



Casualty Evacuation in Korea, 1950-53: The British Experience

Mark Harrison*

1. Introduction
2. Command structure
3. The chain of evacuation
4. Enter the helicopter

1. Introduction

The Korean War was the first conflict in which helicopters were used extensively in the evacuation of casualties. Taken rapidly from the battlefield to advanced surgical facilities, seriously wounded men had a greater chance of survival than in any previous conflict (Bonanno, 1954; Driscoll, 2001). It may be partly for this reason that the helicopter has figured prominently in the iconography of the war, most famously in the long-running television series, 'MASH'. And yet, the proportion of casualties lifted by helicopter appears to have been small and some regard these machines as useful rather than critical elements of the evacuation

* Professor, Faculty of History, University of Oxford / Email: mark.harrison@history.ox.ac.uk

system (Barr and Montgomery, 2019). There is something to be said for both viewpoints but focusing on any single method of evacuation obscures other aspects of the system, some of which were probably more important. This article reassesses the evacuation of casualties among United Nations (UN) forces in Korea, concentrating on arrangements for United Kingdom (UK) personnel, which constituted the largest foreign contingent (cumulatively, some 81,000 men and women) after that of the United States (US).¹⁾ It argues that the considerable success achieved in casualty evacuation was due primarily to effective command and control. Of critical importance were the integrated command structure of Commonwealth forces; their decision to treat less serious cases in forward areas; and the increasing use of radio communication to coordinate casualty extraction and movement.

2. Command structure

Medical arrangements for the British contingent in Korea were closely tied to those of other UN forces, particularly Commonwealth nations and the US. The British often treated the casualties of other forces, while their own passed through medical facilities operated and staffed by their allies. There were some differences in procedure between Commonwealth and US medical units and in the ultimate destinations of their casualties. But the experiences of British and other Commonwealth casualties differed

1) A broader review of historiography on health and medicine in the Korean War is provided in the introductory essay by Harrison and Kim in the present issue. That article develops some of the themes highlighted in this essay, particularly in respect of the role of helicopters (as an example of innovation). It also aims to correct some of the historiographical imbalances highlighted in the introductory essay, such the relative lack of attention to Commonwealth forces and medical work at the front.

relatively little from each other due to the creation of an integrated command structure. The need for such a structure became evident soon after the first Commonwealth deployments to Korea. When British 27 Brigade arrived in Busan from Hong Kong in September 1950, it had no medical complement beyond regimental staff; i.e. those attached to infantry battalions, artillery and so forth. For evacuation of casualties and the treatment of cases requiring hospitalisation, the brigade had to rely on medical units attached to 3 Battalion Royal Australian Regiment (RAR). A British medical liaison officer was attached to the RAR for this purpose but British medical units did not arrive (with 29 British Brigade Group) until the following month.²⁾ A unified medical command was quickly established to allow deficiencies in one brigade to be compensated by support from the others. As the campaign in Korea developed, this integrated command proved invaluable, providing a high degree of coordination at each stage of the evacuation chain - particularly in zones where Commonwealth forces were primarily responsible for their own men.

The medical headquarters of Commonwealth forces was established in the large port city of Busan, which at that time was the base for all UN units. However, the chain of evacuation ended in Japan, in the form of 29 General Hospital (GH) which later became known as British Commonwealth Forces (BCOF) GH. Located in Kure, this hospital had 400 beds and was the first combined medical unit in the UN command, being staffed by British, Canadian and Australian personnel (McIntyre, 1981: 571). The Commonwealth medical command therefore covered both

2) 'Historical Notes: Medical Services, British and Commonwealth Forces in Korea', pp. 1-3, Historical Notes: B.C.F.K., WO 308/21, TNA.

Korea and Japan. Maj.-Gen. Norris, Royal Army Medical Corps (RAMC), was initially in charge of medical arrangements in both countries, as Director of Medical Services (DMS). Other senior posts were allocated to medical officers from Britain, Australia, New Zealand and Canada, roughly in proportion to the size of their forces. These disparate units provided medical support for what became 1 Commonwealth Division, formed on 28 July 1951, comprising 25 (Canadian) and 27 and 29 (British) brigades. Men from other nations were attached to these brigades. The Division was 58 per cent British, 22 per cent Canadian, 14 per cent Australian, 5 per cent New Zealand and 1 per cent Indian. All told, around 145,000 Commonwealth personnel served in Korea before the division was disbanded in 1954 (Grey, 1988: 104).

Countries providing medical support to the Commonwealth brigades were not confined to combatant nations. One of the most important units was 60 (Indian) Parachute Field Ambulance (PFA), which arrived in Korea in December 1950 and worked in accordance with the non-aligned principles of newly independent India. Most of 60 PFA was initially attached to 27 Brigade (which had been joined by 16 New Zealand Field Regiment), apart from a detachment which remained in Daegu, around 100 km north-east of Busan.³⁾ As will be described later, these units slotted into the general UN scheme of evacuation which was largely dependent on the US but which also included medical support from non-combatant countries such as Norway and Denmark.

In addition to 60 PFA, forward medical support for the division consisted of 38 (Canadian) FA, 26 FA (RAMC), 25 (Canadian) Forward Dressing

3) 'Historical Notes: Medical Services, British and Commonwealth Forces in Korea', pp. 1-3, Historical Notes: B.C.F.K., WO 308/21, TNA.

Station (FDS). Other units joined or replaced ones existing in the last months of the conflict. All the key medical formations were commanded by men who had served in the Second World War, albeit in more junior capacities. They were complemented by forward surgical and transfusion teams and a field hygiene section. Dental cover for the Commonwealth Division was provided by sections of 26 and 25 FAs and a number of forward, mobile dental units. Dental care for ANZAC forces was provided separately. While employed in a static role, six nursing sisters, a dietician and a physiotherapist were attached to 25 FDS.⁴⁾

Even after the UN forces pushed north and west from the Busan Pocket, the divisional medical HQ remained in Busan under the command of a Deputy Director of Medical Services (DDMS), initially Col. (later Brig.) C.W. Nye, of the Australian Army Medical Services. Nye was replaced by Brig. F.J. O'Meara, RAMC, in May 1952. Under the DDMS, was an Assistant Director of Medical Services (ADMS), who was initially Col. G. Anderton, RAMC, replaced by Col. G.L.M. Smith, RAMC, in May 1952. All these officers had served in fairly senior capacities during the Second World War - usually at the rank of Lt. Col. or Acting/Temporary Col. - and had probably worked collaboratively with other Commonwealth forces and, in some cases, with those of the US.⁵⁾ Their experience of coalition warfare helps to explain the rapidity with which the unified command was established and the good rapport that persisted throughout

4) 'I: Development of Staff Organization and General Medical Administration', pp. 1-2, Historical Notes: B.C.F.K., WO 308/21, TNA.

5) For example, Francis O'Meara joined the RAMC in 1923 and had reached the rank of Lt Col by 1944; Geoffrey Anderton joined the RAMC in 1927 and had reached the rank of Temporary Colonel by 1943. See Robert Drew, *Commissioned Officers in the Medical Services of the British Army 1660-1960, Volume II* (London: The Wellcome Historical Medical Library, 1968), p. 226; p. 232.

the conflict in Korea,

3. The chain of evacuation

Before we examine how the evacuation system worked in practice, it is necessary to consider its structure, strengths and weaknesses. As in the two world wars, a tree-like chain connected medical units near the front to a series of larger facilities at which more advanced and specialised treatment was available. Broadly, medical support was divided between regimental and divisional units. Most medical personnel were in divisional units such as hospitals and field ambulances but some - the regimental staff - were embedded in other units such as infantry and armoured battalions. Each British battalion normally had a Regimental Medical Officer (RMO), an RAMC corporal or other non-commissioned officer, plus regimental stretcher bearers. The complement varied slightly according to the nature of the unit, but arrangements were similar across the Commonwealth force. The main role of the non-commissioned officer(s) was to establish a small aid post at the HQ of each company within the battalion, separate from the Regimental Aid Post (RAP) in which the RMO was located. The RAP was positioned at or close to the battalion command post so that the RMO could remain constantly in touch with the flow of battle.⁶

RAPs were often dug into the bottom of hillsides in relatively sheltered positions, their walls buttressed with timber, metal stakes and sandbags and their roofs made from timber felled locally.⁷ They were mainly

6) Col. G. Anderton, answers to "Questionnaire on Campaign in Korea, 1952," p. 1, RAMC 761/4, Wellcome Library (hereafter, WL).

7) Lt Col R.L. Marks, 26 FA, "Report for the month of Jul 52, Appendix A. : RAP Construction," RAMC 761/4, WL.

concerned with treating the sick and providing essential first-aid, including splinting of fractures, controlling haemorrhage and administering morphia and penicillin drips to combat wound infection. Their holding capacity was small and to remain effective it was necessary for casualties to be evacuated regularly. Apart from the few casualties that were lifted by helicopter, most men were removed by ambulance cars, one of which was attached to each aid post, or by two or three ambulance jeeps which were used to carry wounded men to forward units of the field ambulance a few miles behind the lines.⁸⁾

Field ambulances (FAs) were mobile, divisional units responsible for carrying and treating medical and surgical casualties in forward areas. British 26 FA was typical in having a staff of around 15 officers, including 8 medical officers and 1 dental officer, the remainder being responsible for administration, transportation and stores. In addition, there were 130 RAMC other ranks who worked in a variety of capacities within the FA's component elements, i.e. collecting posts, dressing stations, etc. All the vehicles were driven by men of the Royal Army Service Corps and the FA also had a small complement of catering and engineering staff.⁹⁾

The furthest forward of the FA units were the Casualty Collecting Posts (CCPs), which were usually located 1-2 miles behind regimental aid posts. At the CCP, field ambulance staff checked first-aid procedures carried out by regimental staff, including penicillin drips, and provided them if they had not been attached earlier. Some casualties were evacuated from CCPs by helicopter but most were taken by road to an Advanced Dressing

8) Lt Col R.L. Marks, "A Medical Picture of the Forward Areas in Korea, text of a presentation to the Royal Society of Medicine's United Service Section," 10 June 1953, p. 2, RAMC 1763, WL.

