Special operations task group regimental aid post presentations, Tarin Kowt, Afghanistan: February - June 2010

Nevin Colgrave MBBS (Hons), MPH, FRACGP

Abstract

Background: The Australian Defence Force (ADF) Special Operations Task Group (SOTG) in Tarin Kowt, Afghanistan, is supported by a Primary Health Care Team (PHCT) which provided health care through its Regimental Aid Post (RAP).

Purpose: To identify and analyse the types of injuries and illnesses for which SOTG personnel are seeking primary health care assistance in Tarin Kowt.

Material and Methods: An electronic record was kept of all presentations by ADF personnel to the SOTG RAP from 28 Feb to 26 Jun 2010.

Results: There were 1074 presentations during the study period, with the most common reasons for presentation being *Medical Examinations* (214 presentations), *Gastrointestinal Disorders* (191), *Upper Respiratory Tract Infections* (URTI) *& Ear, Nose and Throat* (ENT) *Disorders* (164), *Injuries* (117), *Dermatological Disorders* (105) and *Musculoskeletal Disorders* (103). Trends in the incidence of presentations during the study period were identified, with *URTI & ENT Disorders* noted to be more prevalent during the earlier stages of the study period, and *Medical Examinations, Gastrointestinal Disorders, Injuries* and *Musculoskeletal Disorders* all occurring more frequently during the second half of the study period.

Conclusion: These findings suggest that greater emphasis needs to be given to injury prevention and hygiene maintenance during deployments, particularly during the later stages of the deployment cycle, and highlight the importance of medical personnel utilising an electronic database to record patient contacts when deployed.

Introduction

Australia's contribution to the international campaigns against terrorism is termed Operation SLIPPER. A major component of this operation is the contribution of Australian Defence Force (ADF) personnel to the International Security Assistance Force (ISAF) in Afghanistan. At the time of writing, approximately 1550 ADF personnel are based in Afghanistan, principally in Uruzgan Province. The Special Operations Task Group (SOTG) is one element of the ADF presence in Uruzgan, focused on conducting population-centric operations and providing enhanced force protection to other ADF activities in the region. SOTG consists of approximately 300 ADF personnel, primarily drawn from the Special Air Service Regiment (SASR) and the 2nd Commando Regiment (2Cdo), and enabling and supporting units.[1]

The supporting elements of SOTG include a Primary Health Care Team (PHCT), which operates a Regimental Aid Post (RAP) in the SOTG compound. The PHCT consists of a medical officer, a nursing officer and 2-3 medics, and provides primary health care to the members of SOTG and medical support for training and operations. The RAP also has basic resuscitation equipment for use in emergencies that may occur on base and is generally manned by medical personnel 24 hours a day. It is supported by a multinational-run 'Role 2' medical facility located in an adjacent compound, which provides basic radiology and pathology services as well as general surgical, orthopaedic and inpatient care.

Methods

A record of every patient encounter involving ADF personnel presenting to the SOTG RAP was kept between 28 February to 26 June 2010 (precisely 17 weeks). Details regarding all such encounters were recorded on the Medical Information Management Index (MIMI), a non-proprietary suite of link databases developed in MS Access and widely implemented across the ADF. At a minimum, details recorded on MIMI included the member seen, the date of the consult, whether the consult was an initial encounter or a review, and the principal reason for attendance as per the ADF EpiTrack Health Surveillance System (a health surveillance tool based on the 10th revision of the International Classification of Diseases [ICD-10-AM]). Details on those members that were admitted to the RAP for monitoring or transferred to a higher level of care were also recorded.

Results

During the study period, there were 1074 patient encounters at the RAP involving 387 different ADF members. This equated to an average of 63.2 consults per week, however weekly consult numbers ranged from 26 to 137, with the busiest weeks being towards the end of the study period. Weekly consults are shown in Table 1 and Figure 1. The highest number of encounters attributable to an individual member was 20. Of the 1074 encounters, 857 were initial consults and 217 were reviews.

