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CAREER FOCUS

A Career In Military Anaesthesia

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History

Anaesthesia as it is known today originates from 1846 with ether (1) and, a year later in 1847, with chloroform (2). However the history of pain relief on the battlefield and elsewhere goes back much further. The ancient Egyptians and Greeks knew of the hypnotic properties of poppy juice and the Greeks, Scythians and Chinese produced intoxication with hashish for operative procedures (3). It also believed that the Egyptians used carotid compression to induce temporary unconsciousness (4). Pedanius Dioscorides[1] , a military doctor in the Roman Armies of Nero and Vespasian, gave a detailed account in his de Materia Medica of anaesthesia in Egypt, Greece and Rome. His spongia somniferum consisted of little pieces of sponge soaked in the juices of poppy, Mandragora, Hyoscyamus and Cicuta (5). The use of ice and cold for surgical pain relief had been described in the eleventh century (6,7) and again in the sixteenth (8) and seventeenth centuries (9) but, in the military context, Baron Larrey[2], surgeon to the Garde Impériale of Napoléon is well known for his observation at Preuss Eylau in 1807 (10) that soldiers needing amputation who had lain in the snow were pain free. However, he does not seem to have taken this further as he continued to use laudanum and brandy (11).

By the nineteenth century, Shepherd (12) suggests that sailors of the Royal Navy were offered a strong tot of rum prior to surgery whereas soldiers were given a bullet on which to bite!

The introduction of ether anaesthesia in 1846 rapidly spread around the world including the military. The American forces used it first in battle at Buena Vista on 22 February 1847 (13,14) and the Russians were probably next in August 1847 (15) whilst the Danes were probably the first to use chloroform on the battlefield in the war between Germany and Denmark (1848-1850) (16).

The Malta[3] Times reported the discovery of anaesthesia on 9 February 1847 (17). Assistant Surgeon T Spencer Wells Royal Navy at the Royal Naval Hospital in Malta immediately sent for a Hooper's ether inhaler (18) (Figure 1) that arrived on 4 March.

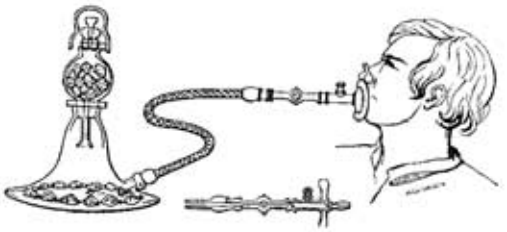

Fig 1. Diagram of Mr Hooper's Ether Inhaler. Reproduced from the Lancet 1847; i: 77

The dental extraction on 6 March 1847 was the first recorded anaesthetic by a British serving medical officer (19). He then went on to write up a case series of over 100 anaesthetics (20). Spencer Wells later served in the army during the Crimean War.

In Grahamstown (South Africa), two regimental medical officers were present at an amputation on 16 June 1847 during the Kaffir wars, the first anaesthetic given outside America and Europe (21).

Chloroform was taken up equally rapidly, with the medical officer of HMS Columbine using it in December 1847 for a dental extraction and it became a stock item of naval stores in 1852 (22). It was also used in the Punjab campaign but there was greater mortality with chloroform than without (23), although the Assistant Surgeon to His Highness the Nizam's 2nd Regiment of Cavalry reported the successful use of chloroform in 15 of 18 major amputations in the Deccan (24) and Kidd (25) reports that chloroform was used extensively during Lord Gough's battles at Chillianwallah etc.

The Crimean War (1854-1856) was the first major conflict in which anaesthesia was used extensively on the battlefield; chloroform being almost always the agent of choice, both by the Regimental Medical Officers and in hospital. However the Senior Medical Officer, Dr Hall, did warn against its use in the severe shock of gunshot wounds (26).

Until the end of the nineteenth century, military anaesthesia continued mainly with chloroform although Dr Thudichum appealed for funds to evaluate nitrous oxide as an anaesthetic in the military hospitals during the Franco-Prussian war of 1870 (27). During the war in South Africa (1899-1902), mounted Medical Officers were issued with chloroform whereas base hospitals also had ether and two drop bottles issued.

