OPERATION SHOVELLER

THE DEPLOYMENT AND TASK OF 2 FIELD HOSPITAL, R.A.M.C.

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SUMMARY: The mounting, deployment and function of a 50 bedded element of 2 Field Hospital when used to provide medical relief to a civil power are described.

The problems associated with the physical movement of stores and equipment are discussed and a plea is made for the introduction of palletisation and for independent transport. Comment on and recommendations for improvement are made in relation to the establishment and the equipment.

Introduction

Operation Shoveller was a medical relief operation carried out at the request of the Jordanian Government. It was carried out by a composite team with the code-name of 'Ferrie Force' and comprised—

- A small command element from 3 Division under the command of Colonel A. M. Ferrie.

- A 50 bedded element of 2 Field Hospital, R.A.M.C.

- One section of 19 Field Ambulance, R.A.M.C.

- 3 Division Field Hygiene Section.

- A detachment of The Prince of Wales's Own Regiment of Yorkshire from Cyprus.

- Signals detachments from 14 Signal Regiment, 30 Signal Regiment, 262 Signal Squadron and 38 Group Support Unit, R.A.F.

The Force was deployed from the United Kingdom to Cyprus on 21 September 1970 and entered Jordan on 30 September; it withdrew from Jordan one month later on 1 and 2 November.

2 Field Hospital

The unit has a War Establishment of 169 all ranks and is maintained in peace time at a cadre strength of approximately 40. The cadre is capable of rapid expansion to a 50 bedded hospital with a staff of 70 personnel by Category I re-inforcements who are nominated from hospitals within Southern Command for periods of stand-by of six months duration and are on seven days availability. They are required to train with the unit in the field at the beginning of each period of stand-by, and here it should be stated that the success of the whole operation and particularly its mounting and the subsequent setting up of the hospital, owed more to this period of familiarisation and integration than to any other single factor. Category II re-inforcements required to bring the unit to War Establishment are also nominated from units in the United Kingdom and are on a similar period of stand-by and availability. They are not however required to train with the hospital or perhaps more correctly, have not been required to train until now. During the recent operation in Jordan this element was mobilised in Thornhill Barracks,

Aldershot but in the event they were never deployed. However, valuable lessons were learned and the need for those re-inforcements to carry out training was established.

All the hospital mobilisation equipment is maintained packed tactically by departments and in operational priorities. On familiarisation exercises it is this actual equipment which is used and here again the value of using such mobilisation equipment cannot be over emphasised. So many of the National teams in Jordan were hampered in setting up and running their hospitals by lack of knowledge of what equipment they had, and lack of familiarity with that equipment once it was unpacked. Provisional manifests are also maintained by departments in order that compilation of actual manifests, once air loading tables are known, will be easier.

The unit—even at 50 bed strength—is entirely self supporting with its own generators, tentage and kitchens. It has, however, only sufficient transport for domestic purposes and requires additional transport to move. There is no palletisation; all equipment being manhandled in bundles and boxes.

Mounting and movement

Mounting of Category I re-inforcements in the United Kingdom went extremely smoothly, and despite the seven day availability and the warning of stand-by being given at 1100 hours on a Sunday morning, the entire team was successfully assembled in Thornhill Barracks by 1900 hours that evening. In an attempt to become airborne, before the decision to go was reversed, I rather over estimated our capability and agreed to an estimated time of departure from Thornhill Barracks of 1100 hours next morning. In retrospect this proved to be the only real error made during the operation as we found ourselves preparing manifests during the night as vehicles were being loaded. On arrival at Devizes, although the manifests were correct for the Chalks, the four-ton vehicles were not so loaded and hence a considerable amount of re-organisation of freight was necessary. That 54,000 pounds of freight was so re-organised with minimal delay in aircraft timing is indeed a tribute to the skill and willingness of the control staff at the Military Control and Check Point (M.C.C.P.), Devizes. We plan in future to have predetermined 4-ton loads by departments and in priorities to meet these manifests and have no doubt that with this a response time of under twenty-four hours is possible.