Week Beginning	No. of Consults
28/02/2010	37
07/03/2010	80
14/03/2010	43
21/03/2010	62
28/03/2010	35
04/04/2010	48
11/04/2010	59
18/04/2010	43
25/04/2010	58
02/05/2010	39
09/05/2010	26
16/05/2010	88
23/05/2010	67
30/05/2010	104
06/06/2010	79
13/06/2010	69
20/06/2010	137

Table 1 - RAP Consults by Week

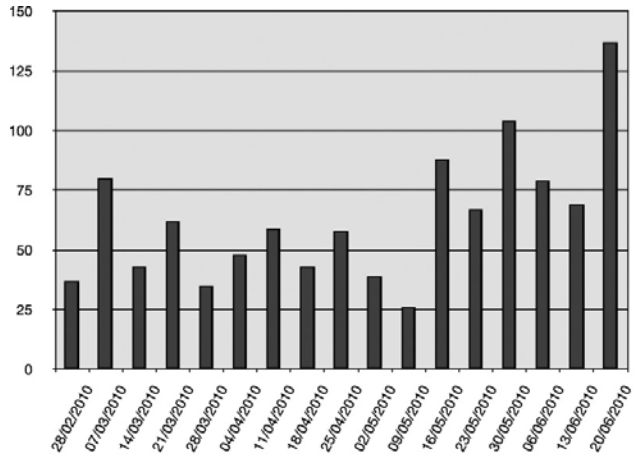

Figure 1 - RAP Consults by Week

Table 2 shows the principal reason for each of the presentations during the study period, as classified by the most appropriate EpiTrack descriptor. These presentations are then further classified according to initial and review consults. The most common single reason for presenting to the RAP was *Medical Examinations* (214 presentations). The vast majority of these were routine medicals performed on each member shortly before returning to Australia. *Intestinal Infectious Diseases* (i.e. Gastroenteritis) was another major reason for presenting (152), followed by *Upper Respiratory Tract Infections* (URTI) (94), *Other Dermatological Conditions* (92), *Disorders of the Ear, Nose and Throat* (ENT) (70) and *Other Musculoskeletal Diseases* (64). In all, there were 31 different EpiTrack descriptors used during the study period.

There were a total of 50 admissions to the RAP during the study period, involving 42 different members. 8 members were admitted twice during the study period. In terms of length of admission, 18 members did not require an overnight stay, 31 members were admitted for 1 night and 1 member stayed 2 nights. The reasons for admission are shown in Table 3, with 38 of the 50 admissions being for *Intestinal Infectious Diseases*. The RAP would only admit members who were haemodynamically stable and could be managed with simple measures including intravenous fluid resuscitation, analgesia, antiemetics and oral antibiotics, if clinically indicated. Any potentially unstable members or members requiring specialist medical input were referred to the Role 2 facility for management.

To better streamline the analysis of the data, several EpiTrack descriptors of a similar nature were combined. Through this process, 6 groups with over 100 presentations each were identified. These were:

Medical Examinations: 214

Gastrointestinal Disorders: 191

- Disorders of the Digestive System: 39
- Intestinal Infectious Diseases: 152

URTI & ENT Disorders: 164

- ENT Disorders: 70
- URTI: 94

Injuries: 117

- Injuries due to Hostile Action: 19
- Injuries due to Military Training: 4
- Injuries due to Sport: 17
- Injuries due to Transport Accidents: 24
- Injuries not due to TAs, Training, Sport or Hostile Action: 53

EpiTrack Descriptor	Total Consults	Initial Consults	Reviews
Climatic Injury (Heat and Cold)	1	1	0
Counselling, Specimen Collection and Special Screening	14	10	4
Deprivation and Motion Sickness	1	1	0
Diseases of Teeth and Oral Cavity	9	8	1
Diseases of the Circulatory System	4	1	3
Diseases of the Digestive System	39	33	6
Diseases of the Genito-urinary System	5	5	0
Diseases of the Nervous System	6	1	5
Disorders of Ear, Nose and Throat	70	52	18
Disorders of the Back	27	20	7
Disorders of the Knee	11	9	2
Eczematous Skin Conditions	13	11	2
Eye Disorders	13	11	2
Injuries Due to Hostile Action	19	9	10
Injuries Due to Military Training	4	3	1
Injuries Due to Sport	17	12	5
Injuries Due to Transport Accidents	24	5	19
Injuries Not Due to TAs, Training, Sport or Hostile Action	53	36	17
Intestinal Infectious Diseases	152	125	27
Lower Respiratory Tract Conditions (including Asthma)	7	5	2
Malaria	26	6	20
Medical Examinations: Routine, Periodic etc	214	214	0
Other Administrative Events Not Already Covered	8	7	1
Other Dermatological Conditions	92	76	16
Other Infectious and Parasitic Diseases	6	5	1
Other Musculoskeletal Diseases (excluding knees and backs)	64	40	24
Repeat Prescriptions: Pharmaceuticals, Spectacles etc	18	14	4
Sexually Transmitted Diseases	4	3	1
Symptoms, Signs and Ill-defined Conditions Not Elsewhere Classified	47	44	3
Upper Respiratory Tract Conditions (including URTI)	94	89	5
Vaccinations, Inoculations and Prophylactic Injections	12	1	11
Total	**1074**	**857**	**217**