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1. AD first century. A contemporary of Pliny the Elder.
2. 1766-1841.
3. RNH Bighi

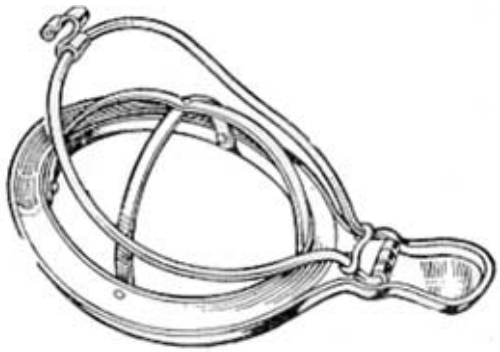

Fig 2. Schimmelbusch mask (issued to regimental medical officers until early 1970s).

It was about this time that Medical Officers appear to have started to specialise as anaesthetists. The distribution list of Officers of the Army Medical Staff and RAMC for the early 1900s records the appointments of a number of medical officers as anaesthetists (28). An early contributor to the then new Journal of the Royal Army Medical Corps was Captain JWH Houghton RAMC who wrote on the use of spinal anaesthesia at the Queen Alexandra's Military Hospital, Millbank (29,30)[4] (31), in Sierra Leone (32) and the Cambridge Military Hospital, Aldershot (33).

Major advances in military anaesthesia and resuscitation were made as a direct result of the first World War that were applied to civilian practice. Captain G Marshall RAMC(T) (later Sir Geoffrey) produced a more physiological basis for resuscitation and fluid therapy (34) whereas Captain HEG Boyle RAMC(T) gave his name to the plenum system of anaesthesia apparatus used both in the field and civilian practice in the United Kingdom for some sixty years (35) (Figure 3).

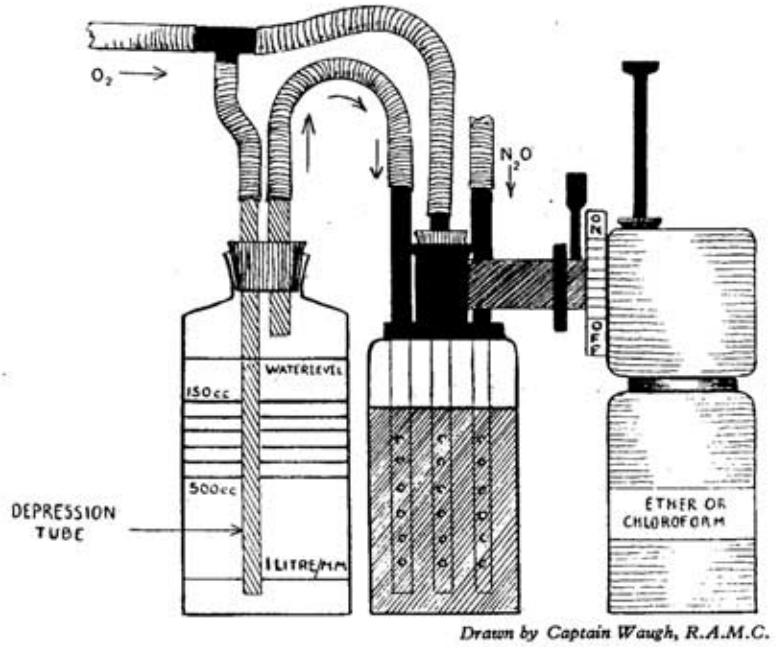

Fig 3. Field Boyle's anaesthetic apparatus (showing connections for modifications to enable carbon dioxide absorption). From Binning, 1943 (36).

In the inter-war years, anaesthesia in the Army appears to have languished somewhat although intravenous anaesthesia (37) and rectal anaesthesia (38) were investigated and intratracheal anaesthesia as a routine was adopted by some military anaesthetists (39).

The first specialist diploma in anaesthesia in the UK was introduced in 1935 (40) but in 1939 only five regular officers held the diploma and only two were actually practising anaesthesia (41). The War Office decided that only those with the DA or anaesthetists on the staff of a London or big provincial hospital recognised by the University of Cambridge for training medical students could be graded specialists and granted the rank of Major (or other service equivalent). War, once again, heralded many advances in anaesthesia and resuscitation and many Medical Officers trained as anaesthetists who, on return to civil life, were able to become consultant anaesthetists with the advent of the National Health Service. The appointment of civilian consultants to the Army and military advisers helped to upgrade equipment and the standing of the specialty.

