

A Career in Military Medicine

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Recent advances in the identification and characterisation of dental stem cells and in dental tissue- engineering strategies suggest that bioengineering approaches may successfully be used to regenerate dental tissues and whole teeth. As clinically relevant methods for generation of bioengineered dental tissues and whole teeth continue to improve, interest in the application of tissue regeneration increases. This paper describes dental derived stem cells and their characterization.



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A career in Military Medicine



An Introduction to Emergency Medicine

Anatomy of Trauma, Emergency Medicine and Operative Procedures



Using a microfluidic device to investigate the role of the furry (FRY) gene in *Dictyostelium discoideum*.

The landmark technique remains a safe alternative to ultrasound guidance for performing a Fascia iliaca block: A cadaveric study

How does addiction occur?



The diagnostic work-up of stable chest pain at a large university teaching hospital

Interview with Professor Laurence Kirmayer, Director of Cultural Psychiatry

Introduction

The World Journal of Medical Education and Research (WJMER) (ISSN 2052-1715) is an online publication of the Doctors Academy Group of Educational Establishments. Published on a quarterly basis, the aim of the journal is to promote academia and research amongst members of the multi-disciplinary healthcare team including doctors, dentists, scientists, and students of these specialties from around the world. The principal objective of this journal is to encourage the aforementioned, from developing countries in particular, to publish their work. The journal intends to promote the healthy transfer of knowledge, opinions and expertise between those who have the benefit of cutting edge technology and those who need to innovate within their resource constraints. It is our hope that this will help to develop medical knowledge and to provide optimal clinical care in different settings. We envisage an incessant stream of information flowing along the channels that WJMER will create and that a surfeit of ideas will be gleaned from this process. We look forward to sharing these experiences with our readers in our editions. We are honoured to welcome you to WJMER.

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A Career in Military Medicine

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Introducing Military Medicine

Military doctors practice medicine within the Armed Forces. Medical Officers (MOs) go wherever the military are deployed, providing medical care when it is required, to both service personnel and civilians. The armed services in the UK are the British Army, Royal Air Force and Royal Navy.

A successful MO must be organised, able to respond quickly and safely when under pressure, and be flexible and able to adapt to service needs. The military offers a broad range of working environments, daily challenges and the opportunity to practice medicine in some of the harshest environments on earth, whether it is a jungle or desert, a submarine or airplane, following a natural disaster where humanitarian aid is needed, or in a war zone. Military medicine places you in situations you would not get exposed to within the NHS. You may be the only doctor for hundreds of miles and may have to adapt to the conditions and lack of access to all the equipment usually required to treat the patient.

The Victoria Cross is the highest award for gallantry in the call of duty. Only three people have ever been awarded the Victoria Cross twice, and two were doctors. Noel Chavasse and Arthur Martin-Leake both served with the Royal Army Medical Corps during the 2nd Boer War and World War 1.

Interaction with Other Specialities

Most of the secondary and tertiary healthcare for the armed services is provided jointly so there is plenty of interaction with colleagues from the other Armed Forces. Military doctors usually work in Military Defence Hospital

Units (MDHU's) alongside their NHS counterparts, treating both military and NHS patients. MDHU's are based at NHS hospitals around the country, Injured service personnel can require further prolonged rehabilitation once back in the UK, after acute treatment. There is a multidisciplinary team of physiotherapists, surgeons, occupational health staff, and dieticians etc, all working together to return the servicemen to full duties, if possible. The military has numerous regional rehabilitation units; the main unit is Headley Court in Epsom, where complex rehabilitation takes place.

Emergency vs. Elective Work

Whilst deployed as a MO, emergency work and General Practice and will be at the forefront of what you do, providing immediate and general healthcare to wounded or sick personnel. When not deployed, elective work may be undertaken on military personnel and civilians. On a mission, MOs are on-call 24/7 ready to respond to any crises that may develop and may have to deal with any medical situation that arises, for example a crew member could be unwell or injured on a Royal Navy Submarine which very rarely surfaces when deployed.

Finance

Cadetships for medical students are arranged by each armed service. These are worth roughly 14K, 16K and 18k for the clinical years, as well as costs for pay tuition fees, in return for 6 years service ("short commission") from the date of full GMC registration. While on a cadetship you will hold a junior officer rank and be expected to join the university unit for your armed service. There will be weekly training nights plus weekend exercises, to learn about the service, its role, and to prepare you for military life.

Pay in the early years after qualification tends to be higher, on average, than an equivalent civilian doctors pay (on reaching full GMC registration - £52,225). Salaries rise by roughly 2.5K each year regardless of rank, so the NHS may begin to pay more when reaching senior levels. The military does provide subsidised accommodation and food.

