and goals; the SOM Strategic Plan has undergone review by the Basic Science Chairs Committee, the Clinical Science Chairs Committee, and the Faculty Senate.

Internal and External Departmental Review Process. A program was adopted by the School of Medicine in 1998, which mandated each SOM department to conduct a *self-study* every five years or at the time of the appointment of a new chairperson. The self-study would be followed with a review of the self-study by a group of *peers* from outside of the University. From 1999 through 2003, self-studies and external reviews have been completed by the following Departments: Anesthesiology; Dermatology; Family Medicine; Military and Emergency Medicine; Obstetrics and Gynecology; Pediatrics; Pharmacology; Neurology; and, Radiology and Radiological Sciences. Other departmental reviews pending completion include: Anatomy, Physiology and Genetics; Medical History; Medicine; Pathology; and, Psychiatry. The results of these studies will be used to chart future courses for these departments in education, research, and community service.

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**Mission Accomplishment...SOM Graduates Provide Continuity and Leadership for Military Medicine.**

Retention of SOM Alumni and Their Unique Training Ensures Continuity for Lessons Learned in Military Medicine.

*Ten Years of Congressional Testimony by the Surgeons General Validate that USU Alumni Ensure Continuity for the MHS.*

The military unique curricula and programs of the Uniformed Services University, successfully grounded in a multi-Service environment, draw upon lessons learned during past and present-day combat and casualty care to produce career-oriented physicians, advanced practice nurses, and scientists with military unique expertise. The USUHS-unique training centered in preventive medicine and combat-related health care is essential to providing superior force health protection and improving the quality of life for our service members, retirees, and families. USUHS also provides a significant national service through its continuing medical education courses for military physicians in combat casualty care, tropical medicine, combat stress, disaster medicine, and the medical responses to weapons of mass destruction (WMD).

- Vice Admiral Michael L. Cowan, Surgeon General of the Navy, Testimony before the Subcommittee on Total Force, House Armed Services Committee, March 27, 2003.

The extraordinary retention of these military officers (USUHS alumni) ensures continuity for the MHS and the safeguarding of lessons learned during combat and casualty care... Furthermore, a significant number of USUHS graduates who have completed their residency training hold leadership or operational positions throughout the MHS... We place great emphasis on the retention of quality physicians in the military.

- Vice Admiral Michael L. Cowan, Surgeon General of the Navy, Testimony before the House Armed Services Committee, Subcommittee on Military Personnel, April 10, 2002.

I believe our opponents don't understand our business... they say medical care, and they envision peace time medical care as the only business we are in. In fact, we have two broad categories of business. One is called readiness. The other is called the peace time benefit.

**USUHS, is the best investment in readiness medicine that we can make, (it) provides a tremendous baseline for us. We train our uniformed services graduates in the benefit missions through residencies, but they (USUHS graduates) have a foundation in readiness that we cannot get anyplace else. We don't practice medicine in the military. We practice military medicine.**

- **Lieutenant General Paul K. Carlton, Jr., Surgeon General of the Air Force, Testimony before the Senate Appropriations Committee, Subcommittee on Defense, February 28, 2001.**

**In Vietnam... I had no military training prior to coming in. It was a very challenging, difficult experience... when I got there I learned how to take care of Marines myself. I was alone. There was no place to med-evac patients, so through the night I had to keep casualties alive until we could move them during the daylight...**

**The emotional experience of a young doctor who does not have the right kind of training in these kind of things has driven me to where I am today.**

**My whole life since that time has been dedicated to try to prepare people for combat, and USUHS has been able to train these young physicians to be far more ready than I was. They are superb in medicine. The training that USUHS provides is far more than just the medical training. What we have here is the ability to train Army, Navy and Air Force and Public Health Service physicians from day one to work together in a joint environment. They go and they jump out of airplanes with the Army, they go with us to the Marine Corps, they go with us aboard ships at sea, and they go to the air. They do all these things together... from day one... so they develop a joint mentality that has a value of which you cannot quantify the cost of. So, when the time came for me to select a doctor who was going to go on the Joint Task Force for Somalia, I chose a USUHS teacher, ...one who had been there, who spoke the language, who was able to do joint planning and to effectively bring the troops to Somalia. You cannot cost that out...the value of having people with this kind of training is really irreplaceable. There are many, many, many courses and experiences at USUHS that are just not duplicatable. It is a national resource. They come as leaders... they are dedicated to stay with us for a long time... We want experienced people to stay in the military... Now that we have USUHS, we cannot give that up.**

- **Vice Admiral Donald F. Hagen, Surgeon General of the Navy, Testimony before the Senate Armed Services Committee, March 2, 1994, pages 35-37.**

***USU SOM Alumni Represent 22.2 Percent of the Total Active Duty Physicians in the Army, Navy, and the Air Force.*** Since its first graduation in 1980, through April of 2004, USU has granted 3,421 medical degrees; 2,735 of those graduates remain on active duty in the Uniformed Services: Army - 1,056; Navy - 789; Air Force - 796; USPHS - 94.

The active duty physician force in the MHS currently totals approximately 11,901 physicians (Army - 4,218; Navy - 3,983; Air Force - 3,700). The 2,641 USU SOM Graduates on active duty in the Army, Navy, and Air Force represent 22.2 percent of those 11,901 physicians. The early founders had hoped that the USU graduates would equal at least 10 percent of the total physician force; the USUHS SOM has more than doubled that original milestone. USU has steadily provided an excellent source of career-minded physicians who are uniquely skilled in the practice of military medicine.

***USU SOM Alumni Provide Overall Retention Rates of 80 percent Over 24 Years.*** Where Congress had envisioned a retention rate close to 70 percent, the overall retention rate for USU SOM graduates from its first graduating class in 1980 through April of 2004, is 80 percent. Significantly, the median length of ***non-obligated service for physician specialists in the Military Health System, not including USU graduates, is 2.9 years***; however, ***the median length of non-obligated service for USUHS graduates is 9 years***. These retention rates become even more significant in light of the recruitment and retention concerns currently reported by the Armed Forces.

SOM Graduates Present Clinical Skills Required for MHS Residency Programs.

*The Office of the Secretary of Defense, the Surgeons General, and Accreditation Entities Provide On-Going Validation of the Outstanding Clinical Educational Experiences Provided at USU.*

**I want to extend my congratulations to you, the leadership and the faculty at the Uniformed Services University for your exemplary performance in receiving a ten-year accreditation with commendation from the Middle States Commission on Higher Education. This is a notable achievement, and it reflects a successful, long-term commitment to the highest levels of professional medical education for this Nation's Military Health System. The quality of your graduates continues to serve as a testament to the quality of the teaching that was endorsed by the Middle States Commission. You and your staff continue to make significant contributions to our Nation's military readiness and our national medical preparedness.**

- **The Honorable William Winkenwerder, Jr., M.D., Assistant Secretary of Defense, Health Affairs, Letter to the USU President, July 22, 2003.**

**I echo the assessment of USUHS provided by the Secretary of Defense on March 22, 2001: *The training USUHS students receive in combat and peacetime health care is essential to providing superior force health protection... USUHS is a unique national asset and a vital integrated part of the Military Health System.***

- **Vice Admiral Michael L. Cowan, Surgeon General of the Navy, Testimony before the House Armed Services Committee, Subcommittee on Military Personnel, April 10, 2002.**

**The system in place for the documentation of the comparability of clinical educational experiences is an outstanding model for other institutions to emulate.**

- **Liaison Committee on Medical Education (LCME), Letter to USU, dated April 6, 2002.**

**Senator, the three of us (Surgeons General) make up the Executive Board for the Uniformed Services University of the Health Sciences (USUHS), and we have a direct impact on the university...over the last eight years, as I have commanded a major medical center and also as the Surgeon General, I have learned of the quality of the product of USUHS and**

**the focus that USUHS has on military medicine and the importance (of USUHS) to the Surgeons General. I would be hard put to be without the graduates of USUHS.**

- **Vice Admiral Richard A. Nelson, Surgeon General of the Navy**, Testimony before the Senate Appropriations Committee, Subcommittee on Defense, February 28, 2001.

**USUHS is a dramatic difference in depth and degree and experience and exposure and immersion in what we call military medicine, that is not available in the civilian community. My experience has been we have uniformly superior products in the (USUHS graduates). I happened to be stationed on an Army post before I came here, with a small clinic run by a young doctor. I saw the difference between his predecessor and himself, the USUHS graduate. He hit the ground running and turned the clinic around in just a few short weeks. It made a lasting impression on me.... From the clinics to the largest Air Force hospital in this country, Wilford Hall, USUHS graduates excel... A third of the USUHS graduates at Wilford Hall are in positions of high responsibility for their grade... I like what I see.**

- **Lieutenant General Alexander M. Sloan, Surgeon General of the Air Force**, Testimony before the Senate Armed Services Committee, March 2, 1994, page 37.

***2003 AAMC Medical School Graduation Questionnaire Results Validate that USU Graduates Are Highly Satisfied with their Medical Education.*** Evidence of the high quality of training that SOM students have received comes from many sources. For example, each academic year, the Association of American Medical Colleges (AAMC), with the assistance of medical school administrators, conducts a survey of graduating seniors at medical schools throughout the United States. Students are asked to rate statements that cover their entire medical school experience. Included among the numerous topics surveyed are premedical preparation, pre-clinical education, clinical experiences, student services and the overall quality of the medical education received. The USU Office of Student Affairs reported that the ratings of the Year 2003 Medical School Graduation Questionnaire show a consistently strong, positive evaluation by USU students at a level well above the all-schools comparison. For example, 67.6 percent of the USU SOM seniors “strongly agreed” with the statement, *Overall, I am satisfied with my medical education.* Whereas, when averaging the replies from all responding medical schools in the United States, only 35.0 percent rated the statement as “Strongly Agree.”

***2003 Joint Service Graduate Medical Education Selection Board Results - 87 Percent Receive First Choice in Specialty.*** Traditionally, more than 75 percent of USU SOM graduates receive their first choice of specialty and location for their first year of residency training. In December of 2003, the Office of Student Affairs reported that the results of the 2003 Joint Service Graduate Medical Education (GME) Selection Board for the USUHS SOM Class of 2004 were favorable. The overall selection rate for FIRST CHOICE programs was 77 percent; 128 out of 167 USU students matched for their first choice both in specialty and training site. Seventeen additional students received their first choice in

specialty for a resulting total of 87 percent who received first choice in specialty. Feedback obtained from residency program directors indicates that SOM graduates are consistently recognized as well-prepared to complete graduate medical training.

***USU SOM Students Pass the 2003 United States Medical Licensing Examination Step 2 at a Rate of 95 Percent.*** USU SOM students have consistently passed the United States Medical Licensing Examination (USMLE) Steps 1 and 2 at rates equal to, or higher than, the national average. In 1999, the National Board of Medical Examiners (NBME) began computer-based testing (CBT) for the USMLE Step 1 and 2 Examinations. The Step Examinations are administered at Prometric Testing Centers throughout the calendar year. Most of the USU fourth-year students (SOM Class of 2004) completed the Step 2 CBT between July and September of 2003. The overall performance for the Class of 2004 was strong; the average score for the class was 211 and the pass rate was 95 percent.

Operational Assignments, Leadership Positions, and Unique Understanding of Military Medicine Are Substantiated.

*Military Associations, the Surgeons General, and the Office of the Secretary of Defense Confirm the Critical Requirement for USU SOM Alumni in the MHS.*

**Thank you for the 2002 Edition of the USU Journal. Your record of accomplishments is truly impressive. Never has the need been greater to provide top quality professionals for our Military Health System. The men and women serving in Iraq and in other challenging assignments around the world are in good hands... What you do is so important to the future of our nation.**

- **Kenneth A. Goss, Colonel, USAF (Retired), Director, Government Relations, The Air Force Association, Letter to USU, November 3, 2003.**

**These USUHS alumni serve in critical roles that are vital to the readiness mission of the Military Health System (MHS). The extraordinary retention of these military officers ensures continuity for the MHS and the safeguarding of lessons learned during combat and casualty care. Currently, USUHS School of Medicine alumni represent over twenty-one percent of the total physicians on active duty in the military services. Furthermore, a significant number of USUHS graduates who have completed their residency training hold leadership or operational positions throughout the MHS. (As of April 2004, the USU SOM alumni represent 22.2 percent of the total physicians on active duty in the military services.)**

- **Vice Admiral Michael L. Cowan, Surgeon General of the Navy, Testimony before the House Armed Services Committee, Subcommittee on Military Personnel, April 10, 2002.**

**Our Uniformed Services University of the Health Sciences has robust and long-standing educational programs in the medical aspects of biological and chemical terrorism developed for our military medical and graduate students. The University is now actively involved in adapting these programs to the civilian medical education community in both traditional and interactive web-based formats. The University works closely with other federal agencies, the private sector, and the American Association of Medical Colleges and the American Medical Association to accomplish these important and timely educational goals.**

- **The Honorable William Winkenwerder, Jr., M.D., Assistant Secretary of Defense for Health Affairs, Testimony before the House Committee on Government Reform, Subcommittee on National Security, Veterans' Affairs, and International Relations, November 7, 2001.**

**As for recruiting, we have some of the best programs in the world. The young men and women who are coming out of the Uniformed Services University of the Health Sciences are absolutely superb!**

- **Lieutenant General James B. Peake, Surgeon General of the Army, Military Medical Technology, Volume 4, Issue 6, 2000, page 18.**

**Do I value USUHS?... I value it a great deal and (consider that) it is a major asset to this country. I do value the output. I can tell you that in the Army we have a deficit of training in the type of individuals who can go into combat with a battalion... and I do get complaints from line officers that we very frequently have physicians in there who are not ready for that. That is never the case when a USUHS graduate fills that bill.**

- **Lieutenant General Alcide M. LaNoue, Surgeon General of the Army, Testimony before the Senate Armed Services Committee, March 2, 1994, page 35.**

***USU SOM Alumni Hold Significant Leadership and Operational Positions Throughout the MHS.***

**Brigadier General Bill Fox, MC, USA, USU SOM Class of 1981, a urologist, recently assumed command of the Brooke Army Medical Center, Fort Sam Houston, Texas.**

- **USU Medicine, *Class Notes*, Fall 2003, page 28.**

**Brigadier General Bill Germann, USAF, MC, USU SOM Class of 1982, has been selected to command the 89th Medical Group (Malcolm Grow United States Medical Center), Andrews Air Force Base, Maryland.**

- **USU Medicine, *Class Notes*, Spring 2003, page 31.**

**Colonel Thomas Travis, USAF, MC, USU SOM Class of 1986, was selected for promotion to Brigadier General. Colonel Travis is currently the Commander of the 311th Human Systems Wing, Brooks City-Base (formerly Brooks AFB), Texas.**

- **Sharon Willis, USU Alumni Affairs, E-Mail, *Another General Officer in the USU Family*, February 18, 2004, 12:47 PM.**

**CAPT David Wade, MC, USN, USU SOM Class of 1981, is the Force Medical Officer, Commander-in-Chief, United States Navy, Europe.**

**COL Rhonda Cornum, MC, USA, USU SOM Class of 1986, is the Commander, Landstuhl Regional Medical Center, Germany.**

- **Sharon Willis, USU Alumni Affairs, E-Mail, *Alumni in Significant Leadership Positions*, November 7, 2003, 3:05 PM.**

The highly dedicated USU graduates are earning promotions at above average rates; they have become well-respected in their medical specialties, and hold significant positions of leadership in areas of military medicine ranging from special operations and hospitals, to the White House and the newly established Department of Homeland Security, to deployments to Kosova and Iraq, and to assignments aboard ships at sea and with the Blue Angels. SOM alumni are engaged in patient care or research in military hospitals and clinics around the world, administering to active duty members, retirees, and their family members. These military physicians and the thousands of other health professionals who have taken advantage of the numerous graduate and continuing education programs provided by the SOM, are living testimony to USU's mission as the Nation's Federal Health Sciences University.

***GAO Review Documents USU SOM Alumni Meet the Special Needs of the MHS.*** Following an inclusive review in 1995, the General Accounting Office (GAO) confirmed that **“43 out of 44 commanders of major military medical units perceived that physicians from the University have a greater overall understanding of the military, greater commitment to the military, better preparation for operational assignments, and better preparation for leadership roles.”** The GAO reviewers also pointed out that they **“perceive that University graduates have a better appreciation of and greater satisfaction with the physician's role within the military”** than other accession sources (General Accounting Office Report, *Military Physicians - DoD's Medical School and Scholarship Program*, September 29, 1995, page 43). Congressional testimony by the Surgeons General reflect that these significant findings have been validated over the past ten years.

***USU SOM Alumni Hold a Significant Percentage of Leadership and Operational Positions in the MHS.*** A review completed in January of 1998, documented that of the approximately 1,431 USU graduates on active duty who were eligible to hold leadership positions, and were not in a post graduate educational status, 292 were serving as chairs, chiefs or heads of departments, directors of services, or program directors in military hospitals, clinics or centers. An additional 60 USU alumni were serving in operational assignments for the three military services. These 352 USU physician alumni were holding significant leadership and/or operational positions throughout the Military Health System (MHS). Another review conducted in February of 1999, documented that of the first six classes of USU graduates, from 1980 through 1985, 408 alumni remain on active duty; 170 of whom (approximately 42 percent) hold senior operational or leadership positions. In April of 2003, a preliminary review reflected that over 50 of the most significant Command Positions in the MHS are held by USU graduates.

The USU SOM Selection Process Ensures Commitment and Exemplary Retention Rates.

**Medical Students represent every state in the union and other locations where American citizenship is granted. Selection of students has been through a well orchestrated administrative and committee process that is regularly reviewed each year. We are seeking the customary bright individual with an array of non-cognitive endowments that matter to the profession of medicine, and matter to one's identity as a commissioned military officer. In this regard, we select individuals whom we believe are gifted in leadership, self reflection, naturally engaging, adaptable and demonstrate evidence of placing service to others as a priority.**

- *V. Students*, Subcommittee Report, Middle States Commission on Higher Education Self Study, USU Web Site, Prepared for the 2003 Accreditation Process, page 3.

**It is important to maintain a sense of continuity by remaining committed to the traditions, core values, and justifiable pride that are part of military medicine. Leaders organize, challenge others, provide the resources, and create the environment for others to achieve goals and accomplish remarkable feats... They make us believe in the nobility of a cause. The integrity and strength of character of the leader results in loyalty and devotion on the part of those who follow. It is the job of a teacher to keep bringing us back to certain basic principles. It is the moral obligation of the teacher to know his or her students, to recognize their individual needs, and to provide information, guidance, and encouragement during the learning process. The future of the medical departments appears bright when considering the quality of applicants seeking admission to the School of Medicine at USUHS. As a group, they have impressive credentials. Their application essays reflect a bright, highly motivated, and service-oriented cadre.**

- **Rear Admiral Donald L. Sturtz, MC, USN, (Retired), Professor, Department of Surgery, USU School of Medicine, Military Medicine, *Commitment*, Volume 166, September 2001, pages 741-742.**

**High ethical standards, the candidate's own 'internal moral compass,' compassion, honesty, and integrity should be emphasized in the selection process for candidates to become the nation's physicians... Selection should employ MCAT scores and GPAs not as predictors of success in medical school, but as threshold measures to indicate only that applicants possess the intellectual endowment and scholastic aptitude needed to meet the academic rigors. Once candidates have satisfied those threshold requirements, we should give no**

**further weight to academic credentials but make selections on the basis of character traits and aptitude for serving others.**

- **Jordon Cohen, M.D., President, Association of American Medical Colleges (AAMC)**, Opening Remarks, the 108th Annual Meeting of the AAMC, on November 6, 1997.

*The USU SOM Selection Process Withstands the Test of Time.* The USU SOM selection process has been identified as one of the major factors in the success of the overall retention rates of the USU alumni. All candidates are carefully screened during the interview process to determine the following: 1) already recognized sensitivity for national, public, and/or community service, which clearly has the potential for enhancement in Federal service; 2) the presence of natural and adaptable leadership skills already documented in a variety of organizations and circumstances; 3) an enthusiasm for supportive caregiving directed at individuals and groups, forming the basis for involvement as a physician in the broad areas of medicine, and military medicine in particular; and, 4) a documented record of academic success, which extends beyond the boundaries of any standard curriculum, as demonstrated through individual creativity, service, and/or research. A Matriculating Student Survey conducted by the Association of American Medical Colleges (AAMC) showed that compared to the national group of matriculants, USU SOM candidates were more likely to select medicine as a career because of the opportunity to serve the community and to lead, and less likely to seek a medical career for purposes of prestige or high income.

The SOM Committee on Admissions, faculty and student interviewers, and the SOM Office of Admissions work together to manage and implement the SOM Selection Process. The Committee on Admissions is comprised of men, women, active duty, civilian, clinical science, basic science, minority, and community representation for a total of 26 individuals. The applicant review process operates at subcommittee and full committee levels, with the initial review focusing on Medical College Admission Test (MCAT) scores and grade point averages (GPAs). The secondary review process is designed to enhance the opportunity for inviting applicants to interview. Candidates with academic records that would ordinarily preclude regular review at the subcommittee level and those not initially invited for interview are reviewed by the Dean of Admissions. This allows the identification of candidates who may have been overlooked and supports the SOM effort to recruit active duty military applicants, disadvantaged individuals and underrepresented minorities. Folders of all interviewed applicants are reviewed by three separate subcommittee members and are presented for full committee review if ranked above the minimum threshold.

The *interview day* is consistently reported as a positive experience by applicants; during the interview process, the applicants take part in various activities, to include: organized briefings; two formal interviews; lunch; a tour of the campus with students; and, informal visits with the Associate Dean for Student Affairs, the Assistant Dean for Admissions and Academic Records, the Vice President for Recruitment and Diversity, the Assistant Dean for Clinical Sciences, faculty members and the SOM Commandant. Applicants are also given the opportunity to stay overnight with a student host. The selection process has continuously brought to the SOM a group of students who are academically

qualified and well-motivated to practice medicine. In the history of the medical school, only two percent of the student body has had to be disenrolled for academic reasons; this is about one-third of the national average. The excellent percentage of students graduating (almost 98 percent) is due to: 1) a good selection process; 2) a solid educational program; and, 3) genuine concern for those students who require academic or personal assistance during their time at USU.

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## ACCREDITATION

### Strengths:

- **The oversight and coordination of scattered clerkship sites produce quality and comparability in a model that other medical schools should follow.**
- **Both faculty and the dean value their roles as mentors and educators of students.**
- **The students are enthusiastic about the University and for their education.**

### Commendation:

- **The University is commended for its success in educating students to become physicians in the military thus achieving the vision of being “the pre-eminent university for military medicine.”**
  - **Evaluation Team of the Middle States Commission on Higher Education, Report to the Faculty, Administration, Trustees, Students of the Uniformed Services University of the Health Sciences, April 2, 2003.**

**Early Coordination with Accrediting Entities.** The developmental process for establishing the initial objectives of the SOM were accomplished through the combined efforts of the founding USU President, **Anthony R. Curreri, M.D.**, the Board of Regents (BOR), the Dean, **Jay P. Sanford, M.D.**, and, special working groups. Activities used to develop these objectives included committee meetings, retreats, and consultation with a variety of experts from military medicine and civilian medical organizations and institutions. Significant among those coordinating entities were representatives from both the Middle States Commission on Higher Education (provides accreditation at the University level, to include the SOM) and the Liaison Committee on Medical Education (LCME), which provides accreditation specifically for the SOM.

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### **SOM Program Accreditation by the Liaison Committee on Medical Education.**

Background. The LCME accreditation process is designed to certify that a medical program meets prescribed standards; and, by awarding accreditation, the LCME indicates confidence in the quality of the medical school program. The accreditation process also fosters institutional and program improvement. The SOM received provisional accreditation from the LCME, a joint activity of the Association of American Colleges (AACMC) and the Council on Medical Education of the American

Medical Association (AMA) in 1976. The SOM was fully accredited by the LCME in 1979, and has continuously maintained that status.

The SOM prepared a Self-Study during 1992 and was visited by an LCME survey team during January 11-14, 1993. On April 7, 1993, the LCME voted to continue full accreditation for seven years. The Dean was asked to submit a report to the LCME by January 1, 1995, addressing: 1) progress in curriculum reform, including decompression in the first two years; 2) the empowerment and role of the curriculum committee to review, evaluate, design, and manage the curriculum; 3) the status of filling chairs of academic departments, with special reference to the availability of space and financial resources to do so and to the energizing of education and research; and, 4) the appropriateness of enrollment size and the adequacy of clinical resources. Following the LCME request, an ongoing curriculum renewal process was initiated in June of 1993. In November of 1993, the Dean's Policy Memorandum regarding the structure and function of the curriculum committee was updated to assign responsibility to the curriculum committee in accordance with the LCME's guidance as described in Functions and Structure of a Medical School. Search committees were appointed to fill the open department chair positions. And, plans were initiated to develop third-year clerkship rotations at two additional sites. A report, submitted in December of 1994, detailed the status of progress in the four areas identified by the 1993 LCME response. The LCME accepted the report in February of 1995; and, it requested an additional report by September 1, 1996, to address the following: 1) any changes in class size stemming from the downsizing of the Uniformed Services; 2) the status of continued Federal support; 3) further progress in curricular management, evaluation, and reform; and, 4) the system and results of monitoring the equivalency of educational quality and the evaluation of students across sites of clinical education. The response, dated August 16, 1996, indicated that the class size had not been affected by the downsizing of the Uniformed Services and that Federal funding was sufficient to support the University's programs. Also, during the 1996-97 Academic Year, an additional ten percent reduction in contact hours for first and second-year students was implemented, resulting in an additional afternoon per week of student study time. In September of 1996, the LCME accepted that report; and, no further information was requested prior to the full accreditation survey scheduled for the 1999-2000 Academic Year.

The LCME Grants Continued Accreditation through 2007. Following accreditation by the LCME in April of 1993, the LCME scheduled its next review of the SOM Program for reaccreditation in November of 1999. As a precursor to that review, the Associate Dean for Medical Education coordinated an institutional Self-Study. Self-Study Committees were established during 1998, assigned topic areas, and charged to review and analyze portions of the Medical Education Database as well as other information considered relevant to their topic areas. Reports were then submitted to the Steering Committee on February 1, 1999; all reports were reviewed by both the Steering Committee and a larger LCME Task Force. All data, Self-Study reports, and the Executive Summary were submitted to the Dean during the Summer of 1999. Following the Dean's review, those materials were submitted for review to the LCME and the Survey Team Members some months prior to the Survey Team Visit. The Site Visit took place on November 14-18, 1999. Exit briefings and follow-up correspondence from the LCME suggested a successful visit and continued accreditation. Official notice from the LCME was provided on April 13, 2000: **"The School of Medicine received continued full accreditation of the educational program leading to the MD degree for a seven-year term. The next full survey will take place during the 2006-2007 academic year"** (Letter from the LCME to the USU President, dated April 13, 2000).

Excerpts from the Summary of the LCME Accreditation Report as Provided in the USU Board of Regents 2000 Report to the Secretary of Defense.

There is ample evidence that a large number of faculty and staff members had taken the self-study seriously and participated fully in the preparation of the report, which was thorough and showed meticulous attention to detail.

***In reaching its decision to continue full accreditation of the medical school, the LCME identified numerous institutional strengths:***

1. The School of Medicine is very successful in meeting its mission in graduating physicians who are well prepared and committed to military medicine;
2. The Dean holds a deep commitment to the values and success of the School of Medicine. He is a strong, capable leader who has been critically important in helping the school fulfill its mission;
3. The clinical curriculum is delivered in excellent military medical facilities, both locally and nationally;
4. The Department of Internal Medicine is to be commended for its success in creating a uniformly excellent clinical clerkship, comparable in quality across multiple educational sites;
5. The students are bright, academically talented, and uniformly dedicated to careers in military public service. They are consistently positive in their views toward their school and its faculty;
6. The support services provided by the Student Affairs Office are exceptional and appreciated by the students;
7. The faculty is available, interested and committed to student instruction and supervision. They work in a collegial fashion on behalf of the School of Medicine and the students; and,
8. The library, computer services, and the new simulation center are state-of-the-art, meeting the educational demands of the students for the future.

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## **2002 Progress Report Receives Commendations from the LCME.**

**At its meeting on April 3-4, 2002, the Liaison Committee on Medical Education (LCME) reviewed and accepted with appreciation your progress report on the documentation of the comparability of clinical educational experiences across clerkship sites.... The system in place for documentation of the comparability of clinical educational experiences is an outstanding model for other institutions to emulate. Your next full accreditation survey is currently scheduled for the 2006-2007 Academic Year.**

- **The Liaison Committee on Medical Education**, Letter to the Dean, School of Medicine, dated April 6, 2002.

In its correspondence dated April 13, 2000, the LCME requested that the Dean of the SOM submit a progress report by March 1, 2002, addressing the following items: documentation of the comparability of clinical experiences across clerkship sites; planning and documentation of resources to support ongoing curriculum design and oversight and enhanced centralized faculty control and management of the curriculum; and, planning for facility improvements for research and education, including progress in addressing the limitations in research laboratory space, office space, and adequate space for small group instruction in the first two years.

The Dean of the SOM began initiatives to enable a timely response to the LCME's request for a progress report. In late April of 2000, the Dean met with the Curriculum Committee and charged its members to develop a plan to further enhance the process of curriculum oversight and management. This new plan was implemented at the beginning of the 2000-2001 Academic Year. The Associate Dean for Clinical Affairs was directed to develop a plan for documenting comparability of clinical experiences across clerkship sites. This task was accomplished in conjunction with the SOM clinical department chairs and hospital-based faculty. The SOM Space Review Committee developed and implemented processes for the review and assessment of space utilization. Baseline data was reviewed and recommendations were provided to improve assignment and utilization of existing space. This process, together with the additional use of 20,000 square feet of laboratory space on the grounds of the National Naval Medical Center and the addition of an approved construction project (41,055 square feet) in the Medical Military Construction Program for Fiscal Year 2006, demonstrated the SOM's progress in addressing space utilization concerns. On February 25, 2002, the USU SOM provided its progress report to the LCME. On April 6, 2002, the Dean, SOM, received notice from the LCME that it had "reviewed and accepted with appreciation the progress report on documentation of the comparability of clinical educational experiences across clerkship sites, planning and documentation of resources to support curriculum design oversight, enhanced centralized faculty control, management of the curriculum, and planning for facility improvements for research and education." The LCME informed USU that the next full accreditation survey is scheduled for the 2006-2007 Academic Year.

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**Additional Accrediting Entities Provide Quality Assurance.** In addition to the University's accreditation by the Middle States Commission on Higher Education and the SOM's accreditation by the LCME, the following professional organizations continue to authorize accreditation for the various programs and activities of the SOM: 1) the Accreditation Council for Continuing Medical Education; 2) the Council on Education for Public Health (CEPH); 3) the American Psychological Association (APA) Committee on Accreditation; and, 4) the Accreditation Board for Engineering and Technology (ABET). Also, SOM Steering Committees are actively involved with the accreditation process for two additional areas of responsibility reviewed by: 5) the American Association for the Accreditation of Laboratory Animal Care; and, 6) the Nuclear Regulatory Commission.

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## **MILITARY UNIQUE CURRICULUM**

**In terms of contributions provided during the conflict (the war with Iraq), upwards of 100 of our physician graduates served with distinction in the war. Their efforts ranged from providing frontline trauma surgery for coalition forces to caring for sick and injured Iraqi citizens and enemy prisoners of war... Additional physician and nurse alumni provided rear echelon support throughout the medical evacuation system, including the critical care air transport systems and Landstuhl Regional Medical Center as well as stateside Army and Navy hospitals. Some of their efforts have been recounted in national and local newspapers and by radio and television stations, including the Washington Post, New York Times, Baltimore Sun, Wall Street Journal, Stars & Stripes, Los Angeles Times, Charlotte Observer, USA Today, Miami Herald, National Public Radio, and ABC-TV.**

**Most of the forward surgical teams and shock-trauma platoons deployed to the theater of operations received just-in-time battlefield skills sustainment training programs, each run by a USU alumnus.**

**Our students receive an extra measure of combat casualty care training in their four years at the University, especially through our Department of Military and Emergency Medicine, the only such department in the Nation... This training was critical to the success of U.S. operations.**

- **Everett Alvarez, Jr., J.D., Chair, USU Board of Regents, 2003 Annual Report to the Secretary of Defense, June 30, 2003.**

**The USUHS-unique training centered in preventive medicine and combat-related health care is essential to providing superior force health protection and improving the quality of life for our service members, retirees, and families. USUHS also provides a significant national service through its continuing medical education courses for military physicians in combat casualty care, tropical medicine, combat stress, disaster medicine, and the medical response to weapons of mass destruction (WMD).**

- **Vice Admiral Michael L. Cowan, Surgeon General of the Navy, Testimony before the Senate Appropriations Committee, Defense Subcommittee on Defense Health, April 30, 2003.**

**Recent tragic events and the current Global War on Terrorism clearly show the benefits of preparedness and training. It is gratifying to know USUHS is leading the way in preparing military health care professionals to meet current and future challenges. Please accept my appreciation and pass on a hearty “Well Done!” to your colleagues and the students for their dedicated efforts in support of our men and women in uniform.**

- **General Richard B. Myers, Chairman of the Joint Chiefs of Staff**, Letter to USUHS, March 29, 2002.

**General Overview.** The School of Medicine is a fully accredited medical institution, which provides a year-round, four-year curriculum. This curriculum is 174 weeks in length, approximately 20 weeks longer than the average curriculum of medical schools in the United States. This expanded curriculum focuses on epidemiology, health promotion, disease prevention, tropical medicine, leadership, officership, the management of combat trauma, and combat casualty field exercises. Woven throughout the students’ entire course of study, these and other subjects focus directly on the unique requirements of career-oriented military physicians. The USU SOM military unique training includes **“approximately between 784 and 889 hours of initial military education and medical readiness training compared to that provided to the Health Professions Scholarship graduates whose training ranges from 50 to 132 hours, depending on the Service”** (General Accounting Office Report, *Military Physicians - DoD’s Medical School and Scholarship Program*, September 29, 1995, page 41).

USU Represents a Total Military Medical Educational Environment and Acculturation Process.

**Among America’s 126 medical schools, USU has a mission unlike any other. Medical education in other schools focuses on the individual down to the subcellular components. This purview is only a subset of the USU perspective. In support of the warfighter, USU must take a worldwide view to include preventive medicine and atypical medical care. Since U.S. forces are expected to be deployed in every geographic and climatic region in the world, USU prepares its students for any and all circumstances.**

- **USU Board of Regents**, *2003 Annual Report to the Secretary of Defense*, June 30, 2003, page 2.

The USU SOM provides the Military Health System (MHS) with career-oriented medical officers who possess the knowledge, skills, and attitudes essential for effective deployment during Joint Service operations. The SOM’s principal focus is on military medicine, which involves the prevention of disease and injury; the management of combat trauma; health promotion; and, diagnosis and treatment by medical personnel who are integral to the military operations they support. This focus also involves syndromes and injuries that are either rare or unknown among non-military populations.

Military medicine requires a solid background in tropical medicine and hygiene, parasitology, and the use of epidemiologic methods and preventive medicine. **The SOM, for example, provides its medical students with approximately 130 hours of study in these areas, compared to about 13 hours found in the typical civilian medical school curriculum.** Additional knowledge in such areas as military medical intelligence, psychologic stresses of combat and trauma, the medical effects of nuclear, chemical, and biological weapons, and the medical effects of extreme environments - aerospace, undersea, tropical or desert conditions - is essential to a uniformed physician's ability to properly support his/her military commander's responsibility for troop fitness. Also critical to a military physician's focus is his or her ability to provide disease prevention and health promotion under austere conditions.

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## **First-Year Curriculum.**

Background. Four SOM Departments, Military and Emergency Medicine, Preventive Medicine and Biometrics, Medical History, and Psychiatry, share the major responsibility at USU for teaching the military unique course material; *material that is not found in the curriculum of any other medical school in the United States*. In addition to the usual first-year medical school courses, such as Anatomy, Physiology, Biochemistry and Human Behavior, students at the SOM have required courses in Military Studies, Military Medical History, Tropical Medicine (Diagnostic Parasitology and Medical Zoology), as well as Biostatistics and Epidemiology, all of which utilize military data and case studies. This provides an introduction to the scope and content of military medicine and exposes each student to all of the medical systems within the Uniformed Services. Students are focused on the delivery of preventive and treatment services in the *field* or in a deployed environment.

Overview of Military Studies. The Department of Military and Emergency Medicine is responsible for teaching the Military Studies Curriculum during the first and second years of medical school. The first course occurs during the Fall of the first year and is entitled, ***Introduction to Military Medicine***; as the course name implies, it introduces the students to military medicine through lectures and small group discussions. The content of the course includes the expectations that line officers have placed on the medical corps, the distribution and classification of combat casualties, the impact of disease and non-battle injuries on readiness, and the career patterns of the military medical officer. The remainder of this course deals with the echelon system and evolving modular concepts of battlefield health care and an introduction to the areas of chemical, biological, radiological, nuclear, and high explosive (CBRNE) warfare.

During the second instructional period (Winter) of the first year, the students learn the basic skills of prehospital care in a course entitled, ***Combat Medical Skills***. This portion of the curriculum exposes the students to the level of medical training of the basic medic and introduces, at an early time, those skills which must be built upon and expanded during subsequent medical training. ***Military Applied Physiology*** is presented during the third instructional period (Spring) of the first year. While this course parallels the traditional Physiology Course, it also reinforces the concept that was introduced during the Fall, that military medicine is a form of occupational/environmental medicine. The physiologic responses to stressors common to the military environment such as cold, heat, radiation, dysbarism, altitude sickness, and exercise are presented in the context of their impact upon readiness.

By the end of the first academic year, each student has completed course work and experiences considerably greater than those required by the Basic Medical Officer Course for any of the Uniformed Services. The first academic year spans 40 weeks of instruction within the SOM, one week of operational medicine, and five weeks of military medical field studies.

Operation Kerkesner.

**Kerkesner focuses on introducing USUHS students to exactly the (military field and preventive medicine) skills that they need to survive in combat... Weapons training, map reading, basic leadership and NBC defense. I saw that medical officers needed these skills time and time again in Iraq.**

- **Lieutenant Colonel Kevin Riley, MS, USAF, CENTCOM Special Operations Command Surgeon for Operation Iraqi Freedom, Correspondence to USU, September 15, 2003.**

**I just returned from a *fantastic* morning at Quantico observing Operation Kerkesner. I had no idea that the training had reached such a high state of sophistication... Some of my observations included the following: how integrated and well thought out the sequence and content of the training was; how those students with prior military time helped the uninitiated ones so well; how professional and competent the Marine NCO cadre was. What a powerful lesson for those students to see how the NCO Corps truly is the backbone of the force; how impressed the two Thai Army officers and Japanese Naval officer were as they observed the training. USUHS no doubt is the global benchmark model; how the students praised this experience. Not one I spoke with had a negative thing to say.**

- **Colonel Frederick J. Erdtmann, MC, USA, Hospital Commander, Walter Reed Army Medical Center, Letter to the USU President, June 25, 1999.**

Between the first and second year, all students participate in the required five-week course, ***Military Medical Field Studies*** (MMFS). The MMFS Course begins with instruction in military field skills, which include: operating a radio; navigating the land in daylight and at night; using preventive medicine principles; and, protecting oneself against CBRNE attacks. The knowledge from this block of instruction prepares the students to successfully complete a one-week leadership laboratory exercise at the Quantico Marine Corps Base. This exercise, ***Operation Kerkesner*** (named after a former Marine faculty member of USU), challenges the students' ability to overcome field problems through their own initiative and team work.

The field exercise focuses on small unit operations in a field environment. The class of 165 students is divided into four platoons, which are further divided into eight person squads. Evaluators from the Department of Military and Emergency Medicine and platoon advisors from USU and Quantico live with the students and accompany them in all scenarios. Student leadership is rotated to place each student in a leadership position at the squad or platoon level with all attendant responsibilities. The schedule includes operational scenarios that emphasize virtually all major points covered in the Military Studies I Course. Student leaders must know the medical threats (i.e., dehydration, insect-borne disease,

sanitation, injury prevention, CBRNE avoidance and decontamination, and physical and psychological stress) they may face and demonstrate how they would control these medical problems in their units.

This course initiates the student to the field skills and small unit leadership experience required for the successful completion of *Operation Bushmaster* during the Military Contingency Medicine Course in the fourth year. Operation Kerkesner has been visited by a variety of active and reserve United States military medical personnel and has served as a model for the Navy's Rapid Deployment Medical Force (RADMF) Training Program. Elements of the course have been used in Public Health Service Disaster Medical Assistance Team (DMAT) Training. Foreign military medical personnel have also attended the course to gain material to enhance their own training programs (i.e., the United Kingdom, France, Israel, Japan, Singapore, Thailand, and Mexico).

Non-Medical Operational Assignments. The field exercise is followed by the final portion of Military Medical Field Studies. During this time, prior service students may elect to participate in research, work with a mentor, or attend a military qualification school such as: Basic Airborne Training; Basic Air Assault School; Survival, Evasion, Resistance, and Escape (SERE) School Training; Underwater Operations (SCUBA); or, Expert Field Medical Badge (EFMB). Those students without prior service experience are required to spend three weeks with an operational unit in their parent Service. Students may be afloat on a Navy ship, with a Marine Battalion, with noncommissioned officers (NCOs), or with other junior officers learning the military occupational environment and developing a *non-medical* perspective on military medicine. Coordinators at each site report on the students' performance to the Department of Military and Emergency Medicine; and, each student produces a daily log and a written report detailing his/her experience and lessons learned. During this same period, twenty-five to thirty-five percent of each class will elect and successfully complete, one of the military qualification schools listed above.

Special Programs in Operational Medicine Offered by the Casualty Care Research Center. The Casualty Care Research Center (CCRC) is a division of the SOM Department of Military and Emergency Medicine. The CCRC, created in July of 1989, is staffed by military and civilian physicians and scientists. The center provides USU medical students and other medical personnel disciplined training and research experiences in combat casualty care, medical counterterrorism, injury epidemiology, trauma management and other related areas. USU's medical students attend the CCRC programs either as an elective during their fourth year or as part of their summer experience between the first and second years of medical school.

During 2003, six students between their first and second year of medical school, selected an area of interest and worked with CCRC faculty members on individualized courses of research and study. The students were also divided into groups; each group was responsible for completing a research effort and for a presentation of findings. Students attended one or more of the following CCRC training opportunities:

1. ***Emergency Medical Technician-Tactical (EMT-T) Course.*** The EMT-T Course was developed to provide relevant training to medical providers who work within the law enforcement special operations community. Topics in the EMT-T Program include: clandestine drug laboratory raids; emergency medical care in barricade situations; care under fire; forensic science during patient care; medical operations, planning and medical intelligence; wounding effects of weapons and booby traps; special medical gear for tactical operations; personal protective gear; special needs for extended operations; preventive medicine; and, injury control;

2. ***Emergency Medical Technician - Tactical Advanced Course.*** The Tactical Advanced Course includes the following topics: advanced technology applications in the remote assessment methodology; legal concepts and moot court; individual health care concepts; concepts in crisis intervention; sleep/wake cycle management; emerging issues in chemical restraint; operational dermatology; management of training injuries; nutrition and fitness for tactical teams; and, less lethal weapons systems; and,

3. ***Weapons of Mass Destruction (WMD) Training Program.*** The Center offers a variety of training programs in the area of WMD to include: Out-of-Hospital Response Training; and, a Health Care Facilities Course. Topics of instruction include: identifying potential chemical-biological-radiological-nuclear (CBRN) devices; threat recognition and evaluation; formulating a building response/evacuation plan; the role of quarantine and isolating exposed individuals; psychological effects of a WMD incident; and, principles of hasty decontamination.

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## **Second-Year Curriculum.**

Extensive Hours of Preventive Medicine Training. During the second year, besides Pathology, Microbiology, Pharmacology, Ethics, Human Behavior, Introduction to Clinical Medicine and Physical Diagnosis, students have additional hours of preventive medicine, including: an introduction to operational (field) preventive medicine; health promotion in the military; physical fitness programs, policies, and implementation strategies; environmental and occupational health; and, health services administration. On October 3, 2001, the Dean, SOM, issued a revised policy directing that *all second-year medical students must certify as Basic Life Support (BLS) providers at the "C" level.* The certification is in effect for two years and is provided during the sophomore year to maintain certification through May of the senior year. The Department of Military and Emergency Medicine schedules BLS certification sessions for the second-year students; however, students may elect to certify through officially approved off-campus courses under the auspices of the American Heart Association or the American Red Cross. These courses must be at the "C" level, also known as *the health care provider level*; students must be certified prior to the beginning of their third-year clerkships.

Military Studies. The second-year ***Course in Military Studies***, conducted by the Department of Military and Emergency Medicine, focuses on two general areas: the science base for the practice of military medicine (wound ballistics, extensive background on conventional and unconventional weapons effects, protective equipment, and decontamination procedures) and the command-and-staff functions of military medicine in Joint Commands (medical planning, medical logistics, medical evacuation systems, and blood programs).

The second academic year spans 35 weeks of instruction within the SOM. After final examinations, students prepare for the ***United States Medical Licensing Examination (USMLE) Step 1***, which is the first of three examinations in the process of becoming a licensed physician. The current second-year class will complete the computer-based testing (CBT) for the USMLE, Step 1, between May and June of 2004, prior to beginning the first rotation of their third year. The Office of Student Affairs reported that 90.1 percent of the USU students in the Class of 2004 passed the examination on their first attempt. The national average percentage pass for 2002 was 90 percent.

Second-Year Medical Ethics Course. The second year, ***Medical Ethics Course: Ethical, Legal and Social Issues in Medicine*** was initiated during the Summer of 1977. The course, taken by all medical students, provides extensive material directly related to military medicine including the special concerns with sending soldiers back to combat, treatment of prisoners and civilians, and limitations imposed by the Geneva Convention. A new issue posed this year was whether treatment of prisoners who had been terrorists should be any different from that of prisoners who had been former enemy soldiers fighting for countries that had signed the Geneva Convention. Other material stresses the resolution of hospital-based ethical problems in Federal institutions.

A wide range of speakers is annually provided during the course: **Gordon Livingston**, a local psychiatrist and West Point Graduate, shares lessons learned during the Vietnam Conflict; and, **Jon Spelman**, an actor, presents a dramatic performance of the play, *Frankenstein*, giving the students the

opportunity to learn how they can use the arts to increase their awareness of the nuances of human emotions, as in this case, of research participants.

There are four major military issues that all USU students address: 1) Military Medical Triage. The students learn that the practice of military medical triage sometimes departs from traditional civilian medical procedures and that the top priority may be to further the military mission. The students discuss how the varying priorities may be necessary to save extensive lives, both military and civilian; 2) Captured Enemy Service Persons. The USU students learn that if the captured enemy is ill or injured, he/she is to be regarded as a patient. There is no option for physicians or any service persons to mistreat prisoners or to treat them *less equally* for revenge or military gain; 3) Exploitation of Vulnerable Patients. In this session, the students learn that in medicine, physicians should never exploit vulnerable patients for military gain; and, 4) Self-Incriminating Information. In this final area, students are instructed that the two primary tasks of military physicians are to keep their patients healthy and to provide commanders with accurate information regarding the health of their patients and that these tasks take precedence over acting as surrogate investigators to help enforce the law.

