

**Air Force medics have  
been around longer than their  
50th anniversary would  
suggest.**

**By Stewart M. Powell**

# Air Force Medics in Peace and War

*Flight nurse Lt. Ethel Guffey and pilot  
Lt. William J. Albrecht consult with Pvt.  
Alfred Peace before casualties are  
loaded aboard this C-47 for air evacu-  
ation from France during World War II.*

**T**HE US Air Force Medical Service celebrated its official 50th anniversary in 1999. It was a historic milestone for a low-profile team of specialists—one achieved by dint of resilience and determination displayed time and again over many decades. Long before the official creation of the medical service in 1949, medical personnel had been heavily engaged in the nation's airpower operations.

It was in World War I that the first flight surgeons provided specialized care for US Army airmen of the open-cockpit biplane era. From that humble beginning more than 80 years ago, the service has grown into an organization now capable of routinely executing demanding transoceanic aeromedical evacuations.

The worldwide team of 48,000 physicians, medics, technicians, and nurses established itself as a highly respected branch of the Air Force. Medical personnel handle routine cases one day, only to deploy a day later to an unexpected assignment thousands of miles away. Service members who helped evacuate victims of terrorist bombings at US embassies in Tanzania and Kenya back to Ramstein AB, Germany, in 1998, later prepared for anticipated casualties in Operation Allied Force, the air attack against Yugoslavia. A few months after that, medical teams were deploying from Europe to Turkey to assist with treatment of victims in an earthquake that claimed thousands of lives.

As the operations underscore, the medical corps continues to respond on short notice and adapt quickly to circumstances to bolster US forces and operations, whether with on-site health care for US humanitarian operations or with preparations for US casualties in distant, little-understood conflicts.

Air transportable hospitals are being reconfigured for quicker, easier deployment. Active duty and reserve personnel are being more fully integrated. Aeromedical evacuations are being overhauled with critical-care-in-the-air teams to enable the Air

Force to shift emergency medical care from front lines to in-flight treatment back to rear echelons or even to the United States itself.

All in all, says James S. Nanney, chief historian in the Office of the Air Force Surgeon General, the medical corps continues to respond to changed circumstances by being steadily "more flexible and responsive."

### **The Early Years**

The service's origins can be traced back to World War I. A team of specially trained aviation medics, comprising 34 physicians and enlisted personnel, arrived in France in August 1918. On Sept. 17, Maj. Robert R. Hampton took up duties as the first flight surgeon in the American Expeditionary Forces.

During the same war, but on the eastern rampart of the conflict, the experiences of a daring young American physician would help to shape a medical corps that came into its own more than three decades later. Dr. Malcolm C. Grow traded a secure medical practice in Philadelphia for combat surgery on the Russian front. An internist with a degree from Jefferson Medical College in Philadelphia, Grow treated Russian troops over a two-year period, first as a civilian and later as a commissioned captain in the army of the Russian czar.

It was in that capacity that Grow and a Russian officer conducted a reconnaissance flight over German lines in a captured German aircraft. The experience left an indelible impression on the young physician. According to a study by George M. Watson Jr. of Grow's role as a pioneer in aviation medicine, Grow would never again doubt the importance of aircraft in combat.

Grow and his Russian pilot spied a pair of new German artillery batteries and reinforcements moving into position. The young American saw that the Russian forces were truly "a blind army," without adequate observation aircraft, "unable to tell what the enemy was doing," recalled

Frederick A. Stokes, author of a 1918 biography of the American. Grow and the Russian returned to Russian lines with the news.

Grow left Russia before the Bolshevik Revolution of late 1917. He joined American forces on the Western Front, but he did not ever forget the horrific Eastern Front experience and the manifest need for the troops to have adequate medical care. In time, Grow would rise to major general in the Air Force and become the first head of the medical service.

The interwar years—the 1920s and 1930s—saw the emergence of preparations for combat aviation and the blossoming of the role of aviation medicine. The Medical Research Laboratory at Mitchel Field, N.Y., became the School of Aviation Medicine, with Maj. Louis H. Bauer serving as first commander. The facility was moved to Brooks Field, Texas, in 1926, later to Randolph AFB, Texas, and still later back to Brooks.

