

A Survey of Primary Health Care Provision at a Forward Operating Base in Afghanistan During Operation HERRICK 10

OJ Hawksley¹, J Jeyanathan², K Mears³, R Simpson⁴

¹Regimental Medical Officer, 40 Regiment Royal Artillery, Lisburn, BFPO 801; ²Specialty Registrar, James Cook University Hospital, Middlesbrough; ³DMS Lecturer in General Practice, RCDM, Birmingham; ⁴Defence Professor of General Practice, RCDM, Birmingham.

Abstract

Objectives: To record and discuss patient morbidity treated in a Forward Operating Base in Afghanistan and explore who delivers the care.

Methods: Prospective case series of all patients presenting to the Regimental Aid Post during a summer tour of Afghanistan.

Results: 1903 episodes of care were delivered over a 6-month period in 2009. Afghan patients represented 32.8% of all cases seen. The majority of cases were related to primary care. The most common types of presentations were dermatological, other general medical conditions, other injuries and disorders of the digestive tract. Combat Medical Technicians (CMT) were able to deal with 47% of all cases using the CMT protocols.

Conclusions: Primary care in forward areas involves patients from a spectrum of backgrounds with multiple morbidities and diagnoses. Consideration should be given for further research into the area of the consultation at the front line to aid patient care. Combat Medical Technicians were able to treat nearly 50% of all cases by themselves but this left a significant number where the assistance of a Medical Officer was required. Consideration should be given for further research into preparation of Combat Medical Technicians for autonomous working at the front line.

Introduction

Little has been published regarding the patient mix of forward Primary Health Care (PHC) in Afghanistan. The supported population for this work was a formation of approximately battalion strength International Stabilisation Assistance Force (ISAF) soldiers supporting an Afghan National Army (ANA) battalion and Afghan National Police (ANP) - together termed the Afghan National Security Forces (ANSF). The Battlegroup was centred on a major town in Helmand province, Southern Afghanistan in the summer of 2009. Surrounding the District Centre (DC) were various checkpoints and patrol bases, which had at least one Combat Medical Technician class 1 (CMT1) and one CMT2 available for medical cover. There were also several ISAF Operational Mentoring Liaison Teams within Afghan Army units; each of which included a CMT1 for support.

The Forward Operating Base (FOB) Regimental Aid Post (RAP) in the DC contained the battlegroup Medical Officer (MO) – a General Duties MO with three and a half years postgraduate experience. The RAP acted as the referral point for the outlying CMTs as well as providing direct front line medical support.

In January 2009 a Non-Governmental Organisation opened a comprehensive Health Clinic (HC). There were also other private medical practices and a dentist, although it was not possible to

confirm practitioner's qualifications. The HC provided limited primary care along with basic X-ray and blood testing. There was no local surgical capability.

Data Collection

Consultations were recorded in the sick book and weekly EPINATO data was sent to the Joint Force UK Medical Group based in Camp Bastion. An Excel spreadsheet (Microsoft Corp, Seattle) was designed to capture the date of presentation, who saw the patient, the diagnosis, the EPINATO/J97 grouping of the diagnosis and treatment. The original aim was to provide a logbook of cases for CMT and MO reflective practice. It was also further recorded if the patient required IV access, suturing or intervention by the Medical Officer, beyond the CMT Treatment Protocols [1]. If a MO saw the patient but the condition fell within the CMT protocols this was recorded as MO not being required. Patient disposal (returned to duty, light duties, bedded down, referred to specialists, CASEVAC priority) was also recorded. All episodes of care were amalgamated into one record so if a patient required daily dressings - this was recorded as a single episode of care.

Results

Between April – October 2009 the RAP provided care for 1903 cases, a mean of 10.3 new cases per day, although there was a wide variation in weekly attendance figures (Figure 1). Fifty-five cases were due to major trauma and a further seven were acute medical emergencies, meaning that the vast majority were primary healthcare (PHC) cases.

Corresponding Author: Capt O J Hawksley,
Regimental Medical Officer, 40th Regiment Royal Artillery,
Lisburn, BFPO 801.
Tel 02892 262640 Email: ojhawksley@hotmail.com



Figure 1: Weekly attendance figures (new episodes) during the study period

The patients came from a variety of backgrounds (Table 1). The majority were UK Military, then Afghan Army and Afghans employed as interpreters and in other roles.

