British Coalition Forces

Preparations Made and Lessons Learned by the United Kingdom Defence Medical Services During Operation Granby

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In this paper, the author presents a brief overview of the United Kingdom's Defence Medical Services' contribution to Operation Desert Shield/Storm. He outlines the medical support provided for the defence of Saudi Arabia and how this was augmented prior to the eviction of Iraqi troops from Kuwait. Despite the brilliance of the military success, the author highlights several areas which need to be addressed and rectified, before the next deployment of British forces.

During the Seven Years War, 1756-1763, a British general, the Marquis of Granby became a national hero because of a series of notable successes against the French. In consequence, his name was included in a randomised list of potential names to be selected for future operations and "Granby" was the codename generated by computer, for the United Kingdom deployment in support of Operation Desert Shield/Storm during the period August 1990 until the cessation of hostilities in March 1991.

Figure 1. *Field Ambulance Collecting Section on the move in the desert.*

History

Direct British Military involvement in Mesopotamia began during the First World War in 1914, when Basra was occupied, followed by an advance up the Tigris valley as far as Kut al-Imarah. However, the expeditionary force met continual heavy resistance and was compelled to surrender in 1916. It was only after a bloody conflict involving a much larger force that Baghdad was occupied in 1917 and Iraq was placed under British mandate. Kuwait had been made a British Protectorate in 1914 and Iraq agreed to its borders in 1923. Full independence was granted to Iraq in 1932 and to Kuwait in 1961. Almost immediately, Iraq claimed Kuwaiti sovereignty and British troops had to be deployed in the summer of 1961 to avert this claim which was then dropped. The invasion and occupation of Kuwait on Aug 2, 1990 was the culmination, not only of a desire for all of the oil reserves, but also the fulfilment of the long-standing Iraqi dream of sovereignty over the area.

The perspective held by the British during the early planning phases of Operation Granby, based upon memories of Mesopotamia and the knowledge that many in the Iraqi Army had recent experience of war, was that the coalition forces could be facing a formidable enemy.

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Casualty Rates

The provision of medical and surgical support in war depends upon a variety of factors of which casualty rates have become the most important parameter in recent years. These are calculated not by the medical services but by the strategists supported by Operational Analysis. Although historical data, weapon systems, climate, ground, relative levels of training and competence of the opposing forces, morale and many other factors contribute to the assessment, the rates remain nothing more than an educated guess. One of the guiding principles is the presumption that troops in direct contact with an enemy would sustain a greater number of casualties than those in logistic and reserve units in the divisional and corps rear areas, assuming air superiority or supremacy. During the early medical planning casualty rates had still to be agreed on. Consequently, despite a perceived superiority of our troops and equipment, the fact that Iraq was armed for *High Intensity Conflict* and possessed a substantial chemical (and perhaps bacteriological) capability in addition to the fact that we lacked any natural cover in the desert, caused us to base our planning rates on those previously estimated for high intensity armoured warfare on the Central Front of NATO. Coincidentally, these ultimately corresponded to the rates finally issued by the strategists.