I have already stated that we require vehicles in order to move and that the unit is not palletised. The sequence of events, therefore, was as follows—we loaded 54,000 pounds weight of freight on to four-ton vehicles in Thornhill—off-loaded at Devizes—re-loaded and off-loaded at Lyneham on to C 130 (Hercules) aircraft. On reaching Cyprus we off-loaded to a hanger at Akrotiri, prepared new manifests for new aircraft, C44s, Argosys and Hercules and on-loaded nine days later. On reaching Amman we off-loaded into ten-ton vehicles supplied by the Jordanians and moved to the King Hussein Military Hospital in Wadi Sir. It is of interest to compare this with the American situation; they loaded their stores on to their own vehicles in Germany and drove those same vehicles off the aircraft and then to the King Hussein Military Hospital. Not only does the movement of freight in vehicles save a tremendous amount of physical labour and clerical effort in the preparation of new manifests, but it appears much tidier in the eyes of the beholder at the other end and because it so reduces the time the aircraft is grounded would permit the use of an airport which was not necessarily totally secure. I am convinced of the requirement to deploy in this manner in a relief role, and would like to

think it would be possible also in a military role. A shuttle service from air-head to location is not really the answer and either the Royal Air Force are going to be unhappy at the length of time they are grounded or we are going to have to wait a long time to get in. While it is agreed that pelletisation would go part of the way to solving the problem it will not, in my opinion, be the whole answer.

Period in Cyprus

We arrived in Akrotiri during the early hours and morning of Tuesday, 22 September and were made welcome and were very comfortably accommodated in the Royal Air Force station sick quarters during our eight days stay.

After Colonel Ferrie's departure to Amman on the 23rd it fell to Major D. P. Connolly R.A.M.C. and myself to represent the Force at conferences held in NEARELF Headquarters, Episkopi. We were grateful indeed to have this opportunity as it gave us invaluable insight into the work involved in mounting even a relatively small operation of this kind and the flexibility of plan required to meet a constantly changing requirement. To take the events of 27/28 September as an example—the conference at NEARELF Headquarters on the morning of the 27th was making final preparations for our move to Jordan, but by mid-morning a signal was received suggesting that the force would not enter Jordan and that patients would instead be flown to Cyprus. Because of this arrangements were made to mobilise the British Military Hospital, Dhekelia to receive up to 250 casualties. On the morning of the 28th the plan had again changed and the force was to deploy to Jordan next day, but at 1900 hours that evening the whole relief role was suddenly changed from medical teams to food supplies in terms of priority. At lunch time the following day I was asked to fly to Amman to meet Colonel Ferrie and on arrival there mid-afternoon was immediately informed that the green light was on and that we were required to be in Amman with all equipment and stores by first light the following morning. A cease fire had been declared some thirty-six hours before, but the intermittent crackle of machine gun fire around the airport suggested that so far this was incomplete. On arrival back in Nicosia at 2200 hours I was driven some fifty miles to Episkopi for de-briefing on the situation in Jordan, then fifteen miles to Akrotiri to finalise arrangements for the move and finally back to Nicosia for take-off at 0400 hours and subsequent arrival in Amman at 0600 hours. In the event this was a little too hurried as we were faced with a multiplicity of tasks simultaneously—preparation of cargo manifests, issue of civilian clothing, volunteering for and being registered by the Red Cross—and undoubtedly all of this was achieved at the expense of a slight 'hangover' in Jordan the following day. Again the use of pre-loaded vehicles would have simplified the task.