9) Lt Col R.L. Marks, 26 FA, "Report for the month of Jun 52, Appendix C: Unit Personnel Stats," RAMC 761/4, WL.

Station (ADS) about 5 miles behind the front. There, casualties would receive further first-aid and basic treatment, as well as being documented and sorted before being sent down the line or, in some cases, returned to their units.¹⁰ Most casualties who were not evacuated from ADSs by helicopter were taken by road to the field dressing station, established about 15 miles behind the front. The FDS housed transfusion and surgical teams, sometimes combining different elements of the Commonwealth forces. During 1951-52, for example, 26 (British) FA was supported by a Canadian surgical team. When conditions allowed, FDSs became more or less permanent, using huts as well as tents. They resembled the Casualty Clearing Stations (CCSs) of the two world wars but lacked the medical and surgical specialists that such units would normally have had.¹¹

The FDS was able to perform some life-saving surgery but its capacity was small. Most forward surgery took place at Mobile Surgical Army Hospitals (MASH), established by US forces and the Norwegians (NORMASH). British casualties were normally treated at 8055 MASH or at NORMASH (Watts, 1954: 22). The handling of casualties differed somewhat between the different armies, so a British field surgical team was attached to various US MASHs and for short periods to NORMASH to improve liaison (Watts, 1954: 26).¹² The attachment of teams from various

10) Lt Col R.L. Marks, "A Medical Picture of the Forward Areas in Korea, text of a presentation to the Royal Society of Medicine's United Service Section," 10 June 1953, p. 2, RAMC 1763, WL.

11) *Ibid.*

12) For example, in the early days of the conflict, patients often arrived at 8055 MASH with wounds dusted by sulphonamide powder. US surgeons seem to have disliked this because it hindered inspection of the wound. Widespread use of penicillin drips most likely obviated the need for such a procedure. See Annual Report of Medical Department Activities of the Mobile Army Surgical Hospital 8055th Army Unit, 1 January 1951, p. 3; RG 112, Records of the Office of the Surgeon-General (Army), 1951, National Library, Seoul.

nationalities to key medical units provided important insights into the way each nation conducted its work, as well as building relationships which improved coordination.

MASH units had a bed capacity of at least 200 and were capable of holding cases for up to five days if necessary. To obtain optimal clinical outcomes, casualties were supposed to reach a MASH within six hours of wounding, otherwise many would have suffered vascular collapse.¹³⁾ Although they were supposed to be mobile, MASH became fixed when the war entered a static phase. Their main function was to ensure that the work done at the RAP to control haemorrhage and other first-aid was made permanent. In Korea, around 80 per cent of wounds occurred in the limbs, with or without fracture, and the chief threat to life in such cases was infection. Although penicillin was administered prophylactically from the outset, surgeons also attempted to prevent the spread of infection by excising the wound to remove dead and contaminated tissue. Afterwards, wounds were 'lightly frosted' with penicillin-sulphonamide powder and an occlusive dressing applied. The prevention of wound-shock was critical and restoration of blood volume was one of the main concerns of staff in the MASH. Fluids were given almost immediately and blood transfusion was later provided if necessary.¹⁴⁾ Transfusions were often large and it was not uncommon to give six or seven pints. It was generally assumed that the provision of large amounts of blood was vital to the survival of many casualties (Watts, 1954: 23; 29). Another common

13) Lt Col R.L. Marks, "A Medical Picture of the Forward Areas in Korea, text of a presentation to the Royal Society of Medicine's United Service Section," 10 June 1953, p. 2, RAMC 1763, WL.

14) Annual Report of Medical Department Activities of the Mobile Army Surgical Hospital 8055th Army Unit, 1 January 1951, p. 3; RG 112, Records of the Office of the Surgeon-General (Army), 1951, National Library, Seoul.

duty of surgical staff in MASH hospitals was to plaster and immobilise limbs. Apart from stabilising fractures, Plaster of Paris was used to protect large flesh wounds and encase protective plasters and padding (Watts, 1954: 25-26).

Most of the surgical cases dealt with at MASH were orthopaedic in nature, with more complex injuries requiring specialized surgery - e.g. head and neurosurgical cases - being evacuated immediately to Japan if air transportation was available.¹⁵⁾ However, the chief limitation of MASH was that they were surgical centres only. They had very few medical beds and no medical specialists, so the majority of medical cases needed to be diagnosed and treated elsewhere.¹⁶⁾ As we shall see, the lack of medical expertise at this point in the chain initially resulted in a great deal of unnecessary evacuation further down the line. Many sick cases from Commonwealth forces were sent to the rear along with patients who had been operated on at MASH, most being sent to the BCOF GH at Kure, usually via US evacuation hospitals in Busan and Seoul.¹⁷⁾

Well into the war, the Commonwealth Division established its own evacuation hospital in Seoul and this helped the division to maintain control over its casualties. In March 1952, a Canadian FDS was sent to Seoul for that purpose, being joined in September by a Royal Air Force (RAF) Casualty Air Evacuation Team and personnel drawn from other medical units. This cluster, which inhabited former school buildings, came to be known as the British Commonwealth Zone Medical Unit

15) *Ibid.*, p. 1; p. 5.

16) *Ibid.*, p. 1.

17) Lt Col R.L. Marks, "A Medical Picture of the Forward Areas in Korea, text of a presentation to the Royal Society of Medicine's United Service Section," 10 June 1953, p. 2, RAMC 1763, WL.

(BCZMU). Patients were held there until they could be flown to Japan. As the name signifies, the unit was entirely medical in nature and no surgery was possible there (Nair, 2007: 165). If the war had lasted longer, the BCZMU would probably have evolved into a CCS with both medical and surgical wards.¹⁸⁾

Most casualties were initially sent by sea to the hospital in Kure but from January 1951, a few Commonwealth casualties were flown to Japan in Royal Australian Air Force (RAAF) Dakotas, landing at Iwakuni, an airfield about two hours' away from the hospital in Kure. Those who had deteriorated during the journey were kept for a time at the airfield station hospital but most were taken directly by motor ambulance to the general hospital. At Kure, all surgical cases were seen on arrival by the duty surgeon and assessed without disturbing their wounds. Men who were in pain or showed signs of fever or elevated pulse were admitted to the duty surgeon's ward and the rest distributed to other surgical wards. After a night's rest, they were taken to theatre for detailed observation of their injuries. More urgent cases were taken directly to the operating theatre for inspection (Watts, 1954: 29).

The bulk of surgery performed at the general hospital in Kure was wound closure by delayed primary suture. This was essentially the same technique that had been used in the majority of hospitals in the Second World War. These operations continued work begun in MASH units but, at this point, a number of complications could arise, including the appearance of gas gangrene. In such cases, the wound was opened immediately and potentially infected tissue ruthlessly excised before being treated again with penicillin. Skin grafting was also sometimes

18) "II: Medical Units," p. 1, Historical Notes: B.C.F.K., WO 308/21, TNA.

carried out and the facilities at Kure allowed specialised work to be done on specific types of injury. In the case of chest wounds, the pleural cavity was cleared of blood by daily aspiration and if this failed to work, the lung was re-expanded making foreign bodies more visible so they could be removed (Watts, 1954: 24-5). Ophthalmic injuries - such as embedded mortar fragments - were also dealt with at the hospital, using a large magnet to remove metallic objects from the eye-ball (Owen, 2023). However, neurological cases were sent to the US specialist hospital in Tokyo, where much of the work involved peripheral nerve repair. A certain number of days was stipulated for recovery following surgery. If the patient recovered within this timeframe, they were sent to the nearby convalescent depot before returning to Korea. If recovery was likely to exceed the allotted period then cases were dispatched to the UK as soon as it was safe to do so and (Watts, 1954: 29).

4. Enter the helicopter

The smooth functioning of all of these units depended on regular clearance of each facility. Overcrowding would have severely compromised the care of patients and presented other difficulties such as the spread of infectious diseases. For most of the conflict in Korea, severe overcrowding was avoided and this contributed to the excellent clinical outcomes recorded by UN forces. Among Commonwealth troops, the case mortality rate of 3.5 per cent was said to be the lowest on record (Watts, 1954: 29). That for some individual components of the force was even lower - only 2.5 per cent among the Australians, for example (McIntyre, 1981: 582). Case fatality rates for US troops also fell to 2.5 per cent in

Korea from 4,5 per cent during the Second World War - a reduction which has been attributed to the efficiency of MASH units and aeromedical evacuation (Zimmerman, 2021). However, the role of helicopters in Korea is contentious and it is necessary to examine their contribution relative to other aspects of the evacuation system. This section looks in detail at the use of helicopters, while the following sections consider other methods of evacuation, together with aspects of command and control.

Helicopters have been widely used in military operations since the Second World War; for reconnaissance, ground attack, search and rescue, transportation and medical evacuation. Nowadays, they are likely to be used in any of these capacities, depending on operational conditions, but their potential was recognised only gradually. When helicopters were brought into service at the end of the Second World War, it was primarily for reconnaissance and to supply remote areas. Their use in medical evacuation was not initially planned and occurred as a result of improvisation. The first instance of this was in April 1944, when a US Army Sikorsky YR-4B helicopter made several flights to rescue British servicemen from a downed aircraft in Burma, removing them to an airstrip from which they were subsequently taken to hospital by a light winged aircraft (Bergin, 2019). In March 1945, the Germans also used a helicopter - a Fa223 Drache (Dragon) - in a military search and rescue mission in the Alps (Schwarzkopf and Schwarzkopf, 2022), and in June-July the same year Sikorsky R-6A helicopters were used to evacuate 75-80 wounded US soldiers from mountainous areas of the Philippines (Connor, 2010). Of these early examples, only the US airlifts in the Philippines can be said to have been systematic in the sense that helicopters were used in a planned and coordinated way to remove the wounded.

The extraction of casualties from the battlefield might therefore be regarded as a secondary phase in the military use of helicopters, while their employment in ground-attack roles happened a little later, when the French began to use them for that purpose in Algeria, in the mid-1950s (Schrader, 1999). By the time of the Vietnam War, helicopters were widely used in all these roles (Chinnery, 1991). The gradual, punctuated evolution of helicopter usage exemplifies one of the main themes in the historiography of military helicopters, which is that their employment has often been hindered by doctrinal rigidity (an unwillingness to consider their potential) and preference for other platforms as much as by their inherent limitations (Boyne, 2011; Matthew, 1993). Indeed, it seems that usage of helicopters for medical evacuation in Korea was not initially planned on a large scale but emerged out of their function as supply aircraft. In late summer of 1951, helicopters used to supply US Marines located in forward areas began to be employed to extract wounded Marines on their return journey (Kreisher, 2011).

