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## Association of Air Ambulances

# Framework for a
# High Performing
# Air Ambulance Service 2013

# Foreword

Since the introduction of the first air ambulance for emergency care in 1987, air ambulances across England and Wales have steadily developed into highly regarded, consistent, critical pre-hospital care services. These services, known as Helicopter Emergency Medical Services (HEMS), have grown consistently, not only in the number of aircraft but also in the level of advanced critical pre-hospital care being delivered. All of these services are mainly delivered by 20 charities across the UK, of which 18 are within England and Wales.

Each charity works tirelessly to raise funds for the network of aircraft and clinical teams. In 2011, that network of charities raised £76.6 million across the UK, primarily through the generosity of the general public. We must acknowledge the significant network of volunteers, committed staff and trustees whose passionate belief in their role drives them to raise these funds so successfully.

At the heart of the air ambulance charities and air ambulance services is an aspiration for clinical and operational excellence, consistency of clinical practice and sound underpinning governance. All elements of this aspiration, which is focused solely on further improving patient care, are now enshrined in the Association of Air Ambulances' Vision Statement: *'The AAA's vision is to improve patient outcomes through the provision of outstanding services to its members'.*

The Association now provides the bridge between air ambulance charities, ambulance services and its supply chain, thus aiding improved sharing of clinical best practice, coordinated fundraising and efficiency improvements. This process of continual improvement through collaboration is key to the on-going success of air ambulances.

The air ambulance services will continue to evolve through the advancement of both clinical and aviation practice. Recent examples include the development of Night HEMS; greater use of doctor/paramedic critical care teams and the development of specialist air ambulance services. In acknowledging these important advances, we must recognise that they would be impossible were it not for the incredible skill and professionalism of both the clinicians  and aviators involved.

This Framework, which owes a great deal to its predecessor, aims to provide an overview through which Air Ambulance Services and the NHS Ambulance Trusts / Foundations can further develop and deliver a high-performing, consistent, patient-focused critical care service.  The Framework does not advocate a specific model, but instead recognises the need for services tailored to meet the demands of the varying local care environments, thus ensuring that the needs of patients remain the priority.

I wish to record my thanks to all those colleagues listed in Appendix G for their hard work and contribution to the development and production of this Framework document, which is designed with the express purpose of improving patient outcomes.

*Bill Sivewright*

Bill Sivewright
Chairman of the Association of Air Ambulances
Chief Executive of the Dorset and Somerset Air Ambulance

*Association of Air Ambulances*

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# 1. Pre-hospital Care

## 1.1 Clinical Care

In 1966 a paper called "Accidental Death and Disability: The Neglected Disease of Modern Society" was published in the USA. The paper commonly known as "The White Paper" concluded that soldiers in Vietnam had a higher probability of survival from trauma than a motorist in an accident on a Californian freeway. This paper was instrumental in taking the established ambulance concept across the globe and adding pre-hospital care in the form of Paramedics. In the UK, pre-hospital care across several ambulance services started in the late 1970s. The professional practice has evolved in response to changing clinical demands and key UK government papers.[1-3] The recognition that mortality and morbidity rates associated with trauma-related deaths and injury could be reduced has led to the introduction of trauma networks and key changes to the delivery of pre-hospital trauma care. Pre-hospital medical care has also seen an improvement with the development of more specialised roles designed to provide alternative care for many medical patients. [4,5,6]

Paramedic practice has developed; education has become University based, local protocols have become national guidelines, and professional registration has led to careful regulation and the protection of the paramedic title. It is not only paramedic practice that has advanced; pre-hospital emergency care is now also recognised as a sub-speciality by the General Medical Council. These higher levels of education and regulation have resulted in enhanced clinical care whilst increasing the pre-hospital research and evidence. With the introduction of wider clinical performance indicators, the emphasis of pre-hospital care now lies firmly on clinical care and standards. [7]

The recognition that many patients require a higher level of clinical care at the point of illness or injury has resulted in many Ambulance and Air Ambulance Services utilising the services of doctors experienced in pre-hospital care. [8] The integration of physicians into traditionally paramedic-led Helicopter Emergency Medical Services (HEMS) units has resulted in improvements in clinical care. Several units now have integrated clinical governance and share best practice on an annual basis.

## 1.2 The NHS Ambulance Service

The NHS Ambulance Service has had to evolve during the last ten years in response to the NHS changing as a whole. [9] Patients' experiences are now tailored to their individual needs with alternative care pathways utilised to ensure definitive care is given in a timely manner. Whilst performance indicators still monitor response times, the emphasis has transferred to clinical performance indicators to include patient outcome, which will enable us to measure how we are doing clinically by reviewing specific and enhanced care bundles. [7]
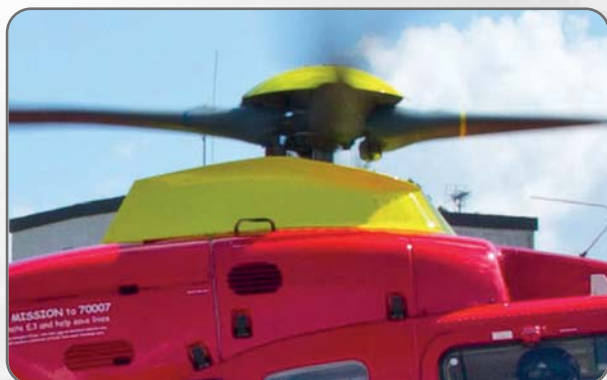


Many Ambulance Services employ a mix of clinicians; doctors, nurses, emergency care practitioners and critical care paramedics. These additional roles supplement the more traditional roles of the emergency medical technician and paramedic. These additional roles offer expertise in trauma care, minor injury and illness. Specialist paramedics and HEMS dispatchers working in emergency operations centres allocate the right resource for the right patient at the right time.

With regards to Air Ambulance Units, many now employ a team approach of a doctor and/or specialist paramedic

teams to ensure that all patients receive the highest level of clinical care from the point of illness/injury through to delivery to a definitive care centre. The knowledge and experience that the team possesses allows for not only clinical expertise but also decision-making processes and problem-solving skills critical to many of the cases attended across the country by Air Ambulance Units.

Even though there has been a shift towards clinical outcomes and patient experience, response times are still an important factor for any ambulance service. For cases where speed is of the essence or a double crewed ambulance may not be required, many services utilise solo paramedics, responding in cars, on motorbikes and even on bicycles. This allows for rapid intervention and appropriate resource allocation when required.

In more rural areas many ambulance services have adopted civilian and military community first responders, equipped with automatic defibrillators and a range of basic ambulance equipment to ensure patients receive emergency care in a timely fashion.

Where time is an important factor, ensuring the right level of clinical care is essential. For example, West Midlands Ambulance Service and South East Coast Ambulance Service have worked in partnership with local universities and developed academic awards focusing on critical care and transfer, delivered at Masters level. These qualifications allow paramedics to extend their clinical and cognitive skills, thus providing specially trained staff to complement physicians working with Ambulance Services.

However, caution has been expressed by some physicians and arguments presented that whilst certain techniques can be taught, skills in other areas are based on years of medical training and the development of clinical acumen.[10,11] Equally there is evidence to support the advancement of paramedic practice and it has been recognised that core and advanced paramedic skills are developed further in association with good governance and research. [12,13,14]

## 1.3  Air Ambulance Services

The sector distinguishes between a **Helicopter Emergency Medical Service (HEMS)** and **air ambulance** missions.  A HEMS flight is a mission carried out by a helicopter operating under a HEMS approval and aims to facilitate emergency medical assistance where immediate and rapid transportation is essential, by carrying:
- medical personnel; and/or
- medical supplies (equipment, blood, organs, drugs); and/or
- ill or injured persons and other persons directly involved.

Response to a HEMS mission is solely based on the **clinical condition** of the patient(s). An air ambulance mission is one where the aircraft is used as an extension of the Ambulance Service's land vehicles for the transfer of patients from / to hospital. The introduction of air ambulances in 1987 was a major development in getting to, and treating, patients quickly. Aircraft with two paramedics or Critical Care Paramedic (CCP) teams is a common staffing method and continues to bring enhanced clinical care to the patient more quickly than a road ambulance and offers an extended skills and knowledge base for treatments of specific patient groups.

The principle of a doctor-paramedic team was first used by London's Air Ambulance.  This fundamental break from the usual paramedic-only model radically changed the dynamics of the crew and the level of care available to patients in the pre-hospital environment.  In 2003, the Great North Air

Ambulance integrated physicians into their team. At the time of writing, several Air Ambulance Services are using this approach to pre-hospital care including Kent, Surrey & Sussex; Great Western; Essex and Herts; East Anglian; Midlands; Thames Valley; and Hampshire and Isle of Wight Air Ambulances.

With the development of the HEMS in London in 1988 and a body of trained practitioners elsewhere, the delivery of care at the point of injury improved markedly, and has been shown to significantly decrease patient mortality and morbidity within an overall system, culminating in definitive hospital treatment. [15,16,17,18,19,20]

The paramedic-physician concept has been the subject of much debate over the years but is now consistently demonstrating increased survival rates and decreased morbidity in regions where it is in use.[17] Correctly utilised HEMS operations target the most seriously injured patients and those likely to benefit most from early medical input regarding scene management, triage, treatment and transfer. Other benefits include providing rapid, controlled and skilled secondary transfers to tertiary centres for further specialist input after initial resuscitation in a non-specialist hospital.

## 1.4  Major Trauma Networks

### 1.4.1    Background
In 2008, Lord Darzi's Next Stage Review, reported that there were 'compelling arguments for saving lives by creating specialised centres for Major Trauma' and Strategic Health Authorities were asked to develop regional plans on this basis. [22]

On 1st April 2009 a National Clinical Director for Trauma Care was appointed to lead the development of clinical policy.

There is unacceptable variation in major trauma care in England depending upon where and when people are treated, according to the National Audit Office report published in February 2010. [23]

This led to an NHS Clinical Advisory Groups report in September 2010, which contained advice and recommendations on setting up trauma networks. Trauma networks were included in the NHS Operating Framework. [24]

A system of Major Trauma Networks was proposed – and implemented - for England, with a Regional Major Trauma Network in the West Midlands. Each Major Trauma Network comprises a Major Trauma Centre (MTC) supported by a network of Trauma Units (TUs). A triage tool is used to identify patients who fall into the major trauma category and these patients are taken direct to an MTC if the journey could be made within 45 minutes.  If the patient can't be taken direct to an MTC then there is the option to take them to a TU for stabilisation and then an onward journey to the MTC would be arranged.

The Regional Major Trauma Network seeks to ensure that CQC standards relating to patient care are met and outcomes improved for this patient group. For example, by extrapolating national figures it is estimated that 50 to 60 lives a year have been saved in the West Midlands region alone following implementation.

The model means each geographical region has a network of TUs geared to treat trauma patients ranging from those with life threatening conditions to those with less complex injuries. This 'trauma system' integrates pre-hospital care (i.e. the care delivered by paramedics at the scene of the injury), the initial



journey to a suitable unit, inter-hospital transfer (where required for patients in need of more specialist treatment), definitive hospital treatment and rehabilitation. Each region has a Major Trauma Plan which defines the pathway of care for severely injured patients, identifies the location and capability of each trust/hospital within the trauma system and outlines ambulance bypass protocols and thresholds for transferring patients to more specialist units. The boundaries of trauma systems are based on patient needs and not current NHS structures.

### 1.4.2 Definitions

**Major Trauma Centre** – A Major Trauma Centre (MTC) is a multi-speciality hospital, on a single site, optimised for the provision of trauma care. It is the focus of the Trauma Network and manages all types of injuries, providing consultant-level care.

- It is optimised for the definitive care of injured patients. In particular it has an active, effective Trauma Quality Improvement Programme. It also provides a managed transition to rehabilitation and the community.
- It takes responsibility for the care of all patients with major trauma in the area covered by the Network. It also supports the Quality Improvement Programmes of other hospitals in its Network.
- It provides all the major specialist services relevant to the care of major trauma, i.e. general, emergency medicine, vascular, orthopaedic, plastic, spinal, maxillofacial, cardiothoracic and neurological surgery and interventional radiology, along with appropriate supporting services, such as critical care.