### **Farewell to Silk Scarves**

Aviation engineers and pilots began to recognize during the 1920s and 1930s that the flight suits and silk scarves of World War I were no match for the rigors pilots faced flying for hours in open-air cockpits in all weather. Test pilots at Wright Field, Ohio, struggled with the ill-effects of carbon monoxide fumes from propeller engines and penetrating wind-driven cold.

For assistance, they turned to the flight surgeon serving at nearby Patterson Field—Maj. Malcolm Grow.

Grow flew with test pilots to assess flight clothing and equipment. He worked to assess maximum allowed carbon monoxide exposure in cockpits, producing a landmark study in 1934. The deepening collaboration between test pilots, physicians, and engineers yielded the Aero Medical Laboratory at Wright Field in 1935. Lt. Harry G. Armstrong guided the facility to become the premier aeromedical research and development center in the United States, accord-

ing to *A History of the Origin of the US Air Force Medical Service 1907–1949* by Mae Mills Link and Hubert A. Coleman.

Groundbreaking demonstration flights highlighted the partnership between medicine and aviation. Grow accompanied 12 Martin B-10 bombers on the “Alaskan Flight” in 1934 to underscore bombers’ potential role as coastal defense weapons. Grow took the assignment at the urging of then-Lt. Col. Henry H. “Hap” Arnold, later chief of the Army Air Corps. The follow-on demonstration mission of 11 B-6 bombers and 12 P-12 pursuit airplanes to Panama in 1936 included Grow as copilot in one of the bombers.

It would take the outbreak of World War II and the peculiar medical demands of hard-pressed aircrews to force the entire US Army Air Corps to take into account the special medical demands of flight crews.

“When the United States entered World War II, our nation’s small aviation force belonged to the US Army and relied on the Army medical system for support,” recalls retired Air Force Lt. Gen. Edgar R. Anderson Jr., who served as surgeon general of the Air Force in the mid-1990s. “By the end of the war, the Army Air Forces successfully acquired its own medical system, oriented to the special needs of air warfare.”

## World War II

When World War II broke out in Europe in 1939, Grow and Armstrong worked with Britain’s armed forces medical staff, including Air Marshal Sir Harold Whittingham, chief medical officer of the Royal Air Force. The US officers gleaned what they could, not only about British adaptations to the physiological challenges of high tempo fighter operations, but also German advances in aviation medicine, according to Watson, in his study, “The First Central Medical Establishment.”

The collaboration of Grow and Armstrong yielded *Fit to Fly: A Medical Handbook for Flyers*. The manual helped commanders begin to train large numbers of aviators for the rapidly expanding Army Air Corps. The authors identified and named the specific emotional stress that irritated aircrews’ gastrointestinal tracts as well as the inflammation of the middle ear stemming from



**During the Burma campaign in World War II, USAAF amphibious L-1 liaison airplanes air evacuated wounded soldiers from deep in the jungle to forward hospital units for treatment.**

frequent altitude pressure changes. They also anticipated the impact of flight fatigue, the aerial version of the shell shock of World War I that eroded combat effectiveness but could be staved off with periodic breaks.

The Air Corps specialists, with help from US Navy and Allied researchers, developed anti-G suits. They worked to refine cockpit oxygen equipment and cold-weather gear for high-altitude aircrews that faced frostbite when fuselages were blown open by flak, exposing the aircrews to extreme cold. The collaborative team turned to the Wilkinson Sword Co. to produce light armored suits of thin manganese plates and to craft helmets that dramatically cut the rates of injury and death from Nazi flak and cannon fire.

More than one million wounded GIs were moved successfully by air during World War II, according to Nanney’s 1995 study, “Army Air Forces Medical Support in World War II.” The practice grew out of necessity in China, Burma, and the southwest Pacific in the bleak early days of World War II. Allied forces sought a foothold against the Imperial Japanese forces. Venerable four-engine C-47 Skytrains that delivered cargo and troops into battle were called upon to carry out wounded troops, bringing Americans back to hospitals in New Caledonia, New Hebrides, and Australia.

