Guest Article

The Medical Management of Chemical Casualty Course in CONUS and Europe During Desert Shield

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For the first time in decades, United States military personnel went into battle facing a very real chemical threat. The staff of the Medical Management of Chemical Casualty Course presented their course to thousands of medical personnel throughout the initial rapid deployment, and then again during the secondary, slower deployment. The author discusses the many ways the course was presented in order to reach the most personnel before and during deployment to Southwest Asia, and presents suggestions for keeping current in chemical casualty management.

After Iraq invaded Kuwait on Aug 2, 1990, it became apparent that US forces, under the auspices of the United Nations, would be involved in any potential conflict. As our forces mobilized for Desert Shield, they did so realizing that for the first time in over seven decades there was the very real possibility that US military personnel might face lethal chemical agents on the battlefield.

Although military training over the past decade has emphasized fighting and patient care in a chemical environment, there often has been little sense of real urgency about this training for various reasons, including the slow but steady dissolution of a chemical threat from the Warsaw Pact countries. In particular, training in the care of chemically injured patients and patient care in a chemical environment was not high on the priority list of most health care providers in the military medical departments.

With Iraq as the aggressor and potential foe, the threat of chemical agent use was very real because Iraq had used chemical agents in the conflict with Iran, and the capabilities of Iraq to manufacture chemical weapons had been widely publicized. Accordingly, during mobilization for Desert Shield instruction in the effects of chemical agents and the care of chemical agent casualties became a very high priority for medical care providers.

The Medical Management of Chemical Casualties Course (M2C3) has provided instruction in chemical casualty management for military medical professional personnel for several decades, both at the USA Medical Research Institute of Chemical Defense (MRICD), Aberdeen Proving Ground (APG), and at units throughout CONUS and overseas, including Germany and Korea. Although this course had been presented to thousands of military medical professionals, because of turnover among medical personnel only a small percentage of the thousands of health care providers who were to be involved in Desert Shield/Desert Storm had received this instruction.

As mobilization began for Desert Shield, the staff of M2C3 confronted the monumental task of educating medical personnel of all US forces in the care of chemical casualties. Augmented by individuals from Walter Reed Army Medical Center, Walter Reed Army Institute of Research, and others who were recent graduates of the M2C3 Instructors' Course, the staff began what ultimately became a two-phase process.

During the first phase, the M2C3 staff attempted to provide instruction to the units that deployed early (August-September). Because of time constraints, unit medical personnel could not come to APG to take the full, or even a shortened, M2C3, nor was there time to present more than a half or full day of instruction on-site. The limited number of course instructors attempted to reach the most people by travelling in two-person teams to deploying units to make best use of their available time (in several instances classes were held for small groups in holding areas just prior to departure). Teams visited units on request, and priorities were established by the unit departure date.

Emphasis was placed on the care of mustard and nerve agent casualties, since Iraq had used these agents extensively against Iran.

In early October, a MRICD teaching team arrived in Saudi Arabia, where it was possible to present a longer period of instruction to more people. People at these courses who had attended the day or less of instruction prior to deployment reported that, although they had learned from these brief periods of instruction, they would have preferred more thorough discussions. In some instances, this sudden and necessarily brief emphasis on chemical casualties had served to increase rather than to decrease anxiety. The MRICD staff concluded that it would be more beneficial to present a longer, more thorough period of instruction to the remaining units before deployment.

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In the second phase, remaining units had more time to prepare for deployment and more time for instruction on chemical casualty management. MRICD personnel attempted to contact each medical unit scheduled for later deployment to offer a course either on-site or at MRICD. As a result, during this phase the M2C3 instructors presented 13 two- or three-day courses (with a field exercise) between late November and January.

In August the instructor staff from MRICD, which totalled eight counting the augmentees, provided instruction at 11 installations. Units at Fort Bragg were among the first to deploy, and medical personnel of these units attended classes in holding areas while waiting to board their planes. Over the next few days teaching teams visited departing personnel at Fort Hood, Fort Sill and Fort Bliss. At the same time, another team presented a day of instruction with an abbreviated field exercise for 150 departing members of the 24th Infantry Division at Fort Stewart. This latter team then crossed the country to present instruction to 294 members of the staff of the USS *Mercy* at Oakland, 300 medical personnel of 1st Marine Expeditionary Force at Camp Pendleton and to 84 of the staff of the San Diego Naval Hospital. A few days later 105 PROFIS personnel at Fort Devens attended the class and several weeks later 80 similar personnel attended the class at Fort Benning and 101 at Fort Leonard Wood.

M2C3 instructors gave classes in October at the National Naval Medical Center to 380 medical personnel departing on the USS *Comfort* and in December to 53 people of the 1660th Hospital Group (a recently activated reserve unit) at Dover AFB immediately before their departure. A team went to Scott AFB to present a longer period of instruction, but the unit departed before the instruction was completed.

During this period, in addition to providing instruction on chemical casualty care to deploying units, the MRICD staff also presented information on chemical agent injuries and associated problems to 54 members of the staff of the Armed Forces Institute of Pathology, who process remains, and to 73 people of the staff of the Federal Bureau of Investigation, who have the mission of identifying remains.