Once the utility of helicopters in evacuation had been demonstrated, twelve helicopters were allocated by the US specifically for medical work, in the form of the H-13 Sioux. However, this was a relatively small aircraft, capable of carrying only two casualties at a time, in pods fixed outside the crew compartment (Olson, et al, 2013). Evacuation helicopters were eventually provided by the US Navy, Air Force and Army, serving personnel from all the UN forces. Six of these helicopters were allocated specifically for the use of Commonwealth Division and placed under the control of its DDMS, who was responsible for the lines of evacuation. They were stationed at MASH units and flew from them to landing zones near the front. From early 1953, some larger helicopters (chiefly the

Sikorsky H-19, Chickasaw), also began to be used and were able to carry three lying casualties inside the aircraft as well as two sitting. Most of the aircraft lifting British casualties were from the US Marine Division, specifically Marine Medium Helicopter Squadron 161 (Parker, 1978).¹⁹⁾

Although the British and other Commonwealth armed forces had helicopters of their own, they were few in number and there seems to have been some reluctance to use them for medical purposes; at least within Britain's RAF. A confidential report in 1951 by Col. C. W. Nye, to the Director General of the Army Medical Service, claimed that:

As in the case of the Naval Air Arm and the new forming Army Liaison Flight, if the service is to function usefully it will have to be under Army (Medical Service) control. Combatant commanders (RAF) are only prepared to give these 'bastard' children second best and they cannot be 'reared' up to useful members of the community unless they are under the control of the sponsors or foster parents who hope to make use of them. The medical services would have to overcome pretty stiff opposition from various other departments to secure and develop the use of these machines to the point where they would enable an effective saving to take place in Amb[ulance] Cars and F[iel]d Medical Units. Nevertheless, this seems to have been done in the U.S. Army Medical Service.²⁰⁾

If true, these comments appear to confirm historiographical reflections on the reluctance of some commanders to embrace helicopters. However, the RAF's apparent disdain for helicopters was not evident elsewhere.

19) Marks, "A Medical Picture of the Forward Areas in Korea, Appendix A: Inspired Questions," RAMC 1763, WL.

20) Col. C. W. Nye, DDMS British Commonwealth Forces in Korea (hereafter BCFK), "Medical Equipment - Report from Korea, 2 November 1951," No. 23 SOP - 'Helicopter Evacuation', RAMC 761/4, WL.

In Malaya, where the British were engaged in a counter-insurgency campaign, Westland 'Dragonfly' helicopters operated by the RAF had been lifting casualties from jungle areas since the spring of 1950 (Harvey, 1951).

Capacity for helicopter evacuation grew steadily during the war in Korea but there was never any serious prospect of these aircraft becoming the primary means of extraction. Their use was chiefly confined to 'Priority 1 cases,' the majority of which were seriously wounded. Cases of sickness were only evacuated by helicopter if there was a likelihood of fatality or if they had a disease, such as haemorrhagic fever, which tended to be aggravated by long road journeys.²¹⁾ Those who were less seriously ill or injured but who could not easily be removed by land transportation were the next most common type of casualty to be lifted by helicopter. Helicopters were ideal for lifting cases from mountains - which covered much of Korea - since they were often inaccessible to wheeled vehicles. Rugged terrain also made carriage by stretcher extremely arduous, time-consuming and frequently painful. In such circumstances, the knowledge that helicopter evacuation might be possible was a much-needed boost to morale (Anon, 1951).

But the utility of helicopters in evacuation was constrained by numerous technical limitations. The H-13 had a relatively short range (273 miles) and lower lifting power compared to most other helicopters then in service. Rain, sleet, snow and high winds (over 30 miles per hour) were also inhibiting factors, reducing capability where and when it was needed most, such as in the mountains. Even in summer, the weather imposed

21) Marks, "A Medical Picture of the Forward Areas in Korea, Appendix A: Inspired Questions," RAMC 1763, WL.

certain limits on the use of helicopters because high temperatures made it difficult for them to lift heavy loads. Heat diminishes air density which, in turn, reduces lifting power. The temperature needed to rise to only 90 degrees Fahrenheit (32 degrees Celsius) for load-bearing capacity to be reduced. As air density also becomes lower with altitude, there were limits on the extraction of casualties from mountains. When lifting two casualties, the highest altitude the H-13 was able to operate from was 1,500 feet above sea-level. Most helicopters were also incapable of operating at night, which meant that casualty collection needed to allow enough time for helicopters to return to the MASH by dusk. The chief reason for this was the H-13's lack of interior lighting. Regardless of weather conditions, it was also necessary to find a landing area that was clear of obstructions such as wires and tall trees and which had a relatively level surface. If and when such an area was identified, it had to be clearly marked, showing the direction of wind or the ideal direction for landing. This was sometimes done by making smoke or having a man point to the direction of landing - which needed to be into the wind. More obviously, helicopters could not operate safely where there was artillery or even small arms fire.²²⁾

Requests for helicopter evacuation were normally made by regimental medical staff to the DDMS at divisional headquarters and, in turn, to the corps surgeon. Once a call was received, the coordinates of the pick-up site were carefully checked, as was the state of hostilities. Most RAPs and ADSs had a prepared landing strip of 30 square yards, but in other cases, for example on mountains, landing zones had to be hastily improvised. If hostile fire did not appear to pose a danger to in-coming helicopters,

22) Nye, "Medical Equipment," RAMC 761/4, WL.

the medical officer making the call coordinated with the Artillery Liaison Officer for the lifting of a barrage long enough to enable safe passage for the aircraft. Before a helicopter was dispatched, the DDMS needed to be satisfied that the helicopter could land safely. Indeed, pilots were instructed not to land if they thought the risks were high. This meant that procedures on the ground, indicating wind-direction and so forth, needed to be followed correctly. Patients also had to be in place for extraction immediately. In the early days of helicopter evacuation in Korea, helicopters were sometimes called out before the casualty had been brought to the landing zone. This meant that helicopters were on the ground for longer than necessary, inviting mortar bombardment and other hostile fire.²³⁾

Once a rigorous system had been devised to ensure the safety of helicopter evacuation, there were few mistakes. From the winter of 1951 through to the end of 1952, Lt. Col. R.L. Marks, commanding 26 FA, noted only three failures, all of which were due to faulty map-reading.²⁴⁾ Most of those who commented on the use of helicopters in casualty evacuation acknowledged that they had saved many lives. Casualties lifted by helicopter normally received full surgical treatment within three hours of being wounded or, to put it another way, within 45 minutes of arriving at a RAP.²⁵⁾ By early 1953, the arrival time of helicopters once a call had been placed had fallen to only twenty minutes.²⁶⁾ This was critical to the survival of severely wounded men, many of whom might otherwise

23) *Ibid.*

24) Lt Col R.L. Marks, answers to 'Questionnaire on Campaign in Korea', 1952, p. 5, RAMC 761/4, WL.

25) "Proceedings of the Royal Society of Medicine on Medical Problems in Korea," comments made by Lt Col R.L. Marks, *The Lancet*, 261, 6774 (1953), p. 1288.

26) Marks, "A Medical Picture of the Forward Areas in Korea," p. 4, RAMC 1763, WL.

have perished due to wound shock. As the commander of 8055 MASH put it, 'when heavy fighting is in progress, there can never be too many helicopters for transporting the wounded.'²⁷⁾ Carriage by helicopter was also far more comfortable than transportation by ambulance car, stretcher jeep or mule - the latter sometimes being used in mountainous areas (Editorial, 1954). In the case of long drives, there was also a danger that the effects of morphia and other medication could wear off.²⁸⁾ But one draw-back of rapid evacuation was that casualties sometimes arrived on the operating table overly sedated because too much morphia had been given in forward units. In time, a policy was developed to prevent this and company medics were directed not to administer morphia except in cases of extreme urgency.²⁹⁾

There is no way of knowing exactly how many British casualties were evacuated by helicopter over the course of the war, as surviving records for UK forces in Korea are fragmentary. One report from 1953 indicates that 254 casualties were evacuated from the British zone by helicopter over a period of ten months, of which 154 were wounded men and the remainder a combination of other injuries and medical conditions (Harris and Hooper, 1953). However, we lack the total number of recorded admissions to and evacuations from field ambulances for the same period, as unit war diaries recorded the number of cases unsystematically. Moreover, a continuous run of such diaries has not survived. It is therefore impossible to work out the exact proportion of field ambulance

27) Annual Report of Medical Department Activities of the Mobile Army Surgical Hospital 8055th Army Unit, 1 January 1951, p. 3; RG 112, Records of the Office of the Surgeon-General (Army), 1951, National Library, Seoul.

28) *Ibid.*, p. 2.

29) Marks, "A Medical Picture of the Forward Areas in Korea," p. 5, RAMC 1763, WL.

admissions that were evacuated by helicopter. Nevertheless, it is safe to say that it was not great. In July 1952, for instance, the total number of battle casualties admitted to 26 FA was 102 plus a further 232 other cases, chiefly medical. In other words, well over 300 casualties were admitted in a single month, which can be extrapolated to somewhere in excess of 3,300 over a ten-month period.³⁰ This means that it is unlikely that the proportion of those evacuated by helicopter would have been above 10 per cent and was probably much less. It is also important to bear in mind that the evacuation figures cited above are from the period after the frontline had stabilised, when it became possible to evacuate the vast majority of Priority 1 cases by helicopter.³¹ By this time, helicopters were also sometimes used to evacuate enemy wounded if they were severely injured.³² But if the first nine months of the war are also considered, the proportion evacuated by helicopter would undoubtedly fall because helicopter evacuation was often impossible. During the Imjin River battle, for example, a helicopter attempted to land to remove casualties but failed (Linklater, 1952: 57). All casualties who could be evacuated (270 plus) had to be removed by road.³³

In view of the limitations placed on helicopter evacuation, it was fortunate that periods of intense fighting were relatively few and that

30) Marks, "Report for the month of Jun 52: Appendix B," RAMC 761/4, WL.

