APPENDICES
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APPENDIX A: Terms of Reference

HELIÇOPTER EMERGENCY MEDICAL SERVICES

Terms of Reference

The Department of Health, Social Services and Public Safety (Belfast) and the Department of Health and Children (Dublin) wish to commission a feasibility study and report on the costs and benefits associated with the introduction of dedicated, Helicopter Emergency Medical Services [HEMS] for the island of Ireland. This will include options for the location of the service.

The study and report should include an evaluation as detailed below. It should also summarise and take account of research and evaluations, which have been carried out internationally, into the costs and benefits of a helicopter emergency medical service as against ground ambulances. The analysis of options should include initial cost, ongoing cost, location area, which could be covered, and management arrangements.

Options

- Identification and evaluation of options for locations for HEMS provided on a 24-hour basis in terms of coverage of population and/or potential calls.
- Identification and evaluation of options for the introduction of a single helicopter operating on a north/south basis with costs shared between Belfast and Dublin.
- Identification and evaluation of options for locations for HEMS provided on an 8.00am to 5.00pm basis and other times for optimum effectiveness.
- Identification and evaluation of any constraints and risks including bad weather and night-time flying, which may reduce or otherwise limit service cover.
- Identification and comparative evaluation of options for the provision of HEMS by civilian and non-civilian operators i.e. leasing and purchasing options.
- Identification and comparative analysis of other options for providing emergency medical services e.g. the potential use of retrieval teams and the use of helicopters currently operated by other service providers including the Department of Defence, the Irish Coastguard and any other existing providers.
Benefits

Identification and quantified evaluation of the benefits of a HEMS, stating the baseline position (without HEMS) and the projected HEMS position, to include:

- identification of all benefits in terms of reduction of pain and suffering, loss of earnings and benefits for public expenditure, for example, through reduction in compensation payments;
- identification of the main patient groups, and numbers, likely to benefit;
- the numbers of primary missions, secondary transfers and tertiary missions likely to be flown and the numbers of patients covered;
- the numbers of lives which might be saved and permanent disabling disabilities avoided;
- description of all non-quantifiable benefits which professional views and research evaluations suggest are likely to result from HEMS.
- release of ground ambulances for other duties.

Monetary Analysis

All capital and revenue costs of each of the options identified to include:

- purchase or lease costs of helicopters and the landing pads/buildings in which they would be based;
- medical equipment for the helicopters;
- maintenance costs and consumables;
- residual values of helicopters, land, buildings and equipment;
- all staff costs by type of staff.

All capital and revenue savings, which may accrue, for example, by eliminating the need for ground based ambulance journeys. All costs must be given in Euros.
Funding

Identification and analysis of funding options, for example, joint public/private/voluntary sector partnerships.

Analysis of Findings

All significant monetary cost risks should be quantified and included in a discounted cash flow analysis. Capital and revenue cost risks should also be identified and a discounted cash flow analysis of risk adjusted options provided.

Non-monetary benefit risks identified should be included in a weighting and scoring analysis.

The findings under all the sections above to be summarised and presented, resulting in the identification of a preferred option and conclusions on the cost effectiveness of the introduction of HEMS.

Methodology

Tenderers should give details of proposed methodology and should demonstrate that this methodology can effectively address the issues outlined above.

Timescales and Deliverables

The project should be commenced early March 2002. Initial results in the form of a management summary with compound data, suitable for presentation to the Steering Group should be ready for consideration by April 2002. The date of the final report will be agreed at an appropriate date, but it is anticipated that the Report will be completed before the end of June 2002 and be provided in electronic and paper format. The report will be subject to final agreement and quality review by the Steering Group.

Any tender received by the Department shall remain the intellectual property of the tenderer. However, once commissioned, all documents/results of the study will become the property of both the commissioning Departments.
APPENDIX B: Submissions Received

The following list of individuals and organisations made submissions to feasibility study.