Over 150 faculty from USU, NNMC, WRAMC, and other distantly located facilities led discussions on these and other issues with small groups of students. The final lecture, during both 1999 and 2000, was given by **Patricia Heberer**, an historian at the Holocaust Museum. In this year's session, the students viewed a film actually shown to the German public by the Nazi Government during World War II to justify policies of euthanasia for selected patient groups such as those who had severe mental illness. The students learned that all physicians are susceptible to immoral behavior and that they must avoid the mistakes of the past.

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### **Third-Year Curriculum.**

Overview. The third-year curriculum consists of clerkships in the principal specialties of medicine. Much of the instruction is provided by uniformed clinical faculty with an emphasis on teaching the special military relevance of the various clinical experiences. Of special note are the military clinical settings for instruction (military tertiary medical centers, military community hospitals, military outpatient ambulatory care clinics, and troop dispensaries on active military bases) and the patient population, which includes active duty personnel presenting diseases and injuries incurred during both training and combat deployments.

As a part of their training and work during their clerkships, USU SOM third (and fourth-year students) provide hundreds of thousands of hours of patient care related services in the MHS hospitals during each calendar year. Such services include: examination of patients; providing post-operative care; organization and maintenance of the completion of the medical history and physical examinations of patients; assistance at surgery and the delivery of newborns; and, updating progress notes in patient records. These services, performed by USU medical students in a supervised setting, provide necessary and important support in the provision of quality medical care to the men, women, and children receiving treatment throughout the MHS.

All SOM departments are providing a clinical experience within the ambulatory setting. The ambulatory services of all departments have grown significantly within the past eight years. The Department of Medicine has taken the lead and devoted extensive resources to the planning, development, and implementation of a comprehensive ambulatory teaching experience. The department's program and its faculty have become nationally recognized for accomplishments in this area; and, numerous publications in peer-reviewed journals and presentations have resulted.

Clerkships Represent the Entire Spectrum of the MHS. USU medical students complete their third and fourth-year clinical clerkships at over 22 military hospitals, representing the entire spectrum of the Military Health System (MHS). The third-year class of approximately 165 students has eight required clinical clerkship rotations of six weeks each, for a total of 1,320 third-year rotations: Family Practice (six weeks); Obstetrics/Gynecology (six weeks); Pediatrics (six weeks); Psychiatry (six weeks); Internal Medicine (two six-week sessions); and, Surgery (two six-week sessions). Five of the USU SOM academic departments - Medicine, Surgery, Obstetrics and Gynecology, Pediatrics, and Psychiatry - use the Walter Reed Army Medical Center and the National Naval Medical Center as major clinical instructional sites.

The following teaching hospitals have affiliation agreements with the USU SOM: 1) **United States Army - (7)** Walter Reed Army Medical Center, Washington, D.C.; Brooke Army Medical Center, San Antonio, Texas; Tripler Army Medical Center, Hawaii; Madigan Army Medical Center, Tacoma, Washington; Eisenhower Army Medical Center, Fort Gordon, Georgia; William Beaumont Army Medical Center, El Paso, Texas; Womack Army Medical Center, Fort Bragg, North Carolina; 2) **United States Navy - (3)** National Naval Medical Center, Bethesda, Maryland; Naval Hospital, Portsmouth, Virginia; Naval Hospital, San Diego, California; and, 3) **United States Air Force - (6)** Malcolm Grow Medical

Center, Andrews Air Force Base, Maryland; Wilford Hall Medical Center, Lackland, Texas; USAF Medical Center, Wright Patterson Air Force Base, Ohio; USAF Medical Center, Keesler Air Force Base; David Grant Medical Center, Travis Air Force Base, California; and, USAF 3rd Medical Group Regional Hospital, Elmendorf, Alaska. In addition, USU students rotate through the following Medical Centers or Community Hospitals for at least one of their required specialty clerkships: 1) **United States Army - (3)** DeWitt Army Community Hospital, Fort Belvoir, Virginia; Martin Army Community Hospital, Fort Benning, Georgia; Darnall Army Community Hospital, Fort Hood, Texas; 2) **United States Navy - (2)** Naval Hospital, Jacksonville, Florida; Naval Hospital, Pensacola, Florida; and, 3) **United States Air Force - (1)** USAF 96th Medical Group Hospital, Eglin Air Force Base, Florida.

The SOM Associate Dean for Clinical Affairs (ADA) provides oversight for relationships and interactions between the SOM and its clinical teaching sites. Issues of concern from all parties can now be readily addressed as changes in the military health care delivery system are implemented. More specifically, the ADA visits the major Military Medical Centers on a regular basis and reevaluates and updates the SOM's affiliation agreements with its major teaching affiliates; this ensures that the agreements are consistent with the requirements of the Liaison Committee on Medical Education (LCME) and with the current needs of the Military Medical Centers, the Military Services, and the University. This process has ensured that clear routes of communication exist and that areas of mutual interest are appropriately defined and addressed, all of which has resulted in an overall improved relationship between the SOM and its numerous clinical sites. During 2003, for example, the ADA conducted site visits to: the Portsmouth Naval Medical Center in Virginia; the San Diego Naval Medical Center in California; the National Naval Medical Center in Bethesda, Maryland; the Madigan Army Medical Center in Tacoma, Washington; the William Beaumont Army Medical Center in El Paso, Texas; and, the Tripler Army Medical Center in Hawaii. Affiliation agreements were updated and concluded with all of the above, as well as with the 81st Medical Group at the Keesler Air Force Medical Center (visited during 2002).

The Department of Obstetrics and Gynecology Successfully Utilizes Standardized Patients to Assure Mastery of Required Knowledge, Skills, and Professional Behaviors. Educators in Obstetrics and Gynecology and accreditation bodies have been concerned that a medical student may complete a required core clinical clerkship without the assurance of the mastery of essential clinical skills or the demonstration of the essential components of professionalism. The SOM Department of Obstetrics and Gynecology initiated a program of assessment utilizing standardized patients (trained actor-patients) in an Objective Structured Clinical Exam (OSCE) format with one-on-one faculty supervision at the end of each core six-week clinical clerkship. These sessions are conducted at USU's Medical Simulation Center for clerkships in the National Capital Area; and, sessions are provided in the Obstetrics and Gynecology Clinics located at the integrated Wilford Hall USAF Medical Center in Lackland, Texas; the Brooke Army Medical Center in San Antonio, Texas; and, at the Tripler Army Medical Center in Hawaii. As other clinical programs have done, the Department can now assure that the students have been observed correctly performing essential techniques.

The following procedures are performed utilizing standardized patients during the OSCE: the clinical breast examination; the speculum pelvic examination; the bimanual pelvic examination; an interview of the adolescent gynecologic patient; and, an interview of the menopausal patient. Another innovation is the provision of direct, on-the-spot feedback to the medical students from the standardized

patients and the faculty supervisors both at the conclusion of each of the essential techniques, or procedures, listed above, and following the final examination sessions. The standardized patients and faculty reinforce the skills and also provide guidance for improvement.

Feedback from the students has been extremely positive; they understand the importance of being able to exhibit the required skills and behaviors; and, they particularly appreciate the immediate guidance and the opportunity to improve their performance of these essential skills. As a consequence, this clerkship experience leaves a permanent impression on the students, which eventually benefits their future patients during subsequent clinical encounters.

An Innovative Clinical Clerkship Management Tool Utilizing Palm-Type, Hand-Held Computer Devices. The Department of Obstetrics and Gynecology has also led the development and implementation of an innovative clinical clerkship management tool utilizing palm-type, hand-held computer devices for medical student performance evaluations. Beginning in 2000, the residents in the USU, NNMC, and WRAMC-sponsored Uniformed Services Residency in Obstetrics and Gynecology Program have utilized a hand-held device operating system application, which was developed by faculty in the USU Department to establish a cumulative data base encompassing the residents' individual patient care management experiences. On a weekly basis, each resident downloads his or her data to the main department computer through a *hot sync* function. This allows the program director to have timely, on-going access to the experiences of all of the residents. During 2003, trainees were enabled to report their experiences at remote sites by utilizing a web-based program. The positive impact of this program was published in the peer-reviewed premier journal, Obstetrics and Gynecology, and was showcased in a special session at the Annual Meeting of the Council on Resident Education in Obstetrics and Gynecology in March of 2001. Since the residents are the primary teaching interface with the USU medical students, a new program has been developed in the SOM Department so that the residents can enter their assessments of the performance of the USU medical students who are rotating on their respective services. When the residents download their own patient care experiences on a weekly basis, their evaluations of the USU medical students are automatically downloaded as well. The Clinical Clerkship Director then has ready access to the progress of all of the medical students in a format that is automatically updated each week. Data for all students in the Department of Obstetrics and Gynecology is downloaded weekly through a secure Internet site so that the Clerkship Coordinator can monitor the progress of all students at all sites. ***This process helped USU to meet the LCME requirements for uniform experience and assessment for all USU medical students across all sites.***

The Department of Obstetrics and Gynecology Implements the Use of Simulation Laboratories. During 2003, the Department of Obstetrics and Gynecology implemented a skills curriculum for residents and medical students, which included a life-sized birth simulator. The simulator is located in a dedicated, mock-up delivery room in the Department's Education Unit, which is located in Building 1 at the National Naval Medical Center. **Colonel Andrew Satin, USAF, MC, Professor and Chair of Obstetrics and Gynecology**, designed a curriculum employing the use of the birth simulator in the instruction of medical students during their core third-year clerkship and residents through their four years of training. Divided into small groups, the students each have an opportunity, under direct faculty supervision, to conduct

a virtual, life-like *normal birth* so that they can gain the knowledge, skills, and confidence required of them during actual clinical care labor and delivery settings. The medical students have been universally enthusiastic in their appreciation of this novel instructional opportunity.

The resident curriculum has been designed to instruct more advanced residents in the principles of obstetric forceps applications and vacuum-assisted delivery, breech delivery, and shoulder dystocia management. Measurable increases in knowledge, skills, confidence, and overall proficiency of the residents have resulted; and, the program has been presented at several national professional forums.

The American Board of Obstetrics and Gynecology, among other organizations and institutions, has taken considerable interest in the further evolution of these instructional programs. Doctor Satin and the Department faculty were recently selected to present a Workshop of this novel program to the Association of Professors of Gynecology and Obstetrics.

Pediatric Clinical Rotation - Experiences with Exceptional Family Members. Several years ago, the Pediatric Clinical Rotation initiated home visits to families with children with special needs. This program has grown to include a set of educational experiences integrated across the four years of medical school. In the first year, medical students have an opportunity, coordinated with the Human Context in Medicine Course, to visit families or adult patients with special needs. In the second year, the Bioethics Course opens with a three-hour session that includes a lecture, film, and small-group discussions with parents whose children have been critically ill during the first year or two of their lives. In addition to the Pediatric Home Visit in the third year, the Pediatric Clinical Rotation includes two sessions in which faculty members and parents collaboratively offer insights about developmental issues of childhood and provide practice and feedback about pediatric medical interviews. The Family Medicine Clinical Rotation now teaches about advocating for patients and families through standardized patient experiences, a three-and-a-half hour session taught collaboratively with adults with chronic medical conditions, and a home visit that focuses on medical and community resources. A Pediatric Research Elective in the fourth year provides an opportunity for students to: design and initiate research that involves parents and patients for providing insights about health care experiences; plan research that incorporates patients and families; and, respond to surveys and interviews.

With continued funding from the Health Resources Services Administration, Department of Health and Human Services, **Janice L. Hanson, Ph.D., Research Assistant Professor, USU SOM Department of Pediatrics**, and **Colonel Virginia Randall, MC, USA, Associate Professor, USU SOM Department of Pediatrics**, furthered the involvement of patients and family members as advisors and co-teachers in medical education. These advisors have chronic medical conditions and/or disabilities, or have a child or other family member with a special need. They share their experiences with medical students during all four years of the curriculum. A new activity developed with input from these advisors presents pediatric applications of evidence-based medicine. Doctor Hanson convened focus groups of the advisors to develop descriptions of physicians' professionalism from the perspective of patients and parents, with plans to develop tools to teach and evaluate professionalism among medical students.

Pediatric Cardiology Module - Cardiac Auscultation at the Simulation Center. Beginning in 2000, an innovative case-based, interactive scenario in pediatric cardiology was introduced to the third-year medical student pediatric clerkship through the advanced technologies of the National Capital Area Medical Simulation Center. This teaching module is an interactive session between the instructor and medical students with discussions on the events of the cardiac cycle and a demonstration of their relationship to heart sounds and murmurs in the normal child as compared to the child with congenital heart disease. The instructor's presentation is supported by slide presentations and the use of computer software. The demonstration of heart sounds and murmurs is based on a CD-ROM, which contains audio files of actual pediatric cardiac sounds as well as other visual resources and are available to each student at his/her individual work station.

The teaching objective is for the student to recognize the normal clinical findings in the cardiovascular examination of the child and to differentiate between physiologic and pathologic sounds and murmurs. The teaching module is expected to complement the clinical experience during the clerkship and to help develop physical diagnostic skills. This educational experience has been presented at the National Meeting of the Council on Medical Student Education in Pediatrics. To date, 222 medical students have received this educational intervention as part of their third-year pediatric clerkship. The students' evaluations have been very positive as expressed in their post-clerkship critiques.

Patient Simulation Laboratory - A Collaborative Effort.

***Invited Presentations:***

- **American Society of Anesthesiology 2003, *Weapons of Mass Destruction Workshop*, San Francisco, California, October 15, 2003.**
- **International Association of Medical Science Educators, *Patient Simulation Applied to Weapons of Mass Destruction*, Washington, D.C., July 21, 2003.**
- **Internet2 Annual Members Meeting, *Health and Medicine Applications*, Washington, D.C., April 25, 2003.**
- **Center of Excellence for Remote and Medically Under-Served Areas, *Distant WMD/T Diagnosis and Treatment via Tele-Simulation Between USU and St. Francis University* (Pennsylvania), March 14, 2003.**

A collaborative project between the National Naval Medical Center's Department of Anesthesiology and two USU SOM Departments: Anesthesiology; and, Anatomy, Physiology, and Genetics led to the development, in 1997, of a fully interactive medical training laboratory at USU: the Patient Simulation Laboratory (PSL). As mannequin-based simulation was new not only to USU, but also quite rare, in 1997, throughout the world of medical education, almost every program offered

by the USU PSL was developed and implemented by the USU PSL staff. The PSL has been in daily use since its first course offering. This instructional facility supports training in combat casualty care, anesthesia, critical care, trauma, and emergency medicine. Students gain experience in recognizing problems, developing decision-making skills, and refining techniques and procedures. During 2003, the PSL provided over 600 hours of University-wide support for course offerings.

The University has access to a total of 12 mannequins that span the range of ages from newborn to adult, both male and female (four at the USU Military Medical Simulation Center (SIMCEN) located at Forest Glen; two at the Naval Medical Education Training Command located in Building 1, at the National Naval Medical Center in Bethesda, Maryland; and, six mannequins at the PSL). There are scores of customizable *events* ranging from anaphylaxis to ventricular fibrillation that can be assigned to the simulated patients. The *mannequin patient* presents a wide range of responses to the following computer-controlled scenarios: lung ventilation visibly detectable by chest movement; eye lid open/closure; pupil dilation/contraction; palpable pulses; arm motion; thumb twitch; tongue and airway swelling; and, urination. In addition, the *mannequin patient* responds to the following student implemented actions: drug and gas administration; chest tube placement; needle thoracentesis; pericardiocentesis; and, cardiac pulmonary resuscitation. Every kind of signal that can be captured from a *real* patient can be displayed and analyzed on the Clinical Monitor. Patient Simulators typically have over two dozen predefined *patients*, each with unique underlying characteristics and cardiovascular, pulmonary, and metabolic attributes. These patient profiles are modified and new *patients* are constructed to match the teaching objective. The patient simulator can present a wide variety of medical problems and altered physiological states as well as difficult airway management and equipment set-up and/or malfunction. ***In addition, the simulators present scenarios applicable to combat casualty care, anesthesia, critical care, trauma, and emergency medicine.***

The drug models include intravenous and inhaled anesthetics, neuromuscular blockers, cardiovascular agents, and a wide range of infusion pharmaceuticals, which affect the simulators as they would human patients. The automated drug recognition system provides for realistic drug administration; each syringe is equipped with a unique computer chip that represents a specific drug. Thus, the instructor can: select the type of a case and adjust the speed and severity to match the ability level of the student; review and/or repeat clinical situations until a desired level of performance is accomplished (a lesson can be *paused* to provide the instructor the opportunity to give the student feedback); evaluate student clinical decision-making judgments; schedule training at convenient times; and, use the simulator as a research tool for training or evaluation methodologies.

During 2003, the patient simulators, located in the USU SOM Department of Anesthesiology, were used to train three primary groups: medical students; graduate nursing students, and, anesthesia residents. In addition, training was also provided to the following TriService, post-graduate military medical readiness groups: The Army Medical Center and School from the Walter Reed Army Medical Center; the Air Force Critical Care Air Transport Teams from the Malcolm Grow Medical Center; and, USNS COMFORT clinical staff from the National Naval Medical Center.

The PSL has completed its sixth year of teaching the first-year SOM students a simulated cardiovascular reflex scenario as part of their Physiology Course; each year, the SOM students have expressed strong enthusiasm for this simulation presentation. The simulated patient definitely adds

a clinical context to some of the physiological and pharmacological principles presented to both the medical and nursing students. In addition to these hands-on small group (eight students) simulations, the PSL provides live, interactive distance education presentations to the second-year SOM students for illustrating simulated, clinical examples during their Pharmacology lectures. Thus, the PSL brings the hospital to the students through a newly installed Advanced Distance Education Network (ADEN), designed by the PSL staff.

During their *third-year anesthesia rotation*, SOM medical students are instructed in the basic fundamentals of anesthesia and the role of the anesthesiologist in surgery. They learn to connect a patient to external life support sources, such as an oxygen mask, a ventilator, or manual ventilation via endotracheal intubation. For the first time, USU medical students combine the lessons learned about the physiology of gas exchange and physiologic and pharmacologic responses, while actually performing the procedures and administering anesthesia on the patient simulator, without putting a patient, or themselves, at risk.

During 2001, 2002 and 2003, the USU PSL team received the *First Place Research Award* for their presentations at the Society for Technology in Anesthesia International Meeting on Medical Simulation. The PSL study shows a remarkable reduction in error detection time, when doctors view clinical monitor data via a prototype Head Mounted Display. This concept of providing immediately accessible critical vital sign data to clinicians via a Head Mounted Display is the basis of a patent application by the PSL team; PSL's winning presentation showed acceptance by surgeons to wearing a Head Mounted Display in the operating room. The PSL, in conjunction with the USU SOM Department of Anesthesia, also presented a continuing medical education (CME)-accredited *Weapons of Mass Destruction Workshop*, at the American Society for Anesthesiology, in San Francisco, California, on October 15, 2003. This presentation was enthusiastically received and has led to requests for book chapters from the PSL faculty on the web response to WMD.

An Innovative Introduction to the Surgical Clerkship. The third-year surgical clerkship is preceded by a three-day introduction to clinical models and operative procedures utilizing the National Capital Medical Simulation Center (SIMCEN) and the animal surgical facilities in the USU Department of Laboratory Medicine. This innovative and comprehensive approach, which occurs with third-year SOM students every six weeks, familiarizes the students with patient interactions associated with the presentation of common surgical illnesses as well as introducing various surgical techniques, priorities, equipment and procedures. The advanced technologies of the SIMCEN employ live patient models well versed in specific disease histories and symptoms. Disease scenarios include common problems such as pancreatitis, appendicitis, ectopic pregnancy, and gallbladder disease. Students perform comprehensive, focused histories and physicals on two to three *patients* under real-time observation by a faculty-teaching surgeon. The encounter is also taped for interactive student-teacher reviews during small group discussions of techniques and performance. In addition to the patient encounters, separate laboratories are held to teach and perform knot tying, endotracheal intubation and ultrasound fast examination techniques on mannequins. A human patient simulator is used to teach acute trauma care, utilizing various scenarios creating positive and negative outcomes to specific student treatment choices. There is also a virtual reality laboratory for the performance of technical skills including suturing and cricothyroidotomy. The unique experience offered by the two days in the live animal laboratory introduces students to actual operative procedures on an anesthetized animal under sterile conditions. The instrumentation, scrub

procedures, apparel and routine are true replicas of actual clinical hospital settings. Students are assigned in groups of three or four to a certified teaching surgeon for the entire two days. Abdominal procedures including appendectomy, splenectomy, bowel resection and cholecystectomy are carried out with each student serving as surgeon, scrub technician, and assistant. On the second day, the thoracic phase is carried out including a pneumonectomy, pericardial window, aortotomy, and chest tube placement. This intense three-day session prepares the student anatomically, physiologically and procedurally for the clinical rotation. The clinical rotations include the standard third-year clerkship in general surgery and surgical specialties. Small group mentoring preceptorships are held weekly as well as Distinguished Professor Lectureships, which are held bi-monthly.

Simulation Center Technologies Utilized During the Surgery Rotation. The advanced technologies of the National Capital Medical Simulation Center are being used in simultaneous fashion every six weeks to introduce the third-year medical students to their surgery rotations. The students are provided both an introductory discussion and a lecture regarding an abdominal surgery laboratory to be held the following day. The patient actors are used to provide an hour-long, three-patient opportunity to elicit, from the medical students, a medical history; and, the patient actors enable the medical students to perform a focused physical examination for a variety of acute abdominal diseases (e.g., appendicitis, pancreatitis, gallbladder disease, ectopic pregnancy, and others). These encounters are videotaped and the tapes are reviewed with the teaching surgeon during the subsequent hour. A suturing and knot-tying laboratory is held in the computer laboratory using both web-based and senior surgeon instruction. Plastic mechanical models (Laerdal/MPL) are used to teach such skills as endotracheal intubation, chest tube insertion, and surgical airway. The human patient simulator (MEDSIM) is used to teach the best approach to simple clinical problems such as hypotension or hypoxemia. The virtual reality laboratory experience includes starting an IV (HT Medical), creating an anastomosis (BDI), and performing bronchoscopy (HT Medical). Two additional simulators are used to teach emergency trauma procedures: pericardiocentesis and diagnostic peritoneal lavage. These last two trauma skills simulator technologies were developed at the National Capital Area Medical Simulation Center. Through the use of this multi-modality facility, the experience of medical students can be enhanced so that the first time some of the above-described problems or procedures are encountered, it will not be with a live patient, but rather with the most appropriate simulator. Approaches, such as those provided by the advanced technologies of the Simulation Center, are expected to minimize the possibility of medical errors.

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## Fourth-Year Curriculum.

**Yours is the only medical school in America which trains physicians to be ready for duty on the bottom of the ocean or on the surface of the Moon, and any place in between... As students, you went through one of the most rigorous programs in the country... You prepared yourself to treat patients anywhere in the world, under any circumstances.**

- **President Ronald Reagan**, Commencement Address, SOM Class of 1987.

Overview. The fourth academic year begins with a one-week *Military Preventive Medicine Course*. Early in the fourth year, approximately 165 students also take the USMLE Step 2. The 165 fourth-year students have ten four-week blocks for 1,650 rotations. Students must complete an eight week subinternship as well as the following four-week clerkships: Military Contingency Medicine; Military Emergency Medicine; and, Neurology. The senior year concludes with a one-week *Transition to Residency Course*.

Military Medicine. The Department of Military and Emergency Medicine conducts two courses in the senior year (*MCM* and *MEM*) that are required for graduation from the SOM. The *Military Contingency Medicine (MCM) Course* focuses on medicine in a deployed environment and in response to a terrorist attack. The first three weeks of the course are currently devoted to reviewing and expanding basic concepts and manual skills learned in the first two years of Military Studies. While the *Combat Medical Skills Course* included first-aid at the medic level for the first-year medical students, the *Advanced Trauma Life Support (ATLS) Course* is taught at the physician level to the fourth-year students. The USU SOM is one of only three medical schools in the United States that requires ATLS for all students. Additional topics in the first three weeks include the management of combat trauma, chemical-biological-radiological (CBR) exposure, environmental injuries, and combat stress. Special sections focus on triage, women's issues, and working with non-governmental organizations in disaster relief or humanitarian assistance missions. Integration with national strategic goals, operational missions, and tactical objectives is emphasized in all aspects of the course. Incorporated into the MCM curriculum is *Introduction to Emergency Medicine (EM)*. The problem-solving techniques used by EM physicians are taught and practiced. This prepares the SOM students to excel in a four-week Emergency Medicine clerkship entitled *Military Emergency Medicine (MEM)* - described below). The final week of MCM is dedicated to *Operation Bushmaster* where the lessons learned can be applied in multiple simulated situations during a field training exercise.

## Operation Bushmaster.

**I learned that I can't think only in the present, that I have to think ahead. Bushmaster gives those with no prior experience a taste of what is ahead in field medicine.**

- **2nd Lieutenant Cristin Kiley, USA, The USU Quarterly, Changes to Operation Bushmaster, Winter Issue, 2002, page 6.**

The field training exercise, ***Operation Bushmaster***, uses the constructs of two United States Army Battalion Aid Stations, one United States Marine Corps Battalion Aid Station, and, new for 2003, the addition of an Air Force Expeditionary Medical Support System (EMEDS) Basic to allow students to practice skills learned in the *Military Contingency Medicine Course* and throughout the *military and traditional* SOM curriculum. These treatment facilities are designed to represent first- and second-echelon levels of care within the forward battlefield environment. Real-world and notional modular teams have been integrated into the scenarios to reflect current medical doctrine and deployment practices for all Services. Each of the Services provides equipment and medical personnel to provide students experience with front-line medical evacuation procedures and platforms. ***The scenario reflects a Joint Task Force (JTF) deployment involving all four Services and incorporates the updated policies established by the Secretary of Defense.*** The students are placed in a resource-restricted environment and are forced to coordinate with theater assets and their *sister* Services in order to accomplish their missions and deliver optimal patient care.

The students practice land navigation, radio communication and other field training, triage and combat casualty care, to include site selection and establishment of their respective medical element. Drawing on their classroom lectures and teachings, SOM students are encouraged to develop novel solutions to many operational scenarios and problems. They also are forced to navigate the different evacuation requirements and procedures that each Service utilizes within the battlefield environment. ***This exposure will allow the USU SOM students to quickly integrate themselves into a future joint combat environment.*** Students occupy at least three leadership and medical evaluation positions throughout the field operation. They are evaluated on the following: medical proficiency while handling dozens of simulated casualties; leadership skills under demanding and stressful conditions; mission accomplishment and focus; and, teamwork. Drawing on all that the students have learned while at USU, Operation Bushmaster is viewed as the capstone exercise of their military medical education, allowing them to hone their skills in a simulated combat environment.

Operation Bushmaster is conducted three times each academic year, in September, November and January. One-third of the class attends each week-long session of Bushmaster at Camp Bullis in San Antonio, Texas. In a recent issue of the USU Quarterly, **Major Troy Johnson, MC, USA, USU SOM Class of 1995**, was interviewed reference his position as the Academic Director for Bushmaster. Within 18 months following his graduation from USU, Major Johnson, a flight surgeon with a special operations unit, was faced with a real-world mass casualty situation overseas involving the United States Marines who did not have a physician with their unit. Major Johnson had to provide care within a Marine Battalion Aid Station; he knew what to do, due to the training he had received at USU, and was

subsequently decorated for his actions. As mentioned above, the USU students are now trained in the Marine Battalion Aid Station.

In the past, the Bushmaster scenario was set in Bosnia. Today, the Bushmaster scenario is based in the Middle East; and, in the future, if another area of the World becomes significant, the USU instructors will change the cultural concerns and the diseases to match the new area of interest.

Emergency Medicine Clerkship. The USU SOM requires all students to complete a Clinical Clerkship in Emergency Medicine prior to their graduation as physicians. In preparation for their clinical work in an Emergency Department, all of the senior students participate in an intensive overview of Emergency Medicine incorporated into the MCM Course. During this didactic phase, students are taught how emergency medicine physicians problem solve. Lecturers demonstrate the steps they use when evaluating patients in the Emergency Department. In small group discussions, led by experienced emergency medicine physicians, students have the opportunity to practice problem-solving techniques. Lectures, small group discussions, and assigned readings give the students the skills they need to work in an Emergency Department. Students leave for their clinical rotations with a solid understanding of Emergency Medicine.

Students may choose from a variety of sites (military and civilian) to perform their Emergency Department clinical rotations. All military hospitals having training programs in Emergency Medicine are open to USU SOM students. These include: the Darnall Army Community Hospital at Fort Hood, Texas; the Madigan Army Medical Center in Tacoma, Washington; the Naval Hospital in San Diego, California; the Naval Hospital in Portsmouth, Virginia; the Medical Center at Wright Patterson Air Force Base, Ohio; and, the San Antonio Uniformed Services Health Education Consortium, which encompasses the Wilford Hall Medical Center in Lackland, Texas, and the Brooke Army Medical Center located in San Antonio, Texas. In addition, USU SOM students can choose from among several high-volume, trauma intensive civilian sites including: Charity Hospital in New Orleans, Louisiana; the Ben Taub General Hospital in Houston, Texas; and, the University of Maryland Medical Center in Baltimore, Maryland. In the Emergency Department, students function under the supervision of experienced Emergency Medicine physicians and are expected to be active members of the Emergency Department team as they care for patients of all ages and with a variety of medical and surgical problems. Students are encouraged to take part in the didactic activities of the Emergency Department in addition to patient care. Each year, about ten USU SOM students choose Emergency Medicine as their career choice; many have gone on to become leaders in Emergency Medicine.

Operational Electives. The Department of Military and Emergency Medicine, through its Education Division or one of its three centers, sponsors several electives in operational medicine. These may include clinical rotations in military emergency departments or aerospace medicine clinics, enrollment in military courses, or attendance at the Joint Readiness Training Center. Qualification as a flight surgeon may be obtained through either the United States Air Force School of Aerospace Medicine or the United States Army School of Aviation Medicine; during the past years, the Army School has altered the timing and structure of their course specifically to enable USU SOM students better access to

this form of occupational medicine. Whereas only one student had attended in the previous two years, five students and one faculty member attended during 2001; four of those six were the top four graduates of the demanding six-week Army course. Nine students attended during 2002. Two students worked in a trauma center in Armenia before their graduation in 2002. And, three students were sponsored by the USU Center for Disaster and Humanitarian Assistance Medicine (CDHAM) to accompany an Air Force unit on a humanitarian mission to El Salvador during 2002; in 2003, CDHAM provided funding for one fourth-year USU SOM student to participate as part of a nutrition-based study in Honduras.

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**USU SOM Curriculum Stresses a Military Focus.** In addition to the military unique curriculum described above, *the USU SOM academic departments and faculty have structured all of their courses to include: topics specific to military medicine and not covered in the traditional medical school curriculum; and, teaching examples and cases drawn from military medicine.* This content focus is reinforced by the fact that many of the faculty (one third of the billeted basic science faculty and two-thirds of the clinical faculty) are uniformed officers representing the Army, Navy, Air Force, and the Public Health Service; these uniformed instructors provide experience and contextual correlations during their teaching of traditional topics. *The unique practice of military medicine is woven throughout the four years of medical school.*

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## Curriculum Renewal.

Background. The SOM curriculum utilizes a variety of educational experiences and learning formats, including lecture, laboratory, clinical correlation, small group discussion, computer and web-based experiences, patient simulator, standardized patients, and experiential exercises. The SOM vision for the undergraduate curriculum is that the science of today is taught in an environment that will foster increased long-term, self-directed learning tomorrow. Toward this end, the SOM Executive Curriculum Committee (ECC) completed an exhaustive study of the undergraduate curriculum, and revisions are ongoing to minimize the traditional curricular *stovepipes* through course integration and the increased use of clinical material.

In both the first and second years of medical school, there is a heavy emphasis on small group learning. In the first year, this takes the form of laboratories in Structure and Function and discussion groups in Human Context. Additionally, the Introduction to Clinical Medicine Course starts in the first year and begins to develop history-taking and physical diagnostic skills. In the second year, laboratories continue in Pathology and Microbiology, while there is increased use of a small group *problem-based learning* educational format. In both Pathology and Clinical Concepts, groups of 8 to 12 students team with a faculty member to review clinical scenarios. The format of these encounters is designed to flow seamlessly into the second-year portion of the Introduction to Clinical Medicine Course and the clerkships during the third year.

Integration of Clinical Medicine and the Basic Science Experience. There are numerous examples of clinical medicine being integrated into *the basic science experience*. Close collaboration between the Departments of Radiology and Radiological Sciences (RAD) and Anatomy, Physiology, and Genetics (APG) led to the development of computer-based learning resources correlating basic anatomy with the radiological representation of normal and pathologic states. The integrated structure and function curriculum (Physiology and Anatomy) incorporates clinical faculty into its teaching. Several areas in particular - Cardiovascular, Renal, and Pulmonary - have demonstrated extensive clinical integration for many years. The Department of Pathology utilizes many clinical facilitators for its small group discussions. In addition, Pathology has coordinated the format of its case presentations with course directors from Clinical Concepts and Introduction to Clinical Medicine to provide a consistent experience for students. Pathology and Clinical Concepts have also coordinated their curriculum to provide the case scenarios in Clinical Concepts in sequence with topics being discussed in Pathology. The Department of Pharmacology also encourages clinical facilitators to participate in their small group exercises. There are currently several initiatives being considered to move basic science to the clinical years. One example is the proposal before the ECC to develop a computer or web-based curriculum of key basic science topics for exploration in the fourth year of medical school. These examples illustrate basic science and clinical integration either in place or under active consideration.

The Renewal Process. As the Chief Academic Officer of the SOM, the Dean is responsible for institutionalized curriculum management. Policy issues are reviewed and considered by the ECC, which reports to the Dean. Institutionalized curriculum renewal in the SOM is a high priority. The formalized process began with Phase I (1993-1995) of curriculum renewal. During Phase I, a steering committee

with four subcommittees was developed to cover the following areas: 1) the history of medical education in the United States; 2) current experiments in curriculum reform; 3) curriculum at the USU SOM; and, 4) professional requirements and outcomes. Subcommittee reports and recommendations were generated and reviewed by the faculty. The Dean's Office and academic departments then offered recommendations on how to best implement the committee's recommendations.

During Phase II (1996-1997), a steering committee and five subcommittees were established; they reviewed or completed the following: 1) objectives and goals; 2) an organizational template for curriculum management; 3) basic science and intra-departmental and clinical integration; 4) outcomes and evaluations of the clinical clerkships, both required and elective; 5) the establishment of topic groups; 6) subcommittee and topic group reports and recommendations; 7) a consensus on the recommendations and implementation planning; and, 8) the implementation process.

In February of 1998, the Dean charged the ECC with reviewing the December 1997 Curriculum Review Report produced during Phase II of the curriculum renewal process. The ECC was also charged with providing oversight for the planning process and the development of an implementation plan for curriculum renewal. This implementation plan is envisioned as an evolutionary process, with changes in the curriculum occurring in an incremental fashion. The ECC completed a draft of the SOM educational objectives, which was reviewed by the Dean and distributed to faculty, students, and staff for comment, and finalized in November of 1998. As changes to the curriculum occur, the SOM Dean has also directed that his office establish and monitor processes for student, faculty, and TriService evaluation of the curriculum changes.

Responsibilities of the Executive Committee on Curriculum. On August 2, 2001, the SOM Dean issued a Policy Memorandum updating the responsibilities of the USU SOM Executive Committee on Curriculum (ECC). The members of the ECC are drawn from the faculty, student body, and administration. Members are charged with representing the interests of the SOM as a whole; not as representatives of specific constituencies. The twelve members of the ECC have been designated with responsibility in seven areas to: 1) articulate, with the concurrence of the Office of the Dean, well-defined learning objectives that each student must meet to receive the M.D. Degree; 2) conduct a biennial review of each required course/clerkship in the SOM undergraduate curriculum, including content, format, teaching methods, course materials and methods for verifying that graduating students have met all of the learning objectives; 3) establish a prospective course/clerkship review schedule that gives course/clerkship directors sufficient time for proper consultation and preparation before the biennial review; 4) complete the course/clerkship review and assessment within 60 days of submission and presentation by the course/clerkship director, including submission of findings and recommendations to the Office of the Dean; 5) request, if necessary, through the Office of the Dean, further information, seek consultation with faculty or external consultants, and, when appropriate, sponsor symposia on curriculum to assist course/clerkship directors or topic group leaders in curricular planning or improvement; 6) periodically review institutional policy concerning the curriculum and educational practices to ensure consistency in the implementation and management of the undergraduate medical education program; and, 7) address other curricular issues and educational initiatives as charged by the Dean, SOM.

Issues addressed by the ECC in recent years include: coordination and/or changes to examination schedules; changes to the academic schedule grid; review of grading policies; review of mandatory attendance policy; discussion and response to student-generated After-Action-Reports; review of fourth-year requirements; consideration of a diversity curriculum proposal; review of changes to the first and second-year Introduction to Clinical Medicine Courses; and, review of the students' military responsibilities and their impact on the overall academic experience.

Responsibilities of Department Chairs and Faculty. The Department Chairs are responsible for establishing objectives, designing content and presenting each course/clerkship assigned to his/her department and for assuring that the performance of students is evaluated in an appropriate and timely manner and in accordance with institutional policy. The Chairs are also responsible for supporting Course or Clerkship Directors with requisite faculty and specifically for assigning teaching responsibilities to faculty members and for allocating departmental resources as required to support the courses, clerkships, selectives, and electives assigned to their departments. Course or Clerkship Directors for departmental-sponsored courses will be appointed by the responsible Chair; Course or Clerkship Directors for interdepartmental courses will be appointed by the Dean, SOM. Faculty members are the content experts in the individual basic science and clinical science disciplines and collectively are responsible for the SOM curriculum. The processes of curricular design, implementation and evaluation must involve broad participation by the SOM faculty both at the departmental level and at the institutional level. Every assigned faculty member is responsible, generally, in coordination with the Course or Clerkship Directors, for fulfilling his/her assigned teaching responsibilities in the areas of undergraduate curriculum.

Center for the Enhancement of Healthcare Training and Outcomes. The Liaison Committee on Medical Education (LCME) has stated that medical faculty and students need to address gender and cultural biases in the delivery of health care and, in general, prepare providers to care for diverse patient populations. Under the direction of **Evelyn L. Lewis, M.D., MA (CDR, MC, USN, Retired), SOM Department of Family Medicine**, and **Richard Tanenbaum, Ph.D., SOM Department of Medical and Clinical Psychology**, USU has developed a biopsychosocial training program for medical students and residents, nursing students, clinical/medical psychology graduate students and other prospective health care professionals, faculty, and staff. The USU SOM Center for the Enhancement of Healthcare Training and Outcomes (CEHTO) enables the University to comply with the LCME requirements and improves USU's curricula by providing training to optimize patient adherence and enhance health care outcomes. Specifically, CEHTO has been established to: 1) infuse concepts and processes into existing curricula in order to advance a biopsychosocial philosophy and improve cultural proficiency; 2) provide a forum in which students have the opportunity to practice the skills and strategies addressed in the classroom; 3) facilitate the development of culturally respectful relationships - inside and outside of the USU community; and, 4) evaluate the impact of this initiative and continuously improve and refine the training provided.

Fundamentally, CEHTO is designed to teach current and future health care professionals how to increase their effectiveness. Its ultimate aim is to train providers to use a wide knowledge base, interpersonal and communication skills, and cultural awareness to effect the most beneficial treatment for patients from diverse backgrounds. As a component of the Family Practice Clerkship Curriculum, for example, medical students receive didactic and experiential training. Via facilitated conversations, small

and large group exercises, and multi-media presentations, students learn about how cultural factors affect them, their patients, and their interactions with others. Experiences such as these foster an appreciation of cultural diversity, the patients' overall health needs, and, most importantly, how our own beliefs and biases can impact medical decision-making and patient care. Moreover, this training gives SOM students the opportunity to consider, rehearse, and evaluate specific strategies to deal most effectively with diverse multi-cultural populations. Hands-on, experiential training modules also utilize standardized patients (patient actors) at the USU Military Medical Simulation Center (SIMCEN). Using realistic behavioral simulations, this state-of-the-art medical simulation center provides a unique forum in which participants can practice, develop, and refine new skills, and translate increased cultural awareness into culturally proficient behaviors. Detailed feedback is provided and individualized behavioral prescriptions are generated to assist participants in setting objective goals for improvement.

During 2003, the University and the SOM Departments of Family Medicine and Medical and Clinical Psychology applied for, and successfully received, a substantial grant from the National Institutes of Health (NIH) to sponsor the USU Center for Health Disparities, referred to as *Project EXPORT*. **Evelyn L. Lewis, M.D., MA (CDR, MC, USN, Retired), SOM Department of Family Medicine**, is the Principal Investigator on the NIH grant; and, **Richard Tanenbaum, Ph.D., SOM Department of Medical and Clinical Psychology**, serves as the Co-Principal Investigator and Project Director. **David S. Krantz, Ph.D., Professor and Chair, SOM Department of Medical and Clinical Psychology**, is the Center Director. As part of Project EXPORT, CEHTO will assist in meeting the following objective: to develop workshops and other educational forums that focus on disseminating critical knowledge about health disparities and teaching practical skills in order to maximize culturally proficient health care service delivery.

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**Departmental Review.** A program was adopted by the School of Medicine in 1998, which mandated each SOM department to conduct a *self-study* every five years or at the time of the appointment of a new chairperson. The self-study would be followed with a review of the self-study by a group of *peers* from outside of the University. From 1999 through 2003, self-studies and external reviews have been completed by the following Departments: Anesthesiology; Dermatology; Family Medicine; Military and Emergency Medicine; Obstetrics and Gynecology; Pediatrics; Pharmacology; Neurology; and, Radiology and Radiological Sciences. Other departmental reviews pending completion include: Anatomy, Physiology and Genetics; Medical History; Medicine; Pathology; and, Psychiatry. The results of these studies will be used to chart future courses for these departments in education, research, and community service.

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## STUDENT AFFAIRS

**Class of 2007.** During August of 2003, the School of Medicine (SOM) matriculated its twenty-eighth class (the Class of 2007). The 1,686 applicants, representing all 50 states, competed for 167 positions. There were approximately 10 applicants for each position, which allowed a diverse and highly qualified selection of candidates with a motivation toward public service. The Class of 2007 includes 63 Army, 51 Navy, and 51 Air Force medical students. In addition, 2 United States Public Health Service medical students were added to the class. The demographics of the class are depicted as follows:

- Sixty-seven students (40 percent) were associated in some way with the military before USU matriculation. Of those,
  - Fifteen students served previously as officers; ten had previously served as enlisted personnel; sixteen were service academy graduates; twenty-three were direct graduates of ROTC programs; and, three were reservists;
- Sixty-seven students (40 percent) are women;
- Forty-four class members (26 percent) are minority students (including 13 students from groups classified as underrepresented by the Association of American Medical Colleges); and,
- The average age of the entrants at the time of application was 24 years.

All members of the Class of 2007 hold Baccalaureate Degrees; eleven students hold Master of Science Degrees; one holds a Doctorate in Veterinary Medicine; and, one holds a Doctor of Optometry. Biology was the most represented undergraduate major of the matriculants (35 percent); thirteen percent of the class had majors in Chemistry; and, seven percent had majors in Biochemistry. Some of the other disciplines in which members of the Class of 2007 hold degrees are Political Science, Neurobiology, Microbiology, Psychology, Nutrition, Engineering, and Anthropology.

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**The Office of Student Affairs.** Throughout Fiscal Year 2003, the Office of Student Affairs (OSA) was engaged in personal and/or professional academic counseling and career guidance for the 668 students in the SOM. Beginning in September of each year, OSA conducts well over 300 formal interviews. In 2003, this process formally began with the post-matriculation interviews of all 167 freshmen from the first-year class.

Structured Interviews for the First Year Class. The purpose of the MS-I (medical student-first year) interview is to engage each new medical student in a relationship with the OSA and the office staff who will manage his/her professional development and career guidance. The interview is open with an emphasis on the future partnership (or the individual management and consulting network) that will exist between each student and the Associate Dean and two Assistant Deans in OSA. The interview covers five areas: 1) Transition - the move to Washington, e.g., housing, getting settled, family issues; 2) Sense of Membership in the Class, e.g., within and between Services, professional, social; 3) Sense of Professional Vision, e.g., vision for what will come after medical school; 4) Adjustment to Student Life, e.g., how are they managing the 24-hour clock; and, 5) Inquiry about Image, e.g., aside from the roles of student, spouse, parent, athlete, what really defines them? Students are free to raise any questions, concerns, or thoughts. The interviews require considerable time, but have definitely proven to be worth the effort for both the students and OSA. These interviews set the stage for an on-going dialogue with each student over the four years of medical school and for establishing a sense of community throughout the student body.

Sponsor Program. In January of 2003, OSA allocated sponsor assignments for the newly accepted students in the Class of 2007. Upon acceptance to USU, members of the incoming class are individually matched with members of the current freshman class. First-year students serve as the incoming students' sponsors; the student-sponsor answers questions about housing, moving to Washington, D.C., family issues, military summer training, and many other topics. The student-sponsor relationship has proven to be a valuable tool in assisting the incoming students through matriculation.

**Jumping from an aircraft at 1,280 feet, 2nd-Lieutenants Reed Kuehn, Chad Cryer, and Johannah Kone** (Class of 2005 - on an operational assignment following their first year of medical school) **qualified as paratroopers while attending Jump School at Fort Benning, Georgia. The school was broken down into three weeks: *ground week*, which consisted of jumping out of a mock door, four people at a time, and practicing landing and falling by hooking a cable from a 34-foot tower; *tower week*, which advanced them to a 250-foot tower, fortifying the practice of landing and falling, mass exiting from an aircraft, air mobility and emergency malfunctions of the parachute and how to handle them; and, *jump week*, where all of the training is pulled together and the students perform four jumps, including a night jump. "The most exciting part was at the door waiting to jump, where it was extremely loud, then jumping into complete silence," said Kuehn.**

**"We went to represent USU, complete the course and to gain knowledge for our futures," said Cryer. "It was good to see the everyday life of the people whom we will be taking care of and the conditions that they go through." All three students gained an understanding of the importance of preventive medicine. Just doing the simple things like staying well-hydrated and applying sunscreen helped keep troops comfortable with all of their gear on. "There was lots of monotony in the training, falling again and again, as repetition helped seed in people's minds what to be aware of to prevent many injuries," said Cryer.**

**In the case of most of the class, this was the group’s first experience with the operational side of the military. The large volume of enlisted troops impressed Kone, in particular. “I think the experience gave me a better awareness of what soldiers go through,” Kone said. “Even though half of the time we were sitting around waiting to jump, while we were waiting, we had to sit with all of the equipment on in the heat.” Kone felt this experience gave her a better understanding of the unique burdens that the enlisted soldiers have to face... “When you are treating someone and they see the patch (patch earned upon completion of the operational training)... you have a connection with the patient.”**

- *USU Medicine, USU Students Gain Deployment Experience, Fall 2002, page 27.*

USMLE Board Examinations. During Fiscal Year 2003, OSA prepared the second-year students for the United States Medical Licensing Examination (USMLE) Step 1 Board Examination, which the students took between May and June of 2003, prior to beginning their first of the third-year clinical rotations. During 2003, OSA provided class-wide presentations covering the fundamentals of the examination process, test preparation strategies, and test-taking skills. Students also organized their own informal programs, which have included mini-lectures on broad relevant topics, meetings with select faculty, and group study sessions. The USU first-time pass average for the Step 1 Board Examination during 2003 was 90.1 percent. Most of the USU fourth-year students (SOM Class of 2004) completed the Step 2 Board Examination between July and September of 2003. The overall performance for the Class of 2004 was strong; the average score for the class was 211; and, the pass rate was 95 percent.