Air evacuations came into their own in early 1943 when the fast-moving Allied offensive across North Africa left medical facilities more than 12 hours behind the lines by truck or more than 20 hours away by train. A C-47 equipped with 18 individual litters could carry out an air evacuation in barely an hour. By May 1943, AAF aircraft had evacuated 15,027 patients from Tunisia, with only one death in flight.

“In the final attack on Tripoli, almost all patients were evacuated by air,” Nanney noted. “Although still new and imperfect in some respects, the use of aeromedical evacuation quickly proved its worth.”

Longer-range C-54 Skymasters could be used for longer flights. In January 1943, five patients from Karachi, Pakistan, were airlifted to Bolling Field in Washington, D.C. It was an operation that showed the feasibility of global aeromedical evacuation, which would greatly reduce reliance on evacuation by sea.

Still, such long-distance air evacuations accounted for a small share of the operations, with only 15 percent of the patients from Europe ferried back to the United States by air. Intratheater air evacuations were far more common. In the first six weeks following the D-Day landings in Normandy, aeromedical evacuations ferried 18,415, or 33 percent, of American casualties to Great Britain.

When Army hospitals in Europe

became filled to capacity during the Battle of the Bulge in winter 1944–45, air teams ferried some GIs from Europe back to Mitchel Field. By September 1945, 5 percent of the war's aeromedical evacuations had been back to the United States.

Gen. Dwight D. Eisenhower, the supreme allied commander in Europe, credited air evacuation with saving many lives. "We evacuated almost everyone from our forward hospitals by air, and it has unquestionably saved hundreds of lives, thousands of lives," Eisenhower said.

Aviation medicine evolved greatly during World War II. Nearly 6,000 doctors completed aviation medical training, with more than 3,000 of the physicians going on to qualify as flight surgeons. By January 1945, AAF had 75,000 hospital beds at 200 station hospitals, 30 regional hospitals, and seven convalescent centers. The AAF medical system had become virtually separate in practice, if not in the military chain of command.

The development stemmed in part from the vision of Maj. Gen. David N.W. Grant, a 1937 graduate of the Army Air Corps Tactical School, who served as the chief air surgeon during World War II. Grant believed that a separate medical corps was essential to the use of airpower as a separate arm in combat, with a separate command and support structure.

AFMS was created on July 1, 1949, with 3,706 Army officers selected for transfer to the newly created US Air Force. This group included 1,182 for the medical corps, 424 for the dental corps, 78 for the veterinary corps, and 1,197 for the nurse corps.

### Korean War

The medical service had not even marked its first anniversary when communist North Korean troops stormed across the 38th parallel with a surprise attack on South Korea on June 25, 1950. Barely 30 doctors, 30 nurses, and 25 medical service corps officers were in the Far East to care for Air Force personnel and dependents stretching from Korea and Japan to Guam, Okinawa, and the Philippines.

The onslaught came well before the Army and the Air Force had worked out an agreement on the division of responsibilities for the aeromedical evacuations from the battlefield that became so crucial in

the fast-moving conflict. As Grow had warned in a report in November 1949: "A great deal of integrated planning with the sister services is necessary for not only peacetime operations but more particularly for planning in the event of an emergency at which time this function may become enormous."

The surprise war "provided a stiff challenge for the small, inexperienced Air Force Medical Service," wrote Nanney, the chief historian, in "The Air Force Medical Service in the Korean War." He added, "For several months the heavy fighting and heavy UN casualties almost overwhelmed the meager resources of the medical service."

The armed forces' medical corps grew rapidly, thanks to a nationwide doctor's draft that funneled physicians and medical personnel into the military. AFMS mushroomed, with 236 physicians, 210 nurses, and 161 dentists in the Far East. The service itself increased from 3,400 to 8,300 medical officers and from 8,000 to 17,500 enlisted medics.

Still, shortages of aircraft, poor communication, and faulty scheduling of cargo aircraft called upon to evacuate the wounded from Korea to Japan imperiled the ability of the US to carry out the 1949 Defense Department directive that aeromedical evacuation was the route of choice.

