General

Royal Naval Registrars Research: The Institute of Naval Medicine Registrars Research Symposium.

A M Wood

For the second year running (1), research from around the Fleet and training regions was presented at the Institute of Naval Medicine Registrars Study Week. The research presented varied from large PhD level animal research to observational studies about operational training.

All of the research was relevant to naval life, and refreshingly the research did not just concentrate on Afghanistan, which allowed other areas of Royal Naval Medicine to be discussed. That said there was a very comprehensive talk from Surg Lt Cdr Fries on surgical training in Afghanistan, which has subsequently been published in full in a previous journal (2).

The research remained topical as Surg Lt Cdr Arthur’s research into Fast Track surgery in Scotland highlighted what type of surgery is being done privately which is relevant, given that the provision of Fast Track surgery is being reviewed within the defence medical services.

The research forum covered many aspect of defence medicine and Surg Cdr (D) Elmer highlighted some of the differences in dental morbidity between the three services. This was then followed by Surg Lt Evans, who discussed the issues presenting to Mental Health units in the services. Unlike many people’s preconceptions, she highlighted that the majority of people referred had no mental health issues or alcohol issues, and not, as many think, PTSD.

From an occupational medicine point of view Surg Lt Cdr Penn-Barwell gave a comprehensive review of Royal Navy and Royal Marines injuries sustained on operations and the likely impact on their occupational role within the service, his talk provoked a dynamic discussion within the audience, as these patients are seen by all specialities within the RN from General Practitioner to Ear Nose and Throat surgeons. The presentations took a different tack, with Surg Lt Cdr Hulse talking about her PhD research into lung injuries on an animal model, demonstrating the depth and variety of research that is being conducted within the Royal Naval registrar fraternity.

The final talk by Surg Lt Bourn was awarded the research prize. Whilst the methodology was simple, Surg Capt Butterfield felt that out of all the research presented it had probably impacted the most on Royal Naval life. Surg Lt Bourn identified an issue with PVL-Staph Aureus carriage on Royal Naval Submarines, and initiated some research to quantify the problem on board and ways that these issues could be addressed.

The abstracts from the presentations are detailed below, and correspondence can be directed to the authors where supplied or through Surg Lt Cdr A Wood.

Surgical Training in Camp Bastion, Afghanistan.

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Surgical trauma care on operations is delivered by consultants. The DMS presently delivers training to surgeons in training to enable them to deliver this care as newly qualified consultants. Deploying as a trainee is one of many training evolutions available to achieve this competency. This paper describes the process involved in trainees deploying, and the training received by the first author (CAF) during a recent deployment.

Pre-deployment training and the process for gaining recognition of training time by the GMC is described. All surgical procedures performed by the first author were recorded prospectively, together with the level of supervision.

The first author performed 210 procedures in 124 operations on 87 patients in a seven week deployment. This was recognised for training by the GMC. All procedures were supervised by consultant trainers. Procedures included trauma surgical procedures and those under the specialities of Plastic Surgery, Orthopaedic Surgery and General Surgery.

Deploying on operations as a trainee is invaluable in preparing DMS juniors for their future roles as consultants in the DMS. Training is received not only in a breadth of surgical and resuscitative procedures, beyond a trainee’s “base speciality”, but also in other critical aspects of deployments including Crew Resource Management.
Military fast-track orthopaedic surgery in Scotland: A One Year analysis.
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All military patients requiring elective orthopaedic surgery in Scotland are referred to the Musculo-skeletal Injury Assessment Clinic (MIAC).

A retrospective analysis of all orthopaedic operations performed on military personnel in 2011 through the fast-track system was conducted from the MIAC data-base.

There were 76 operations performed on 75 patients. For a population of 13,500.

There were 13 Royal Navy patients (Incidence 3.25 per 1000), 19 Royal Marine patients (12.6 per 1000), 24 Army patients (6.85 per 1000) and 19 RAF patients (4.2 per 1000).