Third-Year Clerkship Scheduling. Also during February, OSA met with the second-year students to schedule their third-year clerkships. To increase student input into the orchestration of their third-year clerkship schedule, OSA has moved from a system where students were simply given a pre-selected schedule of randomly assigned clerkships. The student now has the ability to place rotations of special interest in the first half of his/her junior year and the opportunity to experience potential career choices at an early point. In addition, the current system allows students to coordinate some of the required travel in their academic third year with personal events, which may already be planned or anticipated. The staff, of OSA conducted Round 1 clerkship selections for the Class of 2005 using randomly assigned numbers. During the second week of February, students met as a group and picked rotations for the remaining rounds. The students shared equally in opportunities for assignments of choice and expressed their appreciation for the process.

Graduate Medical Education Planning Interviews. OSA conducts interviews with the third-year medical students during the fall term. During the first few months of 2003, OSA met individually with members of the junior class to conduct fourth-year planning. The hour-long meetings covered Graduate Medical Education (GME) planning, specialty choice, interviews, and specific sequencing of senior rotations to maximize the selection of their residency of choice; again, available selections for senior-year rotations exceeded the general expectations of the students. OSA arranged program schedules, which enhanced student growth, professional experience, and individual preferences. A major

product of this process is the Dean's Letter, which presents a comprehensive picture of each student's strengths. Selection for GME positions is competitive; OSA and students worked together to create the best nomination packages possible.

Graduate Medical Education Selection Board. The Joint Service Selection Board convened during the week of December 1-5, 2003; and, 167 USUHS seniors (the Class of 2004) were selected for PGY-1 positions: Army - 67; Navy - 47; Air Force - 53. The overall selection rate for FIRST CHOICE programs was 77 percent. USU had 128 out of 167 students match for first choice both in specialty and training site. Seventeen additional students of the Class of 2004 received their first choice in specialty, resulting in 87 percent (145 out of 167) receiving their first choice in specialty. Nearly half of the class (40 percent) was selected for training in a primary care specialty. Sixty-seven seniors will begin their residency training during this Summer in the following areas: Family Medicine - 18; Internal Medicine - 19; Pediatrics - 23; and, Obstetrics and Gynecology - 7. The directors of the MHS military programs once again demonstrated confidence in the USU SOM graduates.

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**The USU Military Medical Student Association.** The Military Medical Student Association (MMSA), a quad-service, student-run organization, originated at USU more than thirteen years ago. MMSA's goals include developing lines of communication among military medical students nationwide, providing information, and promoting morale and unity among future military medical officers.

Unlike USU medical Students, the Health Professions Scholarship Program (HPSP) students attend universities in the civilian sector; they receive tuition and books and are paid a monthly stipend while working toward their medical degrees. The HPSP students receive limited military training and influence while attending the civilian schools. To share their unique military training, MMSA has sponsored conferences where residency directors and medical specialty representatives from around the country, and USU staff and faculty members present lectures and hold discussions on various topics, including service specific issues, military medical history, operational considerations of military medicine, and basic military concerns that affect both USU and HPSP medical students. The USU MMSA has also established the *MMSA Journal*, which provides valuable military information of interest to medical students; the MMSA goal is to make copies of the journal available to all HPSP students.

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## ACHIEVEMENTS OF THE SOM ALUMNI

As the Executive Agent of the Uniformed Services University of the Health Sciences (USUHS), I would like to comment on the extraordinary achievements of the University... USUHS SOM graduates, with retention averaging twenty years of active duty service, now represent over 22 percent of the total physician officers on active duty in the Armed Forces. And, as provided to the Congress during 2002, the median length of non-obligated service for physician specialists in the Military Health System, not including USUHS graduates, is 2.9 years; however, the median length of non-obligated service for USUHS graduates is 9 years. USUHS graduates are exceeding the original expectations of Congress when the University was established, thus ensuring physician continuity and leadership for the Military Health System... The USUHS-unique training centered in preventive medicine and combat-related health care is essential to providing superior force health protection and improving the quality of life for our service members, retirees, and families. USUHS also provides a significant national service through its continuing medical education courses for military physicians in combat casualty care, tropical medicine, combat stress, disaster medicine, and the medical response to weapons of mass destruction (WMD).

- Vice Admiral Michael L. Cowan, Surgeon General of the Navy, Testimony before the Senate Appropriations Committee, Subcommittee on Defense Health, April 30, 2003.

Recent tragic events and the current Global War on Terrorism clearly show the benefits of preparedness and training. It is gratifying to know USUHS is leading the way in preparing military healthcare professionals to meet current and future challenges.

- Richard B. Myers, Chairman of the Joint Chiefs of Staff, Letter to USU dated March 29, 2002.

I deployed to the Gulf very early, August 11, 1990, as a senior medical officer with the Air Force Special Operations Command. Deployed in this capacity, my responsibilities ranged from flying training and combat support missions to representing my command at theater-level planning conferences... The heat in August was incredible, with temperatures up to 125 degrees. Yet our maintenance personnel had to work around the clock to get our aircraft combat ready. Just sleeping six hours in the heat caused dehydration to the point of dizziness. Our medical team was on the flight line and around our tent-city bringing sunscreen and ice water to the personnel because they could not drink 100 degree water out of a canteen.

*My training at USUHS had prepared me for working in austere conditions without fixed facilities.* The tap water in our camp became contaminated by the sewer system, and water tanks had to be provided with chlorine levels monitored daily. Because of the *military*

*medical history* classes I had at USUHS, I knew that disease and non-battle injuries could make an army ineffective before the battle began. *Preventive medicine* is an entire department and course of study at USUHS. I had the training and references...to avoid repeating the mistakes of previous wars... Because of the emphasis on *tropical medicine* at USUHS, I was able to advise the Commander and troops about potential infections and how to protect themselves...Because we *studied the air evacuation system* and did practice exercises using it at USUHS, I was able to coordinate a unique mini-mobile aeromedical staging facility at our intermediate operating base. This provided the transition from our helicopter rescue aircraft to the C-130 medical evacuation system. As our troop build-up progressed, hospitals from each Service increased. Because at USUHS I had been taught *the organization of medical systems in the other Services*, I was able to arrange referrals for our patients much more easily...We had no logisticians, but were able to obtain supplies through the Army depot system, which I also learned about at USUHS.

Another area of major concern for our personnel was chemical warfare. Because of the thorough preparation and field training I had as a student at USUHS, I was *able to develop a training program in unconventional warfare, such as chemical and biological threats*, which increased confidence and decreased anxiety in our troops... When we deployed to our forward locations, there were no *designated disaster preparedness personnel*. The USUHS experience came in handy again, as I assumed those responsibilities. A plan for *decontaminating aircraft, vehicles, and personnel* was created. Materials were purchased and positioned to maximize readiness.

To summarize the impact of the 4-year immersion in military medicine at USUHS on my preparation for war, I appreciated the operational mission of my unit and how I, as a medical officer, fit into the process of planning and executing that mission. This went well beyond treating patients. It involved analyzing the tactical situation, advising the Commander, and integrating with other Services. *USUHS graduates were well prepared.*

- Lieutenant Colonel Charles Beadling, USAF, MC, USU Class of 1984, (currently at the Rank of O-6), Testimony before the Senate Appropriations Subcommittee on Defense, April 14, 1994, page 95.

**General Overview.** The graduating Class of 2003 was the twenty-fourth class to receive Medical Degrees from USU. *As of April 2004, of the total 3,421 medical school graduates, 2,735 remain on active duty in the Uniformed Services (Army - 1,056; Navy - 789; Air Force - 796; USPHS - 94); and, the 2,641 USU SOM alumni on active duty in the Military Health System represent over 22.2 percent of the total physician force in the Department of Defense - 11,901 physicians.* USU graduates have a seven-year obligation, which only begins after they complete their three-plus years of residency training. This obligation is exclusive of any other service obligations they may have already incurred, such as graduation from one of the Service Academies. After twenty-four graduations, data is now available to document that the USU SOM graduates are meeting, or surpassing, the goals established by the founders of USU. Since the first graduation in 1980 to April of 2004, the overall retention rate for USU graduates

is 80 percent; of the ten USU SOM classes, which graduated between 1990 and 1999, the retention rate is 94.2 percent (Congress had originally envisioned retention rates close to 70 percent). The average USU physician graduate serves over 18.5 years.

An example of the critical role of USU graduates in the MHS was reported to the Congress in both 2002 and 2003, when the Surgeon General of the Navy testified that the Center for Navy Analysis (CNA) had provided significant data on the retention of physicians. The Navy Surgeon General informed the Congressional Committees that his most undermanned specialties were general surgery and all surgical subspecialties, orthopedic surgery, diagnostic radiology, anesthesiology, and urology. Many of these specialties are critical wartime specialties and shortfalls could have a negative impact on medical readiness. *Overall, the median length of non-obligated service for physician specialists averages only 4.4 years. That average drops to 2.9 years when USU graduates are excluded; the median length of non-obligated service as a specialist for USU graduates is 9 years.*

Significantly, in April of 2003, CNA released *Phase II: The Impact of Constraints and Policies on the Optimal-Mix-of-Accession Model* of its major study, Life-Cycle Costs of Selected Uniformed Health Professions. The second of six major findings states: *policy-makers need to consider the costs and benefits for each accession source. For example, even though USUHS accessions are the most costly (the General Accounting Office has reported that when all Federal costs are included, the cost of a USU graduate is comparable to the cost of an HPSP graduate), their better retention makes USUHS the most cost-effective accession source for filling 0-6 grade requirements* (page three of the report).

In just a short timeframe, USU graduates have become well respected in their medical specialties and provide continuity and leadership for the MHS serving in areas of military medicine ranging from special operations and hospitals, to the White House and the newly established Department of Homeland Security, to deployments to Afghanistan and Iraq, and to assignments aboard ships at sea or with the Blue Angels, the NASA Johnson Space Center, the Secretary of Defense, and the Congress of the United States. Following the terrorist attacks on September 11, 2001, USU graduates were strongly represented among the medical relief workers at the World Trade Center and at the Pentagon; they led the efforts to identify remains at the Dover Port Mortuary; and, USU graduates assisted in directing the Nation's medical response in the wake of the anthrax attacks. On May 12, 2003, USU was provided with an *initial* (and ever-increasing) listing of physicians deployed for Operation Iraqi Freedom from the Army; of the 346 Army physicians, 67 (almost 20 percent) were USU SOM alumni. Other alumni are engaged in patient care or research in military hospitals and clinics around the world, administering to active duty officers and enlisted personnel, retirees, and family members. Currently, 14 of the 58 Specialty Consultants to the Army Surgeon General are USU graduates; 8 of the 45 Specialty Consultants to the Navy Surgeon General are USU graduates; and, 18 of the 59 Specialty Consultants to the Air Force Surgeon General are USU graduates. USU graduates are, and continue to provide, a strong cadre of leaders who ensure the continuity of military medicine.

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**Second USU Alumnus Promoted to 0-7.** USU's second flag officer, **Brigadier General Charles "Bill" Fox, MC, USA, USU Class of 1981**, was initially triple-hatted as the Corps Surgeon for the XVII Airborne Corps, Commander of the 44th Medical Command, and Director of Health Services

at Fort Bragg, North Carolina. He is currently assigned as the Commanding General at the Brooke Army Medical Center and Great Plains Regional Medical Command at Fort Sam Houston, Texas. During 2003, he received the Norman M. Rich Department of Surgery 2003 Baron Dominique Jean Larrey Award for Excellence in Military Surgery from the USU Surgical Associates. (**Rear Admiral E. Connie Mariano, MC, USN (Retired), USU SOM Class of 1981**, was the first USU alumnus to be selected as a flag officer.)

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**Third USU Alumnus Selected for Promotion to 0-7.** USU's third alumnus selected for flag officer was **Brigadier General Bill Germann, USAF, MC, USU Class of 1982**; he was selected during 2003 to command the 89th Medical Group, Malcolm Grow USAF Medical Center, at Andrews Air Force Base, Maryland.

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**Fourth USU Alumnus Selected for Promotion to 0-7.** USU's fourth alumnus selected for flag officer was **Brigadier General (select) Thomas Travis, USAF, MC, USU SOM Class of 1986**. He is currently serving as the Commander of the 311th Human Systems Wing, Brooks City-Base (formerly Brooks Air Force Base), Texas.

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#### **USU Alumni Earn Promotions to 0-6.**

##### USU Army Graduates Selected for Promotion to Colonel - 2003.

Thirty-three percent of the medical corps officers selected for promotion to Colonel (0-6) were USU SOM graduates. During 2003, of the 91 medical corps officers designated for 0-6, 30 were USU SOM alumni.

##### USU Navy Captain Promotion Selectees - 2003.

The Navy released the promotion list for Captain (O-6) Medical Corps during the first quarter of 2003. There were 256 physicians considered for promotion to O-6 in or above zone. Of those, 35 were USU alumni; 221 were non-USU alumni. Overall, 72 physicians were selected for promotion. Of the 35 USU alumni considered for promotion, 12 were selected, resulting in a 34.3 percent selection rate. Of the 221 non-USU alumni considered for promotion, 60 were selected, resulting with a 27.1 percent selection rate. Again, USU graduates were selected at a rate higher than their peers.

USU Air Force Graduates Selected for Promotion to Colonel - 2003.

During late 2003, 37 Lieutenant Colonels were selected for promotion to Colonel (0-6). Of the 37 selected for promotion, 12 were USU alumni from the USU SOM Classes of 1987, 1988 and 1989; USU SOM alumni represented 32.4 percent of those selected for promotion in the United States Air Force.

U.S. Public Health Service Graduates Selected for Promotion to Captain - 2003.

The U.S. Public Health Service promoted several USU graduates to Captain during Fiscal Years 2002/2003. **CAPT Karen Parko, M.D., USPHS, USU SOM Class of 1991**, was one of only two physician officers in the USPHS Commissioned Corps selected for an Exceptional Capability Promotion. She assumed the rank of Captain (0-6) on July 1, 2002. CAPT Parko, assigned as the Director, Neurological Services, at the Northern Navajo Medical Center in Shiprock, New Mexico, was also selected by U.S. Medicine, a medical news organization, as one of the 10 top finalists for the Frank Brown Berry Prize in Federal Healthcare during 2003. She recently transferred to the Neurology and Rehab Service at the San Francisco Veteran's Administration Medical Center in California, where she is also serving as the Chief Clinical Consultant in Neurology for the Navajo Area Indian Health Service. **CAPT Anderson Funke, M.D., USPHS, USU SOM Class of 1988**, was also promoted to 0-6 at the beginning of Fiscal Year 2003; CAPT Funke served as the Medical Director of the Carolina Health Centers in Greenwood, South Carolina, during 2003.

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**USU SOM Graduates Hold Leadership Roles and Earn Special Recognition throughout the Uniformed Services - Selected Examples from the USU SOM Alumni.**

**Class of 1980.**

**Colonel Cass Conaway, MC, USA**, following a distinguished career of 23 years on active duty in the Army, retired during 2003 (*see further information on Colonel Conaway's career in the Selected Profiles Section, which directly follows the achievements of the Class of 2001*).

**CAPT Sandra Yerkes, MC, USN**, served as the Deputy Chief of the Navy Medical Corps, assigned to the Navy Bureau of Medicine and Surgery (BUMED) in Washington, D.C., during 2003. CAPT Yerkes is currently the last member of the SOM Charter Class who remains on active duty.

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**Class of 1981.**

**Colonel Don Bradshaw, MC, USA**, served as the Commander of the Martin Army Community Hospital at Fort Benning Georgia, during 2003.

**Colonel Warner "Rocky" Farr, MC, USA**, served as the Command Surgeon for the United States Army Special Operations Command at Fort Bragg, North Carolina, during 2003.

**Colonel George F. Fuller, MC, USA**, retired during 2003 from active duty service. Over the course of his career, he developed a diverse background both as a military officer and as an innovative physician, serving in both operational and academic leadership positions. As a commander, teacher, clinician, and researcher, Colonel Fuller demonstrated unprecedented dedication to his Nation and made countless contributions to military medicine, the Office of the President of the United States, family medicine, and geriatric medicine.

**Colonel Kevin Keenan, MC, USA**, served as the Dean of the Joint Special Operations Medical Training Center at Fort Bragg, North Carolina, during 2003.

**Colonel Ann Norwood, MC, USA, Associate Professor and Associate Chair of the USU SOM Department of Psychiatry**, has been actively working with the American Psychiatric Association to assist the areas impacted by the global war on terrorism. During October of 2002, Colonel Norwood was identified for the position of Special Assistant to the Assistant Secretary of Health at the Department of Health and Human Services (HHS); she transferred from USUHS to HHS during May of 2003.

**CAPT David Wade, MC, USN**, served as the Force Medical Officer to the Commander-in-Chief, United States Navy, Europe, during 2003.

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### Class of 1982.

**Colonel David Burris, MC, USA, FACS, DMCC**, has served as the Interim Chair of the USU School of Medicine Department of Surgery since October of 2002. Colonel Burris completed his general surgery residency at the Walter Reed Army Medical Center, has his Critical Care Certification, and is the Military Region XIII Chief for the Advanced Trauma Life Support (ATLS) Subcommittee of the Committee on Trauma of the American College of Surgeons. In that position, Colonel Burris is responsible for all ATLS programs within the Department of Defense. *During March of 2002, Colonel Burris reported that USU is one of three universities in the country permitted to teach the ATLS Course without using animals.* The American College of Surgeons allowed testing a non-animal model program for the teaching of ATLS; and, the USU President and Dean, SOM, approved the use of non-animal simulators in the Courses at USU. During 2003, Colonel Burris was deployed to Iraq and has since returned to USU.

**Brigadier General William Germann, USAF, MC**, was selected for promotion to Brigadier General, making him USU's third alumnus to achieve flag rank behind Brigadier General William Fox, MC, USA, USU SOM Class of 1981, and Rear Admiral E. Connie Mariano, MC, USN (Retired), USU SOM Class of 1981. Brigadier General Germann has served as the Commander of the 89th Medical Group (Malcolm Grow USAF Medical Center), Andrews Air Force Base, Maryland, since June of 2003.

**Colonel William Gray, USAF, MC**, served as the Commander of the 366th Medical Group, at the Mountain Home Air Force Base, Idaho, during 2003.

**Colonel Deborah Kretzschmar, USAF, MC**, served as the Vice Commander of the 59th Medical Wing at the Wilford Hall United States Air Force Medical Center, Lackland Air Force Base, Texas, during 2003.

**Colonel William P. Madigan, MC, USA**, is the Chief of Ophthalmology at the Walter Reed Army Medical Center, the Army's Consultant to the Surgeon General for Ophthalmology, USU SOM Ophthalmology Division, and the architect of the Army's Laser Refractive Surgery Program. Colonel Madigan explains that the capability exists to dramatically enhance the fighting forces' combat readiness through application of new technology. According to Colonel Madigan, through the Army's Military Refractive Readiness Program, a soldier's vision can be dramatically improved, enabling him to better perform his duties and improve his survivability on the battlefield. It is estimated that one-third to one-half of soldiers on active duty require some form of optical correction. Since the first laser eye surgery was performed in January of 2002, over 1,000 patients have been treated.

**Colonel Alton Powell, USAF, MC**, served as the Commander of the Air Force medical treatment facility at the 341st Medical Group, Malmstrom Air Force Base, Montana, during 2003. His previous assignment was at the hospital at Sheppard Air Force Base, Texas.

**Colonel Lawrence Riddles, USAF, MC**, served as the Commander of the Air Force medical treatment facility of the 5th Medical Group, Minot Air Force Base, North Dakota, during 2003. His previous assignment was as the surgical operations squadron commander at the 81st Medical Group, Keesler Air Force Base.

**CAPT Raphael Roure, MC, USN, Class of 1982**, along with three members of the USU SOM Class of 1992: **Commander Melanie Mitchell, MC, USN; Commander Sharon Miller, MC, USN;** and, **Commander William “Mike” Hall, MC, USN**, comprised four of the six physicians assigned to the Navy’s First Expeditionary Medical Unit, in Djibouti, as part of Operation Enduring Freedom, during 2003.

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### **Class of 1983.**

**Colonel Cliff Cloonan, MC, USA**, served as the Interim Chair of the Department of Military and Emergency Medicine at the USU SOM through June of 2003. Colonel Cloonan was assigned to USU in July of 2000, where he served as the Vice-Chair of the Department until August of 2001, when Craig Llewellyn, M.D., Colonel, USA (Retired), stepped down as the Department Chair of Military and Emergency Medicine. Colonel Cloonan had previously served as the Dean of the Joint Special Operations Medical Training Center at Fort Bragg, North Carolina, for three and one half years. From 1990 through 1993, Colonel Cloonan served in the USU SOM Department of Military and Emergency Medicine as an Assistant Professor; he was also the Course Director for both the *Combat Medical Skills Course* and the *Introduction to Combat Casualty Care Course*. In addition to serving as Interim Chair, Colonel Cloonan also served as the current Emergency Medicine Specialty Consultant to the Army Surgeon General; following a distinguished career, Colonel Cloonan retired from active duty, during 2004.

**Colonel Kevin Keenan, MC, USA**, served as the Dean, Joint Special Operations Medical Training Center, United States Army JFK Special Warfare Center and School, at Fort Bragg, North Carolina, during 2003.

**Colonel Bob Lyons, MC, USA**, served as the Deputy Commander for the United States Army 21st Combat Support Hospital during 2003; he was featured by the Public Broadcasting Service (PBS) program, *NOVA: Life and Death in a Combat Zone*, on March 2, 2004. Colonel Lyons participated in the creation of a state-of-the-art hospital in tents on the outskirts of Baghdad, Iraq.

**CAPT John Perciballi, MC, USN**, was recognized by the television media and the National press as a member of the Devil Docs in Iraq and for his skills outside of the operating room (*Devil Doc Trades Desert Surgeries for Tactics of U.S. Military Chess Team*) on September 8, 2003, due to his competition in the NATO Chess Championship in Copenhagen, Denmark; he is a general surgeon stationed out of the Naval Hospital in Pensacola, Florida.

**CAPT Kevin Yeskey, M.D., USPHS, FACEP, Associate Professor, Department of Military and Emergency Medicine, Board Certified in Emergency Medicine**, served during 2001 as the Director of the Bioterrorism Preparedness and Response Program for the Centers for Disease Control (CDC) in Atlanta, Georgia. CAPT Yeskey was named as the Acting Director of the program on August 20, 2001; and, he was selected as the Director on December 1, 2001. As the Director, he was charged with enhancing CDC’s capacities to assist States and other partners in responding to bioterrorism. In addition

to infectious disease concerns, other CDC efforts under this program included consideration for chemical terrorism, a National Pharmaceutical Stockpile, and National Lab Enhancement. During 2002, CAPT Yeskey served as the Director, Office of Emergency Response, in the newly established Department of Homeland Security, followed by a brief assignment with the Federal Emergency Management Agency (FEMA), until his retirement, in 2004.

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#### **Class of 1984.**

**Colonel Charles Beadling, USAF, MC**, served as the Commander of the 375th Medical Group, Scott Air Force Base, Illinois, during 2003. Colonel Beadling's last assignment was as the Commander of the 95th Medical Group at Edwards Air Force Base, California.

**CAPT Michael Holtel, MC, USN**, served as the Otolaryngology Department Chair and Residency Program Director at the Tripler Army Medical Center, during 2003.

**CAPT Sandra Kweder, M.D., USPHS, Associate Professor, USU SOM Department of Medicine**, served as the Deputy Director of the Food and Drug Administration's Office of New Drugs during 2003. CAPT Kweder's previous assignments included serving as Deputy Director of the Office of Drug Evaluation IV, Co-Chair of FDA's Pregnancy Labeling Taskforce, Acting Director of the Office of Review Management, and Acting Director of the Office of Drug Evaluation II.

**CAPT Diane Mitchell, M.D., USPHS**, served as the Deputy Director for a large division at the Center for Devices and Radiological Health, Regulatory Affairs for Reproductive Devices, at the Food and Drug Administration, during 2003.

**Colonel Kent Murphy, USAF, MC**, was recognized by U.S. Medicine, a medical news organization, for his pioneering work in information therapy. Colonel Murphy, founder of the Air Force Academy's Center of Excellence for Medical Multimedia in 1998, was awarded the Frank Brown Berry Prize in Federal Healthcare. His influence is far reaching in the military medical world, with the most significant impact branching from his work with the Academy Center. The concept behind the Air Force Academy Center is that information technology can empower patients by educating them on medical techniques. Colonel Murphy felt that medicine needed to utilize the technology from the entertainment industry. The Center uses high-level cinemagraphic technology to create multimedia programs. The programs cover an array of medical topics including pregnancy, diabetes, early detection of colon cancer, suicide prevention, and outpatient surgical procedures. The Center takes complex medical topics and simplifies them for patients; it uses animation to make the topics interesting and utilizes technology found in movies to inform patients from underserved populations.

**Colonel Kimberly Slawinski, USAF, MC**, has served as the Commander of the 8th Medical Group at Kunsan Air Base, Korea, since June of 2003. Colonel Slawinski previously served as the Director of the Surgeon General's Tactical Action Team at Bolling Air Force Base in Washington, D.C.

**Colonel Terry Walters, MC, USA**, served as the Brigade Commander of the 1st Medical Brigade at Fort Hood, Texas, during 2003. Colonel Walters is also a graduate of the Master of Public Health Program at USU; she was recently featured in the Killeen (Texas) Daily News, *Former Immigrant Lives American Dream*, on February 23, 2004.

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### **Class of 1985.**

**Colonel Mark Bagg, MC, USA**, served as the Chief of Orthopaedic Surgery at the Brooke Army Medical Center during 2003; he was featured in an interview for the McNeil-Lehrer Hour, *Healing the Wounds*, December 3, 2003, for his service in addressing the traumatic orthopaedic injuries of soldiers wounded in Iraq.

**Commander Margaret Bash, M.D., USPHS**, is currently conducting bacterial vaccine research and development in a joint program through the Food and Drug Administration and the National Institutes of Health.

**CAPT Hans Brings, MC, USN**, is a vascular surgeon who was attached to the Navy's Fleet Hospital Three (FH-3), the first expeditionary medical facility assigned to a war zone. CAPT Brings, who is stationed at the National Naval Medical Center in Bethesda, Maryland, was among a team of 300 health care providers and construction battalion personnel deployed to Iraq with the Pensacola, Florida-based fleet hospital. FH-3 is the latest effort to increase the life-saving capabilities of Navy medicine. With an eye on delivering care faster, the 9-acre, 116-bed facility is designed to provide treatment in the field to those who risk their lives on the battlefield. FH-3 went to Iraq with 166 trucking containers filled with more than \$12 million in medical equipment and supplies.

**CAPT Robert Darling, MC, USN**, is currently the Senior Medical Advisor to the Navy Medicine Office of Homeland Security. "Fighting terrorism is the single most important objective to ensure our national defense, and we need our very best talent dedicated to the cause. CAPT Rob Darling is our most highly qualified expert and will guide us well" (from remarks by Rear Admiral Donald C. Arthur, Deputy Surgeon General of the Navy and Chief of the Medical Corps). During 1996, when the White House was looking for a new White House Physician, a post generally filled by internists, surgeons, or family physicians, CAPT Darling was the first emergency physician to be selected for the assignment. While at the White House, CAPT Darling assisted the Secret Service to better understand the threat of a biological attack from a medical perspective.

**Colonel Loren Erickson, MC, USA**, served as the Commander of the United States Army Center for Health Promotion and Preventive Medicine-Europe, during 2003.

**Colonel Bryan Funke, USAF, MC**, served as the Commander of the 14th Medical Group at the Columbus Air Force Base in Mississippi, during 2003.

**CAPT Noreen Hynes, M.D., USPHS**, is currently working with the Food and Drug Administration on bioterrorism issues. CAPT Hynes' expertise is in international health, microbes of global and terrorism significance, and associated vaccine development.

**Colonel William Lang, MC, USA**, served in the White House Medical Unit during 2003; this is his second tour of duty on the Presidential Medical Staff.

**Lieutenant Colonel Doug Liening, MC, USA**, served as the Commander for the 21st Combat Support Hospital in Iraq during 2003; he was featured by the Wall Street Journal, *In a Tent Hospital*, on October 29, 2003, for his exceptional service; in addition, he was also featured by the London Times, *Move Over Mash - This Is Hi-Tech CASH*, on November 15, 2003.

**Colonel Sean Murphy, USAF, MC**, assumed command of the 325th Medical Group at Tyndall Air Force Base, Florida, during 2003.

**Colonel Donn Richards, MC, USA**, served as the Commander of the 115th Field Hospital based out of Fort Polk, Louisiana; his unit was deployed to Iraq, during 2003.

**Commander Tom Snead, MC, USN**, served as the Officer-in-Charge of the Branch Medical Clinic at the Naval Base, Ingleside, Texas, during 2003.

**Colonel Don Speers, MC, USA**, served as the Commander of the Patterson Army Community Hospital at Fort Monmouth, New Jersey, during 2003.

**Colonel Harry Stinger, MC, USA**, served as the Commander of the 250th Forward Surgical Team in Iraq, during 2003.

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**Class of 1986.**

**Colonel Kory Cornum, USAF, MC**, is currently serving as the Commander of the Medical Operations Squadron at Ramstein Air Base, Germany.

**Colonel Rhonda Cornum, MC, USA**, is serving as the Commander of the Landstuhl Regional Medical Center in Landstuhl, Germany; this medical center is the largest United States Medical Treatment Facility in Europe.

**Colonel Clifford Porter, MC, USA**, served as the Commander of the 250th Forward Surgical Team (Airborne), during the early part of 2003.

**Colonel Andrew Satin, USAF, MC**, following a national search, was selected as the Chair of the USU SOM Department of Obstetrics and Gynecology, effective September 8, 2003. Previously, he served as the Director of the Uniformed Services Residency in Obstetrics and Gynecology and as the Vice Chair of the USU SOM Department of Obstetrics and Gynecology. Under Colonel Satin's leadership, the residency program was granted the maximum five-year accreditation by the Obstetrics and Gynecology (OBG) Residency Review Committee of the Accreditation Council for Graduate Medical Education. The residency program is the first in OBG to move from provisional status as a newly integrated program directly to the maximum accreditation of five years. It is a fully-integrated program under the institutional sponsorship of the National Capital Consortium based at the National Naval Medical Center and the Walter Reed Army Medical Center. Of the more than 250 OBG residency programs in the United States, only nine have achieved the five-year maximum accreditation.

**Colonel Steven Swann, MC, USA**, was assigned as the Commander of the Baynes-Jones Army Community Hospital at Fort Polk, Louisiana, during 2003.

**Colonel Thomas Travis, USAF, MC**, served as the Commander of the 311th Human Systems Wing at Brooks City-Base, Texas, during 2003, and was selected for O-7 in February of 2004.

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#### **Class of 1987.**

**CAPT Tom Grieger, MC, USN, Associate Professor, USU SOM Department of Psychiatry**, was in charge of the Navy Special Psychiatric Rapid Intervention (SPRINT) Team helping out at the Pentagon and the Navy Annex following the terrorist attacks on September 11, 2001. The team provided supportive services to 2,000 active duty and civilian employees on the Navy staff. CAPT Grieger continues to provide significant support as a member of the USU Center for the Study of Traumatic Stress in the USU SOM Department of Psychiatry.

**Colonel Byron Hepburn, USAF, MC**, served as the Command Surgeon of the United States European Command in Stuttgart, Germany, during 2003.

**Lieutenant Colonel Dallas Homas, MC, USA**, a reconstructive and plastic surgeon assigned to the Tripler Army Medical Center in Honolulu, Hawaii, led a 17-member team to Cambodia for a two-week training mission in blast trauma during 2003. The area was selected because of the high numbers of unexploded ordnance and land mines still scattered about the Cambodian countryside. In addition, the group served a humanitarian purpose by offering first-class surgery and medical services to approximately 360 of Cambodia's poor, to include one farmer whose hand was nearly lost when his hoe struck a landmine. Although the individual's thumb could not be saved, the team was able to repair the rest of his hand and a punctured lung and cracked ribs.

**Colonel Timothy Jex, USAF, MC**, is serving as the United States Central Air Force (USCENTAF) Command Surgeon, based at Shaw Air Force Base, South Carolina. Colonel Jex is responsible for the medical planning at USCENTAF. He also manages medical war readiness materials for the USCENTAF, provides supervision, establishes policy, works logistics issues for all of the deployed medical units, handles all medical issues for the Central Air Force Combat Command, and generally provides leadership for all of the deployed medical personnel.

**Lieutenant Colonel Edward Lucci, MC, USA**, is the Chief of Emergency and Operational Medicine at the Walter Reed Army Medical Center (WRAMC). He was the first emergency physician to arrive on the scene after terrorists crashed American Airlines Flight 77 into the Pentagon. On staff at WRAMC since 1997, Lucci serves as the hospital's team leader for the special response team for chemical and biological events.

**Lieutenant Colonel Paul Mongan, MC, USA**, is serving as the Chair of the USU SOM Department of Anesthesiology. *He is the first medical school alumnus to become a Chair of a clinical department at the University.* Lieutenant Colonel Mongan has been an Anesthesiology faculty member since 1997, serving as Director of Research and Associate Professor, and for four years as Vice Chair.

**Colonel Patrick St. Pierre, MC, USA**, was chosen, during 2003, for a medical exchange fellowship program. Colonel St. Pierre, Assistant-Chief of Orthopaedic Surgery at the DeWitt Army Hospital at Fort Belvoir, Virginia, is the first military physician selected as winner of the 2003 American Shoulder and Elbow Surgeon's (ASES) Traveling Fellow Post. The ASES is a society of leading national and international orthopaedic surgeons specializing in surgery of the shoulder and elbow. The society is an educational body responsible for the development of scientific programs, for the organization of current knowledge, for the standardization of nomenclature, and for the publication of scientific materials. Each year, the ASES, along with their international counterparts, alternate choosing two Fellows to travel to their respective continents to confer with shoulder specialists and other Fellows. Colonel St. Pierre will make about 10 to 15 visits in countries such as Italy, Denmark, Germany, Switzerland, and France; he will participate in an average of three to five sessions at each location. Colonel St. Pierre's research has won awards from the Eastern Orthopaedic Association, the Walter Reed Army Institute of Research, the Society of Military Orthopaedic Surgeons, the Arthroscopy Association of North America, and the American Orthopaedic Society for Sports Medicine.

**Colonel John Powell, MC, USA**, served as the Commander of the 10th Combat Support Hospital at Fort Carson, Colorado, during 2003, leading his unit to duty in the Middle East.

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### **Class of 1988.**

**Lieutenant Colonel Michael C. Edwards, USAF, MC, FACS**, held dual positions as Chief of Surgical Services and Chief of the Professional Staff at the 99th Medical Group, Mike O'Callaghan Federal Hospital, Nellis Air Force Base, Nevada, during 2003.

**CAPT Anderson Funke, M.D., USPHS**, served as the Medical Director of the Carolina Health Centers in Greenwood, South Carolina, during 2003.

**Lieutenant Colonel Roman Hayda, MC, USA**, served as an Orthopaedic Trauma Surgeon at the Brooke Army Medical Center; he was featured in an interview for the McNeil-Lehrer Hour, *Healing the Wounds*, December 3, 2003, for his service caring for soldiers injured in Iraq.

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#### **Class of 1989.**

**Colonel John Baxter, USAF, MC**, has served as the Commander of the Pentagon Flight Medicine Clinic for some years; he also serves as the physician to the Secretary of Defense. Several months prior to the terrorist attack, Colonel Baxter's clinic had conducted mass casualty training exercises in conjunction with the Pentagon DiLorenzo Clinic. The exercise simulated a plane crashing into the building; on September 11th, members of both health care facilities agreed that the simulated training had proven to be invaluable.

**Two Members of the USU SOM Class of 1989, Lieutenant Colonel Duane Cespedes, USAF, MC, and Lieutenant Colonel David Ririe, USAF, MC**, assigned to the Wilford Hall United States Air Force Medical Center at Lackland Air Force Base, Texas, during 2003, are playing a significant role in the battle against prostate cancer. In an article produced by the 59th Medical Wing Public Affairs Office, Lieutenant Colonels Cespedes and Ririe were cited as instrumental members of a team of researchers who were involved in a highly publicized, landmark study on the drug, Finasteride's (Proscar) ability to prevent prostate cancer. According to the article, Wilford Hall was the largest site, providing roughly 10 percent of the participant population, for this extensive seven-year nationwide study, named the Prostate Cancer Prevention Trial. The trial has found a 25 percent reduction in prostate cancer occurrences for healthy males taking the drug. Findings were published in the July 17, 2003 edition of The New England Journal of Medicine.

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#### **Class of 1990.**

**Lieutenant Colonel Bruce Adams, MC, USA**, served as the Chief Resident, Department of Emergency Medicine, at the Medical College of Georgia in Augusta, Georgia, during 2003.

**Lieutenant Colonel Kirk Eggleston, MC, USA**, served as the Division Surgeon for the 4th Infantry Division (mechanized) in Iraq, during 2003.

**Lieutenant Colonel Bill Flynn, USAF, MC**, served as the Ophthalmology Residency Program Director at the Wilford Hall United States Air Force Medical Center, Lackland Air Force Base, Texas,

during 2003; he was featured by the 409th Air Expeditionary Group Public Affairs Office on September 17, 2003, for his efforts in a multi-national humanitarian assistance exercise, which took place in the Republic of Georgia.

**Lieutenant Colonel John McGrath, MC, USA**, served as the Division Surgeon for the 1st Armored Division in Iraq, during 2003.

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**Class of 1991.**

**Commander Katy Ciacco-Palatianos, M.D., USPHS**, holds an increasingly important headquarters position as the Principal Risk Management Consultant. She represents the Indian Health Service (IHS) at Health and Human Services (HHS) and at interdepartmental meetings involving quality of care, patient safety, and workforce safety and health. She is currently representing the IHS on the USPHS Physician PAC and a variety of departmental functions. She served as the Chair of the Medical Claims Quality Review Panel for HHS for six years and worked closely with the Office of the General Counsel and Department of Justice attorneys in analyzing and defending claims of negligence at Federal facilities and their providers; she also serves as a Member of the USPHS Commissioned Corps Award Branch.

**Lieutenant Colonel Bill Corr, MC, USA**, served as the Division Surgeon for the 3rd Infantry Division at Fort Stewart, Georgia, during 2003, following his return from Iraq with his unit.

**CAPT Karen Parko, M.D., USPHS**, was one of only 18 PHS Commissioned Corps officers selected for an Exceptional Capability Promotion. She assumed the rank of Captain (O-6) on July 1, 2002. CAPT Parko, due to her assignment as the Director, Neurological Services, at the Northern Navajo Medical Center in Shiprock, New Mexico, was also selected by U.S. Medicine, a medical news organization, as one of the 10 top finalists for the Frank Brown Berry Prize in Federal Healthcare during 2003. She recently transferred to the Neurology and Rehab Service at the San Francisco Veteran's Administration Medical Center in California, where she is also serving as the Chief Clinical Consultant in Neurology for the Navajo Area Indian Health Service.

**Lieutenant Colonel Paul Pasquina, MC, USA**, served as the Program Director for the Physical Medicine and Rehabilitation Residency at the Walter Reed Army Medical Center during 2003. As Program Director, Lieutenant Colonel Pasquina led the department through a successful residency review by the Accreditation Council for Graduate Medical Education (ACGME).

**Lieutenant Colonel Mike Place, MC, USA**, served as the Division Surgeon for the 101st Airborne Division in Iraq, during 2003.

**Lieutenant Colonel Bill Rice, MC, USA**, served as the Director of Occupational Medicine, at the United States Army Center for Health Promotion and Preventive Medicine-Europe in Heidelberg, Germany, during 2003.

**Commander Jay Scheiner, MC, USN**, served in the White House Medical Unit, during 2003.

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**Class of 1992.**

**Lieutenant Colonel Chester “Trip” Buckenmaier, MC, USA**, was featured in the Army Times, *Pain Blocker - Regional Anesthesia Demonstrates Promises for Treating Combat Wounds*, in April of 2004. Lieutenant Colonel Buckenmaier, Chief of the Regional Anesthesia and Pain Management Initiative at the Walter Reed Army Medical Center, is researching the use of regional anesthesia as an alternative to the traditional battlefield pain stopper, morphine; he was also featured in the London Times, *Move Over MASH - This Is High-Tech CASH*, on November 15, 2003.

**Commander Noel Delmundo, M.D., USPHS**, was assigned as staff in the Obstetrics and Gynecology Department at the Phoenix Indian Medical Center in Arizona, during 2003.

**Lieutenant Colonel Erin Edgar, MC, USA**, continued the trend of USU alumni serving in operational positions, when he served as the Division Surgeon for the 82nd Airborne Division at Fort Bragg, North Carolina, during 2003. Lieutenant Colonel Edgar has been twice promoted below zone.

**Major(P) Blake Graham, MC, USA**, served as the Regimental Surgeon for the 3rd Armored Cavalry Regiment in Iraq, during 2003.

**Lieutenant Colonel Nelson Hager, MC, USA**, serves as the Chief of the Physical Medicine and Rehabilitation Service at the Walter Reed Army Medical Center in Washington, D.C.

**Lieutenant Colonel Mark Koeniger, USAF, MC**, recipient of the Malcolm Grow Award for Air Force Flight Surgeon of the Year in 1998, served as the Commander of the 86th Aeromedical Squadron at the Ramstein Air Base in Germany, during 2003. He has been selected to serve on the staff of the Industrial College of the Armed Forces (ICAF).

**Major(P) Kelly Murray, MC, USA**, served as the Regimental Surgeon for the 2nd Armored Cavalry Regiment in Iraq, during 2003.

**Lieutenant Commander John Newman, MC, USN**, assigned to the USS Iwo Jima, was featured in the New York Times, *Medical Teams Fight Outbreak of Malaria Among Marines*, on September 16, 2003; the USU Parasitology and Tropical Medicine Courses, attended by Lieutenant Commander Newman, are referenced as the article explains how the outbreak was diagnosed by Lieutenant Commander Newman.

**Commander Mary Porvaznik, M.D., USPHS**, served as the Chief of Family Medicine at the Northern Navajo Medical Center in Shiprock, New Mexico. She supervised a department of 13 physicians who provide primary care in the Medical Center and in several community clinics outside of the Center. Besides a busy out-patient clinic, Commander Porvaznik's department also ran a busy in-patient adult and pediatric service, including an intensive care unit and full obstetrical services. Commander Porvaznik was born in the Indian Health Service Hospital in Tuba City, Arizona; her father was a physician who also served the Native American population. Commander Porvaznik's father, who completed 30 years in the Public Health Service and retired as an Assistant Surgeon General and Rear Admiral, suggested that she apply to USU. Commander Porvaznik reported that she realizes the intense training she received at the USU SOM was outstanding and the summer field training sessions were incredibly useful.

**Three Members of the USU SOM Class of 1992: Commander Melanie Mitchell, MC, USN; Commander Sharon Miller, MC, USN; and, Commander William "Mike" Hall, MC, USN;** along with **CAPT Raphael Roue, MC, USN, Class of 1982**, comprised four of the six physicians assigned to the Navy's First Expeditionary Medical Eunit, in Djibouti, as part of Operation Enduring Freedom, during 2003.

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#### **Class of 1993.**

**Commander Kimberly (Clancy) Brownell, M.D., USPHS**, is serving as a Staff Pediatrician at the Northern Navajo Medical Center in Shiprock, New Mexico.

**Major Brian Crownover, USAF, MC**, was featured on the [Air Force News Link](#), *Balad* (Iraq) *Medics Aid Villagers*, on January 7, 2004; he recently returned from serving as the Chief of Clinical Services for the 332nd Expeditionary Medical Squadron, Detachment 1, in Balad, Iraq.

**Commander Jeffrey Curtis, M.D., USPHS**, is a Staff Physician in the Medicine/Family Practice Department at the Phoenix Indian Medical Center in Arizona.

**Lieutenant Colonel Marie Dominguez, MC, USA**, served as the Commander of the United States Army Health Clinic at Darmstadt, Germany, during 2003.

**Major Grant Tibbetts, USAF, MC**, was assigned as the Chief of Special Imaging at the 3rd Medical Group, Elmendorf Air Force Base, Alaska, during 2003.

**Lieutenant Colonel Richard Trotta, MC, USA**, served as the Commander of the United States Army Health Clinic in Vicenza, Italy, during 2003.

**Commander Brent Warren, USPHS, M.D.**, is an ophthalmologist and an Assistant Professor of Surgery at USU. He helped to establish the state-of-the-art Refractive Eye Surgery Clinic at the

Walter Reed Army Medical Center in Washington, D.C., and has performed hundreds of laser vision corrective surgeries on soldiers identified for combat.

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#### **Class of 1994.**

**Major Richard Gullick, MC, USA**, is a neurosurgeon based at the Brooke Army Medical Center; he is currently deployed to Iraq as part of the 31st Combat Support Hospital and was featured in The Washington Post, *Lasting Wounds of War - Roadside Bombs Have Devastated Troops*, on April 27, 2004.

**Lieutenant Commander Staci (Valenzuela) Kelley, MC, USN**, served as the Head of the Inpatient Mental Health Division of the Naval Hospital located at Great Lakes, Illinois, during 2003.

**Lieutenant Commander Charles McCannon, MC, USN**, who completed the Preventive Medicine Residency Program at USU, passed the Certified MBA examination and was awarded the CMBA designation by the International Certification Institute, during 2003. He is among the first group of MBAs to earn the distinction. He is one of only 86 Certified MBAs in the United States and Canada. (*There are over two million MBA graduates in the United States and Canada, with over 100,000 new graduates each year.*) The CMBA is the only professional certification designed to confirm an MBA's command of the common body of knowledge required across all accredited MBA programs.

**Lieutenant Commander David P. Murphy, MC, USN**, Head of the Pulmonary/Critical Care Unit, United States Naval Hospital Okinawa, received the Sparks Award for Excellence at the Navy Chapter's annual meeting in Washington, D.C., in November of 2003; this award recognizes him as the top internist in the Navy by the American College of Physicians, United States Navy Chapter.

**Major Donovan Tapper, USAF, MC**, served as the Chief of Surgical Specialties at the 6th Medical Group, MacDill Air Force Base, Florida, during 2003; he was deployed as part of the 332nd Expeditionary Medical Group at Tallil Air Base, Iraq, and was featured on the United States Air Force News Link, *Medical Team Helps Accident Victims*, on January 12, 2004.

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#### **Class of 1995.**

**Commander Christine Casey, M.D., USPHS**, is now serving as an epidemiologist for the Centers for Disease Control and Prevention and works in the National Immunization Program, which has a leading role in bioterrorism surveillance/prevention.

**Major Scott Earwood, MC, USA**, was based out of Fort Bragg, North Carolina and deployed to Iraq, during 2003; he was featured by the Washington Post, *Soldiers Say They Remain Committed*, on November 3, 2003.

