

ARMED SERVICES BLOOD PROGRAM

A History of the Army Blood Program

Shaping the way soldiers receive lifesaving blood

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Throughout its more than 60-year history, the Army Blood Program has developed into a leading supplier of blood and blood products for the military community. Today, it collects thousands of blood products each day for use in hospitals and military treatment facilities across the globe. As technology continues to advance and medical practices continue to change, the Army Blood Program will undoubtedly adapt to the evolving world; however, it will remain dedicated in its mission—providing lifesaving blood.

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Introduction

As the official program of the U.S. military, the Armed Services Blood Program relies on coordination from the blood program of each of the military services it represents—the Army, Navy and Air Force—as well as the unified commands. This means that there are always several components working together to provide quality blood products to ill or injured service members, retirees and their families worldwide. Of those organizations are the individual Service Blood Program Offices that manage their respective blood programs and Food and Drug Administration licenses.

While the Armed Services Blood Program has a long-standing history of its own (*read about it [here](#)*), the individual blood programs for each service also carry with them a rich history of important events, regulations and people that have shaped the way they collect, test, store and ship blood products around the world.

The Army was the first service to establish a military blood bank, and although it had its fair share of struggles, it became the starting point from which a much larger program would develop. The Army Blood Program groundwork can be traced back to the World War II era when it was just beginning to take shape. Technological advancements during the Korean War led to improvements in the way blood was collected. A few years later, the Vietnam War—the first major operation for the Army Blood Program—would take the program to new levels. Peace during the 1970s and 1980s brought with it FDA licensing, the foundations of the modern blood program and advancements in infectious disease testing. Blood had become safer, easier to collect and more easily shipped to deployed service members overseas. As the Army Blood Program grew in the 1990s and the new century, it was faced with conflicts in the Middle East, Afghanistan and Iraq, all the while coming up with new ways to ensure that service members, retirees and their families were continually receiving the highest quality blood product possible.

Throughout its more than 60-year history, the Army Blood Program has developed into a leading supplier of blood and blood products for the military community. Today, it collects and manufactures hundreds of blood products each day for use in hospitals and military treatment facilities across the globe. As technology continues to advance and medical practices and regulations continue to change, the Army Blood Program will undoubtedly adapt to the evolving world; however, it will remain dedicated in its mission—providing lifesaving blood.

Major Events in the Army Blood Program's History

- **1940:** LTC Douglas Kendrick initiates the first blood research program
- **1942:** The Walter Reed General Hospital establishes first military blood bank
- **1945:** World War II ends
- **1950:** Korean War begins
- **1952:** DoD Directive formally establishes Armed Forces Blood Donor Program
- **1958:** U.S. Army Blood Bank Fellowship program is established
- **1965:** MAJ William Collins introduces new Styrofoam blood distribution box
- **1968:** American involvement in the Vietnam War is at its peak
- **1974:** Blood donor centers and transfusion services begin to formalize as a program under the newly established Health Service Command
- **1975:** Brooke Army Medical Center becomes first Army facility to receive FDA license
- **1984:** Dr. Robert Gallo isolates the retrovirus believed to cause AIDS and develops test to screen for the virus
- **1986:** Army begins HIV lookback investigations
- **1990:** Operation Desert Storm begins

- **1991:** FDA issues cGMP and Quality Plan regulations that shape the Army Blood Program
- **2001:** Operation Enduring Freedom begins
- **2003:** Operation Iraqi Freedom begins
- **2009:** Army Blood Program Quality Assurance office expands
- **2011:** Walter Reed Army Medical Center closes

1940s and 1950s

With roots that can be traced back to World War II, the Army Blood Program has a proud history of providing quality blood products and services for soldiers, retirees and their families in both peace and war. The establishment of the program’s blood collecting facilities, transfusion services and distribution units has tremendously improved healthcare on the battlefield. According to David White and Daniel P. Murphy, Ph.D., authors of an article titled “[Battlefield Injuries and Medicine](#),” during the World War II era, a severely injured soldier had about a 50 percent chance of surviving. Today, more than 50 years later, those odds have increased significantly and ill or wounded service members have more than a 90 percent chance of survival.

World War II

In 1940, shortly after World War II broke out in Europe, LTC Douglas Kendrick (Photo 1) initiated a blood research program at the Army Medical School and served as chief of the research program until November 1944. In 1943, Dr. Kendrick was appointed to additionally serve as Special Representative on Blood and Plasma Transfusions in the Office of the Surgeon General. A few months later, in November



Photo 1: LTC Douglas Kendrick

of that year, the Transfusion Branch was established at Office of the Surgeon General. The two entities worked well together; the Transfusion Branch established policies for the blood and plasma program, while operations were conducted at the Army Medical School. (*Learn more about Kendrick in [Influential People of the Army Blood Program](#).*)



Photo 2: Walter Reed General Hospital

In 1942, the Walter Reed General Hospital (Photo 2) established the first military blood bank. By 1944, the Army had several hospitals that were able to collect whole blood to meet their own requirements. However, there was not an infrastructure to support the greater requirements of the war. As a result, many units of blood were collected by the American Red Cross and flown into the European and Pacific theaters of operation using insulated marmite canisters. Supplies into the Pacific theater were also augmented from the Australian Red Cross using heavily insulated wooden shipping boxes.

Since there was no means to keep the whole blood refrigerated during the long flight across the ocean, the cans and bottles were kept refrigerated up until the time of the flight, and then refrigerated upon landing in the theater of operations. Blood was transfused through glass bottles without filters. As a consequence of this design, there were reported cases of air embolisms in transfusion recipients. Filters were later added to the bottles to reduce this risk of embolisms occurring, greatly reducing the danger of a transfusion for a patient. In spite of the efforts to collect and ship whole blood to the war effort, freeze dried plasma was the main blood product used on the battlefield. Use of this helped restore the blood pressure of injured soldiers, but did nothing to correct hemorrhagic shock. As the war continued, increasing cases of hepatitis led field surgeons to focus more on whole blood.

In 1943, ACD was introduced as an anticoagulant which preserved red blood cells for 21 days. On April 1, 1945, 600 milliliter ACD bottles were substituted for the 1,000 milliliter Alsever’s solution. ACD was

a better blood preservative than Alsever's solution, and also required less volume of solution in each unit of blood. Bottles of blood collected in Alsever's solution were 500 milliliters of whole blood and 500 milliliters of Alsever's solution—thus, the 1,000 milliliters bottles. Logistically, this was also better because blood collected in ACD required less space.

From 1947 to 1952, CPT Joseph H. Akeroyd, a laboratory officer at Brooke General Hospital, began testing the utilization of plastic blood storage bags. His work would eventually lead to improved transportation, storage, and blood component separation. (*Learn more about Akeroyd in [Influential People of the Army Blood Program](#).*)

In between World War II and the Korean War, Army hospitals continued to collect whole blood to meet their own needs.

Korean War

In the early part of the Korean War, blood was collected and delivered by the 406th Medical General Laboratory in Tokyo, Japan. The mission of the laboratory was to control the distribution of blood to hospitals in Japan and mobile hospitals throughout the Pacific theater of operation. At the same time, Type O blood was shipped directly from the continental U.S. to Korea via air transport. Shipments were taken to the medical supply depots, where blood was stored and distributed to hospitals in the combat zone.

As the war in Korea intensified, the blood supply from civilian collection agencies in the U.S. was not sufficient to meet all of the military's blood requirements. As a result, the Armed Forces Blood Donor Program was founded in 1951, and formally established by Department of Defense Directive 750.10-1 on Aug. 2, 1952. The goal of the program was to coordinate the supply efforts from both the military and civilian agencies, and improve the efficiency of the delivery and distribution systems by utilizing specially trained military personnel and better resources.

During the later part of the war, Fenwal developed a plastic bag to collect and store blood. Previously, glass bottles had always been used. The bag was designed for 500 milliliters of whole blood using ACD. For sterility, each bag was sealed in a can. Although plastic bags could be used to collect blood by this time, they were not used in the Korean theater of operations until 1957 as then military hospitals were using them routinely. However, just as Akeroyd had envisioned earlier, the new bags led to improved transportation and storage as well as easier blood component separation.

By the time the Korean War was at its height, the Army Blood Program had made great strides forward towards providing a higher quality blood product to ill or injured soldiers worldwide. The program made advancements in blood storage, collection and separation which started the progression towards the modern technologies that are in use today.

During the 1950s, testing donated blood for infectious diseases began with a syphilis test. The Rapid Plasma Reagin (RPR) test, a nontreponemal assay, was commonly used.

1960s

The Army Blood Program during the 1960s, even though shaped in large part by the Vietnam War, had significant developments prior to the war that helped establish its foundations and understandings of the program moving forward.

In 1964, Kendrick published his book "[Blood Program in World War II](#)." The book has become a valuable resource for the modern Army Blood Program, as it outlines the history of blood banking before

World War II, and highlights critical challenges and key advancements of military blood banking during and after World War II.

Also in 1964, COL William Crosby and MAJ Frank Camp (Blood Bank Fellowship (BBF) Class 60-61) were assigned to the Walter Reed Army Institute of Research. The two men developed plans to establish a Blood Research Division, and Fort Knox, Ky., was chosen as the location. Beginning on July 1, 1965, Camp served as director of this program, where he would remain for 10 years. (*Learn more about Crosby and Camp in [Influential People of the Army Blood Program](#).*)

In 1966, MAJ Matthew Gottlieb (BBF Class 61-62) was tasked to provide blood to the newly established Armed Services Whole Blood Processing Laboratory at McGuire Air Force Base, N.J., to help meet the blood requirements from Vietnam. The ASWBPL was an Air Force led activity that received blood from donor centers, verified the blood type of the products, checked for any administrative errors such as labeling errors, and then repacked the unit for shipment in military theaters of operations. After finding an empty wooden two story barracks near the current Army Medical Department Center and School on Fort Sam Houston, Texas, Gottlieb and CPT Anthony Polk wrote the first Brooke Army Medical Center Blood Donor Center regulations requiring the installation engineers to refurbish the empty barracks and for the Medical Training Center to provide donors on a continuous basis. This was the genesis of organized blood collections on Fort Sam Houston. (*Learn more about Gottlieb in [Influential People of the Army Blood Program](#).*)

Vietnam War

The Army Blood Program of the 1960s was shaped, in large part, by the Vietnam War. The war was the first major operation for the military blood program, so it played a huge role in developing a coordinated military program which ultimately impacted donor collections and shipment of blood products into theater for this and future wars.

At the height of American involvement in the Vietnam War, blood used to support the war was collected at military installations in the Pacific and the U.S. Early in the war, only Type O blood was used as it was ideal for emergency situations or when a service member's blood type was unknown. But as the war escalated, type-specific blood was incorporated into the theater inventories. In 1965, MAJ William S. Collins II (BBF Class 58-59), director of the 406th Medical Laboratory and Blood Bank in Japan, introduced a new blood distribution box made of Styrofoam for the shipping and distribution of blood—it became known as the “Collins box.” The new box could maintain appropriate temperatures for up to 48 hours—twice as long as the previous storage box—cost less money and weighed less. It provided flexibility for blood bankers around the world as it did not need to be returned. (*Learn more about Collins in [Influential People of the Army Blood Program](#).*)

In 1966, the Military Blood Program Agency, later renamed the Armed Services Blood Program Office by COL Anthony Polk (BBF Class 72-73), was faced with shortfalls in theater due to a steady increase in blood demand from 1966 to 1970 (it actually went from 100 units/month in early 1965 to over 38,000 units/month in 1969). (*Learn more about Polk in [Influential People of the Army Blood Program](#).*) To help meet the increasing demand for blood in Vietnam, the military blood program began coordinating blood collections at military installations in the U.S. But before whole blood could be flown to the Armed Services Whole Blood Processing Laboratory for processing and shipment into Vietnam, the Army had to coordinate with its 17 active blood donor centers in the continental U.S. that would support their local hospitals:

- Fort Benning, Ga.
- Fort Bliss, Texas
- Fort Bragg, N.C.
- Fort Campbell, Ky.

- Fort Devens, Mass.
- Fort Dix, N.J.
- Fort Gordon, Ga.
- Fort Hood, Texas
- Fort Jackson, S.C.
- Fort Knox, Ky.
- Fort Lee, Va.
- Fort Leonard Wood, Mo.
- Fort Lewis, Wash.
- Fort Ord, Calif.
- Fort Polk, La.
- Fort Sam Houston, Texas
- Fort Sill, Okla.

Although the Vietnam War would continue into the early years of the next decade, the time saw a steady but large increase of needed blood, the Collins box, and coordination between blood centers and theater of operations was at its peak. The Vietnam War was also the first time that the American Red Cross was not needed to purchase blood from to send into theater; instead it was collected free of charge from military personnel, civilians at military locations and service members' families.

1970s

As the Vietnam War slowly came to a close in the early 1970s, Army blood officers focused on lessons learned over the past decade to lay the foundation for a formal Army Blood Program. It was also a time when leaders took steps to show the program's commitment to quality and safety. The program began preparation for individual blood donor centers to become accredited by the AABB (formerly known as the American Association of Blood Banks) and licensed by the Food and Drug Administration.

In 1971, MAJ Frank Camp established a blood donor center, The Blood Bank Center. It was one of many expansion projects of the blood program at Fort Knox. By now, there were programs in operations, training, and blood research. Research projects ranged from expediting blood grouping by automation to red cell and platelet metabolism during storage. Also in 1971, Hepatitis B surface antigen testing on donated blood began in the U.S. as the first laboratory test to screen for Hepatitis B in donated blood.

A few years later, in 1973, Camp, COL Nicholas Conte and LTC Jerry Brewer (BBF Class 65-66) published Military Blood Banking 1941-1973: Lessons Learned Applicable to Civil Disasters and Other Considerations. The primary purpose of this monograph was to apply lessons learned from the military blood program in previous combat operations to the medical management of small to medium mass casualties at U.S. civilian medical centers.

The blood banking community would continue to move forward on blood research and development. In 1979, citrate phosphate dextrose adenine, or CPDA-1, was introduced as a new anticoagulant and extended the shelf life of red blood cells from 21 to 35 days. The expansion of the shelf life made blood inventory management easier.

Foundations of the Modern Army Blood Program

The foundations of the modern military blood program began on April 26, 1973, when the Army activated the U.S. Army Health Service Command at San Antonio, Texas. Pursuant to the Department of the Army General Order Number 7 and as part of a reorganization of the Army Medical Department, the newly established organization assumed command and control of most military treatment facilities within the continental U.S., Alaska, Hawaii and Panama and reported directly to the Chief of Staff of the U.S. Army.

This allowed the Office of the Surgeon General, whose Transfusion Branch had previously been working with the blood research program at the Army Medical School, to focus more on staff and technical supervisory duties as the principal advisor to the Chief of Staff of the Army on health and medical issues.

By 1974, the blood donor centers and hospital-based transfusion services began to formalize as a program under the new Army Health Service Command. Coordination and organization of the various blood donor centers and other blood-related operations were underway worldwide.

Starting in 1979, the Army Blood Program was divided between the Office of the Surgeon General and the Health Service Command. There were two primary positions between the organizations—the Health Service Command Clinical Laboratory and Blood Bank Consultant was in charge of operations, while the blood officer at the Office of the Surgeon General was in charge of policy. This division would continue until 1992 when the Army Blood Program would go through another extensive restructuring.



Photo 3: COL James Spiker, Jr.