**Trauma Unit** – A Trauma Unit (TU) is a hospital in a Trauma Network that provides care for most injured patients and:

- is optimised for the definitive care of injured patients. In particular, it has an active, effective Trauma Quality Improvement Programme. It also provides a managed transition to rehabilitation and the community.
- has systems in place to rapidly move the most severely injured to hospitals that can manage their injuries.
- may provide some specialist services for patients who do not have multiple injuries (e.g. open tibial fractures). The Trauma Unit then takes responsibility for making these services available to patients in the Network who need them. Other Trauma Units may have only limited facilities, being able to stabilise and transfer serious cases but only to admit and manage less severe injuries.

**Local Emergency Hospital (not designated as TU)** – The Local Emergency Hospital (LEH) is a hospital in a Trauma Network that does not routinely receive acute trauma patients (excepting minor injuries that may be seen in an Minor Injuries Unit (MIU)). It has processes in place to ensure that should this occur, patients are appropriately transferred to an MTC or TU.

It may have a role in the rehabilitation of trauma patients and the care of those with minor injuries.

### 1.4.3 Paediatrics

**Paediatrics** is the definition of a patient generally from birth to the age of 16, although some paediatric care pathways will also treat patients up to the age of 18. There are a number of sub-clinical specialisms such as Neo-natal care which can sometimes be included in Paediatrics.

The incidence of paediatric major trauma is low in comparison to major trauma in adult patients. Approximately 16% of patients are paediatric. These patients are taken to the most appropriate centre, be that trauma, burns etc to allow them to enter the most appropriate care pathway.



**SPECIALIST CENTRES [42]**
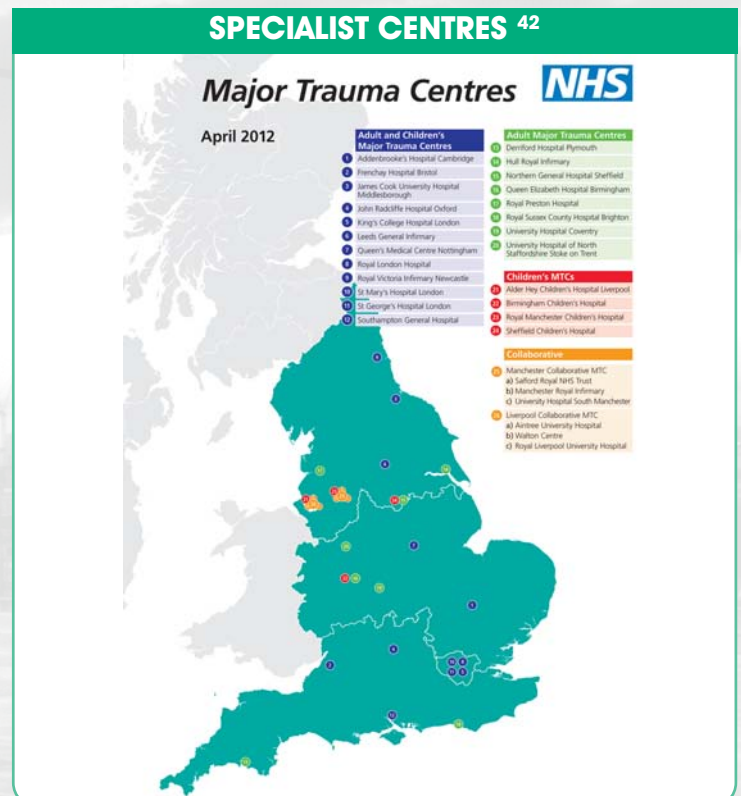
### 1.4.4 An Integrated System of Networks

The map on the right shows the correlation between the Major Trauma Networks and shows the expected flows of patients.

There would be some natural flow of patients into and out of each of the Major Trauma Networks to neighbouring Networks; for example a patient may be taken directly from one area to an MTC in a neighbouring network or a patient may be taken to a TU in one network and later transported on to an MTC in a neighbouring network.

Major trauma has been recognised as a leading cause of death and significant injury and disability. [22]

### 1.4.5 Burns Networks

In England and Wales, there is now a dedicated Burns Network, providing a specialist care pathway. If an attending air ambulance treating a burns patient feels a direct route to a specialist burns unit is the most appropriate course of action, a patient can be taken direct to that specialist unit. However, the method of injury causing the burn is often associated with other life-threatening injuries, resulting in the patient being taken to the MTC or TU first, stabilised and then receiving a secondary transfer.

The diagram on the right outlines the Burns Network in England and Wales. [25]



**MAJOR TRAUMA NETWORKS**



**BURNS NETWORKS**
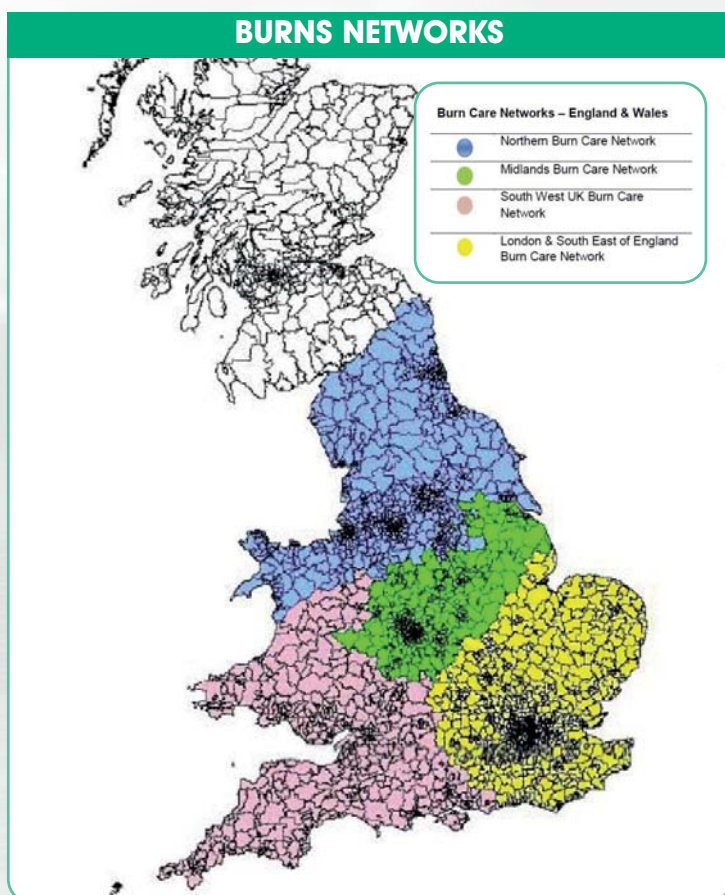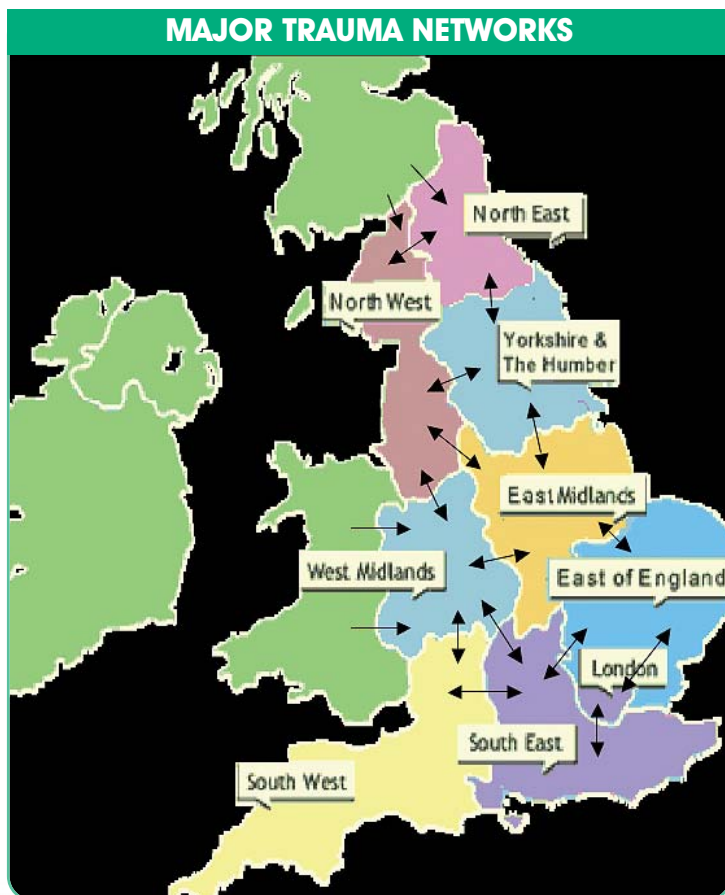
## 1.5  Air Ambulances Services in the Future

'Taking Healthcare to the Patient: Transforming NHS Ambulance Services'[3] highlighted the increasing role that ambulance services should take in pre-hospital care.  Air Ambulances have an important role to play in taking forward this strategy.  The deployment of physicians on aircraft is likely to be a feature of more Air Ambulances, so increasing the clinical ability at the scene of an accident.

Increasingly patients who are seriously ill or injured are being treated in specialist centres.  These patients include those with serious trauma injuries, injured or ill children, burns, stroke, neuro or major heart attack victims.  The development of major trauma and specialist centres will result in an increase in tertiary referrals and require Air Ambulance Services to work closely with the centres to ensure that patients are taken to the correct place from the scene of the incident.

These and other changes will take place within an increasingly regulatory regime and with increasing expectations by patients.  Both air and land-based ambulance services will need to ensure that they have in place staff with the relevant clinical training and systems and procedures which ensure that care is given by the right people at the right time and in the right place.

# 2. Background

## 2.1    The Air Ambulance Sector

### 2.1.1    Overview

HEMS services in the UK continue to evolve. At the time of publication there were 35 rotor wing aircraft, each funded by one of 19 charities.

The first service became operational in 1987 and the latest in 2013.  Together the Air Ambulance Services in the UK lease or own 35 aircraft. In May 2013 Scotland's Charitable Air Ambulance was the latest to be launched.

It is estimated that the 19 charities flew some 25,500 missions in 2012 with Primary HEMS accounting for just over 70% of these.

### 2.1.2    Funding Models

There are a number of different funding and operational models of Air Ambulance Services throughout the UK. The most dominant model is where charities are established as "Owner / Operator" charities. These charities provide the Air Ambulance Services within Ambulance Service regions.

### AIR AMBULANCE SERVICES IN ENGLAND



For a full and accurate list of all air ambulance, ambulance services, aircraft and facilities please visit:
**www.aoaa.org.uk**

For this arrangement to work there should be a Service Level or Operational agreement; this can be a formal contract, with penalties, between the charity and the participating NHS Ambulance Service(s).  An annual review of the agreement should be undertaken.

### 2.1.3    Services Provided by Air Ambulances

A HEMS flight is a mission carried out by a helicopter operating under a HEMS approval and aims to facilitate emergency medical assistance where immediate and rapid transportation is essential, by carrying:

- medical personnel; and/or
- medical supplies (equipment, blood, organs, drugs); and/or
- ill or injured persons and other persons directly involved.

Response to a HEMS mission is solely based on the clinical condition of the patient(s).

An air ambulance mission is one where the aircraft is used as an extension of the Ambulance Service's land vehicles for the transfer of patients from / to hospital.

Responding on a HEMS mission enables transportation of a clinical team rapidly to the scene of an incident and also convey a patient(s)

to a specialist treatment centre. Advantages of HEMS in this situation include:

- airborne response allows for a rapid and direct approach to the scene
- delivers a highly trained team so providing emergency enhanced care at the scene
- offers the ability for the team to recognise, stabilise and optimise treatment of complex evolving patho-physiological effects across all age ranges (e.g. an agitated child with a severe head injury, a flail chest, ruptured spleen and multiple long-bone fractures or an elderly patient with severe burns to head and body)
- enhances the accurate and appropriate triage of patients and scene management decisions
- continues seamless care from point of injury to the most appropriate receiving hospital
- allows for safe and controlled in-transit care of critically ill patients
- ensures appropriate handover and liaison both before and on arrival at hospital
- rapid turnaround times at hospital
- the ability to rapidly return to normal working geographical area after transfer to a specialist facility.

In secondary transfers, HEMS provides a subsequent transfer for patients who require specialist care, who were delivered initially to a local emergency department by a road crew. The transfer is undertaken in order to expedite their ongoing care to a specialist unit such as a cardiac, stroke, burns, spinal injuries or paediatric centre, whereby time and/or specialist care is required.[26]

Air Ambulance Services do not restrict their activity to solely responding to emergency incidents in the pre-hospital setting. Inter-hospital transfers can also be conducted by transferring time-critical patients from one treatment centre to another.