Air Force H-5 rescue helicopters and C-47 Skytrains with aeromedical

crews rushed into forward areas to retrieve casualties. The Air Force's 801st Medical Air Evacuation Squadron evacuated more than 4,700 Marine casualties from the 1st Marine Division's bloody withdrawal from Chosin Reservoir, winning the unit one of the first Distinguished Unit Citations of the war.

It was not until 18 months into the conflict—in December 1951—that the Air Force, Army, and Marine Corps worked out arrangements for battlefield medical evacuation, with the Army and Marine Corps acquiring specially equipped helicopters to handle their own casualties.

Korea underscored the need for compact mobile hospitals that could be transported by air. Ad hoc medical complexes were thrown together with whatever was available, but there was no common design. By 1953, AFMS had conducted a successful experiment, transporting a mobile hospital by air. By 1955, the components of a 36-bed facility were acquired. By 1959, the air transportable hospital came on line as a standardized package for quick deployment.

The American Medical Association formally recognized aviation medicine as a separate specialty in 1953 (changed in 1959 to aerospace medicine). The burgeoning US space program took advantage of specialists in AFMS who learned the lessons of Korea. The first two flight surgeons assigned to the Mercury, Gemini, and Apollo



*In Korea, a Far East Air Forces H-5 helicopter delivers a critically wounded patient from the battlefield to a rear area medical facility. The war speeded development of a compact air transportable hospital.*



**As aeromedical evacuation progressed, it took less than an hour during the Vietnam War to go from battle to a hospital. Here, USAF medical personnel move a Marine casualty from Khe Sanh to a waiting C-130.**

programs were USAF officers—Lt. Col. William K. Douglas and Lt. Col. Charles A. Berry.

### Vietnam War

In the Vietnam War, the front-line evacuation role that AAF personnel played in World War II and the similar emergency duties carried out by AFMS personnel in the Korean War continued to shift to more rear guard responsibilities for long-range aeromedical evacuation operations.

Increasing air operations prompted the Air Force to expand the number of Air Force flight surgeons from 550 in 1963 to more than 700 by 1971—almost 20 percent of Air Force physicians on duty. By 1968, there were roughly 1,900 Air Force medics working in Southeast Asia—about 5 percent of the 41,000 military personnel assigned to the medical service worldwide, according to Nanney's study. About 110 Air Force physicians were serving with 7th Air Force medical service at the peak of fighting in 1968.

They lacked adequate facilities, so 10-foot-by-40-foot modular containers were shipped to Vietnam by sea to create hospitals at airfields, including the air base at Cam Ranh Bay. The 12th Air Force Hospital at Cam Ranh Bay became the largest in-country Air Force medical facility, with 475 operating beds and a 100-bed casualty staging facility.

Long-range air-evacuation opera-

tions were carried out by the Air Force from Cam Ranh Bay airfield, ferrying casualties to Clark AB, Philippines, as well as Yokota and Tachikawa ABs, Japan. Military Airlift Command carried out patient movements to the United States using ordinary transport airplanes equipped with litters and staffed by medical personnel.

Air evacuation over long distances contributed to USAF's acquisition of specially equipped C-9A Nightingales, beginning in August 1968. Twelve aircraft joined the Air Force domestic aeromedical evacuation system. The

aircraft began routine missions in Southeast Asia in March 1972.

Continued preparations by AFMS to quickly deploy mobile hospitals into potential combat areas finally came to fruition in the first weeks of August 1990, after Iraq's surprise invasion of Kuwait.

The seamless deployment stemmed not only from a generation of work with air transportable hospitals. The success could be traced, as well, to a little noticed decision in 1983 to begin a five-year campaign to make air transportable hospitals more flexible. Standard 24-bed air transportable hospitals were transformed into modular components that could create hospitals with 14 beds, 25 beds, or 50 beds.

By the summer of 1990 more than two dozen 50-bed air transportable hospitals were available, many of them attached to US-based tactical fighter units that were on call for rapid deployment into a variety of contingencies. The hospitals were configured for transport aboard six C-141 Starlifters for assembly and operation by a medical staff of 128 personnel within 48 hours. Each facility, equipped for up to 30 days of independent operation without resupply, offered up to three surgery bays.