The Operation in Jordan

Situation in Amman

The background to the situation is complicated and political and is no brief of mine to describe here. Suffice it to say that on our arrival and for most of our stay the situation was very tense with both sides extremely edgy. Although our Red Crosses appeared to give us complete freedom to move, we took no chances and moved only when necessary and never after dusk unless for a real life saving emergency and then only with an escort. A total curfew was imposed from dusk to dawn and during the first few days the

streets were deserted, all shops were closed and the only transport permitted on the streets were Army vehicles, cars of the peace keeping commission and Red Cross vehicles. Gradually conditions improved, but every now and then firing would break out and require all the persuasion and diplomacy of the peace commission to prevent escalation.

The Army does not normally garrison the city of Amman and the main Fedayeen strongholds were located in the centre of the city and in refugee camps in the poorer areas. The majority of the hospitals in Amman are privately owned in the residential suburbs and hence during the emergency were in the area under Army control. The main Government Hospital of 500 beds and the Italian Hospital of 100 beds were in Fedayeen controlled territory and badly damaged during the fighting. For a few days before the cease fire and subsequently the existing civilian medical services in Amman were, for a variety of reasons, almost completely at a standstill. Around the city and particularly in the north-west the Jordanian Army medical services had set up reception centres with nursing and medical cover but no surgical capability. For these centres they used personnel and equipment from their medical battalion (a field medical unit). Their base hospital—a large 400 bedded unit with all facilities—was located at Marka in the north-east of Amman and, although it continued to function throughout the emergency, was in a Fedayeen controlled area.

Into this situation just before and for a few days after the cease fire, came several medical teams under auspices of the Red Cross—American, French, German, Swedish, Finnish and Danish and a Palestinian convoy and Russian team under the auspices of the Palestinian Red Crescent. The American, French and British teams were military and were the largest. The majority of the other teams were small and consisted mainly of a surgical team, perhaps four or five nurses and generally also a jack-of-all-trades who was cook, electrician, generator operator and general handyman as required. Relationship with all teams was excellent and the team leaders met each morning to assess the situation and give details of the previous days work at the headquarters of the international committee of the Red Cross. None of the teams except ourselves had ambulances or adequate communications and so we were able to help tremendously in setting up a communication network between the teams and supplying ambulances as and when required. In concluding these remarks on the situation I am glad to say that initial estimates of casualties were excessive and the teams available were able to cope adequately with the load imposed. This is not to say that the situation had not been desperate as estimates of dead and of those injured who died before help arrived varied tremendously.

Location and setting up

We were fortunate in having as our location the structurally complete, but as yet unfinished, King Hussein Military Hospital in Wadi-Sir, some 12 to 14 miles north-west of Amman airport. When complete it will support 650 beds. The amount of space available was initially severely restricted by availability of light and water, as neither of these utilities had been tested before our arrival. For the first week we required emergency lighting to all essential departments, as supply was cut off between 0001 hours and 0600 hours daily and also power for all appliances had initially to be supplied by our generators. Later, by the kind co-operation of the Jordanian Army Staff, we were given the luxury of total availability of light and power and, shortly before we left, hot water as well.

The unit was completely operational within twenty-four hours of our first stores

arriving. While it is agreed that this is not a rapid response time, it was considered that since other teams were already working, and the majority of patients were already held in reception centres administered and run by the Jordanian Army Medical Services, that it was better to establish ourselves completely before admitting patients in large numbers. In retrospect I am convinced of the correctness of this decision as it permitted consideration being given to a planned layout which worked easily and efficiently throughout our stay. Furthermore, with pairs of hands at a premium, it allowed us to remove all packing boxes, extraneous material left by the contractors, etc., which other teams, having opened hurriedly, never completely achieved. This is not a suggested *modus operandi* for all occasions but simply a plea that given a situation where rapidity of response is not the over-riding aim, then much is to be gained by spending a few extra hours on establishing the unit to work to best advantage.

At the outset, because of space restrictions, Force Headquarters was located within the hospital confines. Not only was this unfortunate in that the Hospital 'atmosphere' was temporarily lost, it was obviously unsatisfactory from a command and communication point of view as well. As soon as space became available the Force Headquarters was separately located.