Photo 4: LTC Robert Usry



Photo 5: LTC Gerald Jacobs

COL James Spiker, Jr. (BBF Class 65-66) (Photo 3) would serve as the first Health Service Command Clinical Laboratory and Blood Bank Consultant from, followed by LTC Robert Usry (BBF Class 72-73) (Photo 4), LTC Gerald Jacobs (Photo 5) and LTC Richard Platte (BBF Class 84-85). (*Learn more about Spiker in [Influential People of the Army Blood Program.](#)*)

Army Blood Donor Centers Begin to Receive Accreditation and Licensure

Beginning in 1974, Spiker took the idea of FDA licensure to the forefront of the military blood program. He would lead the way by developing requirements for all Health Service Command blood banks to be both accredited by the American Association of Blood Banks (currently titled the AABB, dropping the full name in 2005) and licensed by the FDA. He would also coordinate and perform pre-inspection consultations with all Health Service Command sites to prepare for the FDA licensing of blood products.

On Sept. 26, 1974, key leadership¹ from the Military Blood Program Agency and the FDA met to discuss inspection and licensure procedures for the military blood banks. After the discussion, the following agreements were made:

- Pre-licensure inspection schedule will be announced so that key personnel at the activity to be inspected will be present during the inspection.
- All correspondence to the FDA will emanate from the licensee (the Offices of the Surgeon General) not from the individual facilities or lower echelon commands.
- Upon completion of the inspection, an exit interview will be held with the facility commander or his designated representative and the findings of the inspector will be verbally presented. A written report will not be furnished at that time.
- The three Services will endeavor to submit initial licensure applications by Jan. 1, 1975. At the time, the Army planned to submit applications for eight installations, the Navy planned for five installations and the Air Force seven.
- It was anticipated that pre-licensure inspections will be held 60 to 90 days following applications being submitted. Licensing procedures were expected to be completed by July 1, 1975.

¹ Attending from the FDA were Madge Crouch, Dr. Lou Barker, and Mr. Scheno. Col. Hal Etter, Col. Charles Angel from the Office of the Surgeon General, LTC Turman Allen, LCDR Jason Wilson, MAJ Hubert Wrenn from the Surgeon General's Office, U.S. Air Force, and Chief Petty Officer Ralph Hanson from the Navy Bureau of Medicine and Surgery attended on behalf of the military blood program

- It was agreed that the Armed Services Whole Blood Processing Laboratory would be licensed under the Air Force

On March 7, 1975, the Brooke Army Medical Center in San Antonio, Texas, became the first Army facility to receive their FDA license. Their license submission was approved for whole blood, red blood cells, and single donor plasma. This meant that the facility could collect, manufacture and exchange these blood products with other facilities, both military and civilian, by adhering to the requirements of the Public Health Service Act and the Federal Food, Drug and Cosmetic Act. Just a few months later, the Walter Reed Army Medical Center received its FDA license on June 19, 1975.

On Sept. 25, 1975, five more blood donor centers were added to the FDA 611 license, including: the Fitzsimmons, William Beaumont, Dwight David Eisenhower, Tripler and Madigan Army Medical Centers. The donor centers were approved to manufacture whole blood using ACD and citrate phosphate dextrose, or CPD, anticoagulants and red blood cells. Single donor and fresh frozen plasma were approved for all locations except Fitzsimmons. The Brooke Army Medical Center's license was approved to add cryoprecipitated antihemophilic factor and approved for whole blood modified, cryoprecipitate removed. On June 21, 1976, the U.S. Army Medical Department Activities Fort Knox, Ky.², was added to the Department of the Army's FDA 611 license.

1980s

Much like the latter years of the 1970s, the 1980s brought with it a time of peace. This gave the Army Blood Program a great opportunity to expand the types of manufactured blood products as well as work with the FDA to make sure that all of its blood donor centers were FDA-licensed.

During this time of peace, there was a formal agreement between the Army Blood Program and the American Red Cross—referred to as COMPASS—in place across the U.S. The program was, in essence, a credit/debit system of blood exchange in lieu of dollars passing hands. The Army would be credited with blood units as they were collected on Army installations by American Red Cross blood mobiles, and Army hospitals could debit the COMPASS program on an as needed basis against those credits. Chet Summerville was the American Red Cross point of contact. Eventually, the COMPASS program was scrapped as "lines in the sand" drew sides further from compromise and personnel became too intolerant of the American Red Cross collecting on military installations.



Photo 6: LTC
Richard Platte

From 1983 to 1988, MG Lewis Mologne was commander of the Walter Reed Army Medical Center and a real proponent and supporter of the Army Blood Program. However, he faced the fierce competition with the American Red Cross for military donors in the Military District of Washington. A local supplement to AR 40-2, a regulation governing general administrative policies for all active Army military treatment facilities, said the American Red Cross had the right to collect blood in the district at the exclusion of the Army. With the help of Mologne, LTC Richard Platte (BBF Class 84-85) (Photo 6) was able to rescind the supplement but it still was very difficult for the Walter Reed Army

Medical Center to collect blood in the Military District of Washington. However, Platte was able to make inroads at Fort Belvoir, Va., and Fort Meade, Md.

In 1986, the first "joint" blood donor center was established at Fort Ord, Calif. It would be called the Armed Services Blood Bank Center, and would operate under the Army Blood Program's FDA blood establishment license and functioned as a regional blood supplier to military hospitals. CPT Gary Griffin (BBF Class 89-90), a fellowship graduate from 1989-1990, would serve as its first director. Where current

² The U.S. Army Medical Department Activities was the federally recognized name for the Blood Bank Center at Fort Knox, Ky.

military blood donor centers were service-specific, the ASBBC was the first multi-service staffed blood donor center. This was significant in that it combined resources from smaller hospital-based donor centers of the Army, Navy and Air Force in California and created a single center to support all of the region's hospitals.

FDA Licensing Expands Throughout Army Blood Program

In the latter part of the 1970s, FDA licensing was at the forefront of the Army Blood Program's goals and by the end of the decade, several Army blood donor centers had already received their FDA licenses. By the time the mid-1980s rolled around, the Army's FDA 611 license would continue to expand, and by the end of the decade there were a total of 22 Army facilities on the license.

Before additional locations were added to the license, the FDA added several new blood products to the Army's FDA 611 license. This included platelet concentrate, which was added on Jan. 15, 1982, and Additive Solutions, which were added a year later in 1983. The Additive Solution blood collection systems utilize a second preservative solution for red cell storage, in addition to the primary anticoagulant, CDP or CP2D. They were specifically designed to further extend the shelf life of red blood cells. With the new technology, red blood cells could now be stored for 42 days—an increase from the 35-day shelf life of previous years.

On May 2, 1986, the FDA license was revoked for Fort Sill, Okla. (U.S. License No. 611-19, Registration Number 1626236). However, by Nov. 5, 1986, there were now 22 Army facilities on the Army's FDA 611 license. They included:

- Armed Services Blood Bank Center - Fort Ord, Calif.
- Bassett U.S. Army Community Hospital Blood Bank - Fort Wainwright, Ark.
- Bayne-Jones U.S. Army Community Hospital Blood Bank - Fort Polk, La.
- Brooke Army Medical Center - Fort Sam Houston, Texas
- Dwight David Eisenhower Army Medical Center - Fort Gordon, Ga.
- Evans U.S. Army Community Hospital - Fort Carson, Colo.
- Fitzsimons Army Medical Center - Denver, Colo.
- Frank R. Camp Memorial Blood Center - Fort Knox, Ky.
- General Leonard Wood Army Community Hospital Blood Bank - Fort Leonard Wood, Mo.
- Irwin U.S. Army Community Hospital Blood Bank - Fort Riley, Kan.
- Letterman Army Medical Center - Presidio of San Francisco, Calif.
- Madigan Army Medical Center - Tacoma, Wash.
- Martin U.S. Army Community Hospital Blood Bank - Fort Benning, Ga.
- Montcrief U.S. Army Community Hospital Blood Bank - Fort Jackson, S.C.
- Noble U.S. Army Community Hospital Blood Bank - Fort McClellan, Ala.
- Tripler Army Medical Center - Honolulu, Hawaii
- U.S. Army Blood Bank Center - Fort Hood, Texas
- U.S. Army Europe Blood Bank - Landstuhl, West Germany
- Walson U.S. Army Community Hospital Blood Bank - Fort Dix, N.J.
- Walter Reed Army Medical Center - Washington D.C.
- William Beaumont Army Medical Center - El Paso, Texas
- Womack U.S. Army Community Hospital Blood Bank - Fort Bragg, N.C.

Just as the decade was coming to a close, the Army Blood Program would get even more good news from the FDA. On Nov. 13, 1989, the FDA decided to allow Army blood donor centers to separate red blood cells from plasma within eight hours after room temperature storage. The announcement, released by an FDA memorandum titled "Eight-Hour Hold," meant that red blood cells could be separated from the

plasma within eight hours after room temperature storage, allowing Army blood donor centers an extra two hours to centrifuge donor units and place the plasma components into the freezer. This was very helpful because most of the blood collections in the Army were through mobile blood drives. The same technical team that collected the blood had to return to the center to process it into components.

Infectious Disease Testing Advances Program

Prior to the 1980s, infectious disease testing was just beginning to make advancements for the Army Blood Program. A test for syphilis and Hepatitis B were already implemented, but it wasn't until the mid-1980s that the Army Blood Program really began moving forward with additional testing. By 1987, two tests for screening indirect evidence of Non-A and Non-B Hepatitis—the Hepatitis B core antibody and the elevated serum alanine aminotransferase liver test, more commonly known as ALT—were implemented across the U.S. The 1980s also introduced HIV testing and lookback programs that would greatly increase the safety of transfusions.

In 1984, Dr. Robert Gallo isolated the retrovirus believed to be the cause of AIDS and had developed a blood test that would provide the means to screen for the virus. This was the first time such a test could be performed. Later that year, the FDA licensed the first commercial blood test to detect antibodies to HIV and the enzyme-linked immunosorbent assay, or ELISA assay, was quickly implemented across the U.S. Shortly thereafter, the Pentagon announced that it would begin testing all new military recruits for HIV infection and will reject those who test positive for the virus.

During the next several years, Spiker and Jacobs, who served as the Health Service Command Laboratory and Blood Bank consultant from 1985 to 1988, were extremely busy. Together they had to assure the safety of the current blood supply, assure an HIV-negative donor base, test all active duty, National Guard and Reserve soldiers, and establish the Army's biannual HIV testing program. During his tenure, Jacobs established a spreadsheet file for the purpose of tracking HIV lookback cases in the Health Service Command. This would be the precursor to many years of organizing and maintaining HIV lookback cases for the Army Blood Program. Key leadership would eventually go on to create new systems to manage the case load, but for now, Jacob's spreadsheet would be all the program had.

Increased scrutiny by the FDA and the new infectious disease testing was making blood banking increasingly more safe but also highly complicated. And it soon became clear that a system of data automation was needed. One of the big drivers for a system was HIV lookback investigations. In 1986, Usry made a bold move to centrally purchase a blood bank computer system from a company called Western Star for the entire Health Service Command. The computers were considered to be one of the best blood bank computer systems around at the time. However, the Armed Services Blood Program Office, who usurped the Health System Command's authority, asked that the Army wait to purchase the systems and consider developing one of their own. So in April 1987, the Armed Services Blood Program Office formed a task force of blood officers from each service to begin the building of the Defense Blood Management Information System. However, the lack of computerization in those early years and the huge delay in implementing the system had a big impact on the Army Blood Program.

When Platte replaced Jacobs as the Health Service Command Clinical Laboratory and Blood Bank Consultant in 1988, there were nearly 300 HIV lookback cases being monitored. Most of the monitoring was being performed manually in military treatment facilities with central coordination at the Health Service Command. Platte convinced the Health Service Command's commander to increase the Army Blood Program's efforts and resources to build a more robust HIV lookback computer program. By early 1989, the case load was increasing exponentially and the Health Service Command became inundated with cases of post-transfusion HIV infections. Although the Defense Blood Management Information System was still in development, it would be years before it could help with the onslaught of HIV lookback cases. Knowing this, Platte intensified the HIV lookback program and hired Gloria Ochoa as the Army Blood Program's first lookback coordinator.

In the midst of the increasing HIV lookback case load, there was a struggle between the Commanding General of the Health Service Command and the Army Surgeon General in an attempt to gain centralized control over the HIV lookback program in the continental U.S., Alaska, Panama and Hawaii. It became even more of a heated issue as more and more cases of post-transfusion HIV were uncovered.

By June 1990, Platte had developed a prototype HIV lookback computer program for the central management of the Health Service Command lookback cases; but the cases continued to mount. In February 1991, in complete desperation, Platte made a request to Health Care Systems Support Agency to redesign, reprogram and implement an automated database to serve the growing needs of the Health Service Command and AMEDD for HIV lookback investigations. Just as Platte would depart for his next assignment in May 1993, the effort would begin to take shape.

The HIV lookback program uncovered several notable cases. One was the very unfortunate case out of the Letterman Army Medical Center where a young child of a Navy officer contracted HIV from a pedi-pack transfusion for an ophthalmological procedure. Another case involved the wife of an Army officer who contracted post-transfusion HIV after receiving a one unit transfusion for a gynecological procedure. Another set of tragedies was due to a Walter Reed Army Medical Center donor who was responsible for at least four post-transfusion HIV infections. Meanwhile, a new screening test for the detection of antibodies to human t-cell lymphotropic virus, or HTLV-1, was licensed and implemented across the U.S. A Feb. 28, 1989, Army Blood Program Policy Letter directed Army Blood Program blood donor centers to commence testing no later than April 1, 1989.

Although the decade brought great improvements and advancements in infectious disease testing, there would still be a long road ahead to perfect the processes and tests and management of the HIV lookback cases. In the early part of the 1990s, the HIV lookback program would undergo several changes that would help the Army Blood Program regain control of the case load.

1990s

Although the country had just finished nearly two decades of peacetime, the new decade would bring the start of military struggles throughout the Middle East. In the midst of Operations Desert Storm and Desert Shield, the Army Blood Program would continue forward with FDA licensing, infectious disease testing advancements and would introduce new quality assurance programs to provide greater assurance that blood was safe to be collected, shipped overseas and transfused worldwide.



Photo 7: LTC
Richard Brown

By 1990, the Health Service Command operated 26 Food and Drug Administration licensed blood donor centers, the largest of which was the Camp Memorial Blood Center in Kentucky. By now, each U.S. Army Medical Center and most large Army Medical Departments had licensed blood donor centers. By 1991, LTC Richard Brown (BBF Class 80-81) (Photo 7) moved to the Office of the Surgeon General to replace MAJ Mike Stanton. After Spiker retired³, Stanton was tasked to cover the Blood Program Office at the Office of the Surgeon General. He reported to COL Robert Pick, who had replaced Spiker as the Office of the Surgeon General Laboratory Consultant. (*Learn more about Brown in*

[*Influential People of the Army Blood Program.*](#))

By November 1992, the Health Service Command had 21 licensed facilities and 38 registered facilities. The Walson U.S. Army Community Hospital Blood Bank, Fort Dix, N.J., was removed from the Army FDA 611 license. In 1992, at the recommendation of the Base Realignment and Closure Commission,

³ Spiker was brought back on active duty in November 1990, as a retiree recall, during Operation Desert Storm to handle the blood issues for the Army at the Office of the Surgeon General. He remained activated until May 31, 1991, after all of the Operation Desert Storm After Action Reviews were completed.

Walson Army Hospital was transferred to the Air Force (McGuire Air Force Base) and was renamed Walson Air Force Hospital. On April 30, 2001, Walson Hospital closed its doors as the Air Force vacated the building. The former hospital was turned over to the BRAC Committee.