ISAF Presence	Number (% of total)	Afghan	Number (% of total)
UK Military	1263 (66.4%)	ANA	346 (18.2%)
UK Civilian (e.g. FCO)	13 (0.7%)	Interpreter	87 (4.6%)
Other	<5 (0.2%)	ANP	67 (3.5%)
		Locally Employed Civilian	53 (2.8%)
		Local National (LN)	38 (2.0%)
		Local National Child	20 (1.1%)
		Afghan Government	<5 (0.2%)
		Other	7 (0.2%)
ISAF Sub- Total	1199 (68.1%)	Afghan Sub- Total	624 (32.8%)

Table 1 Background of presenting patients

One author (OJH) arbitrarily graded the urgency of conditions; most were routine and reviewed during normal hours (0800-2200)(Table 2).

Priority	Descriptor	Number
1	Emergency	48
2	Urgent	35
3	Soon	145
4	Routine	1667
5	Self Aid appropriate	8
Total		1903

Table 2 Urgency of presentation

Table 3 shows the grade of medic seeing the patient. CMT2s reviewed most patients with an MO present in the background of all consultations to supervise as required.

Role	Number (% of Total)
GDMO	516 (27.1%)
CMT1	565 (29.7%)
CMT2	804 (42.2%)
Unknown	11 (0.6%)

Table 3 Number of Consultations aggregated by Qualification of Practitioner

Initially a majority of medics were uncomfortable in dealing with PHC issues. Many required supervision to examine patients and utilise protocols; after approximately one month all were confident with following these.

Disease Profile

Each week EpiNATO data was sent to higher formations to allow for disease surveillance. The grouped data for all attendances (ISAF and Afghan) is in Table 4.

EPINATO does not include preventative health measures such as smoking cessation; these were included under Group 99 to better reflect the full nature of deployed PHC. The 15 most frequent conditions will be examined in turn, with the commonest first, to examine how the PHC protocols worked for these presentations, as well as other related issues.

Diarrhoea and/or Vomiting

There were 117 cases of Diarrhoea and/or Vomiting (D &/or V) in our location. 100 cases were from ISAF, with 62 cases occurring in the first two months of the tour. Not included in this total are 16 cases of Dysentery, only one of which was ISAF. On arrival in the DC the high water table required that the toilets were half oil-drum latrines (ODL). These were burnt off using diesel twice a day. The toilets were located 25m from the kitchens. The resulting cloud would stay over the camp for the majority of the day providing a highly unpleasant aroma. Following the D &/or V outbreak, authorisation was gained for WAG Bag (American Innotek Inc, Escondido, USA) toilets to be used. These bags are used, and then sealed and buried resulting in little opportunity for flies to transport faecal matter around the camp. Figure 2 charts the marked drop in D&V cases once they were introduced.

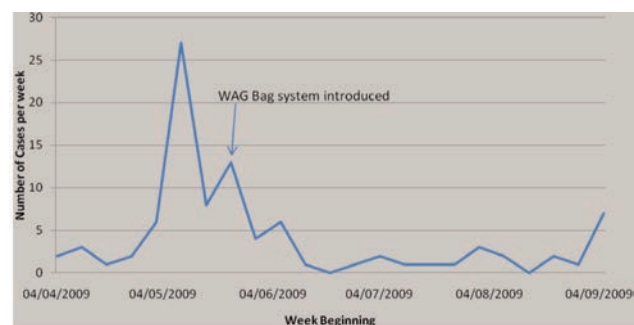


Figure 2: Number of ISAF Diarrhoea and/or Vomiting Cases per week

Due to the hot climate and large sweat losses in addition to GI losses, aggressive IV fluids were used to keep patients hydrated. For CMTs to deal with the large numbers of patients, a local