31) During the Second Battle of the Hook in November 1952, helicopters were on stand-by. On the night of the 18th, the Black Watch repelled a heavy Chinese onslaught, sustaining 76 casualties but all Priority 1 cases were evacuated by helicopter from either the RAP or CCP after first light the following morning. Only one casualty died, at the MASH: "Action of 1 BW on feature HOOK - Night 18/19 Nov 52," pp. 1-2, Appendix A, 26 FA War Diary, November 1952, WO 281/912, TNA.

32) Neville Hughes, "Korea 1951-51," Box 16, Cabinet No. 1, Battalion Welch 1951/1951, Korea, Combined Acc. Nos. 1993/182 & 183, Royal Welsh Regimental Museum, Brecon.

33) 26 Field Ambulance, "War Diary, April 1951," entries for 23 and 27 April, WO 281/1269, TNA.

deployed units were usually in flying distance of the MASH. The air superiority enjoyed by UN forces also enabled helicopters to move freely for the most part,³⁴⁾ allowing helicopters to become the first resort for all the most serious cases. This proved of ‘immense value’ in the treatment of wound shock and in the case of notoriously dangerous injuries such as abdominal wounds, almost all of which recovered. Other cases which required specialised treatment were also carried by helicopter to appropriate centres in MASH units or air-strips for dispatch to Japan.³⁵⁾

All told, helicopter evacuation enabled UN forces to dispense with the need for surgery far forward (i.e. at field ambulance level), which was an important departure from previous practice, although not entirely unprecedented. For example, the use of light aircraft in Burma, in 1945, had enabled many casualties to be flown directly to large surgical and medical centres from locations such as Meiktila (Harrison, 2004: 225). However, as Col. Anderton, ADMS of Commonwealth Division, cautioned, while helicopters had proven their worth for serious cases, ‘one can but ... look at them as a “bonus” as they cannot operate by night - and are very dependent upon weather conditions, adding that, ‘the number of cases so evacuated is naturally comparatively small.’³⁶⁾ We must therefore look elsewhere to explain the success achieved by the medical system as a whole.

34) "Proceedings of Royal Society of Medicine on Medical Problems in Korea, comments made by Gen. A. G. Harsant," *The Lancet*, 261-6774 (1953), p. 1289.

35) Capt. T. A. Mac Lennan, 25 Canadian FA, "Questionnaire on Campaign in Korea," 1952, p. 7, RAMC 761/4, WL.

36) Anderton, "Questionnaire on Campaign in Korea," p. 11, RAMC 761/4, WL.

5. Forward treatment

In order to work effectively, any system of casualty evacuation requires clear directions as to where and when to send each type of patient, where they should be retained, and when they should be returned to duty or discharged. In addition to clinical needs, two factors had an important bearing on these decisions: the first was the need to stem the loss of manpower from the front and the second was the need to reduce the burden of casualties on the lines of communication. Delays and overcrowding would inevitably be detrimental to patients as well as impeding non-medical transport. As the majority of cases presenting at regimental units were medical rather than surgical, effective management of sickness was crucial to the success of the entire system. British and Commonwealth forces therefore decided to implement a system of forward treatment to stem the loss of manpower. In doing so, they followed the precedent set by the two world wars, in which forward treatment had been implemented both to improve clinical outcomes and reduce the length of time that those with minor sickness and wounds spent away from frontline duties (Harrison, 2004; 2010). As all senior officers had served in the Second World War, this decision came naturally, although provisions for such treatment evolved somewhat differently owing to the lack of facilities for medical treatment in the middle of the evacuation chain.

Levels of sickness in Korea were not especially high compared to some previous conflicts but were high enough to warrant special action. Frontline medical units also had to care for substantial numbers of Koreans who worked bedside them. There were well over 6,000 Koreans attached to the Commonwealth Division, the bulk of whom (4,662) were in the

Korean Service Corps and the remainder authorised labourers (1,227) and security police (270). In addition, there were reckoned to be around 500 ‘houseboys’ (domestic workers) and barbers, which also received treatment from divisional units.³⁷⁾ Poor health was a particular concern during the harsh winters experienced in much of the Korean peninsula. In the first winter, cases of frost-bite and other cold injuries were common and this received critical coverage in the British press (Mackenzie, 2011). Over that winter, 152 such injuries were recorded among British troops: severe cases needed surgical intervention and even moderate and mild cases required prolonged periods of bed-rest and nursing (Watts, 1952). Once troops were equipped with specially designed clothing and learned to live with the cold, the number of cold weather injuries diminished (Brentland, 1954).³⁸⁾

Apart from cold injuries, the main health issue that attracted attention internationally was the appearance of a ‘new’ disease in the form of a rodent-borne haemorrhagic fever (later termed Hanta virus). It occurred all year round but was most common in May-June and October-November. Fatality was high at first but, despite the lack of an effective cure, medics became better at treating it. Rapid evacuation, preferably by helicopter, and maintenance of electrolytic balance in body fluids reduced mortality significantly. Prevention took the form of applying insecticides to clothing and anti-rodent measures around streams and the sites of former Korean dwellings. Although serious, the disease never caused a large number of casualties - around 1,000 cases among UN forces as a whole, 60 of which

37) Col. G.L. Morgan Smith, ADMS, 1 Commonwealth Division, “Monthly Liaison Letter, Serial 14 - Jul 1952,” p. 4, RAMC 761/4, WL.

38) “III: Army Health,” Historical Notes: B.C.F.K., WO 308/21, TNA.

were Commonwealth personnel (Royal Society of Medicine, 1953).³⁹⁾

Some infectious diseases such as smallpox, typhus and relapsing fever were endemic in Korea but there were very few cases among British or other foreign soldiers. Only three cases of smallpox and one of relapsing fever occurred in the British force, for example. Virtually all Commonwealth troops had been immunised against typhoid, cholera, typhus and tetanus and vaccinated against smallpox. Malaria posed more of a problem. It was endemic in many parts of Korea and had become more widespread during the Second World War (Kim, 2016). As malaria-bearing mosquitoes were common, vector control was never really an option outside of static camps and the army relied heavily on antimalaria drugs (Paluride) to suppress the infection.⁴⁰⁾ Cases were still fairly common but at no point did they exceed 40 per month for the whole force.⁴¹⁾

Other serious diseases, such as infective hepatitis, occurred from time to time. Although the number of cases was generally low (about the same incidence as malaria), they took a long time to treat and recover.⁴²⁾ J.J. Bulow, who was serving with the RADC in Korea, recalled being evacuated to Kure after contracting hepatitis and not being able to return to duty for six weeks.⁴³⁾ Typhoid and paratyphoid fever - which had hitherto often occurred in deployed armies - were conspicuous by their absence, most likely as a result of inoculation. A British Field Hygiene unit worked

39) *Ibid.* p. 1.

40) Capt. T.A. Mac Lennan, 25 Canadian FA, "Questionnaire on Campaign in Korea," 1952, p. 8, RAMC 761/4, WL.

41) "III: Army Health," pp. 1-2, WO 308/21, TNA.

42) In July 1952, for example, 14 cases of infective hepatitis were admitted to 26 FA and 13 cases of malaria. See Marks, "Report for the month of Jul 52," p. 4, RAMC 761/4, WL.

43) J.J. Bulow, "His recall of events whilst serving in Korea with the RADC - September 1952 to February 1954," Papers of Capt. Bulow, RADC, RADC/PE/1/109/BULO, Museum of Military Medicine, Ash Vale.

alongside the three Commonwealth FAs, attending to sanitary works and providing instruction in everything from preventing frostbite to malaria.⁴⁴⁾

The commonest diseases among Commonwealth troops were gastrointestinal and respiratory infections and skin conditions. In the four-week period from 28 June to 25 July 1952, 1 Commonwealth Division recorded 215 cases of respiratory disease, 271 gastrointestinal disease and 992 cases of skin disease.⁴⁵⁾ Respiratory ailments were more common in winter and gastrointestinal in summer, as might be expected, however fungal infections of the skin were 'extremely prevalent' all year round. There was also a tendency for young and inexperienced MOs to over-treat such cases, resulting sometimes in obstinate secondary eczemas and unnecessary removal from duty.⁴⁶⁾

Equally common were sexually-transmitted infections or what were then known as venereal diseases. In 1952 alone, there were around 10,000 cases, the chief diseases being gonorrhoea and chancroid, in the proportion of four of the former to one of the latter. However, there were very few cases of syphilis. As in previous wars, controls on prostitution were put in place and lectures provided to troops, the only novelty being the use of oral prophylactic penicillin (Fitzpatrick, 2015). Nevertheless, rates of venereal disease were extremely high and rose at times to over 700 per 1,000 or about 360 cases per month. In many previous conflicts, sexually-transmitted diseases had significantly reduced manpower. It was only at the end of the Second World that penicillin blunted their impact (Harrison, 2004: 107, 129, 263). In Korea, penicillin was widely available

44) Interview with Alan Guy (RAMC) and Lyn Guy, 07/012/2016, p. 1, 9729/1-5, Surrey History Centre, Woking.

45) Col. Morgan Smith, "Monthly Liaison Letter. Serial 14 - Jul 1952," p. 2, RAMC 761/4, WL.

46) arks, "A Medical Picture of Forward Areas in Korea," p. 5, RAMC 1763, WL.

and most such cases could be treated as outpatients while still in their units.⁴⁷⁾ But medical staff still had to devote a lot of time to them and some thought that it would have been more efficient to provide specialist teams to treat these complaints.⁴⁸⁾

The main difference between treatment facilities in Korea and some previous conflicts was the lack of a large medical facility placed centrally along the evacuation line. MASH units, as we have seen, had few or no facilities for the treatment and diagnosis of disease. It was probably for this reason that some Commonwealth MOs were initially concerned about the absence of intermediate medical units such as Casualty Clearing Stations, which, unlike MASH, usually contained medical wards (Watts, 1954: 22). They had good reason to be concerned, for, in the first nine months of the conflict, many cases of sickness and minor injury were sent all the way back to Japan. It was not until the frontline stabilised, from the summer of 1951, that it became possible to slow evacuation by expanding treatment facilities near the front.⁴⁹⁾ Some serious cases of sickness still had to be sent Kure or to specialist centres established for infectious cases like haemorrhagic fever.⁵⁰⁾ But a growing number were now treated forward of the MASH; either within their units or in dressing stations located fairly close to the frontline. Regimental staff dealt mostly with outpatients but some RMOs created small sick-bays with 4-6 beds forward of the RAP staffed by non-commissioned officers. These were also occasionally used

47) Col. G.L. Morgan Smith, ADMS, 1 Commonwealth Division, "Monthly Liaison Letter, Serial 14 - Jul 1952," p. 4, RAMC 761/4, WL.