Operations Desert Shield and Desert Storm

The Middle East has a long history of turmoil. Most of the conflicts have been disputes over territory and eventually oil. Beginning in July 1990, Iraq and Kuwait would have disagreements over oil consumption and pumping. Just one month later, some 200,000 Iraqi troops moved into Kuwait and the United Nations demanded Iraq's withdraw. At this point, it seemed that U.S. involvement in the region was inevitable, so the Army Blood Program began to plan ahead.

Operation Desert Shield began when President George H.W. Bush ordered 200,000 U.S. forces to the Persian Gulf region in early August. The deployment of troops to the Gulf region began with the 2,300 soldiers from the 82nd Airborne Division. They deployed with a contingency shipment of blood, O-negative red blood cells, which the Health Service Command blood donor centers rushed to supplement at the time they deployed. Later in August, the 24th Mechanized Infantry Division from Fort Stewart, Ga., began to arrive in Saudi Arabia.

At that time, European Command Joint Blood Program Officer MAJ Michael Fitzpatrick (BBF Class 80-81) began working with Armed Services Blood Program Office on the blood support plan and requirements as the U.S. Central Command did not have a blood officer on staff at the time. In August, the U.S. Army Medical Department also deployed to the region. The 47th Field Hospital, the 28th Combat Support Hospitals and the 5th Mobile Army Surgical Hospital were under the command and control of the 44th Medical Brigade. LTC Wilbur Malloy deployed to Saudi Arabia to establish a frozen blood depot at Al Jubail. The biggest theater challenge for the frozen blood program was sufficient quantities of freezers and deglycerolization bowls.

It soon became clear that the Army Blood Program would play a critical role in the conflict. COL Richard Platte, the Health Service Command Laboratory and Blood Bank consultant at the time, sent a message to all Health Service Command blood donor centers to dust off their mobilization plans, and shortly thereafter—as the situation in theater deteriorated and conflict became a distinct probability—Platte ordered Health Service Command Medical Centers and selected Medical Activities to activate their mobilization plans.

In September, the 655th Medical Company (NC) deployed one officer and seventeen enlisted. It took some time for all of their equipment to arrive in theater. Eventually though, they became operational and were collocated with the frozen blood depot in Al Jubail.

By this time, the tasks at hand were becoming overwhelming. Two Army Mobilization Augmentees were assigned to assist Platte with the mobilization plans. Retired LTC John Bell (BBF Class 73-74), a seasoned blood banker, was also brought in as a retiree recall. Platte saw that the interim Office of the Surgeon General blood program officer, MAJ Mike Stanton, was becoming overwhelmed, so he convinced BG James Peake to recall retired COL Jim Spiker to active duty as well.

Later in September, the 135th Medical Detachment (NC) from Ft. Bragg, N.C., arrived in theater and established operation at Dhahran. Also, the remaining team of the 655th Medical Company in Germany prepares to begin freezing blood for EUCOM. Throughout the force buildup, four additional Army reserve blood units deployed to Southwest Asia: 379th Blood Bank Company from Folsom, Pa; 448th Blood Detachment (NA) from Des Moines, Iowa; 387th Blood Detachment (NC) from Brooklyn, N.Y.; and the 605th Blood Detachment (NC) from Des Moines, Iowa.

As Operation Desert Shield continued to develop, the requirements for blood placed on the Health Service Command began to outstrip the current capabilities to collect at only the licensed establishments. So, Platte ordered the activation of an additional 11 blood donor centers that previously had never operated a blood donor center. This included places like Fort Belvoir, Va., Fort Eustis, Va., Fort Meade, Md., West Point and Fort Lee, Va. Most of these places outsourced their blood donor testing to FDA-licensed civilian testing facilities, and Platte consolidated other testing on the east coast to the Camp Memorial Blood Center at Fort Knox, Ky. One of the biggest challenges encountered at this phase was that mobilization equipment and supplies at the inactive or mobilized blood donor centers were obsolete and/or inadequate. The Army Blood Program had to perform a lot of emergency procurement action to bring these centers up to standards.

The biggest revelation encountered early on in the mobilization was that the Health Service Command Mobilization Plan for blood donor centers had not been exercised for 17 years and was grossly inadequate. The biggest lesson learned was that the U.S. Army Forces Command installations could not be relied upon to provide blood. For years, the current mobilization plan had called for blood collections from deploying troops, but Platte encountered some refusal from commanders to allow troops to donate blood prior to deployment. Troops were busy focusing on training and other preparations for deployment. They did not have time in their training schedules to allow troops to donate blood. There were other concerns such as vaccinations given to deploying troops would prevent them from donating. Commanders would not change their pre-deployment timelines just for soldiers to donate blood. This was especially true at Fort Hood where the Army Blood Program had a major blood donor center. So, Platte moved the whole blood collection operation from Fort Hood to Fort Sill, Okla.—not an easy task, but it got done.

Although the move to Fort Sill was a good one, it caused blood collections at several other locations to be severely reduced. To make up for the drop in blood collections, the Army Blood Program relied heavily on several U.S. Army Training and Doctrine Command installations like Forts Leonard Wood, Fort Sill and Fort Knox to make up the shortfall of blood collections. With collections taking place throughout the country, the bulk of the collections still came from the Camp Memorial Blood Center at Fort Knox, Ky., under the direction of LTC Ken Zielmski. Fort Knox was a large training base with an already established blood center. Even with the large increase in workload, the staff from the Camp Memorial Blood Center performed with distinction.

ASBPO discussed with COL Platte a plan for The Blood Bank Center at Fort Hood to rejuvenate and freeze blood to help meet some of the projected requirements. The biggest challenge however, was the availability of sufficient quantities of PIPA (Pyruvate, Inosine, Phosphate and Adenine) solution.

One final obstacle was discontinuing civilian blood collections on military installations. Although the Armed Services Blood Program Office wanted to continue allowing it, Platte believed that it impacted the Army's ability to meet collection requirements, so he suspended civilian blood agencies' access to Army posts.

In November, several reserve units were alerted for possible deployment to Germany: the 548th Blood Detachment (NA), Madison, Wis.; the 325th Blood Detachment (NB) from Mesquite, Texas; the 1467th Blood Detachment (NC) from Fort Allen, Puerto Rico; and the 324th Blood Detachment (NB) from Chester, Pa.

On Dec. 26, 1990, MAJ Bruce Sylvia (BBF Class 84-85) arrived in theater to serve at the Area Joint Blood Program Officer (AJBPO), under the USCENTCOM Joint Blood Program Office of MAJ Williams, MAJ Springer, and LCDR Fieldman.

On Jan. 12, 1991, Congress agreed to allow the President to use force to end the Gulf crisis. By this time, the Army Medical Department (AMEDD) had deployed 44 hospitals and six blood supply units to Southwest Asia. After several months of intense preparation, the Army Blood Program was poised to meet the blood requirements of Operation Desert Storm. The program moved a considerable amount of blood to Armed Services Whole Blood Processing Laboratory-East prior to the commencement of the air campaign on Jan. 17, 1991. By the time the active war began, there was a total of 30,000 units of red blood cells from the three Services, the European and Pacific Commands and civilian sources available in theater when active war began.

In the months that followed, the “pipeline” was really flowing. When the ground invasion began on Feb. 23, 1991, the Army Blood Program had provided the majority of the military blood that was shipped into theater. During the eight month period of the operations, 105,000 units of red blood cells were flown into theater. Deployed military hospitals transfused approximately 2,000 red blood cells with 250 to U.S. injured service members and the remainder to Iraqi injured civilians. The U.S. was expecting huge casualties once conflict actually began, which is why there were so many Army hospitals deployed. The Army Blood Program was prepared for the worst. Thankfully, the war was quick. The U.S. overwhelmed Saddam Hussein and his army and America suffered relatively few casualties.

The 655th reported that during February 24-25, 235 frozen red cells were deglycerolized. None were transfused.

On Feb. 28, 1991, a cessation of hostilities was declared. The terms of the cease fire were negotiated in Safwan, Iraq, on March 1, 1991. Iraq accepted the terms on April 6, 1991, with an effective date of April 11, 1991.

New Regulations Help Restructure the Army Blood Program

In 1992, the new Surgeon General, LTG Alcide LaNoue, was tasked to downsize the Office of the Surgeon General and to consolidate it with the Health Service Command to prevent Fort Sam Houston, Texas, from being closed as part of the impending Base Realignment and Closure Act of 1991. LaNoue directed a study that resulted in the establishment of U.S. Army Medical Command, more commonly known as MEDCOM. In October 1993, the U.S. Army Medical Command (Provisional) began a one year process of replacing the Health Services Command, and in October 1994 MEDCOM became fully operational. Under this command, management and oversight of medical treatment facilities was consolidated. The Surgeon General now wore two hats—the Surgeon General's traditional responsibility as senior medical advisor on the Army staff was combined with command authority over the MEDCOM and all its subordinate units.

At this time, the Army Blood Program was primarily segmented and standard operating procedures were established by each individual blood bank. Quality assurance positions were nonexistent, and current Good Manufacturing Practices were a foreign language. Brown had to work within the downsizing structure while simultaneously increasing positions or minimally expanding responsibilities. This mandated that no one in the program work in a vacuum.

In May 1993, as Health Service Command deactivated and the new MEDCOM became fully operational, Platte departed the San Antonio and became the executive officer for the Armed Forces Institute of Pathology in Washington, D.C. He retired from the Army the following year in December 1994. Brown was given the Army Blood Program to manage, including both policies and operations and served in this role from 1991 to 1997.

That same year, Brown was directed to move the Army Blood Program Office to MEDCOM. The consolidation of the Office of the Surgeon General and the Health Service Command allowed one Army Blood Program at MEDCOM with oversight to both policy and operation. Under Brown's leadership as

director of the Army Blood Program, the Army's FDA license structure was re-organized to align the office as the FDA Alternate Responsible Person for the FDA license 611.

On June 8, 1991, the Army inactivated the Letterman Army Medical Center as directed by the Base Closure and Realignment Commission Act of 1991. The facility began its transformation from a medical center to an Army hospital, then an Army health clinic, to eventually an aid station. The facility finally closed on Aug. 1, 1995. Also due to the Base Closure and Realignment Commission Act of 1991, the Armed Services Blood Bank Center at Fort Ord, Calif. (the first tri-service blood donor center), also closed in September 1993. Personnel were transferred to Madigan Army Medical Center to help build a new facility in the Pacific Northwest. LTC Dave Miller (BBF Class 86-87) was their last director.

But there were still more changes to be made. In 1996, the Fitzsimmons Army Medical Center began closure due to the Base Closure and Realignment Commission Act of 1995. MAJ Donna Whittaker closed the facility's blood program. In March 1999, the Landstuhl blood donor center closed down their donor testing lab and began sending their samples to Fort Hood. The primary reasons for this move were increased regulatory requirements, Abbott support for testing equipment not being the same as it was in the United States, and the staffing concerns. The bulk for the staff for the Landstuhl blood donor center came from the 226th Medical Logistics Battalion, blood platoon. The soldiers performed very well considering they were constantly pulled between the two units and the different missions.

On Jan. 7, 1998, the Assistant Secretary of Defense for Health Affairs Health Operations Policy letters to the Surgeon General requested the Services look at consolidation of blood donor center functions where possible and at their blood establishments quality assurance programs. Each blood donor center—whether in the continental U.S. or not—was reviewed and a determination made as to its future operation along intra- and inter-services lines.

Army Blood Program Implements New Testing and Quality Assurance Program

In 1991, the FDA held a workshop in Silver Spring, Md. to announce its ***Draft Guidelines for Quality Assurance in Blood Establishments***. This document, which was eventually issued in final format years later, caused an upheaval in the U.S. blood industry and was not met with great acceptance. The meeting was confrontational and yet gave the industry a clear picture of where it was heading. Previously, the industry had basically been run by the American Association of Blood Banks (which is known today as the AABB). The FDA deferred to the ***AABB Standards*** and in most instances, blood was considered a service under the professional oversight of pathologists to be delivered to the patient. With this new drafted guidelines document, the FDA declared it would begin to govern the blood industry and AABB would be subordinate to the FDA. The FDA indicated it would also invoke 21 CFR Part 211 documents, which contain the current Good Manufacturing Practices requirements for finished pharmaceuticals, in addition to 21 CFR Part 600 which deals with biological products. This meant that the blood products manufactured within the U.S. blood industry could now be regulated as a biological product as well as a drug. This was a huge change that would quickly have a significant on blood donor centers and transfusion services. Impact on the Army Blood Program was potentially immense and LTC Richard Brown did not want the program to come under a consent decree. On July 11, 1995, the FDA published the final document ***Guidelines for Quality Assurance in Blood Establishments***. The purpose of this guideline was to assist manufacturers of blood and blood components, including blood banks, transfusion services, and plasmapheresis centers, in developing a quality assurance program in their effort to be consistent with recognized principles of quality assurance and current Good Manufacturing Practices.⁴

⁴ Because blood and blood components are drugs under the FD&C Act, the current Good Manufacturing Practices regulations in 21 CFR, Parts 210 and 211 are applicable. In addition, the FDA issued regulations for blood and blood components in 21 CFR, Part 606. This guideline is intended to be used in conjunction with the applicable federal standards in 21 CFR, Parts 600 through 680 and Parts 210 and 211.

New Tests and Procedures

In 1992, several Army Blood Program Policy Letters directed the Army Blood Program blood donor centers to begin performing several new tests and procedures. Among these:

- April 29, 1992: testing of donor blood for antibodies to HIV-1 and HIV-2 was implemented across the U.S. The Army Blood Program was directed to begin testing for anti-HIV-2, using the acceptable anti-HIV 1/2 combination test
- March 18, 1992: implementation an “improved” test for antibodies to Hepatitis C. There was no FDA licensed supplemental test, so all repeat reactive donors were deferred.
- Aug. 18, 1992: establishment and retention of a Confidential Unit Exclusion procedure and a confidential health history interview with each prospective donor as a blood supply safety issue.

A Nov. 3, 1993, Army Blood Program Policy Letter announced the FDA licensure of a supplemental anti-HCV test. However, Army blood donor centers were not required to implement the test. Instead, centers were told to maintain the same testing algorithm and donor deferral criteria from the previous HCV testing policy.

An Aug. 9, 1995, Army Blood Program Policy Letter announced that Army Blood Program blood donor centers were no longer required to perform ALT testing on units of blood donated for transfusion purposes. In 1996, testing of donor blood for HIV p24 antigen was implemented across the U.S. A Dec. 13, 1995, Army Blood Program Policy Letter outlines the testing algorithms and donor deferral management for HIV-1 p24 Antigen, once a test kit was licensed.

On Aug. 15, 1997, the FDA licensed a combination HTLV I/II test kit for blood donor testing. A Sept. 16, 1997, Army Blood Program Policy Letter directed all Army Blood Program blood donor centers began testing for HTLV I/II.

Throughout the late 1990s, the regulatory requirements for blood donor testing began to grow exponentially. The Army Blood Program began consolidating testing at four facilities: Fort Knox, Fort Hood, the Armed Services Blood Bank Center, and the Tripler Army Medical Center. This meant that blood donor centers would collect donors and send samples to specified locations to perform for testing. Because the regulatory requirement became so strict on facilities that performed testing, the Army Blood Program decided it would be easier to manage if it were consolidated at a few strategic locations. Therefore, the Camp Memorial Blood Center tested their own donor samples plus the samples from Walter Reed Army Medical Center, Dwight D. Eisenhower Army Medical Center and the Womack Army Medical Center. Fort Hood tested their own donor samples plus Brooke Army Medical Center, William Beaumont Army Medical Center, Landstuhl regional Medical Center, Sigonella, Naples, Rota, Great Lakes, Camp Lejune. Tripler Army Medical Center and the Armed Services Blood Bank Center tested only their own samples. Brown left the Army Blood Program Office in 1997 and was replaced by COL Gary Kagawa (BBF Class 81-82) (Photo 8) who would serve as director from 1997-2000.