**Major Shean Phelps, MC, USA**, served as the Battalion Surgeon for the 1st Special Forces Battalion, 1st Special Forces Group, Panzer Kaserne, in Boeblingen, Germany, during 2003.

**Major Stephanie Redding, MC, USA**, was featured in the Stars and Stripes Magazine on August 17, 2003; she was recognized for her dedicated support at the 21st Combat Support Hospital in Iraq, and for her role in saving the life of an Army Non-Commissioned Officer who suffered a heart attack.

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**Class of 1996.**

**Captain Daniel Irizarry, MC, USA**, served as the Regimental Surgeon for the 325th Airborne Infantry Regiment, 82nd Airborne Division, at Fort Bragg, North Carolina, during 2003, with duty in Iraq.

**Lieutenant Commander John M. McCurley, MC, USN**, an internist, served as a Staff Physician in the Office of the Attending Physician on Capital Hill. He is now a cardiologist and USU faculty member.

**Lieutenant Commander Mark Michaud, MC, USN**, served as the Senior Medical Officer aboard the *USS Emory S. Land*, a submarine tender based at Lamaddalena in Sardinia, Italy, during 2003.

**Lieutenant Commander John Mohs, M.D., USPHS**, was assigned to the Northern Navajo Medical Center in Shiprock, New Mexico, as the Vice Chief of Family Medicine and the Director of the Family Medicine Health Clinic, during 2003. He was responsible for scheduling, developing and maintaining practice guidelines, and for conducting performance improvement studies; there are 13 physicians and 10 nurses assigned to the clinic.

**Lieutenant Commander Kimberly Mohs, M.D., USPHS**, was assigned to the Northern Navajo Medical Center in Shiprock, New Mexico, as the Chief of Internal Medicine, during 2003. As such, she provided oversight for a department of six internists who provide primary care as well as cardiology and pulmonary related procedures and endoscopy. Her department also held a number of specialty clinics, including hypertension, tuberculosis, renal disease, gastroenterology, and a uranium miners' clinic, which she also supervised. The Four Corners area has been a primary site for uranium mining over the years, and the clinic mainly treats patients with lung disease or other health problems resulting from exposure to uranium.

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**Class of 1997.**

**Major Scott Brietzke, MC, USA**, was featured in the Edmonton (Alberta, Canada) Journal, *Snore No More with Procedure Developed by Military Doctors*, on April 5, 2004. Major Brietzke, assigned to the Walter Reed Army Medical Center in Washington, D.C., has been developing and refining snorplasty with his colleague, Doctor Eric Mair. More than 200 patients have been treated with injection snorplasty at the center; the new procedure takes about ten minutes and is only recommended for disruptive snoring.

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**Class of 1998.**

**Lieutenant Commander Robert Johnson, MC, USN**, served as a Flight Surgeon assigned to VAQ-133 and the Naval Hospital in Oak Harbor, Washington. He was selected for an Ophthalmology Residency at the Naval Medical Center in San Diego, California, in June of 2003.

**Captain Jocelyn Kilgore, USAF, MC**, was assigned as a Staff Psychiatrist in Germany, during 2003.

**Lieutenant Commander David Lesser, MC, USN**, served as a Flight Surgeon with the Navy Helicopter Squadron HSL-41 in San Diego, California, during 2003.

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**Class of 1999.**

**Lieutenant Kimberly Fagen, MC, USN**, was assigned as a Flight Surgeon to the Commander, Carrier Air Wing 9, during 2003. When not deployed, Lieutenant Fagen was based at the Naval Branch Medical Clinic, Naval Air Station North Island, in San Diego, California.

**Captain Philip Littlefield, MC, USA**, a resident at the Tripler Army Medical Center in Hawaii, scored the highest in the Nation on the Otolaryngology In-Service Examination, during 2003.

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**Class of 2000.**

**Captain Jennifer Bager, MC, USA**, a resident at the Tripler Army Medical Center in Hawaii, was among the six highest scores in the Nation on the Otolaryngology In-Service Examination, during 2003.

**LT Todd Gardner, MC, USN**, is now assigned as the Flight Surgeon to HMX-1, the President's Helicopter Squadron at Quantico, Virginia.

**Lieutenant John Ringquist, MC, USN**, was stationed at Lamaddalena in Sardinia, Italy, as the Undersea Medical Officer on board the *USS Emory S. Land*, during 2003.

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**Class of 2001.**

**Lieutenant Kenneth Terhaar, MC, USN**, was assigned as a General Medical Officer with the 3rd Medical Battalion, Bravo Company, in the 3rd Fleet Service Support Group at Okinawa, Japan, during 2003.

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## **Selected Profiles of USU School of Medicine Graduates.**

### **Multi-Service Efforts in the Development of Trauma Training Centers.**

**(The following is taken from USU Medicine, *Trauma Training - from the City to the Battlefield*, Spring Issue, 2003, written by Ms. Sharon Willis, USU Alumni Affairs.)**

While working on his Master Degree in Health Care Administration, **Colonel Cass Conaway, MC, USA, USU SOM Class of 1980**, recently retired during 2003, developed the concept of a collaborative military-civilian centralized trauma team site where the Army's forward surgical teams could rotate, not as individuals, but as whole units. The concept was launched in December of 1997 by Colonel Conway with the support of the current Surgeon General of the Army, Lieutenant General James Peake, who at that time was the Commander of the Army Medical Department Center and School in San Antonio, Texas. At the same time, the General Accounting Office (GAO) published a report recommending that military personnel should use civilian trauma centers as a source for medical readiness training. In September of 1998, a 30-day pilot rotation and study was conducted at the Ben Taub General Hospital in Houston, Texas, bringing together physicians, nurses, nurse anesthetists, medics and administrators for the team training. The pilot study was hugely successful and all three Services, in February of 1999, agreed to establish the Joint Trauma Training Center at the Ben Taub General Hospital. The center opened in July of 1999, and during the next two years, forward surgical teams from each Service rotated through with great success. Unfortunately, the patient load was not sufficient to sustain the program at Ben Taub; however, the Services decided to continue the team-centered Trauma Training Center concept and opened training centers, during 2002.

**Colonel Thomas Knuth, MC, USA, USU SOM Class of 1984**, is a trauma surgeon and leads the Army's trauma program at the Ryder Trauma Center in Miami, Florida.

**Commander Peter Rhee, MC, USN, USU SOM Class of 1987**, is a trauma surgeon who spearheads the Navy's trauma program at the L.A. County Hospital-USC Medical Center in Los Angeles, California.

**Lieutenant Colonel Bill Beninati, USAF, MC, USU SOM Class of 1988**, is a pulmonologist and the Medical Director of the Air Force CSTARS Program at the R. Adams Cowley Shock Trauma Center in Baltimore, Maryland.

While each of the three leaders in trauma medicine believes that a Service-unique program should be maintained for each Service, all agree on a shared goal of ensuring that military medical professionals have the clinical skills necessary to sustain themselves during deployment and are adequately prepared to work together as a team during combat conditions.

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## Army.

The Ryder Trauma Center, the Baltimore Shock Trauma and the Las Vegas University Medical Center are the only three freestanding trauma hospitals in the Nation. The Ryder Trauma Center has a trauma resuscitation unit with five bays and six critical care observation beds, and six trauma operating rooms that simulate the forward surgical team environment where vehicle accidents, gunshot wounds, stabbings, industrial accidents and crush injuries (*the same type of injuries seen in military combat zones*) are seen, making Ryder an ideal site for a military training program. Co-located is the Jackson Memorial Hospital's Emergency Room that sees over 130,000 patients per year. The Army Trauma Training Program (ATTP) was established in January of 2002, with seven full-time staff members. **Colonel Thomas Knuth, MC, USA, USU SOM Class of 1984**, is the only physician assigned to the program. As the Program Director, he is assisted by a nurse anesthetist, intensive care unit, emergency room and operating room nurses, a non-commissioned officer, and a Medical Service Corps administrator. Program attendees, referred to as *rotators*, all have assignments as members of an Army forward surgical team and provide front-line medical care during combat. They train together as an established team; the training focuses on the team approach. The leadership and organizational skills of the team leaders are regarded to be just as important as their clinical skills. Each 20 person team includes three general surgeons, an orthopaedic surgeon, an operating room nurse, an emergency room nurse, two nurse anesthetists, an administrator, and 10 enlisted medics. The physicians and nurses generally come from Army hospitals, while the medics are usually assigned at operational units. In addition, the ATTP trains reserve component forward surgical teams. The active duty teams complete a 30-day rotation, while the reservists remain for two weeks. The ATTP starts out with an assessment of skills and leadership abilities, for which feedback is provided. Availability, communication, teaching, mentoring, and assertiveness qualities are essential for the team members. The ATTP works in conjunction with the University of Miami SOM's physiology laboratory to create a mass casualty situation on the rotators' first day; they create a combat scenario with casualties expected. The rotators triage, resuscitate and operate; there are two tables and just like a forward surgical team, the rotators are expected to exercise command and control functions and skills. The ATTP members enjoy a positive working relationship with their civilian counterparts at Ryder; enlisted medics rotating through the ATTP are provided ample training opportunities in the emergency room. At the end of the rotation, teams experience the *Super Bowl*, an event initiated by Colonel Cass Conaway. During a 48-hour period, all patient activity is turned over to the Army. The civilian staff is present, but the Army makes all of the management decisions involved in patient resuscitations, operations, and recovery. In addition, rotators go through a *notational evacuation* exercise that involves admitting a patient and arranging for evacuation by contacting the Brooks City-Base in Texas to request a Critical Care Air Transport Team. The *Super Bowl* tests team leadership abilities and assesses work/sleep cycle capabilities.

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## Navy.

The trauma center located at the 600-bed L.A. County Hospital and USC Medical Center has one of the highest volumes of trauma cases in the country, over 7,000 per year. And, it serves as an

excellent location for the Navy Trauma Training Center (NTTC). **Commander Peter Rhee, MC, USN, USU SOM Class of 1987**, as the NTTC Director, heads a 10-person naval staff that also includes an anesthesiologist (**Lieutenant Commander Orlando Ricci, MC, USN, USU SOM Class of 1993**), an orthopaedic surgeon, an emergency physician, an emergency room nurse, an intensive care unit nurse, an operating room nurse, an operating room technician, an independent duty corpsman, and an administrative Medical Service Corps officer, all of whom reported for duty in May of 2002. The first group of rotators arrived in September of 2002 and since then, four additional classes have been trained. The NTTC teams consist of 24 members: 12 *green* who are assigned to forward resuscitative surgical units (FRSS) or shock trauma platoons, and 12 *blue* who are members of fleet surgical teams aboard casualty receiving transport ships. The FRSS teams are deployed far forward on the battlefield; and, the shock trauma platoons are even closer to the front lines. While surgeons have a significant role, the corpsmen and nurses form the basis of the team. The NTTC trains teams just prior to deployment. Rotators spend a month in the program, which consists of didactics, case studies, skills stations, and simulations with mannequins, as well as plenty of hands-on trauma patient care. The majority of the rotators have not had recent trauma experience upon their arrival at the NTTC. As the Navy hospitals do not routinely take care of trauma patients, providers require real-life experience. The NTCC provides *just-in-time* training and experience before the providers are deployed. Rotators work five days a week and on average 12 hours per day. Surgeons are on call every three days; NTTC staff suggest that personnel who are not prepared academically, mentally, and physically will jeopardize the team, the mission, and most importantly, patient care. As with the Army, the NTTC program includes operating room days. The hospital opens a separate operating room and staffs it with Navy personnel. In addition, throughout the program, Navy team members receive emergency room experience and rotate through the intensive care and burn units and the operating room; they also ride with ambulance crews. The NTTC program includes didactic information for the Marine Corps and the Navy that is not applicable to the Army or the Air Force; cross-training can be provided for logistical purposes, as appropriate. Blunt trauma and critical care transport is Air Force specific; and, the Army provides general surgery and support for humanitarian missions.

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### **Air Force.**

The Air Force Trauma Training Center, referred to as *CSTARS*, is located within the University of Maryland's R. Adams Cowley Shock Trauma Center in Baltimore, Maryland. It is a 210-bed, freestanding hospital facility; the center sees between 6,500 to 7,000 patients annually; 100 percent of those patients arrive via state police helicopters, paramedic ambulances, or are transferred from intensive care units at other hospitals. **Lieutenant Colonel Bill Beninati, USAF, MC, USU SOM Class of 1988**, serves as the Medical Director of the Air Force *CSTARS* Program.

The *CSTARS* - Coalition for Sustainment of Trauma and Readiness Skills - Program is comprised of 14 full-time Air Force staff members. In addition to Lieutenant Colonel Beninati, there are six physicians (including **Major Jeffrey Johnson, USAF, MC, USU SOM Class of 1993**), a trauma surgeon, an emergency physician (**Major Shawn Varney, USAF, MC, USU SOM Class of 1993**), a nurse anesthetist (**Captain John Killpack, USU GSN Class of 2002**), intensive care unit, trauma and operating room nurses, two medical technicians, and one administrative officer. Although most hospital

staff members at the Shock Trauma wear their trademark pink scrubs, CSTARS staff are readily identifiable by their lab coats, which are embroidered with the Air Force insignia. While Lieutenant General Paul K. Carlton served as the Surgeon General, there was a large effort toward making Air Force Medical Centers serve as major operational medicine platforms. The Readiness Skills Verification Program, or RSVP, was established; and, one of its major tasks was to develop a list of critical skills that health care providers would need when deployed, so that they would be immediately deployable to a combat theater of operations. The end result was that a significant gap was identified between required battlefield skills and those generally possessed by health care providers. The solution was CSTARS, led by a USU SOM alumnus. Air Force members assigned to Critical Care Air Transport Teams, or EMEDS, spend between three to four weeks in CSTARS, which is designed to enhance their skills in the care of critically injured or ill patients. Physician assignments last approximately 34 days, while enlisted technicians stay only 21 days. Lieutenant Colonel Beninati explained that the medic's rotation was initially longer; however, they are subject to nurse licensure regulations in Maryland, limiting their hands-on experience. Air Force Medics enter CTARS and perform a pre-hospital trauma life support rotation in the trauma resuscitation unit; and, they ride with the Baltimore City Fire Department along with the paramedics, which allows for additional hands-on care. Nurses and surgical technicians remain for approximately 25 days and work primarily at night when crime-related traumatic injuries occur in the city. Nurses can earn up to 240 contact hours of continuing education credit. Physicians attend noon lectures each day, and there is also a military-only journal club for CSTARS participants. Physicians have the potential to earn up to 70 hours of continuing medical education (CME) credit; however, due to calls (emergency patients), lectures, and other demands, they generally earn less hours of CME credit. Medics can earn approximately 26 credit hours. Rotators are integrated into the hospital, just like the residents or fellows. When a call comes in, they take a specific position around the table. On the next call, they rotate positions, depending on the type of case, which comes in, or the level and volume of activity in the trauma unit. The most common injuries seen at Shock Trauma are blunt trauma injuries. Everything required to treat these patients is available in the trauma resuscitation unit. The trauma resuscitation unit has 10 standardized trauma bays, a lab, radiology, a CT scan, and six dedicated operating rooms; everything that could be required during the critical 60 minutes immediately following a serious injury. Unlike the Army and Navy Programs, the CSTARS Program trains only active duty members. A separate, two-week program for reservists is housed in Cincinnati, Ohio. In addition to CSTARS' role in enhancing clinical skills, the Program staff is aiding in homeland security, providing teaching assistance through international engagement missions, and conducting research. Recently, CSTARS staff participated in a disaster drill with hospital personnel. Through the use of their Small Portable Expeditionary Aeromedical Rapid Response (SPEARR) team equipment, CSTARS personnel were able to set up a portable hospital in the street for decontamination and medical care.

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### **United States Public Health Service.**

**CAPT Karen Parko, M.D., M.D., USPHS, USU SOM Class of 1991**, was recognized by U.S. Medicine, a medical news organization, as one of the ten top finalists for the 2003 Frank Brown Berry Prize in Federal Healthcare. She was also one of only two physician officers in the USPHS Commissioned Corps selected for an Exceptional Capability Promotion and assumed the rank of Captain

(0-6) on July 1, 2002. CAPT Parko recently transferred to the Neurology and Rehab Service at the San Francisco Veteran's Administration Medical Center in California, where she is also serving as the Chief Clinical Consultant in Neurology for the Navajo Area Indian Health Service. In Captain Parko's previous assignment, she served as the Chief of Neurology Services for the Northern Navajo Medical Center in Shiprock, New Mexico, where she was the sole neurologist for the Indian Health Service in the lower 48 United States. CAPT Parko frequently travelled to other service units on the Navajo reservation to help with neurology services and to educate other physicians in the care of neurological problems and she also established specialty seizure and Parkinson's clinics for the area patients. In addition, CAPT Parko ran a neuro-diagnostic laboratory and performed nerve conduction studies and electromyography, as well as electroencephalograms; and, her responsibilities included administrative committee work along with serving as a neurology tort claim reviewer for the Public Health Service. CAPT Parko has pointed out that her experience at USU provided her with a good overview of medicine and how it can be applied in different settings; and, that the wide scope of medicine taught at the USU SOM has left her prepared to handle multiple medical situations outside of her specialty.

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## FACULTY OF THE SCHOOL OF MEDICINE.

The University's academic programs are consistent with its mission. In particular, the Team notes: the professionalism of the programs, the objectives to develop the student's intellectual and leadership skills, which are prerequisites for strong foundations in medicine, nursing, the biomedical sciences and public health services, and the credentials of the faculty... The faculty demonstrates a strong sense of commitment to the institution, its students and mission. The faculty is uncommonly sensitive to strengths and needs of their students and the students expressed their recognition of this and reciprocal feelings to team members. Faculty is provided several avenues, through the use of an academic pathway system, to establish scholarship and is provided guidance and flexibility so that they can advance in academic rank regardless of eligibility for tenure. The use of this system is regarded as an exemplar to other medical schools. An extensive description and analysis of the USU experience with this system was published in the journal, Academic Medicine.

- **Evaluation Team of the Middle Sates Commission on Higher Education**, Report to the Faculty, Administration, Trustees, Students of the Uniformed Services University of the Health Sciences, April 2, 2003, pages 4, 7, and 8.

**Composition.** As of November 2003, the School of Medicine had 311 full time assigned faculty members: 196 civilians; and, 115 uniformed officers (*of note, in November of 2003, recruitment was underway for 12 faculty positions within the SOM*). There are approximately 3,960 non-billeted or off-campus faculty who assist in the USU programs of which 1,133 are civilians and 2,827 are uniformed officers.

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**SOM Clinical and Consultative Services Generate an Estimated \$11,921,885 in Cost Avoidance for DoD in Fiscal Year 2003.** The affiliated Medical Treatment Facilities (MTFs) in the National Capital Region (the National Naval Medical Center (NNMC), the Walter Reed Army Medical Center (WRAMC), and the Malcolm Grow Air Force Medical Center (MGMC) use the services of the USU faculty for the provision of health care.

The USU SOM civilian and military clinical faculty members, as a part of maintaining their credentials and level of proficiency, provide medical services and consultation to the hospital patients and staff and teach and supervise residents. In order to meet national accreditation standards, all teaching hospitals must provide both patient care and teaching/supervision of medical students, interns, and resident physicians. Cost avoidance in the Department of Defense (DoD) is generated by the hours of clinical service and medical expertise provided by the USU civilian and military faculty. Thirteen USU SOM academic departments (Anesthesiology, Dermatology, Family Medicine, Department of Medicine, Military and Emergency Medicine, Neurology, Obstetrics and Gynecology, Pathology, Pediatrics,

Preventive Medicine and Biometrics, Psychiatry, Radiology and Nuclear Medicine, and Surgery) provided clinical and consultative support to DoD that totalled some 144,159 hours in 2003, with an estimated cost avoidance of \$11,921,885. Without the patient care and special services provided by the USU SOM faculty throughout the DoD medical facilities, the military hospitals, clinics, and other facilities would find it necessary to augment their medical staffs by 144,159 work hours in order to maintain the level of patient care within the direct care system.

*(Note: the total cost avoidance reported by USU for clinical care also included 3,448 hours of clinical services provided by the Graduate School of Nursing at a manpower cost of \$268,490, which resulted in the provision of an overall total of 147,607 hours of clinical services and generated a USU-wide manpower cost-avoidance for DoD of \$12,190,375 during 2003.)*

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### **USU SOM Faculty Achieve National and International Recognition.**

**USU's Public Health Program, with its emphasis on community health, ranks sixth in the Nation according to U.S. News & World Report's 2004 Rankings of America's Best Graduate Schools... "USU's program ranked just below Tufts University, the Medical College of Wisconsin, Northwestern University, Oregon State University and the University of Rochester on the list of the top ten community health master or doctorate programs."**

- USU Medicine, U.S. News & World Report Ranks USU Graduate Program in Top Six, Fall 2003, page 5.

The SOM faculty members are regularly selected to serve on various study sections for the National Institutes of Health and for other research-granting agencies. Many faculty members, due to their national/international reputations are: 1) selected for editorial boards; 2) designated to serve as consultants or advisors to the White House, the Office of the Secretary of Defense, international schools of medicine (e.g., China, France, Japan, Mexico, Poland, Russia, Thailand, etc.), and numerous Federal Agencies; 3) requested to give invited lectures and to serve on Federal, national, and international committees; and, 4) recognized as senior officers in a wide variety of professional organizations. A number of basic science and clinical faculty hold senior and deputy editor positions on journals representing their disciplines and specialties. Overall, the SOM faculty has clearly achieved recognition with its peers across disciplines and specialties. USU SOM faculty are routinely chosen to serve on university, military, and Federal and professional organization committees in a variety of leadership and service capacities. Due to the unique nature of the USUHS SOM mission and certain of its departments, faculty in the Departments of Military and Emergency Medicine, Preventive Medicine and Biometrics, Psychiatry, and Medical History have achieved national and international recognition in the military unique practice of medicine (*Appendix C provides examples of individual achievements and recognition*).

***Essential Science Indicators, an ISI evaluation tool, ranks the top journals and nations, and the top 1 percent of scientists, institutions and companies by field of research. To even be listed in any one category, an institution has to be in the top 1 percent by number of citations in the period covered by Essential Science Indicators (ESI). For the period covering the last ten years, USU ranked in the top 1 percent in seven fields: Clinical Medicine; Immunology; Biology & Biochemistry; Microbiology; Neuroscience & Behavior; Psychiatry/Psychology; and, General Social Sciences. This ranking is based on the number of citations received by papers published by USU faculty in the period.***

- **Ms. Ursula Scott, Assistant Vice President, USU Learning Resource Center, *Essential Science Indicators and USU*, February 17, 2004.**

As USU medical students complete their third and fourth-year clinical clerkships at over 22 military hospitals, representing the entire spectrum of the MHS, the majority of the SOM clinical faculty are located at the teaching hospitals. The large number of enthusiastic, well-trained primary care and specialist clinicians, based at the hospitals throughout the Military Health System, is an invaluable resource for teaching medical students. Under the oversight and guidance of clinical clerkship directors, this large faculty does an excellent job of medical student clinical training, based on surveys of both students and department chairs. To further enhance communication and cooperation between the USU SOM and its 22 affiliated teaching facilities, the Office of the Associate Dean for Clinical Affairs (ADA) provides oversight for relationships and interactions between the SOM and its clinical teaching sites. Issues of concern from all parties are readily addressed as changes in the military health care delivery system are implemented. More specifically, the ADA visits the major Military Medical Centers on a regular basis and reevaluates and updates the SOM's affiliation agreements with its major teaching affiliates; this ensures that the agreements are consistent with the requirements of the Liaison Committee on Medical Education (LCME) and with the current needs of the Military Medical Centers, the Military Services, and USU. This process has ensured that clear routes of communication exist and that areas of mutual interest are appropriately defined and addressed, all of which has resulted in a positive relationship between the SOM and its numerous clinical sites. A number of the hospital-based faculty are also involved in clinical research programs through the active clinical investigation programs based at the teaching hospitals.

Outcome data such as student-reported satisfaction, student performance on National Board examinations, hospital commanders' overall satisfaction with the performance of USU graduates, and the large percentage of operational and leadership positions held by USU graduates throughout the Military Health System, indicate that the SOM faculty is performing a stable and highly satisfactory job of educating medical students for the Uniformed Services.

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## **Collaborative Efforts.**

Teaching. Cooperation in teaching has been systematically developed within the departments, between departments, and within subspecialties, to improve the educational experience of both medical and graduate students (*the SOM faculty also provides the instructional base for the Graduate Education Programs at the University*). The composite curriculum in behavioral sciences, drawing on Neurology, Psychiatry, and Medical Psychology, is a significant example of interdepartmental cooperation in undergraduate medical education.

The graduate education programs in Neuroscience, Molecular and Cell Biology, and the newly established Interdisciplinary Graduate Program in Emerging Infectious Diseases (EID) illustrate a sound cooperative relationship in research and graduate education (*Section IV of this report provides detailed descriptions of these Graduate Education Programs. For example, the EID Program leading to the Doctoral Degree offers courses on the agents and effects of bioterrorism; to date, this program is one of the only graduate programs in the Nation to offer formal training in this critical area*). The Tumor Biology Program, an interdepartmental effort between the Departments of Pathology and Surgery, serves as a bridge between basic science and clinical practice in Medical Oncology. The special interest groups in curriculum studies have resulted in basic science input into the hospitals, with collaboration in research, and more importantly, with collaboration in teaching, as the basic scientists provide science instruction to the medical house officers and junior faculty within certain subspecialties of mutual interest. In addition, faculty members use electronic mail and computer bulletin boards quite extensively, which also enhances their collaborative efforts throughout the Military Health System.

The Department of Anatomy, Physiology and Genetics. A significant change took place over the past four years in the academic structure of the USU SOM. The Department of Anatomy and Cell Biology and the Department of Physiology were formally merged to create the Department of Anatomy, Physiology and Genetics (APG). The philosophy of the newly formed department conforms with the mission and goals of the USU Strategic Plan. The philosophy is based upon a commitment to the highest level of excellence in teaching, research, and administration. The departmental merger has consolidated the teaching, research, and administrative functions of a substantial component of the University within a single faculty group under the leadership of a single Department Chair. Integration of the formerly separate anatomy and physiology curricula is resulting in a comprehensive, cohesive and dynamic educational experience that spans the entire first year of medical education. As expected, the departmental merger is yielding benefits beyond the immediate outcomes of curriculum integration.

***A focus on How the Human Body Functions as a Self-Regulating System.*** A goal of APG is to integrate the information explosion resulting from the Human Genome Initiative and a myriad of cellular and molecular biological approaches, so that biomedicine explains how the human body functions as an integrated self-regulating system. The systems biology approach is seen as a means to further improve the information transfer process for the major responsibility of APG - the education of USU medical and graduate students. The Basic Anatomy and Physiology Courses have been integrated and are providing students with a comprehensive understanding of tissue and organ function. The APG faculty members oversee courses that extend for the entire first academic year; in fact, first-year medical students spend

approximately 53 percent of their first year of medical education with APG faculty. APG has organized its basic instruction into three modules. ***Introduction to Structure and Function*** introduces the student to cell classification, organelle function, and cellular processes, followed by study of the gross anatomy of the human body. An emphasis is placed upon understanding anatomical relationships and the causes and functional consequences of anomalies arising from disease processes. Gross anatomical study of the head and neck region, neuroanatomy, and basic clinical neurology are taught in the second module, ***Clinical Head and Neck and Functional Neuroscience***. Clinical cases are presented and case studies are assigned to students to reinforce their understanding of neurological function. Then, the students return to cellular and subcellular analysis in the third module, ***Structure and Function of Organ Systems***. This module presents an integrated approach to understanding the functions of different cells and organ systems, which include: the functions of muscle; heart; endocrine systems; kidney; respiration; gastrointestinal physiology; hematology; and, reproduction. Again, basic principles are emphasized to underscore clinical relevance. These educational experiences have been overwhelmingly lauded by both medical and graduate students.

The APG Department oversees other educational programs for medical and graduate education. In addition to faculty participation in graduate courses offered by various Ph.D. Programs at the University, APG faculty members, in a collaborative project with the National Naval Medical Center (NNMC) Department of Anesthesiology and the USU SOM Department of Anesthesiology, operate the Patient Simulation Laboratory (PSL). Since its inception in 1997, the PSL has created and presented patient simulation-based clinical education for USU students as well as for clinicians from local military treatment facilities. To extend the reach of the simulation-based education, the PSL recently installed an ultra-high speed Internet-2 Advanced Distance Education Network throughout USU with links to NNMC and the National Library of Medicine. APG faculty are also active members of two USU interdisciplinary programs: the Molecular and Cell Biology and the Neuroscience Graduate Programs. Many graduate students in these programs are undertaking their thesis research in APG laboratories. Future educational initiatives are in the planning stage. APG faculty members are preparing a Clinical Genetics Curriculum that will be an addition to the clinical course instruction of the fourth-year medical students.

This newly integrated Department, with over 100 members, offers wide-ranging, varied and collaborative research programs; and, these research programs study many fundamental biological problems. The APG research programs employ a wide range of anatomical, electrophysiological, biochemical, cellular and molecular biological methods to address medical problems associated with neurodegenerative disorders, such as: Multiple Sclerosis; Parkinson's Disease and Alzheimer's Disease; Down Syndrome; Canavan Disease; and, central and peripheral nerve injury. Faculty members also have active research programs in hypertension and cardiovascular pathophysiology, neuroimmune responses of gastrointestinal function, and understanding metabolic disorders such as Cystic Fibrosis and Diabetes. Studies within the Department focus on: the regulation of neuronal gene expression; biological clock mechanisms; neuroendocrine secretory processes; the role of glial cells in CNS injury and disease; traumatic brain injury; hemorrhagic shock; and, neuronal regeneration and plasticity. Several programs employ state-of-the-art approaches, to include: cell therapy using engineered cells; gene therapy using viral and chemical vectors; knock-out and transgenic mouse models; and, microarray and mass spectrometry technologies. The Department's research funding is supported by the National Institutes of Health, the National Science Foundation, the United States Air Force, the Juvenile Diabetes Foundation, the Cystic Fibrosis Foundation, the Department of Defense/Veterans Head Injury Program, as well as the USU Intramural Grants Program.

Interdisciplinary Research Programs. The research and development goals of the USU strategic plan are to build, sustain, and publicize interdisciplinary research programs relevant to the needs of the Uniformed Services. In addition to the above-described research in the newly integrated Department of APG, there are three interdisciplinary research programs at USU: 1) ***Emerging Infectious Diseases.*** Initially, a special interest group from the USU SOM Departments of Microbiology and Immunology (MIC) and Preventive Medicine and Biometrics (PMB), to include faculty from other departments who were interested in infectious diseases, began meeting and successfully submitted a proposal for an NIH training grant in this area. This effort led, in 1999, to the establishment of the Emerging Infectious Diseases (EID) Graduate Program with seven inaugural graduate students matriculating in the Fall of 2000. Since then, 24 uniformed and civilian students have entered the program, to include eight students who entered the EID Program in the Fall of 2003. The EID Program has three academic tracks within the field of emerging infectious diseases: microbiology and immunology; pathology; and, preventive medicine/parasitology, with primary interest in the contemporary approaches to the study of molecular biology, pathogenesis, and host responses within the context of emerging and re-emerging infectious diseases. The establishment of this program at USU by the SOM formally recognizes the breadth of disciplines spanned by emerging infectious diseases and the extent to which advances in these areas can affect the current and future health of individuals within the United States and also in the global arena. The implementation of an interdisciplinary and interdepartmental Program in Emerging and Infectious Diseases broadens and enhances the overall educational objectives of USU and brings together faculty and students in a scientific community designed to stimulate and promote collaborative interactions. **Eleanor S. Metcalf, Ph.D., Professor, USU SOM Department of Microbiology and Immunology,** is the Program Director; she can be contacted by e-mail at <[emetcalf@usuhs.mil](mailto:emetcalf@usuhs.mil)> or at <[www.usuhs.mil/mic/eid.html](http://www.usuhs.mil/mic/eid.html)>; 2) ***Molecular and Cell Biology.*** An Interdisciplinary Program, in Molecular and Cell Biology (including Genetics), was developed in 1993, to contribute to cross-disciplinary interactions and to develop the critical skills needed for data presentation and analysis; the program also includes a seminar series and a journal club, all of which support the Ph.D. Program. This interdisciplinary Ph.D. Degree Program offers training to address many of the fundamental questions of modern biology ranging from protein-nucleic acid interactions to cytokines, growth factors, and developmental biology. Research areas include: molecular biology of lymphocyte interactions; host-pathogen interactions; cell surface, cytoplasmic and nuclear receptor signaling pathways, exocrine secretory processes; and, gene targeting in mice to include a transgenic mouse facility for targeted gene disruption using homologous recombination. Five students entered the program in the Fall of 2003; and, two Doctoral Degrees were granted during USU's May 2003 Commencement Ceremonies. **Jeffrey M. Harmon, Ph.D., Professor, USU SOM Department of Pharmacology,** was appointed as the third Director of the Molecular and Cell Biology (MCB) Program; he oversees the studies of the MCB students and coordinates with over 40 MCB faculty members. He can be contacted by e-mail at <[jharmon@usuhs.mil](mailto:jharmon@usuhs.mil)> or <[www.usuhs.mil/mcb/index.html](http://www.usuhs.mil/mcb/index.html)>; and, 3) ***Neuroscience.*** The Interdisciplinary Program in Neuroscience and its Ph.D. Graduate Program are supported by faculty members whose primary appointments are established throughout the SOM departments. It provides a seminar series and flexible program of courses and research areas for graduate students and postdoctoral fellows who have strong training in the biological, behavioral, and/or physical sciences. Research areas strongly represented by faculty include: development, regeneration, and plasticity in the nervous system; molecular neurobiology; and, adaptive responses of the nervous system to stress, injury, and a changing environment. Integrated interdisciplinary instruction in the development, structure, function, and pathology of the nervous system and its interaction with

the environment is also included. Four students entered the program in the Fall of 2003; and, three individuals received Doctoral Degrees during USU's May 2003 Commencement Ceremonies. **Regina C. Armstrong, Ph.D., Professor, USU SOM Department of Anatomy, Physiology and Genetics**, is the Director of the Neuroscience Program with over 40 participating faculty members; Doctor Armstrong can be contacted by e-mail at <[rarmstrong@usuhs.mil](mailto:rarmstrong@usuhs.mil)> or at <[www.usuhs.mil/nes/home.html](http://www.usuhs.mil/nes/home.html)>.

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## Selected Profiles of USU School of Medicine Faculty.

As Founding Chairman, Dr. Rich was faced with the difficult task of establishing a Department of Surgery at a University where the campus had not yet been constructed. From the outset, Dr. Rich and his considerable reputation gave credibility to the newly established Uniformed Services University of the Health Sciences (USUHS) and enabled the recruitment of a competent faculty for its new Department of Surgery. He utilized his collaborative relationships, both nationally and internationally, to strengthen his department's curricula and lectures and thereby provided a military and academically unique environment for the over 3,400 USUHS medical school graduates and thousands more future uniformed medical students. Dr. Rich can take pride in having developed an academically sound curriculum, recruiting competent faculty with military unique expertise, meeting the initial and on-going accreditation requirements for the School of Medicine, and creating a sound national and global reputation for the University. His efforts have aided the School of Medicine in attaining full accreditation and he has helped shape USUHS graduates into what the Secretary of Defense has dubbed *the backbone of the Military Health System*. Indeed, his efforts are reflected in the continued success of USUHS and its graduates and in the millions of uniformed personnel and their families who have benefited from his extraordinary expertise... Our Nation can be proud of Dr. Rich's long and distinguished career of service... and, I am pleased to join with his family, friends and colleagues in expressing appreciation for the significant contributions he has made to the health of the Uniformed Services and that of all citizens.

- The Honorable Paul S. Sarbanes, United States Senator from Maryland, Congressional Record, *Tribute to Norman M. Rich, M.D.*, March 23, 2004, page S2994.

**New Director Is Appointed for the Armed Forces Radiobiology Research Institute.** Colonel David G. Jarrett, MC, USA, became the 14th Director of the Armed Forces Radiobiology Research Institute (AFRRI) during the Summer of 2003. (*He replaced Colonel Robert R. Eng, who had served in the position since December of 1997; Colonel Eng is now the Director of the Proponency Office for Preventive Medicine at the United States Army Medical Command in Fort Sam Houston, Texas.*) Colonel Jarrett came to AFRRI from his previous assignment as the Head of Doctrine Development for the Medical Operations Division of the United States Army Medical Research Institute for Infectious Diseases at Fort Detrick, Maryland, where he also served as the Flight Surgeon in charge of the Aero-Medical Isolation Team. Colonel Jarrett earned the Doctor of Medicine Degree at the Indiana University School of Medicine in 1973. He subsequently trained in Obstetrics and Gynecology at the Charity Hospitals of Louisiana in New Orleans and is board-certified in emergency medicine. Colonel Jarrett is well versed in the AFRRI mission, having served the institute previously as: the Head of Military Medical Operations; Senior Instructor for the Medical Effects of Ionizing Radiation (MEIR) Course; Chief Physician for the Incident Response Team; and, the Medical Team Chief for the Emergency Medical Radiobiology Assistance Team. Other key assignments include serving as the Nuclear Casualty Management Delegate to the Nuclear, Biological, Chemical (NBC) Medical Working Party and the Nuclear Casualty Advisor

for the Joint Chiefs of Staff (J-4 Medical), in Brussels, Belgium. He has authored various publications, presentations, videotapes, and CD-ROMs including: the MEIR Course Book; the Medical Management of Radiological Casualties Handbook; the NATO Handbook on the Medical Aspects of NBC Defensive Operations, Volume 1; and, the MEIR CD-ROM.

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**Two USU SOM Department Chairs Have NIH Grants Renewed for 22 and 21 Consecutive Years.** A common measure of research success is the length of time that an investigator has had his or her research funded by the same entity. Since most Federal agencies fund proposals in two- to five-year increments, someone who has kept a grant for a decade or more is recognized for his/her excellence in peer-reviewed research. Two USU SOM Department Chairs have had their research continuously funded by the National Institutes of Health (NIH) for 22 and 21 years. **Doctor Brian Cox, Ph.D., Professor and Chair, USU SOM Department of Pharmacology**, had his NIH R01 research grant renewed during 2003; with this renewal, Doctor Cox has now had his research funded for 22 continuous years. Doctor Cox's grant support has been provided by the National Institute on Drug Abuse and is entitled, *N/OFQ Expression and Neural Injury*. His research has focused on mechanisms of morphine tolerance and dependency. Both of these aspects are poorly understood despite their importance in understanding pain management and the treatment of addiction. Over the years, his research has focused on increasing the understanding of the actions and potential therapeutic uses of opiate drugs, such as morphine, and of the natural systems in the brain on which this type of drug normally acts. Doctor Cox is studying opioid peptides that are present during development and that are widely distributed in the adult brain; the current peptide that he is studying plays a role in the neural response to injury. His studies have demonstrated that this peptide and its receptor partners play a role in reducing neural cell survival after seizures and chemical injury. Doctor Cox is currently attempting to identify the major products and biochemical partners in this pathway under resting conditions and to determine the relative concentrations of the biologically active molecules after seizures or other stimuli. His long-term goal is to determine the mechanism of neurotoxicity following seizure or exposure to toxins and/or drugs, which could lead to novel developments of neuroprotective therapies.

Also recognized for her successful research is **Alison O'Brien, Ph.D., Professor and Chair, USU SOM Department of Microbiology and Immunology**; she has received funding for the 21st year to continue her studies on Shiga toxin-producing *Escherichia coli* (STEC). Doctor O'Brien was awarded \$1.9 million through an NIH R01 grant for STEC research to be conducted over the next five years. Her studies will include the epidemiology, virulence factors, and host-bacterial interactions of Shiga toxin-producing *Escherichia coli* that contribute to their pathogenicity in humans. Doctor O'Brien is an internationally recognized expert in Shiga toxin and STECs - food-borne pathogens for which cattle are the reservoir. Humans become infected through ingestion of contaminated beef, agricultural products, and water; infection caused by STEC is responsible for 100,000 cases of bloody diarrhea per year in the United States. These infections can lead to the potentially life-threatening hemolytic uremic syndrome, particularly in young children. Doctor O'Brien is credited with several seminal studies in the biology and pathogenicity of STEC. In addition, she will continue the development of novel plant-based edible vaccines for the prevention of colonization in livestock and the protection of humans against infection and disease associated with Shiga toxin-producing *E. coli*.

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**USU Participates in a Regional Center of Excellence for Biodefense and Emerging Infectious Diseases Research.** USU is part of a Middle Atlantic Region University Consortium that was recently selected by Health and Human Services (HHS) as one of eight Regional Centers of Excellence (RCE) for Biodefense and Emerging Infectious Diseases Research in the Nation. The RCEs were awarded close to \$350 million in grants for a five-year period. **Alison O'Brien, Ph.D., Professor and Chair, USU SOM Department of Microbiology and Immunology; Christopher Broder, Ph.D., USU SOM Assistant Professor of Microbiology and Immunology; and, CAPT Gerald V. Quinnan, M.D., USPHS, Professor and Chair, USU SOM Department of Preventive Medicine and Biometrics,** are the participating investigators from USU. They are part of 60-plus scientists in the Middle Atlantic RCE who will serve either as investigators, co-investigators, or collaborators. *Doctor O'Brien is also one of five members on the Middle Atlantic RCE Executive Committee, which will provide senior coordination to the RCE.* USU is one of the major components of the Middle Atlantic RCE. The University will be doing research, be represented on the Executive Committee, and be involved in all aspects of the RCE activities. This is a superb opportunity for the University to be part of the leadership in biodefense research; it represents the opportunity for USU investigators to grow and develop research on the prevention, treatment and diagnosis of diseases caused by bioterrorism agents as well as agents of emerging and infectious diseases, with particular emphasis on the most dangerous biodefense agents. The research projects of the Middle Atlantic RCE are examining the biology and the immunology of, as well as attempting to develop therapeutics and vaccines for, anthrax, hemorrhagic fever and other emerging viruses. In addition to USU, the Middle Atlantic RCE includes: Drexel University; Georgetown University; George Washington University; Johns Hopkins University; the University of Maryland Biotechnology Institute; the University of Maryland School of Medicine (*the lead institution*); the University of Missouri, Kansas City; the University of Pennsylvania; the University of Pittsburgh; the University of Vermont; the University of Virginia; the Virginia Bioinformatics Institute; Virginia Commonwealth University; the Virginia Polytechnic Institute and State University; and, West Virginia University.

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**USU Chair Establishes the USU Center for Medical Genomics and Proteomics.** **Harvey B. Pollard, M.D., Ph.D., Professor and Chair, USU SOM Department of Anatomy, Physiology and Genetics (APG),** is the principal investigator for a National Institutes of Health (NIH)-sponsored study on the proteomics of cystic fibrosis. The award totals \$12.7 million over a seven-year period. Under the leadership of Doctor Pollard, *the USU SOM APG Center for Medical Genomics and Proteomics has become one of ten academic organizations in the United States to win substantial support from the NIH for the establishment of a Proteomics Center.* This contract has allowed the University to acquire a world-class set of mass spectrometers, as well as support personnel, to form the critically required technical basis for proteomic research in the 21st Century. *In terms of NIH funding, this moves the USU SOM Department into the ranks of the top twenty equivalent Departments in United States Medical Schools.* The Center is used as a resource for supporting critical research by the entire University. The focus of the Center is to identify proteins whose expression and function are significantly increased or decreased in cystic fibrosis. The rationale is that the identification of such proteins will provide essential information for the development of new clinical diagnostics and the discovery of new drugs with which to treat cystic fibrosis. Cystic fibrosis is the most common autosomal recessive lethal genetic disease affecting

the population of the United States, with one out of every 1,600 live births afflicted. A cystic fibrosis patient carries two copies of a mutant cystic fibrosis transmembrane conductance regulator (CFTR) gene, and approximately five percent of the population carries at least one mutant CFTR gene. The average cystic fibrosis patient dies at the age of 28, primarily through lung inflammation, infection, and failure. Information derived from this research promises to impact on the understanding of challenging, but less understood, inflammatory diseases of the lungs such as asthma, as well as inflammatory processes in other parts of the body. Faculty co-investigators and consultants at USU include **Gregory P. Mueller, Ph.D., Professor, APG; David Jacobowitz, Ph.D., Adjunct Professor, APG; Meera Srivastava, Ph.D., Associate Professor, APG; Ofer Eidelman, Ph.D., Research Assistant Professor, APG;** and, **Eleanor S. Metcalf, Ph.D., Professor, Microbiology and Immunology.** The Center for Medical Genomics and Proteomics is located in the USU Biological Instrumentation Center (BIC).

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**Department Chair Receives Lifetime Distinction Award. Robert E. Goldstein, M.D., Professor and Chair, USU SOM Department of Medicine,** received the prestigious John F. Maher Memorial Laureate Award in November of 2003. The District of Columbia Chapter of the American College of Physicians (ACP) presents this award to those physicians who have shown by their lives and conduct an abiding commitment to excellence in medical care and service to the ACP. In presenting the award, Doctor Eugene Libre, Governor, ACP, DC Chapter, noted that Doctor Goldstein *...has set standards for professional skill and ethical conduct,* (and) *serves as a role model for other generations of physicians. ... (In) his many years of accomplishments he serves as a beacon to guide our profession.* Additionally, Doctor Goldstein was awarded the Department of Navy Meritorious Civilian Service Medal for his *...effective leadership, unparalleled initiative and inspiring devotion to duty...* (and) *in recognition and appreciation of his Meritorious Service, which has been of high value and benefit to the Navy.* Currently, Doctor Goldstein is a reviewer for the Annals for Internal Medicine, Circulation, the American Journal of Cardiology, the Journal of the American College of Cardiology, Cardiovascular Research, and the Journal of the American Medical Association. In addition, he serves on the Editorial Boards of the American Journal of Cardiology and the Journal of the American College of Cardiology. Doctor Goldstein became a Fellow of the American College of Physicians in 1973 and was elevated to Mastership in 2002. He is an ardent advocate of College activities and issues. As Chair of the USU SOM Department of Medicine, he recruits and sponsors medical students for ACP membership and active involvement. He strongly endorses advancement to Fellowship at faculty gatherings; and, the evaluation of progress towards Fellowship is a regular feature of the annual faculty review process in his Department.

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**Robert J. Ursano, M.D., Professor and Chair, USU SOM Department of Psychiatry, Director, USU Center for the Study of Traumatic Stress,** internationally recognized expert on post traumatic stress disorder (PTSD) and the mass psychological response to terrorism, continued to bring recognition to the SOM during 2003. During the past year, a Nation-wide mailing of CD-ROMs entitled, *Disaster Psychiatry: Individual and Community Interventions and Psychological Consequences of the September 11 Terrorist Attack*, was completed by the USU SOM Center for the Study of Traumatic

Stress. Numerous letters of appreciation from across the Nation have resulted from that mailing, to include the following: the Governor of Guam; the Executive Office of the Mayor, City of Providence, Rhode Island; and, the Secretary of the Department of Labor of the United States. A similar theme of appreciation resulting from the mailing was the recognition of the Center's efforts in educating individuals in the importance of the psychological and behavioral responses to bioterrorism events and the Center's significant assistance in preparing for and mitigating the possible psychological threats related to global terrorism. Also significant during 2002 and 2003, Doctor Ursano served on the Institute of Medicine Committee on Responding to the Psychological Consequences of Terrorism. ***His leadership was instrumental in developing and advancing a national strategy that integrates mental health into a public health paradigm for terrorism management and response.*** This new model is of substantial consequence as it demonstrates how disaster psychiatry, a singular specialty significantly contributed to by the forging of military medicine and USU faculty health care leaders in the 1980's, has become a recognized, valued, and integral component for strengthening homeland security in this Century. The Committee's recommendations have been published in Preparing for the Psychological Consequences of Terrorism - A Public Health Strategy, the National Academies Press, Washington, D.C., 2003. In the December 2003 edition of THE LANCET, Volume 362, he also published *Prisoners of War: Long-Term Health Outcomes*. Doctor Ursano has continued his on-going collaborative efforts with the World Health Organization, which resulted in the January 2004 publication of *Mental Health of Populations Exposed to Biological and Chemical Weapons*. Recently, Doctor Ursano participated in the 2004 Sam Nunn Bank of America Policy Forum on *Bioterrorism Preparedness*, for which he was personally recognized by former Senator Nunn.