48) Maj. Montgomery, "Questionnaire on Korean Campaign: Answers," Para. 11, RAMC 761/4, WL.

49) Col. Morgan Smith, "Monthly Liaison Letter, Serial 14 - Jul 1952," p. 1, RAMC 761/4, WL.

50) Marks, "A Medical Picture of the Forward Areas in Korea, Appendix B: Arrangements for Sick in 1 Comwel. Div.," RAMC 1763, WL.

to treat minor injuries, thus reducing the need for evacuation to either the RAP or field ambulances. But such arrangements were only possible when the front was static. Also, patients who remained close to the fighting did not receive the level of care that could be provided at a RAP, under close supervision from the RMO. Some MOs therefore considered these sick-bays to be neither necessary nor desirable.⁵¹⁾ In practice, the vast majority of cases that could not be treated simply as out-patients were sent from regimental units to dressing stations belonging to field ambulances.

The retention capacity of FAs was also quite low, initially. Over the winter of 1950-51, for example, 26 FA was forced to evacuate between 250 and 350 cases to base hospitals and Japan because it did not have sufficient tents to accommodate them. As a result, 29 Brigade Group suffered losses comparable to a major action per week, chiefly from sickness and cold injury.⁵²⁾ After the formation of the Commonwealth Division and the stabilisation of the front, it became possible to expand facilities for treatment and this was coordinated across the entire Commonwealth Division in order to permit rotation between the three divisional FAs. The two ADSs of the British and Canadian field ambulances which operated in forward areas were equipped with 10-20 beds and were authorised to hold cases for up to seven days. The reserve FA was equipped with a larger number of beds and these were gradually increased. The British, Indian and Canadian FAs shared these tasks as they rotated from forward to reserve areas. By early 1953, the reserve unit had 100 beds and there were a further 150 at a separate FDS run by the Canadians. This FDS was able to hold patients for up to three weeks and to perform minor

51) Marks, 26 FA, "Report for the month of Jul 52," p. 1, RAMC 761/4, WL.

52) Mac Lennan, "Questionnaire on Campaign in Korea," 1952, p. 4, RAMC 761/4, WL.

surgery - e.g. for cold injury - and subject cases to medical assessment. The fact that the FA now had around 400 beds in total allowed all minor cases of sickness, cold injury and wounding to be treated without further evacuation down the line. It was said that this policy prevented a manpower loss equivalent to one infantry company at any given time.⁵³⁾ Mobile dental units, which moved throughout the theatre, visiting field ambulances, also prevented a good deal of unnecessary wastage.⁵⁴⁾ Specialists in other areas of medicine such as ophthalmology were also rotated through the FDS and made occasional visits to ADSs to treat eye infections (Owen, 2023).

Lastly, some mention should be made of psychiatric cases, the number of which was substantial though never large. Little thought was given to the handling of psychiatric cases in Commonwealth armies until after the formation of the Commonwealth Division and the appointment of a divisional psychiatrist, although psychiatrists would sometimes visit field ambulances prior to that time.⁵⁵⁾ US forces had more psychiatric facilities and some were in place in forward areas as early as December 1950, in addition to specialist treatment and convalescent centres in the rear (Fitzpatrick, 2017: 63). The lack of specialist units or expertise in Commonwealth forces resulted in many cases being evacuated further down the line than was necessary (Fitzpatrick, 2017: 70). Even so, throughout 1951, some two-thirds of British psychiatric casualties were returned to their unit - 365 out of a total of 554 who were referred for

53) Marks, "A Medical Picture of the Forward Areas in Korea," p. 2; 3, RAMC 1763, WL.

54) J.J. Bulow, "His recall of events whilst serving in Korea with the RADC - September 1952 to February 1954," Papers of Capt. Bulow, RADC, RADC/PE/1/109/BULO, Museum of Military Medicine.

55) 26 FA, "War Diary, 24-25 June 1951," WO 281/1270, TNA.

psychiatric examination (Flood, 1954).

As the war progressed, special procedures were adopted in forward areas to deal with cases of 'battle exhaustion,' as they were often termed. The label 'battle exhaustion' was first used by Commonwealth forces during the Second World War and was meant to convey to patients that their feelings and symptoms were temporary and that they would recover after a few days of rest (Copp and McAndrew, 1990). The first screening of such cases occurred in RAPs and some of them were rested in the 'B' (i.e. rear) echelon of their battalions. A second screening took place at the FDS, where a psychiatric wing was established and manned by British and Canadian psychiatrists. These arrangements allowed approximately 50 per cent of patients to be retained within the division and subsequently returned to duty.⁵⁶⁾

6. Command and control

The shift towards forward treatment from the summer of 1951 was a vital to the success of medical operations in Korea. Without it, the lines of evacuation would have been overwhelmed and clinical outcomes compromised because of unnecessary delays. But such a policy could only work if there was effective command and control of medical units and transportation. In a large and diverse coalition this was far from easy but difficulties were overcome thanks to a pervasive spirit of good will. British medical officers often commented that other nations had been extremely cooperative,⁵⁷⁾ confirming the general impression that the

56) Anderton, "Questionnaire on Campaign in Korea," p. 12, RAMC 761/4, WL.

57) Marks, "A Medical Picture of Forward Areas in Korea," p. 5, RAMC 1763, WL; Anderton, "Questionnaire on Campaign in Korea," p. 19, RAMC 761/4, WL.

constituent elements of the UN force worked very well together (Grey, 1988).⁵⁸⁾ Nevertheless, casualty evacuation before the summer of 1951 was difficult to manage. Prior to the formation of the Commonwealth Division, casualties from the three independent brigade groups were evacuated entirely through channels managed by the US and consequently scattered throughout US hospitals in Korea and Japan. Clothing these patients and returning them to their units became a major problem. Efforts were made to recover British casualties at Busan and fly those requiring further treatment directly to 29 GH in Kure but many slipped through the net. Thus, when the Commonwealth Division was formed at the end of July 1951, a large proportion of patients were difficult to locate. This situation did not really change until mid-August, when the new division had assembled sufficient medical units of its own, forming a chain of evacuation independent of the US, albeit incorporating some of their hospital facilities.⁵⁹⁾

Each stage in the line of evacuation presented unique challenges on account of operational conditions. Some of these could be foreseen and thus accounted for in divisional planning but most only became apparent with experience. As well as having a clear plan of evacuation, there therefore needed to be sufficient flexibility in the system to allow for adaptation to changing conditions. At regimental level, the most difficult task was the extraction of casualties from the battlefield, particularly in the period from late 1950 through to stabilisation of the frontline in the summer of 1951. Fighting was fierce at this time; lines of communication were often long and the number of vehicles available for evacuation few.

58) Transcript of interview Philip Miles (Pip) Chambers, officer, Kings Shropshire Light Infantry, 6005/SHYKS/2008/2677/26, Shropshire Archives, Shrewsbury.

59) Anderton, "Questionnaire on Campaign in Korea," pp. 5-6, RAMC 761/4, WL.

For example, in early January 1951, during the battle north of Seoul many casualties sustained at first light on the 3rd did not reach a MASH until 0400 the following morning.⁶⁰⁾ Such delays were not uncommon because most men who were unable to walk needed to be removed by hand, using stretchers supplied by either the US or from Britain. There was little to choose between the two, although some bearers and medical staff had a slight preference for the lighter, more easily folding US equipment.⁶¹⁾ It was also difficult to find enough men for such duties, without removing them from combat roles. For this reason, Koreans were often employed as stretcher bearers instead of British personnel and this appears to have worked well for the most part, although one soldier was tasked with escorting Korean bearing parties in order to discourage desertion.⁶²⁾

Over time, stretcher bearers worked out ways to speed up the process of removal and to reduce danger to themselves and the men they carried. Stretcher slings were widely used for long carries and enabled some extraordinary feats. On one occasion, a party of six bearers was able to carry a wounded man 3,000 yards over paddy fields and hills in only 45 minutes and was still fresh enough to undertake another carry.⁶³⁾ Wheeled stretcher carriages, such as those sometimes used in 1914-18, were unsuitable for rough terrain but other innovations proved invaluable. In some mountainous areas, trolley cableways were sometimes constructed to obviate the need for long and uncomfortable carries. One system made use of a large metal box containing two stretcher frames. The container

60) Maj. P.M. Brentland, DDMS 1 Commonwealth Division, "Questionnaire on Campaign in Korea," p. 3, RAMC 761/4, WL.

61) Nye, "Medical Equipment," RAMC 761/4, WL.

62) *Ibid.*

63) Mac Lennan, "Questionnaire on Campaign in Korea," 1952, p. 6, RAMC 761/4, WL.

was fitted with four wheels and hauled up and down the hillside using a modified $\frac{3}{4}$ ton truck as a winch, the cable running over a pulley at the top of the hill. On the upwards journey, the trolley was able to carry supplies including water. The other trolley system in use was the cable-car constructed by engineers to carry casualties and supplies across the Imjin River. Like the land-trolley, each car contained room for two stretcher cases. It took 12 minutes for the car to be winched across the river.⁶⁴

Like the trolley systems constructed on the Western Front in 1914-18, such improvisations were possible only because the frontlines were relatively static. It is difficult to calculate their impact on clinical outcomes but it seems reasonable to suppose that many stretcher cases would have fared far worse if they had not existed, on account of both delays and additional trauma. At regimental level, the versatile jeep was widely regarded as essential in transporting casualties from company aid posts to the RAP and often to the ADS.⁶⁵ For this reason, it was customary for the jeep belonging to the commander of each company to be fitted with a frame to carry a stretcher. Each battalion therefore had, on average, five or six jeeps which could be used to carry stretcher cases. The main drawback of the jeep was that it was unsuitable for carrying casualties in winter.⁶⁶ This was certainly true of regimental jeeps but most of those used by field ambulances were eventually 'winterised' with the addition of covers and heaters.⁶⁷ As with other adaptations, coordination between the different elements of the UN force was important in order to disseminate best practice and provide or up-date equipment for all.