Photo 8: COL
Gary Kagawa

Kagawa was instrumental in bringing Nucleic Acid Amplification Testing to the blood donor testing battery. Nucleic acid testing was developed to detect a virus in a shorter window—the time from when a patient was first infected to when the virus can be detected by antibody tests. The first nucleic acid test for HIV and HCV was not licensed and to be implemented under an Investigational New Drug protocol. This was the first time the Army Blood Program blood donor centers had to perform donor testing using a FDA unlicensed test methodology. The Army Blood Program partnered with Gen-Probe for single donor testing using their Investigational New Drug protocol. The Institutional Review Board—a board at each hospital that has to approve all clinical research—at all blood donor center locations had to approve the protocol prior to commencing testing. An April 17, 2000,

Army Blood Program Policy Letter 4-17-00 provided guidance to Army Blood Program donor centers on the implementation of single donor Nucleic Acid Amplification testing. Fort Hood implemented the test in February 2000. The Tripler Army Medical Center and the Camp Memorial Blood Center implemented the test in August 2000. Only three of the four blood donor centers that tested samples established NAT labs. The ASBBC did not because of space issues.



Photo 9: LTC Dennis Stewart

LTC Dennis Stewart (BBF Class 89-90) (Photo 9) replaced Kagawa as the director of the Army Blood Program in 2000. He served in that position for a little less than one year, but was instrumental in deploying theater Defense Blood Standardization System to the frozen blood depots in Korea—Camp Carrol and Camp Humphreys. These were the locations in Korea where frozen blood was kept as part of the healthcare strategy should war on the Korean peninsula begin again. Frozen blood would be used until blood donor centers in the continental U.S. could ramp up collections and begin shipping fresh liquid blood to Korea.

Quality Assurance Program

With the rapid growth of healthcare information systems, the military blood programs continued to see the need to electronically capture the blood donor center and transfusion service records and information. The Defense Blood Management Information System that was being developed by Platte in the late 1980s was never fielded to the sites. So in 1991, blood officers from the three services joined with the Defense Medical Logistics Standard Support office and began development on a new blood program computer system—the Defense Blood Standardized System. The new system was first deployed to military transfusion services and blood donor centers in 1994. It was a Class II medical device regulated by the FDA (the DMLSS office carried the FDA manufacturer’s license). DBSS remained stagnant as a record keeping system, unlike commercial blood bank systems that transitioned into decision making systems.



In 1994, Brown hired Mr. John Ives to replace Ochoa as the lookback coordinator. Ives held this position from 1994 to 2002. Brown foresaw the additional regulatory oversight that would be required when the FDA’s quality assurance guidance would become effective. He knew that a quality assurance position was needed for consistency and directions within the Army Blood Program.



Photo 10: Kathy Elder

In 1994, for six months, Brown had a laboratory officer, CPT Sheryl Dunn, fill in as a quality assurance officer. Brown saw the need to have continuity for this position, created and established a civilian quality assurance manager position to execute and manage the regulatory compliance of the FDA guidance. It was in September 1995 that Kathy Elder (Photo 10) assumed the duties of the quality assurance manager for the Army Blood Program. Brown and Elder began holding MEDCOM-wide current Good Manufacturing Practices (cGMP) workshops. They began conducting regular facility audits, publishing audit reports for senior leadership’s awareness, and started to make inroads into standardizing standard operating procedures. Brown and Elder were able to work with the FDA, and they established a trust between the Army Blood Program and the FDA because they understood Brown’s intent as he led the Army Blood Program within governmental and Army restrictions.

An Aug. 15, 1996, Army Blood Program Policy Letter directed all Army Blood Program facilities to implement the quality assurance program and self assessment plan. LTC Dave Miller, Chief of Blood Services at the Brooke Army Medical Center, worked with Elder to develop the template which all Army Blood Program facilities would use.

2000s

In the new century, the Army Blood Program would continue to go through a restructuring process while conflicts in Afghanistan and Iraq continued to escalate. Restructuring would change how blood was tested and also bring about the opening of new blood donor centers. It would be a decade that played a vital role in shaping the Army Blood Program and laid the groundwork for the program as it is known today.

Restructuring Continues Into the New Century

In January 2000, the Army Blood Program notified the FDA that the United States Forces, Korea blood donor center would no longer be collecting blood. Although, their FDA license was not revoked at the time in case the theater needed to start collecting. Increased regulatory requirements, no civilian staff to maintain continuity and competencies, and the uncertainty of whether donors traveled north of Seoul where *P. vivax* malaria was endemic, were all reasons why the facility was closed.

From 2001 to 2005, COL Gary Norris (BBF Class 86-87) (Photo 11) was next to serve as the director of the Army Blood Program. Norris moved the Army Blood Program Officer position back to the Office of the Surgeon General in Falls Church, Va., however, the Quality Assurance Manager and Lookback Coordinator positions remained at MEDCOM. Towards the end of Norris' tenure, he established the first metrics program which would help the Army Blood Program leadership gauge how well the program and individual facilities were performing. Army Blood Program Policy Letter 2004-09-02 provided implementation guidance to all Army Blood Program blood donor centers and transfusions services.



Photo 11: COL Gary Norris



Photo 12: MAJ Oswald H. Robertson

On Aug. 3, 2001, the new blood donor center at Fort Hood was dedicated in honor of MAJ Oswald H. Robertson (Photo 12). Dr. Robertson was commissioned in the Army Medical Corps during World War I. During the war, he experimented with preserving red blood cells for use in blood transfusions. He would later become recognized as the “Father of Blood Banking.” The Robertson Blood Center was the most technically advanced donor center in the Department of Defense, with more than 21,571 square feet. The staff collected the first donors in the new facility in July 2001. In 2002, retired SGM Anselmo “Papo” Martinez was hired to replacing the retiring John Ives, who held the lookback coordinator position since 1994. Developed in 1986, the HIV lookback program served as a way for the Army Blood Program to track down all blood products donated by an infected donor, or in the case of a transfused patient, the source of the infection. By the 1990s, the lookback program caseload had been reduced and was starting to move forward. As of 2012, Martinez is still holding the lookback coordinator position.

In October 2001, the Army Blood Program implemented donor screening for variant Creutzfeldt-Jakob Disease, or vCJD, more commonly known as Mad-Cow Disease. These new screening requirements deferred many donors due to their military assignments in Europe from 1980 to 1996. Approximately 18 percent of the current active force was expected to be deferred with an even greater percentage of retirees. Because of these changes, each blood donor center received one donor recruiter, managed by the Armed Services Blood Program Office, to help increase collections at the local facilities. This came at a critical time as the war in Afghanistan began. (*Learn more about vCJD [here.](#)*)

From Kagawa's work in the late 1990's on the Investigational New Drug Protocol, the FDA approved Nucleic Acid Amplification Testing to screen whole blood donors for HIV and HCV in 2002. A May 29, 2002, Army Blood Program Policy Letter 2002-05-02 provided guidance to Army Blood Program blood donor centers on the transition from the IND protocol to the FDA licensed assay. With the implementation of the FDA-licensed nucleic test for HIV-1/HCV, all blood and blood components collected by Army Blood Program donor centers would no longer be tested for the HIV-1 p24 antigen.

On June 3, 2002, Army blood donor testing facilities transitioned from the nucleic acid test performed under the Investigative New Drug protocol to Chiron's FDA-licensed Procleix HIV-1/HCV assay for the detection of HIV-1 and/or the Hepatitis C virus.

Many new medical treatment facilities and blood centers were programmed in the Army Military Construction Program (MILCON). New blood donor centers being planned include: Fort Bragg, Fort Benning, Fort Bliss, Fort Gordon, and Fort Leonard Wood.

A July 28, 2003, Army Blood Program Policy Letter 2003-07-01 provided implementation guidance to all Army Blood Program blood donor centers for West Nile Virus Nucleic Acid Amplification Testing single donor testing under Investigative New Drug protocol.

An April 27, 2005, Army Blood Program Policy Letter 2005-04-01 directed all Army Blood Program blood donor centers and transfusion services to migrate to the International Society for Blood Transfusion 128 Uniform Labeling for blood and blood components, replacing Codabar labeling.



Photo 13: COL Stephen Beardsley

In 2005, COL Stephen Beardsley (BBF Class 90-91) (Photo 13) replaced Norris as director of the program. As the wars in Afghanistan and Iraq continued, concern developed about the number of severely wounded soldiers receiving emergency collected whole blood on the battlefield. Health Affairs wanted to ensure that these individuals were monitored at specific intervals post-transfusion. So in October 2006, a Reserve blood bank officer, LTC Kenneth Davis, was mobilized to augment the Army Blood Program Office. His primary mission was to manage the lookback and recipient follow-up cases of the patients who had received emergency whole blood or plateletpheresis collected in theater and also manage all reservists supporting the Army Blood Program.

One of the key initiatives of Beardsley and Elder was the standardization of processes and procedures across all Army Blood Program blood donor centers and transfusion services. This fit well with the Army Blood Program Office's long-standing commitment to improving quality, operational efficiency and regulatory compliance across the program. An April 10, 2006, Army Blood Program Policy Letter 2006-04-02 standardized the procedure for review and lot release.

On Feb. 9, 2007, the FDA approved the Army Blood Program's request for a variance to 21 CFR 606.122(m)(3) under the provisions of 21 CFR 640.120 to increase the expiration date of fresh frozen plasma to 24 hours after thawing, instead of six hours after thawing.

On March 2, 2007, the FDA approved the license supplement for the first fully automated WNV Nucleic Acid Amplification Testing for donor screening. A May 11, 2007, Army Blood Program Policy Letter 2007-05-03, provided guidance to Army Blood Program blood donor centers on the transition from the IND protocol to the FDA licensed assay.

The Fort Benning Blood Donor Center stood up in 2006 as the troop population from Fort Knox was relocated to Fort Benning, another training installation. (The Camp Memorial Blood Center officially closed their doors in October 2007; although, blood collections would continue at Fort Knox through 2008 as a satellite collection facility for the blood donor center at the Womack Army Medical Center at Fort Bragg, N.C.) A temporary building was constructed in March 2007 to house the processing, manufacturing and distribution sections. And in February 2008, the Fort Benning Blood Donor Center opened its doors as the newest blood donor center in the Army Blood Program. One hundred percent of the blood collected at Fort Benning was performed via mobile blood drives.

With the closure of the Camp Memorial Blood Center, blood donor testing that was performed at that facility transitioned to Robertson Blood Center at Fort Hood, Texas. It was also during this time that

blood donor testing at the Armed Services Blood Bank Center, Fort Lewis, Wash., was discontinued and moved to the Robertson Blood Center, leaving only the Robertson Blood Center and the Tripler Army Medical Center, Hawaii, as testing facilities for the Army Blood Program

In 2008, after serving as the director of the Army Blood Program from 2005-2008, Beardsley returned to the Walter Reed Army Medical Center and remained there as their Chief of Blood Services, Education Program Director and interim Laboratory Manager until the medical center officially closed on July 27, 2011. At that time, the facility merged with the National Naval Medical Center in Bethesda, Md., and currently stands as the Walter Reed National Military Medical Center. With the completion of this merger, the blood donor center at Walter Reed and the Transfusion Services at Dewitt Army Community Hospital, Fort Belvoir, Va., realigned under the Department of the Navy's FDA blood establishment license.



Photo 14: LTC Mike Lopatka

Following in Beardsley's footsteps was LTC Mike Lopatka (BBF Class 00-01) (Photo 14). Although, he was assigned as an interim director for the Army Blood Program and his tenure was less than a year long, the Army Blood Program remained busy. The military blood community saw the need to move with the times, into the electronic age. Lopatka would begin many months of meetings and discussions to gain approval for the military blood program to obtain a commercial blood computer system. It would take a few years, but by September 2010, the Blood Donor Management System contract was awarded to Team ThunderCat (MediWare as the device manufacturer - LifeTrak) and the Transfusion Service followed with an award to Team ThunderCat (MediWare as the device manufacturer - HCLL) for the device manufacturer in March 2011.

In 2009, after joint decisions by the three Deputy Surgeon Generals, the Army Blood Program was directed to outsource all blood donor testing. Initially the Deputy Surgeon Generals were looking to get fresher blood to the war zone. It quickly turned into a Business Case Analysis. The end result for the Army Blood Program was that it was less expensive and more efficient to outsource donor testing. The change was hard to accept because testing had been part of the program for so long. However, as time went by, the benefits of outsourcing became very clear. In late 2009, early 2010, the Army Blood Program was expanding with several other new initiatives such as the incorporation of leukoreduced whole blood collections at the Brooke Army Medical Center and the incorporation of plasmapheresis at the Eisenhower Army Medical Center, Womack Army Medical Center, Fort Benning and the Armed Services Blood Bank Center-Pacific Northwest. Tripler was now serving as the pilot site for Blood Tracks—a program which provides positive patient identification and improved patient safety. The officer-in-charge at Tripler had discussed the system with COL Beardsley. Tripler purchased the system and began implementation. No other site was going to start using this system until Tripler was fully operational. As of today, the program at Tripler is on hold. They have yet to complete implementing all modules.

Operations Enduring Freedom, Iraqi Freedom and New Dawn

On Sept. 11, 2001, the world was shocked when a series of coordinated suicide attacks was launched against the United States. Nineteen al-Queda terrorists hijacked four commercial airplanes. American Airlines Flight 11 and United Airlines 175 were flown into the World Trade Center twin towers in New York City. American Airlines Flight 77 was flown into the Pentagon, and United Airlines Flight 93 crashed into a field in Shanksville, Pa. Later, investigators believed Flight 93 was destined for another target in Washington, DC.

On Sept. 20, 2001, the U.S. stated that Osama bin Laden was behind the September 11th attacks in 2001 and issued a five point ultimatum to the Taliban to include handing over all al-Queda leaders. The Taliban rejected the U.S.'s ultimatum because they said there was no link between Osama bin Laden and the nineteen hijackers.

On Oct. 7, 2001, the U.S. launched Operation Enduring Freedom. The objectives included the destruction of terrorist training camps and infrastructure within Afghanistan, the capture of al-Qaeda leaders, and the cessation of terrorist activities in Afghanistan. Great Britain joined the United States in an air campaign. The first ground combat action was the battle of Mazari Sharif on Nov. 9, 2001, President George W. Bush built an international coalition to join the U.S. in the fight against terrorism.

The Army Blood Program was a critical part of the initial medical support to the early combat action in the Middle East. In October 2001, US Central Command (CENTCOM) deployed LTC Herman Peterson to the US Naval Support Activity base in the Kingdom of Bahrain to serve as the JBPO-Foward. LTC Peterson and the 32nd Blood Platoon quickly established blood support detachments in Bahrain, Oman, and Djibouti. LT Mike Bukovitz led the blood supply unit.