Ongoing improvements to the systems can only lead to further expansion of activities of the aircraft, such as:

- more appropriate HEMS tasks
- night flying
- patient transfers.

These are subject to individual charity trustee board determination in line with their charity's objects and aims, and also depends on increased income to provide for additional flying time and staff.

## 2.1.4   Clinical Staffing of Aircraft

Since the first service was established, different staffing models on the helicopters have evolved, reflecting both clinical and financial resources.  The main staffing models are:

- **Paramedic Model -** State-registered paramedics operating within Joint Royal Colleges Ambulance Service Liaison Committee (JRCALC) guidelines complemented by local Patient Group Directives (PGDs).[27]
- **the Critical Care Paramedic(CCP) Model -** Enhanced care can be delivered by this model to include advanced analgesia and interventions.
- **the Paramedic/CCP & Physician Model -** this provides further levels of clinical expertise for major trauma and medical patients.

## 2.2  The Legal and Regulatory Environment

### 2.2.1    The Charity Commission

Charities are highly regulated, wholly accountable independent bodies. Governed by the same laws and regulations as companies, charities must also comply with Charity Law. [28,29,30]

Charities are subject to a number of different legal regimes summarised as follows:
- all charities are subject to charity law
- all charities are subject to tax law
- every charity will be subject to the legal regime that applies to its particular legal form
- every charity will also be subject to the legal regimes that apply as a consequence of what it does.

There are many different legal regimes that can apply to a charity as a consequence of what it does; in this sense, a charity is in much the same position as any commercial entity operating in a particular area and it is the responsibility of the trustees to ensure compliance.

For a body to be a charity, it must be **independent**.  Independence in this context means that the charity must act to carry out its own charitable purposes, not for the purpose of implementing the policies or directions of a governmental authority, or any other bodies.

A charity is an institution which:
- is established for charitable purposes only, and
- is subject to the control of the High Court in the jurisdiction with respect to charities.

'Charitable purpose' is defined by Section 2 of the Charities Act.[31] It is any purpose that falls within a number of **descriptions of purposes** set out in the Act and is also for **'Public Benefit'**.  Both requirements must be met.

The description under which all Air Ambulance charities fall is:
> *The advancement of health or the saving of lives (including the prevention or relief of sickness, disease or human suffering).*

Public Benefit is the legal requirement that every charitable organisation must be able to demonstrate that its aims are for the public benefit.  There are two key principles, both of which must be met in order to show that an organisation's aims are for the public benefit:
- there must be an identifiable benefit or benefits.  It must be clear what the benefits are and the benefits must be related to the aims
- the benefit must be to the public, or a section of the public.  The beneficiaries must be appropriate to the aims and where the benefit is to a section of the public, the opportunity to benefit must not be unreasonably restricted.
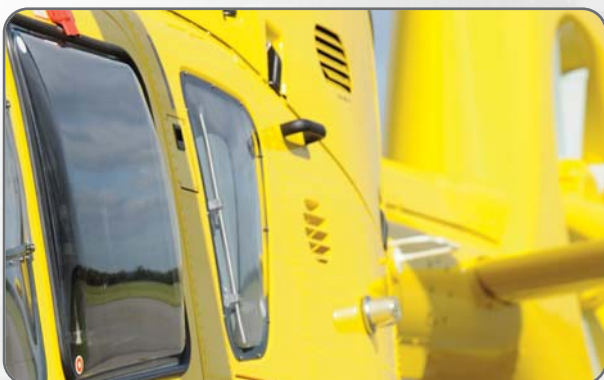
All charities are required by the Charities Act to report on their activities to fulfil their objectives to meet the Public Benefit. Charities not meeting this requirement can be removed from the register.

Public perception of what Government should provide changes over time, as do relative levels of provision by the charitable and public sectors. Public authorities have taken over responsibility for some services in response to changing public expectations, Government policy and statutory duties. More recently, whilst retaining responsibility for the

provision (or funding) of services, public authorities have contracted out delivery of some services to private or voluntary sector organizations.

There is no general legal prohibition on charities delivering public services under a funding agreement with a public authority or using their own funds to do so. This does not alter the trustees' responsibility to comply with charity law and the requirements of the charity's governing document. The following legal rules apply to all charities but are particularly relevant to charities delivering public services:

- charities must only undertake activities that are within their objects and powers
- charities must be independent of Government and other funders
- trustees must act only in the interests of the charity and its beneficiaries
- trustees must make decisions in line with their duty of care and duty to act prudently.

Charities play an increasingly important role in the supply of services on behalf of local (and, to a lesser extent, national) Government. However, for co-operation between charities and the state to be effective, it is important that the framework within which charities operate should be clearly understood.

### 2.2.2    Aviation Regulation
The aviation regulatory authority within the UK is the Civil Aviation Authority (CAA).  The CAA is a member of the Joint Aviation Authorities (JAA)  which is an associated body of the European Civil Aviation Conference (ECAC), representing the civil aviation regulatory authorities of a number of European States who agreed to co-operate in developing and implementing common safety regulatory standards and procedures. [32,33,34]

In October 2007 an adoption process took place to create the European Aviation Safety Agency (EASA). Many of the JAA's operational requirements are concurrent with the proposed EASA requirements. [35]

The JAA produced regulations called Joint Aviation Requirements (JAR). JAR Operations 3 (JAR-Ops 3) covered Commercial Air Transportation (Helicopters), including the operation of air ambulances.  HEMS operations are strictly governed by the Civil Aviation Authority using JAR-Ops. JAR-Ops 3 states that an air ambulance can deploy in one of two manners, "Air Ambulance" or "HEMS" as defined earlier.

### 2.2.3    Care Quality Commission
The Care Quality Commission (CQC) is the independent regulator of health and adult social care in England. It replaced three earlier commissions: the Healthcare Commission, the Commission for Social Care Inspection and the Mental Health Act Commission. Whilst the CQC regulates the NHS Ambulance Services, it does not  regulate all air ambulance charities.  This means that some air ambulances come under the jurisdiction of the CQC (those where the air ambulance is operated by the charity and where the charity employs the clinical staff) whilst others do not (those where the air ambulance works with clinical governance provided by an NHS Ambulance Service). Where the Air Ambulance Service is operated by the charity, the close partnership between the local NHS Ambulance Service and the charity means that the role of the CQC will impact on the charity. [36]

# 3. Trustees and Governance

## 3.1  Charity and Clinical Governance

This section outlines the governance responsibilities for air ambulances.  The governance responsibilities and accountabilities for the NHS are clearly laid down for all NHS and Foundation Trusts.  The best practice suggested in this section will allow charities to meet their own governance responsibilities whilst ensuring that these are compatible with the NHS.

Governance refers to the general management of the organisation and the legal framework with which the organisation must comply. Anyone who exercises powers in relation to the governance of a charity must act solely in the interests of the charity.  Governance responsibilities and requirements for NHS organisations are clearly laid down and must be followed by NHS organisations.  With regard to charities, the governance responsibilities will depend on the type of charity they are and their relationship with the NHS Ambulance Service(s).  The responsibility and accountability for governance will depend on the role that the charity plays – from funding to providing the service.

| | Grant Giving Charity | | Provider/Operator Charity | |
| --- | --- | --- | --- | --- |
| | Responsibility | Authority | Responsibility | Authority |
| Governance | Can't delegate | Unlikely to delegate | Can't delegate | Unlikely to delegate |
| Clinical Governance | None | None | Can't delegate* | Can delegate or integrate |
| Operational Management | None | None | Can't delegate* | Can delegate or integrate |

**\* For charities leasing/owning the aircraft but not directing clinical staff, their clinical governance and operational management responsibilities will be limited to issues around equipment.**

Governance arrangements are the responsibility of the Trustees and cannot be the responsibility of another organisation such as the host Ambulance Service that engages with the charity.  Critical to this position was a letter from the Charity Commission (4/12/07) which stated that 'charities must exist for charitable purposes, not just to carry out another body's policies or instructions.  Trustees must have freedom to decide how to use the charity's funds and assets to further its charitable purposes.  The Trustees must be informed by, but must not be directed by, the Ambulance Service.'

This has significant implications for the role of Trustees within the charity as well as the relationship between firstly Ambulance Services and Air Ambulance Charities and secondly, Air Ambulance Charities and contractors.   There is a need for absolute clarity around the roles and responsibilities of the Trustees and their partner organisations.



In the future charities will be expected to provide greater detail as to how they meet the public benefit requirement. Not only are the Government and donors increasingly demanding evidence that money is being used effectively by charities, but competition between charitable organisations for funding and contracts is also on the rise. Being able to provide evidence and demonstrate effectiveness is becoming a key priority for the third sector generally.

## 3.2  Trustees

### 3.2.1    Responsibilities of Trustees

Charity Trustees are the people who serve on the governing body of a charity and are responsible for controlling the management and administration of the charity. Trustees have ultimate responsibility for directing the affairs of a charity, and ensuring that it is solvent, well-run, and delivering the charitable purpose for which it has been set up.  Charity trustees must:

- ensure that they carry out their charity's aims for the Public Benefit
- have regard to guidance the Charity Commission publishes on Public Benefit when they exercise any powers or duties
- report on their charity's Public Benefit in their Trustees Annual Report.

Failure to meet the public benefit reporting requirement means that the charity trustees are failing in their statutory duty under the Charity Act.  If the trustees act imprudently, or are otherwise in breach of the law or the governing document, they may be personally responsible for liabilities incurred by the charity, or for making good any loss to the charity. Since trustees act collectively in running a charity, they will usually be collectively responsible to meet any such liability.

The role and responsibility of a charity trustee is onerous, without financial reward and carries responsibilities that cannot, without consultation, be left to others. As the role of air ambulances extends i.e. inter-hospital transfers, night operations and improved levels of clinical care, trustees have a responsibility to ensure that key decisions are made about the future of their organisations

### 3.2.2    Joint Responsibility and Joint/Several Liability

Trustees are jointly responsible for the activities of the charity and must act together. No trustee acting alone can bind his fellow trustees, unless specifically authorized to do so. This does not mean that board decisions must be unanimous; in that case the majority bind the minority.

### 3.2.3    Trustees' Discretion

The trustees of a charity are bound to exercise their own discretion in deciding who will benefit from the charity, precisely what facilities or services should be made available, and when and on what terms the public (or particular sections of the public) should be able to use the charity's facilities or services. Trustees can surrender their discretion to make those decisions only if they have power to delegate them (for example, under the charity's governing document). Where trustees are authorised to delegate, the person who makes the decision has the same duty as the trustees to take into account only considerations that are relevant to the pursuit of the charity's purpose.

In the case of continuing decisions (such as the selection of individuals for benefit), allowing the decision to be made by an individual or body with no delegated authority or fiduciary duty to the charity amounts to a surrender of discretion. Trustees must not only avoid surrendering their discretion without proper authority but they must also avoid fettering their discretion (except where the interests of the charity require them to do so).

### 3.2.4    Delegation

Trustees are required to act in person and decisions affecting the charity must be made by the trustees acting together. Trustees are, however, permitted to delegate a wide range of tasks, provided they give clear instruction which define:

- the tasks which are being delegated and the results that the trustees expect
- the limits of the authority which the delegate may exercise on the trustees' behalf
- the types of decisions that can be made by delegates in the course of their work and the types that must be referred back to the trustees
- how and at what intervals the delegates are to report progress to the trustees
- where day to day management and operations are delegated to staff, the board of trustees still remains ultimately responsible for all the charity's activities.

### 3.2.5    Conflict of Interest

Where there is a relationship between a charity and an authority, a trustee who is an officer of that authority is placed in a position of potential conflict between duty to the charity and loyalty to the authority. Consideration should be given to any trustees who serve on the charity boards that have a direct and corresponding relationship with partner organizations such as a co-located Ambulance Service Trust.   Where there is a trustee with a potential conflict of interest, the charity must clearly state the way in which any potential conflicts will be declared and dealt with.

## 3.3  Governance Arrangements and Responsibilities

Trustees should ensure that they have established appropriate arrangements to satisfy themselves that the Charity is meeting its objects.  These arrangements include:

- financial systems to meet the requirements of the Charity Commission and charity law with regard to raising monies and making grants
- a proper process to enable the Charity to make grants
- systems to assure the Board that the Charity's funds are being used for the purposes for which they were intended
- service level agreements with all relevant parties which are monitored
- best practice is followed when procuring equipment and supplies
- annual accounts and other returns required under charity and company law
- procedures to delegate authority in line with the Charity's purpose and objects.