64) Marks, "Report for the month of Jun 52," RAMC 761/4, WL.

65) Anderton, "Questionnaire on Campaign in Korea," p. 11, RAMC 761/4, WL.

66) Mac Lennan, "Questionnaire on Campaign in Korea," 1952, p. 6, RAMC 761/4, WL.

67) *Ibid*, p. 9.

Although jeeps were often used to carry the wounded to dressing stations, ambulance cars carried the majority of casualties from those stations to MASH, with helicopters taking only the most serious cases. In the case of British and other Commonwealth units, most of the vehicles used were initially Austin ambulance cars but they were supplemented or replaced by American Dodge ambulances. The latter were more suitable for rough terrain because of their four-wheel drive capabilities.⁶⁸⁾ In wet weather, the two-wheel drive Austin ambulance cars were frequently bogged down.⁶⁹⁾ Heating in the Dodge ambulance was also said to be superior to that in the Austin.⁷⁰⁾ The other problem affecting evacuation near the front was congestion. Stretcher jeeps and other vehicles plying between units were often absent for several hours due to traffic conditions and this led to overcrowding at RAPs (McIntyre, 1981: 573). Unlike other deficiencies, which could be remedied to some extent, road congestion remained a problem throughout the conflict.

Sometimes battlefield conditions and rough terrain rendered evacuation by ambulance car or jeep impossible. As the Scottish author Eric Linklater put it, 'Most of the Korean landscape was medieval in its roadlessness' (Linklater, 1952: 64). In such circumstances, other vehicles were improvised as ambulances, including the Universal Carriers - better known as the Bren-Gun Carrier - which had entered service in 1940. These were also found to be unsuitable for use over rough ground and were eventually withdrawn. Far better was the Oxford Tracked Carrier (C-20) which entered service in 1946. This vehicle was better over rocky ground because of its higher ground clearance and greater power. It

68) Marks, "Report for the month of Jun 52," RAMC 761/4, WL.

69) Morgan Smith, "Monthly Liaison Letter, Serial 14 - Jul 1952," p. 2, RAMC 761/4, WL.

70) Anderton, "Questionnaire on Campaign in Korea," p. 14, RAMC 761/4, WL.

was also twice the size of the Universal Carrier. However, these vehicles were not specially designed for medical work, being intended for use as artillery tractors and armoured personnel carriers. As with the old Universal Carrier, stretchers had to be fixed to the surface of the vehicle, meaning that patients were exposed during evacuation. Injuries to patients during carriage, however, appear to have been rare. In dire emergencies, casualties were piled atop Centurion tanks and pretty much anything that could move. Tanks were particularly useful because they were able to ford rivers if the water was not too deep and a number of casualties were taken across the Imjin River in this way. But perhaps the most useful vehicles were White Scout Cars, which were used as ambulances by the 8th Hussars, for example. These vehicles brought out many casualties from situations where they otherwise would have been lost. During the Battle of the Imjin River in April 1951, scout cars were able to extract many casualties from the Royal Ulster Regiment and the Northumberland Fusiliers. Unfortunately, they were not able to reach the wounded of the Gloucestershire Regiment, many of whom fell into captivity.⁷¹⁾ Later, a few of those who escaped via a tortuous and perilous route were picked up by an American ambulance (Whatmore, 1993: 84).

Evacuation along the last two stages of the line was conducted with fewer problems. Most of the evacuation from MASH hospitals was by rail, to Busan and later to Seoul. As in the First World War, rail evacuation was the only sustainable means of removing large numbers of casualties from hospitals along the lines of communication - the MASH in Korea and the CCS on the Western Front. Rail evacuation was not only far more comfortable for patients but normally quicker and helped to relieve

71) Mac Lennan, "Questionnaire on Campaign in Korea," 1952, p. 6, RAMC 761/4, WL.

congestion on the roads (Anderton, 1952). Although the rail network in Korea was not extensive, there was a main line connecting Seoul to Busan (via Daegu) and another from Busan to Incheon (via Uijongbu, where 8055 MASH was located), in addition to shorter lines in other directions. For much of the conflict, the railways were able to carry casualties with little interruption and considerable effort was invested in developing this form of evacuation. New ambulance railcars were brought from the United States to Korea via Japan: they were well heated, air-conditioned and contained relatively advanced medical facilities. They appear to have been popular with the patients transported in them (Sibul, 2011).⁷²⁾ However, rail transportation was too slow for cases which required urgent specialised treatment urgently. In these very serious cases, patients were taken from 8055 MASH and similar units to the nearest airfield, often by helicopter, and dispatched by fixed-wing plane to hospitals in Japan.⁷³⁾

As with helicopters, rail evacuation remained under the control of the US rather than Commonwealth forces but the final stages of the evacuation chain were under their own control. Until well into 1951, most Commonwealth casualties were evacuated to Japan by ship, the majority by H.M. Hospital Ship Maine, which carried some 1,850 patients to Japan. While normally comfortable, the crossing took about 48 hours (Latta, 1951). From January 1951, RAAF Dakota aircraft began to fly Commonwealth casualties from Gimpo airfield near Seoul to Iwakuni airfield near Kure, allowing casualties to reach their destination within two hours rather than two days. By July 1951, air evacuation had become

72) Morgan Smith, "Monthly Liaison Letter, Serial 14 - Jul 1952," p. 2, RAMC 761/4, WL.

73) Annual Report of Medical Department Activities of the Mobile Army Surgical Hospital 8055th Army Unit, 1 January 1951, p. 9; RG 112, Records of the Office of the Surgeon-General (Army), 1951, National Library, Seoul.

the norm (Editorial, 1951). As well as obtaining better clinical outcomes, the shorter travel time to and from Japan was seen as necessary to reduce the 'gross wastage' of manpower which had occurred earlier in the conflict (Anderton, 1952). From Japan, casualties who could not be returned to Korea were dispatched by air - and occasionally by ship - to the UK, normally via Singapore or Hong Kong. This trip took on average five or six days (Anon, 1953). No problems appear to have been encountered with this journey or that back to Korea. UN air and naval superiority reduced the risk of accidental or deliberate attack to negligible proportions.

A key factor in the success of this evacuation system was coordination. Even with the newest machines and facilities, the system could easily have broken down if communications between the different elements had failed. This was a particular anxiety for medics in units near to the front, who for a long time suffered from the absence of wireless communication.⁷⁴⁾ British and other Commonwealth infantry and armoured units had been equipped with wireless devices from an early stage, but medical units lagged behind. One of the main pieces of equipment was the WS (Wireless Set) No.88, which was a lightweight infantry man-pack radio set with a range of up to one and a half miles. This was widely used as a ground station for forward units and in vehicles. Another common device was the WS No.31, used for short-range (3-5 miles) radio communications between infantry units. Both of these sets had been used in the Second World War.⁷⁵⁾ Medical units did not receive such devices until much later and they were forced to rely on line communications (e.g. using portable telephone sets) which could be used when the war entered a static phase

74) Marks, "Report for the month of Jul 52," p. 2, RAMC 761/4, WL.

75) Korean War exhibit, Royal Signals Museum, Blandford Camp, Dorset, UK.

but this was sub-optimal and constituted an unnecessary risk, for line communications often failed when an area was shelled. Telephone communications in Korea were also poor and adversely affected by bad weather. As a result, communications with medical units sometimes relied on the transmission of written instructions and an operation could be well under way by the time orders had been received by the HQ of a field ambulance, for example.⁷⁶⁾

Wireless communication was therefore essential if each FA was to connect quickly and directly with brigade or divisional HQ and with infantry companies at the front. The fact that brigade HQ was also in regular touch with infantry battalions meant that a FA could also gain an accurate impression of what was going on at the front, regardless of whether they were able to have direct contact with company HQs. Lt. Col. Marks, commanding 26 FA during 1951 and 1952, therefore urged that each FA and FDS should have its own radio set, in addition to ADMS Control, in order to be prepared for all eventualities.⁷⁷⁾ However, his unit did not receive its own radio set - a WS No.19 - until sometime towards the end of 1951.⁷⁸⁾

The No.19 wireless set had been developed in the late 1930s and was used extensively by armoured columns during the Second World War. It was capable of fairly long-range transmission (an HF range of 10 miles, 15 miles CW and a VHF range of 1,000 yards). It was also comparatively light, weighing 40 lbs.⁷⁹⁾ Overall, it was very successful and about

76) *Ibid.*

77) Marks, answers to "Questionnaire on Campaign in Korea," 1952, p. 5, RAMC 761/4, WL.

78) Montgomery, "Questionnaire on Korean Campaign," Para. 13, RAMC 761/4, WL.

79) http://www.army.mod.uk/royalsignalsmuseum/equipment/wireless_set_no_19.htm

115,000 sets were employed in service and modified over time.⁸⁰⁾ Once it had been issued to medical units in Korea, the No.19 set was used primarily to maintain communications between the field ambulance HQ and the collecting posts in forward areas. In this role, it was considered 'invaluable.'⁸¹⁾ However, radio communication between HQ and mobile units was sometimes difficult. 26 FA was provided with a No. 62 rover set to maintain communications with company commanders in forward areas but its No.19 set at HQ was not always compatible with the mobile radio net because their frequencies did not always coincide. In this sense, 26 FA was at a disadvantage compared with 37 (Canadian) FA, which had a complete field ambulance radio net. In stark contrast, 60 (Indian) PFA was reliant on telephone lines alone - at least, up to the end of July 1952.⁸²⁾ The fact that 60 PFA lacked radios for so long confirms the general impression that the ambulance, while universally praised for its work, was seriously lacking in equipment.⁸³⁾

Despite the fact that radio coverage was incomplete, wireless communication made an enormous difference to medical work at the front. Without it, there would certainly have been times - as in poor weather or bombardments - when communication between FAs and forward units would have been impossible. Effective use of helicopters also depended on being able to call in air evacuation; notify friendly artillery; and inform pilots of battlefield conditions. Radios were essential for safe evacuation by other means, too. Sgt. Wilson of the Royal Welch, who was hit by

80) WWII mobile command and control exhibit, Wireless Set No.19 display, Royal Signals Museum, Blandford Camp, Dorset, UK.