There were 30 knee arthroscopies performed for meniscal injuries, 15 ACL reconstructions, 12 shoulder stabilisations, 6 other arthroscopic shoulder operations, 8 ankle stabilisations and 5 ankle arthroscopies.

Ankle stabilisations were all performed in infantry personnel (RM/Army) with 75% of ankle stabilisations performed on Royal Marines. With an incidence of 4 per 1000 Royal Marines compared to 0.6 per 1000 in Army personnel.

Our results give an indication about the incidence of orthopaedic injuries in military patients requiring fast track surgery in Scotland. Knee injuries remain the most common type of injury being treated by this process. Whilst these injuries may vary slightly by type of unit present they should give medical planners an indication of expected workload dependent upon the future military population.

Is there a differential in the dental health of new recruits to the British Armed Forces? A pilot-study.

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Background and aim: Figures from the British Defence Dental Services reveal that serving personnel in the British Army have a persistently lower level of dental fitness than those in the Royal Navy or the Royal Air Force. No research had been undertaken to ascertain if this reflects the oral health of recruits joining each Service. This study aimed to pilot a process for collecting dental and socio-demographic data from new recruits to each Service and examine the null hypothesis that no differences in dental health existed.

Method Diagnostic criteria were developed, a sample size calculated and data collected at the initial training establishments of each Service. Results Data for 432 participants was entered into the analysis. Recruits in the Army sample had a significantly greater prevalence of dental decay and greater treatment resource need than either of the other two Services. Army recruits had a mean number of 2.59 (2.08, 3.09) decayed teeth per recruit, compared to 1.93 (1.49, 2.39 p<0.01) in Royal Navy recruits and 1.26 (0.98, 1.53 p<0.001) in Royal Air Force recruits. Amongst Army recruits 62.7% were from the two most deprived quintiles of the Index of Multiple Deprivation compared to 42.5% of Royal Naval recruits and 36.6% of Royal Air Force recruits.

Conclusion: A significant difference in dental health between recruits to each Service does exist and is likely to be a reflection of the socio-demographic background from which they are drawn.

From military general practice into mental health services. A survey of patient referrals to a Military Department of Community Mental Health over a 6 month period.

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As part of ongoing Service improvement work, a survey of new referrals to DCMH(D) over a six months was undertaken. Every referral to the Department, serving all military personnel in the South West, from April to September 2010 was scrutinised using both electronic and paper records. Numerous data sets were collected, the most interesting to a multi-speciality audience were the diagnoses the patients received at first assessment and the treatments they received before referral, and afterwards. This offers an
insight into what psychiatric problems affect those in the military and how we as military medical staff treat them.

236 patients were referred during the study. Of those who attended an assessment appointment (181), a seemingly small number were already on psychotropic medication (18.23%), mainly SSRIs of which Citalopram was the most common. The most common initial diagnosis at assessment was of No Mental Illness (43.09%) followed by Alcohol Misuse (14.35%) and low mood/depression (10.53%). Notably absent from this is the common perception of a high incidence of PTSD. The most common treatment offered was ongoing CPN review/support (41.99%) followed by referral to the Divisional System (11%). Referral for intensive CBT or other psychotherapy made up 6.36% of treatments.

Is the high incidence of ‘No Mental Illness’ an issue or simply inherent within the military system? How much faith can be placed in predominantly CPN diagnoses and does this affect the conclusions which can be drawn? Is the low rate of psychotropic prescribing in primary care significant compared to civilian practice?

The injury burden of recent combat operations: mortality, morbidity and return to service of Royal Navy and Royal Marine personnel following combat trauma.

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The purpose of the study was to define the spectrum of Naval Service casualties from the recent conflicts in Iraq and Afghanistan, and characterise the casualty rate, injury patterns, recovery and residual functional burden over the last decade.

The JTTR was searched for all Naval Service personnel injured between March 2003 and September 2010. These records were then cross-referenced with the NSMBOS records. Population at risk data was calculated from JPA. Probability of survival (Ps) was calculated using accepted TRISS/Ps09 methodology.