MAJ Dave Reiber commanded the 440th Blood Support Detachment. They were the first blood support unit within the Afghanistan operational theater. Reiber went directly from Germany to Uzbekistan and got there in late January 2002. The Soldier of the 440th arrived in early February. Only four Soldiers joined Reiber in Uzbekistan (Karshi-Khanabad or "K2"). The remaining Soldiers from the unit joined LTC Herman Peterson in Bahrain. During the second rotation of the blood supply unit, LT Evans and the 440th relocated from "K2" down to Bagram. Elements of the 440th also operated small blood supply units in Oman and Djibouti. Between January 2002 and January 2003, the 440th distributed over 5,400 blood products to 20 different U.S. and Coalition medical facilities.

ASBPO significantly increased the Services' blood requirement quotas in support of CENTCOM. The total blood requirement quota doubled from 246 units of red blood cells per week to 500 units per week with the Army collecting 50 percent of the total. Although this required a significant increase in blood collections, the Army blood donor centers were able to meet the increased requirements by expanding their operations without additional personnel. This was primarily accomplished by lengthening the work day and increasing work hours of donor center staff. This additional workload, along with maintaining the strict regulatory requirements of the FDA, created undesirable conditions at the blood donor centers.

In 2002, the United Nations Security Council passed Resolution 1441 which called for Iraq to completely cooperate with UN weapon inspectors to verify that Iraq was not in possession of WMD and cruise missiles. The United Nations Monitoring, Verification and Inspection Commission (UNMOVIC) found no evidence of WMD, but could not verify the accuracy of Iraq's declarations regarding what weapons it possessed. President Bush demanded an end to Iraq's production of WMD and full compliance with the UN Security Council Resolution. President Bush also warned of military actions should the Iraqi government continue to prevent weapons inspections. U.S. intelligence agencies had claimed that Iraq had attempted to acquire centrifuge tubes for uranium enrichment processes. In the 2003 State of the Union address, President Bush said "we know that Iraq, in the late 1990s, had several mobile biological weapons labs." On Feb. 5, 2003, Secretary of State Colin Powell appeared before the UN to present American evidence that Iraq was hiding unconventional weapons.

On Jan. 29, 2003, ASBPO tasked the Services to increase their blood requirement quotas in support of the Global War on Terrorism (GWOT). The new quotas were effective on Feb. 3, 2003, and resulted in a 50 percent increase in the total Service requirements – 500 units of red blood cells to 750 units per week with the Army still providing 50 percent of the total. Since the CENTCOM theater blood requirements had increased beyond the organic expansion capability of the Army blood donor centers, and the CENTCOM theater blood requirements appeared to be steadily increasing, the Department of the Army activated and deployed 12 of the 13 Reserve Component Medical Support Unit (MSU) blood teams to the active duty blood donor centers to provide personnel augmentation in support of implementing significantly increased blood collections on military installations.

RC Unit Name	Deployment Site	Number of Personnel
7227 MSU	Fort Leonard Wood, MO *	22 Assigned 24 Authorized
7233 MSU	Fort Hood, TX	29 Assigned 44 Authorized
7218 MSU	Fort Knox, KY	24 Assigned 44 Authorized
5501 MSU	Fort Sam Houston, TX	23 Assigned 24 Authorized
7236 MSU	Fort Bragg, NC	None deployed ISO OIF
7217 MSU	Fort Gordon, GA	24 Assigned 24 Authorized
4223 MSU	Fort Bliss, TX	20 Assigned 24 Authorized
7220 MSU	Oklahoma Blood Institute, OK	25 Assigned 35 Authorized
7226 MSU	Fort Gordon, GA	24 Assigned 24 Authorized
4219 MSU	Fort Bragg / Great lakes	21 Assigned 24 Authorized
6253 MSU	Fort Lewis – ASBBC-PNW	20 Assigned 44 Authorized
7229 MSU	ASWBPL-West (via Ft. Lewis)	17 Assigned 24 Authorized
7223 MSU	ASWBPL-East (via Ft. Knox)	17 Assigned 24 Authorized

* NOTE: The 7227th MSU did not move to FLW at the same time the other MSUs mobilized. FLW did not have a BDC but was identified because it was a TRADOC Base with young trainees who overwhelmingly would not reasons to be deferred as blood donors.

On Feb. 27, 2003, the ASBPO again significantly increased the Services blood requirement quotas to meet the increased theater requirements in the CENTCOM area of operations in support of the building operations in Iraq. The total Service blood requirement quotas increased by approximately 67 percent from the previous requirement quotas from Feb. 3, 2003. The quotas rose from 750 to 2000 units of red blood cells per week with the Army providing 1000 units per week.

On March 20, 2003, Operation Iraqi Freedom began. GEN Tommy Franks commanded the U.S.-led coalition. Some 40 other countries participated in the military coalition. Again, the Army Blood Program played a critical role in the initial medical support role. CPT Robert Gates led the 424th blood platoon. Initially, they deployed to Camp Arifjan under MAJ Robin Whitacre (BBF Class 98-99) (JBPO-Forward). Unfortunately as a Reserve unit, the 424th equipment was old, did not work, and failed to arrive in theater until late in May, after the 424th blood platoon was at mission completion. They linked up with SFC Shane Thompson from the 32nd Blood Platoon, who served as CPT Gate's non-commissioned officer-in-charge. They procured an ISU96 from the 212th MASH in order to conduct forward blood operations under the 30th Medical Brigade. The remainder of the 32nd blood team operated out of Talial, Iraq. Gates, Thompson and their team followed combat units in the push up to Baghdad, traveling with the 591st Medical Logistics Company. Most of the Iraqi military was quickly defeated and Baghdad was occupied on 9 April, ending Saddam Hussein's 24 year rule. CPT Gates' blood supply team returned to Kuwait, after turning over forward blood operations to LT Bautista and the 172nd blood platoon.

CENTCOM blood requirements reached a peak in early April 2003, increasing to between 2200-2225 units of red blood cells per week with the Army providing approximately 1100 units per week. By mid-May through June 2003, the total Service blood requirement quotas began decreasing to levels of approximately 1050-1100 units per week with the Army providing 525-550 units per week. By late August 2003, the total CENTCOM requirements decreased by approximately 20 percent of the previous levels, down to 880 units of red blood cells per week.

On May 1, 2003, President Bush declared an end of major combat operations, while aboard the USS Abraham Lincoln, and the beginning of the military occupation period. LT Bautista and the 172th Blood Platoon deployed into Iraq and began to support the U.S.-led occupation.

Shortly after the declaration, insurgency attacks began to escalate from Ba'ath Party loyalists, religious radicals and Iraqis angered by the occupation. The number of U.S. casualties and the severity of injuries increased. The use of emergency whole blood collections also began to increase. The fresh whole blood helped to save many lives, but the products were not tested prior to transfusion, yet alone meeting current FDA blood manufacturing requirements. Health Affairs policy dictated that the products had to be retrospectively tested at a FDA-licensed donor testing lab and recipients of non-FDA compliant blood products had to be notified and followed at three, six and twelve month intervals. This quickly created a large workload for the Army Blood Program Office. Tracking the recipients once they were evacuated back to the U.S. and ensuring that they were properly notified and counseled became a huge challenge.

During September 2003, four of the 12 mobilized MSUs underwent early REFRAD (release from Active Duty). COL Norris selected these four MSUs primarily to ensure that MSU blood team support could be sustained in the future should RC augmentation be required on a long-term basis and, to a lesser extent, due to the decrease in the CENTCOM blood requirements. Since the remaining deployed RC MSUs were nearing their demobilization dates in December 2003, 82 volunteers from the deployed RC MSUs were extended on active duty for one year in support of the significantly higher theater blood requirements that still exceeded GWOT blood requirement levels when all 12 RC MSUs were initially activated and deployed. From late January 2004 through mid-April 2004, the CENTCOM blood requirements increased by 20 percent to the previous levels of approximately 1,100 total units per week with the Army blood donor centers providing 540 units per week.

In 2004, half of the Reservist supporting the Army Blood Program was released due to the quota requirements reduction. At that time, Secretary of Defense Donald Rumsfeld interpreted the Presidential Selective Reserve Call-up regulation as Reservists could only be used for up to two years under this call-up and could not be utilized once the two year mark was reached for the remainder of the current Presidential Call-up. As a consequence of this interpretation, half the MSU BDCs reached their two year mark and were REFRAD in 2005. To continue to support theater, the soldiers released 2004 were recalled back to AD.

COL Norris was faced with another challenge as the war was expected to continue. Trauma surgeons at deployed U.S. hospitals began to call for additional components to treat the hemorrhaging seen in massive trauma patients. Old doctrine was quickly set aside and new ways to provide better blood support was explored by ASBPO and the Service Blood Programs.

LT Maria Johnson and the 226th Blood Platoon replaced the 172nd in April 2004. In May, for the first time ever, cryoprecipitate was shipped into theater for use at Level III medical treatment facilities (Army Combat Support Hospitals). Type AB frozen plasma was pushed forward to Level II facilities such as forward surgical teams. From November to December 2004, LTC Emmett Gourdine established the first-ever plateletpheresis program in an operational theater at the 31st Combat Support Hospital in Iraq. LTC Gourdine prepared a pre-screened pool of potential donors to support his newly established platelet program. Clinical Practice Guidelines (CPGs) shifted to a 1:1:1 ratio of red cells, frozen plasma and platelets to treat massively injured Soldiers.

In December 2004, the 7227th Medical Support Unit from Columbia, Mo., activated and deployed to Fort Leonard Wood to establish a new contingency blood donor center. Fort Leonard Wood was a Training and Doctrine Command (TRADOC) installation whose young training population would have little or no reason for deferral. This meant that the location would be ideal for collecting units of blood. With a staff of just 10 Reserve Soldiers, LTC William Walden set up the Fort Leonard Wood Blood Collection Center

in Buildings 790 and 791. Because of the FDA's requirements, the donor center would operate as a satellite collection center of Robertson Blood Center, Fort Hood, Texas. Administrative control would fall under the General Leonard Wood Army Community Hospital for personnel actions. After working with the Fort Leonard Wood command teams and post facilities, the 7227th put "needle to arm" in April 2005. Their mission was to collect approximately 100 units per week from four training battalions. The Fort Leonard Wood Blood Donor Center was the only Army blood donor center whose military staff was 100 percent mobilized Army Reservists. Three civilian contractors provided additional support to the center.

By 2006, the number of emergency whole blood transfusion cases had reached high levels. Approximately, 10 percent of total U.S. wounded in action required whole blood transfusions. Trying to ensure proper follow-up of these cases per Health Affairs' policy (HA Policy: 01-020) became an insurmountable task for COL Stephen Beardsley. So, he requested that the Army Blood Program Office activate its IMA Reserve Augmentation position to provide the additional manpower. On Oct. 15, 2006, LTC Kenneth Davis arrived. His primary task was to gain a handle on the non-FDA cases. At the time, the backlog of service members not notified was determined to be about 450- 480 personnel. As he began to gain control, he also assisted COL Beardsley in managing the more than 100 reservists supporting the Army Blood Program blood donor centers, and to manage the Army quota requirements. During 2006, the number of patients transfused with non-FDA compliant products rose to 200 U.S. service members and peaked 209 in 2007 followed by a gradual decline until 2011 where the number peaked to 278 patients.

In 2006, with all the Reservist service members assigned to blood detachments having been activated, other MOS (71L, 42A, 67G, 67W, 71D, 68J) were called to fill in the ranks to support the Army Blood Program. In 2007, Dr. Robert Gates was appointed as the new Secretary of Defense. He reevaluated the interpretation of the regulations pertaining to Presidential Selective Call-up to be "Reservist can only be utilized up to 2 years per mobilization but would be subject to recall. Dwell time between mobilizations could be as short as one day." In 2007, the Army Blood Program was once again able to bring 68K lab technicians back on board from the original 13 Reserve MSUs, reducing the training time. The Army Blood Program was designated by MEDCOM MOB Division as a continuous MEDCOM mission requirement, allowing the program to extend personnel beyond the one year period under CO-ADOS, 12301d orders as volunteers. This enhanced the programs ability to continue to perform its mission with minimal reduction in operations due to personnel turn over. During 2007, 115 Reservists supported the Army Blood Program.

Several initiatives impacted the Army Blood Program during Operations Enduring Freedom and Iraqi Freedom.

- In 2002, LTC Frank Rentas (BBF Class 91-92) (Photo 15), from the Walter Reed Army Institute of Research, led a research team to design a new red blood cell shipping container that would allow four units of red blood cells to be pushed further onto the battlefield than ever before. The new "Golden Hour Container" which used phased change material instead of Styrofoam, could maintain temperatures for up to 96 hours after being packaged instead of the 48 hours from previous containers. It was brought to market by Minnesota Thermal Science. In 2003, the "Golden Hour Container" won Greatest Army Invention award for that year.
- In 2002, two new types of hemostatic bandages were developed and used by service members: QuikClot, an engineered form of the mineral zeolite manufactured by Z-Medica, received approval from the Food and Drug Administration for external use and used by U.S. Special Operations Command and U.S. Marines deployed in theater; and the HemCon bandage,



Photo 15: Col. Frank Rentas preconditions the Golden Hour Human Blood Transport Container.

manufactured by HemCom Medical Technologies and approved by the FDA in 2003, was made of chitosan and was used by the U.S. Army.

- From 2003 to 2005, new improved tourniquets to control hemorrhaging were developed and deployed to theater. The Combat Application Tourniquet issued to individual Soldiers and the Special Operations Forces—Tactical Tourniquets were recommended as an alternative. Starting on April 1, 2005, all new Soldiers began to receive training on the new tourniquets.
- In 2004, MAJ Kevin Belanger conceptualized a handheld scanner, much like large retailers use to manage inventories. Theater-Defense Blood Standard System (T-DBSS) had a long history of not being the best system in a field environment. Manual methods of maintaining blood product inventories and dispositions were time consuming. The Telemedicine & Advanced Technology Research Center at Fort Detrick, Md., took MAJ Belanger's concept and developed the Blood Information Program (BIP) handheld device. MAJ Belanger completed the field testing with the 440th Blood Supply Detachment during 2005-2006. The BIPs first deployed into theater with MAJ Bachman (BBF Class 98-99) and the 932nd Blood Supply Detachment in March 2007. The BIP was recognized as one of the Army's Greatest Invention in 2004.
- In February 2005, the Army Blood Program blood donor centers began providing Type O frozen plasma to both theaters of operation. Early in 2006, thawed plasma began to be used as a major resuscitative fluid.
- In August 2008, the 153rd Blood Support Detachment in Balad, Iraq, under the command of MAJ Melanie Sloan and the 440th Blood Support Detachment at Bagram Air Field, Afghanistan, under the command of MAJ Matt Swingholm, received training on the ACP215 and deglycerolizing frozen red cells. ACP215 is an automated device used to freeze, thaw and wash red cells and is ideal for helping to build strategic blood resources and rare blood reserves. Their processes were validated later in September. On Nov. 7, 2008, the first deglycerolized unit of red cells frozen using the closed system ACP215 was transfused at the 86th Combat Support Hospital in Baghdad, Iraq. This was the first U.S. transfusion of deglycerolized red blood cells during a hostile conflict since the Vietnam War.
- During Operations Enduring Freedom and Iraqi Freedom, rapid screening tests for HIV, HBV, and HCV were employed to screen all donors collected in theater for emergency whole blood or plateletpheresis. Rapid testing kits became better with time and two are currently approved by the FDA for diagnostic testing. Complete retrospective testing was performed back in the continental U.S.

In 2007, the military operations began to change in Afghanistan. MAJ Barbara Bachman and the 932nd Blood Supply Detachment were tasked to support more customers. To best do this, she split off one technician from her team in Bagram and moved him down to Kandahar. When MAJ Matt Swingholm and the 440th arrived in theater to replace the 932nd, MAJ Swingholm began increasing the Kandahar supply operations.