Mrs Grainne Doyle
Cllr Eamonn O Neill MLA
Dr Brendan O'Hare, Secretary, Trauma Committee, OLHSC, Dublin
Dr Brendan O'Hare, Convenor, Paediatric Anaesthesia Travelling Society of Ireland
Down Lisburn Health & Social Services Trust
Dr. Jerry Cowley T.D.
Rural, Island and Dispensing Doctors of Ireland
Department of Orthopaedic Surgery & National Spinal Injuries Unit, Mater Misericordiae Hospital, Dublin
Dr Michael Thornton, Consultant Anaesthetist, Mayo General Hospital
Roy Beggs MLA
Craigavon Borough Council
Mr Robert Cummings
Derry City Council
City of Derry Airport
Fermanagh District Council
John McGinley
Eileen Harkin
Emer McHugh
Maryann McFadden
Andrew & Sandra Tate
Kevin Gallaghar
Miss Julie McFadden
Sloane Helicopters Limited
Donna-Marie Friel
Strabane District Council
Mr Kevin J Taylor
Margaret Feannelly
Irish Society for Immediate Care
Dr Peter A (Tony) Healy, Consultant Anaesthetist
National Department of Neurosurgery, Beaumont Hospital, Dublin
Dr M Thornton, Consultant Anaesthetist, Mayo General Hospital
Alan R G Cathcart
Irish Underwater Council
Capt. Andrew Whelan (retd.)
James Mulhall, Consultant Anaesthetist
Dr Bob Taylor, Consultant in Paediatric Intensive Care, Belfast
Mr Paul Gillespie
Isobel Turner
James H Wells MLA
Eddie McGrady MP MLA
Green Party
(Bridget) Rita Mulchrone
National Neonatal Transport Programme
D.U.P. Councillor John Smyth
Royal College of Nursing Northern Ireland Board
Our Lady's Hospital for Sick Children, Dublin
Ballymena Borough Council
CHC Ireland Limited
Gregory Campbell MP
Dr David Mannion, Director ICU, OLHSC, Dublin
Dr Gerard Bury, Professor of General Practice, University College Dublin
Newry & Mourne District Council
Down District Council
Bond Air Services
Beaumont Hospital Trauma Committee
Pre-Hospital Emergency Care Council
Dial-A-Medic Ltd
College of Anaesthetists & The Association of Anaesthetists of Great Britain and Ireland
National Ambulance Training Board
Cllr Oliver C. Gibson MLA
Ian Paisley Jnr MLA
Alderman Jim Shannon
Peter D Robinson MLA MP
Intensive Care Society of Ireland
Craigavon Area Hospital A&E Department consultants
Irish Association of Emergency Medicine - Royal College of Surgeons in Ireland
Rev Dr R T Williams McCrea MLA DC
Mark Robinson MLA
Irish Patients' Association Ltd
Castlereagh Borough Council
Department of Surgery, Mayo General Hospital
Altnagelvin Hospitals Health & Social Services Trust
Association of Chief Ambulance Officers
Combined NI Health & Social Services Boards' Chief Executives Group
Nigel Dodds OBE MP MLA
Ulster Community & Hospitals Trust
CEOs of the Health Boards, Ireland
Irish Medical Organisation
Dr Dermot Phelan, MICAS Management Committee
Mr Laurence Roche
Cecilia Keaveney TD MCC
Sperrin Lakeland Health & Social Care Trust
K J S Panesar
Irish Hospital Consultants Association
John O'Byrne
Dr Gavin Lavery
Mr Paul Bayliss
Dr Alan McKinney
College of Anaesthetists R.C.S.I.
APPENDICES …

APPENDIX C: List of References


5. The role of Helicopters in pre-hospital care, Jon Nicholl, Pre-Hospital Immediate care, 1997:1:82.90

6. Comparison of air and Ground transport of cardiac patients, Kathleen S Berns RN, MS, Daniel G. Hankins MD FACEP, Scott P Zietlow, MD, FACS, Air Medical Journal 20: 6, Nov-Dec 2001


8. Use of an Ambulance-Based Helicopter retrieval service, Vanessa L Wills, Louise Eno, Christopher Walker, Jonathon S Gani, Australia New Zealand Journal of Surgery (2000) 70. 511-514