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**USU SOM Alumnus Selected as Department Chair. Colonel Andrew J. Satin, USAF, MC, USU SOM Class of 1986**, was appointed to serve as the Chair of the USU SOM Department of Obstetrics and Gynecology in September of 2003, following a national search. Prior to his selection, Colonel Satin, served as Professor and Vice Chair in the Department and as the Program Director of the Uniformed Services Residency in Obstetrics and Gynecology. He is currently a member of the Editorial Board of Obstetrics and Gynecology, the premier journal of his specialty, and an Examiner for the American Board of Obstetrics and Gynecology. Colonel Satin is certified by the American Board of Obstetrics and Gynecology and by its subspecialty Division of Maternal-Fetal Medicine. (*Satin succeeds Douglas R. Knab, M.D., and William H.J. Haffner, M.D., USPHS (Retired), as the third Chair of the Department of Obstetrics and Gynecology. Doctor Knab, the first Chair, simultaneously served as the Associate Dean for Graduate Medical Education and retired in 1992. Doctor Haffner, following a national search, was appointed as the second Chair of the Department. After stepping down as the Department Chair, Doctor Haffner retains his position as a Professor within the Department and continues to lead and further advance the faculty development program for the Department, as well as his teaching and clinical care activities.*) As the Residency Program Director, Colonel Satin led the program from provisional accreditation status to full accreditation for the maximum term of five years. He is a nationally recognized expert in labor stimulation and labor management and has authored over 100 peer-reviewed manuscripts, abstracts, and book chapters. In addition, Doctor Satin has been appointed by the American College of Obstetricians and Gynecologists to the Committee on Practice Bulletins-Obstetrics.

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**SOM Associate Dean Re-Elected to the American Medical Association Council on Medical Education. Emmanuel G. Cassimatis, M.D., Professor of Psychiatry and Associate Dean for Clinical Affairs,** was re-elected to the American Medical Association (AMA) Council on Medical Education; Doctor Cassimatis is presently serving as the Council's Chair and as the Chair of the Liaison Committee on Specialty Boards. Doctor Cassimatis was also elected to serve as Chair-elect of the Accreditation Council for Graduate Medical Education (ACGME). And, he continues to serve on the Board of Managers of the Association of Military Surgeons of the United States (AMSUS), as the AMSUS Delegate to the AMA House of Delegates. He also holds the position of the Immediate Past Chair of the AMA's Specialty and Service Society (the caucus of all of the Specialties and Services represented in the AMA House of Delegates). During 2003, Doctor Cassimatis additionally: co-chaired the annual meeting of the American Academy of Psychoanalysis and Dynamic Psychiatry; was selected as *Teacher of the Year* by the PGY-3 Psychiatry Residents of the National Capital Consortium; and, was awarded the *American Psychiatric Association's Nancy C.A. Roeske Certificate of Recognition for Excellence in Medical Student Education*.

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**Department Chair Appointed to OSD Advisory Council. James G. Smirniotopoulos, M.D., Professor and Chair of the USU SOM Department of Radiology and Radiological Sciences, and Professor of Neurology and Biomedical Informatics,** was appointed during 2003 to serve as the Defense Department's Health Affairs Representative to the newly formed National Advisory Council for Biomedical Imaging and Bioengineering. The Council, under the oversight of the Secretary, Department of Health and Human Services (HHS), was mandated by Congress in the Public Health Service Act to advise the Secretary (HHS), Assistant Secretary for Health (HHS), the Director, National Institutes of Health (NIH), and the Director, National Institute of Biomedical Imaging and Bioengineering (NIBIB), on matters relating to the conduct and support of research, training, health information dissemination and on other programs that address biomedical imaging, biomedical engineering, and associated technologies and modalities with biomedical applications. Eight ex-officio members, plus 12 individuals appointed by the Secretary, HHS, make up the Council. In addition to the Secretary, the remaining seven ex-officio members include: the Directors of NIH and NIBIB; the Chief Medical Director of the Department of Veterans Affairs; the Directors of the Centers for Disease Control and Prevention, the National Science Foundation, and the National Institute of Standards and Technology; and, the Assistant Secretary of Defense for Health Affairs (*or their designated representatives*). Doctor Smirniotopoulos serves as the designated representative for the Assistant Secretary of Defense for Health Affairs. Council members serve overlapping four-year terms. In addition, Doctor Smirniotopoulos received approval for providing on-line continuing medical education (CME) and continuing nursing education (CNE) through his MedPix Radiology Teaching File; the program provides one hour of Category 1 CME or 1.2 hours of CNE for every four MedPix cases. *USU now supports all of the DoD Diagnostic Radiology Residency Programs by administering and hosting commonly shared teaching files.* MedPix has over 7,000 registered users, although registration is not required for simple case review. During 2003, the MedPix database was upgraded to include a secure web server for log-in and user administration. *MedPix has delivered more than 11,206,663 pages since September 3, 2000, and it is the longest running Case of the Week program in the world.* Doctor Smirniotopoulos has also begun a *Teach the Teachers* project, sponsored by an educational grant from the Radiological Society of North America (RSNA) to train 6-8 African Radiologists in Tropical Imaging. This competitively chosen group will spend seven weeks at

USU in classroom, small group, and independent study. The radiologists will then return to their home countries to share their experiences at USU.

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**SOM Dean Selects Interdisciplinary Program Chair.** On January 10, 2003, the SOM Dean announced the appointment of **Jeffrey M. Harmon, Ph.D., USU SOM Professor of Pharmacology**, as the Director of the Interdisciplinary Graduate Program in Molecular and Cell Biology. (*Doctor Harmon succeeded William C. Gause, Ph.D., USU SOM Professor of Microbiology and Immunology, who had served in this position since 1995 until his appointment as Vice Chair in the Department of Microbiology and Immunology.*) The faculty of the Interdisciplinary Graduate Program in Molecular and Cell Biology comes from 11 basic science and clinical departments. Their research programs reflect a wide range of interests, including the molecular virology of HIV pathogenesis, the function of the immune system, and the mechanisms by which cells sense, process, and respond to a variety of normal and abnormal stimuli. These research programs attract extensive funding from the National Institutes of Health, the National Science Foundation, and a host of other public and private agencies and provide molecular and cell biology graduate students, who come from all over the world, with the opportunity to receive training in virtually every cutting-edge area of modern biomedical research. Doctor Harmon received his Doctorate in Radiation Biology and Biophysics from the University of Rochester in 1976; and, he was a Damon Runyon-Walter Winchell Fellow in Cancer Research in the laboratory of biochemistry of the National Cancer Institute from 1976 to 1978. His own research is directed at elucidating the mechanisms by which steroid hormones regulate the expression of specific genes in cancer cells and understanding how cancer cells become drug-resistant.

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**Biochemistry Faculty Member Receives Two Research Grants.** In April of 2003, the National Science Foundation (NSF) announced that **Teresa M. Dunn, Ph.D., USU SOM Professor of Biochemistry**, was the recipient of a prestigious and highly competitive NSF 2010 grant, with a goal to identify the function of all genes in the wild-mustard plant, *Arabidopsis thaliana*, by the year 2010. This information will be used to help develop new strategies in crop breeding and pest control. Doctor Dunn will be leading a team of internationally respected investigators that includes: Jan Jaworski, Ph.D., and Edgar Cahoon, Ph.D., at the Danforth Plant Research Center in St. Louis, Missouri; Daniel Lynch, Ph.D., at Williams College in Williamstown, Massachusetts; and, Johnathan Napier, Ph.D., at the Rothamsted Research Institute in the United Kingdom. The grant is a four-year award with a total budget of \$2.6 million. During July of 2003, Doctor Dunn was notified by the National Institute of Neurological Disorders and Stroke that she would receive a five-year, \$2.9 million grant to study the mammalian version of the enzyme *serine palmitoyltransferase* (SPT), whose composition and regulation she has previously characterized in yeast. This enzyme catalyzes the committed step of sphingolipid biosynthesis; and, its alteration has recently been discovered to be the cause of Hereditary Sensory Neuropathy Type 1 (HSN1), a rare, inherited disease that results in progressive loss of sensation in the lower extremities. This study will be performed in collaboration with **Jeffrey M. Harman, Ph.D., USU SOM Professor of Pharmacology**, and Robert Brown, Ph.D., of the Harvard Medical School.

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**Two USU SOM Departments Garner Significant NIH Support for Health Disparities Research.** During 2003, CDR Evelyn Lewis, MC, USN, (Retired), Assistant Professor, USU SOM Department of Family Medicine, and Richard Tanenbaum, Ph.D., Visiting Scientist, USU SOM Department of Medical and Clinical Psychology, were awarded a \$7 million, multi-year grant, from the National Institutes of Health (NIH) National Center on Minority Health and Health Disparities, to sponsor the USU Center for Health Disparities, referred to as *Project EXPORT*. Doctor Evelyn Lewis is the Principal Investigator on the NIH grant; and, Doctor Richard Tanenbaum serves as the Co-Principal Investigator and Project Director. **David S. Krantz, Ph.D., Professor and Chair, USU SOM Department of Medical and Clinical Psychology,** serves as the Center Director. This groundbreaking project will establish an infrastructure to: optimize patient outcomes by enhancing providers' interpersonal and communication skills with diverse patients; educate practitioners about health disparities; and, highlight the importance of establishing collaborative patient-provider relationships. *Project EXPORT* will sponsor the development of workshops and other educational forums that focus on disseminating critical knowledge about health disparities and teaching practical skills in order to maximize culturally proficient health care service delivery. (Additional information on this new USU center is provided in the following section entitled, *RESEARCH CENTERS AND PROGRAMS.*)

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**USU Research, Recognized by Science as one of the Top Ten Scientific Breakthroughs of 2002, Continues Significant Collaborative Efforts.** Two thousand United States troops were sent from a base in North Carolina to the Sinai Desert, fulfilling their rapid deployment force mission to deploy anywhere in the world in 18 hours. While the soldiers were ready fighting forces when they left North Carolina, because of the effects of jet lag, their performance would have been degraded if they had to engage in combat immediately upon arrival in the Desert. A discovery by scientists in the USU SOM Department of Anatomy, Physiology and Genetics (APG) could eventually result in a treatment for jet lag and help to optimize performance by deployed service members. Researchers have been studying the eye for several hundred years. Santiago Ramon y Cajal, a Spanish neuroanatomist, who is frequently referred to as *the father of neuroanatomy*, was the first to anatomically characterize the cells of the retina. Cajal's work showed that the rods and cones were the only two types of photoreceptors in the retina, initiating sight by activating nerve cells that send signals to the brain. The rods are the cells responsible for vision at low light levels, while the cones are active at higher light levels. His work done around the turn of the 20th Century, showing that rods and cones were the only photoreceptors in the eye, was long considered the standard until 2002. USU faculty member, **Ignacio Provencio, Ph.D., Assistant Professor, USU SOM Department of APG,** and **Doctor Mark D. Rollag, Ph.D., Professor and Vice Chair, USU SOM Department of APG,** identified a new photosensory system in the mammalian eye responsible for resetting the internal 24-hour (circadian) clock. This discovery was recognized by the prestigious journal, Science, as one of the *Top Ten Scientific Breakthroughs of 2002*. This past year, these USU investigators, in collaboration with colleagues in The Scripps Research Institute, the Genomics Institute of the Novartis Research Foundation, and Washington University, showed that the melanopsin-containing cells of the photoreceptive net work, in conjunction with the well-known rod and cone visual photoreceptors of the retina, reset the clock. Understanding how our internal daily clocks are reset will provide the basis for future pharmacologic or phototherapeutic strategies to ameliorate internal timing

disturbances such as jet lag. In an age when the men and women of our Armed Forces are immediately deployed into theaters of operation many time zones away, developing such strategies will prove critical to medical readiness.

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**USU Researchers Target Malaria at Home and Abroad.** Within the last year, an estimated two to three million deaths world-wide were caused by malaria. Combating this global threat is important to the military since fighting forces are often deployed into areas where malaria is endemic. Researchers at USU, led by **Donald R. Roberts, Ph.D., Professor of Tropical Public Health, USU SOM Department of Preventive Medicine and Biometrics**, are helping nations predict high-risk locations for malaria occurrence through satellite imaging and the use of geographic information system (GIS) technology. This technology is used to predict malaria mosquito population levels and disease transmission risks within precise areas and time frames. The National Aeronautics and Space Administration (NASA) is the primary sponsor of this research. Remote sensing and GIS technologies have the potential for targeting and managing malaria vector control in Belize, a Central American country that experienced a resurgence of malaria in the mid-1990's. Through stratification, the country has reduced malaria rates since 1995. To make efforts more cost-effective, officials can increase the use of remote sensing and GIS technologies to more precisely target the application of control measures; past research in Belize has shown that these technologies can be used to identify favorable mosquito habitats through characterization of vegetation, bodies of water, and other environmental factors. This information, along with specific locations of human habitations, can help Belize's Ministry of Health pinpoint high risk areas to reduce malaria control operational costs and the amounts of chemicals needed for effective levels of control. Once a functional GIS is developed for the whole country, it can also be used in other public health programs such as immunizations and dengue control. In September of 2002, two confirmed cases of malaria were discovered in Northern Virginia. In response, Doctor Roberts and his team, under existing memoranda of understanding, helped local and state health authorities trap and test mosquitoes that might be harboring malaria. They collected and verified the presence of malaria-positive pools of mosquitoes from Selden Island; the island is part of Montgomery County, Maryland, but is located on the Virginia side of the Potomac River. The USU team, led by Doctor Roberts, continues to provide technical and consultative expertise to authorities on this issue; and, Doctor Roberts continued to garner national press coverage for his work during 2003.

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*(Appendix C provides selected examples of billeted and off-campus members of USU Departments and Programs and Department Activities receiving special recognition during 2003.)*



## **RESEARCH CENTERS AND PROGRAMS.**

**We will coordinate with other agencies to develop and conduct specialized training for health care professionals in:**

- **Disaster and Humanitarian Relief**
- **Weapons of Mass Destruction**
- **Traumatic and Post-Traumatic Stress**
- **Preventive Medicine for Mission Readiness**
- **Force Health Protection and Healthy Lifestyles**

- **USU Strategic Plan, Goal 1, *Education*, 2003-2004.**

**We will emphasize research and development relevant to military, Federal, and homeland security needs.**

- **USU Strategic Plan, Goal 3, *Research*, 2003-2004.**

**Research is Directed Toward Military Requirements.** As discussed in the *Strategic Planning* and *Research Administration* sections of Part I of this annual report, the majority of the research programs and projects currently taking place at USU are focused on meeting the needs of the Uniformed Services. Research protocols throughout the SOM study diseases of high military relevance for troop deployment and sustainment. During 2003, the USU intramural program consisted of 69 militarily relevant protocols; extramurally funded research at USU, in 2003, included 198 projects supported by Federal agencies such as the National Institutes of Health (NIH), the National Science Foundation (NSF), the Department of Energy (DOE), the United States Army Medical Research and Materiel Command (USAMRMC), and the Office of Naval Research (ONR). These 267 protocols explored a wide span of scientific areas, including basic biomedical questions central to the mission of the Military Health System such as: 1) the mechanisms, transmission and control of a wide range of infectious and/or common diseases that may be faced by warfighters; 2) a variety of crucial topics in combat casualty care, operational medicine, and health education and promotion; 3) women's health issues in the DoD; and, 4) the development of new methods for the diagnosis and treatment of medical problems faced by the United States military and their dependents. Research contributed by SOM faculty relating to combat casualty care continues to provide rapid diagnostic methods and treatments that ensure military readiness.

The understanding gleaned by USU researchers will open avenues to better control, diagnose, and treat natural and man-made biological threats both at home and abroad. *For example, on-going technological advances by USU researchers in the SOM Department of Preventive Medicine and Biometrics (PMB) have made it possible to predict mosquito population levels and transmission risks for a range of mosquito-borne diseases such as malaria, even within precise areas and time frames.* By using satellite imaging and remote sensing devices, USU researchers assist in predicting high-risk locations for the occurrence of malaria and similar diseases. These predictions focus disease-control operations and conserve scarce finances as well as human resources. A recent discovery by scientists in

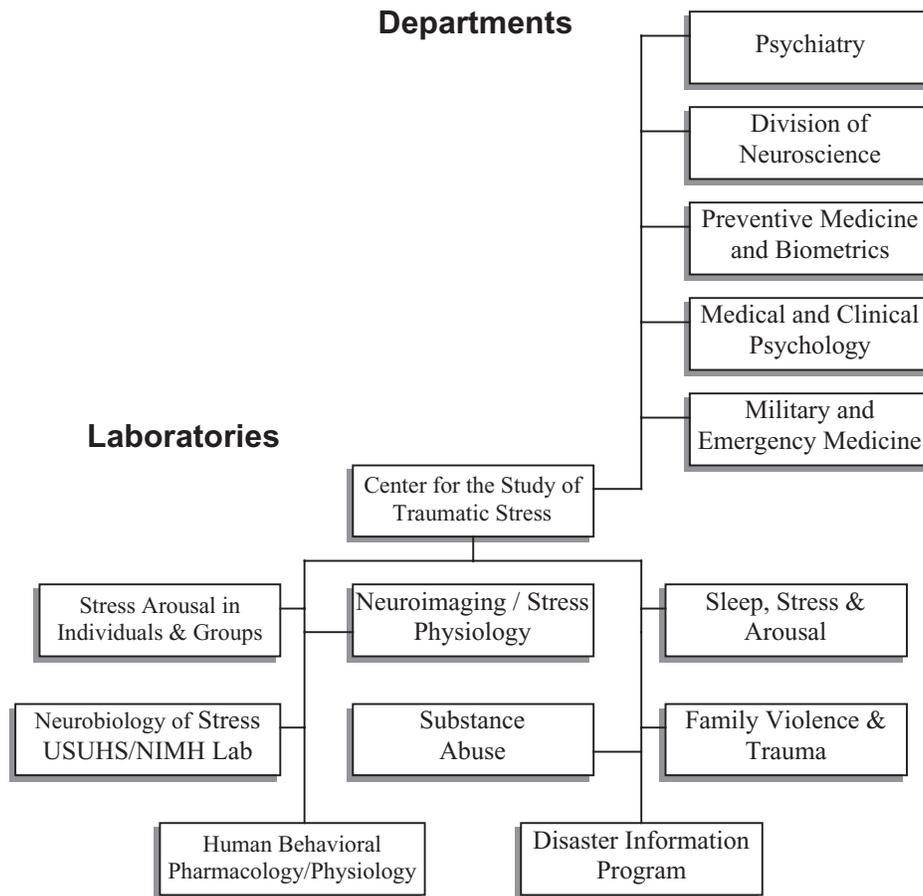
the USU SOM Department of Anatomy, Physiology and Genetics (APG) could result in a treatment for jet lag and help to optimize performance by deployed members of the Uniformed Services. *Recognized by Science as one of the top ten scientific breakthroughs of 2002, two APG researchers identified a photoreceptive net, a new light-detecting apparatus in the retina*; their collaborative research continued throughout 2003.

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*The following SOM Centers, Activities, and individual researchers are provided as selected examples of the research and consultative services taking place throughout the School of Medicine. (See Appendix C for Additional Examples of Individual Achievements and Recognition.)*

## SELECTED PROFILES OF SOM CENTERS AND PROGRAMS

**USU School of Medicine Department of Psychiatry and the Center for the Study of Traumatic Stress.**



Establishment. The USU Center for the Study of Traumatic Stress (CSTS) was established in 1987, as a center of excellence for responding to DoD’s long-term concerns over the substantial health risks resulting from the traumatic impact of: 1) the possibility, or actual use, of weapons of mass destruction (WMD) during combat, acts of terrorism or hostage events; 2) combat, peacemaking, peacekeeping, and operations other than war; 3) natural disasters such as hurricanes, tornadoes, or floods; and, 4) more common stress producing events such as physical assaults and motor vehicle, shipboard, or airplane accidents in both the uniformed and civilian communities. As the Academic Health Sciences

Center for the Uniformed Services, the University is well situated to assist in meeting the needs of the Military Health System (MHS) and of the Nation in the area of *traumatic stress*.

At present, investigators from the four USU SOM Departments of Psychiatry, Preventive Medicine and Biometrics, Military and Emergency Medicine, and Medical and Clinical Psychology, and the SOM Division of Neuroscience are collaborating on extensive studies on traumatic stress. The CSTS scientists are involved in a wide range of projects including responses to natural, man-made, and environmental disasters; the studies examine community responses to loss of life and property, community displacement, and organizational leadership. In addition, the CSTS research projects involve the examination of the physiological changes after trauma and the neurobiology of stress. Since its establishment, the CSTS has provided education and consultation to: the Armed Forces; the Department of Veterans Affairs; the Department of State; the Central Intelligence Agency; the National Aeronautics and Space Administration; the Institute of Medicine; the National Transportation Safety Board; the National Institute of Mental Health; the American Medical Association; the American Psychiatric Association; the American Psychological Association; the American Red Cross; the World Health Organization; the Disaster Stress Center of the University of Oslo, Norway; the Traumatic Stress Center of the Hadassah Medical Center in Jerusalem, Israel; and, the Italian Ministry of Health.

The last quarter of 2001 validated the *raison d'être* of the CSTS, when ***military unique expertise in disaster mental health and trauma research in terrorism and bioterrorism were recognized as being essential to national security***. Federal and State leaders, as well as the public health and mental health care systems, teaching institutions, and media outlets were seeking to understand the traumatic impact of 9/11, the anthrax attacks, and the traumatic anxiety generated by those events. CSTS quickly assumed a leadership position in responding to these contingencies and in advising Federal and State leaders on recovery and resiliency; CSTS sustained its critical support throughout 2002 and 2003 in the form of education, training conferences, research and published work addressing population-based trauma. ***By the end of 2003, CSTS leadership had been instrumental in developing and advancing a national strategy that integrates mental health into a public health paradigm for terrorism management and response***. This new model is of substantial consequence as it demonstrates how ***disaster psychiatry, a singular specialty significantly contributed to by the forging of military medicine and USU faculty health care leaders in the 1980's***, has become a recognized, valued and integral component for strengthening homeland security in the 21st Century.

**The chaos that occurs when lives are thrown into the turmoil of terrorism and disaster has a structure that becomes increasingly evident through research, clinical work, and related community concerns. Further understanding of the consequences of terrorism and disaster will aid leaders and health care providers in planning for such events.**

- **Robert J. Ursano, M.D., Professor and Chair, Department of Psychiatry, Director, Center for the Study of Traumatic Stress, USUHS, Terrorism and Disaster: Individual and Community Responses to Extraordinary Events, Cambridge University Press, 2003.**

Mission. Today, CSTS is well positioned within the MHS and continues to increase the military's medical knowledge (in the areas of epidemiology, psychology, neurobiology, health care systems and treatment) of the consequences of bioterrorism, trauma, and disaster *and to apply that knowledge* in addressing the real world problems, issues, and requirements of homeland defense, the response to terrorism and disaster, and humanitarian assistance. **Robert J. Ursano, M.D., Professor and Chair, USU SOM Department of Psychiatry, serves as the Director of the CSTS.**

***Preservation of Lessons Learned.*** The health implications of traumatic stress are a focused interest immediately following each trauma or disaster, but the data tends to be lost from institutional memory because of the lack of an organized center for the maintenance and development of the resulting information. The USU CSTS has served the Military Health System by capturing, organizing, and maintaining relevant information following disasters, terrorist events, and wars. Currently, the Center's basic computer data base (accessible to the Uniformed Services) provides over 17,000 articles of relevance to traumatic stress. It is this data base that enabled the CSTS to effectively respond, throughout 2002 and 2003, to the traumatic stress resulting from the terrorist acts of war against our Nation. The CSTS conducts research on the neurobiology of traumatic stress and is studying the psychological and behavioral responses to such events as the attack on the *USS Cole* in October of 2000, the attacks on the Twin Towers and the Pentagon in September of 2001, the October 2002 Sniper attacks in the Washington, D.C. area, and the on-going war in Iraq. Additional information is available at <<http://www.usuhs.mil/psy/disasterresources.html>> or <<http://www.usuhs.mil/psy/traumaticstress/newcenter.html>>.

Core Military Competency. The location of the CSTS within the multi-Service environment of USU, with its emphasis on education and development, studies, research, and on-going clinical and operational practice is critical to the development and sustainment of CSTS's ability to provide its ***CORE COMPETENCY - the capability to ensure the continued provision of critically required military-unique, medical expertise and consultative support in response to the impact of traumatic stress during and following activities related to crisis management, disaster response, and homeland defense.*** The successful assessment and management of the behavioral, psychological, and social consequences of WMD-related and other national security contingencies is essential to DoD during the organization of effective responses to such events. Failure to attend to the consequences of WMD may lead to heightened stress or demoralization and could undermine the confidence of the Armed Forces and American citizens in their government and its institutions. Only DoD has a self-renewing source of physicians and other medical personnel with interest and experience in these areas. USU, through its students in the School of Medicine, the Graduate School of Nursing and Graduate Education Programs, and its career-focused faculty and staff, plays a vital role for the DoD in the renewal process of militarily-focused and experienced health care providers in the study of traumatic stress. The Center's unique military medical capability to assess and manage the traumatic impact of WMD and other disaster-related contingencies provides direct support to Homeland Security and Defense.

Areas of Study. Twelve major projects are currently funded with well over six million dollars from the following sources: the Department of the Army; the National Institute of Mental Health; the National Alliance for Research on Schizophrenia and Depression; the National Alliance for the Mentally Ill Research Institute; the National Institute on Drug Abuse; the Substance Abuse and Mental Health

Services Administration of the Department of Health and Human Services; the Stanley Foundation; and, the United States Marine Corps. *Ongoing studies include the following areas:* psychological and behavioral responses to weapons of mass destruction; combat stress; the prevention of stress-related disease; shipboard fires and emergencies; relocation stress; prisoners of war; leadership of those suffering from grief; medical personnel in disasters; traumatic stress and the immune function; community responses to disaster; identification of high risk populations; chronic stress; medical treatment following trauma; biomedical responses to stress; family violence; and, others. *Recently funded studies include:* combat stress in Bosnian-deployed troops; stress among emergency workers after an air disaster; psychological stress in the United States military deployed to Desert Storm/Shield; family violence and trauma; stress and women's health; combat, deployment, contingency operations, and trauma; basic neurobiology of genetic and second messenger stress responses; stress and arousal symptoms in individuals and groups using the Persian Gulf War symptoms as a paradigm; disaster psychiatry education; natural disasters and health outcome: adult and adolescent responses to Hurricane Andrew; genetic risk for substance abuse and cognitive processing; animal models for the study of the neurobiology of trauma responses and depression; and, the development of a strategic plan for the management of mass violence in the workplace.

Focus of the Nine CSTS Laboratories. The CSTS has nine research laboratories that concentrate on the following areas of study: 1) stress and arousal in individuals and groups; 2) neuroimaging/stress physiology; 3) sleep, stress and arousal; 4) social function in high stress environments; 5) neurobiology of stress; 6) family violence and trauma; 7) human behavioral pharmacology/physiology; 8) substance abuse; and, 9) disaster information.

Activities During 2003. The unifying themes of military service, leadership and education characterize CSTS' growth and impact in addressing three of the University's strategic goals. First, CSTS provided direct support to the MHS for the management of the traumatic consequences and mental health care requirements of deployed troops and their dependents during the on-going war on terrorism. Second, CSTS leadership was instrumental in developing and advancing a national strategy that integrates mental health into a public health paradigm for managing the psychological impact of disaster, terrorism, and bioterrorism, both for the MHS and the Nation. And, third, the CSTS expanded its role in public education initiatives and public/private partnerships to reflect USU's mission to educate, train, consult and establish new forums for addressing the traumatic consequences of disaster, terrorism and bioterrorism.

***CSTS Leadership.*** **Doctor Robert J. Ursano, M.D., Professor and Chair, USU SOM Department of Psychiatry, and Director of the CSTS,** served on the Institute of Medicine Committee on Responding to the Psychological Consequences of Terrorism. His military unique expertise was instrumental in developing and advancing a national strategy that integrates mental health into a public health paradigm for terrorism management and response. This new model is of substantial consequence as it demonstrates how disaster psychiatry, a singular specialty significantly contributed to by the forging of military medicine and USU faculty health care leaders in the 1980's, has become recognized, valued and regarded as an integral component for strengthening homeland security in this Century. The

Committee's recommendations have been published in Preparing for the Psychological Consequences of Terrorism: A Public Health Strategy, the National Academies Press, Washington, D.C., 2003.

The CSTS expanded and applied the new model described above and benefited the readiness mission of the MHS through the establishment of the *Nation's first Disaster and Preventive Psychiatry Fellowship*, which was awarded to **Lieutenant Colonel (P) Elspeth Cameron Ritchie, MC, USA**, an Army psychiatrist. Under the mentorship of the USU CSTS faculty, Lieutenant Colonel Ritchie established an international presence for USU by working in Israel, Egypt, and Baghdad, Iraq, with psychiatrists from the State Department, to improve mental health assessment and interventions following terrorism intrinsic to the war in Iraq. Doctor Ritchie coordinated a planning meeting, which was held at USU, with representatives from the State Department; the National Institute of Mental Health, the Substance Abuse and Mental Health Services Administration; the World Bank; and, Non-Governmental Relief Organizations on the DoD mission and objectives for assisting in rebuilding a mental health system in Iraq.

Recognition of the national stature of the CSTS also occurred when **Colonel Ann E. Norwood, MC, USA, USU SOM Class of 1981, Associate Professor and Associate Chair, USU SOM Department of Psychiatry**, who served at USU and the CSTS until May of 2003, was selected for the position of *Senior Advisor for Public Health Risk Communication* in the Office of the Assistant Secretary for Public Health Emergency Preparedness at the Department of Health and Human Services (HHS). Colonel Norwood continues to serve as the Director of the Disaster and Preventive Psychiatry Fellowship, described above, and to work closely with the CSTS on multiple projects.

***Collaboration Throughout the Military Health System.*** Throughout 2003, the CSTS provided expert consultation to health care and mental health professionals who were deployed in support of the Operations Iraqi Freedom and Enduring Freedom. CSTS support included preparation and planning with the Walter Reed Army Medical Center, the National Naval Medical Center, and the *USN Comfort*. Based upon lessons learned from the 1990-91 war with Iraq as portrayed in CSTS' seminal document, Emotional Aftermath of the Persian Gulf War: Veterans, Families, Communities, and Nations (edited by Doctors Ursano and Ann Norwood, MC, USA, USU SOM Class of 1981, and published by CSTS following the 1991 conflict), consultation and liaison services were provided to the MHS medical centers for mitigating and treating the psychiatric requirements of returning casualties. In addition, CSTS faculty and practitioners consulted on pre-deployment and post-deployment troop assessments and provided on-going *reach-back* consultation to address the special requirements of prisoners of war, psychiatric casualties, and preparation for the psychological consequences of WMD. The CSTS maintained close contact with the *USN Comfort*, throughout the past year, and completed a study that assesses the impact of deployment on medical personnel and examines interventions for possible support to medical care teams.

**Doctor Robert Gifford, CSTS**, conducted a review of mental health operations during Operation Iraqi Freedom. Protocols for collaboration between USU and the National Committee for Employer Support of the Guard and Reserve are being developed to study the stresses on the members of the Reserve Components called to active duty. **Colonel Charles C. Engel, Jr., MC, USA, Associate Professor, USU SOM Department of Psychiatry, Director, Deployment Health Clinical Center**, is studying how to improve behavioral and rehabilitative elements of primary care in the MHS, particularly in the

occupational health care setting. Doctor Engel has multiple projects focusing on: medically unexplained physical symptoms in the veteran population; primary care aspects of environmental risk communication; and, evidence-based clinical practice guideline development and implementation. The National Institutes of Health, the Centers for Disease Control, the Department of Defense, and the Department of Veterans Affairs fund his research. His work has been widely published in peer-reviewed medical journals, such as the Journal of the American Medical Association, the American Journal of Psychiatry, and Controlled Clinical Trials. Doctor Engel was awarded the William C. Porter Award by the Association of Military Surgeons of the United States (AMSUS) for outstanding contributions to military psychiatry.

The Center's ***Family Violence and Trauma Project (FVTP)*** entered its eighth year in October of 2003. The Center's FVTP provides support to command including the Army Community and Family Support Center Headquarters and Staff; the Headquarters, Department of the Army Family Advocacy Committee; the Family Advocacy Research SubCommittee; Family Advocacy Program Managers; Chiefs of Social Work Services; and, Army Social Workers. The FVTP has provided immediate responses, briefings, papers, and staff studies to the Headquarters Department of the Army Family Advocacy Program Managers and the Family Advocacy Research SubCommittee reference issues involving the scientific and medical aspects of child and spouse abuse. During 2002, the FVTP completed the only two empirical studies of *Family Violence and Deployment* using an Army database for one study and a study of troops from Fort Hood (to include their spouses) who were deployed to Bosnia in the other. Also, an analysis was initiated on the Army's Transitional Compensation data base, which lists cases of soldiers who have been discharged from the Army where spouse or child abuse has been a part of the discharge. Joining Forces, a quarterly newsletter of the FVTP, brings important research to the field and enjoys strong popularity within the Army and the DoD. During 2003, the FVTP continued to add to its scientific literature data base of family violence articles. This data base is used for scientific reference to improve the development of family violence research protocols and to further the research education of Army military and civilian research social workers. Many of these articles have been sent to investigators and program managers in the Army's Family Advocacy Program (FAP) and FAP-related programs such as the military police school for teaching police to respond to incidents of family violence.

***National Educational Activities.*** The Institute of Medicine (IOM) published a groundbreaking report, during 2003, linking public health and mental health as critical to national psychological and behavioral preparation and response plans for facing terrorism. As mentioned above, Doctor Ursano was an invited member of the Committee that authored The Institute of Medicine Report on Preparing for the Psychological Consequences of Terrorism: A Public Health Strategy (The National Academies Press, Washington, D.C., <[www.nap.edu](http://www.nap.edu)>, 2003). The report provides a public health strategy from which plans to prevent and respond to the psychological consequences of a variety of terrorist events can be formulated. The report includes recommendations for the training and education of service providers, ensuring appropriate guidelines for the protection of service providers, and developing public health surveillance for pre-event, event, and post-event factors leading to psychological consequences.

The CSTS, in collaboration with the Centers for Disease Control (CDC), the National Institute of Mental Health (NIMH), and the National Child Trauma Network, is developing measures to assess a new area of terrorism and bioterrorism interest, *resilient communities*. This work addresses the integration of mental health and public health through new practices such as mental health surveillance to assess community adaptation before, during, and after a disaster or terrorist event. This information will enable

the effective use of resources to enhance resilience and preparedness and direct response plans. As part of its on-going work to enhance the Nation's readiness, the CSTS, in collaboration with the Substance Abuse Mental Health Services Administration (SAMHSA), produced a two CD-ROM volume on *Bioterrorism for Government Leaders and Policy Makers*. The CD-ROMs were distributed to all members of the United States Congress, State Governors, Supreme Court Justices, State Health Departments and Chief Executive Officers (CEOs) of Fortune 500 Companies. Numerous letters of praise and appreciation have been received from the recipients.

Doctor Ursano was invited participant at the **2003 Conference Board in New York City, a meeting of the Nation's Fortune 100 CEOs**, established in 1920. This year, the Conference Board focused on the *Effects of Terrorism in the Workplace*. The CSTS received a grant from the National Institute for Occupational Safety and Health (NIOSH) and developed a strategic plan for the management of mass violence in the workplace. **Doctor Carol Fullerton, SOM Associate Professor (Research)**, and **Doctor Robert Gifford, CSTS Research Psychologist (former Director of the Walter Reed Army Institute of Research (WRAIR))**, spearheaded the NIOSH initiative.

A live video-teleconference was conducted by the CSTS with faculty and clinical staff from the Rush Medical Center in Chicago, Illinois. This *scenario-based model for distance learning* was established to train emergency room health care professionals to mitigate and treat terrorism-related trauma. The half-day broadcast provided education on the psychological and behavioral impacts of bioterrorism and developed recommendations for the Rush Medical Center's Emergency Response Plan.

The Center continued to provide consultation and expertise to local and state governments. **Colonel Molly J. Hall, USAF, MC, FS, Associate Professor, USU SOM Department of Psychiatry, and Director, Bioterrorism Education Project**, co-authored multiple articles on the psychological impact of bioterrorism and provided teaching and training to multiple State and Federal agencies, including the Central Intelligence Agency, the Maryland State Office of Public Health Preparedness, and the Arizona State Emergency Management Authority. She provided on-going consultation to the Maryland, Virginia, Washington, D.C. Council of Government Bioterrorism Task Force and The Animal Services Committee. Doctor Hall and members of the CSTS wrote the guidance on mental health support for the Veterinarian Medical Emergency Assistance Teams as part of the National Medical Defense System (*Psychological Impact of the Animal-Human Bond in Disaster Preparedness and Response: Guidance for Veterinary Medical Assistance Teams*, authored by M.J. Hall, R.J. Ursano, H. Holloway, C.S. Fullerton, A.E. Norwood, and J. Casper, Veterinarian Medical Assistance Team Field Manual, FEMA/National Medical Defense System, in press, 2004.) In addition, **Rear Admiral Brian W. Flynn, M.D., United States Public Health Service (Retired), Associate Director, CSTS**, an international expert on disaster mental health, worked with a number of State Departments of Health on integrating mental health interventions into the individual State preparedness plans for disaster and terrorism. In addition, Doctor Flynn worked with families and survivors of the Rhode Island nightclub tragedy to reach consensus on a disaster memorial.

In June of 2003, CSTS created an **Office of Public Education and Preparedness (OPEP)** under the direction of **Nancy T. Vineburgh, Assistant Professor, USU SOM Department of Psychiatry**, a recognized expert in corporate health promotion and public education on mental health issues. This new office is charged with identifying programs and partnerships that will advance CSTS and USU visibility,

expertise, and funding for preparedness programs, especially in the workplace. OPEP objectives include the expansion of CSTS' role in education, consultation, and training provided to the Nation's workplaces and schools and the DoD community. Activities of the OPEP include a Substance Abuse Mental Health Services Administration (SAMHSA) Knowledge Dissemination Grant submission to conduct a national workplace preparedness conference and presentations on public health strategies for managing the psychological consequences of terrorism at the American Public Health Association Conference to be held in November of 2004. A Task Force has been formed to guide the Conference and includes Fortune 100 Employers, such as Chevron/Texaco, Dupont, Citigroup, and other industries designated by the Department of Homeland Security as high risk in sports and entertainment; the CSTS will be participating with the CDC, other agencies within the Department of Health and Human Services, and the Institute of Medicine. And, the CSTS/OPEP and the Department of Homeland Security's Public Affairs Office have established on-going collaborative efforts on public education and risk communication. In October of 2003, the OPEP Director attended a Global Symposium on Workplace Mental Health at the United Nations International Labour Organization in Geneva, Switzerland, which promoted awareness of the CSTS' role in organizational education and consultation; she will also speak at an international conference for employee assistance professionals in Ottawa, Canada. ***The OPEP worked with the CSTS faculty to introduce a health promotion campaign for the DoD community to enhance healthy lifestyles for families.*** A *Holiday Homecoming Fact Sheet*, which received excellent feedback, has led to a USU-wide promotion campaign to be launched in 2004. This campaign, *Courage to Care*, will help to position USU as one of the leaders in uniformed health care education within the DoD community.

The CSTS Neuroscience Program grew during 2002-2003. Funding was received from DoD, during 2002, to begin laboratory renovations and to obtain stimulus presentation equipment for functional magnetic resonance imaging (fMRI). **Elizabeth Osuch, M.D. Assistant Professor, USU SOM Department of Psychiatry**, received an R01 Grant from the National Institute of Mental Health to study *Functional Neuroimaging in Acute Stress Disorder and PTSD*. Doctor Osuch's research focuses on the neurobiological and behavioral effects of exposure to extreme environmental stress, which includes functional brain imaging studies in traumatized populations, such as individuals who have been in motor vehicle collisions. Her research also includes a major, new national initiative to develop a postmortem brain tissue collection for the study of the pathology of exposure to extreme stress.

***National and International Educational Initiatives.*** CSTS has made great strides in educational initiatives involving national and international agency collaboration on: training health care professionals in disaster and humanitarian relief; understanding the traumatic consequences of weapons of mass destruction; and, innovative public education programs reaching new audiences and enhancing force health protection and healthy lifestyles. The CSTS sponsors trauma and disaster-related fellowship programs, to include the Visiting Science Fellowship Program and the Military Psychiatry Fellowship Program. Graduates of these programs serve as catalysts for research, educational, and clinical programs throughout the World. Beginning in 1998, when the Center sponsored a visiting scientist from the Japanese National Defense Medical College, the *CSTS International Training Programs* have hosted a total of ten scientists from numerous nations, to include: Japan; Singapore; Greece; Korea; Germany; the Republic of Georgia; Italy; and, Israel.

Consistent with the DoD requirement to provide behavioral health expertise for mass casualty responses, population-oriented behavioral health programs, and behavioral health epidemiology, the

Department of Psychiatry and the CSTS, developed a new two-year *Disaster/Preventive Psychiatry Fellowship* sponsored by the National Capital Consortium and approved by the United States Army. The program matriculated its first Fellow in the Summer of 2003. In addition to applying through the established Graduate Medical Education route, candidates must also apply to the USU SOM Graduate Education Programs and be accepted by the USU Master of Public Health Program for their first year. The second year is spent with the Department of Psychiatry's CSTS and includes didactic experience, research, and rotations at other institutions.

**Lieutenant Colonel (P) Elspeth Cameron Ritchie, MC, USA, the first CSTS Disaster Psychiatry Fellow**, established an international presence working with State Department psychiatrists to improve plans for mental health interventions following the terrorist attacks in the United States. She presented in Israel on current efforts to respond to the mental health requirements due to the impact of terrorism and attended meetings in Egypt and Baghdad, Iraq, on assessing the mental health requirements and resources of Iraq. In July of 2003, the CSTS sponsored a meeting of national and international leaders at USU to identify the mental health care needs and requirements in Iraq.

**Carol S. Fullerton, Ph.D., Associate Professor (Research), USU SOM Department of Psychiatry, CSTS Scientific Director**, supervised the educational experiences of two CSTS International Disaster Psychiatry Fellows from Italy and the Japanese Defense University, as part of CSTS' International Training Programs.

**Rafaella Querci, M.D., CSTS International Disaster Psychiatry Fellow**, presented in Milan, Italy, on the *Psychological Impacts of Bioterrorism*, as part of an international agency coordination and training effort. Doctors Carol Fullerton, Robert Ursano, and Colonel Molly J. Hall successfully collaborated with the **Italian Embassy Scientific Attache, Professor Vittorio Daniore**, to develop and conduct the first meeting establishing a trans-Atlantic educational initiative between the United States and Europe to combat bioterrorism through disaster psychiatry. The conference, held at the Italian Embassy in Washington, D.C., on November 24, 2003, introduced the public health issues of bioterrorism to the European Community by employing a *space bridge* linked to Europe, which further achieved the distance learning objectives of USU. The conference program included presentations from **Professor Girolamo Sirchia, Minister of Health of the Republic of Italy**, and **Professor Antonio Cassone, Director, Department of Infectious Diseases, Istituto Superiore di Sanita** (the equivalent of the United States National Institute of Health), in Italy.

**Jun Shigemura, M.D., CSTS International Disaster Psychiatry Fellow from the Japanese Defense University**, was involved in research and humanitarian work with the United States Embassy of Japan and the Japanese Americans' Care Fund, a non-profit organization for Japanese Americans, to study relocation stress and mental health outcomes among Japanese residents in the Washington, D.C. area, as well as workplace trauma and disaster and terrorism preparedness and response in Japanese corporations.

Recently, the CSTS has also been requested to provide training, education, and consultation to Independent Counseling and Advisory Services (ICAS), which is based in the United Kingdom. ICAS provides international consultation to over 300 employee assistance programs and is the *World's* largest provider of critical incident response and management of trauma and violence in the workplace. Among

programs discussed were: education of first responders; education of leadership and managers; and, the development of preparedness plans for the workplace.

**Community Activities.** During 2002-2003, the CSTS forged an alliance with the Washington, D.C. Department of Mental Health by providing training on preparing and administering a smallpox vaccination plan and co-sponsoring a one-day conference on Terrorism at the George Washington University Medical Center. The conference was attended by over 150 health care providers and is being produced on a CD-ROM as an educational and training resource. The CSTS is also collaborating with the Washington, D.C. Department of Mental Health in a study to understand the impact of the Sniper attacks of 2002.

The CSTS Art and Public Health Education Project, under the leadership of **Doctor Carol Fullerton** and **Ms. Cathy Levinson**, produced a CD-ROM for distribution to area school systems and a curriculum targeted for elementary school students. And, the Adolescent Art and Public Education Campaign to Highlight Hope in a Time of Fear held a *Gallery Showing of Young Artist's Work*, at Glen Echo, Maryland. In recognition of the power of this outreach tool, Catholic University invited the CSTS faculty to present the work to their Graduate School of Social Work. CSTS joined **Everett Alvarez, Jr., J.D., Chair, USU Board of Regents**, and **Mrs. Tammy Alvarez**, collaborators with CSTS on a Photography Project on Human Resiliency, as they participated in the *Open Doors Gallery*, which showed Mrs. Alvarez' work on prisoners of war (POWs) from the Vietnam War.

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**The USU School of Medicine Department of Preventive Medicine and Biometrics, Graduate Education in Preventive Medicine and Public Health, and the Centers for Preventive Medicine and Public Health.**

**Graduate Education in Preventive Medicine and Public Health.**

**USU's Public Health Program, with its emphasis on community health, ranks sixth in the Nation according to U.S. News & World Report's 2004 rankings of America's Best Graduate Schools... USU's program ranked just below Tufts University, the Medical College of Wisconsin, Northwestern University, Oregon State University and the University of Rochester on the list of the top 10 community health master or doctorate programs.**

- USU Medicine, U.S. News & World Report Ranks USU Graduate Programs in Top Six, Fall 2003, page 5.