81) Montgomery, "Questionnaire on Korean Campaign," Para. 13, RAMC 761/4, WL.

82) Marks, "Report for the month of Jul 52," p. 2, RAMC 761/4, WL.

83) Typescript of interview with Private George Andrew Casewell, Kings Shropshire Light Infantry, 6005/SHYKS/2008/2677/24, Shropshire Archives, Shrewsbury.

shrapnel after a shell burst on New Year's Eve 1951, recalled:

I felt warm blood trickling down my face and arm. I pulled out my field dressing bandages and asked the nearest soldier to bind up my face. The platoon Commander called for the stretcher bearers on the radio and also instructed the centurion tanks, who were, at this time, dug into our lines to keep firing at the enemy positions in order to keep them occupied... At last the stretcher bearers arrived and Sgt. McLevy my platoon sergeant came up with them to help out with the platoon Commander. Corporal Hilton was, by this time, in great pain and I felt doped. Blood was still running down by arm and face. They loaded us on stretchers and commenced to carry us back to a 'listening post' in the valley. It was a very harrowing experience and I could hear them saying to each other that they hoped there were no mines around, as we were being brought out by the quickest way possible and not by the regular trail.⁸⁴⁾

On this occasion, the use of radios allowed timely evacuation and for covering fire while the rescue took place. Wilson was subsequently evacuated to 26 FA and through there to NORMASH and Kure.⁸⁵⁾ The radio was not a panacea, as there were times when rapid movement put units out of range of one another (Linklater, 1952: 29-30), but its contribution to the effectiveness of evacuation in Korea was probably no less significant than that of the helicopter.

84) Sgt. 'Tug' Wilson, "New Year's Eve Korea 51/52," Box 16, Cabinet No.1, Battalion Welch 1951/1952, Korea, Combined Acc. Nos. 1993/182 & 183, Royal Welsh Regimental Museum, Brecon.

85) Marks, "Report for the month of Jul 52," pp. 3-5, RAMC 761/4, WL.

7. Conclusion

The widespread use of helicopters for medical evacuation in Korea was undoubtedly a pivotal moment in the history of military medicine. Formulated at the close of the Second World War, the concept of helicopter evacuation was proven emphatically in Korea, where it contributed significantly to the survival of casualties - particularly those with serious injuries. But while helicopters were an important factor in the overall success of the medical system, the number of aircraft available, their limited power and range, and the constraints imposed by operational and meteorological conditions meant that their role ought not to be exaggerated. Until they reached the final stages of the evacuation chain, where most evacuation was conducted by ship or winged aircraft, the vast majority of casualties were moved over ground, either by wheeled or tracked vehicles or by rail. In this respect, the evacuation of casualties in Korea resembled the situation at the end of the Second World War more closely than that of later conflicts such as Vietnam.

However, the success of medical evacuation owed less to any single means of transportation than to effective command and control. This may seem an obvious point but it is often overlooked because of the understandable tendency to focus on new technologies. One element vital in the effective control of evacuation in Korea was coordination between the forces of the various combatant nations. Discord was fortunately rare and observers in Korea were impressed by a 'remarkable demonstration of international effort' on behalf of the wounded of all nations (Linklater, 1952: 65). The attachment of British and other Commonwealth staff to US and other UN units facilitated this, as did the

experience gained by senior officers during the Second World War. The creation of an integrated medical command structure, ultimately under the Commonwealth Division, allowed British and other Commonwealth forces to exert better control over their casualties as they moved down the line of evacuation, whereas initially many had been lost after they had entered American units. Cooperation between the allies was also evident in the pervasive spirit of reciprocity, which was particularly important in managing evacuation from forward areas and in replacing sub-optimal transportation and equipment. This atmosphere of trust was one which also fostered innovation and the dissemination of best practice among the constituent forces.

Another key factor in the success of medical arrangements was communication. The role of communications in military medical operations is a badly neglected subject but accounts from the Korean War show just how much coordination was required between different elements of the military to permit safe and timely extraction of the wounded. This was true not only of helicopter evacuation - which obviously depended on up-to-date information being provided to pilots - but to almost all types of evacuation, particularly from forward areas. The coordination of frontline evacuation seems to have improved considerably after the provision of radio sets to some field ambulances, allowing rapid communication between medical units at different points along the chain of evacuation and also - crucially - between forward units and those fighting at the front. This enabled the rapid extraction of casualties and notification to armoured and artillery units to withhold fire or provide covering fire while extraction of the wounded took place.

Perhaps the most important factor in the success of the evacuation

system was the decision to treat most cases of sickness and minor injury in forward units; in other words, those located in front of the MASH. Without this directive, it is likely that hospitals and transportation along the lines of communication would have been overwhelmed and clinical outcomes far less satisfactory. There would also have been an operationally significant loss of manpower. In this respect, the policy adopted in Korea was not so very different from that used by the Allies in the two world wars, in which the vast majority of medical cases were treated near the front. Over the next few decades, planning for a possible campaign against the Soviet Union in Europe continued to reflect the experience gained in Korea, with heavy reliance on evacuation by rail and other forms of ground transportation. However, other conflicts in which the UK was or was soon to become involved - such as those in Malaya, Aden and Oman - would require an entirely different configuration of medical support, with less emphasis on forward treatment and routine use of helicopters for rapid extraction. What these differences tell us is that there is no straightforward evolution in medical evacuation but rather the adaptation of existing equipment and knowledge to operational conditions. With the return of industrial warfare and mass casualties in Eastern Europe, the experience gained in Korea is once again horribly relevant.

Key words: casualty, evacuation, helicopter, ambulance, radio, British Army, British Commonwealth

투고일: 2023.6.1 심사일: 2023.7.3 게재확정일: 2023.8.19

참고문헌 REFERENCES

<Primary Sources>

Unpublished

- 26 Field Ambulance, "War Diary, April 1951," entries for 23 and 27 April, WO 281/1269, The National Archives (hereafter TNA, UK).
- "Action of 1 BW on feature HOOK - Night 18/19 Nov 52," Appendix A, 26 FA War Diary, November 1952, WO 281/912, TNA.
- "Historical Notes: Medical Services. British and Commonwealth Forces in Korea," pp. 1-3, Historical Notes: B.C.F.K., WO 308/21, TNA.
- "I: Development of Staff Organization and General Medical Administration," pp. 1-2, Historical Notes: B.C.F.K., WO 308/21, TNA.
- "II: Medical Units," p. 1, Historical Notes: B.C.F.K., WO 308/21, TNA.
- "III: Army Health," pp. 1-2, Historical Notes: B.C.F.K., WO 308/21, TNA.
- Interview with Alan Guy (former SSgt., RAMC) and Lyn Guy, 07/12/2016, p. 1, 9729/1-5, Surrey History Centre, Woking, UK.
- Interview with John Owen (former Sgt., RAMC), 26/07/2023, RAMC Oral History Project, University of Oxford/Museum of Military Medicine, UK.
- Capt. T.A. Mac Lennan, 25 Canadian FA, "Questionnaire on Campaign in Korea," 1952, RAMC 761/4, WL.
- Col. C.W. Nye, DDMS British Commonwealth Forces in Korea (hereafter BCFK), "Medical Equipment - Report from Korea, 2 November 1951," No.23 SOP - "Helicopter Evacuation," RAMC 761/4, Wellcome Library, London, UK [hereafter, WL].
- Col. G. Anderton, "answers to 'Questionnaire on Campaign in Korea,'" 1952, RAMC 761/4, WL.
- Col. Morgan Smith, "Monthly Liaison Letter. Serial 14 - Jul 1952," RAMC 761/4, WL.
- J.J. Bulow, 'His recall of events whilst serving in Korea with the RADC - September 1952 to February 1954', Papers of Capt. Bulow, RADC, RADC/PE/1/109/BULO, Museum of Military Medicine, Ash Vale, UK.
- Lt Col R.L. Marks, 26 FA, "Report for the month of Jul 52, Appendix A.: RAP Construction," RAMC 761/4, WL.

- Lt Col R.L. Marks, 26 FA, "Report for the month of Jun 52, Appendix C: Unit Personnel Stats," RAMC 761/4, WL.
- Lt Col R.L. Marks, "answers to 'Questionnaire on Campaign in Korea'", 1952, RAMC 761/4, WL.
- Lt Col R.L. Marks, "A Medical Picture of the Forward Areas in Korea," text of a presentation to the Royal Society of Medicine's United Service Section, 10 June 1953, RAMC 1763, WL.
- Maj. Montgomery, Questionnaire on Korean Campaign: Answers, Para.11, RAMC 761/4, WL.
- Maj. P.M. Brentland, DDMS 1 Commonwealth Division, "Questionnaire on Campaign in Korea," RAMC 761/4, WL.
- Neville Hughes, "Korea 1951-51," Box 16, Cabinet No.1, Battalion Welch 1951/1951, Korea, Combined Acc. Nos. 1993/182 & 183, Royal Welsh Regimental Museum, Brecon, UK.
- Sgt. 'Tug' Wilson, 'New Year's Eve Korea 51/52', Box 16, Cabinet No.1, Battalion Welch 1951/1952, Korea, Combined Acc. Nos. 1993/182 & 183, Royal Welsh Regimental Museum, Brecon, UK.
- Transcript of interview Philip Miles (Pip) Chambers, officer, Kings Shropshire Light Infantry, 6005/SHYKS/2008/2677/26, Shropshire Archives, Shrewsbury, UK.
- Typescript of interview with Private George Andrew Casewell, Kings Shropshire Light Infantry, 6005/SHYKS/2008/2677/24, Shropshire Archives, Shrewsbury, UK.