Table 2 - Consults by EpiTrack Descriptor

EpiTrack Descriptor	Admissions
Diseases of the Digestive System	1
Disorders of Ear, Nose and Throat	2
Injuries Due to Sport	1
Injuries Not Due to TAs, Training, Sport or Hostile Action	2
Intestinal Infectious Diseases	38
Malaria	3
Other Dermatological Conditions	1
Symptoms, Signs and Ill-defined Conditions Not Elsewhere Classified	2
Total	**50**

Table 3 - Admissions by EpiTrack Descriptor

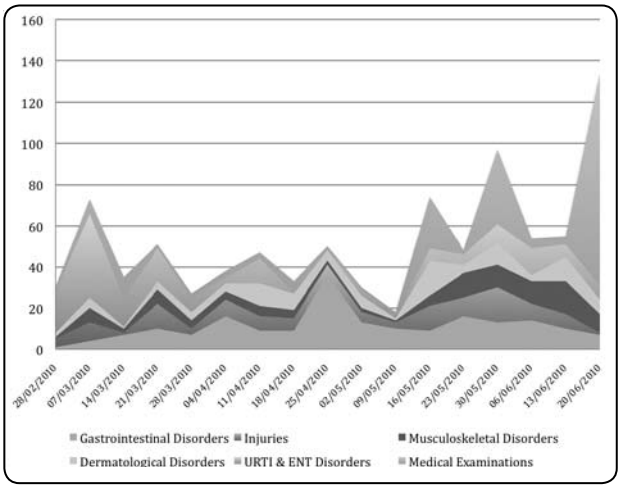

Figure 2 - Major EpiTrack Descriptors – Number of Presentations by Week

Dermatological Disorders: 105

Eczematous Skin Conditions: 13

Other Dermatological Conditions: 92

Musculoskeletal Disorders: 103

Disorders of the Back: 27

Disorders of the Knee: 11

Other Musculoskeletal Disorders: 64

Presentations for the above groups during each week of the study period are shown in Table 4 and graphically in Figure 2.

Discussion

An analysis of the weekly breakdown of the major presentations reveals a number of trends. Few presentations relating to *Medical Examinations* occurred during the first 11 weeks of the study period, with the vast majority of such presentations occurring after this point, particularly in the last week, which saw 103 presentations. This is explained by the requirement for members to undergo Return To Australia Medicals prior to completion of their deployment.

A further trend was that the majority of presentations for *URTI/ENT Disorders* occurred in the first 4 weeks of

Week beginning	Medical Examinations	Gastrointestinal Disorders	URTI & ENT Disorders	Injuries	Dermatological Disorders	Musculoskeletal Disorders
28/02/10	2	1	20	4	2	1
07/03/10	7	4	41	9	5	7
14/03/10	10	7	14	1	1	2
21/03/10	2	10	16	12	4	7
28/03/10	2	7	7	3	4	4
04/04/10	3	16	3	8	4	4
11/04/10	3	9	12	7	11	5
18/04/10	5	9	1	6	8	4
25/04/10	2	36	0	5	5	2
02/05/10	1	13	3	5	6	2
09/05/10	2	10	1	3	1	1
16/05/10	25	9	6	12	17	5
23/05/10	2	16	5	9	4	12
30/05/10	36	13	9	17	11	11
06/06/10	5	14	13	8	3	11
13/06/10	4	10	6	7	12	16
20/06/10	103	7	7	1	7	9
Total	**214**	**191**	**164**	**117**	**105**	**103**

Table 4 - Major EpiTrack Descriptors by Week

the study period (91 out of 164). A possible explanation for this was the colder temperatures during the late winter and early spring months of February and March, increasing the likelihood of contracting an URTI.[2] The exposure of members to local respiratory pathogens and environmental contaminants to which they were unaccustomed at the start of the deployment may also be a factor in the higher incidence of *URTI/ ENT Disorders* in the early part of the study period.