The SOM Department of Preventive Medicine and Biometrics (PMB) offers programs of study leading to the graduate Degrees of Master of Public Health (MPH), Master of Tropical Medicine and Hygiene (MTM&H), Master of Science in Public Health (MSPH), Doctor of Public Health (DrPH), and Doctor of Philosophy (Ph.D) in Medical Zoology and Environmental Health Sciences. Between 1983 and April of 2004, PMB has graduated 487 individuals and granted 430 - MPH; 5 - MSPH; 26 - MTM&H; 1 - MS; 15 - DrPH; and, 10 Ph.D Degrees. During 2003, 44 Preventive Medicine and Biometrics students were awarded advanced degrees: 2 Doctors of Philosophy; 3 Doctors of Public Health; 38 Masters of Public Health; and, 1 Master of Science in Public Health. The PMB Graduate Programs have undergone considerable growth over the past several years and have approximately 59 students currently enrolled in the Master and Doctoral Programs. With its stated mission *to produce knowledgeable and highly skilled public health professionals in support of the health and global mission of the Uniformed Services*, the PMB Department has sought to be responsive to the needs of its customers; and, this is reflected in the types of programs and training offered. During 2003, PMB continued its collaborative educational agreements with the Walter Reed Army Medical Center Preventive Medicine Residency Program and Internal Medicine Fellowship Program, the Army Program for Training in Health Services Administration, the United States Army and the United States Public Health Service Laboratory Animal Medicine Program, the Navy Dental Research Institute Program in Dental Public Health, and the Indian Health Service Environmental Health Training Program. In addition, the PMB Department is affiliated with the United States Army and Navy Biomedical Research Laboratories located in: Bangkok, Thailand; Rio de Janeiro, Brazil; Nairobi, Kenya; Cairo, Egypt; Jakarta, Indonesia; and, Lima, Peru. The MTM&H Program includes a six-week overseas clinical experience in tropical medicine; the graduate students find excellent opportunities at these overseas laboratories. A research program also exists under an agreement with the Ministry of Health in Belize. Several doctoral students have found opportunities to do research in these various locations.

***Demographics of the Graduate Program in Public Health.*** The class composition, as of April 2004, for the Graduate Programs in Public Health consists of 50 Master Degree-level students (MPH,

MTM&H, and MSPH); these programs are designed for students with at least three years of experience in a health-related field. Forty-eight of these students are in the Uniformed Services and two are civilians. *The 50 Master Degree-level students include:* 21 - Physicians; 2 - Veterinarians; 5 - Air Force International Health Specialists; 4 - Environmental Health Officers; 3 - Air Force Bioenvironmental Engineers; 6 - Health Physics Track; 2 - Air Force Public Health Officers; 2 - Indian Health Service Environmental Health Training Program; 2 - Aerospace Physiologists; 1 - Attorney (civilian); 1 - Pre-Veterinarian (civilian); and, 1 - Clinical Psychologist. First-year residents in General Preventive Medicine/Public Health and Occupational and Environmental Medicine take courses and meet all of the requirements for the MPH or MTM&H Degrees as part of their residency training.

*The 9 doctoral-level students include:* 4 individuals (1 uniformed officer; 3 civilians) who are Doctor of Public Health candidates; and, 5 individuals (4 uniformed officers; 1 civilian) who are Doctor of Philosophy candidates.

**Accrediting Entities.** The Graduate Education Programs offered by the PMB Department, as an integral part of the SOM and the SOM Office of Graduate Education, are included in the on-going accreditation granted by the **Commission on Higher Education of the Middle States Association of Colleges and Schools** to the University. In addition, the PMB graduate programs are nationally accredited by the **Council on Education for Public Health (CEPH)**. CEPH is the recognized accrediting body for graduate schools of public health and graduate programs in community health education and community health and preventive medicine. The PMB Graduate Programs in Public Health were initially accredited by CEPH in 1985 and were last reviewed in 1998. The CEPH report, following the June 1998 site visit by a team of external evaluators, noted that *the values of the institution and the philosophy of military medicine are an exceptionally good fit with the values and philosophy which underlie public health and preventive medicine. The program has strong ties to the military community, both locally and worldwide, and the instructional programs have particular relevance to the needs of the Uniformed Services to which the program graduates will return after their training. The curriculum is quantitatively-oriented and rigorous.* The PMB Graduate Programs in Public Health are fully accredited through 2005.

Following the CEPH accreditation process in 1998, an *ad hoc* committee was established to articulate the mission, goals, and objectives of the PMB Graduate Programs. The PMB Department has continued to use this document as part of a dynamic process of program review and evaluation for continuous quality improvement, including efforts to identify measurable program outcomes. In addition to the rigorous, quantitatively-focused curriculum (60 credit hours), *students are required to complete a 108-hour practicum experience*, as well as an independent project. Greater emphasis has been placed on basic research methodology, and students are encouraged to present their research results at scientific meetings and to submit manuscripts to peer-reviewed journals for publication. The **Program Director, Colonel Gary D. Gackstetter, DVM, Ph.D, MPH, BSC, USAF, Assistant Professor, USU SOM Department of PMB**, can be contacted by e-mail at <[ggackstetter@usuhs.mil](mailto:ggackstetter@usuhs.mil)> or at <[www.usuhs.mil/pmb/pmb.html](http://www.usuhs.mil/pmb/pmb.html)>.

In response to the CEPH requirement for a practicum or field experience as part of the MPH Program, a new departmental program office was established to direct graduate student activities related to the practicum experience and the required MPH independent project. During their 108-hour practicum experience, students have the opportunity to apply knowledge and skills learned in the classroom

within various *real world* settings at public health agencies and other health-related organizations offering practical experiences as a planned, supervised, and evaluated educational activity. Examples of practicum sites include the following: Headquarters, United States Air Force Safety Center; the National Security Administration; the Pentagon, Defense Medical Oversight Committee; the Food and Drug Administration's Center for Veterinary Medicine; the State of Maryland's Department of Health and Mental Hygiene; the United States Consumer Product Safety Commission; Clinical and Program Policy in the Office of the Assistant Secretary of Defense for Health Affairs; and, the White House Commission on Complementary and Alternative Medicine Policy. **Tomoko (Tonie) I. Hooper, MD, MPH, Assistant Professor, USU SOM Department of PMB**, is the Director of Graduate Research and Practicum Programs; and, she also serves as the Deputy Director for the Department of PMB's Graduate Education Programs.

Finally, the USU SOM Department of Preventive Medicine and Biometrics submitted an application for accreditation from the *Accreditation Board for Engineering and Technology (ABET)* in support of PMB's Environmental and Occupational Health Division in October of 2003; the review process by ABET proved to be a positive one. The University expects to receive a formal response from ABET in July of 2004.

Outstanding Responsiveness to the Continuing Medical Education Requirements of the TriServices.

***The Occupational Ergonomics Program.*** Recognizing the importance of occupational musculoskeletal injuries among military personnel and in response to the Army's request for specialty training in occupational ergonomics within the MPH Program, a new area of concentration was established, the Occupational Ergonomics Concentration in the Department of Preventive Medicine and Biometrics Master of Public Health Program. The first student entered this program in July of 2002, and graduated in June of 2003. *The Occupational Ergonomics Program is the only established graduate-level injury prevention program in the Department of Defense;*

***The International Health Specialist (IHS) Program*** was initiated in 1999, under the guidance of **Lieutenant General Paul K. Carlton, Jr., Surgeon General of the Air Force**. Numerous After Action Reports (AARs) indicated that Humanitarian Assistance (HA) and Disaster Response (DR) missions would benefit if members of the Air Force Medical System (AFMS) received additional training. The goal of the IHS Program is to prepare regionally-focused military medical experts who can help prepare uniformed forces for operational contingencies and the global response to medical crises during war and/or peacetime deployment. The AFMS members may be selected for full-time IHS assignments in support of Combatant Commander's Theater Engagement Plans. Individuals selected for the positions will be prepared with short courses and rotations as well as degree programs, i.e., the Master of Public Health (MPH) Degree with a regional, humanitarian assistance, disaster response, or international health focus. A memorandum of understanding was signed between the Office of the Air Force Surgeon General and USU during November of 2001, to design, test, and implement an educational and academic curriculum for the IHS Program;

***The USU/SOM MPH Program*** is a 12-month program consisting of 60 quarter credit hours; in addition to the MPH requirements, the IHS students are required to take: International Health I; International Health II; Medical Anthropology; Joint Medical Operations and Humanitarian Assistance; Public Health Issues in Disasters; Historical Perspectives of International Health; and, Introduction to Epidemiology II. Furthermore, IHS students must also select three additional electives from the following courses: Program Planning & Development; Principles and Practice of Tropical Medicine; Malaria Epidemiology and Control; Travel Medicine Practicum; Biostatistics II; and, Deployment Environmental Exposures. IHS graduates are expected to use their acquired quantitative and analytical skills in biostatistics and epidemiology to identify and measure community health needs and to investigate the impact of biological, environmental, and/or behavioral factors in solving public health problems. ***Each graduate will understand the components, operations, and financing of health delivery services and have the administrative skills to plan, analyze, manage, and improve public health programs for the Uniformed Services.*** The graduate will also understand the role that the United States military and other organizations and agencies play in addressing global health issues. And, the graduate will be able to apply public health principles toward assessing international health needs and in the planning, conducting, and evaluating of international health-related activities and projects. Four students matriculated into the program during 2002; and, all four graduated in June of 2003; currently, there are four additional IHS students who are projected to graduate in June of 2005;

***The Ph.D. Program in Environmental Health Science*** was recently established in response to identified needs within the Uniformed Services. The first Ph.D. in Environmental Health Science was granted in May of 2003. Three active duty Naval officers, are currently enrolled in the Ph.D. program;

***The Master of Science in Public Health (MSPH) Program*** has graduated five degree candidates between 2000 and April of 2004; during 2003, one officer graduated from the Health Physics specialty of the MSPH. Thirteen Navy, Air Force, Army, and Public Health Service officers are currently enrolled in the Environmental and Occupational Health and the Health Physics specialties in the MSPH Program; four of these students are expected to graduate during 2004. Students in both the Ph.D. and MSPH Programs design and conduct research with military relevance. ***Past and current projects have included the development of chemical warfare detection methods and instrumentation.*** The students and program faculty work closely with the Services and other Federal and international organizations to identify and address current needs for operational forces and emergency responders;

***The Aviation Physiology Specialty Track in the Master of Public Health Program*** has been offered for the past four years. The track consists of 5 courses: Aviation Operational Physiology I and II; Aviation Human Factors; Aviation Physiology; and, Special Topics in Aviation Physiology. This course of study prepares students for a career in the military as an Aviation Physiologist. Since 1999, 7 students have completed the program and three students have audited the course. Both of the students, who participated in the program during the 2000-2003 term, were accepted into the United States Navy's Aerospace Physiology Program. Each year, the program has expanded; this year's emphasis incorporated additional mishap investigation techniques; plans are to continue in this area throughout 2004, to include establishing a modeling segment. And, plans are also in place to develop a course in Hyperbaric Medicine during 2004;

***The TriService Advanced Military Tropical Medicine Course*** has been offered at USU, beginning in 1996, through the Summer of 2003. During 2003, 71 military medical officer students were trained in operational military medicine, consisting of four weeks of lectures and laboratories in the advanced diagnosis and treatment of tropical diseases. Approximately 70 lecturers provided over 106.5 hours of didactic instruction. To date, over 425 students have completed the course. One hundred and thirteen continuing medical education hours (CME) were awarded during the past year; the overseas field missions were attended by 38 medical officers (El Salvador - 17; Bolivia - 8; Peru - 8; Cairo - 3; and, Thailand - 2);

***The Tropical Medicine and Travelers' Health Course*** is offered as a 12-week course during the Spring Quarter of the MPH Program. It includes lecture, seminar, laboratory and case-based curriculum approved by the American Society of Tropical Medicine and Hygiene and leads to eligibility for the qualifying examination in Tropical Medicine and Travelers' Health. To date, 31 uniformed medical officers and 11 civilian physicians have completed the course;

***The Diagnostic Parasitology Course*** is offered as a series of lectures and hands-on laboratory sessions for individuals wishing to study parasitic infections in humans. Uniformed and civilian medical technologists and physicians from all parts of the world have completed this course. Participants for the course have included: United States Embassy personnel from Asian and African countries sent by the United States Department of State; members of the Peace Corps; a medical doctor from the Japan Ground Self Defense Force; and, civilians from various foreign and domestic health related organizations. Since 1988, over 290 individuals have taken the course, to include 10 individuals who took the course during 2003; and,

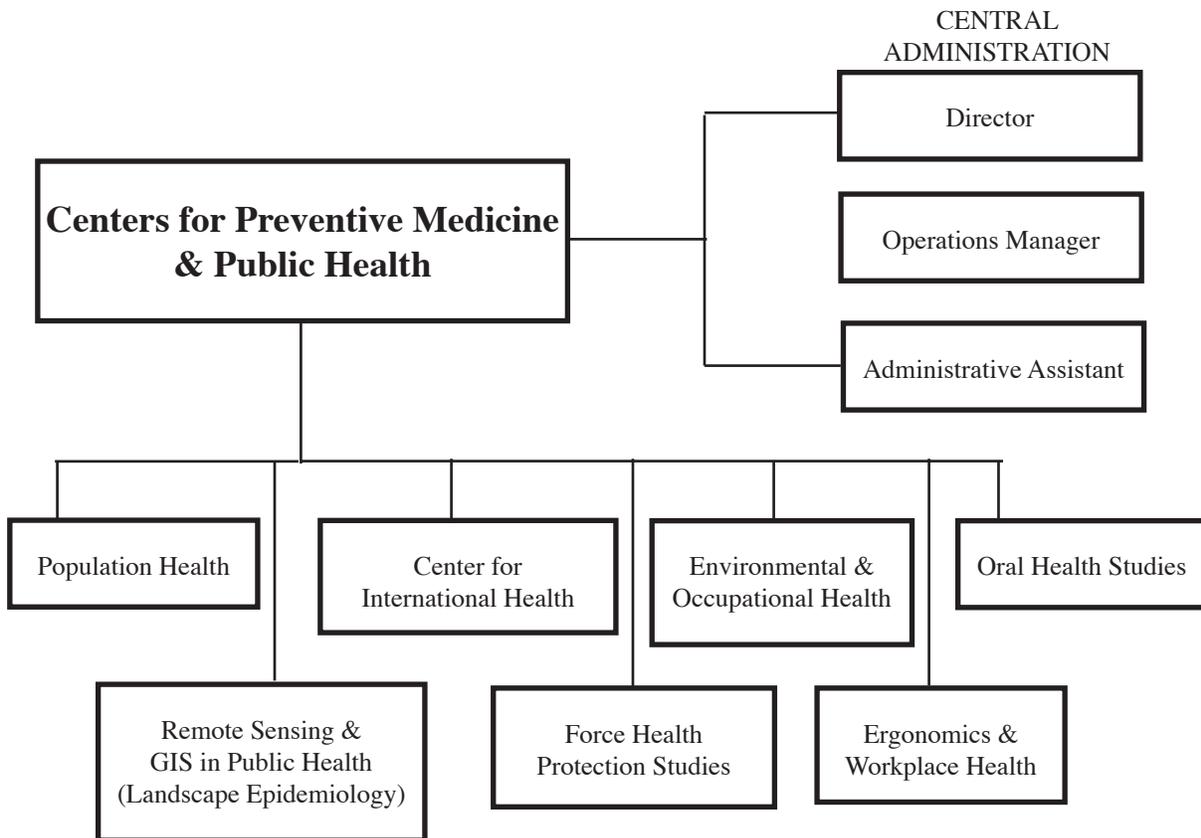
***Critical Decision Making for Medical Executives: Keys to Improving Population Health***, a five-day training course held four times each year, responds to the Congressional mandate that current and prospective DoD health care leaders receive training in health care management and administration. The focus of the course is to equip health care professionals with the knowledge and tools needed to integrate clinical and business decisions to improve health care delivery and population health. To date, 34 sessions have been held in the TRICARE Regions and approximately 950 senior officers have been trained for the MHS.

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**Centers for Preventive Medicine and Public Health.**

*The Centers for Preventive Medicine and Public Health (CPM/PH) are an entity within the USU SOM Department of Preventive Medicine and Biometrics.* The seven Centers, under the direction of **Kenneth E. Kinnamon, D.V.M., Ph.D., Professor, USU SOM Department of Preventive Medicine and Biometrics,** operate under terms of a Memorandum of Understanding with the Henry M. Jackson Foundation for the Advancement of Military Medicine. The Centers combine broad expertise in research, consultation, education, training, and clinical preventive medicine and public health; this expertise is used to develop data bases and analytical methodologies, prepare innovative curricula, and evaluate processes and outcomes in clinical practices. The following seven Centers provided consultative, research, and educational services to the TriServices during 2003:

- 1) The Center for Application of Remote Sensing and Geographic Information Systems (GIS) in Public Health (Landscape Epidemiology);
- 2) The Center for Environmental and Occupational Health;
- 3) The Center for Ergonomics and Workplace Health;
- 4) The Center for Force Health Protection Studies;
- 5) The Center for International Health;
- 6) The Center for Oral Health Studies; and,
- 7) The Center for Population Health.



## **The Center for Application of Remote Sensing and Geographic Information Systems in Public Health (Landscape Epidemiology).**

Background. Remote sensing has an increasingly prominent role in the improvement of public health programs; as a result, a significant number of graduate students in public health are seeking formal training and experience in remote sensing technology. The Center's earlier National Aeronautics and Space Administration (NASA)-supported research and equipment, along with additional equipment provided by a special NASA grant for the purchase of hardware and software, have been used to establish a Center in which remote sensing technology is applied to emerging and re-emerging infectious diseases and environmental health.

Mission. The Center provides faculty expertise and the software and hardware necessary for students and faculty to engage in remote sensing (RS) and geographic information systems (GIS) research projects in public health.

***Donald R. Roberts, Ph.D., Professor, USU SOM Department of Preventive Medicine and Biometrics, served as the Director for the Center during 2003.*** Doctor Roberts is a member of: the American Society of Tropical Medicine and Hygiene; the Society of Vector Ecology; and, the American Mosquito Control Association. He is interested in developing new and innovative models for malaria control and in applied research for testing different approaches to controlling malaria. For many years, he has studied the behavioral responses of malaria vectors to insecticide residues and this research has culminated in a new conceptual model for actions of insecticides in malaria control programs; these efforts have resulted in numerous scientific publications and extensive press coverage. Doctor Roberts continues several lines of funded research, including a National Institutes of Health/National Science Foundation funded research program in Belize on assessing the impact of anthropogenic environmental change on malaria; and, malaria vector ecology, a NASA funded research program to apply GIS and remote sensing technologies to the study of vector-borne diseases. Doctor Roberts also serves as the Office of the Army Surgeon General representative (alternate) to the Armed Forces Pest Management Board. And, he serves as the DoD representative on the Department of the Interior's National Invasive Species Council Interagency Subcommittee on Early Detection and Rapid Response.

Educational Activities. The Center offers a four-hour credit course entitled, *Remote Sensing and GIS Methods in Public Health*, and non-credit training classes in remote sensing and GIS to students and faculty. Both credit and non-credit courses cover the basic elements usually taught in remote sensing and geographic information systems (GIS) with emphasis on the areas most relevant to public health (such as classification, raster GIS modeling, and integrating field maps with remotely sensed images). The credit course, first presented during the Winter Quarter of 1998-1999, has been offered in the Fall Quarters of 1999 through 2003. The course covers remote sensing, image processing, GIS, and spatial analysis methods as applied to the field of public health. The goal of the course is to provide students with a combination of theoretical background, example applications in the published literature, and hands-on experience in using hardware and software to enable the students to use the techniques discussed in class in a knowledgeable way in their research and future work in public health. The lectures cover types of

remote sensing imagery, image processing, photointerpretation of various imagery types, application of remote sensing to public health, the overview and history of GIS, GIS data structures, entering data into a GIS geographic analysis, cartographic presentation, and applications of GIS to public health. The laboratory provides students with hands-on experience in the public health uses of image processing and GIS software. The students and faculty have been enthusiastic about the course; the next presentation of the course is scheduled for the Fall Quarter of 2005.

***Computer and Equipment Support for Research Activities.*** Recently funded research proposals use the Center computers to perform research. A proposal funded by the National Oceanographic and Atmospheric Administration (NOAA) is studying climate change and its effect on Bartonellosis in Peru. Another proposal funded by the National Institutes of Health (NIH) studies the effect of human-induced change on mosquito habitats in Belize. Both use Center computers in support of research activities. The former grant is for a three-year period and the latter is a five-year grant. The Center's printers are being used to assist in the publication of research results from the Center. As the training and course work continue, the Center staff anticipates that students and faculty will be adding new projects to the Center in both infectious disease and environmental health studies.

**Malaria Research in Belize.** The Center has continued studies in Belize to apply remote sensing and geographic information systems to the National Malaria Control Program. The Center has been working on malaria in Belize since 1995, with funding from NASA. The Center has received a five-year grant from the National Institutes of Health (NIH) along with the University of California, Davis, to continue its work in Belize. Research under the NIH grant is focused on studying human-induced change, such as deforestation along streams and changes in marsh vegetation due to agricultural runoff, and the effect these changing environments have on the distribution of malaria in Belize. One DrPH student is currently using the historical malaria data collected during the earlier Belize research in her dissertation. Another Ph.D student in Medical Zoology is contributing to the mapping of deforestation along rivers under the Belize grant and will use this study as part of her dissertation.

**Malaria Research in Thailand.** During 2001, work began on remote sensing and geographic information systems to define spatial relationships between mosquitoes, humans, and malaria incidence in Thailand. This study is a collaboration among investigators with the Division of Tropical Public Health in the USU SOM and Army researchers at the Armed Forces Research Institute of Medical Sciences (AFRIMS), at Bangkok, Thailand; it is funded by the United States Army Medical Research and Material Command. The principal investigator, Doctor Leon Roberts, presented the collaborative research at the Annual Meeting of the American Society of Tropical Medicine and Hygiene in November of 2002. During Fiscal Year 2004, this research project will be expanded to study the spatial relationships of scrub typhus in Thailand.

**Bartonellosis Research in Peru.** Work was also continued during the past year on applications of remote sensing to study bartonellosis in Peru. The work in Peru was initiated in 1997, in conjunction with the research of other investigators, within the Division of Tropical Public Health in the USU SOM and Navy researchers at the Navy Research Laboratory in Lima, Peru. In 2000, a three-year grant to look

at climate variables and the incidence of bartonellosis was received from NOAA. This work is being done with two climatologists at NASA's Goddard Space Flight Center.

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## **The Center for Environmental and Occupational Health.**

Mission. The Center for Environmental and Occupational Health promotes excellence in programs focusing on environmental and occupational health by providing research, consultation, education, and training support to government entities and educational institutions. Areas of interest pertaining to environmental and occupational health include: policy; education and training; health risk and hazard assessment standards setting; resource management; regulatory compliance; pollution prevention; and, environmental restoration.

***Lieutenant Colonel Thomas A. Neal, USAF, MC, MPH, Assistant Professor, USU SOM Department of Preventive Medicine and Biometrics, served as the Director of this PMB Center during 2003.*** Doctor Neal is a member of both the American College of Occupational and Environmental Medicine and the American Society for Laser Medicine and Surgery. Four courses in Graduate Education Programs are taught by Doctor Neal; he is: the Course Director for *Essentials of Toxicology*; the Co-Course Director of *Occupational and Environmental Epidemiology*; a lecturer in *Environmental Health*; and, an MPH/MSPH Student Advisor for *Directed Studies & Research*. Within the SOM curriculum, Doctor Neal serves as the Director of the second year *Preventive Medicine Occupational Medicine Module*. He is the Principal Investigator on the grant, *Enhancement Through Operational Research of the U.S. Army's Global Preventive Medicine Program*; this is a five-year follow-on research project, from April of 2001 through March of 2006, for the United States Army Center for Health Promotion and Preventive Medicine (CHPPM).

### Research Activities.

***Indian Health Service Education and Training Support Program.*** At first, the principal output of this program was the administration of a one-year Environmental Health Post-Graduate Fellowship on behalf of the Indian Health Service of the United States Public Health Service. In July of 2001, two students from the Indian Health Service (IHS) began their studies at USU in the one-year Master of Public Health (MPH) Program; the two students received their MPH Degrees in June of 2002. Throughout the Fall of 2001, and the Spring of 2002, **Colonel Robert Lipnick, MS, USA, Division of Environmental and Occupational Health, PMB**, coordinated with the IHS in the development of a variety of rotations/courses that would compose a second year of Environmental Health Post-Graduate training. Due to that effort, the two initial students successfully experienced a second year of study, which concluded in 2003.

***Enhancement Through Operational Research of the United States Army's Global Preventive Medicine Program.*** This project is a follow-on to an original grant initiated in July of 1995, which terminated on March 31, 2001. The original grant consisted of nine separate research initiatives: health risk assessment; health promotion; health hazard assessment; occupational and environmental medicine; environmental compliance and pollution prevention; medical entomology; radiation protection; preventive medicine and readiness planning; and, preventive medicine planning and integration. Five

research tasks were to be accomplished: conduct a program assessment; develop alternative program change methodologies; develop measures of merit to evaluate alternative methodologies; implement and evaluate the selected methodology; and, publish results. The total funding level was set at \$21.362 million. The research took place at the United States Army Center for Health Promotion and Preventive Medicine (CHPPM). During the five and one-half years of the original project, over 500 publications were produced, including technical reports and assessments, peer-reviewed and other publications, training session materials, studies, and professional meeting presentations.

Because of the success of the original grant project, CHPPM reinitiated a follow-on project with USU and the Henry M. Jackson Foundation (HJF) that began on April 1, 2001, as a contract effort. Funding, in the amount of \$4.2 million for the first year (April 2001 through March 2002) of the follow-on project, was received. The follow-on project entitled, *Enhancement Through Operational Research of the United States Army's Global Preventive Medicine Program*, is divided into ten study areas: 1) Health Risk Assessment; 2) Health Promotion; 3) Health Hazard Assessment; 4) Epidemiology and Medical Surveillance; 5) Environmental Health and Compliance; 6) Medical Entomology; 7) Radiation Protection; 8) Ergonomics; 9) Clinical Preventive Medicine; and, 10) Informatics. A total of 58 personnel were employed through the HJF for this project. At the completion of the first year, the project was re-established as a new one-year contract effort on April 1, 2002, with four follow-on option years built in. Funding in the amount of \$3.2 million was received for the first year of the new contract (April of 2002 through March of 2003); \$2.8 million was funded for the second year (April of 2003 through March 31, 2004). As of September 30, 2003, 31 personnel were employed through the HJF to work on the project. The reduction from 58 personnel primarily occurred through the conversion of HJF employees to temporary employees at CHPPM with Civil Service status.

***Development of Environmental Organic Contaminant Sampling and Analysis Methods.*** The Center's research group studying field-detection methods for military relevant chemicals has been focusing on three areas: field detection methods for military relevant compounds; instrument development; and, training for field chemical detection.

***Field Detection Methods for Military Relevant Compounds.*** Research has focused on the use of solid phase micro-extraction (SPME) coupled to gas chromatography-mass spectrometry (GC-MS) as a field expedient method for the detection of cyanide in water. Collaborating with the Armed Forces Radiobiology Research Institute (AFRRI) and Defence Research and Development of Canada (DRDC)-Suffield, ***PMB Center researchers have completed studies on dynamic SPME sampling for quantitative analysis of airborne Sarin (GB).*** Using a concept previously identified in scientific literature, a dynamic sampler was designed and built at AFRRI and challenged with GB at DRDC-Suffield. The sampler was found to provide linear results that closely estimated the actual airborne concentration of GB.

An MSPH student, in conjunction with the Federal Bureau of Investigation Forensic Research Laboratory and DRDC-Suffield, has initiated research utilizing a commercially available low thermal mass, resistively heated column for the rapid separation of complex organic mixtures and chemical warfare agents in the field. ***This work has demonstrated the ability to separate and identify a complex mixture of five airborne chemical warfare agents in under three minutes.*** This work has been coupled with the Center's collaboration with the Soldier Biological Chemical Command and DSO National

Laboratories, Singapore, for rapid field detection of low concentrations of chemical warfare agents in water. Another MSPH student, funded by the United States Army Center for Environmental Health Research, is conducting research on the use of SPME/GC-MS for the detection of pesticides in water.

*Instrument Development.* Research is currently underway that will enhance field analytical capabilities through the enhancement of existing equipment and the development of a new, rapid GC-MS. An MSPH student is collaborating with Inficon, manufacturer of the Hapsite portable GC-MS. This effort focuses on the development of a SPME injection port for the Hapsite. This instrument is currently limited to analysis of samples already in the gas phase. This will enhance the capabilities of the instrument by enabling it to analyze non-gas phase samples (i.e., aqueous samples).

The most current instrument development effort is funded by MARCORPSYSCOM and is being conducted in collaboration with RVM Scientific. This effort will couple a commercially available resistively heated, low thermal mass (LTM) GC column directly to a mass spectral detector (MSD). Currently, this technology is used as an add-on to the existing air-bath GC oven. ***The direct coupling of the LTM column to an MSD will provide an analytical instrument capable of extremely rapid separations with a significantly reduced footprint, which is of great importance for field deployment.***

*Training for Field Chemical Detection.* The EOH research group continues to provide focused GC-MS training for military field GC-MS operators. The formal, 12-week GC-MS Course, developed and taught last year, is being conducted again for the USMC Chemical Biological Incident Response Force (CBIRF). ***Weekly training evolutions have continued with the CBIRF throughout 2003, as well as faculty and student involvement in CBIRF's live-agent training at DRDC-Suffield.***

***Triage and Treatment of Laser Eye Injury on the Modern Battlefield.*** This research will study five task areas:

*Task 1.* This task will make major equipment purchases, which will include high energy laser sources operating in the 1.3 to 2.0 um spectral region, and support equipment (i.e., optics, detectors, and analysis equipment). Funding was accomplished in March of 2003.

*Task 2.* This task will determine *in vitro* and *in vivo* thresholds for injury at 1.3, 1.5, and 2.0 um wavelengths. This information will be used to determine: correlations between gross appearance of lesions following *in vivo* and *in vitro* exposures; correlations of biomarker expression between *in vivo* and *in vitro* exposures; and, theoretical and predictive models of the biophysical damage mechanisms to tissue from these wavelengths.

*Task 3.* This task will utilize histomorphometric and biomarker data and other information from Task 2 to develop battlefield treatment techniques for thermal injuries (linear phenomena) at, or near, the threshold for injury. ***Battlefield treatments will focus on using supplies/pharmaceuticals already carried by a field medic.*** Special emphasis will be made on contraindicated battlefield treatments.

*Task 4.* This task will determine thresholds for non-linear phenomena in the cornea. These non-linear effects are expected to be mechanically more disruptive to tissue, causing damage that is consistent with tearing and ripping of tissue rather than the thermal damage expected in Task 2. This information will be used to determine: extent and permanency of tissue damage through *in vivo* and *in vitro* exposures; biomarker correlation between *in vivo* and *in vitro* exposures from the more severe, non-linear effects induced injuries; and, theoretical and predictive models of the biophysical damage mechanisms to tissue from non-linear effects.

*Task 5.* This task will utilize histomorphometric and biomarker data and other information from Task 4 to ***develop battlefield treatment techniques for non-linear injuries significantly above the ED threshold for injury.*** Battlefield treatments will focus on using supplies/pharmaceuticals already carried by a field medic. Special emphasis will be made on contraindicated battlefield treatments, with a goal to return the service member to active duty.

***Health Effects of the 3800 nm Laser.*** This project has yielded a multitude of information in three main areas: artificial skin, pig skin, and human skin reactions:

*Artificial Skin.* Studies performed with artificial skin were performed in conjunction with the University of Illinois. Histology and gross effects were used to predict the effects of the laser on pig skin. This information provided a starting point for the animal models; the initial ED was ascertained based on this model.

*Pig Skin.* Studies have found the ED for various types of skin reactions. Each reaction was characterized by photograph; and, analysis using histology is in progress. ***This information, in conjunction with the artificial skin findings, will be utilized to help set new standards for skin exposure*** in the ANSI Z136.1 *Safe Use of Lasers* standard.

*Human Skin.* The thresholds for human skin sensation to this laser was also investigated, in order to determine if aversion response is possible. This investigation is in its preliminary stages; approximately half of the subjects have been exposed. ***This information will also be utilized to help revise and revisit aversion response as it is related to the safety standards currently in place.***

***Laser Injuries.*** This project was successful in hiring a dedicated technician in May of 2003; two graduate students were also assigned to the project. One graduate student is ascertaining the best methodology to determine useful information for the Air Force from available databases; she will continue on the project until June of 2004, when she graduates. This graduate student, **Lt. Krystyn Clark, USAF**, was a keynote speaker at the International Laser Conference; multiple individuals noted that hers was the best presentation at the conference. Lt. Clark has been strongly encouraged by the safety community to rapidly publish the data; she has already submitted an abstract for SPIE (Photonics West) for January 2004, and the International Radiation Protection Association's Conference in Madrid, Spain, during 2004. She will also present her work, in 2004, at the annual Health Physics Society meeting in Washington, D.C. A second graduate student began assisting on the project in September of 2003; he will be investigating the medical surveillance aspects of this project. The Center has long

sought to perform a detailed analysis of the medical surveillance efficacy currently in place; this graduate student is interested in reviewing the efficacy and the basis for the examinations.

***The Military Human Exposure Assessment Study.*** The Center investigator has been working with **Major Lisa May, DrPH candidate** to complete research in the area of human biomarkers and military deployments. Following receipt of Institutional Review Board approvals from USU and CDC, Major May solicited 51 individuals to volunteer in this research. Study volunteers provided informed consent and completed questionnaires; they also provided blood and urine pre-, during, and post deployment to Bosnia during March through September of 2002. Environmental samplings of air, water, and soil were also gathered. All samples were analyzed for chemical warfare agents (sulfur mustard and nerve agent), total and isotopic uranium, volatile organic compounds, and heavy metals. The CDC and Armed Forces Institute of Pathology analyzed samples and provided research funding and collaboration. Major May had two manuscripts accepted for publication from the research, presented at numerous scientific seminars, and defended her research on November 3 and 12, 2003.

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## **The Center for Ergonomics and Workplace Health.**

Mission. The Center for Ergonomics and Workplace Health focuses on an integrated approach to ergonomics and occupational health, targeting both the civilian and military workplace. Research in the Center is directed at understanding the interactive roles of medical, biomechanical, organizational, workplace and individual psychosocial factors in the etiology, prevention, and management of prevalent occupational health problems. Currently, the Center conducts research on the mechanisms and management of workplace musculoskeletal disorders and is also involved in education, public policy, and consultation. The Center is a joint effort between the USU SOM Departments of Preventive Medicine and Biometrics *and* Medical and Clinical Psychology. **Michael Feuerstein, Ph.D., MPH, Professor, USU SOM Department of Medical and Clinical Psychology, served as the Director of the Center during 2003.** Doctor Feuerstein is a *Member* of the National Academy of Sciences, the Institute of Medicine, the Human Factors and Ergonomics Society, the Association for Advancement of Behavior Therapy, and the International Association for the Study of Pain. In addition, he is a *Fellow* at the Academy of Behavioral Medicine Research, the American Psychological Association and the Society of Behavioral Medicine.

### Research Activities.

***Patient Satisfaction, Cost and Treatment Guidelines: Musculoskeletal Disorders.*** The premise for developing treatment guidelines is to improve health care outcomes and costs for the disease, injury, or disorder, which is addressed, using existing standards of care. The DoD and the Department of Veterans Affairs (VA) have developed treatment guidelines for a number of health problems. Among the existing treatment guidelines are standards for treating low back pain and chronic pain; however, at this time, no DoD/VA guideline exists for the treatment of upper extremity pain. It is currently unclear what effects these guidelines have on patient satisfaction outcomes. In addition, it is not known whether the treatment guidelines are most efficacious for disorders involving specific etiologies. The study has two aims: 1) to compare the patient satisfaction outcomes from the Health Care Survey of DoD beneficiaries and the administrative data on treatment costs for active duty personnel with low back pain diagnoses (disorders for which there is an existing treatment guideline) in contrast to upper extremity pain (not addressed with a treatment guideline at this time); and, 2) to compare the same data from low back pain cases with data from chronic pain cases. The first comparison will highlight any benefits gained from the existence and implementation of treatment standards. The second comparison will determine if treatment guidelines have any differential effects for disorders with, or without, localized pain sites and clearer etiology. This study is funded by the Epidemiology Health Program Analysis and Evaluation branch of the TRICARE Management Activity (Departments of Defense and Veterans Affairs).

***Prospectively Identifying Patterns of Ergonomic and Work Organization Risk Factors for Musculoskeletal Disorders.*** USU Center researchers have identified low back and upper extremity disorders to be the major sources of lost time and clinic visits in the United States Marine Corps. While there has been an increasing number of studies that have identified risk factors for work-related musculoskeletal disorders, no prospective studies have examined combinations of ergonomic and

specific work organization factors related to time pressure, cognitive demands, interpersonal demands, and participatory management. The aims of the present study are to: 1) determine the incidence of diagnosed low back and upper extremity disorders among enlisted Marines; and, 2) delineate ergonomics and specific work organization risk factors for such musculoskeletal outcomes at six and twelve months through a post- baseline questionnaire. Follow-up data on ICD-9 musculoskeletal-related diagnoses recorded at clinic visits will be obtained from a medical administrative database. This investigation represents a key next step in a series of studies designed to develop an innovative secondary prevention program for work-related low back and upper extremity-related disorders. ***In particular, findings may shed light on those ergonomic factors and specific dimensions of work organization to be targeted in prevention efforts.*** Furthermore, the prospective nature of this research can potentially provide insights into mechanisms for musculoskeletal outcomes and assist in reducing burdens associated with health care utilization, financial costs, and lost productivity. This study is funded by the Johns Hopkins NIOSH Education Research Center.

***Workstyle Intervention for the Prevention of Work-Related Upper Extremity Problems.*** Work-related upper extremity disorders (WRUEDs) are a considerable source of distress and disability in the modern workforce. Research has identified that physical factors (i.e., workplace ergonomic design and biomechanical motions required by the task, etc.), psychosocial risk factors (i.e., workplace stress, workload, etc.), and personal risk factors (i.e., individual coping style, appraisal style, medical history/status, etc.) all play a role in the development, exacerbation, and maintenance of WRUEDs. However, prevention methods often focus on the modification of only one of these risk factors (i.e., the focus is on ergonomic redesign only or only on individual stress management). ***Recent investigations using combined approaches (i.e., ergonomic redesign and individual stress management) show promise for increasing the effectiveness and durability of intervention benefits.*** Workstyle is a description of how people perform their work and is proposed as a mechanism by which ergonomic and psychosocial stressors in the workplace interact with the individual's response style to place a worker at risk for the development and/or exacerbation of WRUEDs. Inclusion of workstyle-related interventions into workplace WRUED prevention (primary and secondary) programs may result in better overall treatment gains. This study is a randomized controlled trial of workplace intervention for the secondary prevention of work-related upper extremity symptoms and functional limitations. Symptomatic workers will be assigned to one of four treatment conditions: ergonomics-only (current standard practice); workstyle only (investigation of cognitive-behavioral modification of how individuals perform work); workstyle and ergonomics combined condition; and, wait-list control. Measures of ergonomic risk, psychosocial stress, workstyle response, and symptom status will be collected at baseline, post-treatment, and at a three-month follow-up period. The aim of this study is to determine if the addition of workstyle-related interventions result in positive outcomes. The findings may enhance the development of effective workplace programs to prevent WRUEDs. This project is funded by the PMB Ergonomics Research Committee and will be conducted in collaboration with the CNA Insurance Company in Chicago, Illinois.

***Work-Related Upper Extremity Disorders in Sign Language Interpreters: A Qualitative Analysis.*** This study provides a qualitative content analysis of sign language interpreters (n=1092) across the country (National Register of Interpreters) in relation to the development of work-related upper extremity symptoms and their management (medical, health care in general, and work-related).

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## **The Center for Force Health Protection Studies.**

Mission. The Center for Force Health Protection Studies conducts a comprehensive research program on the short- and long-term health outcomes associated with military operational environments, in particular, the conditions and experiences associated with training, deployment, combat, and humanitarian and disaster relief operations. For example, current efforts are underway to distill the findings of research across disciplines on the health outcomes associated with service in the Gulf War. The Center promotes the use of a systematic process to prospectively evaluate disease and non-battle injuries in military and veteran populations for guiding health policy development. ***The Center's goal is to enhance the scientific knowledge base for military deployment health and to develop recommendations for preventive health interventions.*** The research focus is on studies that collect, manage, and integrate health-related data for purposes of risk assessment and risk communication to protect individuals who serve the Nation during peacetime and during war. The Center develops databases, analytic methodologies, and models for predicting health outcomes, as well as for identifying and evaluating or designing specific interventions for preventing injury and illness. The Center also disseminates information to promote force health protection and participates in interagency research and development programs. It also provides consultation to program managers and executives in the health-related components of the DoD, the Department of Veterans' Affairs, other Federal agencies, local governments, and private organizations. **Tomoko I. Hooper, M.D., MPH, Assistant Professor, USU SOM Department of Preventive Medicine and Biometrics, served as the Director of the Center during 2003.** Doctor Hooper maintains *Diplomate* status with the American Board of Preventive Medicine, General Preventive Medicine/Public Health and the National Board of Medical Examiners. Doctor Hooper is a Co-Course Director in three PMB Graduate Education Courses (*Introduction to the MPH Project and Practicum, MPH Project/Practicum Design and Development, and the MPH Project/Practicum Implementation and Evaluation*; and, she serves as the Course Director for *Public Health Practicum* and the *MPH Independent Project*.

### Changes in Organization During 2003.

The Center for Military Medical Analysis and Projection (formerly an independent center) was realigned with the Center for Force Health Protection Studies in January of 2003. USU faculty researchers continued to participate in the planning, review, and conduct of epidemiologic studies designed to assess health outcomes associated with the conditions and experiences of military service, to include deployment and combat, as well as missions related to humanitarian assistance. After a seven-year relationship with the researchers at the Naval Health Research Center (NHRC) in San Diego, California, it is expected that all operations related to USU administrative and fiscal oversight of previous collaborative research would end during February of 2004. However, several USU researchers will continue to work with the research team at NHRC, notably as co-investigators on the landmark Millennium Cohort Study and several other projects, under the current inter-institutional Memorandum of Understanding. ***The focus of this Center on studies related to force health protection continues to be reflected in the various on-going and planned collaborative research activities within the Center.***

## Research Activities.

***Epidemiologic Support of Health-Related Research Pertaining to Military, Veteran, and Dependent Populations.*** All funding under this grant has been exhausted; however, work continued under a no-cost extension through February of 2004. Total grant support was approximately \$17.6 million, with a follow-on grant funded at \$2.2 million; the Center submitted a final report to the USU Office of Research Administration to close out the grant in December of 2003, which included the status of the 28 sub-projects that had been monitored as part of this collaborative research program with NHRC. The program's focus was in the areas of: 1) emerging illness research; 2) deployment health research; and, 3) other research with direct relevance to military populations, such as studies of vaccines, complementary and alternative therapies, and reproductive outcomes. The Center will continue its collaboration on the Millennium Cohort Study with the NHRC researchers, as well as other projects of importance to military force health protection. These studies and others continue to add to the scientific knowledge base on a wide range of public health related topics, including epidemiologic methodology for population-based studies, reproductive outcomes, vaccination policy, as well as the health effects of exposures and experiences associated with military service.

***The Millennium Cohort Study.*** Conceived in 2000, initial data collection for the baseline cohort began in July of 2001. A modified Dillman approach was used to construct the initial cohort. Enrollment was nearly 80,000 at the close of the initial enrollment phase. Additional cohorts, of approximately 40,000 in 2004 and 20,000 in 2007, will be added for a total of 140,000. Work on a survey instrument for the 2004 recruitment has been initiated. Two, of the Center's seven investigators on the original research team, participated in regular teleconferences, annual meetings with the Scientific Steering and Advisory Committee, and had responsibility for the development of guidelines for future collaborative research studies using the Millennium Cohort data. The purpose of the collaborative research guidelines is to preserve the integrity of the original study design and protect the study cohort from inappropriate contact, misuse of collected data, or the introduction of bias by peripheral research investigations.

***Case-Control Study of Fatal Motor Vehicle Crashes Among Gulf War and Non-Deployed Veterans.*** The Principal and Co-Investigator on this research project attended the annual American Institute of Biological Sciences (AIBS) Scientific Peer-Review of Federally Funded Force Health Protection Studies, which was held in San Diego, California, during February of 2003. They provided updates on both the fatal motor vehicle crash (MVC) study and the Saudi Arabian National Guard study. Results of bivariate and multivariate analyses for the nested case-control study of fatal MVC were presented. AIBS reviewers recommended additional analyses to include the evaluation of possible interaction between military unique variables and other risk factors for MVC and the application of factor or cluster analysis to construct risk profiles. A protocol amendment was submitted incorporating these recommendations along with a request for supplemental funding to the United States Army Medical Research and Materiel Command. A grant for \$281,950 was awarded in August of 2003 (for a cumulative total of \$786,000); the research was renamed as, *A Nested Case-Control Study of Fatal Motor Vehicle Crashes Among Gulf War Era Veterans*. USU investigators meet regularly with VA and other collaborators to consider strategies and timelines to implement additional data analyses and manuscript preparation. ***A new analytic data set will be created to include data on pre-deployment hospitalization,***

***potential exposure to the demolition plume at Kamisiyah, and separation from military service (to include the reason(s) for separation).*** USU investigators presented posters at the 6th Annual Force Health Protection Conference held in Albuquerque, New Mexico, on August 11-14, 2003. Their poster entitled, *Hazards Associated with Deployment: Fatal Motor Vehicle Crashes Among Veterans of the Gulf War Era*, was selected as one of the top five posters. Two manuscripts, one on methodology and the other on sub-group analyses, were projected to be in final form by the end of 2003. Efforts to identify and secure additional funding for a follow-on study of non-fatal motor vehicle crashes for the purposes of ultimately identifying, implementing, and evaluating preventive interventions to reduce the injuries and deaths caused by motor vehicle crashes are continuing.

***Medical Events During Periods of Isolation: The United States Navy Submarine Force Experience.*** The results of a study conducted aboard one submarine during a 101-day submergence (under a 1997 amendment to the original protocol) were published in Aviation, Space, and Environmental Medicine in August of 2003. Data collected during this study included responses to the Profile of Mood States survey (POMS) administered at the beginning, midpoint and end of the underway period to capture transient mood states among the submarine crewmembers. These data were recently reanalyzed and the preparation of a manuscript on *Changes in Moods States of Submarine Crewmembers during Prolonged Submergence* is expected to begin during 2004.

***Military Deployment and Self-Assessed Health Status.*** The Defense Medical Surveillance System (DMSS) provided data sets for over 30,000 military members who returned from deployments in 2000. DMSS provided person-level data from the: DD Form 2795 Pre-Deployment Health Assessment; DD Form 2796 Post-Deployment Health Assessment; military personnel systems; and, military inpatient and outpatient data reports. Center researchers have completed the initial analyses of these data to look at the association between self-reported health status and health care utilization following deployment. A poster entitled, *Increased Rate of Illness-Related Ambulatory Care Visits After Deployment Among Military Members With Low Self-Rated Post-Deployment Health*, was presented at the USU Faculty Senate Research Day in May of 2003. There were 114,265 illness-related ambulatory care visits (median of 3 visits per person, range 0-132) over a period of 36,883 person-years of observation. The survival analysis found that low self-rated health upon return from deployment is associated with increased health care utilization. Military members returning from deployment with *fair/poor* self-rated health had 5.3 visits per person per year; *good health* self-rated health had 3.9 visits per person per year; and, *excellent* self-rated health had 2.9 visits per person per year. Additional analyses and preparation of a manuscript are in progress.