Published

- Anderton, Colonel G. O.B.E, 'The Birth of the British Commonwealth Division, Korea', *Journal of Royal Army Medical Corps*, 99-1 (1952), pp. 44-54.
- Anon, 'Mountain Warfare', *Journal of the Royal Army Medical Corps*, 1 June 1951, pp. 391-393.
- _____, 'The Medical Services in Korea', *The Lancet*, 261-6751 (1953), p. 154.
- Brentland, Maj. P.M., 'The Principles of Cold Injuries', *Journal of the Royal Army Medical Corps*, 100-2 (1 April 1954), pp. 88-98.
- Editorial, 'Medical Services in Korea', *The Lancet*, 257-6651 (1951), p. 896.
- _____, 'The Lessons of War', *The Lancet*, 266-6808 (1954), p. 400.
- Flood, J.J., 'Psychiatric Casualties in U.K. Elements of the Korean Force: December

- 1950-November, 1951', *Journal of the Royal Army Medical Corps*, 100-1 (1954), pp. 40-47.
- Harris, F. and Hooper, P.D., 'The Medical Services in the Korean War', *The Lancet*, 261-6751 (1953), pp. 134-136.
- Harsant, A.G., 'Proceedings of Royal Society of Medicine on Medical Problems in Korea', comments made by Gen. A.G. Harsant, *The Lancet*, 261-6774 (1953), p. 1289.
- Harvey, E. Bruce 'Casualty Evacuation by Helicopter in Malaya', *British Medical Journal*, 2-4730 (1951), p. 542.
- Latta, Surg. Comdr. R.M., 'Management of Battle Casualties from Korea', *The Lancet*, 257-6648 (1951), pp. 228-231.
- Marks, R.L., 'Proceedings of the Royal Society of Medicine on Medical Problems in Korea', comments made by Lt Col R.L. Marks, *The Lancet*, 261-6774 (1953), p. 1288.
- Royal Society of Medicine, 'Medical Problems in Korea', *The Lancet*, 261-6774 (1953), p. 1289.
- Watts, Lt Col J.C., 'Cold Injury in Korea', *Journal of the Royal Army Medical Corps*, 97-6 (18 January, 1952), pp. 1-7.
- Watts, J.C., 'War Surgery in the Korean Campaign', *Postgraduate Medical Journal* (1 January 1954), pp. 22-29.

Websites

- The British Army, http://www.army.mod.uk/royalsignalsmuseum/equipment/wireless_set_no_19.htm.
- The U.S. Army Center of Military History, <https://history.army.mil/reference/korea/kw-chrono.htm>.

<Secondary Sources>

- Bonanno, Joseph, "The Helicopter in Combat," *Ordnance*, 38-203 (1954), pp. 868-72.
- Barr, Justin and Montgomery, Sean, "Helicopter medical evacuation in the Korean War: Did it matter?," *Journal of Trauma Acute Care Surgery*, 87 (2019), 1S Suppl. 1, S10-S13.
- Bergin, Bob, "In 1940s Burma, a New Kind of Flying Machine Joined the

- War: The Helicopter,” *Air and Space Magazine* (August 2019), <https://www.smithsonianmag.com/air-space-magazine/helicopter-goes-to-war-180972605/>.
- Boyne, Walter J., *How the Helicopter Changed Modern Warfare* (Gretna, La. : Pelican, 2011).
- Chinnery, Philip D., *Vietnam: The Helicopter War* (Annapolis: Naval Institute Press, 1991).
- Connor, Roger, ‘Medevac from Luzon’, *Air and Space Magazine* (July 2010), <https://www.smithsonianmag.com/air-space-magazine/medevac-from-luzon-187256/>.
- Copp, Terry and McAndrew, Bill, *Battle Exhaustion: Soldiers and Psychiatrists in the Canadian Army, 1939-1945* (Montreal: McGill-Queen’s University Press, 1990).
- Drew, Robert, *Commissioned Officers in the Medical Services of the British Army 1660-1960, Volume II* (London: The Wellcome Historical Medical Library, 1968).
- Driscoll, R.S., “New York Chapter History of Military Medicine Award. U.S. Army medical helicopters in the Korean War,” *Military Medicine*, 166-4 (2001), pp. 290-296.
- Fitzpatrick, K. Meghan, “Prostitutes, Penicillin and Prophylaxis: Fighting Venereal Disease in the Commonwealth Division during the Korean War, 1950-1953,” *Social History of Medicine*, 28-3 (2015), pp. 555-575.
- _____, *Invisible Scars: Mental Trauma and the Korean War* (Vancouver: UBC Press, 2017).
- Grey, Jeffrey, *The Commonwealth Armies and the Korean War: An Alliance Study* (Manchester: Manchester University Press, 1988).
- Harrison, Mark, *Medicine and Victory: British Military Medicine in the Second World War* (Oxford: Oxford University Press, 2004).
- _____, *The Medical War: British Military Medicine in the First World War* (Oxford: Oxford University Press, 2010).
- Kim, Jeong-Ran, “Malaria and Colonialism in Korea, c. 1876-c.1945,” *Social History of Medicine*, 29-2 (2016), pp. 360-383.
- Kreisher, Otto, “Rise of the Helicopter during the Korean War,” *History Net* (2011), <https://www.historynet.com/the-rise-of-the-helicopter-during-the-korean->

war/?f

- Linklater, Eric, *Our Men in Korea* (London: HMSO, 1952).
- Matthew, Allen, *Military Helicopter Doctrines of the Major Powers, 1945-1992* (Westport, CT: Greenwood Press, 1993).
- Mackenzie, S.P., "Cold Comfort: The Politics of Winter Kit for British Troops in Korea, 1950-53", *Journal of the Society for Army Historical Research*, 89-359 (2011), pp. 241-260.
- McIntyre, Darryl, "Australian Army Medical Services in Korea," in Robert O'Neil ed., *Australia in the Korean War 1950-53*, Vol.1 (Canberra: The Australian War Memorial and the Australian Government Publishing Service, 1981), pp. 570-585.
- Nair, E.J., *A British Army Nurse in the Korean War* (Stroud: Tempus, 2007).
- Olson, C.M. et al, "Forward Aeromedical Evacuation: A Brief History, Lessons Learned from the Global War on Terror, and the Way Forward for US Policy," *Journal of Acute Trauma Care Surgery*, 75-2 (2013), Suppl. 2, S130-36.
- Parker, Lt Col Gary W., *A History of Marine Medium Helicopter Squadron 161* (Washington DC: US Marine Corps History and Museums Division, 1978).
- Schrader, Charles R., *The First Helicopter War: Logistics and Mobility in Algeria, 1954-1962* (Westport, CT: Praeger, 1999).
- Schwarzkopf, Konrad and Schwarzkopf, Charlotte, "The First German Army Helicopter Evacuation Mission in World War 2," *Air Medical Journal*, 41-2 (2022), pp. 257-258.
- Sibul, "Eric, A. Medical Railroading during the Korean War: 1950-1953," *Railroad History*, 204 (2011), pp. 64-80.
- Whatmore, D.E., *One Road to Imjin: A National Service Experience* (Cheltenham: Dew Line Publications, 1993).
- Zimmerman, D.J., "Battlefield Medicine in the Korean War," *Veterans Affairs and Military Medicine* OUTLOOK (Spring, 2021), https://issuu.com/faircountmedia/docs/veterans_affairs_military_medicine_outlook_spring_/s/12249293.

Abstract

Casualty Evacuation in Korea, 1950-53: The British Experience[†]

Mark Harrison*

The Korean War was the first conflict in which helicopters were used extensively for casualty evacuation but their contribution to medical evacuation at that time is disputed. On the one hand, many cases undoubtedly survived because of helicopter transportation; on the other, the proportion of casualties evacuated appears to have been small and difficult to determine precisely. Taking the British army as a case study, this article looks more closely at arrangements for casualty evacuation in Korea, assessing the role of helicopters in relation to other elements of the evacuation system and its operation as a whole.

The article is divided into several sections. The first examines the command structure of the medical system in Korea, which extended as far back as hospitals in Japan. It shows how medical support for British forces was closely integrated with that of other Commonwealth forces. It notes that rapid and effective integration was a major factor in the success of medical evacuation because it allowed ideas and equipment to be

[†] This work was supported by an Arts and Humanities Research Council grant, *Medicine and Conflict: c. 1945-c. 1980: The United Kingdom and the 'Savage Wars of Peace,'* AH/T013656/1.

* Professor, Faculty of History, University of Oxford / Email: mark.harrison@history.ox.ac.uk

Received: Jun. 1, 2023; Reviewed: Jul. 3, 2023; Accepted: Aug. 19, 2023

shared easily and because it fostered a spirit of cooperation. This section also highlights the Second World service of all senior Commonwealth medical officers as a factor conducive to integration. The second section provides an overview of the chain of evacuation from the frontline to hospitals in Japan. It describes the functions of the different medical institutions along the chain and how they were connected. Among other things, it shows how the chain for British and Commonwealth troops intersected with medical units of the United States such as Mobile Army Surgical Hospitals and hospital trains. In the third section of the article, there is a detail examination of evacuation by helicopter, describing how it was arranged, what its limitations were, and what types of casualty were evacuated. It estimates the proportion of casualties that were evacuated by this means. The fourth and fifth sections highlight the importance of command decisions in the effective working of the evacuation system. The fourth concentrates on the evolution of a system of forward treatment of minor cases, looking at the challenge posed by disease and other non-battle casualties. The fifth and final section of the article describes how the system of evacuation functioned as a whole, including the different means used to carry the sick and wounded in addition to helicopters. It stresses the importance of coordination between these different elements and places particular emphasis on the value of wireless communications.

The article concludes that the success of casualty evacuation in Korea depended less on any single method of transportation than on effective command and control. In this respect, communication between constituent units of the evacuation chain and cooperation between British and other UN forces was crucial. Of equal and perhaps even greater importance was the decision to implement a policy of forward

treatment of sickness and minor injuries. Without such a policy, the lines of evacuation would inevitably have become congested, having a detrimental effect on casualty survival rates. This policy drew on the lessons of the two world wars which were still relatively fresh in the minds of medical commanders. Although far less striking than the advent of the helicopter, prior knowledge of coalition warfare and the handling of mass casualties was crucial to medical success. If there is a lesson to be learned from the Korean War for own times, it is probably this.

Key words : casualty, evacuation, helicopter, ambulance, radio, British Army, British Commonwealth