Naval Medical Support

Winning the Battle Against an Unseen Enemy

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A brief comprehensive overview of the role played by the Navy, as preventive medicine specialist during Desert Shield/Storm.

The efficiency and effectiveness of the Allied Forces kept our combat casualties to an incredible low. Also kept to an all-time low were "disease and non-battle injuries," or DNBIs, which in past experiences in the Middle East have seriously impaired troop readiness. This time, Navy preventive medicine efforts won the battle against disease and heat.

To prepare for combat injuries, the Navy mobilized the finest, most sophisticated medical support system ever deployed. By mid-September, both of the Navy's 1,000-bed, CT scan-equipped hospital ships were on station, as was the 500-bed Fleet Hospital 5, which was set up on 28 acres of Saudi Arabian coastline in Al Jubayl, but these sophisticated platforms were relative late-comers compared to other Navy medical assets.

Medical support arrived in theater when the first aircraft carriers entered the Persian Gulf on Aug 6, 1990. Every deployed ship routinely carries some type of medical capability, and in contingency situations these capabilities are augmented by mobilization teams, which began arriving on August 8.

Navy medicine was standing by, ready to care for the ill and injured. But another part of the Navy medical team was already hard at work battling a foe as potentially harmful as Saddam Hussein's army, but much less visible, the environment. Navy preventive medicine specialists began educating the troops about heat, disease and local "critters" even before they arrived in theater. The goal of these specialists was to keep our troops from needing the care available at the medical platforms.

Based on troop strength and historic information on heat injury rates during previous wars and exercises, Navy preventive medicine specialists were prepared to deal with numbers in the hundreds; instead, they were handling numbers in the 10s and 20s. Specialists credit the low incidence of heat illness to the Marine commanders' strong support of water discipline, acclimatization and work/rest cycles. CAPT (Dr.) William M. Houk, head of the Bureau of Medicine and Surgery's Readiness Cell, said that all preventive medicine specialists in the theater "deployed heat stress prevention program and sanitation guidelines. Operational commanders jumped on these, fully supported troop discipline, and the results are that we *never* saw excessive heat stress or major outbreaks of disease. The few outbreaks that did occur were immediately controlled."

Disease is of major concern in the Middle Eastern theater. A multi-author paper on endemic infectious diseases of the Middle East by Navy infectious disease experts included the historical impact of disease on military operations. It cited Civil War hospital admissions due to infectious diseases at a rate of 1,030 admissions per 1,000 soldiers per year. In the Middle Eastern theater of World War II, the report said, the annual rate of hospital admissions due to disease was 917/1,000 service members. The rate for Operation Desert Storm troops was less than 50/1,000.

"Although Operation Desert Shield was not disease free," said CAPT (Dr.) William F. Bina, preventive medicine specialty advisor to the Surgeon General, "a new standard has been set for our ability to maintain a healthy force during a major deployment or conflict." Bina stressed the importance of the preventive medicine specialists who are routinely assigned with Marine Corps units. Their day-to-day attention to various preventive medicine regimens, such as food and water sanitation and vector (bug) control, were critical to the success against DNBIs in this theater.

Preventive Medicine Technicians, Environmental Health Officers and Medical Entomologists, like other medical support, are routinely deployed with our fleet and marine forces. To augment the personnel already in theater, several Vector Control and Preventive Medicine teams were deployed. During the war, between 140 and 160 preventive medicine specialists were ashore, with afloat personnel including one or two Preventive Medicine Technicians aboard each of the larger Navy ships. To serve as a focal point, and to provide assistance and support for all these assets, a Naval Forces Central (NavCent) Command Preventive Medicine Augmentation Team was activated. The personnel in the team were experts in problems of this region, as well as having experience with the Fleet Marine Force. The team

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investigated disease outbreaks, conducted disease surveillance, monitored implementation and effectiveness of preventive medicine measures throughout the theater and provided advice to the NavCent Surgeon on preventive medicine issues.

