Clinical

Contingency: the likely spectrum of injuries based upon a review of three recent undeveloped theatres of operations - CORPORATE, TELIC 1 and HERRICK 4

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Abstract

Contingency operations are by their nature unpredictable and high-risk, with undeveloped logistical support, and medical provision is no exception. Can the contingency experiences of the last three decades help to predict the type of casualties that may be seen in future contingency operations? By reviewing published casualty statistics available from Operations CORPORATE, TELIC 1 and HERRICK 4 it can be demonstrated, unsurprisingly, that gunshot wounds and blast injuries dominate battle injuries, but that disease non-battle injuries also constitute a significant draw on medical provision, particularly gastrointestinal illness in hot environments. Planning for medical support for future contingency operations should anticipate this. Disease non-battle injuries have the potential to render a large proportion of a force combat-ineffective, requiring preventative measures to avoid overwhelming the available medical facilities. When operations occur in populated areas civilian casualties are likely to pose difficulties to medical support, due to issues with onward evacuation and a wider case mix, such as paediatrics.

Introduction

The Oxford English Dictionary defines contingency as “a future event or circumstance which is possible but cannot be predicted with certainty”. Only Operation (Op) CORPORATE, the retaking of the Falkland Islands, could be truly classified as such. Op TELIC 1 (the invasion of Iraq between 19th March and 28th April 2003) was the war-fighting phase of a Divisional-size commitment as part of a US led ‘coalition of the willing’, which had a protracted political build-up, if not a military one. Op HERRICK 4 constituted a planned battlegroup deployment as part of the North Atlantic Treaty Organisation (NATO) International Security Assistance Force’s (ISAF) move into Southern Afghanistan in May 2006. The UK’s deployment in Helmand Province was publicly announced 5 months before military operations there officially started - during which time the main operating base, Camp Bastion, was constructed and was intended to support civilian-led ‘nation building’ efforts. All three operations have in common the undeveloped nature of their theatre, with minimal or no established combat service support infrastructure. However, while CORPORATE and TELIC 1 were conventional war fighting operations, HERRICK 4, despite initial planning assumptions, evolved rapidly to a violent counterinsurgency operation.

Military or civilian

Due to the sparsely-populated nature of the Falkland Islands in 1982, and the fact that fighting occurred for the most part away from the major population centres on the islands, the civilian casualty rate was very low. There were in fact only three civilian deaths during CORPORATE, all as a result of a naval bombardment of Port Stanley. Consequently RN and Army medical units were never troubled by the difficulties of treating, holding and evacuating civilian personnel, although since they were British citizens few diplomatic difficulties would have been expected in processing the Islanders through the UK aero-medical evacuation chain, in contrast to the situation with local civilians in future conflicts.

Southern Iraq is a considerably more densely-populated area than the Falkland Islands: it was to be expected, therefore, that during TELIC 1 the UK’s forward Field
Cold injuries, which have been discussed. An estimated 37% of casualties treated at the Ajax Bay facility were classified DNBI (6). 9% of the admissions to the hospital ship SS UGANDA, to which all casualties who could not be returned to battle were eventually evacuated during hostilities, were classed as ‘non-battle related conditions’ (3). This statistic includes the Argentinian wounded, but is an unreliable figure when it is considered that ‘trench foot’ cases were accounted for in the ‘battle injuries’ figures. While accounts from the Army Forward Surgical Teams acknowledge that medical cases did pass through their facilities, no further details have been published. This suggests that, beyond the various cold injuries (5), no one other type of DNBI became a significant factor, although clearly they must have existed.

By comparison, extensive statistics exist classifying medical facility attendances for TELIC 1 and HERRICK 4, due to the existence of detailed attendance registers, which demonstrate that the DNBI caseload far outweighed the battle injuries. 95% of all attendances to the Field Hospital at Shaibah Airbase were DNBI; just over half of all patients attending the facility were admitted, and of those 58.6% were due to gastrointestinal illness. This figure is known to be an underestimate, as the scale of the problem led to the establishment of an infectious disease assessment area towards the end of the war fighting phase, attendances at which were not recorded on any official register (1).