Over the last fifty years, the scope of anaesthesia has increased in many directions and now encompasses both intensive care and pain relief. Training has improved beyond all recognition (although anaesthesia was, and still is, in the forefront of developing training programmes) and the number of postgraduate qualifications has multiplied. Equipment has been extensively modernised although it has been necessary to take into account the limitations imposed by field practice and logistics in its provision. The needs of the service generally, too, have changed from providing anaesthetists for small isolated military-hospitals throughout the world[5] to supporting expeditionary military operations whilst working in NHS hospitals (Ministry of Defence Hospital Units (MDHUs) and other teaching hospital facilities) to acquire and maintain specialist skills. This paper examines the career pathways and prospects for training as a military anaesthetist.

A Career Pathway for the Army Anaesthetist

Military anaesthesia, mirroring the advances made in civilian practice, has contributed much towards the management of injured service-personnel, both in peacetime and war. Anaesthetists are involved throughout the spectrum of care, sometimes at the point of wounding, right through resuscitation, surgical treatment, postoperative and intensive care, acute pain

4. Captain Dorgan in writing of his personal experience of spinal analgesia gives a somewhat less appreciative report.
5. Locations included BMHs in Hong Kong, Cyprus, Gibraltar, Singapore, Malaya, Jamaica, Johannesburg, Sierra Leone, Nairobi, Japan, Austria, Baghdad, Libya, Falkland Islands and Germany.

management to the recovery and rehabilitation phases with chronic-pain management. Thus, the skills required and opportunities available are many and varied. Anaesthesia combines the need for good practical skills to undertake many differing procedures and knowledge of applied anatomy, physiology and pharmacology that these treatments may affect. To administer safely a number of extremely potent drugs, via different routes of administration and often in combination, necessitates a good background knowledge and understanding combined with technical proficiency.

The Training Pathway

Medical Officers during their Entry Officer's Course are given an opportunity to express their preference for specialty training. This is not binding on them but it identifies those who may wish to go on to start training in a particular specialty after their general duties appointment. It also allows the Consultant Adviser in Anaesthetics to DGAMS to see potential anaesthetists informally and answer their questions about training and possible future careers. Potential anaesthetists are then encouraged to go and enjoy their time in General Duties. This currently lasts two years although the effects of Modernising Medical Careers (MMC) may change this. The foundation programme will last two years and be followed by run-through training that starts in 2007. If any additional questions arise in the general duties medical officer (GDMO) phase, further interviews can be arranged. A formal application for specialty training is submitted to the RAMC Post Graduate Council (PGC) towards the end of the GDMO posting. Between now and 2007, training programmes will be tailored individually depending on the stage of training.

Once the PGC has approved the application for training, the Defence Consultant Adviser (DCA), as head of the specialty for all three services, who would have been informed at an early stage of a Medical Officer's wish to specialise in anaesthesia, will advise the Army Medical Services Manning and Career Management Division (AMS MCM Div) about where to post the trainee for his or her first SHO appointment after completing the GDMO tour. Medical Officers are usually posted to one of the MDHUs that are currently located in Derriford (Plymouth), Frimley Park (Camberley), Middlesborough, Peterborough, Portsmouth or the Royal Centre for Defence Medicine in Birmingham (RCDM). Although the MDHUs have some geographical and historical links to the single services it is possible for trainees of any service to be posted to any of these hospitals on the recommendation of the DCA, particularly if there are personal circumstances or particular aspirations.

Senior House Officer Training

Once at the new hospital, a military SHO in anaesthesia is absorbed into the departmental training programme in the same way as his or her civilian colleagues and, following mandatory unit and hospital induction programmes, embarks on anaesthesia training proper. Training guidelines are provided by the Royal College of Anaesthetists in the document "The CCST in Anaesthesia-Volumes 1-4". Although this document is currently out of print it may be accessed on the internet through the College website at http://www.rcoa.ac.uk/index.asp?PageID=57 (42).