The hospital layout consisted essentially of two identical ward blocks forming the basement and ground floors of this part of the existing hospital. Entrance to these was through a large foyer which led into a longish corridor with offices throughout its length. This we used as our administrative area, and the block at ground floor level became the hospital complex. The block in the basement was utilised as a mess and accommodation area with our kitchen set up in tentage adjacent to the mess area.

Work load

Thirty-two patients were admitted on the first day, the majority having sustained their injuries 2-10 days previously. All of these came, initially, from the Jordanian Army Medical Services Reception Centres which contained beds and nursing staff but no surgical facilities. During the next week to ten days we received patients as transfers from other teams and admitted a few direct from their homes, mainly in the Jebel Hussein area. Thereafter, our admissions were mainly fresh mine injuries, accidental weapon discharges and patients who had been involved in road traffic accidents. For the greater part of the time, our bed state was over our 50 equipped beds—the maximum at any one time being 62, but I consider that the size of the unit was correct for the work we were faced with had an additional Field Surgical Team (F.S.T.) been available. Statistics for the Hospital covering the period 1 October to 29 October are shown in Table I.

Adequacy of Establishment

In attempting to equate these figures with the adequacy of our establishment it must be remembered that in Jordan we were acting as a base hospital with no facilities for evacuation, that many of the patients were women and children and the majority of wounds were days old on admission and grossly infected. It is, however, considered that the maximum daily figures shown in Table I are near maximum loads for one field surgical team, one radiographer and one laboratory technician, and could not be maintained for more than five to seven days without relief. The F.S.T., in particular, demands comment. While the normally accepted figure of 12 to 16 major cases in a twenty-four

Table I
Statistics for 2 Field Hospital covering the period 1 October to 29 October 1970
Bed state

Number of beds equipped	...	...	50	Average daily occupancy	...	...	57			
Work load for the period covered										
Admissions	...	...	...	...	94	Minor operations	...	...	...	19
Outpatients	...	...	...	...	563	X-Rays taken	...	...	...	451
Major operations (those requiring a general anaesthetic in theatre)	...	...	...	...	246	Laboratory investigations	...	...	...	406
						Blood issued (pints)	...	...	...	125
Maximum work load in a period of twenty-four hours										
Major operations	...	...	...	...	15	Laboratory investigations	...	...	...	30
X-Rays	...	...	...	...	32	Units of blood issued	...	...	...	15

hour period was achieved, this cannot be maintained for more than a few days if the team is required to provide cover at all times for emergency admissions. That the figure can be achieved and maintained for many days, provided adequate rest is assured, there can be no doubt; but this requires that two surgical teams be available from the outset.

As presently organised we attempted to staff a 50 bedded ward block, always subject to "overstretch" and also a resuscitation unit with just one nursing team. This proved insufficient and had we not had the personnel from the Field Ambulance Section available, we could not have so functioned.

Experience in Jordan suggests that the scaling of one nursing team to a 50 bedded block is correct but a further half team is required to staff the resuscitation department. This by the way, worked extremely well and took a considerable load from the surgeon and the staff of the 50 bedded ward. Given this slight increase in staff and good evacuation, I have no doubt that a single nursing team can support two surgical teams without any increase in the number of beds.

Adequacy of equipment

In general terms and with a few obvious exceptions this would appear to be perfectly adequate for our normal role. In a relief or disaster situation the requirement is different. As a result of the breakdown of additional equipment and stores which we had flown in from Cyprus we intend to produce, and we hope hold, a supplement for each department for a relief task.

On the medical side there is an obvious need for a capability in the laboratory to undertake cultures and antibiotic sensitivity. It is understood that the new scaling of field laboratory equipment does, in fact, include this provision.

Storage of blood is another thorny problem and although a very sophisticated blood storage cabinet for field and general hospitals is to be produced and a small cabinet of

American design is being considered for F.S.T's, nothing really exists at the moment. We were fortunate in having, on trial, a four cubic foot conservator type top loading cabinet with the thermostat adjusted by R.E.M.E. This worked marvellously in Jordan and held all our vaccines together with 60 Fenwall bags. Adequate cold storage is the real requirement and with the possible exception of the Allied Mobile Force (Land) role, sophisticated machines for heating and cooling blood are not required.