   The auditors should have direct access to the chair of the trustees if they request it. It is best practice in the NHS and private sector for a sub-committee of the Board to be established to oversee the financial governance responsibilities.  In this case the auditors should have direct access to the chair of the Audit Committee.

A service-providing charity should also ensure that arrangements are in place to effectively discharge their clinical governance and risk management responsibilities, including:

- multidisciplinary governance, audit and research
- health and safety
- training, education and professional development;
- clinical risk and incident reporting
- standard operating procedures (clinical and operational).

The Medical Director should be the lead director with responsibility for clinical governance.

The trustees of a grant-giving charity should ensure that they receive quarterly reports from the local Ambulance Service committee's governance committee, to assure themselves that the funds granted to the local Ambulance Service(s) are being used for the purposes for which they were intended.  The Medical Director of the local Ambulance Service(s) should report at least once a year to the Trustee Board.

Service-providing charities should appoint a Finance Director, a Medical Director and an Operations Director, reporting directly to the Chief Executive/Director of the Charity and through him/her to the Board.

A grant-giving charity should appoint suitable officers to ensure financial scrutiny. Trustees should agree with the local Ambulance Service(s) what the Medical, Operations and financial officers' responsibilities are in assuring the trustees that grants made by the Charity are being used for the purposes for which they were intended.

Person specifications for the three Director posts are given in Appendix A.

## 3.4  Relationship With Third Parties

### 3.4.1    Principles
If another authority, including a government authority, has been given powers under a charity's governing document, it is bound to exercise those powers solely in the interests of the charity.

It is the duty of all Air Ambulance Charities to ensure that their constitutional documents have clear objects and powers of delegation; that Memorandums of Understanding and Service Level Agreements are in place; that the Charity takes independent advice (as recommended by the Charity Commission); and to ensure that all such documents are in the best interests of the charity and its beneficiaries.

The Air Ambulance Charity will have operational and business arrangements with a number of third parties.  The trustees should agree principles, codes of conduct, policies and procedures upon which such relationships should be conducted.   It is particularly important that:
- the requirements of the Charities Commission are fully met with regard to allocation and use of funds and that the allocation and use meets the objectives of the charity
- formal delegation of authority and lines of communication and accountability have been agreed in light of the Public Benefit reporting requirements within the Charities Act
- a dedicated link person is identified in both parties. This identified person will be responsible for the maintenance of communications between the parties and the dissemination of information to the appropriate person or department within their organisation.

### 3.4.2    Aircraft Operators
This document does not seek to prescribe the level of service provision of the operator as minimum operational facilities and pilot qualifications are specified elsewhere. It is advisable that the minimum level of operational performance and pilot qualifications / experience be laid down in the negotiated contracts.

Procurement of aircraft and/or accompanying services from aircraft operators should be conducted within the charities' best working practices.
Regular contract review meetings should be held with all interested parties.

### 3.4.3   NHS Ambulance Services

There must be a close relationship between each Air Ambulance Service and its local Ambulance Service(s). There should be a written agreement between the Charity and Trust Board of the host Ambulance Service which indicates where responsibility for the different aspects of management and governance lies. It should take the form of a written Operating or Service Level Agreement (SLA).

Where an Air Ambulance Service serves more than one NHS Ambulance Service Trust (or vice versa), one organisation should be identified to take the lead on governance matters.   The relationship should be reflected through joint Clinical Governance Committee meetings, sharing of best practice, lessons learnt from complaints and problematic inquests, patient feedback and suggested changes to standard operating procedures.

Each helicopter contract that is held by an NHS Trust has an obligatory liability for that trust, not the funding charity. Consequently if the charity fails to provide sufficient funds by way of grant then the trust is wholly responsible for contractual payments and trusts could find themselves funding part (if not all) of the contract/s they hold. Since a grant is not a contract, a charity is under no obligation to provide full cost recovery for any service, nor can a trust impose a debt of grant on a giving charity if the grant fails to cover the costs incurred.  In extreme circumstances, the Ambulance Service could find itself encumbered with the full cost of the HEMS operation or else be in breach of contract with the helicopter contractor. On no account should an Ambulance Service invoice a charity for a charge it incurs on a contract the trust holds.

A grant-giving charity is not accountable to an NHS Trust for its financial performance.  However a trust, in receipt of a grant payment, must account to the charity for its disbursement and application in line with the charity's objects.   Failure to do so could result in a reduced or rejected grant application or in the case of a service provider, a reduction in service or charges levied on inappropriate use of the charity's resource.  Alternatively if the charity holds the contract for the aircraft, the trust incurs no financial liability should the charity fail to raise sufficient funds.

## 3.5  Comparative Performance Measures

In order to support the identification and development of good practice, comparative performance measures should be developed.

Examples include:
- Response Times (including call connect time to airbase contact time and airbase call receipt to airborne time); accuracy of HEMS v Air Ambulance classification identification by tasking authority; response time for Air Ambulance classifications; alerting destination hospitals; aircraft availability; and dispatch audits
- Clinical Performance including hospital feedback to ensure patients are being taken to the most suitable treatments centres; and data submission to, and information from, UK Trauma Audit Research Network (TARN)
  - Efficiency Indicators such as aborted or stood down missions; ratio of primary to secondary responses; percent of missions which are transfers; leasing costs; and spend per mission.

# 4. Clinical Standards and Clinical Governance

## 4.1  Clinical Governance Arrangements

This section outlines suggested clinical governance for all charities and Ambulance Services providing air ambulance services, and the clinical processes that should be in place.  In particular it advocates the adoption of best practice, clinical and non-clinical audit, clinical and non-clinical risk management, development of a shared model through multi-professional meetings and operational guidelines, regular peer review and clear lines of medical accountability.

The extent to which a charity will have clinical governance responsibility depends on the role of the charity.  As indicated in Section 3.1 grant-giving charities will not have clinical governance responsibilities. In this case the Ambulance Service managing and providing the service will have responsibility. For provider/operator charities:
- for charities which lease/own the aircraft and equipment but do not employ the staff, their responsibility will be to provide aircraft and equipment to a particular specification
- charities which employ clinical staff will have fuller clinical governance responsibilities.

There are two models by which Air Ambulance Units can assure clinical governance:
- the Air Ambulance Unit agrees to share the governance arrangements with one or more host NHS Ambulance Services or other suitable registered organisations.  In this case the charity retains responsibility for clinical governance even though it may delegate authority
- the Air Ambulance Unit develops an autonomous governance arrangement which is recognised by the NHS Litigation Authority, and conforms to the CQC standards against which the local Ambulance Trusts are assessed.

Charities must ensure that they are clear as to the limit of their clinical governance responsibilities and that these are agreed with the Ambulance Service.

### 4.1.1    UK National Clinical Audit Advisory Group (NCAAG)
A National Clinical Audit Advisory Group should be instituted (to which all members report), whose membership represents all the constituent Air Ambulances Services. The Chair and Medical Director should be elected from local clinical advisory groups.  The Medical Director should develop links with, or be a member of, the National Ambulance Directors of Clinical Care Group.

As part of the terms of reference, this group should oversee the development and review of nationally agreed clinical standard operating procedures.

There should be regular liaison with other organisations practising in the pre-Hospital field (CEM, Faculty of Pre-hospital Care, Royal College of Surgeons, BASICS, College of Paramedics) to ensure continuity of service and a seamless transition/provision of care. The standard operating procedures should also include best evidence-based care from pre-hospital and in-hospital sources such as NICE, SIGN, JRCALC, National Service Frameworks and other national guidance and policy.

### 4.1.2    Local Clinical Advisory Groups

Each service should either develop a Clinical Advisory Group or share existing clinical advisory arrangements with a defined structure, nominated chair and Medical Director. The group should meet at least twice a year and should have clear reporting lines from and to the group.  The group should include (as a minimum) consultant level representation from:

- Regional Trauma Network
- Anaesthesia I Critical Care
- Emergency Medicine
- Neurosurgery
- Orthopaedics I General Surgery
- Paediatrics
- Senior HEMS crewmember.

This advisory structure is the foundation on which all clinical activities are built, and will report to the Board of Trustees and/or to the local or host Ambulance Service Trust Board as appropriate.


## 4.2  Risk Management, Clinical Audit and Complaints

### 4.2.1    Risk Management

Each service providing HEMS must have a multidisciplinary Health and Safety Committee with a defined constitution, chair and reporting structure. The committee must provide a minimum six-monthly review of incidents and occurrences and demonstrate closure of incident loops and the lessons learnt.

Each service should have a robust Clinical Occurrence Incident Reporting System which is easily accessible to staff so that any untoward incidents are recorded and the lessons learnt are communicated to all relevant staff.  The system should comply with guidance from the relevant governing bodies.


### 4.2.2    Clinical Audit

Each Air Ambulance Service should regularly review its clinical practice and undertake an audit of all clinical documentation every three months, along with a multi-professional longitudinal audit of a series of clinical cases, reflecting representative calls attended by the Service. These sessions should be chaired by the Medical Director and the documentation should be made available to the local Clinical Advisory Group and the Board.

Each Service should hold regular events (a minimum requirement of six-monthly, but ideally monthly depending on the workload of the unit) to include an audit session comprising the number of cases attended, missions undertaken, primary and secondary workload, cancellation rate, adverse incidents reported, complaints and successes reported. A longitudinal case audit and a best practice session and safety review should be undertaken.  These sessions should be chaired by the Medical Director and minutes from these meetings should be available to the Clinical Governance Committee and Trust Board / Board of Trustees.

To assist in maintaining best practice, all unit members must have access to relevant clinical journals either by hard copy or electronic means. Regular (six-monthly) journal clubs should take place and attendance at relevant national conferences and external clinical seminars should be encouraged. All operational staff should maintain a portfolio of experience and continuing professional development

and undergo regular appraisals covering both clinical and non-clinical performance.

### 4.2.3    Complaints

Each service should develop a system for recording and responding to enquiries and complaints. The system should follow NHS guidance and should ensure that users of the service are aware of how to register complaints.  The Medical and Operations Directors should regularly review concerns expressed and demonstrate how any lessons learned are disseminated. As most Air Ambulance Services are allied to Ambulance Services it may be appropriate to share this task and the information which results.

### 4.2.4    Information

All Air Ambulance Services should develop a comprehensive electronic database to complement the paper-based medical records / run sheets. Medical records must be controlled in accordance with NHS guidelines and each unit will have a nominated Caldicott Guardian (normally the Medical Director).

### 4.2.5    Medical Indemnity Insurance

Each Service must have medical indemnity insurance for all operational staff as well as clear lines of accountability. On appointment, enhanced CRB checks must be undertaken for all members of operational staff.

## 4.3  Accreditation, Peer Review and Regulation

All Air Ambulance Services should undertake an annual clinical review conducted by the Medical Director of another Air Ambulance or Ambulance Service. Members should also be submitting data to the CQC as required either by their CQC Registration or by their Ambulance Service partner.  This information is subject to review by the CQC.

## 4.4  Standard Operating Procedures

Each Air Ambulance Service should work to a core set of agreed clinical and operational procedures – see Appendix D for examples. AAA Best Practice Guidelines and Guidance Standard Operating Procedures are available to utilise and for guidance to assist in standardising best practice.

   All Standard Operating Procedures should be regularly reviewed through other governance tools such as the Clinical Risk or Safety and Risk Committee and through other forms of audit.

# 5. Operational Management

## 5.1  Crew Resource Management (CRM)

CRM is an essential part of air ambulance operations and encompasses a wide range of knowledge, skills and attitudes including communications, situational awareness, problem solving, decision making, and teamwork. The elements that comprise CRM are not new and have been recognised in one form or another since aviation began, usually under more general headings such as 'Airmanship', 'Captaincy', or 'Crew Co-operation'. In the past, however, these terms have not been defined, structured or articulated in a formal way, and CRM can be seen as an attempt to remedy this. CRM can therefore be defined as a management system that makes optimum use of all available resources - equipment, procedures and people - to promote safety and enhance the efficiency of flight operations.

CRM is concerned not so much with the technical knowledge and skills required to fly and operate an aircraft but rather with the cognitive and interpersonal skills needed to manage the flight within an organized aviation system. In this context, cognitive skills are defined as the mental processes used for gaining and maintaining situational awareness, for solving problems and for taking decisions. Interpersonal skills are regarded as communications and a range of behavioural activities associated with teamwork. In aviation, as in other walks of life, these skill areas often overlap with each other, and they also overlap with the required technical skills. Furthermore, they are not confined to multi-crew aircraft, but also relate to single pilot operations, which invariably need to interface with other aircraft and with various ground support agencies in order to complete their missions successfully.