Central to the team's success in carrying out its tasks was the Navy Forward Laboratory, which was in place as quickly as our hospital ships and fleet hospital. The Navy Environmental and Preventive Medicine Unit in Naples (NEPMU 7) had a pre-tested field laboratory ready for transport within six hours of the NavCent request; the laboratory was on the ground in Saudi Arabia within 72 hours.

Keys to the success of Navy preventive medicine efforts, as with our combat forces, were preparation and readiness. The Navy Forward Laboratory is a prime example of not only these attributes, but also of Navy medicine's innovation and flexibility. "In the 1980s," explained Houk, "we developed the *concept* of activating a forward laboratory in a contingency situation." Plans to implement this laboratory were under way by the Naval Medical Research and Development Command (NMRDC) when Operation Desert Shield meant the plans begun on paper would be finished in reality.

With the laboratory in place, in-theater staffing was augmented by people from NEPMU 7, the Naval Medical Research Unit in Cairo (NAMRU 3), NMRDC and the Naval Medical Research Institute (NMRI) in Bethesda, Md, and NMRI Infectious Disease Detachment, Lima, Peru. Linkage was set up between the Navy Forward Laboratory, NAMRU 3 and NMRI. As the needs of the laboratory were identified and filled, it became more and more independent, with the linkage remaining mostly just to verify techniques.

The Navy Forward Laboratory was designed to provide rapid diagnostic capability for infectious disease and biological warfare. In peacetime, medical researchers were investigating ways to perform more rapid diagnoses. In theater, they finalized development of a method to incubate spores that allowed diagnoses within 45 minutes. Before, it was 48 hours at best. The laboratory provided early theater capability to detect epidemic diarrheal agents and was able to prevent a major outbreak. The Navy Forward Laboratory also served as the US Central Command's main laboratory for infectious diseases and biological warfare threats.

After the end of offensive combat operations against Iraq, the laboratory's staff was busy supporting two Navy civil action support teams. These teams, about 29 people with expertise in public health issues, arrived in early January to work with Kuwaiti Public Health Service officials to reconstitute the Kuwaiti PHS. The teams worked with enemy prisoners of war and were with the 2nd Marine Expeditionary Force in Kuwait City, helping to restore that city's basic functions.

Needed even beyond the Storm, Navy preventive medicine's most important role was from August 1990 through February 1991, when it helped avoid the weakening of the coalition's Desert Shield and kept Desert Storm's thunder rolling. ●

ACHIEVEMENTS OF THE NAVY FORWARD LABORATORY

In response to Operation Desert Shield, NMRDC and several of our laboratories quickly initiated efforts to establish a Navy Forward Laboratory (NFL) to provide unique laboratory services to complement the medical capabilities within theater. In September 1990, infectious disease specialists from NMRDC, NMRI and NAMRU 3 deployed with the First Marine Expeditionary Force to Al Jubayl, Saudi Arabia. The laboratory, established in an abandoned Saudi hospital near the Kuwaiti border, allowed the researchers to track diseases disabling the front-line troops.

Achievements of the Navy Forward Laboratory

- Served as the only theater capability to detect epidemic diarrheal agents.
- Prevented a major diarrhea outbreak, saving 10% to 20% of the Navy and Marine Corps fighting force by prompt initiation of effective preventive measures and use of special antibiotics.
- Served as the only theater capability to diagnose region-specific tropical diseases and identify viral disease outbreaks.
- Employed an entire series of "state-of-the-art biotechnology" biological warfare (BW) detection systems. These systems were developed by NMRI with significant contributions from the US Army Medical Research Institute for Infectious Diseases (USAMRIID), Ft Detrick, MD; and the chemical defense establishment at Porton Down, UK.
- Was first to identify problems with fielded medical BW diagnostic systems (30% to 40% false positives). The systems were withdrawn by the US Central Command (USCENTCOM). NFL provided theater reference backup for medical BW diagnostics.
- Was first to identify problems with environmental sample BW detection kits. NFL, with assistance from USAMRIID and the Chemical Research, Development and Engineering Center, Edgewood, MD, developed a "work-around" and the system was up by Feb 20, 1991. *Outlook*