Figure 2. *Tented ward of a field hospital ready to receive casualties.*

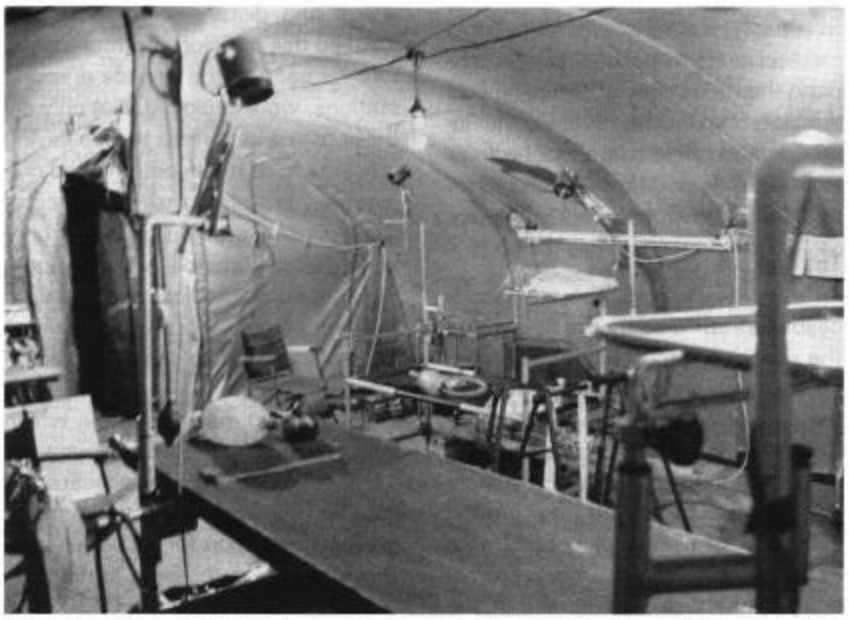

Figure 3. *McVicar field operating table with accessories erected within collective protection.*

Size of Force

The second determinant for calculating medical support is obviously the size of the force deployed and the numbers at risk. Although this figure should have been easily available, in the event that it was needed, it remained a constantly changing entity. The size of the UK's deployment changed substantially a number of times, and in a number of cases support requirements proved substantially greater than the levels appropriate in Europe. In addition to the Royal Navy, who were already in theatre and the Royal Air Force squadrons which were deployed early, the Army involvement was initially set at an armoured brigade group. Seventh (7th) Armoured Brigade was selected because it was equipped with the most modern tanks and armoured personnel carriers. Initially, the size of this force was set at a level which would have precluded the deployment of sufficient logistic support, including medical, to allow it to function. Increases were agreed on subsequently and by November 1990, 7th Armoured Brigade was in a position to help counter an invasion of Saudi Arabia by Iraq. The "Shield" was in place. Once the decision was made to build up the military capability, notably to defend the threatened Gulf states and to oust the Iraqi Army from Kuwait, the British agreed to increase their army component to a fully supported armoured division of two brigades.

Medical Support

First Line: Each of the battle groups took with them their integral medical support consisting of a regimental medical officer and a team of regimental medical assistants who belong to, and wear, the unit cap-badge. The mechanised infantry battalions were enhanced by a second medical officer and for all practical purposes each major unit was also supported by an armoured collecting section from a field ambulance. This section was the United Kingdom's second line unit with responsibilities for the collection, resuscitation and evacuation of casualties from the battle groups to the most forward hospitals.

Second Line: In support of the initial deployment, the 1st Armoured Field Ambulance was brought up to full war capability and deployed, providing the collecting sections already mentioned and two dressing stations. When the deployment escalated to divisional strength, the 5th Armoured Field Ambulance, appropriately enhanced, was sent in support of the 4th Brigade with a similar number of sections and dressing stations.

Third Line: The initial surgical support consisted of two medical support troops, made up of one surgeon, one anesthetist (anaesthesiologist) and a modest back-up staff of nurses and technicians. These were deployed in August to the two airfields at Dhahran and Tabuk used by the RAF on the Arabian Peninsula. Two ship's surgical teams were deployed afloat and two field hospitals, the 22nd and the 33rd, were set up in the old RAF hospital at Muharraq on Bahrain and at Al Jubayl. During the later buildup, the 32nd Field Hospital from Germany deployed to Al Qaysumah, and the 33rd Field Hospital expanded and re-roled as a General Hospital. 205 General Hospital, a Territorial Army unit, was established in Riyadh. The Royal Fleet auxilliary flight training ship, *Argus*, was refitted to become a 100-bed Primary Casualty Receiving Ship with its own dedicated helicopter case evacuation support. An RAF evacuation hospital of 100 beds moved into the buildings in Muharraq which had been vacated by the 22nd Field Hospital when they moved near to Al Qasumah ready to deploy north should the necessity have arisen.