HERRICK 4 followed a similar pattern to TELIC 1, with 84% of the 1348 total attendances not attributable to enemy action. Of the 620 cases seen that were classified as medical, 42% were due to gastrointestinal illness (2).

Heat or cold
All three of the operational theatres discussed demonstrated extremes of temperature. The Falklands War was fought at the beginning of a South Atlantic winter with temperatures ashore averaging just above freezing, with frequent strong winds and precipitation. Although there were certainly more cases, 70 ‘trench foot’ casualties were evacuated that could be attributed to the weather conditions, ground composition and lack of available shelter. Studies on groups of Royal Marines following the conflict demonstrated residual cold sensitivity with moderate cold stimuli causing pain (3), and there were cases of such severe feet swelling due to non-freezing cold injury that soldiers were unable to put their boots back on (4).

While Iraq and Afghanistan are capable of very low temperatures during the winter months, both TELIC 1 and HERRICK 4 occurred during the warmer months of their respective countries. However, heat illness accounted for just 1% of emergency attendances on TELIC 1 (1) and 1.4% on HERRICK 4 (2). This could be explained by the deployment for both operations occurring in the cooler spring months with the resulting gradual acclimatisation to the hottersummer temperatures. Direct entry into theatre during the Iraqi summer months, as was the case at the end of TELIC 1, resulted in a heat injury rate of 14% of all emergency attendances to hospital (1).

Disease Non-Battle Injury (DNBI) or battle injury
Comprehensive casualty breakdown statistics are unfortunately not available for CORPORATE, although we know that the problem of DNBI was significant, particularly cold injuries, which have been discussed. An estimated 37% of casualties treated at the Ajax Bay facility were classified DNBI (6). 9% of the admissions to the hospital ship SS UGANDA, to which all casualties who could not be returned to battle were eventually evacuated during hostilities, were classed as ‘non-battle related conditions’ (3). This statistic includes the Argentinian wounded, but is an unreliable figure when it is considered that ‘trench foot’ cases were accounted for in the ‘battle injuries’ figures. While accounts from the Army Forward Surgical Teams acknowledge that medical cases did pass through their facilities, no further details have been published. This suggests that, beyond the various cold injuries (5), no one other type of DNBI became a significant factor, although clearly they must have existed.
Table 1: Composition of battle casualties by operation

<table>
<thead>
<tr>
<th>Operation</th>
<th>Battle Injuries %</th>
<th>Total Battle Injuries</th>
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<tbody>
<tr>
<td></td>
<td>GSW</td>
<td>Blast</td>
</tr>
<tr>
<td>CORPORATE</td>
<td>36</td>
<td>43</td>
</tr>
<tr>
<td>TELIC 1</td>
<td>57</td>
<td>43</td>
</tr>
<tr>
<td>HERRICK 4</td>
<td>44</td>
<td>56</td>
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*Burns cases seen but not in battle injury statistics suggesting other cause

The most common mechanism of wounding after GSW and explosives on CORPORATE was burns, which accounted for 21% of evacuated British casualties. The vast majority of these casualties came from a single incident, namely the bombing of RFA SIR GALAHAD (3).

Just over half of the battle injuries seen during TELIC 1 were GSW, the remainder being accounted for by fragmentation or blast mechanisms. There were 73 burns attendances of which the majority were civilians. These cases were not included in the battle injuries statistic, so it may be assumed that they were not directly caused by hostilities (1).

HERRICK 4 saw the balance of battle injuries shift back towards those reported during CORPORATE, with 44% of battle injuries attributable to GSW, and the remainder through an explosive mechanism. 60 cases of burns were seen by Bastion Role 3 Hospital during the same period, although none appear as part of the battle injury statistics (2).

Discussion

There are a number of limitations to the above review. In the case of the Falklands War, casualty statistics were not universally collected by a single means in a single place. The Army and Royal Navy Medical Services of that time were not as accustomed to collaborating as they are today, and consequently many of the statistics include cases seen purely by Army Surgical Teams and exclude those of the more numerous RN Teams, both embarked and disembarked. However, the figures are likely to be a valid indicator of casualty trends.

