

Special Feature

Maritime in transit care

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Abstract

Operation GRITROCK saw the first operational deployment of the Maritime In Transit Care team from the Role 2 (Enhanced) (R2(E)) Medical Treatment Facility, which is able to provide Damage Control Surgery and the limited holding of patients, situated on board RFA ARGUS. Whilst the Medical Emergency Response Team demonstrated the capability of advanced military Pre-Hospital Emergency Care (PHEC) on Op HERRICK, the need to provide a similar high level of care on contingency operations was recognised. Op GRITROCK allowed for the continued exploration of a maritime capability from an established R2(E) platform whilst providing medical evacuation capability for a significant population at risk distributed over a large Joint Operation Area. Although the patient load during the operation was low, key lessons were learnt and opportunities identified to further develop the newly recognised sub-speciality of PHEC, both medically and logistically, and these will be discussed in this article.

Background

During the Afghanistan conflict, the UK Defence Medical Services learnt valuable lessons in health care. One success was the development of a bespoke capability to provide a Medical Emergency Response Team (MERT), which could begin advanced Pre-Hospital Emergency Care (PHEC) in a Chinook helicopter *en route* from point of wounding to the hospital at Camp Bastion. This forward emergency capability allowed a greater level of care than had previously been available to troops on the ground and contributed to enhanced survival rates in major trauma (1). With the draw-down from Afghanistan, a need was identified to develop smaller and more flexible teams to provide a comparable level of care in different environments using different modes of transport.

The Maritime In Transit Care (MITC) team has been developed to provide the Royal Navy and Royal Marines with a pre-hospital and critical care transfer capability that can be utilised during operations to close the gap from point of wounding to provision of damage control resuscitation and critical care support; this can be delivered in the land, littoral or maritime environments. In addition to retrieving casualties from point of wounding or illness (Forward Medevac), MITC can also provide secondary critical care transfers from forward medical facilities to a higher level of care (Tactical Medevac).

Capability development

In order to develop the MITC capability, a working group was established to deliver the new capability across

multiple platforms. The MITC concept was first derived from the small Damage Control Surgery (DCS) teams deployed as Role 2 Afloat (R2A) teams (2) on board various fleet platforms (2). The working group was tasked with formalising policy and equipment for the MITC capability to include the full range of transfer options, from the well-equipped Role 3 (R3) Primary Casualty Receiving Facility (PCRF), which is able to provide enhanced imaging and extended ITU staging of patients, to the lightly equipped Role 2 Light Manoeuvre (R2LM) Commando Forward Surgical Group (CFSG), which has limited diagnostics and a short ITU holding ability. In 2014, it was agreed which medical modules should be supplied to each platform for on-going evaluation, an issue that will be discussed later in the article.

Whilst developing the MITC capabilities, the varying needs of the contingency platforms had to be considered during force generation. Initially, plans were made to embed MITC personnel within the complement of the R2/R3. Whilst this appears to be appropriate on R2A (3), due to its need to be a small and flexible team, on both R2LM and R3 PCRF this would potentially lead to a reduction of capability. For the Forward Medevac capability, the training burden of ensuring all Emergency Medicine (EM) nurses deploying are in date for specific MITC competencies (military and PHEC) would be costly. The nomination of a dedicated MITC Nurse reduces this training burden. When looking at a Tactical Medevac, tasking an Intensive Therapy Unit (ITU) Nurse and Consultant from R2LM to move a patient to R3 would help facilitate rearward transfer, but

would diminish the capability and counter any benefit to the facility. However, tasking the dedicated MITC team plus an embedded ITU nurse from R3 to collect the patient enables the R2LM to maintain capability, whilst the R3 does not lose capability, as the nurse utilised to retrieve the patient is the nurse receiving the patient. Therefore, on the PCRf it is possible to embed some elements of the MITC team within the current establishment, but this may not work for R2A or R2LM.

Much of the important work to develop the capability has been undertaken by a multi-disciplinary MITC working group. Since PHEC has been recognised as a sub-specialty by the General Medical Council (GMC), it was important that military PHEC was also recognised as a separate sub-specialty. This has been achieved with the appointment of a Defence Consultant Adviser (DCA) in PHEC and a single Service Consultant Adviser (CA) MITC to continue the development of Maritime PHEC (3).

Op GRITROCK

Whilst individuals have deployed and worked in the MITC environment previously (4), a dedicated doctor had not deployed as a member of the team prior to Op GRITROCK (5), when a team consisting of a Consultant, EM Nurse and Medical Assistant was generated and deployed with the PCRf. This milestone is important, as it has been recognised that pre-hospital interventions should be delivered by personnel of the same seniority and experience as those working in the Emergency Department. Op GRITROCK saw the first deployment of this nature (3).

The initial stage of the deployment provided many challenges for the team. It was the first time that the MITC modules had been issued to the PCRf, and various issues arose from the inevitable misunderstandings about quantity of items when ordered, storage issues and inappropriate equipment. Unfortunately, the PCRf was already at saturation point with medical equipment and stores. This meant that MITC equipment was spread over seven different locations, making it difficult to manage the equipment, and adding to the response time of the team. Held at thirty minutes' readiness (Alert 30) during daylight hours and sixty minutes' readiness at night (Alert 60), the team was required to be on watch for the duration of the tour. This had a sustainability risk and limited cover was available to allow for illness or injury of team members.