Fourth Line: The Princess Mary RAF Hospital at Akrotiri in Cyprus was expanded to 400 beds by the start of the ground war and would have served, in particular, to treat those casualties who had deteriorated during case evacuation as well as those evacuated directly.

Fifth Line: Military hospitals remained open in the United Kingdom (UK) and with the British Army of the Rhine (BAOR), but their capacity to absorb the predicted casualty load was limited. In consequence, a joint plan was formulated whereby civilian National Health Service hospitals, in close proximity to airports, were designated to receive casualties, should the numbers involved exceed the service resources. Action was also taken in both UK and BAOR to enhance greatly the peacetime rehabilitation services.

Wounded Prisoners of War

The original size of the hospital deployment was based upon the estimated British casualties and did not include a capacity to treat prisoners of war (known in the Gulf as EPWs). Eventually, a number of multinational medical units were deployed to expand the UK's capacity, including field hospitals from Canada, Sweden and Romania, and other contributions from Norway, Belgium, New Zealand, Denmark, the Netherlands and Singapore.

The Conflict

As everyone knows, the number of casualties suffered by the British and the coalition forces was, mercifully, far less than anticipated and the systems in place were never stressed. On the British side, 32nd Field Hospital treated the bulk of those wounded and evacuated during the ground campaign, of whom nearly 50% were Iraqi. Nevertheless, it is the universal opinion of those who served in the Defence Medical Service hospitals in the Gulf that they would have coped admirably had the casualty load been the sort of worst case assumption on which our plans had been based.

LESSONS

Numerous lessons were learned or re-learned and many areas of previously recognised weaknesses were highlighted.

Philosophy of Deployment

The philosophy for the treatment of battle casualties used by the British Forces has two principles:

(1) That as many as possible receive treatment and are returned to duty.

(2) That those who cannot be rendered fit only receive such resuscitation and surgery as is needed to guarantee their safe evacuation to the next echelon of treatment.

The application of this philosophy to the concept of mobile defensive battles fought on the Central Front in North West Europe presumed that initial surgery would take place at the third line field hospitals. The Gulf War plans modified this principle making provision for the forward deployment of field surgical teams primarily in a resuscitation role, to the dressing stations at second line. The speed of advance and distances involved fully justified this decision and four teams, two for each of the brigade dressing stations, were deployed. Not only did these teams undertake the life-saving procedures of tracheostomy and craniotomy, but also, their presence at the dressing stations inspired considerable confidence with the inexperienced paramedical personnel. In addition, much worthwhile training took place prior to the outbreak of hostilities.

The second major variation which was implemented from the plans for a war in Europe, was the allocation of support helicopters as the primary means of transport for casualties from the second line dressing stations to the field hospitals and for C130 fixed wing transport from the field to gen-

eral hospitals within theater. As a backup, Ambulance Coach Squadrons were also deployed. Due to an absence of tracks, there was no possibility of incorporating ambulance trains into the case evacuation chain.

Training

Prior to leaving for the Gulf, all military personnel received intensive refresher training, first aid in nuclear, biological and chemical (NBC) warfare protection, heat illness, field sanitation, and the Geneva Convention along with physical fitness training. All who were medically downgraded were reviewed and regraded for deployment where appropriate. The Royal Army Dental Corps worked tirelessly to rectify acute problems in order to upgrade the overall level of combat dental fitness.

Despite these measures, a relatively small number of personnel did arrive in the Gulf region, unfit for war, and dental disease once again proved to be a major component of overall morbidity.

All doctors who were deployed underwent British Army Trauma Life Support (BATLS) training, as did a number of dentists, theater sisters (nurses), operating theater and combat medical technicians. BATLS is a modification of ATLS tailored specifically by the British Army to the conditions likely to be found on the battlefield. There is no question now that this particular training program was one of the great successes of the war and greatly increased confidence amongst the field ambulance and hospital staffs.