Sub- Specialities

Some specialities are unavailable to military doctors due to service requirements. These include Geriatrics, Paediatrics, Obstetrics and Gynaecology, and Oncology. However, there is plenty of scope for undertaking training in the following specialist fields: Radiology, Aviation, Hyperbaric, Occupational and the more traditional trauma-based specialities of Emergency Medicine, Orthopaedics, Anaesthetics, and General Surgery. Rehabilitation, Plastic surgery, Ophthalmology and Reconstructive medicine are also growing fields in Military medicine.

Opportunities, Challenges, Thrills

Advantages of Military Medicine include working alongside people who share the same ethos and values as yourself, and experiencing work in different environments and locations. Also, being a doctor and in the armed services often affords great respect by both the public and other doctors.

However, there are challenges to being a military doctor:

- You can be away from home for extended periods of time, often with little contact with family and friends.
- The general duties period, 2-3 years in General Practice serving with a particular regiment, unit, ship, submarine etc, means that military doctors end up 2-3 years behind their NHS counterparts, i.e. it will take longer to reach a consultant post.
- When on deployment it can be stressful and tiring, as you are basically on call 24/7 in what may be cramped conditions.
- Some specialties are not available to military doctors, reflecting the needs of the service.
- As an officer in the armed forces it is important to note that the service always comes first regardless of your position, and leave can be withdrawn at any time.
- Due to improvements in body armour and medical care, personnel are surviving with ever more complex problems. This can be extremely challenging when dealing with young people who may be unable to perform as they once did.

Application Process

In order to become a military doctor, you have to pass the normal armed services officer selection process. This

comprises of: numerical and verbal reasoning tests; fitness tests; interviews, and a weekend of tests with your desired armed service. This can be done while at university to become a cadet, or once qualified, if you are considering a direct entry. Your Foundation years will take place at one of the MDHUs, either Plymouth, Portsmouth, Northallerton, Frimley Park (Surrey), and Peterborough. The Royal College of Defence Medicine is based in Birmingham, where you can also work. Because the MDHUs are spread out around the country, the Defence Postgraduate Medical Deanery (DPMD) was set up in 1996 to coordinate applications to the MDHUs. While in your final year as a medical student you will apply to the DPMD for the 6 hospitals mentioned. No interview is needed.

On completion of your Foundation Programme, you will go to RAF Cranwell, BRNC Dartmouth or RMA Sandhurst for your officer training. Postgraduate specialist training is undertaken with the NHS along the same pathways as civilian doctors. The forces do take a number of direct-entry medical graduates. This varies year to year and it is best to check with your local careers office. If you do not want to go full time in the services, there is plenty of scope to join up as a reservist. With this you will train alongside your regular counterparts for a few weeks each year and can be deployed operationally every few years. It is certainly very worthwhile considering if you are unable to commit full time.

Recent Advancements

Advances in Military Medicine include the use of telemedicine (employing information and communication equipment to deliver health care from a distance) and robotics. Military Medicine often influences civilian trauma management too, such as the restructuring of ABC management to CABC. This is for Catastrophic hemorrhage, and subsequent resuscitation with equal dose of blood products.

Injuries unique to Military Medicine include shrapnel and maxillofacial injuries. There is now a suction device for shrapnel wounds which uses topical negative pressure to be applied, to help remove bacteria and reduce inflammation. Internal fixation of maxillofacial injuries with mini titanium plates rather than cumbersome external ones, has allowed better post-operative recovery.

Due to the variety of injuries sustained new techniques are being developed all the time especially involving reconstructive surgery: In 2006 Pte. Neil McCallion had his wrist bones remodeled from 3 of his ribs and muscles from his right torso, after a 17-hour operation he can now perform most daily activities. Another case involved

Pte. Andrew Garthwaite who was severely injured in 2010; his 'bionic' arm will allow him to regain some sensory feedback.

Camp Bastion, the main British base in Afghanistan, hosts the busiest trauma department in the world and brings together the expertise of North Atlantic Treaty Organization (NATO) doctors from around the world, working together to perform life- saving surgery. It is now thought that roughly 90% of battlefield injured personnel will survive mainly due to the practices employed at Bastion. For example, every seriously injured patient undergoes a full body scan while being admitted. There are also new 'one hand' tourniquets, which can be used

by anyone, and the helicopter-based Medical Emergency Response Team, MERT, which allows early critical care management and rapid evacuation of field casualties to Camp Bastion for further treatment.

In conclusion, Military Medicine is a challenging yet highly rewarding approach to medical practice. Doctors need to be willing to serve their country at immediate notice and maintain training to ensure they can deal with any scenario as it arises. It allows working with patients in numerous environments, from both benign to trauma situations, and the acquisition of a unique set of skills and totally different life experiences.

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