EPINATO Code	Description	Number	Percentage
1	Intestinal Infectious Disease	135	7.1%
2	Sexually Transmitted Infection Incl HIV	33	1.7%
3	Other Infectious & Parasitic Disease	9	0.5%
4	Alcohol & Drug Abuse	<5	0.2%
5	Mental Disorders	<5	0.2%
6	Stress Reaction	7	0.4%
7	Eye Disorder	58	3.0%
8	Ear, Nose and Throat	131	6.9%
9	Resp Tract Infection	51	2.7%
10	Disease of Teeth and Oral Cavity	102	5.4%
11	Disorders of Digestive Tract	177	9.3%
12	Gynaecological	5	0.3%
13	Dermatological Conditions	448	23.5%
14	Disorders of Knee	22	1.2%
15	Disorders of Back	71	3.7%
16	Other MS disorders	102	5.4%
17	Complications of Medical Care	<5	0.2%
18	Other Diseases / Conditions	211	11.1%
19	Injuries due to Transport	6	0.3%
20	Injuries due to Mil Training	<5	0.2%
21	Injuries due to Sport	11	0.6%
22	Injuries due to Hostile Action	67	3.5%
23	Injuries Other	194	10.2%
24	Climatic Injuries	11	0.6%
25	CBRN	<5	0.2%
99	Not included in EPINATO	46	2.4%

Table 4: EPINATO Data for all patients. HIV (Human Immunodeficiency Virus); MS (Musculoskeletal); CBRN (Chemical, biological, radiation, nuclear)

protocol was adopted; all vomiting patients were treated with Buccastem (buccal prochlorperazine) and all patients with resting pulse >100bpm were given IV fluids. If diarrhoea lasted more than three days they were treated with Ciprofloxacin for presumed bacterial gastroenteritis. The only requirement for the MO to become involved was dehydration, dysentery or prolonged diarrhoea.

The majority of Dysentery and Afghan D &/or V patients were from the ANA. Early in the tour the ANA's main well was tested, which demonstrated gross contamination with coliforms and E. coli. The Royal Engineers had no spare water purification equipment and so the ANA were offered the use of the ISAF filtered and treated water source. Since this involved greater distance and less convenience the ANA rarely used filtered water and drank straight from their well.

Viral Illness

There were 68 cases of Viral Illness during this period; 36 were ISAF, 32 were Afghan. The dry, dusty climate and confined living conditions may have contributed to the precipitation of these cases. These patients were treated with Paracetamol or Ibuprofen. Thirty-two patients (47.1%) required an MO's assessment. The majority of these cases had fever or an increased resting heart rate. One ANA soldier presented with septic shock and this was later confirmed by Camp Bastion to be caused by malaria. There was no significant difference between ISAF and Afghan patients requiring an MO.

Back Pain

There were 66 cases of Back Pain during the tour, 31 ISAF and 35 Afghans. The amount of weight carried by the two forces varies considerably, ISAF carry up to 50kg of weight, which is generally more than the ANSF. Thirty-seven patients (17 ISAF, 20 Afghan) (56.1%) required assessment by the MO, the remaining 29 not requiring assessment were nearly evenly split between ISAF and Afghan. Afghan patients frequently confused the CMTs by presenting with "kidney pain" that had no features of renal colic or kidney pathology and was clearly lumbar back pain. After three weeks of increased ANSF "kidney pain" attendance, the ANSF medic was taught about back pain and was given a simple algorithm to follow. This was only hampered by his lack of simple analgesia. The language of the protocol also confused the CMTs, who did not understand the meaning of "paraesthesia". OJH was also concerned that fever, night sweats and weight loss were not part of the protocol, so medics were instructed to specifically ask all Afghan patients about these features in case of spinal tuberculosis. One locally employed civilian (LEC) was referred for x-ray at the local HC and had features of a spinal lesion.

Headache

Of the 62 patients seen for headache a majority (38) were ISAF. CMTs felt competent dealing with headache, as only eight required an MO (5 ISAF, 3 Afghan). The fact that the protocol comes as a flow chart may have helped them.

Musculoskeletal Pain

This diagnosis was used for all musculoskeletal pains which did not fall into the following categories: back pain, neck pain, chest pain, knee pain, ankle pain, foot pain or shoulder pain or fractures (Table 5). The main conditions seen were calf, thigh and forearm pain.

Component	No (%)		No (%)
ISAF	36 (60.0%)	RMO Required? Yes / No	18 / 18 (50.0% each)
Afghan	24 (40.0%)	RMO Required? Yes / No	8 / 16 (33.3 / 66.6%)

Table 5: Musculoskeletal Pain

For ISAF patients the MOs opinion was mainly sought for prognosis or recurrence of a chronic problem. Afghan patients generally presented with short duration strained muscles with obvious trigger points.