Aviation and clinical considerations are intensified, in terms of risk, by the nature of HEMS operations. Crew Resource Management (CRM) principles should be applied not only to flight operations but to the medical decision-making which is intrinsic to HEMS missions. Human factors and team working should be formally accounted for, both in recruitment and selection, as well as day-to-day working. The medical, operational, charity, aviation and Ambulance Service facets within air ambulance organizations sometimes have objectives that appear to be in conflict and this needs to be managed.

This risk can be operationally managed by pre-planning ways to mitigate or avoid error by using CRM. There is a wealth of expertise, experience and research from the aviation industry, and more recently from anaesthesia, about how to use CRM to improve the safety and efficiency of organisations involved in risky work.

CRM training and recurrent training is an essential part of all aircrews' annual training requirements. Multi –disciplinary attendance at the CRM training sessions is essential practice to be able to operate to the highest clinical and aviation safety standards.[37]

## 5.2  Landing Sites

Emergency Service Helicopters using aircraft capable of Class 1 performance standards do not require a licensed facility when landing at a hospital.  In these situations the Civil Aviation Authority authorises the helicopter operator to use helipads, which are Performance Class 1 compatible, and places the onus on the operator for inspecting the sites.

All aircraft operators hold directories for all landing sites at hospitals within the areas covered by Air Ambulances in the UK.  All operations should ensure access to both this

database and military landing site guides. These details are produced in a common format and should be kept up to date by the Helicopter Operator for each respective hospital.



**Health Building Note 15-03: Hospital Helipads** describes the requirements and options for new helipads compliant with regulatory requirements at both existing and new hospitals, and provides guidance on their operation and management.[38] This is not a stand-alone document as the helicopter operator has the responsibility of deciding whether a helipad is safe for use. Therefore, expert aviation advice should be sought before committing to design and expenditure. This advice could be from an independent helicopter consultant or from the Ministry of Defence, along with advice from the operator of the local ambulance helicopters. This Health Building Note is intended to provide basic guidance, which complements and interprets the relevant legislation and standards.

There are three principal options for siting a hospital helipad:
- **at ground level.** Ground-level helipads can be relatively cheap to build and operate but may be some distance from the Emergency Department
- **on a rooftop.** Helipads built on rooftops (ideally above the Accident and Emergency department to ensure a short transit for the patient) can remove any constraints on future building plans, they provide the greatest choice of obstacle-free helicopter airways, and they reduce the environmental impact on the hospital and its neighbours. However, fire cover is required and can impact on the hospital services, increased time warnings of an incoming aircraft are required to ensure all staff are on site prior to landing, and pilots need to be elevated helipad trained. Where a secondary site needs to be used, this reduces the effectiveness of the mission due to increased transit times and increased transfer movements for the patients
- **on a low structure or mound** near to the Accident and Emergency Department. This has some of the benefits of a rooftop site but costs less to construct and operate.

All options require airways clear of obstacles such as trees and buildings as well as a clear space for the helipad and its immediate surrounds. These criteria can be difficult to achieve, particularly at ground level in congested areas and on small hospital estates, and may compromise a hospital's future development plans.

Some charities are actively involved in the funding of Hospital helipads. The input of public funds into infrastructure developments needs to be carefully managed to ensure the long-term availability of the helipad.

Since helicopter-borne patients are likely to be in a time-critical condition, it is important that the time taken to transfer them between the helicopter and hospital A&E department is short and that the patient is protected as far as possible from adverse weather conditions. The safest, fastest and most efficient means of transfer is by trolley from the helicopter. Transferring patients from a helicopter to a road ambulance for the journey to A&E is always undesirable and often impractical, especially if they are connected to fluid, gas and electrical life-support systems. The best locations for a helipad are therefore in an open area immediately adjacent to A&E or on the roof above it, with trolley access.

If the landing site is remote from the receiving hospital, it is important to have robust agreements and procedures for the provision of the suitably equipped ambulances to transport the patients to/from the hospital.

When a hospital has an operational helipad, it is important that a dedicated link person should be

identified within the hospital management structure. This identified person will be responsible for the maintenance of communications between the parties and the dissemination of information to the appropriate person or department within their organisation.

The current availability of hospital landing sites does not meet operational and clinical needs. With future streamlining of NHS services the demand for capable helipads is rapidly growing, not only at the proposed "centres of excellence" but essentially also at the local referring hospitals. Preference as to the destination of patients transported by air ambulances is greatly influenced by the standard of the hospital helipad and its proximity to the receiving department. The need to include night approvals for helipads at key specialist units is pivotal to the success of night operations as air ambulance services develop.

## 5.3  Mutual Aid Agreements

Many UK Air Ambulance Services now subscribe to a mutual aid agreement. This ensures that cross-border coverage for incidents with multiple patients or paramedic-only crews requiring medical support is available. Bad weather contingency support arrangements should be made with Police ASUs, most of whom have a stretcher-fit modification and the ability to assist in out-of-hours primary HEMS transfers at the request of the ambulance service. Further capability may be offered by regionally-based Search and Rescue helicopters.

Mutual aid agreements can also increase the airborne assets that can be mobilised in the event of a major incident.

SAR aircraft are essential for search and rescue; however once a patient has been found and removed to a safe position, transfer to experienced fully qualified medical staff is advised. Since military SAR aircraft are often staffed by aircrew who hold State Registered Paramedic status, care needs to be taken to ensure that clinical teams have the appropriate expertise for the incidents they are attending. SAR aircraft may be available when the weather dictates that normal HEMS aircraft are unable to operate. Similarly, an incident occurring at night, or when temperature levels are conducive to ice formation on the leading edge of the rotors, threatens HEMS aircraft but not necessarily military or SAR helicopters.

## 5.4  Major Incidents

Civil protection in the UK is based on the concept of integrated emergency management. Emergency response is grounded in what local responders do on a day to day basis. The Civil Contingencies Act lists responders in Category 1 or Category 2.  The Ambulance Service comes under Category 1, however voluntary services come under Category 2 which would include Air Ambulance Charities.  Therefore an Ambulance Service that holds the lease on a helicopter would include that helicopter as its own resource.  On the other hand a charity that owns or leases a helicopter will need to determine the extent to which it can be used in a Major Incident. This decision should be made after discussions with the regional ambulance service(s).

There is an obvious role for HEMS in major incidents as was demonstrated by London's Air Ambulance during the bombings when paramedic-physician trauma teams were delivered immediately and directly to the scenes. However both helicopters and trauma teams are a small part of the overall contribution to major incidents which is reflected proportionally in the planning. Fundamentally how this

resource is used is determined at a local level and dependent on the medical expertise on board and air operation limitations. Regional plans vary considerably, from little or no mention of helicopters to complex multifaceted protocols. Where there is more than one NHS Ambulance Service, agreements will need to be made with each of the Services.

In order to co-ordinate this resource to its maximum potential all HEMS / Air Ambulance Operations must have a Major Incident Plan that has been produced in conjunction with all essential services, receiving hospitals and, essentially, the funding charitable organization. There must be a clear and documented agreement between the charity's trustees and the Ambulance Service(s) documenting the scope of the role of the aircraft in the event of a major incident. The aircraft can fulfil multiple roles during the course of a major incident, for example:

**Tactical scene assessment from the air** - On initial approach to the scene the aircraft is ideally placed to perform a detailed reconnaissance of the entire scene. From a tactical point of view (silver command), this early information can be useful for establishing effective command structures.

**Deployment of helicopter crew to scene (difficult or remote access)** - Initial command from the Ambulance Service (forward incident officer / Bronze Command) can be established in any remote location and effective communication links can also be set up directly from the scene. Some early tasks for the HEMS Crewmembers acting as Bronze Commanders may include delegating to others:
- Triage Officer
- Casualty Clearing Officer
- Ambulance Loading Officer
- Ambulance Holding Point Officer.

**Deployment of further ambulance/emergency personnel to scene** - Rapid situation reports can allow Ambulance Control to send appropriate resources, including external agency resources such as fire service, police, urban search and rescue and mountain rescue personnel. The aircraft can also be used to transport specialists from these agencies to the scene if required.

**Deployment of medical/surgical/trauma teams to scene** - Similarly, medical teams from the designated receiving hospitals can be flown to the scene. The speed of transfer by air means that medical and surgical teams can be flown directly from hospitals outside the initial catchment area of the incident, leaving the closer hospitals fully staffed for the reception of casualties.

**Delivery of medical equipment/supplies to scene** - The aircraft can be effectively used to transport medical equipment and supplies to the scene if required.

**Rapid transportation of time-critical patients to designated hospitals** - Due to the speed of the aircraft, patients can be transferred to appropriate receiving hospitals capable of delivering specialist definitive care. In addition, the flexibility of the aircraft also means that patients do not necessarily have to be transferred to the nearest receiving hospital, but can be flown further afield to ease the pressure on these hospitals.

In order to ensure safe operating practices, all HEMS crewmembers should have a thorough working knowledge of their local major incident plan. This will ensure their understanding of the aircraft and aircrew roles at the scene of a major incident.

The development of a coordinated Air Asset Major Incident Response Plan was started in October 2012. The AAA, British Helicopter Association and the National Police Aviation Service are due to publish the HELP guidance document in 2013.

## 5.5  Handover and Shift Start

To encourage good team working and communication each service should have a multidisciplinary operational meeting at the beginning of each shift; this meeting will be logged and will include documented equipment checks, review of weather, local issues and any guideline or SOP changes.

Each service must hold a monthly (max permitted six weeks) multidisciplinary operational meeting to include review of incidents occurrences / lessons learnt. This meeting should be minuted and reviewed by the local Clinical Advisory Group.

## 5.6  Standard Operating Procedures

It is essential that each air ambulance unit has a set of Standard Operating Procedures (SOPs). All Operating SOPs must be subject to an all-party annual review, and improvements made as applicable.

A list of the minimum SOPs that a service should have in place can be found in Appendix D.

## 5.7  Health and Safety

Within the overall risk management arrangements, risk assessments should be undertaken for areas specific to each aspect of operating an air ambulance.  These will cover the operating base as well as areas away from the operating base. The risk assessments should include but not be limited to:

- Aircraft mobilisation
- Scene landing site control
- Safety whilst at scene public / patients / personnel
- Medical equipment use / stowage
- Medical gases use / stowage
- Each hospital landing site
- Patient handover arrangements
- Refuelling – both on and off base site
- PR events – aircraft continued availability
- Visitors to airbase / helipad
- PPE requirements / use.

The control, review and update of these assessments should be undertaken in accordance with individual operations procedures.  Best practice would suggest an annual review of all assessments, with exploration of new areas of safety concerns, developing defined workstreams and timeframes to address issues raised. Risk assessments should be made available, and ideally undertaken, with the local Ambulance Service to ensure best practice and to satisfy their requirements for patient and, where appropriate, staff safety.

Although generic risk assessments formats are available, individual operations are encouraged to use a format that can be incorporated and understood by other agencies involved with service delivery.

The findings of the risk assessment should be reported to the Multidisciplinary Health and Safety Committee, which will also be responsible for monitoring actions taken as a result of any risk assessment.

# 6. Dispatch

## 6.1 Tasking

### 6.1.1 The Importance of Good Tasking

Tasking of the aircraft is one of the main determinants of the success of a HEMS operation. Tasking is usually dealt with by the Ambulance Service.  HEMS success is dependent upon finding the right jobs, arriving in a timely manner and delivering advanced interventions to the patients before transporting them to the most appropriate hospital. Any break in that chain will result in a failure of tasking with potentially serious implications for both the patient and the HEMS organisation.

**The Financial Cost of Poor Tasking**

The role of HEMS in the UK has to be considered as twofold; firstly as a delivery platform for specialists with advanced critical care skills; and secondly as a means of expedient transfer of patients to definitive care at specialist centres.  Tasking and deployment of assets should therefore be targeted towards cases in which advanced care interventions are likely to be required and/or where delays in reaching a specialist care centre will adversely affect the patient.  Non-conveyance by helicopter alone should not be used as an independent marker of the efficiency of HEMS operations.  A holistic approach to the assessment of efficiency of HEMS operations, including the delivery of clinical interventions at scene, should be adopted.