One MPH graduate education student conducted a survival analysis of the post-deployment hospitalization experience of deployers. He found a significant difference in the post-deployment hospitalization experience between those who self-rated their health as *excellent* or *very good* versus *good/fair/poor* when the observation period was extended beyond the immediate 6-month post-deployment period. In a stratified analysis, the difference was present for men, but not for women. The student presented a poster entitled, *Is Self-Assessment of General Health Condition Post-Deployment Related to Post-Deployment Hospitalization*, at the USU Faculty Senate Research Day in May of 2003.

As part of the project on military deployment and self-assessed health status, two Center researchers examined associations between self-reported health status and history of deployment using responses from 17,264 military members who completed anonymous questionnaires for the 1998 Department of Defense Survey of Health Related Behaviors among Military Personnel. In the initial report on this work, associations were noted between a history of deployment and several self-reported measures of health; following the completion of analytic work, a manuscript will be prepared for publication.

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## **Center for International Health.**

Mission. A Memorandum of Understanding was signed between the Air Force Office of the Surgeon General and USU during October/November of 2001, to design, test, and implement an educational and academic curriculum for the International Health Specialist Program. The Air Force Surgeon General established a new competency focus for selected uniformed health care providers entitled, *International Health Specialists (IHS)*, in response to operational requirements. The International Health Specialist Program's purpose is to prepare regionally-focused military medical experts who can help prepare uniformed forces for operational contingencies and the global response to medical crises around the world. **Colonel Martha Turner, USAF, Associate Dean, USU Graduate School of Nursing,** served as the Center Director during 2003.

The International Health Specialist Program. The International Health Specialist (IHS) Program was initiated in 1999, under the guidance of **Lieutenant General Paul K. Carlton, Jr., Surgeon General of the Air Force.** Numerous After Action Reports (AARs) indicated that Humanitarian Assistance (HA) and Disaster Response (DR) missions would benefit if members of the Air Force Medical System (AFMS) received additional training. The goal of the IHS Program is to prepare regionally-focused military medical experts who can help prepare uniformed forces for operational contingencies and the global response to medical crises during war and/or peacetime deployment. The AFMS members may be selected for full-time IHS assignments in support of Combatant Commander's Theater Engagement Plans. Individuals selected for the positions will be prepared with short courses and rotations as well as degree programs (i.e., the Master of Public Health (MPH) Degree with a regional, humanitarian assistance, disaster response, or international health focus).

The USU/SOM MPH Program is a 12-month program consisting of 60 quarter credit hours; in addition to the MPH requirements, the IHS students are required to take: International Health I; International Health II; Medical Anthropology; Joint Medical Operations and Humanitarian Assistance; Public Health Issues in Disasters; Historical Perspectives of International Health; and, Introduction to Epidemiology II. Furthermore, IHS students must also select three additional electives from the following courses: Program Planning & Development; Principles and Practice of Tropical Medicine; Malaria Epidemiology and Control; Travel Medicine Practicum; Biostatistics II; and, Deployment Environmental Exposures. IHS graduates are expected to use their acquired quantitative and analytical skills in biostatistics and epidemiology to identify and measure community health needs and to investigate the impact of biological, environmental, and/or behavioral factors in solving public health problems. Each graduate will understand the components, operations, and financing of health delivery services and have the administrative skills to plan, analyze, manage, and improve public health programs for the Uniformed Services. The graduate will also understand the role that the United States military and other organizations and agencies play in addressing global health issues. And, the graduate will be able to apply public health principles toward assessing international health needs and in the planning, conducting, and evaluating of international health-related activities and projects. Four students matriculated into the program during 2002; and, all four graduated in June of 2003; currently, there are four additional IHS students who are projected to graduate in June of 2005.

Staff Activities During 2003. During the past year, Center staff made a site visit to SOUTHCOM in September of 2003, to assess learning opportunities; and, they presented a poster at the Asian-Pacific Military Medical Conference in Thailand. Another staff member co-directed *Military Preventive Medicine Week* for senior medical students during May of 2003. Other activities included: attendance at the 6th Annual Force Protection Conference held in Albuquerque, New Mexico, on August 11-17, 2003; presenting a sanitation and hygiene lecture to 170 senior students, in preparation for medical officer duties, during Military Preventive Medicine Week; presenting a food sanitation in the field lecture to 132 students and assisting in the night Land Navigation Course during *Operation Kerkesner*; and, performing mosquito surveillance and control in the field during *Operation Kerkesner*, to include monitoring for mosquito larva and reducing mosquito populations in a field expedient manner.

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## **The Center for Oral Health Studies.**

Mission. The Center for Oral Health Studies provides oral health care services information and dental public health education to the DoD, the TriService Dental Corps Chiefs, and other interested organizations. The Center gathers, synthesizes, and distributes management information needed to develop oral health care policies and programs necessary to optimize the oral health of DoD beneficiaries and the dental readiness of service members. **Andrew K. York, DMD, MPH, CAPT, DC, USN, served as the Director of the Center for Oral Health Studies during 2003.** CAPT York is licensed to practice dentistry in both Kentucky and Virginia. He holds *Diplomate* status with the American Board of Dental Public Health; and, he is a Member of the American Dental Association and the American Association of Public Health Dentistry.

Center Activities. The Center's staff played key roles in corporate military dentistry, during 2003. ***As the primary source of military dentistry health services information, the Center's staff are members of many Integrated Product Teams (IPTs) associated with military dentistry,*** to include the following: the TRICARE Management Activity (TMA) IPT for Redefining the Military Dental Classification System; the TMA Dental Health Standard (65% Health) IPT; the TMA MHS Survey Workgroup; the TMA Reserve Dental Readiness IPT; the Navy Bureau of Medicine and Surgery (BUMED) Population Health IPT; and, the Base Realignment and Assessment Committee (BRAC) Medical/Dental Research Development and Acquisition Sub-Work Group.

During the past year, the Center completed the major tasking of the TRICARE Management Activity (TMA) to conduct a study of the oral health status and treatment needs of military Reservists mobilized for *Operation Enduring Freedom/Noble Eagle*. Center staff also completed a second TMA tasking to evaluate the level of enrollment and the effectiveness of the TRICARE Dental Program (TDP) among mobilized Reservists; they ***developed and distributed to TMA and all military dental commands information necessary to assess the impact on military dentistry for meeting the dental care requirements of the thousands of Reservists currently being mobilized.***

The Center's ***TMA-funded Dental Patient Satisfaction Program continued to be the military's sole source for assessing the satisfaction of patients with military dental care.*** The Center received, compiled, and analyzed over 12,000 patient satisfaction survey forms each month, from military dental clinics worldwide. The staff developed and disseminated over 250 individual dental clinic reports each fiscal quarter. These quarterly reports allowed the clinic directors to identify specific areas for improvement leading to better service and patient satisfaction across the system. The DoD Dental Patient Satisfaction Program continues to be an integral part of the overall Military Health System (MHS) performance assessment.

During 2003, the Center completed data collection for the ***2003 TriService Oral Health Assessment,*** funded by the Army and Air Force Dental Corps. This involved travel to 16 randomly selected Army and Air Force dental clinics world-wide. ***This data will serve as the sole source for Service level assessment of dental treatment needs for the Army and Air Force and is a follow-up to the Center's 1994 TriService Comprehensive Oral Health Survey.*** Data analysis is underway.

The Navy's Dental Common Access System (DENCAS) is a web-based system utilized to capture dental treatment needs on a real-time basis. ***The Center was tasked and funded by the Navy Dental Corps to assess the validity of data in its DENCAS System.*** Center personnel traveled to a sample of eight Navy dental clinics and four Navy commands to capture the level of agreement and document discrepancies between *paper patient dental records* and the DENCAS System. Data collection was completed and analysis is underway.

The Air Force Dental Corps tasked the Center to assess ***the oral health status and treatment needs of Air Force National Guard personnel mobilized to active service.*** Copies of individual inprocessing examinations were mailed to the Center; and, the computer entry of treatment needs information is ongoing.

During 2003, the Center provided data, analysis and report preparation support to three dentists who were completing their MPH special research projects. The Center staff continued to mentor two MPH graduates during their Dental Public Health Residency at the National Institute for Dental and Craniofacial Research.

Finally, the Center was tasked by the Dental Advisory Board for the Pentagon Dental Clinic and the Chief of the Navy Dental Corps to assess the treatment requirements of patients supported by the clinic. The Center collected treatment needs data from a random sample of patient dental records at the Pentagon Dental Clinic and ***developed a detailed report, which was critical to the development of proper staffing and budgeting at the Pentagon Dental Clinic.***

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## **The Center for Population Health.**

Mission. The Center for Population Health is an integral part of the research, service, and educational activities of the PMB Division of Health Services Administration. The Center's functions are carried out through two primary activities: a focus on patient safety; and, a focus on clinical performance analysis and improvement. The Center also develops innovative educational curricula and provides training to Federal health care executives and managers to create, manage, and improve high quality health systems. Through these activities, the Center provides expertise, experience, and insight for the assessment of large health care databases to determine trends in population health and care delivery and the efficiency and effectiveness of care delivery processes. This performance analysis includes the linkage of practice patterns and support structure and policy to health outcomes. The analysis also focuses on the major issue of patient safety in a health care system and its processes and the identification of appropriate actions to limit risk and to improve the system. Both primary activities lead to the development of educational material for medical students, active practitioners, and policy makers to improve the safety and effectiveness of the Federal Health Care Systems. The Center for Population Health is currently sponsored by projects with the Agency for Healthcare Quality and Research, California State, the United States Military Cancer Institute, and the Health Resources and Services Administration (HRSA). **Galen Barbour, M.D., FACP, FACHE, Professor, USU SOM Department of Preventive Medicine and Biometrics, served as the Director for the Center during 2003.** Doctor Barbour is a Member of the following organizations: the American Federation for Clinical Research; (Member and Fellow of) the American College of Physicians; the American Heart Association; the American Society of Nephrology; the American Society for Artificial Internal Organs; the Society of the Sigma Xi; Alpha Omega Alpha; the American Institute of Nutrition; the American Society for Clinical Nutrition; and the American College of Healthcare Executives.

Center Activities. The Center is specifically *designed to enable Federal health care providers and administrators to access comprehensive, integrated, population-based performance information to facilitate quality improvement and cost reduction and demonstrate the value and power of the combined Federal health care systems to the American Public.* The following was included in the Center's summary report for 2002-2003:

### **Education and Training.**

***The Medical Executive Skills Program.*** The Medical Executive Skills Program (*MedExec*) was designed in response to a Congressional mandate that current and prospective DoD health care leaders receive training in health care management and administration. Both face-to-face and distance learning are included in the program. In 2003, a new case study was developed for the in-class portion of the program based on recent customer service issues in the Military Health System (MHS).

*Integrating Clinical Managerial Decisions to Improve Population Health.* This five-day, in-class portion of the *MedExec* Program is held five times each year throughout the continental United States

and the Atlantic and Pacific TRICARE Regions. To date, 34 sessions have been held in the TRICARE Regions; and, approximately 950 senior officers have been trained for the Military Health System.

*Distance Learning Program.* The Distance Learning Program is an integral part of the *MedExec* Program. Several of the previous presentations have been developed into distance/distributed learning formats and are presented prior to the formal on-site class via web-based mechanisms. Learning accomplishments of the presentations are measured and reflected in the changes seen from a pre-test and post-test analysis using qualitative questions derived from the material in the on-site and web-based presentations. Implementation and evaluation of the MedXellence Distance Learning Program was expanded to include 10 to 14 on-line modules. As in the past, much of the current information presented in class will be migrated to CML format. The web portal has been upgraded in appearance and content to support the Center's educational efforts; and, plans to expand the web portal to include an on-line library and continuing education links are on-going.

*Master of Public Health.* During 2003, the Center for Population Health developed an integrated case study for MPH students in the HSA track. This case study is used in all HSA courses so that students can apply what they have learned in a more realistic way. The Center's staff have also developed three new courses in the HSA MPH track: *Health Care Performance Improvement*; *Fundamentals of United States Healthcare Policy*; and, *Human Resources for Healthcare Executives*.

*Application of the Tools of Clinical Epidemiology in Health Services Management.* The Center has signed a Data Use Agreement with the Center for Medicare and Medicaid (CMS) as part of its goal to access all Federal health care databases in order to support the Federal agencies in the measurement of cost and quality of care in the Federal sector of American medicine. The Center's staff have also developed data extraction capabilities with the MHS and continue to pursue access to the Veterans Healthcare Administration database in order to conduct large database studies.

### *Research Activities.*

*California Active Duty Tobacco Use Study.* A survey designed to study tobacco use has been mailed to over 16,000 active duty military personnel stationed in California. Initial data is expected in March of 2004; and, the final report will be completed in August of 2004.

*Bioterrorism Preparedness.* The Center for Population Health received funding in the amount of \$2 million from the Health Resources and Services Administration to study bioterrorism preparedness in the United States health care infrastructure.

***Cancer Epidemiology.*** Preliminary results of the national epidemiological study of cancer for the United States Military Cancer Institute have been obtained and are driving re-extraction of some data elements and new analysis activities.

***Chronic Disease.*** Final data analysis on three chronic disease cohorts from the Medicare database has been completed; a manuscript is in preparation; and, data analysis is proceeding for three surgical procedures.

***Student Research.*** Center personnel are mentoring or advising three MPH student projects; each of these projects involves addressing the MHS database through existing Center data use agreements within the MHS. All of these projects open a viable avenue for future research.

***Research Collaboration.*** Center personnel have collaborated with Doctor Richard Atkinson of the Medlantic Research Foundation in submitting two proposals for Federal funding of a study of obesity causation linked to adenovirus infection. Center personnel are also sponsoring Doctor Atkinson's approach to the Department of Defense Serum Repository for studies to examine the prevalence and relationship of adenovirus infection and obesity in military personnel.

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**The USU School of Medicine Department of Military and Emergency Medicine and the Casualty Care Research Center.**

**The CCRC Mission is to serve as a unique national resource by providing quality research, education, and expertise in the delivery of good medicine in bad places.**

- Mission Statement Approved by the President, USU, 1995.

Establishment and Mission. The Casualty Care Research Center (CCRC) was established in July of 1989, under the USU SOM Department of Military and Emergency Medicine as a center of excellence for injury control and casualty care research.

In keeping with the overall mission of USU, the scope of the CCRC activities includes the following: 1) conducting research and investigations on issues relating to injury control, casualty care, and operational and disaster medicine; 2) providing a disciplined, educational, research experience in combat casualty care, injury epidemiology, trauma management, and related areas to medical students, graduate physicians, and other uniformed medical personnel; 3) serving as a repository of resources and information relating to injury control, injury epidemiology, and operational medicine for the Uniformed Services; and, 5) providing research, resource and educational support, technical assistance, and other community service to USU, the Uniformed Services, and other Federal, State, and local elements. The Center operates on extramural funding; it employs eight full-time personnel and is supplemented by ten part-time civilian volunteers and military officers loaned on an intermittent basis by their parent commands. Personnel within the USU Department of Military and Emergency Medicine participate in various activities of the CCRC based on their professional interests and as their teaching and clinical responsibilities permit. The Center's efforts fall into three categories: research, training, and consultative/operational support. **Mr. Joshua Vayer, Research Assistant Professor, USU SOM Department of Military and Emergency Medicine, serves as the Director for the Center.**

Core Military Competency. The location of the CCRC within the multi-Service environment of USU, with its emphasis on education and development, scientific studies, research, and on-going clinical and operational practice, is critical to the development and sustainment of the CCRC's ability to maintain its core competency - *the capability to provide military-unique, medical expertise and experience required by both uniformed and civilian emergency/health care responders to weapons of mass destruction (WMD)-related and other national security contingencies*. Only DoD has a self-renewing source of physicians and other medical personnel with interest and experience in these areas. USU, through its students in the School of Medicine and the Graduate Education Programs, and its career-focused faculty and staff, plays a vital role for the DoD in the renewal process of militarily-focused and experienced health care providers. The University ensures continuity and leadership for the MHS; and, the CCRC's core competency plays an essential role in that equation.

**First responders suffer from shifting Federal priorities, bureaucratic rivalries, and poorly designed training programs.**

- Government Executive, *Emergency Assistance*, November 2002, pages 18-27.

Contributions to Homeland Security - The Counter Narcotics and Terrorism Operational Medical Support Program. Since 1989, the CCRC has successfully served as a bridge between DoD and Civilian Emergency Responders for the coordination and sharing of critical, military-unique medical knowledge, technology, and expertise. Initially, this CCRC Program was a cooperative effort between USU, the Department of Defense Office of Drug Enforcement Policy and Support, the Henry M. Jackson Foundation for the Advancement of Military Medicine, and the Department of Interior, United States Park Police Special Forces Branch. From 1990 through 2001, the CCRC Program was continuously funded by the Office of Drug Enforcement Policy and Support, which reported through the Assistant Secretary of Defense for Special Operations/Low Intensity Conflict. Currently, the Program has been supported through special congressional funding for Chemical/Biological/Radiation/Nuclear/Explosive (CBRNE) Training. The Program's policies are governed by a Board of Directors representing military medicine, law enforcement, and pre-hospital care communities.

The Counter Narcotics and Terrorism Operational Medical Support Program focus is on the crisis management response to: *weapons of mass destruction (WMD); counter terrorism; protective operations; hostage rescue; explosive ordnance disposal; maritime operations; civil disorder; and, major national security events.* To date, the CCRC Program has trained over 6,000 civilian emergency personnel from 750 agencies through collaborative support agreements with law enforcement organizations from all 50 States, the District of Columbia, Guam, Puerto Rico, the United States Virgin Islands, England, Denmark, and Canada. Forty local, State, and Federal law enforcement agencies mandate this CCRC certification-based training as a condition of employment for their SWAT medics. It teaches skills that reduce the risk of death or serious injury during counter terrorist operations, drug raids, hostage situations, and other high risk operations for DoD personnel and, on a reimbursable basis, for personnel from other Federal, State, and local agencies. In October of 2002, ***the Secretary of Defense recognized the exemplary response by CCRC to the terrorist attacks on September 11th, when he awarded the Exceptional Civilian Service Award and the Secretary of Defense Meritorious Civilian Service Award to several CCRC personnel.*** The superb support of the CCRC was also recognized on February 28, 2003, when ***the Honorable Gail Norton, Secretary of the Interior, presented a Unit Citation Award to the CCRC*** in recognition of support provided to the United States Park Police on September 11, 2001.

The Program provides *military-unique, national standard, assessment-driven curricula; certification; and, a quality assessment process* that exist nowhere else. Its unique Special Operations Injury Epidemiology Database, the only database of its kind, ensures both effectiveness and relevance during the generation of assessment-driven curricula; and, it provides information and data for research on injuries incurred during the crisis management of domestic contingency operations. *The data derived through this CCRC Program is utilized by DoD to explore the epidemiology of injury and the impact of various medical interventions.*

The Counter Narcotics and Terrorism Operational Medical Support Program has received the endorsement of, and/or continuing medical education credit from: The National Tactical Officers Association; the National Association of Emergency Medical Technicians; and, the Continuing Education Coordinating Board for Emergency Medical Service. *The CCRC's maturing relationship with the law enforcement community as a principal consultant for medical support for Federal law enforcement special operations in the United States has resulted in the transfer of valuable knowledge, experience, and technology for military medical application.* This information is used to guide the educational components of the CCRC Programs and to explore similarities and differences between the experiences of the civilian law enforcement communities and the military special operations forces; thus, it contributes to medical readiness. *For example, during 1996, these collaborative efforts led to a significant change/enhancement in the training programs for the Navy SEALs.* The CCRC has received multiple testimonials from faculty and students who attribute their success in planning medical support for the deployment of military units in the field directly to knowledge gained at the CCRC. Medical readiness and mission support was also provided by CCRC following the bombing of the United States Embassies in East Africa, to include preventive medicine, field sanitation and hygiene, medical intelligence, acute care, and clinical forensic medicine. Critical medical coverage of security forces and protectees, following 9/11, was provided by CCRC for several weeks, which supported efforts for the continuity of government.

As the CCRC's largest training program, the Counter Narcotics and Terrorism Operational Medical Support Program, offers the following medical/evidence-based courses: *EMT-Tactical; the Advanced School; the Commander's Course; the Medical Director's Course; and, the Instructor Development School.* These CCRC courses receive maximum attendance. For example, the Medical Director's Course, presented at the 2002 Annual Meeting of the National Association of EMS Physicians, received unprecedented attendance. Participants in these courses also include medical students, graduate physicians, special operations medics from all of the Services, and selected Federal law enforcement medics. In addition, the CCRC can provide training with an array of hand-held PC-based knowledge management tools and guides, such as the *ChemBio Toolkit*, currently being adapted for the Navy and the National Institutes of Justice, which guides a commander through the steps of handling a suspicious mailroom package or an abandoned briefcase and provides a probability based threat assessment and agent identification. ***The location of this CCRC Program within the University ensures academic oversight and credibility for the Congressionally mandated collaboration between DoD and the civilian emergency personnel community.***

WMD Scientific Training Programs. The CCRC provides a family of seven WMD medical educational programs to meet the needs of a variety of communities. These include *Responding to WMD for Health Care Facilities*, *Responding to WMD for Health Care Providers*, and *WMD Awareness: What Everyone Needs to Know*. These programs have been highly acclaimed because of their effectiveness and efficiency; and, they are being reviewed as a model for Military Treatment Facility (MTF)-based training. The CCRC continues to receive requests from health care facilities and their staffs for this training. In 2003, the CCRC, at the request of the Commander, Wright-Patterson Air Force Base, conducted two *WMD for Military Medical Treatment Facilities* courses for military and civilian staff at the Wright-Patterson Air Force Base Medical Center in Dayton, Ohio. The program was well attended and received much praise from the attendees.

The Wound Data and Munitions Effectiveness Team (Vietnam) Database (WDMET) - A Unique Resource. The Wound Data and Munitions Effectiveness Team (Vietnam) database (WDMET) is maintained by the CCRC. It contains information on the tactical engagement, weapons employed, resulting injuries, and treatment in the pre-hospital and hospital environments on approximately 8,000 combat casualties. It is the only collection of its kind in the world. Photographs, medical records, X-rays, recovered bullets and fragments make this a unique resource, which has been studied extensively, resulting in numerous scholarly publications since the establishment of the Center. Most recently, the WDMET data has been used to support the *Persistence in Combat Project*, which is sponsored by the Defense Advanced Research Project Agency (DARPA).

CCRC Mission Support Center and Operational Medical Support. In agreement with the philosophy that teachers and scholars must maintain an active practice in their areas of expertise to ensure competency, the Operational Medical Support Programs of the CCRC provide consultation and support to multiple organizations, including the White House Medical Unit, the Federal law enforcement community, and numerous national security contingencies. These activities are carried out under appropriate Memoranda of Understanding. On the average, the CCRC Mission Support Center responds to at least one request for support each day; it is staffed by uniquely trained personnel who provide medical informatics, consultation, planning, and threat assessment support on a *round-the-clock* basis. These support-related activities serve as a suitable vehicle for USU faculty, both billeted and off-site, to develop and maintain their expertise in operational medicine. *Participation in actual missions lends important credibility to teaching and research and provides a living laboratory where concepts, techniques, and technology can be evaluated.* The Secretary of Defense has commended the CCRC for its contingency support for the Republican National Convention and the Presidential Inaugural and the direct service support to the Departments of State, Treasury, Interior, and Justice. Based upon the similarities between military medicine and selected types of civilian emergency medical support, lessons learned can be applied from one to the other. The increasing frequency of military operations other than war, including responses to terrorist activities, makes the law enforcement special operations experience critically relevant to military medicine.

CCRC Emergency Medicine Resident Rotation. The CCRC's Emergency Medicine Resident Rotation in Operational Medicine Course, initiated in 1992, is a four-week elective for military emergency medicine residents. Ninety-two active duty emergency medicine residents, six active duty staff physicians, and three physician assistants have completed the course. It consists of successful performance in the one-week Counter Narcotics and Terrorism Operational Medical Support (CONTOMS) Program EMT-Tactical School, when it is available, followed by temporary duty at the CCRC. While assigned to the CCRC, the emergency medicine residents deploy on actual support missions, complete short research projects, and generate *white papers* on topics such as antibiotic selection, malaria prophylaxis in high risk special operations, and field laboratory diagnostics for chemical, biological, and radiological incidents. In 1998, the three Surgeons General suggested that the elective be made a required rotation for all military emergency medicine residents. Residents from the Joint Service (Army/Air Force) Emergency Medicine Residency Program in San Antonio, Texas, began completing the elective as a requirement for their residency training. In addition to the military residents, CCRC has received requests for training from numerous civilian programs, including George Washington University, Case Western Reserve University, and the Genesys Regional Medical Health Systems.

Deployments for Training Program. The CCRC Deployments for Training (DFT) Program provides an opportunity for military graduate physicians to develop operational competence prior to actual combat conditions through collaborations in counterterrorism and national security operations with the law enforcement community. This program provides students with a real world operational experience in a permissive environment that cannot be duplicated outside of combat. Special Forces' experience in Iraq has demonstrated the value of the DFT Program in bridging the gap between classroom and operational readiness.

CCRC Military Medical Field Studies Rotation. The Military Medical Field Studies Rotation at the CCRC accommodates up to twenty first-year medical students with prior service for the required military experience between the first and second years of medical school; if required by the Services, this number could be increased. Up to six, fourth-year medical students complete an elective rotation in operational medicine research at the CCRC each year; again, the number of students could be increased if required by the Services. The operational experiences of the CCRC Medical Support Teams are integrated throughout the medical school curriculum as tangible demonstrations of the medical science being taught. ***For example, a large part of the USU SOM curriculum on blast injury uses the first-hand experiences of the CCRC faculty acquired during their response to the embassy bombings in East Africa.***

During 2003, 6 students, between their first and second year of medical school, selected an area of interest and worked with CCRC faculty members on individualized courses of research and study. The students were also divided into groups; each group was responsible for completing a research effort and for a presentation of findings. Students attended one or more of the following CCRC training opportunities: *the Emergency Medical Technician Tactical (EMT-T) Course*; *the Emergency Medical Technician - Tactical Advanced Course*; or, *the Weapons of Mass Destruction (WMD) Training Program.*

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**USU School of Medicine Department of Military and Emergency Medicine and the Center for Disaster and Humanitarian Assistance Medicine.**

Establishment. The Center for Disaster and Humanitarian Assistance Medicine (CDHAM) was established in September of 1998, under the USU SOM Department of Military and Emergency Medicine to advance the understanding and global delivery of disaster medical care and humanitarian assistance. The Center ensures specialized expertise, consultation, training, education, and research for medical support activities that impact homeland defense, terrorism and disaster response, and humanitarian assistance. Personnel within the USU Department of Military and Emergency Medicine participate in various activities of the CDHAM based on their professional interests and as their teaching and clinical responsibilities permit. **Craig H. Llewellyn, M.D., Professor and Former Chair, USU SOM Department of Military and Emergency Medicine, serves as the Director for the Center.**

Mission. The mission of CDHAM is to advance the understanding and delivery of disaster medical care and humanitarian assistance on a worldwide basis. Uniquely positioned as an academic center within the USU, the CDHAM has served as a focal point in the Military Health System to: 1) develop relationships between various governmental, non-governmental, and private volunteer organizations; 2) assist in the critical management of relief efforts in the medical response to weapons of mass destruction, terrorism, natural disasters, and humanitarian assistance contingencies through new developments in the areas of disaster and humanitarian assistance medicine (such as ultrasound imaging training for disaster response or the use of PDA/handheld computer software platforms for disaster needs and assessment); and, 3) augment the training of military medical officers through specialized expertise, consultation, and training in the field of Telemedicine and medical informatics in relation to the austere environment, education, and research capabilities.

Center Activities. The CDHAM uses training, technology, and best management practices to improve military medical capabilities and readiness during disaster and humanitarian contingencies, especially through collaboration with the inter-agency process, the international medical community, and the host nation medical infrastructure and beneficiary populations. ***The CDHAM works closely with the Unified Combatant Commands to meet its primary mission.*** Such efforts generally involve direct liaison with other DoD humanitarian assistance centers to include: the Center of Excellence (COE) for Disaster Management and Humanitarian Assistance under the United States Pacific Command (USPACOM) located in Honolulu, Hawaii; and, the Center for Disaster Management and Humanitarian Assistance (CDMHA) under the United States Southern Command (USSOUTHCOM), located in Miami, Florida.

In conducting studies and operations concerning local and global relief efforts, the CDHAM also works to expand relationships with other United States government agencies such as the Office of Foreign Disaster Assistance (OFDA) and the United States Agency for International Development (USAID), as well as international organizations such as the Pan American Health Organization (PAHO) and the World Health Organization (WHO). During 2003, CDHAM was actively engaged in various studies supported by the Department of Defense (DoD), the Unified Combatant Commanders, and other Federal agencies. A summary of the CDHAM's activities during 2003 follows.

## Research and Operations.

***Measures of Effectiveness.*** The DoD has the World's finest deployable medical system, and as such, it is routinely engaged in providing international medical humanitarian assistance. Scenarios in which military personnel provide medical humanitarian assistance range from deliberately planned theater engagement activities, to contingency operations, and complex human emergencies and military operations other than war. *The CDHAM produced a series of reports examining the training value of medical humanitarian assistance projects and their effectiveness for beneficiaries in 2002.* To ensure greatest exposure to military planners and decision makers, the nine reports from the study were published in booklet form during 2003, and distributed widely among the Department of Defense, the Unified Combatant Commands, and to various offices concerned with humanitarian assistance and disaster response planning and execution. The nine reports were:

Report 02-01. *Overview of Overseas Humanitarian Assistance, Humanitarian and Civic Assistance, and Excess Property Programs;*

Report 02-02. *Humanitarian and Civic Assistance Projects and Military Training;*

Report 02-03. *Measuring the Effectiveness of Department of Defense Humanitarian Assistance;*

Report 02-04. *United States Participants Perspectives on Military Medical Humanitarian Assistance;*

Report 02-05. *Host Nation Participants Perspectives on Military Medical Humanitarian Assistance;*

Report 02-06. *Information Management for More Effective Humanitarian Assistance Projects and Programs;*

Report 02-07. *Measuring the Effectiveness of Humanitarian Assistance Other than Department of Defense Providers;*

Report 02-08. *Humanitarian Service: Recruitment and Retention Effects Among Uniformed Services Medical Personnel; and,*

Report 02-09. *Humanitarian Assistance Bibliography: With some Annotations, After Action Reports and Web Sites of Interest.*

For greater visibility, two additional formats were also provided: 1) a CD-ROM was developed containing a description of the CDHAM's mission and activities that had hot-links to all nine reports, available in *Adobe Acrobat*. ***The CD-ROM was distributed as an enclosure to the distribution list of DoD, Uniformed Combatant Commands, and offices concerned with humanitarian assistance and***

*disaster response planning and execution*; it was also mailed out to any requesting activity, agency, or command interested in obtaining additional information on this topic. Links to the *Adobe Acrobat* report files are also provided on the World-Wide-Web through the CDHAM's homepage at <[www.cdham.org](http://www.cdham.org)>; and, 2) in December of 2003, a peer-reviewed version of the summary report entitled, *Overview of Overseas Humanitarian, Disaster and Civic Aid Programs*, was also published in *Military Medicine*, 168, 12:975-980, 2003.

***Rapid Assessment.*** Efficient means for assessing the effects of a disaster event are essential for the direction of coordinated relief efforts. As previously reported, the CDHAM completed a study entitled, *An Analysis of the Involvement of United States Department of Defense Personnel in Rapid Assessment Surveys Following Natural and Man-Made Disasters*. The rapid assessment study was made part of the distribution effort identified above for the measures of effectiveness study, and was further provided as an *Adobe Acrobat* file on CD-ROM and via the World-Wide-Web on the CDHAM home page.

***Gorgas Laboratory.*** CDHAM continues to collaborate with the Department of Defense Global Emerging Infections System (DoD-GEIS) co-sponsorship of a SOUTHCOM-funded initiative dealing with the Public Health Laboratory Information System (PHLIS), a hierarchical public health laboratory surveillance network for seven Central American countries and the Dominican Republic. Key partners in this endeavor have included the CDHAM, the Pan American Health Organization (PAHO), and the Pan American Health and Education Foundation. After a training program introduced approximately 28 ministries of health epidemiologists, laboratories, and informatics specialists to the PHLIS software, funds were provided to GEIS and CDHAM for on-going collaborative efforts.

***Support to Unified Combatant Commanders: USSOUTHCOM, USNORTHCOM and USCENTCOM.*** The CDHAM maintains close working relationships with three of the five unified combatant commands, which have responsibilities for those parts of the globe that are proximal to USU. *CDHAM continues to work under a Memorandum of Understanding with USCENTCOM to develop an effective humanitarian de-mining organization that will assess host nation treatment facilities and capabilities in mine-populated areas.* Following completion of a contract to provide training and humanitarian support to Mexico, formerly under the United States Joint Forces Command (USJFCOM), the CDHAM initiated contacts with the newly established USNORTHCOM and the Command Surgeon's Office, to continue to provide coordination on projects that will enhance *military to military* cooperation with Mexico. The Director of CDHAM was invited to participate in two conferences hosted by USNORTHCOM (see *Other Activities and Relationships* below). Finally, the CDHAM is involved in several collaborative activities with USSOUTHCOM related to consequence management, as well as in providing assistance to the Command Surgeon to support analyses of several Caribbean and Latin American countries as part of the Department of Defense HIV/AIDS Prevention Program (DHAPP); a program managed by the Navy Health Research Center in San Diego, California. The DHAPP has been supporting *military to military* interventions in other unified combatant command AORs since 2000 (discussed in *CDHAM Consultative Support*, below).

## Telemedicine Operations and Technology Cell.

***Operational Course of Instruction in Telemedicine.*** The CDHAM designed and operates a demonstration course intended for personnel to gain a broader overview of the use of telemedicine in austere environments, which would prove useful to users of satellite communications in deployed settings. The training is based on a course that has been in existence since 1995; it consists of six hours of lectures, demonstrations, and small *hands-on* practical sessions. The demonstration course provides closer insight into the clinical and technical skills required for the successful practice of telemedicine. The CDHAM faculty is comprised of military and civilian medical and technical personnel who have extensive experience in teaching and practicing telemedicine.

Disciplines within the medical sciences currently using telemedicine technology such as Radiology, Pathology, Psychiatry, Dermatology, and Cardiology are briefly discussed. Next, other uses for deployable telemedicine systems are outlined, to include describing applications of the PCOST (Portable, Commercial, Open-Standards Telemedicine) System for use in Disaster Response and Management and the integration of Remote Local Area Networks (RLANS) for data collection and management. The session then leads into an overview of equipment, which is followed by a basic *Spectrum of Telemedicine* session that encompasses all of the various communications modalities used and how they relate to the equipment on display.

The usage and integration of medical devices (Scopes-Sonosite) lesson follows, along with a demonstration of dental, dermatological, and otoscopies. At the conclusion of the scope sets demonstration, an introduction and use of the Sonosite portable ultrasound in conjunction with the Gaumard is presented. The demonstrations are intended to encourage audience interaction with the instructors and equipment in various formats (i.e., placing satellite calls, conducting video teleconferencing communication, and experimentation with the scope sets).

## Training.

***CDHAM Director - An Invitational Speaker at Multiple Course Offerings in 2003.*** The Director, CDHAM, presented several lectures on bioterrorism and consequence management at a *Homeland Security for Medical Executives Course* sponsored by the Defense Medical Readiness Training Institute (DMRTI), in San Antonio, Texas. The Director also was a sponsored presenter for the *38th Parallel Medical Society Conference* held in Seoul, South Korea, which was attended by military and civilian representatives of the United States and the Republic of Korea Armed Forces. And, the CDHAM Director lectured at a *United States Public Health Service-Hosted Combined Humanitarian Assistance Response Training (CHART) Course* held in Rockville, Maryland.

***Strategic Medical Planning and Contingency Course.*** CDHAM provides information and training lectures for the Navy's *Strategic Medical Planning and Contingency Course* (SMPCC). This

CDHAM support expands the base of knowledge among service personnel engaged in operational planning concerning the role of the military in humanitarian assistance and disaster response; it also prepares personnel in the decision-making process regarding methodology in disaster scenarios.

***NGO Briefing to USU Fourth-Year Medical Students.*** The CDHAM regularly participates in the USU fourth-year medical student training curriculum by providing a lecture on the topic of NGOs and their relationship to the United States military, based upon the CDHAM publication, *Guide to NGOs*.

***USU Graduate School of Nursing Operational Readiness Course.*** A presentation similar to the above-described SMRCC lecture was presented during the USU Graduate School of Nursing (GSN) *Operational Readiness Course*, to prepare the GSN participants for decision-making during humanitarian assistance and disaster relief operations, as well as to encourage active military participation in future missions.

***Master of Public Health Program, USU SOM Department of Preventive Medicine and Biometrics.*** The Director of CDHAM participated as an instructor/lecturer in the *International Health Course*, which is part of the Master of Public Health (MPH) Program in the USU SOM Department of Preventive Medicine and Biometrics.

***Man-Made Disaster Training for the Mexican Military.*** CDHAM completed the execution of a contract supporting the United States Joint Forces Command (USJFCOM) theater engagement plan in Mexico during 2002. In 2003, a report was finalized concerning the principal tasks, which included: 1) the facilitation of a bilateral disaster medical training conference; and, 2) the humanitarian donation of property that was excess to the needs of the Department of Defense. Total attendance at the training presented in support of the contract included 287 civilian and military personnel. Bilingual proceedings and training materials, developed as part of the support contract, are available as training resources via CDHAM's home page on the World-Wide-Web.

***Military Medical Humanitarian Assistance Courses.*** Of ten *Military Medical Humanitarian Assistance Courses (MMHAC)* initially developed by the CDHAM, six are in final preparation for conversion into web-based programs. Much of the course content is being updated from original lesson plans developed during 2001-2002. While the definitions and the military's view of complex emergencies have hardly changed concerning the basic dialog, the execution and response by the DoD has continued to evolve. The opening lectures of many of the courses of instruction (i.e., *Introduction to Humanitarian Assistance*, etc.) are being reevaluated either in electronic or hard copy form.

The *MMHAC* originally consisted of 13 courses: 1) Medical/Clinical Psychology; 2) Psychiatry; 3) Internal Medicine; 4) Dermatology; 5) Nurse Practitioner (combined with Nurse Anesthesia); 6) Emergency Medicine; 7) Pediatrics; 8) Obstetrics and Gynecology; 9) Medical Informatics; 10) Family Medicine; 11) Orthopedic Surgery; 12) Veterinary Public Health; and, 13) Physical Medicine

Rehabilitation Services. Some of the original 13 courses were never developed or conducted; and, several of the courses continue to be prepared for evaluation either in electronic or hard copy form.

From available course materials, six courses were evaluated for web-based conversion and ranked using the following prerequisites:

- Immediate availability for HTML conversion for web presentation;
- Availability of materials, including electronic copies of reference materials and examinations;
- Current application to disaster management; and,
- Organization and structure of the course material.

During 2004, beta test versions of the six courses will be finalized and just-in-time instructional curricula will be produced for delivery via the CDHAM home page on the World-Wide-Web.

***Combined Humanitarian Assistance Response Training Course.*** In prior years, the CDHAM has served as a host site for the *Combined Humanitarian Assistance Response Training (CHART) Course*. Additionally, CDHAM sponsored an organizational meeting on behalf of the Office of the Assistant Secretary of Defense, Special Operations Low Intensity Conflict, to update the day-four medical agenda topics for the CHART Course, which is managed in Hawaii by the Center of Excellence (COE) in Disaster Management and Humanitarian Assistance. Whereas, the CDHAM is currently focusing its humanitarian assistance and disaster response training efforts towards Military Medical Humanitarian Assistance Courses, members of the CDHAM staff continue to serve as faculty instructors for CHART Courses that are held in the area. In February of 2003, the CDHAM Director lectured in a United States Public Health Service sponsored CHART Course held in Rockville, Maryland.

***Kerkesner and Bushmaster.*** The CDHAM staff continues to support the education of USU medical students during the first-year of medical school (*Kerkesner*) and fourth-year (*Bushmaster*) operational training courses and exercises. Live demonstrations of telemedicine equipment and medical informatics in relation to the austere environment are presented under actual field operating conditions.

***Public Service Recognition Week.*** The CDHAM provides an interactive display on Telemedicine for the general public during the annual Public Service Recognition Week hosted by DoD on the Mall in Washington, D.C.

## CDHAM Consultative Support.

The CDHAM provides telephone and on-site consultation for organizations requiring timely expertise in all phases of disaster mitigation. Consultative support with response planning, vulnerability assessment, needs assessment, medical care, and epidemiological surveillance is available.

***A Guide to NGOs: A primer about private, voluntary, non-governmental organizations that operate in humanitarian emergencies globally.*** The CDHAM completed its publication of an instructional reference that deals with non-governmental organizations (NGOs), often referred to as private volunteer organizations (PVOs), non-profits, charities, or aid organizations. Actively involved in humanitarian emergencies globally, the role of NGOs and their interaction with the United States Department of Defense, which has become increasingly involved in humanitarian assistance and disaster relief operations, is described and discussed in CDHAM's 247-page reference publication, *Guide to NGOs*. This publication was designed to orient a wide range of readers with NGOs, their operations, strengths and limitations, budgets, practices, and other characteristics that make them unique across the humanitarian assistance community. ***A timely reference, the Guide to NGOs also includes two annexes dealing with NGOs in Afghanistan and Iraq.*** As with previous CDHAM studies, the publication has also been produced on a CD-ROM as an Adobe Acrobat file, and can be accessed, at no cost, via the CDHAM homepage at <[www.cdham.org](http://www.cdham.org)>.

***CDHAM's Homepage and the On-Line Disaster and Humanitarian Assistance Portal.*** The CDHAM homepage can be accessed on the World Wide Web at <[www.cdham.org](http://www.cdham.org)>. Intended to serve as an information resource, the CDHAM mission and functions are detailed on the site and there are active links that enable the user to access various CDHAM resource materials. One feature on the CDHAM website is the capability to support web-hosting of real-time discussions on timely and relevant topics via the ***Disaster Management Zone (DMZ)***, as well as serving as a vital link to personnel or organizations involved in HA/DR activities anywhere in the world. Another vital link on the CDHAM homepage is the ***On-Line Disaster and Humanitarian Assistance Portal (ODHAP)***, which is a forum to provide rapid access - *two mouse clicks* - to a current listing of over 314 reference sites in 41 different categories dealing with relevant disaster response and humanitarian assistance topics.

***Monitoring and Evaluation of the DoD HIV/AIDS Prevention Program in Africa.*** The CDHAM received funding from the Navy Health Research Center (NHRC) in San Diego, California; NHRC is the executive agent for the DoD HIV/AIDS Prevention Program (DHAPP). The CDHAM is conducting an evaluation and analysis of the DHAPP, which is under NHRC's management oversight, with a focus on the validation of the current business plan and the execution of program dollars since the establishment of the DHAPP in Fiscal Year 2000. The CDHAM will also provide recommendations for program improvement or changes, as appropriate, to assist NHRC in validating the processes and procedures used for program execution for the DoD. At the end of 2003, three site visits were made to NHRC to begin the data collection; the bulk of the contract work should be completed during 2004.

## Other Activities and Relationships.

***Humanitarian Training Program for the San Antonio Military Pediatric Center, Joint Pediatric Residency Program, Honduras, and Electronic Health and Nutrition Surveillance for Force Health Protection and Humanitarian or Disaster Assistance.*** A study entitled, ***Nutrition Assessments in Children Living in the Pacific Islands: A Capacity Building Approach***, initiated during 2003, receives administrative and fiscal support from the CDHAM. Another project on nutrition assessments was completed in American Samoa during 2003; and, follow-on assessments are being coordinated for the Republic of the Marshall Islands during 2004. This project is a collaborative effort between the University of Hawaii and the CDHAM at USU. The ***Healthy Living in the Pacific Islands (HLPI) Project***, originally requested support from CDHAM to complete nutrition/health assessments for United States-affiliated Pacific jurisdictions; CDHAM continues to provide technical and financial support to this health initiative, which is a collaborative effort between the University of Hawaii, the Pacific Island Health Departments, and Land Grant Agricultural Universities. The HLPI Project strives to eliminate problems of increased mortality and to decrease the health care costs of treating chronic diseases in the United States-associated Pacific Islands. The Project's focus is on increasing collaboration and community-based strategic planning to better utilize scarce resources and to promote capacity building; the ultimate goal is to ensure the means for longer and healthier lives for those who live in the United States-affiliated Pacific jurisdictions. The CDHAM shares a common concern for improving the health status of the underserved and disadvantaged populations in the Pacific Islands through the provision of quality research and data collection focused on reducing disparity in health. The above described projects focus on children's health and are designed to assist in eliminating health disparities among special racial and ethnic populations. The continued collection of health and nutrition assessment based research data will help to target the most at risk population groups and validate requirements for public health and nutrition interventions.

***Support to Honduras and American Somoa.*** The CDHAM provided funding support for: one rotation of a fourth-year USU medical student, through the USU SOM Military and Emergency Medicine Department, and one part-time CDHAM staff member to participate in the nutrition-based study in Honduras; and, three support personnel from the Walter Reed Army Institute of Research and the Centers for Disease Control to participate in the work accomplished on nutrition in American Somoa and the Marshall Islands.

***The Veterans Administration Employee Education Steering Committee.*** The CDHAM was also involved in numerous meetings to support the Veterans Administration (VA) Employee Education Steering Committee (EES) for Public Law 107-287. The EES is a newly organized effort to provide training to VA employees in response to Public Law 107-287 and to address the VA's responsiveness and facility preparedness against bioterrorism after the events of September 11, 2001. The CDHAM represented the USU at all Sub-Committee Chair and Working Group Conferences on topics dealing with biological and chemical agents, radiological weapons, mental health and stress management, and explosive agents and blast injuries. In accordance with the language of the public law, the VA is developing a series of close-circuit televised training lectures on the five topic areas, as well as network education modules leading to competency certification of VA employees with the help of subject-matter experts at USU.

***USU Center Participates in a Three-Day Conference in Laredo, Texas, "Los Dos Laredos."***

CDHAM personnel attended a conference entitled, *Binational Communication to Enhance Public Health*, in Laredo, Texas, which addressed issues of public health safety along the United States and Mexican border. The CDHAM presentation, ***Response to Bioterrorism with High Technology***, promoted commercial, off-the-shelf technologies in telemedicine that are evaluated as part of CDHAM's Operations and Technology Cell for use in consequence management settings. The conference had over 250 attendees and was affiliated with the United States-Mexico Border Health Association (USMBHA), which the CDHAM has supported over the past three years. The CDHAM also took part in a five-day symposium, ***Bioterrorism and Emerging Infectious Diseases Conference***, in Mexico City, Mexico, which was hosted by the United States Navy, Office of Naval Research. The CDHAM Director presented lectures concerning bioterrorism and consequence management in relation to humanitarian assistance/disaster response. In addition, the CDHAM Director was a member of a team engaged in bilateral United States - Mexico meetings concerning critical infrastructure protection in Mexico City, Mexico.