Non-specific Abdominal Pain

Abdominal Pain was a frequent complaint from the ANSF. Analysis showed that Afghans presented with abdominal pain far more frequently (40 Afghans versus 15 ISAF soldiers). In accordance with the protocols, a MO saw all patients with abdominal pain. CMTs also reported they were unsure how to examine the abdomen other than what they had been taught in BATLS; their knowledge of the anatomy and physiology of the GI system was also poor. This was addressed through a series of teaching sessions and by the end of their time in the RAP most CMTs could identify when they should be worried. Other GI complaints were also common with 30 cases of indigestion and 22 cases of Gastro Oesophageal Reflux Disease (GORD) being diagnosed.

Major Trauma

51 cases of Major Trauma were treated during the period. The majority were from gunshot wounds and Improvised Explosive Devices. Also included are falls from height and road traffic collisions. The patients included ISAF, Afghan soldiers and police as well as civilians. All were evacuated to hospitals for surgical care having been stabilised appropriately.

Minor Wounds

Fifty-three patients were treated for minor wounds. This category did not include facial, hand or finger injuries. Cleaning of wounds was an extremely common procedure being performed in 147 cases (6.1% of all total cases). All CMTs had previously been trained to use sterile water to clean wounds; this was changed to using standard drinking water as evidence shows there is no difference in infection rates between the two [2], and drinking water was more available with a lower logistic cost.

Hayfever

A total of 46 patients were diagnosed with Hayfever, most of the cases (38) were ISAF and only 2 (1 ISAF and 1 Afghan) required the MO. The majority (32 patients) presented in late April and May when the wheat and poppy harvest was ongoing. The maize crop did not seem to cause the same level of problems.

Finger Injury

There were 45 cases of finger injury. The majority of cases (39) were ISAF, and 16 required an MO. Two cases were evacuated after tendons were completely divided, with a further case sent rearwards for X-rays. Three nail bed repairs were carried out in the RAP.

Mouth Ulcers

Thirty-five patients had mouth ulcers, of which only five were Afghan. The MO was required for only two cases and this was to

adjudicate whether the mouth ulcers were due to the Chloroquine/Paludrine anti-malarials issued to all soldiers. The usual treatment was to issue Bonjela and advise return if the mouth ulcers were still present in a week.

Dry Skin

Dry skin was a common problem with 35 cases. Twenty-three were ISAF and 12 Afghan. Only three required the MO. Dry skin and hand dermatitis (13 cases) were common. Part of the blame was placed on the issued washing powder that soldiers used to hand wash their kit, which was highly caustic.

Smoking Cessation

Smoking Cessation was offered once a supply of nicotine replacement products were delivered through the supply chain. Thirty-four patients took up the offer, including one interpreter and one ANA soldier. The MO was required for all these patients due to no CMTs being non-smokers and therefore not qualified as Smoking Cessation Advisors - it is possible for non-smoking CMTs to do this course. The long-term efficacy of this service was not recorded.

Sweat Rash

Thirty-one patients required treatment for sweat rash, of which two were Afghan. All cases were capable of being dealt with by CMTs. There were also 30 cases of the related condition of athlete's foot. The hot conditions combined with body armour and wet feet from sweat and wadi crossings accounts for the frequency of these conditions. Dermatological conditions were the most common EPINATO group, in addition to dry skin discussed above other common diagnoses included non-specific rash (29 cases), abscesses (24 cases), blisters (22 cases) and acne (10 cases).

Indigestion and Dyspepsia

There were 30 cases of indigestion, 16 from Afghan forces and 14 from ISAF forces. 14 required a MO. This was mainly for cases that did not settle on simple antacids. There were no facilities for H. Pylori testing in this forward facility.

Returned to Duty

One of the roles of the Medical Services is to conserve the fighting strength. Almost 85% of the patients seen were immediately returned to duty. Of those that were not, 377 man-days were lost due to illness for those given light duties or bedded down. The destination of those sent outside of the FOB are shown in Table 6.

Destination	Number
MERT/Pedro	80
Bastion-GP	16
Bastion R3-Surgery	10
Bastion R3-Orthopaedics	10
Bastion-Dentist	9
Camp Hero	8
Bastion-Physiotherapy	6
Local Doctor in Bazaar	5
Bastion-CPN	<5
BOST Hospital	<5

Table 6: Disposal of Patients outside of the FOB

The urgency of evacuation was not the same for all cases. Less than one-quarter was deemed to require immediate MEDEVAC.