The equipment bags supplied with the modules were not suitable for advanced PHEC and resulted in equipment being damaged and rendered unusable. The subsequent Significant Event Report (SER) identified the need for more robust PHEC equipment and a more suitable bag was sourced from the Search and Rescue (SAR) teams at Royal Navy Air Station (RNAS) CULDROSE, trialled during the

second half of the deployment, and found fit for purpose.

Also deployed on board RFA ARGUS were three Royal Navy Merlin Mk 2 aircraft from 820 Naval Air Squadron. These airframes became the primary vehicle for MITC during the tour. Their normal tasking is anti-submarine warfare, but they were adapted to provide a support capability including heavy lift, helicopter transport service and Helicopter Emergency Medical Service (HEMS). Unfortunately, due to the nature of the operation, it was not possible to have an aircraft always loaded and equipped for MITC (in contrast to the loaded and equipped MERT Chinook in Afghanistan). As a result, equipment had to be easy to move and self-contained. However, when an aircraft was held at Alert 30/60, it was inappropriate to keep the equipment on board, because of regular alternate tasking. This meant that each MITC activation required collection of equipment and loading of the aircraft, which was a significant challenge that should not be under-estimated. The fast boats of 539 Assault Group Royal Marines were also embarked, and there was a possibility that the team would be required to transfer patients by either landing craft or Offshore Raiding Craft (ORC). This presented additional challenges: RFA ARGUS was not designed to accommodate amphibious missions, having no dock. As a result, there are limited ways of embarking a casualty from a landing craft or ORC. However, options were available should a serious casualty require movement by boat, with the preferred method being to winch the patient from the boat to the helicopter and then land on deck.

The obvious threat not previously factored into the MITC role was that of the spread of infectious diseases, in particular Ebola Virus Disease (EVD). RFA ARGUS deployed to provide medical aid to around 300 UK military personnel on the ground in Sierra Leone, but the Population At Risk (PAR) grew to over 1000, including international volunteers and NGO staff, which presented its own unique challenges. Whilst UK forces were mainly isolated in secure locations and rigorously monitored for evidence of EVD, no such assurances were true for the remaining PAR. The introduction of Ebola worker categorisation helped to define the risk and guided the joint Headquarters in their decisions regarding who was appropriate for transfer to the PCRf. A Standard Operating Procedure (SOP) was also developed for the use of enhanced personal protective equipment (PPE) and extra time would be spent preparing a trauma patient to minimise leakage of bodily fluids whilst in the aircraft. Initially, a simple solution utilised the plastic Maritime Escape Stretcher (MES), which is, essentially, a shallow orange plastic bathtub, into which the patient could be secured and which would contain any bodily fluids.

After the initial trials of the MES, the team moved to the lightweight stretcher, which can be secured to the deck of

the Merlin and can, more importantly, be lifted by a winch. A trauma patient would be secured skin to scoop, and then the patient and scoop would be wrapped in an ambulance sheet and immobilised in a vacuum mattress. In addition, for trauma and hypothermic patients, the casualty could be wrapped in a Blizzard Heat™ Blanket before being secured into the lightweight stretcher. All of these levels of wrapping around the patient would also safeguard against leakage of bodily fluids.

The MITC team was already small and flexible, but it was never intended always to deploy as a three-person team (3). The Medical Assistant (MA) and EM nurse can also be utilised together or individually to transfer patients not requiring advanced PHEC, but needing a level of medical assistance. However, neither the MA nor EM Nurse had the authority to issue medication under either the Medics Issuing Protocol (MIP) or Patient Group Directions (PGD); this had previously been managed by the provision of PGD on R2A (4). This issue is being addressed by the MITC working group, with the ultimate aim being to have the EM Nurse trained as a nurse prescriber.

The future for MITC

Whilst it is recognised that further work is still required, Op GRITROCK has proved invaluable in developing MITC as a concept and deployed capability, and has allowed for several significant advances to be made. A business case is currently in progress to allow those nominated to a MITC line to be correctly equipped with properly fitted aircrew Survival Equipment (SE), which will be held at a conveniently located Naval Air Station to allow for maintenance and collection by the individual prior to deployment. A full review of the equipment modules was carried out with a recommendation to increase holdings to

improve the sustainability and enable the treatment of five T1 casualties, those requiring medical assistance within 90 minutes, and five T2 casualties, those who could wait up to four hours for assistance, before resupply was needed.

Terms of Reference (ToRs) for each role, including the supplementary ITU nurse, have been ratified by Navy Command Headquarters and approved training can be undertaken as required to include the MERT or Critical Care Air Support Team (CCAST) courses run by Tactical Medical Wing at Royal Air Force (RAF) Brize Norton. Important additions to the ToRs include the addition of Short Term Air Supply System (STASS) training in addition to the current Helicopter Underwater Escape Training (HUET) requirement. The nursing cadre is currently exploring professional study for Level 7 Advancing Nursing Practice to allow the nursing line to be filled by autonomous nurse practitioners with the ability to prescribe independently, thus improving the skill mix available when deploying the MITC team. For the MA cadre, importance will be placed on pre-hospital experience, allowing MAs to undertake specific PHEC training and placements whilst based in a base port medical centre.

Summary

The deployment of MITC on Op GRITROCK has allowed significant advances to be made in the development of the capability, whilst identifying the most appropriate equipment required for the role. In addition, the skills and knowledge necessary to provide a highly capable and flexible pre-hospital and critical care transfer team in the land, littoral and maritime environments have been identified.

References

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