The data available from all three operations only includes those cases seen at the respective Role 2 or 3 medical facilities. No data is available for attendances at Regimental Aid Posts (RAP) or Company Aid Posts (CAP). While this is unlikely to bias any of the battle injury statistics, as all such wounded are highly likely to pass through these facilities, it does mean that the DNBI data is likely to be an underestimate for all of the operations discussed, as the RAPs or CAPs attempt to treat these patients as far forward as they can. Based on these three immature operations, what can we learn about what may be expected from any future contingency operations?

In the 30 years that have passed since Op CORPORATE, the Falklands War has turned out to be an anomaly with its negligible civilian involvement. Since the Falklands War the British military have been tasked with operating frequently in more heavily-populated areas on humanitarian-focused missions. While it should not be expected that civilian wounded or sick would be any more complicated to treat than the deployed military population, their significance is magnified by the difficulty of their onward movement from battlefield medical facilities due either to diplomatic restrictions or to lack of civilian medical infrastructure.

The operations do not differ significantly in the proportion of battle injuries attributable to gunshot wounds compared to blast mechanisms, ranging from a third due to GSW for CORPORATE and HERRICK 4 to just over half in TELIC 1. CORPORATE accounted for the greatest number of battle injuries seen. No firm conclusions can be drawn from the data: CORPORATE and TELIC 1 were both operations against conventional enemy forces, yet produced a battle injury mix at opposite ends of the spectrum, with HERRICK 4, a counterinsurgency operation, in the middle. This suggests that battle injury patterns cannot be assumed from the mode of conflict. Expectations will be influenced by the intelligence available on the enemy force and their expected utilisation of artillery, mines or Improvised Explosive Devices (IEDs).

No conclusions can be drawn from the burns statistics either. CORPORATE’s burns numbers are hugely influenced by a single incident, and TELIC 1 and HERRICK 4’s data is not specific enough to determine causation. History would suggest that naval operations and the use of armoured vehicles increase the likelihood of burns casualties. Non-battle related burns in the civilian population, particularly paediatric, are a feature of social deprivation in developing countries due to the practice of cooking over open fires (7).

In considering conditions of environmental temperature it is not a requirement to deploy outside of the UK. The
prolonged cold and wet conditions that are associated with development of non-freezing cold injury are frequently present in the UK and continue to cause morbidity in service personnel (4). Therefore, cold injuries should be expected to some degree on any contingency operation. However, it is hoped that the improvements in issued boots and clothing since the Falklands conflict, and repeated education on the subject, will mean that service personnel are never affected in such numbers again. Likewise, heat illness can occur whilst training in the UK in either abnormally hot or more mild temperatures (8). Heat illness may be a greater cause for concern in contingency operations, as the fast-moving nature of any such operational deployment is unlikely to allow much time for the only effective countermeasure, namely acclimatisation.

Historically DNBI has always significantly outnumbered battle injury in a deployed force, and therefore the same pattern should be expected and anticipated in future contingency operations. The problem of DNBI can be minimised by preventative measures (e.g. good field hygiene, malaria prevention, effective combat boots etc.) but should always be expected. Diarrhoea and vomiting is an ubiquitous consequence of suboptimal infrastructure due to change in climate, diet and its highly contagious nature, and can rapidly render units temporarily combat-ineffective.

Recommendations

The spectrum of battle injury that one can expect on contingency operations is difficult to predict specifically with any accuracy. The experience of the two most recent immature operations indicates that disease and management of non-battle injury will continue to be the predominant challenge to the deployed medical services. Training should focus on a wide spectrum of injuries, but include significant training on managing DNBI. The relevant medical modules for such deployments should also reflect the DNBI threat to the population at risk. Paediatrics is an example of an area that is often overlooked and poorly resourced, but which in both HERRICK and TELIC required support not initially available. The casualty estimate should take into account both friendly and enemy forces, as well as the civilian population, to measure the threats accurately: but, as this review has shown, expect the unexpected.

References


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