Another point of interest is the higher frequency of presentations of *Gastrointestinal Disorders* during the warmer months of May and June, with 128 of the 191 presentations (67%) occurring from Week 9 onwards (25/4/10 to 26/6/10). Warmer temperatures increase the rate of pathogen growth on contaminated food and other surfaces,[3] which would have put members at greater risk of developing gastroenteritis. Further, the higher operational tempo typically seen in warmer months meant that SOTG members were more active in the field and therefore more likely to be exposed to gastroenteritis-causing pathogens through contaminated food and water and the difficulties in maintaining ideal levels of hygiene.

A large proportion of injury presentations (54 out of 117) occurred during the last 6 weeks of the study period. This may have involved a number of factors. The higher operational tempo during the warmer months later in the study period would have meant members were more active in the field and therefore more prone to injury (both hostile and otherwise). Additionally, members may have suffered minor injuries earlier in the study period, which deteriorated in the subsequent weeks and months, ultimately resulting in them seeking medical attention at the RAP. There may possibly have been greater complacency and reduced vigilance of members with regards to injury prevention as their deployment wore on. Finally, there may have been a reluctance by members to report injuries earlier in the deployment for fear of being placed on restrictions or even medically evacuated back to Australia, as well as a propensity for members to report all injuries, no matter how minor, just prior to returning home to ensure they were adequately documented for possible future rehabilitation and compensation purposes. A closer look at the breakdown of injuries in Table 2 shows that 53 of the 117 injury consults were due to *Injuries not due to TAs, Training, Sport or Hostile Action*, which mainly included musculoskeletal injuries (sprains and strains) and minor lacerations, grazes and burns, as well as associated follow-up visits. The relative paucity of Injuries due to *Military Training* (4 consults) and *Injuries due to Sport* (17 consults) was likely due to the absence of organised sporting or training activities on base during the study period. Members generally maintained their fitness by undertaking individual, gym-based training, with injuries sustained from this type of activity generally classified under Musculoskeletal Disorders or *Injuries not due to TAs, Training, Sport or Hostile Action*. Finally, the high proportion of reviews from *Injuries due to Transport Accidents* (19 of 24 consults) was due to a single case of an injured member requiring regular follow-up over a period of several weeks.

As with injuries, presentations for *Musculoskeletal Disorders* were much more prevalent during the latter stages of the study period, with 64 of the 103 presentations occurring during the last 6 weeks. *Musculoskeletal Disorders* included minor strains as well as overuse and other non-acute injuries, and this higher prevalence towards the end of the study period could therefore be due to many of the aforementioned reasons proposed for the trend in injury presentations.

Malaria

Special note should be made of presentations for malaria during the study period. There were a total of 26 presentations (6 initial consults and 20 reviews) for malaria, with all occurring during the last 3 weeks of the study period (see Table 5). All 6 members involved presented initially over a period of 48 hours and had all worked closely together on high intensity operations in the field during the 1-2 weeks prior to presentation. Diagnosis was made on clinical symptoms and via blood films interpreted by a Dutch pathology technician, who felt that *Plasmodium vivax* was the most likely causative agent.

Week beginning	Malaria Presentations
28/02/2010	0
07/03/2010	0
14/03/2010	0
21/03/2010	0
28/03/2010	0
04/04/2010	0
11/04/2010	0
18/04/2010	0
25/04/2010	0
02/05/2010	0
09/05/2010	0
16/05/2010	0
23/05/2010	0
30/05/2010	0
06/06/2010	16
13/06/2010	9
20/06/2010	1
Total	**26**

Table 5 - Malaria Presentations

All SOTG members had access to malaria chemoprophylaxis during the duration of the study period, in accordance with ADF policy.[4] This consisted principally of doxycycline (100mg daily), with the alternative regimens of Malarone™ (atovaquone 250mg + proguanil 100mg, one tablet daily) and mefloquine hydrochloride (250mg weekly) also being available, however ultimately, no SOTG member accessed Malarone™ nor mefloquine from the RAP for malaria chemoprophylaxis during the study period. DEET-containing topical mosquito repellents were also made readily available from the RAP.