   Mission cancellations perhaps offer the most accurate and reproducible assessment of the efficiency of tasking and deployment of HEMS teams.  In the UK the proportion of missions resulting in cancellation of HEMS teams before they reach the scene varies between approximately 20% to 40%.  The tasking policies used by HEMS services in the UK generally lack scientific foundation and are normally based on criteria derived from consensus or expert opinion.  Further research is required to derive, test and validate tasking criteria that predict the likelihood of patients having suffered life-threatening or life-changing injuries or time-critical illness.  This approach will ensure that deployment of assets is better targeted to those in greatest need of life-saving advanced care interventions from HEMS clinicians at scene and expedient transfer to definitive care by helicopter.

**Potential Litigation as a Result of Poor Tasking**

On 6th April 2008 the Corporate Manslaughter and Corporate Homicide Act 2007 came into force, creating a new criminal offence for organizations causing death through gross negligence. Under the new law, an organisation will be found guilty of corporate manslaughter if it is proved beyond reasonable doubt that:

- the way in which its activities are managed or organized caused a person's death; and
- this amounts to a gross breach of the duty of care owed to the deceased.

The law applies to charities as well as statutory bodies.[39]

   A gross breach of duty is defined as conduct that falls far below the standard that can reasonably be expected of the organization in the circumstances.

   As public perception and culture changes, it will be inevitable that the public will expect the highest standards of care, wherever and by whomever it is delivered. As the public become more aware as to what resources and care can be provided, an inappropriate response could result in the Ambulance Service facing litigation or even charges of corporate manslaughter. The potential is not restricted to Ambulance Services.  Charities need to consider the implications including training, governance, qualification of staff and resource delivery protocols.

## Call Selection

Helicopters are an expensive resource and their use is not without risk. Whichever tasking system is in operation some decision has to be made, either in the control room for primary responses or at the scene for secondary responses, about which incidents HEMS should be dispatched to. This requires some form of call selection to identify calls that may benefit from a HEMS response and therefore appropriate deployment. A variety of criteria have been proposed and used to try and identify calls suitable for a HEMS response.

There are no definitive guidelines for call selection and HEMS tasking. The AAA recognised this and has developed best practice guidelines to assist in developing criteria nationally that can be utilised for different models and areas of cover (i.e rural, urban). At present individual services develop their own deployment strategies adapted to local circumstances. However, there are some basic principles that should be taken into account:

- the purpose of aero medical emergency transfer is to provide better initial patient care and transport than available alternatives
- air response is only justified where the speed of transport, skill of the medical team and/or ability of the helicopter to overcome environmental obstacles contribute to improved patient outcome
- in trauma, helicopter deployment is not justified if it does not significantly reduce the time between injury and the patient arriving at an appropriate hospital unless the response delivers additional medical expertise or equipment to the scene.

The dispatch system used is immaterial, call selection is the critical issue, and every effort therefore should be put into developing a national clinical response standard and educating those responsible for dispatch.

### 6.1.2  Tasking Responsibilities

On a daily basis responsibilities in the dispatch phase should include:

(i)  Tasking Authority
- Identify incident against dispatch criteria
- Identify the classification for dispatch
- Identify the availability of air ambulance assets
- Balance dispatch against other air assets known to be deployed.

(ii)  Pilots
- Legality of flight and passengers
- Serviceability of aircraft
- Limitation of weather
- Pilot duty hours and discretionary options
- Endurance of aircraft
- For inter-hospital transfers, availability and serviceability of landing facilities at destination.

(iii)  Medical personnel
- Confirmation of incident classification based on medical information
- Medical benefit able to be brought to patient (both by aircrew & by destination hospital options)
- Serviceability of medical equipment on aircraft.

### 6.1.3 Principles and Criteria

Deployment under HEMS / air ambulance requirements is governed solely by the clinical urgency of the patient. Therefore:

- there should be clear tasking criteria
- the clinical need must be ascertained prior to a HEMS tasking
- all persons connected with the decision making process in tasking an air ambulance should have a working knowledge in the difference between air ambulance and HEMS classifications. This includes:
  - what tasking under each classification the pilot is permitted to undertake
  - what tasking under each classification the pilot is not permitted to undertake
  - the responsibility to correctly classify a tasking
  - the limitations dictated by the regulations
  - the fluid nature of classification after the initial dispatch as updates from scene become available, and the need to ensure the pilot (via the medical aircrew) is made aware of any changes
- regular and transparent monitoring of tasking should be undertaken by the tasking authority, in conjunction with the air ambulance operation, to ensure correct practice in tasking under HEMS / air ambulance.

Dispatch Criteria/Protocols should be established to ensure a consistent standard of tasking. Although the exact content of the Dispatch Criteria should be for individual operations / tasking authorities to decide, best practice would dictate that reference should be made to:

- medical / trauma criteria for considering dispatch
- minimum level of information available before a dispatch can be effected
- geographical limitations
- access to incident
- patient conditions not suitable for air ambulance conveyance
- medical skill of aircrew to meet patient need
- availability of other suitable medical resources
- treatment centre locations / distance / speciality services
- who is able to stand down an air ambulance once deployed (i.e. medical personnel only or other persons).

The opportunity for ground ambulance crews to request the air ambulance team to attend should be factored in, to cover situations where additional clinical skills, over and above those of the attending paramedic, are required; or the patient's location necessitates the use of a helicopter.

### 6.1.4 Quality of Tasking

Tasking authorities should work in conjunction with the Air Ambulance operation to provide a robust system of deployment, both strategically and on a day-to-day basis. The system should ensure best practice and continual organizational learning about supplying a helicopter medical service. Best practice benchmarks or guidelines may prove useful. Comparative performance measures should be considered.

Times of dispatch need to have agreed start and end points and there are several key points where unnecessary delays may cause medically poorer outcomes for HEMS missions. The following need to be defined and performance measured:

- call origin time

- dispatch started
- dispatch completed
- aircraft lifts
- aircraft overhead
- aircraft landed
- medical team at patient's side
- medical team depart for hospital with patient
- medical team land with patient
- medical team arrive in resus' room or hospital department.

Regular review meetings looking at tasking statistics / problems / successes should be held between the Tasking authority and the Air Ambulance operation, to enable a communication pathway which will enable correct and best practice to flourish and to facilitate the development of service improvement.

### 6.1.5    Stand-down

Each operation should have a stand-down guideline for Emergency Department ground staff and a standard operating procedure for cancelling HEMS missions. This is to ensure:

the information deemed minimum for cancellations is documented, particularly if the mission classification legally alters to 'air ambulance' after a cancellation. This will provide a defensible policy in case of legal actions taken against the Ambulance Trust or air ambulance charity for failure to provide potentially life-saving interventions on scene or transport to a hospital with the right specialties, following a cancellation. The policy should contain statements as to the qualification level of staff in attendance at the incident that can cancel the response and the implications of the decisions made regarding efficient use of the helicopter.

Following the roll out of the Airwave Radio fit, direct ground to air communications have greatly improved to assist with the decision making process.

## 6.2  Restrictions on Mission Type

The staffing of the HEMS crew should be guided by predicted regional medical requirements, and operations should be designed around serving those patients who will benefit from helicopter services. If the predominant need is acute retrievals and critical transfers then the trauma team who can provide the requisite skills should be recruited or trained.  If the predominant need is primary trauma care, then whichever clinicians can best care for that patient group should be selected or trained.
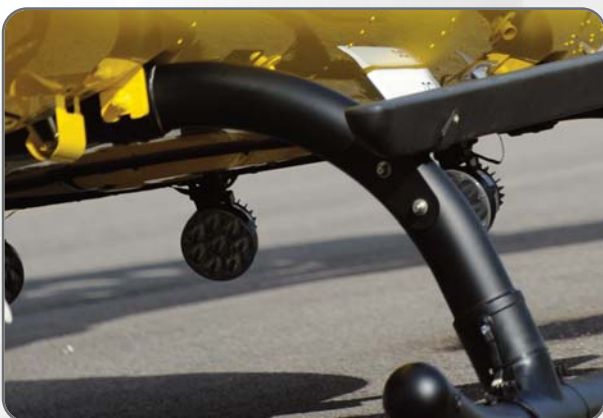
### 6.2.1    Hours of Operation

Until recently, HEMS operating hours have been restricted by the Civil Aviation Authority in terms of both pilot duty hours and official daylight hours. Any infringement of either is taken very seriously and can be investigated by the CAA, leading to suspension of the pilot or the aircraft operator's licence. Consequently, pilots' hours are strictly regulated, governed and monitored. HEMS pilots are limited to 60 hours per seven days. In summer, when a pilot may exceed his hours during a HEMS call, they must reclaim the time during the next shift to maintain overall compliance.[32]

### 6.2.2    Night Flying

In addition to pilots' duty hours, HEMS operating times are usually governed by official daylight; however in October 2012 the CAA issued a Safety Directive (SD-2012-04) outlining the requirements for HEMS operations at night.



JAR-OPS do allow flying at night but until recently it was only approved if an aircraft lifts from and lands upon a 'class one landing site'. Examples of class one landing sites include secure airfields, airports and a few night-lit, approved hospital helicopter pads. On HEMS operations it is highly unlikely that any primary HEMS mission landing at an incident will be on a designated class one site. Police ASUs can and do land near to life-threatening incidents at the request of the emergency services. They are able to do this because any potential landing site is surveyed by a traffic police officer for size and hazards, before marshalling the aircraft down.  In addition police aircraft are fitted with night vision aids to facilitate landing at ad-hoc sites.

Notwithstanding primary HEMS, certain ambulance services have tried to establish night-time HEMS capability by reconnoitring permanent sites in locations where they could land in response to a nearby incident. There are several risks associated with this:

- a site surveyed in daylight may not be safe at night – security is unlikely to be absolutely guaranteed, and the risk of Foreign Object Debris (FOD) or unseen, newly applied hazards exclude this
- if the helicopter lands in a pre-determined site away from the incident, transport from the site to the incident cannot be guaranteed by the police
- a transfer from the incident to the aircraft by road may be required. In an unstable patient, additional unnecessary movement increases the risk to the patient.

If an Air Ambulance Unit is involved in night-time air ambulance operations or night-time recoveries to base then it is good practice to involve all the aircrew in additional training, additional CRM training and regular night exercises.

In addition, several pre-hospital schemes now provide a twenty-four hour HEMS-equivalent response to metropolitan areas by moving their paramedic–physician team into fast response cars during the night or on no-fly days. Different schemes have variable results in terms of effectiveness and time to scene when comparing outcomes with 'normal' HEMS. [26,32]

### 6.2.3    Weather Restrictions

Although HEMS operations are able to fly in most weather conditions, there are extreme weather conditions which would preclude deployment.

Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) are laid down by the Air Navigation Order. An IFR-approved aircraft can fly both VFR and IFR.  Essentially this means:

- that pilots should be 'current' on the aircraft and in using the modes of flight dictated by normal HEMS duties
- the aircraft must always be flown 'within limits' which will be weight dependent and significantly influenced by air density and temperature and consequently the weather
- HEMS pilots usually fly to VFR or Special VFR although some can fly on instruments if the weather closes in and the aircraft has IFR capability. In the vast majority of cases however, HEMS operations will only fly within the visual limits laid down by law.

An IFR capability does not guarantee a service whatever the weather; and the range of the aircraft is restricted compared with its VFR capability.

The IFR implication is that in moderate weather it might be possible to transit IFR to a suitable airfield for a let-down but not transit VFR onwards to the destination hospital - an ambulance would be required for the final leg of the journey. This is probably not a major problem but it would need to be taken into account.

Icing is not something that has to be dealt with as a VFR operation. However even if the temperature on the ground is well above zero it does decrease with height and during the colder winter months the level at which the temperature in cloud reaches zero can be lower than the minimum safe height. This would prevent HEMS flying IFR and yet still be able to fly VFR.

## 6.3  Transfers

The current level of transfers undertaken by UK air ambulances is relatively low in comparison to HEMS activations. Whilst the use of an air ambulance can bring clinical benefits to patients who require transfer, transfers are predominately secondary missions that take the aircraft away from its primary role as a HEMS aircraft.

There should be a transfer policy in place in conjunction with the charities, Critical Care Networks, Ambulance Services and the main Acute Trusts served by the Ambulance Service(s).

The level of involvement of individual operations within transfers will also depend on the charitable objectives of the funding charity. Therefore any request to transfer patients should be justifiable not only on the clinical benefit and / or operational availability but also on the funding charity's policies.