From attendance records and estimates (when attendance was not taken), the M2C3 staff provided instruction to about 2,000 people during this phase.

During the second phase teams presented three-day courses for 53 people of the 1st Infantry Division at Fort Riley, 79 of the 2nd Marine Expeditionary Force at Camp Lejeune and 120 from the 2nd Army at Fort Stewart in early December.

Personnel from MRICD traveled to Germany and presented five intense two-day courses (in which several field exercises were held in five-inch-deep snow) to 360 deploying medical personnel. On Dec 3, personnel from MRICD were presenting courses on three continents: North America, at Camp Lejeune; Europe, at Neubruecken, Germany; and Asia, in Saudi Arabia.

In addition to the well-attended regularly scheduled five-day courses held at MRICD in September and November, five additional 3-day courses were held at MRICD during December and January for deploying personnel. During phase two, about 900 people attended the courses presented in CONUS and Europe, and an additional 160 attended the two regularly scheduled 5-day courses. Including those in Saudi Arabia, approximately 4600 medical personnel received instruction from the MRICD staff during the period of August 1990 to January 1991.

In addition to teaching, the staff of MRICD also produced four publications to provide assistance for medical professionals challenged with chemical casualties. The first, USAMRICD Technical Memorandum (TM) 90-1, provided guidance for the care of nerve agent and vesicant casualties. The second, TM 90-2, contained answers to frequently asked questions and contained copies of relevant published reports on nerve agent and vesicant injuries in man. The third and fourth, TM 90-3 and TM 90-4, were written and distributed to provide guidance to medical personnel on the use of two drugs which were fielded during Desert Storm, diazepam and pyridostigmine, respectively. The former is for treatment of a nerve agent casualty, and the latter is for pretreatment during a nerve agent threat. Approximately 7000 copies of each of these publications were distributed in Saudi Arabia.

These drugs had been under study for these purposes for over a decade (pyridostigmine) and longer than five years (diazepam), and both had advanced through the research and developmental stages and were ready for fielding. Desert Shield accelerated this latter step, and the drugs were in the hands of soldiers and medical personnel before Desert Storm. An associated process was to establish doctrine of use, and this was done in the Fall of 1990. Because use of these drugs in prophylaxing and treating chemical casualties was new to medical personnel, education in their use became a major topic in the teaching efforts.

Generally, it was not difficult for medical personnel to understand that diazepam should be administered (via autoinjector) to a severe nerve agent casualty. However, misconceptions about pyridostigmine were frequent primarily, but not exclusively, among non-medical personnel. Some felt it was an antidote that would reverse the effects of nerve agent poisoning when taken after poisoning, and some acknowledged that it was a pretreatment but felt it would prevent all effects of nerve agents, eliminating the necessity for the MARK I autoinjectors containing atropine and pralidoxime chloride. Very early in the teaching effort it became apparent that one of the major responsibilities of the teams would be to disseminate the correct doctrine of use for these drugs and to encourage medical personnel to dis-

seminate the correct information among non-medical troops. As events evolved, instruction by M2C3 personnel was the primary, if not the sole, conduit for this new doctrine.

Discussion

Although for many years military training had emphasized the potential use of chemical weapons on a future battlefield, and for years medical personnel had attended M2C3 to prepare for this, at the onset of Desert Shield most health care providers had little confidence in their ability to care for chemical casualties and in their ability to survive on a chemical battlefield. The threat of chemical agent use was very real, and the anxiety and concern of the health care providers about caring for chemical casualties and working in a chemical environment presented two challenges to the staff of M2C3. The first was to provide information about the medical care of casualties injured by chemical agents. The second, equally important, was to instill confidence in medical care providers—that they could accomplish their mission in a chemical environment, that they could treat chemical casualties and that these casualties would survive and return to duty. Closely tied to these was what was probably the major concern among medical care providers—their own survival on a chemical battlefield.

During the buildup phase of Desert Shield and during the initial teaching phase, the goal was to reach as many deploying personnel as possible, even though a minimal amount of instruction could be provided during the short time available. We hoped that even a little was better than none, and generally this may have been true, although as stated earlier, in some it might have had the opposite effect. Later, when more time was available, this instruction was lengthened to several days, and was more effective in meeting both goals. The teaching team in Saudi Arabia presented three days of instruction at 14 different sites and reinforced the brief predeployment sessions for many, provided instruction to those who had not received it before departing and hopefully reduced anxiety in many, if anxiety can ever be lessened in personnel going to war.

I believe that at the onset of Desert Storm, the US military medical personnel were as well prepared to deal with chemical agent casualties as any military medical personnel have ever been.

One lesson from the Gulf War is that, although instruction is and has been available in chemical casualty management, most medical units had no one who had attended any training. As a result, most units had no local guidance or "expert." This situation is being addressed. One suggested solution is to have in each unit a medical officer designated as the "chemical expert," who would receive intense initial instruction and attend annual conferences to update his or her knowledge and skills.

Whether changes such as these are implemented or not, each military medical care provider who was involved in Desert Shield/Desert Storm should remember his or her thoughts about the prospect of being on a chemical battlefield and caring for chemical casualties. As long as there are warring nations there will be the threat of chemical agent use, and medical care providers must be prepared. ●