During 2008, MEDCOM MOB Branch published MOB TDAs for the Army Blood Program and required the program to start conforming to the TDA. This resulted in releasing Soldiers that did not have the required MOS. One exception was made with a 71B officer. That same year, the Reserves sustained a significant loss of 68K Lab Technicians in Troop Program Units (TPU), with numbers falling below 50%. This led the Army Blood Program to assess other MOSs to find personnel to fill the ranks. 68W, Health Care Specialists, were incorporated as a suitable replacement for some, but not all 68K positions. The 68Ws could perform donor screening, health assessment and even phlebotomy procedures but were restricted from testing and processing blood products. With the ability of Reservists to continue to volunteer and extend under CO-ADOS orders for up to three years, the number of Involuntarily Mobilized Reservist reduced to no more than 12 Reservist involuntarily mobilized per year. MEDCOM Mobilization Branch, decided to designate a DUIC BDC to serve as the unit that would be responsible for providing replacement reservist to the ABP. Units such as the 7220, 7218th, 7223, 5501st, and this year

6252nd were designated as the parent unit for new replacements. Required replacements were reassigned to the designated unit and mobilized to fill a specific vacancy. Challenges in managing Reserve personnel stemmed from the persistent concept that a 68K, 71E or other MOS personnel were fully qualified to perform their duties on arrival to a duty station. This mentality posed a significant challenge for the Army Blood Program. As a manufacturer of blood products they are requirements to follow the FDA regulations and the AABB standards. Both require personnel to be trained, assessed for competency and evaluated periodically to ensure they are capable of performing their job.

When the war in Iraq started, Reservists were given TCS orders (12301a) orders with full per diem and BHA based on their home of record. This enabled the Soldier to ensure his/her family would not lose their home and at the same time have per diem to live off post (installation dependent). In 2008, Reserve per diem rates was dropped to 55 percent and over the course of the years was dropped altogether. Soldiers are now extended under PCS with their BHA based on their duty location or home of record if they resided within 50 miles from their duty location.

As operations in Afghanistan and Iraq continued, getting fresher blood to theater became a major concern for battlefield surgeons treating severely wounded soldiers. The Army Blood Program's new goal was to have blood arrive at the Armed Services Whole Blood Processing Laboratory four days after collection. With process improvements and reduction of redundancies in lot release and labeling procedures, COL Ronny Fryar (BBF Class 95-96) led the Army Blood Program from a low of only 2 percent of the blood arriving at ASWBPL-East on or before Day 4 in 2008, to more than 99 percent in 2012. The average age of red cells arriving in theater was between seven and eight days. This played a significant role in the treatment of severely injured soldiers.

On Aug. 31, 2010, President Obama declared "the American combat mission in Iraq has ended. Operation Iraqi Freedom is over, and the Iraqi people now have lead responsibility for the security of their country." The U.S. operation in Iraq changed to Operation New Dawn, where remaining U.S. troops were designated as advisors in non-combat roles.

As the number of troops in Iraq began to decrease, MAJ Evans and the 153rd Blood Detachment would be the last in Iraq. In October 2011, the smaller blood distribution mission was given to CPT Paul Randall, Lab Officer with the 47th CSH. On Oct. 21, 2011, President Obama announced that all U.S. troops would be out of Iraq by the end of the year. On Dec. 15, 2011, Secretary of Defense Leon Panetta officially declared the Iraq War over. The US mission in Iraq would transition once again - this time to a diplomatic mission of the Department of State. ASBPO established an MOU with DOS to provide blood to their Diplomatic Support Hospitals. The amount of blood, however, was very small – approximately 50-60 units of red cells per month.

From October 2001 through September 2011, the following blood products were shipped to ASWBPL-East in support of CENTCOM requirements, with the Army providing 50 percent of these products:

Red Blood Cells	Frozen Plasma
346,164 units	141,563 units

During 2011 and 2012, Reservists ordered or extending on active duty were involuntarily reassigned to the IRR and military schools suspended while they served in active duty. This presented challenges in getting volunteer soldiers and officers to extend or to come onto active duty in support of the Army Blood Program.

As of Sept. 17, 2012, the following numbers of blood products have been transfused in the CENTCOM area of responsibility:

Operation Enduring Freedom

Product Type	A NEG	A POS	AB NEG	AB POS	B NEG	B POS	O NEG	O POS	Unk	UNKNOWN	(blank)	Grand Total
RBC	1489	12346	2	2	627	7120	8245	39982		3	1	69817
FFP	2405	11200	2447	13338	984	6191	1281	6442		4		44292
CRYO	971	5369	8	21	165	972	1046	5253				13805
PLT	300	1637	31	184	72	389	294	1505	1	4		4417
WB	120	1078	18	242	65	454	173	1538		29		3717
DRBC	8	38				1	33	574				654
UNK				1				5				6
Grand Total	5293	31668	2506	13788	1913	15127	11072	55299	1	40	1	136708

Operation Iraqi Freedom/Operation New Dawn

Product Type	A NEG	A POS	AB NEG	AB POS	B NEG	B POS	O NEG	O POS	UNKNOWN	Grand Total
RBC	2210	20827		4	667	11854	9577	47764	1	92904
FFP	2814	15143	1766	10874	1566	9958	2018	10071		54210
CRYO	1090	6152	25	81	227	1338	939	4871		14723
PLT	367	1921	17	193	55	510	391	2262	20	5736
WB	172	1614	12	124	99	854	304	2773	17	5969
DRBC								13		13
Grand Total	6653	45657	1820	11276	2614	24514	13229	67754	38	173555

CENTCOM Total

Product Type	A NEG	A POS	AB NEG	AB POS	B NEG	B POS	O NEG	O POS	Unk	UNKNOWN	(blank)	Grand Total
RBC	3699	33173	2	6	1294	18974	17822	87746		4	1	162721
FFP	5219	26343	4213	24212	2550	16149	3299	16513		4		98502
CRYO	2061	11521	33	102	392	2310	1985	10124				28528
PLT	667	3558	48	377	127	899	685	3767	1	24		10153
WB	292	2692	30	366	164	1308	477	4311		46		9686
DRBC	8	38				1	33	587				667
UNK				1				5				6
Grand Total	11946	77325	4326	25064	4527	39641	24301	123053	1	78	1	310263

With the great success of treating the wounded, ASBPO proposed new blood product planning factors based upon transfusion data through Dec. 31, 2009.

Blood Product	Current Planning Factor	Planning Factor Based Solely on current WIA	Planning Factor Based on current WIA and estimated NBI	Proposed Revised Planning Factors
RBCs	4.0	3.4	2.5	3.0
PLTs	0.04	0.17	0.12	0.15
FFP	0.08	1.86	1.35	1.60
CRYO	N/A	0.47	0.34	0.40
* WIA is 36,462 [based on ASBP briefing - data current as of 31 Dec 09]				
** NBI is estimate to be 13,418 (36.8% of the WIA) [based on Joint Theatre Trauma System briefing - data for period Feb 09 to Jan 10]				
Calculations: Planning Factor Based Solely on current WIA = # Units Tx'd / WIA Planning Factor Based on current WIA and NBI = # Units Tx'd / WIA & NBI Proposed Revised Planning Factors = Planning Factors based on WIA plus Planning Factors based on WIA and NBI / 2				

Here are the officers and NCOs who helped lead the Army Blood Program in both the Afghanistan and Iraq theaters:

JBPO-Forward (Bahrain)	Date
LTC Herman Peterson	October 2001 - March 2002
LTC Richard Gonzales	April 2002 - November 2002
MAJ Robin Whitacre	October 2002 - May 2003

Multi-National Force-Iraq Lab/Blood Officer	Date
COL Noel Webster	August 2004 - February 2005
LTC Danny Deuter	February 2005 - January 2006
LTC Mike Buckellew	January 2006 - July 2006
Multi-National Corps-Iraq Lab/Blood Officer	Date
MAJ Paul Mann	March 2008-October 2008

OEF Blood Supply Unit (Bahrain)	Unit	Date
LT Mike Bukovitz	32nd Blood Platoon (Bahrain)	Nov-01
OEF Blood Supply Unit (Afghanistan AO)	Unit	Date
MAJ David Reiber	440th Blood Supply Detachment (Uzbekistan)	Jan-02
LT Chris Evans	440th Blood Supply Detachment (Bagram)	Aug-02
SSG Gwendolyn McFadden	32nd Blood Platoon	Feb-03
LT Sam Ismail	312th Blood Platoon	May-04
LT Lionel Lowery	440th Blood Supply Detachment	Apr-05
LT Ronnie Hill	932nd Blood Supply Detachment	Apr-06
MAJ Barbara Bachman	932nd Blood Supply Detachment	Mar-07
MAJ Matthew Swingholm	440th Blood Supply Detachment	May-08
CPT Craig Mester	440th Blood Supply Detachment	Jul-09
CPT Maria Espiritu	7220th Blood Supply Detachment (Reserve unit)	Jun-10
CPT Roderick Clayton	4224th Blood Supply Detachment (Reserve unit)	Apr-11
MAJ Jose Quesada	440th Blood Supply Detachment	Dec-11
MAJ Javier Trevino	432nd Blood Supply Detachment (PROJECTED)	Oct-12

OIF Blood Supply Unit (Iraq/Kuwait AO)	Unit	Date
SFC Shane Thompson	32nd Blood Platoon (Iraq/Kuwait)	Feb-03
CPT Robert Gates	424th Blood Platoon (Iraq/Kuwait) (Reserve unit)	Mar-03

OIF Blood Supply Unit (Iraq/Kuwait AO)	Unit	Date
LT Bautista	172nd Blood Platoon (Iraq)	Apr-03
LT Maria Johnson	226th Blood Platoon	Apr-04
LT Crista Campos	32nd Blood Platoon	Jul-05
LT Maria Farah	226th Blood Platoon	Nov-05
CPT Elaine Morrison	32nd Blood Platoon	Sep-06
MAJ Melanie Sloan	153rd Blood Supply Detachment	Nov-07
MAJ Jason Corley	432nd Blood Supply Detachment	Jan-09
MAJ Teresa Terry	932nd Blood Supply Detachment	Nov-09
MAJ Chris Evans	153rd Blood Supply Detachment	Oct-10
CPT Paul Randall	47th CSH	Oct-11

Army Blood Program of Today

It took decades of work by a large group of influential leaders to shape the Army Blood Program into what it is today. From its roots in World War II, through the years of the Vietnam War, peace in the late 1970s and 1980s and through the conflicts in the Middle East, the Army the Blood Program managed to improve the way it collected, stored, shipped and transfused blood. But this isn't the end of increasing improvements for the program. Even today, the program continues to mold itself into a leading supplier of blood for service members, retirees and their families worldwide.



Photo 16:
Retired LTC
Dave Reiber

In 2009, the Army Blood Program Quality Assurance program expanded, and retired LTC Dave Reiber (BBF Class 95-96) (Photo 16) was hired to be the Assistant Quality Assurance Manager. Initially, Reiber assisted Elder in administering the Quality Assurance Program for the Army Blood Program. He conducted audits and reviewed critical policies and procedures. Reiber also took the lead on working with the staff at all of the Army Blood Program blood donor centers and transfusion services, regarding standard operating procedures standardization efforts to include standardizing Information Mapping procedures. He took on many of the peripheral Information Technology projects used within the Armed Services Blood Program. One of the key projects that he worked on was the validation of the new

International Society for Blood Transfusion labeling software and equipment, and built and served as the System Administrator for the Army Blood Program site on Army Knowledge Online (AKO)—a site that maintains all of the blood program's policies and other critical documents and information. With Reiber's strong knowledge of computers and information technology systems, he became a vital leader in the development and deployment of the new commercial off-the-shelf blood computer systems which will eventually replace DBSS.



Photo 17: COL
Ronny Fryar

In July 2009, COL Ronny Fryar (BBF Class 95-96) (Photo 17) became the next director of the Army Blood Program. Fryar guided and completed the outsourcing of Army Blood Program donor testing. Donor centers established contracts with civilian testing facilities within their region of operations, in part, to help expedite test result turn-around times. Just as Fryar was taking over the director position of the Army Blood Program, the Brooke Army Medical Center began sending their blood donor testing to Wilford Hall Medical Center at Lackland Air Force Base, Texas. Other donor centers soon followed suit, sending their testing to other locations:

Testing Locations

Blood Donor Center	Testing Location	Testing Began
Brooke Army Medical Center, Texas	Wilford Hall Medical Center, Lackland AFB, Texas	July 2009
Armed Services Blood Bank Center—Europe, Germany		Oct. 2009
Armed Services Blood Bank Center—Pacific Northwest, Wash.	Puget Sound Blood Center, Seattle, Wash.	Oct. 2009
Tripler Army Medical Center		Oct. 2010
Walter Reed Army Medical Center, D.C.	Miller-Keystone Blood Services	Nov. 2009
Dwight D. Eisenhower Army Medical Center, Ga.	American Red Cross National Testing Laboratory, Charlotte, N.C.	Nov. 2009
Womack Army Medical Center, N.C.		Nov. 2009
Fort Benning Blood Donor Center, Ga.		Nov. 2009
Naval Medical Center Portsmouth, Va.		Nov. 2009
Naval Hospital Camp Lejeune, N.C.		Nov. 2009
William Beaumont Army Medical Center, Texas	Blood Systems Laboratories, Bedford, Texas (merged with Florida Blood Center to form Creative Testing Solutions (CTS))	Nov. 2009

With the closure of the Tripler donor testing lab in October 2010, the Army Blood Program was saving over \$4 million annually on testing costs, equipment leases and maintenance contracts.

With donor testing outsourced to civilian blood donor testing facilities, COL Fryar directed the Robertson Blood Center to take on two new missions: plateletpheresis using the MCS9000 and frozen red blood cell deglycerolization using the ACP215. Both of these equipment items are standard in field Medical Equipment Sets (MES). This began the transformation of Fort Hood into a premier pre-deployment blood program training site, with the Robertson Blood Center as the lead facility. Deploying units and individuals were now able to receive training on the new programs, but also receive training on other topics such as blood reporting tools, emergency whole blood collection requirements and rapid screening test for infectious diseases. Units and individuals were also able to coordinate for refresher training on routine transfusion service procedures at the Carl R. Darnall Army Medical Center and blood distribution training from the 932nd Medical Detachment Blood Support (MDBS). Eventually, Fort Hood would go on to become a one-stop shop for pre-deployment blood program training.

At the same time that the Robertson Blood Center was undergoing a transformation, the Armed Services Blood Program Office began looking at the Armed Services Blood Program frozen blood program since it had restarted in 2005 with the new generation of inventory frozen with the ACP215. One of the key goals was to ensure that the inventory did not remain static, not keeping up with new requirements, as the previous generation of frozen red cells. The Armed Services Blood Program Office wanted to ensure that the new inventory was rotated, and utilized as supplement to MTFs regular red cell inventories. The Army Blood Program led the way with establishing additional deglycerolization points at the Service's more remote locations. These facilities were Landstuhl, Vicenza, Tripler, and the BAACH/121st CSH in Korea. This represented the largest expansion of the frozen blood program in decades.