In addition, AFMS had developed 250-bed staging facilities to complement the air transportable hospitals and provide first-class temporary care for patients awaiting aeromedical evacu-



Staff photo by Guy Aceto

**Long-distance air evacuation from Vietnam to the Philippines, Japan, and the US spurred USAF to acquire specially built C-9 Nightingale hospital aircraft. The C-9 can carry 40 litter patients with five medical personnel.**

ation. The facilities relied on tents and could be set up in five days.

### Into Desert Storm

The first medical teams—assigned to fighter squadrons—with air transportable clinics, which had only one physician and three technicians and emergency medical supplies, left the US on Aug. 8, 1990. Air transportable hospitals followed from Shaw AFB, S.C., MacDill AFB, Fla., and Langley AFB, Va., on Aug. 11. Given the suspected chemical warfare threat posed by Iraqi President Saddam Hussein, each air transportable hospital was accompanied by a 19-member decontamination team to handle casualties from chemical warfare.

The air mobile AFMS provided arriving Air Force, Army, and Marine forces their principal medical support for the first month of rapid US force deployments to Saudi Arabia to deter a deeper Iraqi penetration into the Arabian oil fields.

The six-month buildup before allies launched their 43-day campaign enabled AFMS to deploy 925 hospital beds in-theater, in addition to staffing contingency hospitals in Germany and Britain, providing 500 to 1,500 beds each.

By November, air transportable hospitals from 10 US bases had reached the area of operations. Each was designed to provide care for about 4,000 personnel, the number required to support a deployed tactical fighter wing. By January 1991, 15 air transportable hospitals were up and running, backed by a 250-bed contingency hospital.

Injured or wounded Air Force personnel could obtain emergency treatment at 31 deployed air transportable clinics. The service deployed nearly 4,900 medics to the Persian Gulf theater—about 9 percent of the total Air Force deployment. Almost 6,900 additional medics provided care at 3,740 beds in the Air Force fixed and contingency hospitals in Europe.

By the end of the Gulf War, the active-duty AFMS was at its peak size—14,500 officers, 30,000 enlisted medics, and 9,500 civilians, the Nanney study reported. More than one-half of the Air Force medics who deployed to Europe and Southwest Asia at that time belonged to the Air National Guard and the Air Force Reserve, with almost 97 percent of



**The Air Force Medical Service expects to be able to deploy multiskilled teams to any part of the world within 72 hours as it restructures to fit USAF's new expeditionary force.**

the aeromedical evacuation personnel drawn from the reserves.

### Getting Expeditionary

The operation gave AFMS another chance to evaluate itself with an eye toward improvements.

“Although the deployment was extremely rapid and successful by historical standards, the medical service was fortunate that hostilities began 163 days after the initial mobilization,” Nanney wrote. “Since there was no guarantee that this lead time would be available in a future war, the Air Force Medical Service immediately began to ensure that its next response would be even more timely and efficient.”

The leadership began to reconfigure the size of air transportable hospitals and revise air evacuation operations to accommodate the rapid deployment scenarios into remote regions that have become standard fare at the turn of the century.

Air Force leaders focused on improving the integration of Guard and Reserve personnel called to active duty with AFMS. They instituted a program that was dubbed “Mirror Force” by then-Deputy Surgeon General Maj. Gen. Charles Roadman II.

Roadman, who became Air Force

surgeon general (1996–99), saw reservists “coming onto active duty, not understanding the milieu in which things were occurring,” forcing AFMS to operate with “a dual class of warriors, vs. a single class.” So Roadman made sure that medical personnel called onto active duty were “involved in the mainstream so that when we call them to active duty, they mesh quickly.”

The reassessment paid off with greater emphasis on working reservists into their prospective active duty units.

The medical service continues to underscore its traditional flexibility by fielding a range of mobile deployable medical facilities, from the four-person air transportable clinic to 90-bed air transportable hospitals. With the Air Force shifting to expeditionary Air Force units, AFMS is revamping operations to enable it to dispatch multiskilled teams to any part of the world within 72 hours. Forward resuscitative surgical capabilities are being achieved with five-person teams relying on only 300 pounds of man-portable equipment.

AFMS was prepared to adapt as needed to changing Air Force requirements. It’s now an 80-year tradition. ■

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