For the first three months the novice senior house officer (SHO) is fully supervised by senior doctors in the department. Anaesthesia is not generally covered extensively in the undergraduate curriculum, and, apart from some potential exposure in the new foundation programmes, most of anaesthetic practice is completely novel to the new SHO. Most training schemes operate a competency-based programme and progress is closely monitored, either by the Royal College of Anaesthetists' tutor or a senior military anaesthetist, or both. The learning curve, however, is steep and following successful completion of the initial phase, the trainee is incorporated into the on-call rota, with appropriate supervision. The aim of this initial training is to develop a capable and confident practitioner, skilled in the basic techniques of patient assessment, resuscitation, general and local anaesthesia, postoperative care and acute-pain management. Exposure to a variety of specialties is desirable, particularly intensive care medicine (ICM) obstetric and paediatric anaesthesia, three months of ICM being a formal requirement for the completion of anaesthetic SHO training.

With the exposure to, and acquisition of, new skills comes the requirement for personal record keeping and audit of practice. The logbook and portfolio become an important tool in assessing performance and prepare the trainee for his or her part in the wider process of personal, professional and organisational audit.

In addition to the daily routine, it is not long before sights must be turned towards the external assessment of a trainee's performance-'the Exam'. The Diploma of Fellow of the Royal College of Anaesthetists (FRCA) is divided into two parts, the Primary and the Final. The syllabi for these examinations may also be accessed on the College website at http://www.rcoa.ac.uk/index.asp?PageID=46. The Primary examination may be attempted after 12 months in a suitable training post but most trainees make their first attempt at about 18 months. There are many external training courses

available to help prepare for this examination and military trainees usually have no difficulty in arranging study leave and funding to attend either the various day release or intensive courses. The Defence Postgraduate Medical Deanery (DPMD) currently has a generous budget for other appropriate courses, such as medical simulator training and various life-support courses (ALS, APLS, ATLS, PALS etc), indeed provider or instructor status in at least one of these courses is considered an essential part of an all round cv.

Membership of the RCA is mandatory for all trainees and membership of the Association of Anaesthetists of Great Britain and Ireland (AAGBI) is strongly recommended; the Association's sub group, the Group of Anaesthetists in Training (GAT) holds an Annual Scientific Meeting which is a lively and popular forum where trainees can meet and get involved with their anaesthetic peers both in and out of the military.

As senior house officers, military trainees will not be required to deploy on operations in anaesthetic posts, although recent conflicts have demonstrated the utility of anaesthetic trainees in general duties posts in field hospitals when deployed. This requirement is only likely to occur on large-scale deployments, but it does demonstrate the need for trainees to maintain their core military-skills. It is also possible that those trainees who come to the specialty fully trained in general practice may be asked to deploy in that rôle in certain circumstances.

Transition to Specialist Registrar

The next step is to become a Specialist Registrar (SpR) and requires that the SHO must have completed at least two years in a recognised anaesthetic post of which three months must have been spent in ICM; he must have passed the Primary FRCA; completed the required competency-based assessments and maintained a satisfactory record of training (logbook).

With the above, a trainee is eligible to apply to the Triservice Postgraduate Deanery for an SpR National Training Number. However, as enrolment onto the SpR training programme requires converting from a Short to a Medium Commission with its significant commitment to further service in the Army, many trainees use the remaining time of their short-service commission to widen their experience of medicine in general before applying for an NTN.

Trainees are encouraged, with advice from the DCA/CA, to suggest their own preferences for training schemes within the United Kingdom. Previous experience in a region or personal circumstances are often given for choosing a particular area. Informal contacts with the director of a specific programme are important to ensure that a trainee will be welcome!

Currently, the Regional Educational Adviser (RCA) and the DCA/CA interview trainees before attending the West Midlands Deanery appointments board. Although service trainees are not in direct competition for appointments with NHS trainees, they must show equivalence with civilian standards. Trainees who are unsuitable for an N.H.S. appointment are not given a military 'number' until they can demonstrate they have reached N.H.S. standards. This, however, is a rare occurrence as most military trainees perform well above the standard required. The award of a military NTN and a place on a training scheme attracts a return of service of three years once appointed as a military consultant anaesthetist.

On appointment as an SpR, the trainee follows the same training scheme as his civilian colleagues for the first two years. This entails gaining experience in anaesthesia for most of the major subspecialties, cardiothoracic, neurosurgery, obstetrics, paediatrics and further ITU experience, in a teaching hospital environment. The supervising consultant usually appraises performance in each block and at the end of each year these appraisals are consolidated together to form the Record of In Training Assessment (RITA). During the RITA process, the RCA tutor and a Service representative will examine a trainee's logbook, assessments and any publications or audits completed to determine whether or not the trainee is ready to proceed to the next year of training.