The crew configuration decision for any transfer should be made following a direct conversation between the medical personnel concerned.  Factors to take into account are:
- level of patient care – can a crew of two Flight Paramedics provide all the patient care required?
- is the presence of a Critical Care Paramedic (CCP) required due to their advanced skill base?
- is the HEMS Flight Doctor required and does the Flight Doctor have all the requisite skills required to care for the patient?
- is the presence of a hospital doctor required due to the complicated nature of the patient's condition?

It is advisable that the unit's Flight Doctor or on-call Medical Advisor undertakes the discussions with the hospital concerned and then makes the documented decision as to the crew configuration.

# 7. Staffing and Training

## 7.1  Staffing of Air Ambulances

Staffing of air ambulances varies between and within services where some services have opted for a paramedic crew and some the physician-paramedic partnership. The differences reflect patient need and the range of interventions undertaken / drugs administered, which depends on the formally approved local clinical agreements in place. This document does not promote any one particular configuration as this will depend on the role of the air ambulance service and the clinical requirements.  However the clinical teams always require suitable selection, induction, training and clinical support.

Guidelines on minimum crewing of aircraft have been developed by the Joint Aviation Authority and are attached at Appendix C.

### 7.1.1    HEMS Crewmembers
The ability for a HEMS crew to operate effectively in stressful situations requires a lot of teamwork and confidence in both their own and each other's abilities. The HEMS organisation should strive to instigate the required ethos early on.  There should be agreed selection criteria for new doctors and paramedics, and once selected they should be inducted together via a training programme that allows each to develop their skills alongside the others. A course such as the UK HEMS Helicopter Crew Course allows this type of integration, building a baseline of Crew Resource Management upon which the teams can build.

HEMS crew members are individuals assigned to a HEMS flight for the purpose of attending to any person in need of medical assistance carried in the helicopter and assisting the pilot during the mission. The HEMS Aircrew training requirements and currency quotas are laid down in JAR OPS. Areas that should be covered by training include:
- duties in the HEMS role
- navigation (map reading, navigation aid principles and use)
- operation of radio equipment
- use of onboard medical equipment
- preparing the helicopter and specialist medical equipment for subsequent HEMS departure
- instrument reading, warnings, use of normal and emergency check lists in assistance of the pilot as required
- basic understanding of the helicopter type in terms of location and design of normal and emergency systems and equipment
- crew coordination
- practice of response to HEMS call out
- conducting refuelling and rotors-running refuelling
- HEMS operating site selection and use
- techniques for handling patients, the medical consequences of air transport and some knowledge of hospital casualty reception
- marshalling signals
- underslung load operations as appropriate
- winch operations as appropriate
- the dangers to self and others of rotor-running helicopters including loading of patients

- the use of the helicopter inter-communications system
- Where a paramedic-doctor care model is adopted, the doctors should be fully trained as HEMS crew member or operate as a Medical Passenger (See Section 7.1.3).

The increased training will provide an improved level of patient care. The autonomy of the staff to undertake many of the advanced procedures must be clearly and robustly documented and agreed with the Clinical Advisory / governance arrangements of the ambulance service/charity and the Health Professions Council.

### 7.1.2    Clinical Advice to Crews

Each service should establish a rota of senior clinicians available for on-line medical advice.  If the crew is a paramedic-only crew there may not be an automatic need for an on-call consultant as clinical governance responsibility will fall under the clinical governance lead for the service.  This must provide immediate (i.e. under 5 minutes) consultant medical advice for duty crews throughout the operating hours of the service. This facility should be regularly tested and the results reported to the Clinical Governance Committee. Each patient episode will have a named consultant.

### 7.1.3    Medical Passengers

There are two distinct types of crew on a HEMS aircraft - aircrew and medical passengers. These fall under strict criteria with regard to the Civil Aviation Authority. The aircrew are integral to the safe running of the aircraft, navigation, using the radios, ensuring passenger safety, performing refuels and checking for in-flight and ground-based hazards. Being classed as aircrew, they will require annual 'line-checks' to ensure they remain competent. Medical passengers, however, have no role and are classed solely as passengers.

Different approaches are taken in different services.  At London's Air Ambulance for instance, the organisation uses two pilots on every mission and the doctor and paramedic remain in the cabin. They are not expected to operate the doors or perform any navigation. Other models ensure at least one member of the clinical team is trained, current and line-checked. These crew members will participate in the aircrew roles to include sitting in the co-pilot's seat and assisting the pilot where required.

A medical passenger is defined as a medical person carried in a helicopter during a HEMS flight, including but not limited to doctors and paramedics. Prior to any HEMS flight, or series of flights, medical passengers shall be briefed on the following:
- familiarisation with the helicopter type(s) operated
- entry and exit under normal and emergency conditions both for self and patients
- use of the relevant onboard specialist medical equipment
- the need for the commander's approval prior to use of specialized equipment
- method of supervision of other medical staff
- the use of helicopter intercommunication  systems
- location and use of onboard fire extinguishers.

If the crew configuration consists of a crewmember who provides a clinical benefit to patients and who attends on a regular basis but has not yet undertaken the full HEMS Aircrew course, then a full one-day aircraft and operational familiarisation course should be undertaken.  This course should be competency based and include a manual handling section.

### 7.1.4    Aircraft Dispatchers

Air Ambulance Services need to work closely with their local Ambulance Service(s), to establish optimal dispatching to ensure that the most appropriate calls are identified and the cancellation rate is minimised.  Systems which work well utilise dedicated HEMS dispatcher-trained personnel, Flight Paramedics/Critical Care Paramedics working within the ambulance control room.  These individuals develop the ability to identify suitable calls for the helicopter through the use of immediate dispatch for certain types of call and ring-backs to question the caller and identify the need for the HEMS team.  Other systems use dispatchers in the aircrew room with screens for the area served by the air ambulance.

Tasking Authority personnel should undertake additional training specifically relating to the deployment and capabilities of air ambulances. They should be encouraged to develop a close working relationship with the air ambulance operations, and where possible, participate in all aspects of Crew Resource Management.  Correct tasking is directly linked to the health & safety of the aircrew, patients and the public.

Where the HEMS dispatcher is co-located within an ambulance communications centre (control room / clinical hub), they must be autonomous in their decision making process for HEMS tasking to ensure only clinical urgency is used to effect a HEMS dispatch.

It is recommended that the dispatcher:
- be a designated role and considered part of the flight team
- should have a good knowledge of flight operations and safety
- should be competent to make decisions based on clinical need.

### 7.1.5    Observers

Air Ambulance Services may attract observers who may or may not have a clinical background but accompany the clinical team on missions.  In order to maintain patient care as the priority, observers should only be carried if medically trained to required standards or if they hold a valid HEMS qualification. The same safety standards should apply to any individual involved in air ambulance operations.  No observer should fly with the aircraft if it impinges on the treatment of a patient or the safety of the aircraft.

Any observer should receive a standardised formal briefing on the safety and operational aspects of the organisation and on the limitations around their involvement before undertaking any mission. This briefing should be recorded and logged and repeated every six months as necessary.

## 7.2    Selection of Staff, Training and CPD

### 7.2.1    Clinical Competencies

All aircrew must be fully registered with, and meet the CPD requirements of, their individual governing body.  Specifically:
- all Flight Paramedics must be fully registered with the Health Care Professions Council (HCPC)
- Charities employing doctors should ensure that doctors demonstrate competencies in emergency medicine and that doctors have a minimum level of competency at specialist registrar or above. Specialty requirements vary between the services but the most common are anaesthetics and/or intensive care, emergency medicine or Emergency Department.

### 7.2.2   Selection of Doctors

HEMS doctors should be selected on criteria agreed by the organisation. Advertising for the roles should be undertaken nationally in the British Medical Journal, but locally employed physicians will improve the interactions with receiving hospitals and should also be considered. It should be stressed that the reputation of the local  Air Ambulance Service rests largely on the ability of the doctors and their relationship with the ambulance service and hospitals that HEMS is supporting. HEMS physicians may originate from a number of specialities including Emergency Medicine, Anaesthetics and General Practice.  Regardless of specialist medical background, doctors should have a strong grasp of the fundamentals (and demonstrate practical ability) in the other acute specialities i.e. an anaesthetist should have completed a significant period of emergency medicine and an emergency physician should have a background in anaesthesia and critical care. To this end most HEMS operations require similar criteria:

- Post Membership / Fellowship exam holder
- Usually senior registrar – year 4+ or consultant
- Demonstrate extensive pre-hospital care experience
- Proof of interest in pre-hospital care
- Preferably has DipIMC RCSEd or equivalent
- ALS/APLS/ATLS/MIMMS current
- Adaptable
- Personable
- Clinically proficient
- Willing to undertake a full training course
- Agree to work under agreed SOPs
- Willing to subscribe to clinical oversight
- Subscribes to the vision of the HEMS organisation.

Potential HEMS doctors should undergo a period of observation on the aircraft, watching the team work. This will allow a mutual look at each other to assess whether the doctor wishes to join and the paramedics feel they can work with the doctor. Upon selection, the physician should undertake the prerequisite training courses and examinations before being allowed to operate as the sole physician.

Whilst there will be some GPs who will have the appropriate training (usually BASICS), many GPs are not able to deliver the prerequisites ascribed by NCEPOD as necessary to perform the role of pre-hospital care successfully.

BASICS doctors come from a variety of medical backgrounds with an interest in pre-hospital care. Since the development of BASICS in 1977, doctors who were perceived as keen amateurs with a 'pastime approach' [40] were responsible for providing much of the pre-hospital care in complicated cases or in remote locations. Public and political demands upon the NHS over the past few years have resulted in higher levels of scrutiny concerning the services it provides. This in turn has led to organisational and legislative changes regarding patient safety through means of clinical governance and risk management strategies. Pre-hospital care falls under the umbrella of the NHS but as yet remains outside of the clinical governance and regulatory directives the NHS adheres to.

In effect, therefore, the standard of pre-hospital care responder (whilst a full member of BASICS) can vary dramatically in their range of skills and experience.  Whilst the issue is in the process of being rectified by the Faculty of Pre-hospital Care for both civilian and military doctors, this is likely to take time.   Careful selection of BASICS doctors is therefore required to ensure consistent standards of care.

The recent recognition of Pre-Hospital Emergency Medicine as a formal sub-speciality has led to the development of specific pre-hospital training programmes for doctors, which include training in the skills required to provide HEMS care. It is anticipated that in time this may become the standard route by which doctors become involved in air ambulance work

### 7.2.3    Employment of Paramedics

There are two models of recruiting paramedics into a HEMS system. The first is for the organisation to employ its own staff.
This allows for the organisation to train and develop the service with a core of staff dedicated to HEMS. The second option is to obtain suitable paramedics on secondment from their parent ambulance service. Whilst the HEMS organisation does not claim exclusivity of its staff, the benefits of this include:

- a larger pool of potential paramedics
- increasing awareness of HEMS as more ambulance staff do it
- prevention of stagnation in the organization
- injection of 'new blood' and enthusiasm at regular intervals
- lower cost implications on the organisation if secondments exist
- direct links with both the Ambulance Service and the NHS.

### 7.2.4    Trainees

The HEMS service should actively participate in selecting and training future HEMS doctors. Where possible this should be in partnership with training Deaneries to deliver formal Pre-Hospital Emergency Medicine sub-specialist training.

### 7.2.5    Induction

A general induction / orientation period of one day should be obligatory for all new permanent staff who should then enter a documented training programme with an associated list of competencies to be achieved. For HEMS crew members,  all staff undertaking unsupervised practice must have completed and passed either the UK HEMS Helicopter Crew Course (see Section 7.1), or a nationally approved alternative.  In addition they should have received other relevant training, such as JAROPs training, extrication methods, working in confined spaces etc.

Staff must complete an operational signing-off process under the supervision of senior members of the clinical team. For medical staff this will involve a supervised review of competencies in practice, after a specified period of supervised training. For paramedics it will involve a similar review of their competencies, both clinical and non-clinical by a senior HEMS crewmember.

### 7.2.6    In-Service Training

Each member of staff should have a formal review undertaken every six months, covering all aspects of their clinical work, documentation and development. The records from these discussions should form part of their CPD portfolio.

Due to the specialist nature of air ambulance operations it is envisaged that most units will provide additional update / development training for their staff.  If a unit has dedicated crews, it is advisable for provision to be made for the staff to spend time working with other agencies such as hospitals, road crews etc.
Annual Fire Training should be brought in to ensure the highest levels of safety for the patients, staff and the general public.