For the 6 individual members that contracted malaria, treatment was provided as per the relevant ADF directive and on the assumption that *P. vivax* was the causative agent.[4] This involved high-dose Malarone™ (4 tablets daily for 3 consecutive days) followed by a primaquine eradication course (primaquine phosphate 15mg twice daily for 14 days). Within 2-3 days, four of the affected members had recovered to the extent that they could resume light duties. The remaining 2 members showed initial improvement in their symptoms but suffered a relapse after 3-4 days and were given high-dose chloroquine (1g initially, followed by 500mg six hours later and 500mg on day 2 and day 3), which proved effective in both cases. Post-treatment blood for all 6 cases were taken and sent to the Role 2 facility, but the results of the slides prepared were interpreted as being inconclusive however. Pre-treatment slides for each of the 6 cases and a post-treatment slide for 1 case were then sent to the Australian Army Malaria Institute (AMI) in Enoggera, Queensland. While microscopy analysis conducted by AMI failed to identify parasites in any of the slides, subsequent PCR testing confirmed that 2 of the members had contracted *Plasmodium falciparum*, with 1 other member positive for mixed *P. falciparum* and *P. vivax*.[5]

Conclusion

This review demonstrates the importance of using an electronic database, such as MIMI, to record medical presentations in a deployed environment. The ease with which data can be collated and analysed by using such a database facilitates further comparative studies of RAP presentations during future SOTG deployments. Trends in presentation numbers and EpiTrack descriptors can therefore be more readily detected and proactive changes made to the delivery of healthcare to Special Operations members. Further, MIMI allows for presentations to be matched to individual members, enabling better tracking of conditions and identifying high risk groups within SOTG (e.g. as with the malaria cases). It is recommended that with these advantages, MIMI use should be mandatory for all future SOTG deployments.

The higher incidence of both injuries and musculoskeletal disorders during the warmer summer months and/or during the latter stages of the deployment cycle suggest that greater efforts need to be made in injury prevention during these periods. Organised occupational health and safety (OH&S) meetings involving the medical and command elements of SOTG could be held, especially during high risk periods, to discuss injuries and musculoskeletal presentations and devise strategies for minimising their occurrence.

Similarly, the higher incidence of gastroenteritis during the warmer months warrants greater emphasis on preventative actions. The importance of maintaining high standards of hygiene through regular hand-washing, drinking only bottled water and preparing and storing food appropriately needs to be emphasised to all members throughout their deployment.

Finally, the analysis confirms that malaria (including *P. falciparum*) is present in the areas of Afghanistan where SOTG members are operating. The occurrence of potentially fatal cases of malaria during the study period highlights the need for adequate malaria prophylaxis during the warmer months. All SOTG members are educated in appropriate prophylactic measures and are provided with chemoprophylaxis, and ongoing efforts need to be made in encouraging the uptake of these measures.

To test the validity of the trends in presentations raised above, a repeat study using MIMI statistics collected over a similar period of time but looking at a different SOTG rotation is planned.

Authors' affiliations: Department of Defence, Australia
Contact author: Nevin Colgrave, Tobruk Lines Health Centre, Tobruk Line, Holsworthy Barracks NSW 2173
Email: nevinco@hotmail.com

References

1. Department of Defence. Fact sheet 3: Australia's commitment in Afghanistan [Internet]. 2011 [cited 2011 Jan 19]. Available from: http://www.defence.gov.au/defencenews/articles/1017/files/3_Australia's%20commitment%20in%20Afghanistan%20Fact%20Sheet%203.pdf
2. Leder K, Sundararajan V, Weld L, Pandey P, Brown G, Torresi J, GeoSentinal Surveillance Group. Respiratory tract infections in travelers: a review of the GeoSentinel Surveillance Network. Clin Infect Dis. 2003; 36 (4): 399-406
3. Hall GV, Kirk MD, Ashbolt R, Stafford R, Lalor K, OzFoodNet Working Group. Frequency of infectious gastrointestinal illness in Australia, 2002: regional, seasonal and demographic variation. Epidemiology and Infection 2006; 134: 111-118
4. Defence Health Services. Health directive 215: malaria. Canberra: Australian Defence Force, 2006 Nov 29
5. Australian Army Malaria Institute, Minute AMI 46/10, 2010 Sep 14