The trainee must have passed the Final FRCA examination before he or she is allowed to progress to year three. N.H.S. trainees usually spend year three at a District General Hospital (DGH). Service trainees are encouraged to spend this year at an MDHU or RCDM to remind them that they are actually military doctors! The time is spent consolidating the extended skills learnt in the university environment in the more down-to-earth setting of a DGH. It is likely that a trainee will use this time also to gain administrative and management skills. It is during year three or later that he or she may be called upon to serve in an operational rôle. The RCA recognises up to three months of a military deployment for training purposes, provided that a consultant directly supervises the trainee. All recent trainees have seen some operational service and it provides excellent experience not available to their NHS colleagues.

The fourth year is often used as a 'fellowship' year[6] where a trainee may develop an area of special interest, such as intensive care, aero-medical retrieval or pain manage-

6 On full pay unlike civilian SpR fellowships.

ment etc. This year may be spent abroad, if the trainee can demonstrate to the DPMD that the training is unavailable in the UK and that it is essential for the training of a military anaesthetist. Many recent trainees (one of the authors included) have had very positive experiences of overseas training. The amount of trauma in the UK, although on the increase, does not compare with that experienced in countries such as South Africa and the United States. The Australians have been running sophisticated aero-medical retrieval services with both fixed and rotary wing aircraft for many years and thus extremely relevant experience can be gained in a very concentrated form. Additionally it encourages the retention of military SpRs.

The final year of SpR training is used to complete any aspects of the trainee's training programme that may be considered deficient. It may be possibly to spend the final six months in the hospital where the successful trainee wishes to be posted as a consultant.

MMC is likely to affect and reduce the training programme from the above scheme so that a CCT is awarded at the end of specialist year 3.

Transition to Consultant Status

The trainee undergoes the final RITA on successful completion of his final year. This is more extensive than the annual RITAs of previous years as it is the Deanery's final chance to ensure that the trainee is adequately prepared to take on the rôle of a consultant in the specialty. If successful, the SpR is recommended for the award of a Certificate of Completion of Training (CCT, formerly CCST) that allows a civilian trainee to apply for a consultant appointment. However, the military trainee is posted to a consultant appointment by the AMS MCM Div on the advice of the DCA (which hopefully accords with his or her wishes) and the agreement of the proposed hospital. In order to maintain consistent standards, the military consultant candidate is brought before a suitably constituted appointments board. The Armed Services Consultants Appointments Board (ASCAB) used to consist of a Chairman appointed by the President of the RCA and the civilian honorary consultants to the three services, with the Dean or his representative and the DCA or his representative in attendance. There could be little doubt that being able to convince such a civilian board of one's suitability for consultant status was a reasonable test of one's ability and equivalence. However the ASCAB composition now reflects much more closely the composition of a statutory NHS consultant appointments committee, removing all doubt about the process by which military consultants are appointed.

Life as a Military Consultant

The new army consultant anaesthetist is appointed, either to a military post in an MDHU, or to a post in a Field Unit such as 16 Close Support Medical Regiment which requires parachute training or one of the three Regular Field Hospitals, 22, 33 or 34.

As an MDHU consultant most of the time will be spent pursuing a normal working-life in a DGH with plenty of opportunities for pursuing a specialist interest, although the primary role is to support operational commitments around the world. Typically a military consultant anaesthetist can expect to have one six to eight-week tour per year, though this may change depending on the operational tempo.

A consultant in a field unit may well have a greater commitment. In addition to deployments, training and preparation of unit personnel takes up extra time and the key is to get the right balance. As doctors, we must continue with our professional anaesthetic-development, as well as providing military expertise in the field.

As consultants it is vital to continue with professional development, this is possible with the generous financial support of the DPMD who will fund most postgraduate education if relevance can be demonstrated.

Conclusion

In conclusion, military anaesthesia is a vital component of the medical mission in support of military operations. Military anaesthetists are better trained and motivated than their civilian colleagues. The military way of life is challenging, exciting and guaranteed to provide unique experiences, however long the trainee chooses to stay.

This guide is written as the MMC process is just beginning and although the authors do not anticipate any major changes in the programme, some of the terminology and timings may change.

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