***The Fiscal Year 2004 CONUS Air Force Medical Service Exercise, Concept Development Meeting.*** To support the United States Air Force Humanitarian Assistance/Disaster Relief (HA/DR) Programs, CDHAM personnel attended the *Fiscal Year 2004 CONUS AFMS Exercise, Concept Development Meeting* and provided a briefing on the after-action/lessons learned proposal from CDHAM's Report 02-06, *Information Management for More Effective Humanitarian Assistance Projects and Program*, on the Measures of Effectiveness Study completed during 2002. The conference was attended by 25 decision-makers of the United States Air Force International Health Specialist Subspecialty; it provided CDHAM with an opportunity to continue to seek a user community for the evaluation and implementation of its web-based information gathering and reporting and retrieval system to support HA/DR planning and execution.

***United States Air Force Reserves and National Guard Working Group.*** The CDHAM is actively involved with a working group hosted by USU to address the topic of training and education and certification programs for the United States Air Force Reserve and National Guard Components. The CDHAM is actively pursuing means to serve as a resource for developing and operating web-based training, while avoiding duplication of effort, for the Guard and Reserves as part of its homepage on the World-Wide-Web.

***Support to the 354th CA Battalion, Washington, D.C.*** The CDHAM provided resource materials to a Navy representative from the 354th CA Battalion in preparation for deployment in response to Operation Iraqi Freedom.

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**USU School of Medicine Department of Surgery and the Center for Prostate Disease Research - A TriService Effort.**

Background. The Center for Prostate Disease Research (CPDR) is a United States Department of Defense Program located in Rockville, Maryland; it integrates basic and clinical science multidisciplinary programs to develop promising detection techniques and treatments for prostate cancer and disease. The CPDR was established in 1991, by the United States Congress in an effort to combat the increasing rate of occurrence of prostate cancer. Current figures released by the American Cancer Society reveal that over 230,900 American men will be diagnosed with prostate cancer this year and that approximately 29,900 of those men will die from the disease.

The CPDR is a USU program located in Bethesda, Maryland; it is affiliated with the Walter Reed Army Medical Center (WRAMC) and the Armed Forces Institute of Pathology (AFIP), both located in Washington, D.C., as well as nine, TriService (Army, Navy and Air Force) Military Medical Centers located throughout the United States. The CPDR is administered by the Henry M. Jackson Foundation for the Advancement of Military Medicine.

Mission. The CPDR is unique, in that it incorporates three distinct areas of prostate disease research into one comprehensive program. In particular, clinicians are working closely with basic scientists, pathologists, and other medical researchers to advance the field. **Colonel Judd W. Moul, MC, USA, Urologic Oncologist, Walter Reed Army Medical Center (WRAMC), Professor, USU SOM Department of Surgery, and Colonel David G. McLeod, MC, USA, Urologist, Walter Reed Army Medical Center (WRAMC), Professor, USU SOM Department of Surgery,** served as the Directors of the Center for Prostate Disease Research during 2003.

Center Activities During 2003.

**Clinical Research Center.** The CPDR Clinical Research Center, located at the Walter Reed Army Medical Center in Washington, D.C., provides state-of-the-art care to military beneficiary patients affected by prostate disease, with particular emphasis on enrolling military beneficiaries in clinical trials. The CPDR combines prostate screening, data collection, clinical diagnosis, education and counseling in a distinctly patient-oriented setting.

The CPDR Clinical Research Center at WRAMC made great strides during 2003. It has enhanced its collaborative efforts in radiation therapy; created a clinical trial portfolio covering all stages of prostate cancer; strengthened clinical trails and sponsored screenings; created a seamless system for maintaining at least yearly contact with its database patients; initiated the utilization of various clinics and special events for research opportunities; increased the number of investigator-initiated clinical trails, as well as other trails that can be supported within existing resources; and, initiated work on an ICDB *clinic note* to help with data collection.

**CPDR Tables.** In a paper published in the March 2003 issue of the journal, *Urology*, CPDR reported on a new prognostic model, developed to predict pathologic outcome at the time of radical prostatectomy. A complement to the widely used Partin Tables, the CPDR Tables incorporate the patient's quantitative histology - the percentage of biopsy cores that contain cancer, among other clinical variables, to predict the likelihood of cancer recurrence following radical prostatectomy. The CPDR Tables are rapidly gaining acceptance among prostate cancer clinicians.

**Collaboration with the National Cancer Institute.** CPDR recently initiated a close collaboration with the National Cancer Institute (NCI). **Doctor William Dahut, Chief of Genitourinary Clinical Research and Head of the NCI Prostate Cancer Clinic**, is now actively conducting studies of patients enrolled for research through CPDR's clinical site at the National Naval Medical Center.

**TriService, MultiCenter National Prostate Cancer Patient Database.** The CPDR Patient Database is one of the largest, most comprehensive prostate cancer patient databases in the country. After informed consent, patients provide comprehensive data about their care, which is maintained in a state-of-the-art relational computer database. **Leon Sun, M.D., Ph.D., MultiCenter Database Administrator, Research Assistant Professor, USU SOM Department of Surgery**, and **Colonel Judd W. Moul, MC, USA**, led this monumental project, which is administered, nation-wide, by principal investigators and database managers at nine, nationwide TriService Military Medical Centers. *The CPDR database has evolved into a valuable research tool for both clinicians and scientists working in the prostate disease field. Currently, there are more than 532,000 records on over 20,000 patients in the database.*

**Patient Education and Outreach.** In 2003, CPDR initiated efforts to provide patient education and outreach through participation in community health fairs, such as the *NBC4 Health and Fitness Expo*, held at the Washington D.C. Convention Center, the *Capitol Hill Health Fair* in Washington, D.C., and numerous similar events.

The scientific staff of the Basic Science Research Program (BRP) is committed to the teaching and training of urology residents, post-doctoral fellows, graduate students, and medical, college, and high school students. The BRP has, on average, 10 to 15 trainees per year; the BRP scientists actively participate in the meetings organized by CaP (prostate cancer) support groups and other local, regional, and national meetings.

**Academic and Administrative Responsibilities of Members of the Basic Science Research Program at USU and the United States Military Cancer Institute.** The senior scientific staff members of the CPDR are actively involved in the research training of residents, graduate students, medical students, and high school summer interns within the CPDR. Some of the members of CPDR are also actively involved in the formal teaching of medical and graduate students focusing on topics related to urology and cancer biology. CPDR members continuously provide their services to the USU SOM Department of Surgery and other academic and research activities at USU on an as-needed basis. Researchers at the CPDR contribute to the research meetings in the USU SOM Department of Surgery and other USU activities. There are numerous collaborative interactions between CPDR and the USU faculty; USU and

the scientific staff of the CPDR Basic Science Research Program actively contribute to the planning and development of the United States Military Cancer Institute (USMCI). In addition, the CPDR BRP staff serve as members on numerous USU and USMCI committees.

***CPDR Website Receives High Ratings.*** In 2003, the prestigious publication, Prostate Cancer Science and Clinical Practice, ranked the CPDR website as the **6th Best Among Not-For-Profit Websites** with specific content related to prostate cancer. This reference book was published by Academic Press, an imprint of Elsevier, which publishes Clinical Oncology and other recognized academic journals.

***Basic Science Research Program.*** In the Basic Science Research Program of CPDR, 2003 proved to be a great success for research productivity. Under the direction of **Shiv Srivastava, Ph.D., CPDR Scientific Director, USU SOM Research Associate Professor, Department of Surgery**, the Basic Research Program of the CPDR now includes more than twenty-five cancer researchers including the **Associate Director, Doctor Johng Rhim**, and the **Assistant Director, Doctor Vasantha Srikantan**, three Senior Investigators, a Laboratory Manager, Post-Doctoral Fellows, WRAMC Urology Residents, Research Assistants, and USU graduate and medical students. The Basic Research Program Team has developed a vigorous long-term research program and unique bio-resources with a team of dedicated researchers to address molecular genetic alterations during the on-set, or the progression of, prostate cancers. *Collaborative efforts between Doctor Srivastava and Doctor Judd Moul, CPDR Director, have led to the integration of basic and clinical research activities at the CPDR.* This allows the rapid translation of basic research discoveries into the clinical arena (i.e., the evaluation of biomarkers for prostate cancer progression and the identification of new targets for therapy). Also, prostate cancer gene discovery efforts at the CPDR, using state-of-the-art global gene expression profiling and positional cloning strategies, are uncovering novel gene alterations in prostate cancer. In 2003, the Basic Research Program produced peer-reviewed papers of high quality that have been published in the leading cancer research journals, to include: Cancer Research, Oncogene, and Clinical Cancer Research. In addition to CPDR funds, extramural grants from the National Institutes of Health, DoD, and private companies support the CPDR Basic Science Research Program.

***Proteomics Research Activities.*** Two state-of-the-art technologies being evaluated at CPDR include serum proteomic profiling using surface enhanced laser desorption and ionization (SELDI) and the detection of circulating prostate epithelial cells (CPECS) in the peripheral blood of patients. Proteomics is the study of proteins and their interactions in cells; samples that can be tested in this manner include serum, semen, urine, and plasma.

SELDI is a method in which proteins are selectively bound to a chemically-modified solid surface, or *chip*; unbound proteins are removed by washing; an energy-absorbing matrix is applied; and, the proteins are identified by a mass spectrometer. This ProteinChip System can analyze trace amounts of native proteins in their natural state and requires only one drop of blood. Through bioinformatic analysis, hidden patterns in the serum proteomic profiles of known prostate cancer patients and healthy males provide algorithms, which can predict the disease status of serum samples with fairly high accuracy (85% specificity/sensitivity). Through this method, CPDR scientists report promising results with great potential, in terms of clinical value, in being able to distinguish between patients with prostate cancer

and patients with conditions such as BPH, or other prostate disease, which PSA testing is unable to do. Further development of this technology is in progress at the CPDR.

Another breakthrough, the detection of circulating prostate epithelial cells (CPECS) in the peripheral blood and bone marrow of prostate cancer patients, shows great diagnostic and prognostic potential. These circulating cells can be isolated from the blood and detected as they travel from the prostate cancer to the rest of the patient's body. These cells are identified by the presence of genes, which are selectively expressed in the prostate such as PSA. It is now apparent that CPECS are mostly detected in prostate cancer patients and rarely present in normal controls. Detection of CPECS in prostate cancer patients has been successfully performed in the CPDR laboratory by sensitive methods that involve PCR amplification, or the production of large amounts of DNA, followed by the detection of very specific DNA (in this case, prostate related). The specificity and sensitivity of this method is very high - greater than 85% in the initial experiments. While CPECS could provide more methods of CaP (prostate cancer cell) detection, quantitative measurement of CPECS may have prognostic utility. For example, patients with an increased number of CPECS may suggest a more advanced stage of the disease than anticipated by current diagnostic modalities; research along these lines is in progress.

In August of 2003, the CPDR published its initial findings on the diagnostic potential of using serum SELDI-TOF-MS protein profiling in prostate cancer. *These preliminary results were also presented at multiple scientific meetings, including the Annual Meetings of the American Urological Association, the American Association for Cancer Research, the Society of Urological Oncology, and the 50th Annual Kimbrough.*

Collaborations on CPDR proteomics studies have also been formed with such institutions as the National Cancer Institute Center for Bioinformatics, the Eastern Virginia Medical School, and Science Applications International Corporation (SAIC). ***A significant collaborative achievement was the inclusion of the CPDR in a multi-institution validation trial under the National Cancer Institute - Early Research Detection Network.*** A noteworthy CPDR paper entitled, *PMEPA1, an Androgen-regulated NEDD4-binding Protein, Exhibits Cell Growth Inhibitory Function and Decreased Expression during Prostate Cancer Progression*, demonstrated the important role of the PMEPA1 protein in prostate cancer. The PMEPA1 gene was discovered by CPDR researchers several years ago; by utilizing primary prostate cancer cell lines, CPDR researchers found promising findings that the loss or reduced PMEPA1 expression in prostate cancer further suggests its role in prostate tumor growth.

***The Prostate Cell Center.*** The Prostate Cell Center of the CPDR is under the direction of **Doctor Johng S. Rhim, Associate Scientific Director, CPDR, and Research Professor, USU SOM Department of Surgery.** The Prostate Cell Center, established in January of 2000, continues to facilitate studies of new prostate cell lines. Doctor Rhim and his team continue working towards the Center's goal - *the generation and characterization of cell lines from primary tumors of prostate cancer patients as well as from normal prostate tissues of the same patients.* This also includes cell lines from familial prostate cancer patients. ***The Prostate Cell Center also serves as a resource center to provide primary cell cultures of epithelial cells derived from normal and malignant prostatic tissues to the larger scientific research community.*** The availability of these cell cultures, as well as derived materials such as RNA, DNA, proteins and conditioned media, facilitates research by other investigators who do not have the means to establish primary cultures themselves. Doctor Rhim and his colleagues from the CPDR have

reported the discovery and characterization of two new prostate cancer cell lines in two leading cancer journals, Cancer Research and Oncogene.

***The CPDR Administration and Staff.*** The CPDR administration and staff is currently comprised of over 80 researchers and support staff located at USU, WRAMC, AFIP, the Rockville, Maryland CPDR site, and nine participating military medical sites throughout the Nation. The synergism of this professional team of principal investigators, clinical and laboratory researchers, and administrative and scientific support staff has enabled the CPDR to produce cutting-edge quality prostate cancer research. This dynamic program will continue to focus on improving the treatment and detection methods for prostate disease in the military community. The ultimate goal is to improve the health care of all American men suffering from this *silent killer*, which affects, at some time, one out of every five men. More information is available on the CPDR web site at <[www.cpdr.org](http://www.cpdr.org)>.

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## **The United States Military Cancer Institute.**

Background/Organization. The United States Military Cancer Institute (USMCI) is a component of USU; the Director of the Institute reports directly to the President of the University. In addition to the USU SOM, other components of the USMCI are the Walter Reed Army Medical Center, the National Naval Medical Center, the Malcolm Grow Air Force Medical Center, the Armed Forces Institute of Pathology, and the Armed Forces Radiobiology Research Institute. The Institute has, as its objective, the enhancement of multi-disciplinary cancer research under the USU aegis; the ultimate goals are to advance the science of cancer prevention, diagnosis, treatment, and research. **John F. Potter, M.D., former Director of the Lombardi Cancer Center at Georgetown University, and Professor of Surgery at USU,** serves as the Director of the USMCI. Doctor Potter is also the Department of Defense (DoD) Representative to the C-Change, an entity that brings together leaders in the National Cancer Community from academia, government and industry; he also serves as the DoD Representative to the National Cancer Advisory Board of the National Cancer Institute.

Mission. The mission of the United States Military Cancer Institute is to promote collaborations among DoD basic and clinical scientists to augment cancer-related patient care and research activities. Significant numbers of DoD beneficiaries have been afflicted by cancer in the past 14 years. Basic scientists at USU are contributing significantly to translational cancer research with clinicians at the local military hospitals.

Benefits of the Cancer Institute. Cancer remains a very significant issue for the DoD beneficiaries in the Military Health System (MHS). Last year, more than 355,000 patients were treated for oncologic conditions; annual costs for cancer care in the MHS are estimated at \$1 billion, of which TRICARE paid \$550 million.

There are a number of benefits that will result from the establishment of the USMCI. The USMCI will further enhance the academic prestige of USU and would position the University among the premier academic entities in the Nation. As a consequence, student applications to USU would be increased. Medical and nursing students will benefit from their involvement in multi-disciplinary patient care, which is the hallmark of state-of-the-art cancer treatment. The Institute will enhance the collaborative relationships among cancer scientists in both the basic and clinical areas. The increased public awareness of the high quality of care provided to cancer patients in military treatment facilities should increase the flow of patients to the military treatment centers. Post-graduate education must also have large numbers of patients for teaching purposes; this level is being threatened in some hospitals. The USMCI will increase patient accessions to the military treatment facilities. Moreover, these cancer patients present extremely challenging surgical and medical conditions. Caring for such patients maintains and enhances the skills of staff physicians, residents, medical students, and nurses. A cancer institute will stimulate the submission of grant applications to the National Institute of Health and other such prestigious entities. An increase in grant awards would be a clear indication of the high quality of research being conducted at the University. The Institute could also serve as a model for TriService collaboration.

**The United States Military Cancer Institute has been accepted as a member of the Association of American Cancer Institutes. This Association, to which all of the leading cancer centers in this country belong, has established rigid guidelines for admission. These include the performance of high quality basic, translational, and clinical research. The Association reviewed the extensive documentation, which it requires, describing the USMCI research programs before voting for acceptance. This recognition is a tribute to the quality of USMCI research and patient care activities.**

- The Weekly Activities Report, Uniformed Services University Military Cancer Institute Recognized, Health Affairs, Office of the Secretary of Defense, September 3-7, 2002.

Achievements of the Institute. Since its inception, the Institute has accepted over 90 candidates as members. These basic and clinical scientists have formed TriService, multi-disciplinary research teams and programs. For example, the USMCI member programs now include the Center for Prostate Disease Research, the Clinical Breast Care Project, and the Cancer Vaccine Development Laboratory. Other programs focus on soft-tissue sarcoma and gynecologic oncology. A Committee of Scientific Advisors, composed of nationally distinguished cancer scientists, meets annually to review the progress of the Institute. At its most recent meeting, the Committee declared that it was impressed with the progress of the Institute and expressed renewed support for the focus of the Institute on cancer prevention and control. This theme was adopted because it will capitalize on the talents of the basic scientists of the USU SOM to conduct translational research with clinicians in the local military hospitals. Also, the wellness concept is important for DoD's strategic goal on medical readiness. To achieve these goals, a nationally prominent epidemiologist has been recruited as the Associate Director for Epidemiology. Recently, a Memorandum of Understanding was signed with the National Cancer Institute (NCI) to conduct epidemiological studies on military beneficiaries; the NCI is funding this effort in the amount of \$250,000.

***Services Sign Memorandum to Combine Efforts in Cancer Research.*** The Commanders of four local military health care facilities signed a Memorandum of Understanding in February of 2002, to create the first TriService Institutional Review Board for the United States Military Cancer Institute. In the past, the necessity for an investigator to obtain Institutional Review Board (IRB) approval from each institution at which the investigator wished to perform research (which often amounted to the completion of approval processes with four or five entities) served as a substantial roadblock to collaborative research. However, the signing of an agreement by the Commanders from the Walter Reed Army Medical Center, the National Naval Medical Center, the Malcolm Grow Medical Center, and the President of USU will enable researchers to obtain the required reviews of their research protocols through a more streamlined process. Instead of being required to submit a protocol to the IRB sponsored by each individual institution, a researcher can now make one submission to one *integrated* Institutional Review Board. This will facilitate the work of the investigators and expedite cutting-edge discoveries and technology for the DoD communities.

***Establishment of the USMCI Committee.*** A USMCI Committee has been established to support and advise the United States Military Cancer Institute. **The Honorable Frank Carlucci, former Secretary of Defense and National Security Advisor to the President of the United States,** serves as the Committee Chair. Other members include **The First Lady of the United States, Mrs. Laura Bush; Ms. Ellen Stoval, President and CEO of the National Coalition for Cancer Survivorship; Mrs. Marlene Malek, President of Friends of Cancer Research; Doctor Jeong Kim, Chairman of CIBERNET Corporation; General H. Norman Schwarzkopf, USA, Retired; and, Mr. Gerald S.J. Cassidy, President of Cassidy and Associates.**

***Congressional Recognition.*** The Congress of the United States has both recognized the United States Military Cancer Institute and mandated substantial funding for its operations during Fiscal Years 2002 and 2003.

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**The USU SOM Departments of Family Medicine *and* Medical and Clinical Psychology and the USU Center for Health Disparities Research and Education - *Project EXPORT*.**

Background. Despite overall improvements in health in the United States, there continues to be substantial health disparities within ethnic/racial minority (i.e., African-Americans, Hispanics, Native Americans, Asians) and other underserved populations. These disparities are believed to be the result of a complex interaction of many variables, such as biological factors, the environment, patients' health-related behaviors, and inadequate provider training. Greater efforts are needed to develop effective and efficient methods to reduce and ultimately eliminate these disparities. The Liaison Committee on Medical Education (LCME) has also stated that medical faculty and students need to address gender and cultural biases in the delivery of health care and, in general, prepare providers to care for diverse patient populations. Under the direction of **Evelyn L. Lewis, M.D., MA (CDR, MC, USN, Retired), SOM Department of Family Medicine**, and **Richard Tanenbaum, Ph.D., SOM Department of Medical and Clinical Psychology**, USU developed a biopsychosocial training program for medical students and residents, nursing students, clinical/medical psychology graduate students and other prospective health care professionals, faculty, and staff. The USU SOM Center for the Enhancement of Healthcare Training and Outcomes (CEHTO) enables the University to comply with the LCME requirements and improves USU's curricula by providing training to optimize patient adherence and enhance health care outcomes. Specifically, CEHTO has been established to: 1) infuse concepts and processes into existing curricula in order to advance a biopsychosocial philosophy and improve cultural proficiency; 2) provide a forum in which students have the opportunity to practice the skills and strategies addressed in the classroom; 3) facilitate the development of culturally respectful relationships, inside and outside of the USU community; and, 4) evaluate the impact of this initiative and continuously improve and refine the training provided.

During 2003, the University and the SOM Departments of Family Medicine and Medical and Clinical Psychology applied for, and successfully received, a substantial grant from the National Institutes of Health (NIH) to sponsor the USU Center for Health Disparities Research and Education, referred to as ***Project EXPORT***. **Evelyn L. Lewis, M.D., MA, USU SOM Department of Family Medicine**, is the Principal Investigator on the NIH grant; and, **Richard Tanenbaum, Ph.D., USU SOM Department of Medical and Clinical Psychology**, serves as the Co-Principal Investigator and Project Director. **David S. Krantz, Ph.D., Professor and Chair, USU SOM Department of Medical and Clinical Psychology**, is the Center Director. As part of ***Project EXPORT***, CEHTO will assist in meeting the following objective: to develop workshops and other educational forums that focus on disseminating critical knowledge about health disparities and teaching practical skills in order to maximize culturally proficient health care service delivery.

Mission. The USU Center for Health Disparities Research and Education (CHD) aims to improve the quality of healthcare services provided to all patient populations. Newly funded by a National Institutes of Health (NIH) grant administered by the Henry M. Jackson Foundation for the Advancement of Military Medicine, and in partnership with the University of Maryland-Eastern Shore and community-based organizations, the Center's goal is to promote positive health-related change and ultimately reduce health disparities among racial and ethnic minorities and other underserved populations through research, education, training, community outreach and information dissemination.

Center Activities and Scope of Work. The Center's research, education, training, community outreach, information dissemination and shared resource (information technology) components operate both independently and synergistically to fulfill *Project EXPORT*'s scope of work through the following approaches:

**Research.** The Center conducts research to systematically investigate issues central to the understanding and amelioration of health disparities (i.e., evaluate recently developed training methods to improve medical providers' knowledge and skills to reduce health disparities and explore other bio-behavioral and biomedical contributions to health care disparities in minority and underserved populations). The current, primary research projects are summarized as follows:

- ***Obesity Treatment and Prevention among African Americans: Utilizing Networks Outside Traditional Settings to Eliminate Health Disparities.*** Funded by the National Institutes of Health, this USU SOM research project primarily focuses on health behaviors in general, and on diet and weight management in particular. A core element of the project is the delivery of evidence-based weight loss instruction (Behavior Choice Therapy, BCT) to African American women from the National Capital Area. The goal of this research is to promote long-term behavior change in the treatment of overweight and obesity and to prevent health problems and disease;

- ***Reducing Health Disparities Through the Enhancement of Patient-Provider Relationships.*** This project is designed to assess the effectiveness of a cultural proficiency training program to enhance health care providers' interpersonal and communication skills and cultural knowledge so that they are better able to engender trust and collaboration with multicultural patient populations. This research project will also test the efficacy of the healthcare provider training component described in the Minority and Underserved Population Health and Health Disparity Education Program Component;

**Educate.** The Center will educate healthcare sector students, faculty, other health care professionals, and community members about health care disparities and will provide methods to reduce disparate treatment with a goal to improve healthcare outcomes;

**Promote.** The Center will promote and create effective mechanisms for the recruitment and training of students from minority and underserved populations in the biomedical sciences, research, and healthcare fields;

**Develop.** The Center will develop mutually beneficial and collaborative research, training, and educational partnerships with ethnic/minority community groups (i.e., churches, community health centers and providers, the YMCA and other youth organizations), academic institutions, scientific communities, medical centers, and other entities;

***Disseminate.*** The Center will disseminate relevant and culturally tailored, health-related information through its collaborative research, training and educational partnerships; and,

***Ensure.*** The Center will ensure that all research and project status data are collected, analyzed, and reported effectively and efficiently; and, also ensure that all components are provided with the information technology needed to realize their objectives through the on-going utilization of a shared core of resources.

Minority and Underserved Population Health and Health Disparity Education. The objective of the Minority and Underserved Population Health and Health Disparity Education Program Component is to develop workshops and other educational forums that focus on disseminating critical knowledge about health disparities and teaching practical skills in order to maximize culturally proficient healthcare service delivery. The Minority and Underserved Population Health and Health Disparity Education Component of *Project EXPORT* focuses on providing both didactic training and experiential exercises to sensitize current and future healthcare and biomedical science professionals to the need for reducing and ultimately eliminating healthcare disparities in minority and underserved populations. To date, USU/CHD and CEHTO accomplish this objective by infusing cultural sensitivity and proficiency training modules into existing USU courses and clerkships and providing opportunities for students to practice, hands on, the strategies and techniques introduced and discussed in the classroom. Part of the experiential aspect of this training is accomplished by using standardized patients at the USU SIMCEN (described in Section I of this report). Training USU faculty and those at the educational institutions, where the Center has established collaborative partnerships, is another essential aspect of the training initiative. This training will not only educate the faculty about the goals and objectives of the Center, but as with the students, it will serve to assist in helping these individuals to enhance their own cultural proficiency and multicultural sophistication.

Community Outreach and Information Dissemination. The objective of this component of *Project EXPORT* is to actively involve community partners in research, training opportunities, and educational offerings to maximize the understanding and reduction of health disparities in minority and underserved populations. Through multiple activities, the Community Outreach and Information Dissemination Component extracts, synthesizes and compiles relevant material and information from the other primary components of *Project EXPORT*, and translates the resulting data into user-friendly materials for dissemination. The objectives include providing health promotion related materials and information about available healthcare services to minority and underserved populations most vulnerable to disparate healthcare treatment. In addition, the necessary infrastructures to carry out research is provided to the appropriate communities; and, opportunities to participate in research studies to elicit data about healthcare disparities will be publicized.

The Training Component. The objective of the Training Component is to provide exceptional training opportunities in biomedical research and the clinical sciences for students and junior faculty throughout the span of their academic development. The Training Component provides learning

opportunities primarily at the undergraduate level. More specifically, USU/CHD summer programs make research opportunities available to college students who are members of minority and underserved populations. These learning opportunities focus on research in the biomedical and behavioral sciences. Students are assigned faculty mentors to make their learning experiences as successful and productive as possible.

Shared Resource Core: EXPORT Data Network. The objective of the Shared Resource Core is to provide on-going data management and systems support to ensure the effective functioning of *Project EXPORT*. The goal of the Information Technology (IT) Shared Resource Core is to support and facilitate consistent and high quality research by providing appropriate IT infrastructure to enable data collection, storage, management, and analysis and the generation of reports; this support also includes interaction and information exchange among the Center components and the timely dissemination of information to all participants. Information Technology support is also provided in the areas of training, program evaluation, budget tracking, and other Center requirements.

Vision and Goals. USU's newest Center, established to address critical concerns over disparities in healthcare and treatment, is positioned and funded to conduct research and effect positive health-related change among individuals and populations in greatest need. As it solidifies its operational infrastructure, ***Project EXPORT*** is enthusiastically looking forward to working with current and future partners, both within the USU and the external community, to collaboratively achieve the best possible healthcare and treatment outcomes for minority and underserved populations.

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**The TriService Nursing Research Program - A Joint Program Under the Leadership of the Chief of the Army Nurse Corps and the Directors of the Navy and the Air Force Nurse Corps.**

Background. The TriService Nursing Research Program (TSNRP) is a Congressionally authorized program targeted to support research conducted by military nurses (S.R. 107-732). In 1996, the TriService Nursing Research Program was authorized as part of the DoD Health Care Program and established at the Uniformed Services University of the Health Sciences (Chapter 104, Title 10, U.S. Code, as amended). The TSNRP is under the leadership of the Chief of the Army Nurse Corps and the Directors of the Navy and the Air Force Nurse Corps. The continuing investment of resources and support from the Congress for military nursing research has begun to yield valuable results as uniformed nurse investigators have initiated efforts to expand the scientific foundation for military nursing.

Mission. During 2001, the TriService Nursing Research Program re-defined its mission: *to provide resources for the conduct and use of research to foster excellence in military nursing care.* To achieve its mission, four goals were identified:

- 1) Increase the military nursing research capacity by providing opportunities for nurses to engage in military nursing research;
- 2) Expand the breadth and depth of the nursing research portfolio by encouraging and funding programs of research in TSNRP's focused areas of investigation: *deployment health; developing and sustaining competencies; recruitment and retention of the workforce; clinical resource management; military clinical practice;* and, *outcomes management;*
- 3) Develop partnerships for collaborative research among the Services and their components, institutions, disciplines and agencies; and,
- 4) Build an infrastructure to stimulate and support military nursing research and provide resources to support the exploration of salient military nursing research issues.

The TSNRP's first Director was appointed in 1997, to coordinate and implement all aspects of the program and to manage the *day-to-day* operations of the TSNRP. Also during 1997, the TSNRP established the Resource Center for Excellence in Military Nursing (Resource Center) to provide resources for nurse clinicians, nurse researchers, and policy makers in support of military nursing research. The major goals of the Resource Center, reestablished in 2001, include the following:

- Provide military nurse researchers with a repository of information for use in designing, implementing, and disseminating nursing research;
- Improve the quality and quantity of proposals submitted by military nurse clinicians;
- Facilitate the implementation of research findings into clinical practice; and,
- Promote the timely dissemination of TSNRP-funded research findings.

A total of 245 research proposals have been funded by the TSNRP; *more than 600 military nurses have been involved in TSNRP-funded research since the program's inception, as principal, co-, and associate investigators, as well as consultants and data collectors.* With a redefined mission, identified goals and strategies, and the Resource Center for Excellence in Military Nursing firmly in place, the TSNRP offers military nurse researchers a full spectrum of services that will ultimately improve the ability of military nurses to provide appropriate, high quality health care for the Armed Forces.

#### Highlights of TSNRP Activities During 2003.

***New Program Director.*** The Director of the TSNRP must be an active duty military nurse; and, the position is rotated among the three Services. The leadership position was passed to the Navy in the Summer of 2003, when **Commander Patricia W. Kelley** became the TSNRP's third Director. As Director, CDR Kelley coordinates and implements all aspects of the program and manages the *day-to-day* operations of the TSNRP.

#### ***General Program Activities.***

***Outreach.*** One of the strategies employed to stimulate and support military nursing research is to increase the visibility of opportunities available to military nurses through the TSNRP. In 2003, the TSNRP was exhibited at various nursing forums throughout the Nation, to include: ***The 36th Annual Communicating Nursing Research Conference***, Western Institute of Nursing, held in Phoenix, Arizona; ***The Sigma Theta Tau International Research Congress***, held in St. Thomas in the United States Virgin Islands; ***The Uniformed Nurse Practitioners Association Conference***, held at the American Academy of Nurse Practitioners, in Anaheim, California; ***The Charles J. Reddy Leadership Development Conference***, held in Washington, D.C.; and, ***The 109th Meeting of the Association of Military Surgeons of the United States (AMSUS)***, held in San Antonio, Texas.

***Website.*** The TSNRP maintains an active web site, <[www.usuhs.mil/tsnrp](http://www.usuhs.mil/tsnrp)>, which provides investigators with current information on opportunities for: dissemination; funding sources (to include eligibility, requirements and application forms); previously funded TSNRP research and findings; references and links to related web sites; and, Resource Center activities. Approximately 19,000 *hits* were logged during the past two years.

***Newsletter.*** A quarterly newsletter was started during 2003, to provide grant-related information to current TSNRP investigators and to increase networking among the TriService investigators.

*2003 Testimony Before the Senate Appropriations Committee, Subcommittee on Defense.* During 2003, each Nurse Corps Chief and Director, in submitted written testimony for the Subcommittee on Defense, Senate Appropriations Committee, cited the value of the TriService Nursing Research Program to military nursing practice. In his testimony, the **Army Nurse Corps Chief, Brigadier General William Bester** stated:

**The TriService Nursing Research Program continues to offer a breadth of supportive activities, such as workshops and symposiums to promote, encourage, and develop both our novice and seasoned researchers. It is clearly evident by the types of proposals submitted that nursing research is, and will continue to be, focused on relevant and timely research problems that necessitate solid outcome data. Your continued support of the TriService Nursing Research Program is truly appreciated and has resulted in continued advances in nursing practice for the benefit of our soldiers, their family members, and our deserving retiree population.**

The **Navy Nurse Corps Director, Rear Admiral Nancy Lescavage**, testified that:

**Through your support of the TriService Nursing Research Program funding, research has been conducted at our three major medical centers, our two Recruit Training Centers, several Naval Hospitals, on more than six aircraft carriers and collaboratively with our uniformed colleagues and more than thirteen universities across the country.**

The **Air Force Nurse Corps Director, Major General Barbara Brannon**, testified:

**Another (TSNRP) study conducted on in-flight invasive hemodynamic monitoring identified inaccuracies due to procedural variance. The recommendations resulted in significant process changes - and for the first time change was driven by scientific research. These process changes will be incorporated into the training programs for Critical Care Air Transport Teams (CCATT) and Aeromedical Evacuation (AE) nurses.**

#### Pre-Grant Award Activities.

**2003 Grant Writing Camp.** The TSNRP Resource Center sponsors an annual two-phase summer workshop to expand the grant-writing skills of military nurse researchers. Phase I is a five-day workshop that features a balance between lectures, small group discussion, *one-on-one* sessions with faculty, and homework to support the improvement of the participants' draft proposals. Phase II offers a two-day workshop intended to increase the participants' understanding of the scientific review process. To accomplish this, each participant's research proposal is reviewed by two peer-reviewers, as well as by a faculty reviewer. Comments from the 2003 Grant Writing Workshop participants include: ***This is an***

*exceptionally well-done program... Working with the faculty in the afternoon was priceless... Excellent coordinated effort by the entire group.* Three participants from the 2002 grant-writing workshop were funded by the TSNRP during Fiscal Year 2003; seven participants from the 2003 workshop submitted proposals during the first funding cycle of Fiscal Year 2004.

**Graduate Research Awards.** The submission process for this award category was expanded in late 2003 to facilitate keeping military students in school both on time and on track. Applications are now accepted for this award at any time between October 1st and April 30th of each year.

### ***Three-Tiered Proposal Review.***

*Review for Scientific Merit.* All proposals submitted to the TSNRP for funding are subject to rigorous peer review designed to evaluate the scientific merit of the research proposals. Nurse scientists selected from the health care community for their research experience, publications, and work experience, comprise the review panel. Military reviewers evaluate the proposals for the feasibility of implementing the research in a military environment.

*Review for Programmatic Merit.* Following the scientific merit review, the TSNRP Advisory Council, comprised of one representative from both the Active Duty and Reserve Components from each branch of the military Services, conducts a programmatic review. Council members assess the likelihood that the proposed research will meet TSNRP goals and priorities.

*Awarding of Grants.* Final funding decisions are based on scientific and programmatic evaluations; grant awards are made by the TSNRP Executive Board of Directors, the Corps Chief and Directors of the three Nurse Corps.

### **Grant Award Activities.**

**Grant Management Workshop.** Since 1998, the TSNRP has provided a three-day grant management workshop for newly funded principal investigators; and, since 2001, project directors. The workshop is designed to provide education on Federal, DoD, and USU regulations and requirements, as well as practical information on managing a research grant. Presentations at the 2003 workshop included didactic sessions, case studies, and small group discussions in areas such as: grant agreement regulations and cost principles; Federal and local institutional review board (IRB) requirements; research integrity; copyright laws; ethics in research; the investigator's role and responsibilities; assistance visits; reporting requirements; and, budget management. The workshop provides an opportunity for investigators to meet the TSNRP staff and to establish a working relationship; it can also be a venue for the investigators to network with other military nurse researchers from their own and other Services. The response to the workshop, which was well received by the TSNRP investigators, was outstandingly enthusiastic.

**Grant Management.** Two full-time grant managers provide routine monitoring and timely assistance for over 60 active research grants. Investigators receive assistance from TSNRP grant managers for a myriad of issues, to include: requests for changes in research design and study personnel; additional funding and extensions to the study period; disposition of equipment; monitoring and tracking of regulatory compliance and human subject protection training; and, reviewing progress of the research.

**The TSNRP Web Site.** As indicated above, the TSNRP maintains an active web site, <[www.usuhs.mil/tsnrp](http://www.usuhs.mil/tsnrp)>, which provides the investigators with current information on opportunities for dissemination; application eligibility, requirements and forms; previously funded TSNRP research and findings; references and links to related web sites; and, Resource Center activities. More than 19,000 hits have been logged since a counter was placed on the site in early 2002.

#### Post Grant Award Activities.

**Fiscal Year 2003 Funded Research.** Fourteen military nurse researchers received funding, during 2003, in the following areas: active duty military care givers' experiences; prostrate cancer screening for African American and Asian/Pacific Islanders; recruitment issues for Bachelor of Science in Nursing students; coping strategies for stress-related urinary incontinence; CCAT nursing in the combat environment; ventilator-acquired pneumonia; evaluating the Combat Medic Skills Evaluation test; bioterrorism education; after-action reports for readiness/competency training; stress and resiliency of reservist families; postpartum fatigue in active duty military women; and, combat casualty aeromedical nursing.

**Research Fellow Award.** This innovative funding category is intended to facilitate the expansion of military nurse scientists' research skills. It can also be used to facilitate the training of military nurses interested in research. The first Fellow Award was made during 2003 for training in instrument development and psychometric testing.

**Grant Management Workshop.** Beginning in 1998, the TSNRP has provided a three-day grant management workshop for newly funded Principal Investigators; and, since 2001, Project Directors have been included. The workshop is designed to provide education on Federal, DoD, and USU regulations and requirements, as well as practical information on managing a research grant. Presentations at the 2003 workshop included didactics, case studies, and small group discussions in areas such as: grant agreement regulations and cost principles; Federal and local Institutional Review Board (IRB) requirements; research integrity; copyright laws; ethics in research; the investigator role and responsibilities; assistance visits; reporting requirements; and, budget management. The workshop provides an opportunity for investigators to meet the TSNRP staff and to establish a working relationship; it can also be a venue for the investigators to network with other military nurse researchers from their own and other Services. Comments from the 2003 workshop participants indicated that the three-day workshops are well received by the TSNRP investigators: *Outstanding!... Wonderful information.... Lots of good tips for the PIs... I feel that I know so much more about the entire process after attending the workshop... I learned an*

*amazing amount about the grant process... I feel eager to start and have a much firmer grasp of what needs to be done and in what order.*

**Grant Management.** Two full-time grant managers provide routine monitoring and timely assistance for over 60 active research grants. Investigators receive assistance from the TSNRP grant managers for a myriad of issues such as: requests for changes in research design and study personnel; additional funding and extensions to the study period; disposition of equipment; monitoring and tracking regulatory compliance and human subject protection training; and, reviewing the progress of research projects.

### **2003 Research Findings.**

*Army Beneficiary Experiences and Expectations for the Military Health System.* A TSNRP-funded study in 2000 examined Army beneficiary experiences with, and expectations for, the Military Health System (MHS) in an attempt to provide information for improving patient satisfaction in the future. Focus groups and individual interviews were held within two TRICARE regions. Regardless of the region, beneficiary status, or delivery option, considerable discrepancy existed between what Army beneficiaries experienced in the MHS and what they expected. For example: 1) there were many roadblocks reported to getting care, such as the telephone/appointment system; 2) TRICARE information sources were often inconsistent, which confused the beneficiaries; 3) active duty personnel sometimes had a difficult time accessing care given the conflict between the hours during which care was offered and the demands of training; and, 4) patients wanted to be treated with individual importance but felt as though care was provided in an *assembly-line* manner. Army personnel who were not involved with the study indicated that the findings accurately portrayed their experiences in the MHS, suggesting the findings were relevant beyond the study participants. Additionally, individuals from the Navy and Air Force also stated that the findings, in some cases, mirrored their experiences, which indicates the potential use of this information by other Branches of the Services and the TRICARE Management Activity. ***Findings from this study illuminate countless targets of opportunity for ways to improve the delivery of care for military beneficiaries,*** as well as for the TRICARE insurance plan.

*Experiences of Navy Nurses Assigned to Carriers.* Another study funded during 2000, examined the experiences of Navy nurses who were assigned to carriers. *The results of this study were instrumental in determining the placement of additional critical care nurse billets on vessels at sea.*

*The Use of Dopamine in Intensive Care Units.* Often, patients in intensive care units (ICU) have difficulty breaking from mechanical ventilation because the diaphragm, the major muscle used for breathing, does not work properly. A study, funded by the TSNRP in 2002, is investigating why a commonly used ICU drug, *dopamine*, helps the diaphragm to work better and specifically how the drug prevents damage to the DNA of the diaphragm. The nurse researcher has produced the first images of diaphragm DNA. The diaphragm DNA will help to determine if the muscle is damaged; and, thus it will determine, at the molecular level, the effects of dopamine on the diaphragm. This *cutting edge*

research should provide valuable information to clinicians who are treating patients with diaphragm-related problems.

### ***Dissemination of Research Findings.***

*Publications.* During 2003, 12 publications from TSNRP-funded research appeared in peer-reviewed journals, to include: Heart and Lung; the Journal of Traumatic Stress; Military Medicine; Oncology Nursing Forum; the Journal of Infusion Nursing; Neurological Research; Endocrine Research; Nursing Forum; Neuroscience Research; and, Nurse Practitioner.

The June 2003 issue of Critical Care Nursing Clinics of North America was dedicated to *Military and Disaster Nursing*; and, it was edited by one of the TSNRP investigators. Ten TSNRP-funded investigators contributed nine of the fifteen articles in this specific issue. One article, *Care of the Critically Ill Patient in a Military Unique Environment: A Program of Research*, describes three areas of interest: the TSNRP, which is the only funding source specific to military nursing research; the Air Force Nursing Program of Research located at the Wilford Hall Medical Center; and, examples of Air Force and military unique nursing research studies. A second article, *Preparing to Respond: Joint Trauma Training Center and USAF Nursing Warskills Simulation Laboratory*, reported on a TSNRP-funded study that consisted of: training and evaluating nurses on their ability to perform required competencies in a state-of-the-art simulation laboratory; the completion of a cognitive examination; and, a self-assessment.

*Presentations.* More than 40 papers and posters of TSNRP-funded research were presented at major research and clinical conferences throughout the United States and abroad, to include the following: the ***14th Sigma theta Tau International Nursing Research Congress***, held at St. Thomas in the United States Virgin Islands; the ***36th Annual Communicating Nursing Research Conference*** held at the Western Institute of Nursing in Phoenix, Arizona; the ***109th Meeting of the Association of Military Surgeons of the United States (AMSUS)*** in San Antonio, Texas; the ***7th Annual National Conference on Cancer Nursing Research*** held in San Diego, California; the ***37th Biennial Convention of the Sigma Theta Tau International*** held in Ontario, Canada; the ***Southern Nursing Research Society Conference*** held in Orlando, Florida; the ***16th Annual Pacific Nursing Research Conference***; the ***2003 Uniformed Nurse Practitioner Association Conference*** held in Anaheim, California; the ***2003 National Teaching Institute and Critical Care Exposition*** held in San Antonio, Texas; the ***2003 Vermont Nurses Association Annual Convention*** held in Killington, Vermont; the ***Nursing 2003 Symposium*** held in Orlando, Florida; and, the ***2003 Joint New Parents Conference*** in New Orleans, Louisiana. Of the 80 abstracts selected for presentation at the ***15th Annual Karen Reider Poster Session*** held during the 109th AMSUS meeting, twenty-five percent were presented by TSNRP-funded research.

*The Federal Nursing Service Award.* **CAPT Felecia Rivers, AN, USA**, received the Federal Nursing Service Award during the 109th Meeting of the Association of Military Surgeons of the United States in San Antonio, Texas. The Federal Nursing Service Award is presented to the professional nurse from the Federal Nursing Services who has submitted an essay on the results of a study or a scholarly paper that will have an impact on nursing. CAPT Rivers' essay entitled, *Competency Skills of United*

*States Army Personnel: Continued Development of a Conceptual Foundation*, was based on her 2002 TSNRP-funded study, *Identifying Competency Skills of PROFIS Personnel*.

*Research Utilization/Evidence-Based Practice.* Regional nursing research groups were created during 2001 through the TSNRP Resource Center. These regional nursing research groups, termed PODs, are located across the United States and Hawaii and are led by doctorally-prepared military nurse scientists. The Research PODs objectives are to: 1) facilitate military nursing research across the Services; 2) provide mentorship to master degree-prepared nurse researchers; 3) support programs of nursing research within and across Services and Military Medical Centers; 4) share research resources; 5) foster research; and, 6) facilitate utilization of research findings in practice. The TSNRP supports the integration of evidence-based practice into nursing practice. To that end, ***evidence-based practice was the focus of POD activities during 2003.*** This three-year initiative was designed to increase the use of evidence-based practice in the MHS by changing both individual nursing practice and organizational practice. Specific evidence-based practice activities include the following: ***The Northeast POD:*** The Walter Reed Army Medical Center (WRAMC), the National Naval Medical Center (NNMC) Bethesda, and the Naval Medical Center at Portsmouth received funding to facilitate the TSNRP initiative to collaboratively develop an evidence-based nursing practice project. The three facilities partnered to work out a three-year plan to train a core team of advanced practice nurses in the development and implementation of evidence-based practice guidelines. Evidence-based practice guidelines, currently in development, include: prevention and care of pressure ulcers; prevention and care of deep vein thrombosis/pulmonary embolism; enteral feedings and tube care; acute adult inpatient pain assessment; central line management; and, thermoregulation of infants. These guidelines eventually will be available to other facilities for adaptation; ***The Southern Research POD:*** The Southern Research POD is a collaborative effort between the Wilford Hall Medical Center and the Brooke Army Medical Center. This activity implemented guidelines for ventilator-associated pneumonia in five ICUs at the two medical treatment facilities. The use of these guidelines should result in a reduction of infection rates and the length of stay, along with the associated costs; and, ***The Southeast POD:*** The Southeast POD provided a continuing education program, which introduced evidence-based practice models to senior nurse executives from one Navy and two Air Force hospitals. It was followed by a two-day workshop on the essentials of evidence-based practice.

Future Direction. The future of military nursing research is largely in the control of the military nursing community. ***Advancing the practice of military nursing and its response to the requirements of military readiness and deployment remains both the mission and the priority of military nursing research.*** The TriService Nursing Research Program serves as a catalyst for stimulating the synergistic endeavors between the three military nursing Services in both the Active and Reserve Components, to advance the science of military nursing. For the Year 2004 and beyond, the TriService Nursing Research Program *stands ready* to support those endeavors.

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