# 8. Conclusions

"Reforming Emergency Care"[40], outlines the NHS strategy for improving and developing emergency care. The strategy is based on six leading principles;

- Services should be designed from the patients' point of view
- Patients should receive a consistent response, wherever, whenever and however they contact the service
- Patients' needs should be met by the professional best able to deliver the service
- Information obtained at each stage of the patients' journey should be shared with other professionals involved in their care
- Assessment or treatment should not be delayed through absence of diagnostic or specialist advice
- Emergency care should be delivered to clear and measurable standards.

These principles were directed to hospital emergency care and out of hours primary care. However all of these principles are equally relevant to pre-hospital care. We should therefore: "continue to improve the speed and quality of service provided to patients with emergency care needs".

The Air Ambulance Services have an important role to play in this, both by enabling patients to be reached more quickly than by a ground ambulance and by providing an extra tier of specialists for complex patients in difficult situations. This extra tier of specialist care would provide smoother transition through the care pathways and extend emergency care networks as dictated by current Department of Health initiatives.

This Framework aims to provide a structure through which Air Ambulance Services and the NHS Ambulance Services with whom they work can deliver a high and consistent standard of operational management and clinical care. A list of suggested best practice is given below.

## 1.    Governance

1.1    Trustees and managers should be familiar with the report 'Taking Healthcare to the Patient: Transforming NHS Ambulance Services', in particular those recommendations that can be applied to HEMS operations.[40]

1.2    Consideration should be given to any trustees who serve on the charity boards that have a direct and corresponding relationship with partner organizations such as co-located Ambulance Service Trust.   Where there is a trustee with a potential conflict of interest, the charity should clearly state the way in which any potential conflicts will be declared and dealt with.

1.3    All air ambulance charities should ensure that their constitutional documents have clear objects and powers of delegation and have Memorandums of Understanding and Service Level Agreements in place.

1.4    Appropriate governance arrangements should be in place including, where appropriate, a medical director and operations manager to oversee clinical standards and operational performance.

1.5    Charities should review and demonstrate the impact they wish to have on the people who benefit.

1.6    Charities should be able to demonstrate their independence in carrying out their charitable purpose and not for the purpose of implementing the policies or directions of any third party.

1.7    Grant applications should be made within a national standard format to be agreed by the charities. Ambulance Services should neither invoice nor recharge costs as an alternative to grant application.

1.8    Trustees should ensure that they have approved delegated authority to third parties.

1.9    Each Ambulance Service should nominate a liaison officer of at least divisional commander rank to act as a direct, one point of contact link between charity and Ambulance Service to ensure regular and effective communication.

1.10   Procurement of aircraft and/or accompanying services from aircraft operators should be conducted within the charity's best working practices.

1.11   A self audit and peer review process should be developed to enable services to assess themselves against the Framework and identify areas for improvement and development.  This process should be developed under the aegis of the Association of Air Ambulances.

1.12   In order to support the identification and development of good practice, comparative performance measures should be developed.


## 2.    Clinical Standards and Clinical Governance

2.1    A National Clinical Advisory Group should be instituted to which all members report (UK National Clinical Advisory Group) and which has a membership representing all the constituent Air Ambulances Services.

2.2    Each Air Ambulance Service should either develop a Clinical Advisory Group or share existing clinical advisory arrangements with an NHS Ambulance Service.

2.3    Clinical quality measures and clinical audit should be embedded within all HEMS organisations and a single repository and data set established.  A system of clinical and outcome indicators should be agreed.

2.5    Each service should ensure that they have clinical governance arrangements in place including a robust clinical occurrence / incident reporting system, a system for recording and responding to enquiries and complaints, and a comprehensive electronic data base to complement the paper-based medical records / run sheets.

2.6    Each Air Ambulance Service should work to a core set of nationally agreed operational procedures covering both clinical and non-clinical procedures.

## 3. Operational Management and Dispatch

3.1 Trustees' discretions should be formally delegated to a senior ambulance service employee responsible for call selection and dispatch.

3.2 There should be a standard competency framework and core training for staff involved in call handling particularly where HEMS should be used.

3.3 Tasking arrangements should ensure optimum dispatch and use of helicopters. Dispatch criteria / protocols should be established to ensure a consistent standard of tasking.

3.4 There should be greater emphasis on developing local agreements for rapid referral of patients where there is evidence of improved outcomes.

3.5 For measuring HEMS response times, the clock should start when the call is connected to the ambulance control room.

3.6 There should be a multidisciplinary operational meeting at the start of each shift.

3.7 Charities and NHS Ambulance Services operating air ambulances should have standard operating procedures which are in line with best practice.

3.8 All HEMS / Air Ambulance Operations should have a Major Incident Plan, agreed with the NHS Ambulance Service.

3.9 Air Ambulance Services should agree 'mutual aid' agreement to augment their air resources at critical times.

3.10 95% of calls requesting air ambulance assistance should be answered in less than 5 seconds.

## 4. Staffing

4.1 HEMS doctors should be selected on criteria agreed by the organisation.

4.2 HEMS clinical training should be designed around the case mix they deal with.

4.3 There should be a rota of senior clinicians available for on-line medical advice. If the crew is a paramedic-only crew there may not be an automatic need for an on-call consult as clinical governance responsibility will fall under the clinical governance lead for the charity or the clinical lead for the charity.

4.4 Each service should have an annual training and continuing professional development plan.

## 5. Services in the Future

5.1 A separate review should be undertaken to establish the ability and willingness of charities in undertaking the additional work of night flying and inter-hospital transfers and the costs thoroughly investigated.

# Appendicies

# Appendix A

## Outline Job Descriptions

### A. Medical Director

**Accountability**
Reports to Chief Executive
Accountable to Trust Board / Trustee Board

**Person Specification**
Essential criteria:
Registered with the GMC
Member of the Specialist Register
Be a minimum of 10 years post qualification
Have a minimum of 3 months anaesthesia ITU.
Demonstrate operational air ambulance experience
Demonstrate participation in NHS appraisal system.

Desirable Criteria:
Broad range of aero medical work
Diploma or Fellowship in Immediate Medical Care
Pre-hospital Emergency Care course
MIMMS, ALS, ATLS APLS Certification

### B. Flight Doctors

**Person Specification**
Essential criteria:
Registered with GMC
5 years post qualification
If practising RSI, a minimum of 6 months anaesthesia & 3 months ITU experience

Desirable criteria:
Diploma or Fellowship in Immediate Care
Pre-hospital Emergency Care course/ HCC or equivalent
MIMMS / ATLS / ALS / APLS certified

### C. Flight Paramedics

**Person Specification**
Essential criteria:
Registered with Health Professions Council
2 years post-paramedic qualification experience

Desirable criteria:
Diploma in Immediate Medical Care
Pre-hospital Emergency Care course
MIMMS /PHTLS / ALS

## D. Finance Director

**Accountability**
Reports to Chief Executive
Accountable to Trust Board / Trustee Board

**Person Specification**
Essential criteria:
Qualified Accountant (Chartered, CIPFA or CIMA)
Be a minimum of 5 years post qualification

Desirable Criteria:
Experience of charity work

## E. Operations Director

**Accountability**
Reports to Chief Executive
Accountable to Trust Board / Trustee Board

**Person Specification**
Essential criteria:
Be a minimum of 5 years post qualification in operational role

Desirable Criteria:
Qualified paramedic or clinician

# Appendix B

**External Review Proforma**

| Area of Governance Activity | Evidence of Activity in Accordance with Charter Standards | Comments |
|---|---|---|
| Medical Director | | |
| Operational Doctors | | |
| Operational Paramedics | | |
| SOPs | | |
| Notes Audit | | |
| Longitudinal Audit | | |
| Best Practice | | |
| Safety Committee | | |
| Occurrence Reporting System | | |
| Daily Briefing | | |
| Weekly Operations Meeting | | |
| 6 Monthly Governance Forum | | |
| Induction Programmes | | |
| Training and Development | | |
| On-line Clinical Advice | | |

# Appendix C

## Minimum Crewing of Aircraft

The definition for the minimum crewing of the aircraft can be found in the Joint Aviation Requirements as below:

(A)     Day flight. The minimum crew by day shall be one pilot and one HEMS crewmember. This can be reduced to one pilot only in exceptional circumstances.

([2])     HEMS crew member. A person who is assigned to a HEMS flight for the purpose of attending to any person in need of medical assistance carried in the helicopter and assisting the pilot during the mission. This person is subject to specific training as detailed in subparagraph (e)(2)

Obviously the single manning of an aircraft is not ideal and therefore should only be undertaken due to unforeseen circumstances.

The minimum crewing for HEMS missions is clearly laid down in JAR OPS.

(iv)     Crew composition See ACJ to Appendix 1 to JAR-OPS 3.005

(A)     Day flight. The minimum crew by day shall be one pilot and one HEMS crew member. This can be reduced to one pilot only in exceptional circumstances.

(B)     Night flight. The minimum crew by night shall be two pilots. However, one pilot and one HEMS crewmember may be employed in specific geographical areas defined by the operator in the Operations Manual to the satisfaction of the Authority taking into account the following:

(B1)     Adequate ground reference

(B2)     Flight following system for the duration of the HEMS mission (see AMC to Appendix 1 to JAR-OPS 3.005(d), sub-paragraph (c)(3)(iv)(B)(B2))

(B3)     Reliability of weather reporting facilities

(B4)     HEMS minimum equipment list

(B5)     Continuity of a crew concept

(B6)     Minimum crew qualification, initial and recurrent training

(B7)     Operating procedures, including crew co-ordination

(B8)     Weather minima

(B9)     Additional considerations due to specific local conditions.

# Appendix D

## Minimum List of Standard Operating Procedures

### Clinical/Equipment/Drugs
- Defibrillation in flight procedure
- Equipment inventory list
- Equipment cleaning
- Drugs/stores requests
- Medical gases storage/policies/ordering
- Stretcher use and care
- Suction unit use and care
- Ventilator use and care
- Clinical waste
- On-call medical advice
- Calidocott / Confidentiality / Data protection
- Photography and Video at Scene
- Management of Major Haemorrhage
- Post Return Of Spontaneous Circulation (ROSC)
- Traumatic cardiac arrest
- Asthma
- Drowning
- Burns
- Defibrillation in flight

### Operational
- Management of operational SOP's
- Aircraft call-out guidelines / Dispatch criteria
- Responsibilities in-flight of crew-members
- Equipment check and use
- Hospitals, hospital landing sites & specialities
- Operating limits for HEMS / Air Ambulance
- Communications
- Major incidents
- HEMS Alerting System
- Personal Protective Equipment
- Working with Mountain Rescue units
- Infection control and equipment cleaning
- Aircraft safety
- Management of missions database
- Carriage of media personnel
- Incident reporting and management
- Selection of Aircrew Paramedics
- Dispatch personnel
- Patient feedback
- Tasking

### Miscellaneous
- Police interviews
- Housekeeping
- Aircraft washing procedure
- Helilift/aircraft towing policy and procedures
- APU (auxiliary power units)
- Personal accident reporting
- Incident reporting procedure
- Press interviews
- CPD
- Unit hangar
- Patient property
- Unit visitors

> This extensive list of SOPs covers the majority of the daily tasks and responsibilities. The Ambulance Service policies and procedures applicable to each individual Ambulance NHS Trust can cover other daily routines and duties.
>
> Other policies and procedures will need to be written to accommodate future night transfer/HEMS operations within the UK.

# Appendix E

## List of People Consulted

Peter Aldrick, CEO Lincolnshire and Nottinghamshire Air Ambulance Trust
Dave Bramley, Great North Air Ambulance Charity
Dr. Gareth Davies, London's Air Ambulance Charity
Clive Dickin, National Director of the AAA
Cliff Gale, Essex and Herts Air Ambulance Trust
Nigel Hare, Devon Air Ambulance Trust and South Western Ambulance Service
Gerry Hermer, East Anglian Air Ambulance Trust
Helena Holt, CEO Devon Air Ambulance Trust
Roger Linnell, Lincolnshire and Nottinghamshire Air Ambulance Trust
Mark McGeown, CEO Thames Valley and Chiltern Air Ambulance Trust
Dr Carl McQueen, Midland Air Ambulance Charity
Paul Owen, Dorset and Somerset Air Ambulance Charity and South Western Ambulance Service
Becky Tinsley, Chair of AAA Operational Subcommittee, Midland Air Ambulance Charity
Dr. Anne Weaver, London's Air Ambulance Charity
Steve Wheaton, Deputy CEO West Midlands Ambulance Service
Dr. David Zideman, Chair, BASICS

# Appendix F

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