There were 221 casualties in the study period: 54 (24%) of these were fatalities; of the 167 survivors, 21 (9% of total) were medically discharged; 26 (12%) were placed in a reduced fitness category and 120 (55%) returned to duty (RTD) without any restriction, of these, 16 had a New Injury Severity Scores (NISS) greater than 20. There was a 4.6% casualty risk per year of operational service for Naval Service personnel. Of the fatalities the mean Ps was 12% (range 7.5-24.4). There were no unexpected fatalities and 3 unexpected survivors whose mean Ps was 18% (range 7.5-22.5). The 47 personnel who were reviewed by the medical board had a median three distinct injuries each, which predominantly affected the extremities.

This study characterises the spectrum of injuries sustained by the Naval Service during recent conflicts and indicates a high standard of acute care and good rates of functional recovery following surgical reconstruction and rehabilitation.

Pulmonary injury in organophosphorus pesticide poisoning.

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Self-poisoning through ingestion of organophosphorus pesticides (OPs) is common with 250,000 annual deaths worldwide. In Western countries the main threat is the weaponisation of OP compounds. OPs inhibit the enzyme acetylcholinesterase which results in a systemic excess of the neurotransmitter acetylcholine. This usually manifests clinically with an unconscious patient suffering from respiratory failure where 30-50% of patients are intubated, and of those, 50-70% will die. The reasons are not fully understood and so this study was designed to find evidence of acute lung injury following ingestion of OP.

10 Gottingen minipigs (25-30 Kg) were given 2.5mls/kg dimethoate EC40 by gavage under terminal anaesthesia. Standard intensive care monitoring was used with a protective ventilation protocol.

Bronchoalveolar lavage (BAL) was conducted prior to poisoning and on completion of the study at 6 hours for comparison. The BAL fluid was examined for the number and type of cells and enzyme linked immuno-assays were performed to determine C-reactive protein and interleukin 8 (IL-8) concentrations. PaO2/FiO2 ratios were also calculated. Statistical analysis with t-tests and permutation testing was conducted using Graph pad prism 5 where p was considered significant at p<0.05.

There was a non-significant rise in the number of cells (p=0.218) and BAL fluid CRP (p= 0.27). A significant rise was seen in the percentage of neutrophils (p=0.026) and concentration of IL-8 (p=0.002) in the BAL fluid. A
significant decrease of the PaO2/FiO2 ratios was observed (P=0.002).

The evidence suggests that OP by lavage can cause a measurable lung injury.

Panton Valentine Leucocidin Staphylococcus Aureus (PVL-SA), a stowaway aboard a HM Submarine.

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A submariner was diagnosed with PVL-SA (Woodbury Common Disease). PVL-SA causes leucocyte destruction and is responsible for severe soft tissue infections, including necrotizing pneumonia. Those afflicted are younger and healthier and suffer a worse outcome than those infected with non-PVL-SA. This case was reported to the HPA and FLEET.

To establish operational risk, population screening was conducted. Concurrently, to quantify skin complaints suffered by the crew, an audit was conducted. Audit data was combined with the swab results to investigate any relationship between dermatological symptoms, nasal carriage and deployment.

168 (100%) of the crew were screened and completed the audit questionnaire. An unexpectedly high rate of SA nasal carriage was found (52%, expected 37%). The audit revealed 22% of crew suffered from skin complaints (dryness, acne, eczema and infections) while off-crew, compared to 49% when deployed. 46% stated that their overall skin condition deteriorated while at sea, with most of those suffering reporting low grade longstanding complaints.

Several papers have reported high levels of SA carriage within military populations internationally; all are exceeded by this cohort. The explanation for high rates is likely to be multi-factorial.

This case and audit highlights the high incidence of dermatological complaints and carriage of SA in a submarine population. Management of skin complaints needs to be aggressive and hygiene rigorous, to limit morbidity and maximise operational effectiveness.

References

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