IV Access

IV Access was established 124 times (6.5% of all attendances) in a variety of patients including trauma, heat illness, dehydration, abdominal pain and septic shock. CMT2s are not trained in this skill and CMT1s had little current clinical experience. Not all CMTs understood the importance of skin fixation and this was addressed for all RAP CMTs, regardless of grade, by re-training in cannulation using other, volunteer, CMTs/MOs arms.

Requirement for an MO

Overall, 53.0% of cases required the input of the MO, which was unsurprising given that the majority of CMT protocols ended with "Now refer to senior medic or MO". If a smoking cessation trained CMT had been available this would have reduced to 51.2%.

Discussion

This report has attempted to provide a snapshot description of the pattern of disease, and how it was treated, in a FOB in Southern Afghanistan. The only similar example available in the literature is a brigade level amalgamation of Aid Post data from Gulf War 1 [3]. That prior review also showed a preponderance of dermatological and musculoskeletal injuries. This pattern is further reported in US Army population level literature from Bosnia [4] and Iraq and Afghanistan [5].

This article's data provides an overall picture of morbidity within the FOB and provides evidence to support or deny perceived trends. One trend observed was that the RAP was treating more ANA than ISAF soldiers; analysis showed this was not true and the observation probably arose due to the use of interpreters in consultations with Afghans. These consultation difficulties reveal a cultural difference between ISAF healthcare providers and the Afghan patient population expectations. With the ongoing nature of operations this area of care needs further research.

The authors were unable to find any previously published studies regarding the utility of the CMT PHC protocols in the deployed setting. The current protocols were able to deal with 47% of the cases presenting to the RAP. Whilst the protocols can be used by CMTs, once they have got used to them, the authors feel they do not contain enough "Red flags" to guide the CMT to ask for assistance. For example, in D&V it is not clear how a CMT will know if the patient is dehydrated as he may use a postural drop in BP, dry mucous membranes, increased pulse or a global assessment. Abdominal pain is a complex area and if it is as common across Helmand as in this RAP, then it is likely that

CMTs need further practical guidance. Currently, the CMTs are clearly not MEDEVACing all patients with abdominal pain and it is important to understand how those decisions are arrived at.

Dermatological conditions were the most common presentation and we suggest that the addition of colour photographs to the dermatology section of the protocols and increased training would help CMTs with either diagnosing or better description of lesions to enable effective remote supervision.

In the current operating environment the population includes non-Europeans with different endemic diseases not reflected in the current protocols. Referral and supervision of cases is difficult. Army CMTs are working without direct access to an MO and need relevant protocols and training for autonomous practice. In comparison Royal Naval Medical Assistants are trained to work autonomously and are allowed to prescribe antibiotics. Consideration should be given to allow CMT1's the same capability following appropriate preparation.

This article is a snapshot and for increased applicability data from across theatre for both summer and winter tours would be required. The introduction of widespread Medical IT into theatre offers this chance to examine practice on a scale not previously attempted. This in turn offers the opportunity to research the consultation on the frontline as well as re-examine training and equipment requirements using a firm evidence base. This paper is offered as a start to that research and associated discussion.

Acknowledgements

Thank you to the RAP CMTs for their assistance with data collection and dedication to improving their skills.

References

1. Morgan-Jones D (Ed) *Medic's Primary Health Care Treatment Protocols*. 1st Edition, Version 4.7. London. Army Code No 64256.
2. Thompson S. Tap water is an adequate cleansant for minor wounds. BestBETs. Accessible online at: <http://www.bestbets.org/bets/bet.php?id=24>. Accessed 18 Jan 10.
3. Wassermann GM, Martin BL, Hyams KC. A Survey of Outpatient Visits in a United States Army Forward Unit during Operation Desert Shield. *Mil Med* 1997; 162 (6): 374.
4. McKee KT, Kortepeter MG, Ljaamo SK. Disease and Non Battle Injury among United States Soldiers Deployed in Bosnia-Herzegovina during 1997: Summary Primary Care Statistics for Operation Joint Guard. *Mil Med* 1998; 163 (11): 733.
5. Sanders JW, Putnam SD, Frankhart C et al. Impact of Illness and Non-Combat Injury During Operations Iraqi Freedom and Enduring Freedom (Afghanistan). *Am J Trop Med Hyg* 2005; 73(4): 713