The latter part of the decade brought growing concern about rising healthcare costs, the growing federal deficit and the uncertainty of future budgets. Because of this, Fryar's vision for the Army Blood Program was to ensure that the program was business-wise, operationally efficient and always patient focused. So Fryar and several of the senior blood program officers developed and published a strategic plan of the program. The U.S. Army Blood Program—Strategic Plan 2012-2015 had five broad goals:

1. Foster the development of qualified staff and excellent warfighter medical support
2. Improve safety and program efficiencies
3. Reduce costs associated with blood collections
4. Modernize and standardize the Army Blood Program infrastructure

5. Communicate with stakeholders to maintain and enhance the reputation of the Army Blood Program

Several of the objectives under the second goal were to utilize state-of-the-art information technology. The acquisition of two Blood Establishment Computer Systems BECS, Mediware's LifeTrak and HCLL, and the new computer systems lead to a huge project of Table and Files Build, standard operating procedure development, validation and training. The Army Blood Program worked alongside the Armed Services Blood Program Office and the Navy and Air Force Blood Program. The Army Blood Program members on the LifeTrak team were Kathy Elder, Dave Reiber and Todd Cosgrove. Marta Harshbarger, Debbie Van Ronzelen joined Dave Reiber on the HCLL team.



Photo 18: LTC Ken Davis

In 2010, U.S. Army Reserve LTC Ken Davis (BBF Class of 07-08 (audited)) (Photo 18) led the design of a web-based Blood Management Tool to facilitate improved communication across all three Services, assist in cross-leveling inventories and reduce blood product expirations. During the first year of use, the Armed Services Blood Program more than a 14 percent reduction in purchased blood products and a reduction in red cell expiration by more than 30 percent. Reiber leveraged this new program and designed a module for the Army Blood Program Metrics. The new module made it

much easier for facilities to input their respective site data and allow management to analyze it to help shape policy and procedures.

On Sept. 23, 2010, the Fort Bragg Blood Donor Center moved into its new state-of-the-art facility adjacent to the North Post PX and Commissary.

In December 2010, the FDA released its Final Guidance on the Use of Serological Tests to reduce the Risk of Transmission of Trypanosoma cruzi Infection in Whole Blood and Blood Components Intended for Transfusion. The document directed implementation of all recommendations within the guidance no later than Dec. 31, 2011. Army Blood Program Policy Letter 2011-11-02 directed all Army blood donor centers to implement Chagas testing and to update procedure for donor screening, donor deferral, notification and lookback processes.

In December 2010, Congress enacted a bill specifying that the policy against homosexuals serving openly in the military would be repealed. The policy known as 'Don't Ask, Don't Tell' would remain in place until President Obama, Secretary of Defense Panetta and Chairman of the Joint Chiefs of Staff Admiral Mullins certified that the repeal would not harm military readiness. On July 22, 2011, the three presented the certification documents to Congress and set an end date of DADT for Sept. 20, 2011. With the policy officially repealed, the Army Blood Program, along with the rest of the ASBP, could now look at retiring the long-standing DD572, Blood Donation Record, and look towards implementing the AABB's Uniform Donor History Questionnaire (UDHQ). Previously, all high risk behavior questions were grouped together, based upon the deferral period, and donors provided a single 'yes' or 'no' answer to the entire group. If a donor answered 'yes', the donor center staff did not know which specific question it may have been. But, the donors were deferred appropriately. Now, the ASBP is looking forward to implement the new UDHQ in late 2012 or early 2013. Eventually, the UDHQ will be included in the new Mediware LifeTrak computer system being implemented at all donor centers.

In March 2011, the Fort Benning Blood Donor Center broke ground on a new facility with plans to open in the summer 2012. Three additional blood donor centers are programmed with the Health Facility Planning Agency for construction, sometime before 2015: Fort Bliss, Fort Gordon, and Fort Leonard Wood (provided permanent personnel authorizations can be transferred to their installation).

As 2011 came to a close, the Army Blood Program had nine active licensed blood donor centers, one satellite collection facility at Fort Leonard Wood, and 25 registered transfusion services—five of which

are also part of a hospital blood donor center and therefore registered/licensed (Brooke, Dwight D. Eisenhower, Tripler, William Beaumont and Womack Army Medical Centers.)

In January 2012, the Army Blood Program entered into a lifetime Business Associate Agreement (BAA) with the AABB to ensure compliance with the Health Insurance Portability and Accountability Act (HIPAA) of 1996 and the Health Information Technology for Economic and Clinical Health (HITECH) Act (Title XIII of the American Recovery and Reinvestment Act of 2009). The agreement would also protect the privacy and security of Protected Health Information (PHI).

During the spring of 2012, Army Surgeon General LTG Patricia Horoho began reorganizing the OTSG/MEDCOM staff more into a G-staff construct. To help accomplish this, she brought on board COL(P) John Cho to focus on the development of the G-3/5/7 office. He quickly realized that in order to improve operational efficiency, there were some critical positions at MEDCOM that would need to be relocated to the Office of the Surgeon General. At the same time, the Office of the Surgeon General was relocating out of the Skyline office complex in Falls Church, Va., in to the new Defense Health Headquarters (DHHQ). With staff from Health Affairs, Tricare Management Agency, and the three Services' Surgeon General offices, space was a premium in the new DHHQ facility. As a result, COL(P) Cho directed, and the MEDCOM Chief of Staff, Mr. Herbert Coley, approved, the relocation of the Director, Army Blood Program and Deputy Director, Army Blood Program (IMA) positions to San Antonio. So after 11 years of the Army Blood Program Office being split between San Antonio and the National Capitol Region, the office was once again consolidated in one location.

In September 2012, COL Richard Gonzales (BBF Class of 92-93) replaced Fryar as the director of the Army Blood Program.

Today, the Army Blood Program has collected millions of units of blood to support U.S. military members and beneficiaries. This would not have been possible without the support of dedicated and trained staff and generous donors within the military community.

Army Blood Bank Fellowship

In order to meet military hospital and combat needs, the military requires qualified personnel to preserve a safe and secure blood supply for our military community. The Blood Bank Fellowship is an 18 month program which trains clinical laboratory officers from all three branches of the armed forces (Army, Navy and Air Force) in the advanced, specialized blood bank topics required in today's healthcare industry. At the completion of the 18 month program, officers graduate with a Master of Science from George Washington University.

Students take courses in immunology, cellular and molecular biology, transfusion transmitted diseases, transfusion services and donor center operations/management. Other courses include accreditation/federal regulatory requirements, such as quality systems and current good manufacturing practices as established by the Food and Drug Administration and the AABB (formerly known as the American Association of Blood Banks).

The Blood Bank Fellowship is accredited by the Commission on Accreditation of Allied health Education Programs and the AABB sponsors the committee that conducts the program accreditation process. The program consistently ranks in the top five of the 17 Specialist in Blood Banking programs in the United States. Currently, the Blood Bank Fellowship has a graduation rate nearing 98 percent—8 percent higher than the national average—and the Specialist in Blood Banking exam pass rate is around 90 percent—nearly doubling the national average.

History of the Army Blood Bank Fellowship

In 1958, LTC Joseph H. Akeroyd established the U.S. Army Blood Bank Fellowship program at the Walter Reed Institute of Research in Washington, D.C. The intent of the program was to provide military officers with the training and experience to become experts and leaders in the field of military blood banking in both peace and wartime. It was formally sponsored by the U.S. Army and had academic affiliations with the U.S. Navy and U.S. Air Force through inter-Service Memorandums of Understanding.

In 1965, as COL William Crosby and MAJ Frank Camp established the Blood Research Division, the program transferred to the U.S. Army Medical Research Laboratory at Fort Knox, Ky. In 1971, with the help of Dr. (COL) William Hann, U.S. Army Reserve and professor of science at Bowling Green State University, the Blood Bank Fellowship established an affiliation with the university. Bowling Green State University accepted academic credit from the fellows for the didactic and clinical training. With additional graduate classes and the successful completion of a thesis, the university would grant a Master of Science degree and a Specialist in Applied Biology degree to the fellows who completed the program. The full degree program would take 18 months to complete—12 months for the initial Specialist in Blood Banking portion and an additional six months for the masters degree.

In 1972, the Blood Bank Fellowship was officially mandated by the Department of Defense. In an effort to consolidate resources, the program moved to The Blood Bank Center, also located at Fort Knox, in 1974. It remained at this location for another two years, until a Base Realignment and Closure Act moved the program back to Washington, D.C. and the Walter Reed Army Medical Center in 1976.

During the late 1980s, there was a push to remove the Blood Bank Fellowship from the Army sponsorship and transfer it over to the Navy. There were two main reasons for making the move. One was the affiliation with Bowling Green State University and the other was that the current program director of the fellowship, LTC Richard Platte, did not have a Ph.D. So Platte worked with COL James Spiker to designate the program director position as one of the validated Ph.D. required positions. The first Ph.D. assigned officer to this new position was LTC Tom Hathaway (BBF Class 80-81).

Throughout the distinguished history of the Blood Bank Fellowship, there have been many senior officers who oversaw the program. Among those officers were: LTCs Akeroyd, Frank Camp, Richard Platte, Tom Hathaway, Lloyd Lippert, Patrick Supon, Michael Fitzpatrick, Mike Stanton, Stephen Beardsley, Francisco Rentas and Robert “Ken” Pell Jr.

However, it wasn't just the senior Army Blood Program officers that led the program. Since 1976, the Blood Bank Fellowship has had a civilian program director as well. Past directors have included: Jan Sigman, LeeAnn Wantanabe, Nancy Murphy, Eve Tenali and Bill Turcan, who is currently the director of the program.

When the Walter Reed Army Medical Center closed in September 2011 as a result of the Base Closure and Realignment Commission Act of 2005, the Blood Bank Fellowship relocated once again. Its current home is at the new Walter Reed National Military Medical Center in Bethesda, Md.

Graduates of the Fellowship

Whether in Kentucky, Washington D.C., or Maryland, the Blood Bank Fellowship has a proud history of training Medical Technologists from all three services to become Specialists in Blood Banking. As of early 2012, more than 175 officers from the Army, Navy and Air Force have graduated from the program. A complete listing of these graduates can be found below:

Walter Reed Institute of Research, Washington, D.C.		
<i>Year</i>	<i>Graduate(s)</i>	<i>Service</i>
1958-59	W.S. Collins	USA
1959-60	E.B. McCord	USA
1960-61	F.R. Camp	USA
	R.N. Huff	USAF
1961-62	A.M. Gottlieb	USA
1962-63	J.M. Tuggle	USA
1963-64	T.F. Allen	USA
U.S. Army Medical Research Laboratory, Fort Knox, Ky.		
<i>Year</i>	<i>Graduate(s)</i>	<i>Service</i>
1965-66	J.R. Brewer, J.F. Rodgers , J.E. Spiker	USA
1966-67	D.G. Courtenay , G. Ikeda , M.H. McClain	USA
1967-68	S.S. Gates, H.C. Harrell, G.N. Sesano	USA
1968-69	J.D. Arnoldin , R.L. Phillips, J.H. Radcliffe	USA
1969-70	V.R. Coley, D.E. Hohn, B.J. Johnson	USA
	D. Levan	USN
1970-71	J.B. Beene	USN
	T.R. Lesser, B.Y. Linkenhoker, V.J. Simon	USA
1971-72	A.G. Cumze	USAF
	R.G. DeBonneville , L.R. McKinley, J.H. Young	USA
	J.R. Maples	USN
1972-73	S.S. Hill, S.A. Lavoy	USAF
	W.P. Monaghan	USN
	A.J. Polk, P.S. Sepulveda, D.E. Urban, R.T. Usry	USA
	R.J. Tjan	Civilian
1973-74	J.W. Bell, E.M. Frohman, W.E. Opie, R.L. Travis	USA
	G.R. Koehn	USN
	C.A. Newberth-Bue	Civilian
	H.F. Wren	USAF
Blood Bank Center, Fort Knox, Ky.		
<i>Year</i>	<i>Graduate(s)</i>	<i>Service</i>
1974-75	F.M. Hack, K.A. Fontecchio, L.E. Lippert, A.B. Papineau	USA
	B.J. Sawyer	USAF
1975-76	R.E. Duhon	USAF
	S.E. Knodel, K.E. Zielanski	USA
Walter Reed Army Medical Center, Washington, D.C.		
<i>Year</i>	<i>Graduate(s)</i>	<i>Service</i>
1976-77	B.F. Chaney , W.W. Malloy	USA
	J.R. Lindberg	USN
	R.C. Vura	USAF
1977-78	L.C. Feltz, R.G. Sullivan	USA
	D.A. Reichman	USN
1978-79	D.A. Smith, T.S. Wadsworth	USN
1979-80	D.A. Armbruster	USAF
	R.T. Lawn	USA
	B.D. Rutherford	USN
1980-81	R.E. Brown, M.G. Fitzpatrick, T.K. Hathaway	USA
1981-82	G.K. Kagawa, H.W. Robinson	USA
	W.R. Woods	USN

1982-83	J. Berger	USAF
	M.A. Klimt-Bianco	USN
	J.A. Hatten, P.A. Supon	USA
1983-84	J.V. Baltrukonis, J.A. Holmberg	USN
	K.A. Drerup	USA
1984-85	R.C. Platte, B.F. Sylvia	USA
1985-86	J.A. Schmidt, B.M. Wannamacher	USA
	A.U. Smith	USAF
1986-87	B.G. Brown-Bartley	USN
	W.L. Gibbs	USAF
	D.M. Miller , G.C. Norris	USA
1987-88	J.L. Bryant, D. Lofquist, L.W. Wulff-Groshell	USAF
	D.R. Fipps, D.J. VanRozelen	USA
	R. Girven	USN
1988-89	R. Dillon-Sylvester, D.A. Ferguson, L.E. Johansen	USAF
	R.A. Slater	USN
	N.R. Webster	USA
1989-90	G.D. Griffin , R. Perron, D.A. Stewart	USA
	J. Hager , H.L. Smith	USAF
	C.M. Roper	USN
1990-91	T. Andersen, S.E. Knoll, K.J. Markland	USAF
	S.E. Beardsley , E.S. Perry	USA
	M.C. Libby	USN
1991-92	C.H. Bennett, F.J. Rentas	USA
	D.C. Davis, K.R. Holmes, F. Saraceni	USAF
	F.C. Music	USN
1992-93	J.L. Daugirda, R. Gonzales, V.J. Welsh	USA
	R.A. Purkhiser	USAF
	J.T. Scherrer	USN
1993-94	M.C. Crowell	USN
	J.L. Giglio, R.H. McBride	USAF
	A.D. Hawkins, R.K. Pell Jr., H.F. Peterson	USA
1994-95	R.G. Alford	USAF
	S.E. Allen	USN
	E. Gourdine	USA
1995-96	B.G. Casleton, J.P. Ruddell	USAF
	S.L. Dunn, R.A. Fryar, D.T. Reiber	USA
	A.K. Knight	USN
1996-97	K.J. Belanger, H. Velazquez	USA
	G.W. Jones, C.R. Watson	USAF
	F.C. Mettelle	USN
1997-98	R.L. Fahie, J.F. Van Patten	USN
	M.C. Hawkins, L.K. Viveros	USAF
1998-99	B.J. Bachman, M.J. Buckellew, M.A. Sloan, R.M. Whitacre	USA
	R.C. Davis	USN
	M. Montes	USAF
1999-2000	S.R. Futterman, A.C. Mattoch	USAF
2000-01	A.M. Hudson	USAF
	C.C. Lelkens	RNLN
	M.J. Lopatka, J.F. Quesada	USA
	R.S. Watson	USN
2001-02	S.C. Clifford	USN
	A.F. Colon	USA
	G.A. Hestilow, C.L. Murphy	USAF
2002-03	C.E. Bell	USA
	K.F. Fumia, D.A. Lincoln	USAF

	D.H. Koch, B.K. Williamson	USN
2003-04	A.J. Harding, R.D. Hayden, M.J. Roth	USN
	H. McDonald, A.L. Taylor	USA
2004-05	R.A. Borders, C.R. Jenkins	USN
	R.J. Curtis, R.R. Leslie-Holt, K.B. Shaw	USAF
	M.T. Swingholm	USA
2005-06	A. Cofresi, J.D. Hughes	USAF
	J.B. Corley, C.L. Evans, V.M. McCarthy, C.W. Mester	USA
	J.E. Culpepper, J.A. Hoiles	USN
2006-07	K.J. Buikema	USAF
	R.G. Gates, T.M. Terry	USA
	F.A. Matheu, T.J. Riley	USN
2007-08	A.V. Casco-Figueroa	USA
	A.B. Polito	USAF
	L.E. Riggs	USN
	K.W. Davis	USAR*
2008-09	J.F. Badloe	RNLA
	A.R. Bartmier, S.D. Glenn	USAF
	D.E. Desmond	USN
	J. Trevino	USA
2009-10	W.M. Adamian, S.M. Dilworth, E.Q. Morrison	USA
	H.A. McMinn	USAF
	L.A. Pecenka, J.P. Stephan	USN
2010-11	M.E. Burke	USAF
	E. Guzman, C.I. Knaus	USN
	G.G. Kellar	USA
Walter Reed National Military Medical Center, Bethesda, Md.		
<i>Year</i>	<i>Graduate(s)</i>	<i>Service</i>
2011-12	J. A. Valdez, S. Golla	USN
	R. L. Hill	USA
	N. M. Ferguson	USAF
* non-resident student (audit)		

Influential People of the Army Blood Program

Over the years many talented, prestigious individuals have made the Army Blood Program what it is today. Some have truly been “pioneers” in the blood banking field and have left their mark in military medical history.