We were concerned about the amount of scatter from the Watson MX 2 X-ray machine. No exposure badges are included in the scale, and of course would not have helped us to assess the risk on the spot. A fountain pen type dosimeter is required from which, with previous advice from our radiological colleagues, we can make some assessment. Fortunately our fears were not realised and a badge worn for a week by a relief radiographer from Cyprus has shown a dose of 20 millirem which is, only 1/10th of the maximum permissible.

Turning to Ordnance equipment there are several obvious deficiencies. Additional water storage and distribution facilities with some simple robust but lightweight means of providing hot water for cookhouse and hospital is desperately needed. I may say that by kind permission of the Commanding Officer of the American Field Hospital we brought back with us two drip-feed petrol burners which can be used in dust bins or any other large drum and we hope to initiate troop trials on these as a means of supplying hot water. Laundry facilities for bedding, F.S.T. linen and personal clothing are also a definite requirement but presumably a section of a Mobile Bath and Laundry Unit is the answer to this problem.

Re-supply

The total weight for medical re-supply over the thirty day period in Jordan was 11,685 pounds, giving an average daily re-supply weight of approximately 400 pounds. Of this total some 3,000 pounds was oxygen.

Despite the fact that our role was not a conventional one it is considered that these figures may well represent a realistic assessment. For, although a considerable proportion of the oxygen was required for one seriously ill patient over a ten day period, it is equally possible that in our normal role with good evacuation many patients would have required oxygen over short periods.

Experience of medical re-supply for this comparatively small element in Jordan showed that supply by item indent is time consuming and requires lengthy signals which, by their nature, impose considerable strain on teleprinter operators and involve over-time working by the staff in medical supply establishments.

As a result of an F.S.T. Study some months ago, standard re-supply boxes were produced for them and these were made available to us in Jordan from the Army Medical Equipment Depot, Ludgershall. While it is not possible to make a complete assessment because of our altered role, all available evidence suggests that they would prove suitable. It is, therefore, considered that it should be feasible to produce re-supply boxes for say 50 patients for all departments of a Field Hospital and thus reduce signal traffic. On this basis and assuming the maximum capability of each F.S.T. to be 100 cases in each 7 days, then departmental supply would be required twice weekly in multiples of the number of teams working. Occasional item demand indents would be required to level out holdings but these should normally be of a non-urgent nature.

Withdrawal

Unfortunately it was not until forty-eight hours before our proposed withdrawal date that the Jordanian civil medical authorities announced their plan for after care of those requiring continued hospitalization. In essence this was that all such cases requiring hospitalization would be concentrated in the King Hussein Military Hospital and nursed by staff supplied by the Jordanian Ministry of Health. Surgical responsibility was vested in the Danish and Finnish Red Cross teams who had elected to remain in Jordan for a limited period. Provision of equipment for the hospital was provided by the Jordanian Government's purchase of the entire equipment and supplies of both British and American teams. The disposal of the cases admitted to the British Hospital is shown at Table II.

Table II
Disposal of cases admitted to 2 Field Hospital

Total admissions	94	Total discharges	63
Total deaths (four over 70)	9	Total remaining in hospital	22
Breakdown of discharges			
Home			44
Other hospitals (mainly to Marka base hospital)			16
Abroad (Palestine Red Crescent)			3

Tailpiece

There can be no doubt that the operation quite apart from its humanitarian aspect provided valuable practical experience of deployment and of the surgical care of battle casualties. It is many years now since an element of a field hospital was used to assist war wounded and the experience gained must be invaluable, not only to the team itself but to all those in the United Kingdom and Cyprus who, by their untiring effort, not only made the operation possible but contributed so much to its ultimate success.

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