For many years it had been recognised that the British Defence Medical Services faced a shortage of surgeons, anaesthetists (anaesthesiologists) and theater sisters (nurses) if general war were to break out at short notice. A variety of expedients had been devised to overcome these shortfalls. These included the potential employment of gynaecologists and otorhinolaryngologists as general surgeons, dentists as resuscitation officers/anaesthetists and midwives as theater sisters. By calling up part of the Territorial Army and a number of individual reservists, sufficient specialist staff were made available. All surgeons deployed were at least holders of the FRCS, at registrar grade and all anaesthetists had a minimum of the diploma in anaesthesia or Part 1 of the Fellowship in Anaesthetics. Midwives were not called upon to act as theater sisters. However, dentists, who had undergone a basic one-month course in anaesthetics, followed by annual refresher courses, were deployed as combat anaesthetic support officers (CASOs). Heated debate, led by the anaesthetists, surrounded their employment. General agreement was reached that the training of modern dentists does not make them good resuscitators, but that many possess the innate skills to be successfully trained in the maintenance of anaesthesia. As a result of the operation, a revised training program has been drawn up which will include formal assessment of an individual dentist's capacity to adapt to the aneasthetic role. This will be recorded, and those showing ability will be updated on a regular basis.

The protracted period of transition to war (TTW), allowed extensive in-theater practice of standing operating procedures, particularly those related to NBC. Collective protection, (COLPRO) in the form of Porton liners, was deployed with all medical units. These were designed to fit into the standard issue tentage used by forward units. Trials of these liners had taken place several times on hospital field training exercises, and their drawbacks had been recognized. But, as the British Army had no alternative to the COLPRO, they had to be used. The experience of this system in the Gulf has confirmed its limitations and in due course we hope to develop suitable alternatives for use in combat hospitals. Such alternatives exist. It should be remembered, however, that the Porton liner offered the only toxic free environment available in the Gulf theater of operations, in which surgery could be performed.

War Establishments (WEs)

The medical units' peace to war establishment gaps had been the subject of discussion and debate for many years. Many also held the view, that the WEs were below a level which would allow satisfactory functioning. It was intriguing to observe the approval of considerable enhancements during the deployment. Attempts are in-hand to endorse these in future establishments.

Scales of Equipment

No single issue generated greater criticism than that which surrounded the scale of equipment deployed to the Gulf region. The pre-packed unit equipment was often either incomplete, obsolete or both. Heroic efforts by the clinical directors and advisers, the medical supply organisation and the civilian suppliers resulted in appropriate enhancements arriving in-theater before the onset of the ground offensive. The whole question of pre-packing has been studied and a project is presently under way to re-scale units by departments, with equipment and drugs to parallel casualty treatment regimes.

Two areas need elaboration:

(1) The concept of an eight-day, high intensity war in which few medical casualties would have time to emerge cannot be regarded as a basis for future planning. The likelihood that we may at some time in the future again face a prolonged period of TTW, in association with long non-battle phases has highlighted the need to review the provision for disease and non-battle casualties. This need has been recognized and appropriate scales of personnel and equipment are being introduced.

(2) Should war have broken out in Western Europe, the projected intensity of casualties dictated that some of the most badly wounded survivors who reached third line would only have

been treated there, if time and resources allowed. Therefore, intensive care facilities were not established at that level. We no longer regard such a policy as tenable. The need for a capacity to ventilate the wounded and also those afflicted by nerve agents was recognised and a basic multi-outlet resuscitator was issued. Attempts are underway to scale both ventilators and essential basic physiological monitoring equipment for the future.

CONCLUSION

This paper attempts to give an overview of the British contribution to the medical support of Operation Desert Shield/Storm and reflects the views of the then Command Consultant Surgeon at HQ BAOR. He was not deployed, but did become involved in the planning, and has had the privilege of hearing from those who did. Implementation of the lessons learnt must be tailored to the future rather than the past.

The motto of the Royal Army Medical Corps is "in arduis fidelis." At various points during Operation Granby, the medical personnel of all three services involved had cause to remember it. Those who contributed, either directly or indirectly, can look back with pride, at a job executed in the finest traditions, despite the many problems that are an inevitable feature of war. ●