MG Douglas Kendrick, MD

In 1940, in the midst of World War II, Dr. Douglas Kendrick (Photo 19) initiated a blood research program at the Army Medical School. He would go on to serve as chief of that program until November 1944. In 1943, Dr. Kendrick was appointed to additionally serve as the special representative on blood and plasma transfusions in the Office of the Surgeon General.



*Photo 19:
MG Douglas
Kendrick*

Just after the war ended, he would serve as the personal physician to Gen. Douglas MacArthur in Japan. By 1960, Kendrick became the chief surgeon of the U.S. Army in Europe, and few years later he authored the influential book “[Blood Programs in World War II](#).” In 1965, Kendrick assumed command of the Walter Reed Army Medical Center, where he would stay until 1967 when he retired from the Army.

In May 2001, the blood donor center at the Dwight D. Eisenhower Army Medical Center at Fort Gordon, Ga., was dedicated in his honor. Kendrick, whose career played a critical role in the development of the

Army Blood Program, served in the Army for more than 33 years. He retired to Atlanta, Ga., but accepted the position of medical director at Grady Memorial Hospital.

COL Frank R. Camp (BBF Class 60-61)



Photo 20: COL Frank Camp

COL Frank R. Camp (Photo 20) would become known as the “Father of the Armed Services Blood Program.” Over the course of his influential career, he would prove to be a valuable resource in shaping the Army Blood Program. On July 1, 1965, Camp was appointed as the first director of the Blood Transfusion Research Division at the U.S. Army Medical Research Laboratory at Fort Knox, Ky. He would serve at the location until 1975, where he would be known for improving the way blood was shipped and transfused. He is recognized and highly respected worldwide for his blood banking and transfusion research.

In July 1984, the Blood Bank Center at Fort Knox, Ky., was renamed the COL Frank R. Camp Memorial Blood Center in honor of this great Army Blood Program pioneer.

LTC Joseph H. Akeroyd, MD



Photo 21: LTC Joseph H. Akeroyd

LTC Joseph H. Akeroyd (Photo 21) played a vital role in the development of new, safer ways to collect and ship blood and blood products. In 1947, while serving as a laboratory officer at the Brooke General Hospital, Akeroyd began testing plastic blood storage bags. His efforts led to improved transportation and storage of blood, as well as blood component separation. The Army Blood Program could now break down whole blood donations into three separate components—red blood cells, platelets and plasma.

In 1958, he established the U.S. Army. Blood Bank Fellowship program at the Walter Reed Institute of Research in Washington, D.C.

In 1993, the blood donor center at Fort Sam Houston was renamed to the Akeroyd Blood Donor Center to honor one of the most influential people in Army medicine.

MAJ William S. Collins II (BBF Class 58-59)



Photo 22: MAJ William Collins

MAJ William S. Collins II (Photo 22) is one of the most influential men in the Army Blood Program’s history. He was the first official student in the U.S. Army Blood Bank Fellowship. His career shaped the way blood could be shipped to service members overseas. While the Vietnam War will be remembered for many things, it will also be remembered for the introduction of the Styrofoam blood box, which was introduced by Collins in 1965. The box would replace the old cardboard divide which permitted the shipping of blood at required temperatures, no matter the temperature outside. It was easier to handle, was less susceptible to damage and could be used for a lower cost. According to the Army.mil website, Collins “received \$935 for his suggestion, and his innovation resulted in a first-year savings of \$56,000 and a new flexibility in military blood banking.”

COL James Spiker, Jr. (BBF Class 65-66)



Photo 23: COL James Spiker, Jr.

COL James Spiker’s (Photo 23) illustrious military blood banking career is filled with a host of “firsts.” He served as the first Health Service Command Clinical Laboratory and Blood Bank consultant, developed requirements for all Health Service Command blood banks to be both accredited by the AABB (formerly known as the American Association of Blood Banks) and licensed by the FDA. He further coordinated and performed pre-inspection consultant visits to all Health Service Command sites to prepare for FDA licensing of blood products thereby making a great contribution to the safety and integrity of the military blood supply. Spiker also promoted and directed the conversion of tri-service military blood bank manuals into official AABB manuals. He would go on to serve in that position until 1979 when he transferred to the Office of the Surgeon General located in Falls Church, Va.

In 1979, Spiker established and served as the first director of the U.S. Army Blood Program—the first official Army-wide blood program. During that time, he also served as the Office of the Surgeon General laboratory sciences consultant to the surgeon general. Spiker set up the first Army 8T additional skill identifier to ensure authorized positions for blood officers, and served as the Army Blood Program officer from 1979 to 1990. Spiker also served as the assistant chief for the Medical Service Corps from May 1984 to August 1990.

In 2011, Spiker received the Armed Services Blood Program Lifetime Achievement Award at the annual AABB meeting San Diego, Calif. (*Read more about the Lifetime Achievement Award recipient [here.](#)*)

COL Anthony Polk (BBF Class 72-73)



Photo 24: COL Anthony Polk

COL Anthony Polk (Photo 24), a graduate of the Blood Bank Fellowship graduate of 1972-1973, was another important leader in the Army Blood Program. Throughout his 25-year career, Polk served at various levels within the Army Blood Program. However, he is mostly recognized for his work in the joint environment of the Armed Services Blood Program. From 1984 to 1991, Polk served as the director of the Armed Services Blood Program Office. He authored The Military Blood Program 2004 Implementation Plan to establish blood program goals and resources from 1984 to 2004. The plan's inclusion in the Department of Defense's Medical Readiness Strategic Plan, approved by the secretary of defense, marked the beginning of the military blood program's routine inclusion in all contingency plans, with participation subsequently, in all worldwide military exercises to train personnel at all levels on Armed Services Blood Program operations in wartime. He also coordinated and implemented the world's largest frozen blood program, adding Frozen Blood Product Depots around the world on land and ships.

To reflect the criticality and tri-service nature of the military blood program, Polk changed the name of the Military Blood Program Office to the Armed Services Blood Program Office and coined the titles service blood program officer, joint blood program officer and area joint blood program officer. Polk also developed a one-page worldwide distribution system for all unified commands that included a standardized terms and a distribution system scheme. He also oversaw the first wartime frozen blood operation during Operation Desert Storm, added a non-commissioned officer and two field grade officers to the Armed Services Blood Program Office staff and developed a monthly class for new blood bank fellows—which is still in use today—to give new blood bankers on-the-ground skills.

In October 2009, Polk received the Armed Services Blood Program Lifetime Achievement Award at the AABB Annual meeting in New Orleans, La. (*Read more about the Lifetime Achievement Award recipient [here.](#)*)

COL Richard Brown (BBF Class 80-81)



Photo 25: COL Richard Brown

From 1991 through 1997, COL Brown (Photo 25) served as the Director, Army Blood Program. His tenure was second in length only COL Spiker. COL Brown guided the Army Blood Program through, arguably, the most dynamic period of change in the US blood industry. This was a time when the FDA began to exert its authority over the industry along with the enforcement of blood being a pharmaceutical product. Until the 1990s, the FDA only regulated blood as a biologic, even though it has been classified as both a biologic and a drug. When the FDA implemented its cGMP and Quality Plan regulations, COL Brown guided the program through this major cultural change. He hired Ms. Kathy Elder to be the Quality Assurance Officer. He reorganized the Army's FDA license structure, which included a change from 27 collection sites to 18, and ensured all blood collection sites obtained FDA licensure. Representing The Surgeon General, COL Brown held the title of 'Alternate Responsible Head' on the Department of the Army's blood establishment license with the FDA. During his tenure as director, he rewrote and published the Army Blood Program regulations,

changing them from HSC regulations to MEDCOM regulations. COL Brown was admired by many. He took time to really get to know and mentor the Officers, Soldiers, and civilians who worked in the program.

COL Elaine Perry (BBF Class 90-91)



Photo 26: COL Elaine Perry

From August 1977 through July 2000, COL Elaine Perry (Photo 26) served as the Chief, Blood Bank and Hematology Branch at the AMEDD center and School. During her tenure, she instituted the Department of Defense User and System Administrator courses for the Defense Blood Standard System (DBSS). From July 2000 through July 2004, she served as Director of the largest and most productive blood center in DoD, Robertson Blood Center (RBC), Fort Hood. While Director, she also served as the Primary Investigator for all 25 DoD donor centers' Nucleic Acid testing (NAT) protocols for HIV/HCV and West Nile Virus. She participated in the joint Public Health Service and FDA NAT working group for blood donation policy and practice. In 2004, she became the first female Clinical Lab/Blood Program Office to be selected for promotion to the rank of Colonel.

COL Donna Whittaker



Photo 27: COL Donna Whittaker

In 2002, COL Donna Whittaker (Photo 27) designed the modern Blood Mobile that was obtained and is in use at BAMC. This was the prototype that was to be purchase for all Army Blood Donor Centers. As a Blood Program Officer, she started the Six Sigma program for all Clinical Lab and Blood Program Officers in 2004. She was recognized by the Army Surgeon General with the Excalibur Award for launching the “War on Waste (WoW)” Six Sigma Business Initiative. This initiative saved more than \$1.6M in the first year. Later, she became the Army Medical Department’s first certified Lean Six Sigma Master Black Belt. In 2006, she was honored with the Department of Defense’s Science, Technology, Engineering and Math Award. In 2009, COL Whittaker became the first female and first Blood Program Officer, to hold the position of Dean of the AMEDD Center and School.

MAJ Matthew Gottlieb (BBF Class 61-62)



Photo 28: LTC Matthew Gottlieb

To help meet blood requirements in Vietnam, MAJ Matthew Gottlieb (Photo 28) was tasked to provide blood to the newly established Armed Services Whole Blood Processing Laboratory at McGuire Air Force Base, N.J. After finding an empty wooden two story barracks near the current Army Medicine Center and School at Fort Sam Houston, Texas, Gottlieb, co-authored, along with CPT Anthony Polk (BBF Class 72-73), the first Brooke Army Medical Center Blood Donor Center regulations requiring the installation engineers to refurbish the empty barracks and for the Medical Training Center to provide donors on a continuous basis. This was the genesis of organized blood collections on Fort Sam Houston.

In 1992, Gottlieb published [A Pictorial History of Blood Practices and Transfusions.](#)

Complete Listing of Army Blood Program Leaders

Over the course of the Army Blood Program’s 50-year history, there have been many key individuals that have helped shaped the program. Below is a complete listing, to date, of those that helped make the Army Blood Program a vital supplier of blood and blood products to ill or injured soldiers around the world.

Directors of the Army Blood Program	
Tenure	Name
1979-1990	COL James Spiker, Jr.
1991-1997	COL Richard Brown
1997-2000	COL Gary Kagawa
2000-2001	LTC Dennis Stewart
2001-2005	COL Gary Norris
2005-2008	COL Steven Beardsley
2008-2009	LTC Michael Lopatka
2009-2012	COL Ronny Fryar
2012-Present	COL Richard Gonzales

Office of the Surgeon General Sciences Consultant	
Tenure	Name
	COL James Spiker, Jr.
	COL Robert Pick
	COL Clark Southworth
	COL Jim O'Brian
Health Service Command Laboratory and Blood Bank Consultant	
Tenure	Name
1974-1979	COL James Spiker, Jr.
1979-1985	LTC Robert “Bob” Ursy
1985-1988	LTC Gerald “Jerry” Jacobs
1988-1993	COL Richard Platte

AMEDD Blood Program Consultant	
Tenure	Name
1991-1998	COL Richard Brown
1998-2001	COL G. Michael Fitzpatrick
2001-2005	COL Gary Norris
2005-2008	COL Steven Beardsley
2009- 2012	COL Ronny Fryar
2012 - Present	COL Richard Gonzales

Army Officers Assigned to the Military Blood Program Agency/ Armed Services Blood Program Office	
Tenure	Name
1962-1964	LTC Edward O’Shaughnessy, MC*
1964-1966	LTC William Leslie, MC*
1966-1971	COL Richard Krakaur, MC*
1971-1972	COL James McCarthy, MC*
1972-1973	COL Janice Mendelson, MC*
1973-1975	LTC Turman Allen, MS
1975-1977	COL Bob Angel # 1
1977-1978	COL Doug Beach # 2
1979-1981	LTC Jim Spiker #
1982-1990	COL Jim Spiker #
1984-1991	COL Anthony Polk, MS*
1992-1997	LTC Noel Webster, MS
1997-1999	LTC G. Michael Fitzpatrick, MS
1999-2003	COL G. Michael Fitzpatrick, MS*
2003-2006	LTC Ronny Fryar, MS
2006-2008	LTC Michael Lopatka, MS
2008-2012	COL Frank Rentas, MS*
2012-Present	LTC Jason Corley, MS

* denotes director

denotes assigned additional duty as Army deputy

1: COL Angel was a Biochemist and Lab Consultant at OTSG. He was also Chief for Medical Allied Sciences and Assistant Chief of the Medical Services Corps.

2: COL Beach was a Biochemist at Fort Detrick and also Acting Lab Consultant at OTSG. He was detailed to work a couple of days each week at the MBPO.

NOTE: If COLs Beach and Angel needed “blood bank specific” information, they would contact LTC Spiker (COL (Ret) Jim Spiker, personal communication 24 March 2014)

References and Helpful Links

[Blood Program in World War II \(Kendrick\)](#)

[Military Blood Banking 1941-1973: Lessons Learned Applicable to Civil Disasters and Other Considerations \(Camp, Conte, Brewer\)](#)

[FDA 611 License: Brooke Army Medical Center \(March 7, 1975\)](#)

[1974 Memorandum of Understanding with the FDA](#)

[Health Service Command Blood Program Activity Identification](#)

[ASBPO Blood Coordinating Committee Meeting Minutes \(July 1998\)](#)