10. Effectiveness of Helicopter versus ground Ambulance services for Interfacility transport, Cynthia L Arfhen Ph.D., Marc J Shapiro MD, Palmer O Bessey MD, Benjamin Littency MD, The Journal of Trauma Injury Infection and Critical Care, Vol. 45 No.4


16. A Rural Ambulance Helicopter System in Northern Sweden, J. Vesterbacka, MD, Anders Eriksson, MD, PhD


26. Differences in Mortality Rates among Trauma Patients by Helicopter and Ambulance in Maryland, Kerr WA, Kerns TJ, and Bissell RA, Prehospital and Disaster Medicine, July – September 1999, Vol 14, No. 3, pp159-164


30. Profile and outcomes of patients transported to an accident and emergency department by helicopter: prospective case series, Hong Kong Medical Journal, 2000, September, Vol 6 No 3, pp 249-253


Unpublished Articles, Reports and Discussion papers.

An Audit of Interhospital Transfers of Critically Ill Patients from Mayo General Hospital 1998-1999, O’Brien J and Mulhall J, Dept. of Anaesthesia, Mayo General Hospital, Ireland (article reviewed unpublished)

Examination of the Need for a dedicated air ambulance service by the Standing Committee on Air Ambulance Services, 1996, Ireland


Paediatric intensive care transport in Ireland, Justin L, Mannion D and Fitzgerald J, 2001? (article reviewed unpublished)
The National Neonatal Transport Programme, Annual Report, 2002

Report on Transport of the Critically Ill, Intensive Care Society of Ireland, 1994,

Strategic Review of Ambulance Services, Ireland, 2001

Spatial analysis of road traffic accidents in the Western and North Western Health Boards, Report by McCutcheon Hogan & Department of General Practice, NUI, Galway, February 2002

Mapping the Road to Change – A Strategy Review of the Northern Ireland Ambulance Service, January 2000

APPENDIX D: Road Traffic Accident Data

Emergency Medical Service (EMS) activity involves a wide range of tasks. Road traffic accidents (RTAs) account for a significant proportion of emergency activity of the ambulance services in the RoI. Other important EMS tasks include responding to ‘cardiac incidents’. There is also a significant volume of inter-hospital transfer activity occurring within the RoI (including a small amount of international activity).

Combined survey data\(^1\) from the Western Health Board (Galway, Mayo and Roscommon), the Midlands Health Board (Laois, Offaly, West Meath) and South Eastern Health Board (Waterford, Carlow, Kilkenny and Wexford) for May 2001 to April 2002 indicates that of the 59,532 patients transfers undertaken; 60% were classified as RTA or Cardiac or Emergency:

- 3,126 transports were directly to scenes of RTAs
- 5,664 transports directly to scenes of “cardiac complaint”
- 5,534 transports directly related to emergency situations.

Over half of all road accidents and casualties in the RoI occur in four counties; and include the two major cities of Dublin and Cork.

In the Republic of Ireland in 2002, 48% of the total number of accidents resulting in fatality or injury occurred during what are typically ‘day light’ hours; the period from 9am and 6pm. The number of accidents increases rapidly after noon to reach a peak at 5pm, which corresponds to the traffic peak and declines to reach a low at around 6am.

### Road accidents 2001 and 2002

- The total number of accidents in 2002 was 6,625 (6,909 in 2001), including 346 fatal accidents (360 in 2001)
- Road accidents in 2002 resulted in 9,582 casualties (10,633 in 2001)
  - including 376 persons killed (411 killed in 2001)
- Two axes represent 51% of total road accident casualties in 2002 (46% in 2001)
  - Dublin – Kildare
  - Cork – Limerick
- Leinster recorded 54% of the total accident casualties in the RoI in 2002 (53% in 2001)

Source: National Roads Authority, 2002 and 2003 "Road Accident Facts, Ireland"

Approximately a fifth of the total accidents happen between midnight and 6am; 50% of accidents occur between 9am and 6pm and 25% between 6pm and midnight.

\(^1\) Data derived from responses to a survey of Health Boards conducted by the consultants.
There does not appear to be significant seasonal variation to the occurrence of accidents across days of the week or months of the year. No significant peak can be observed during any month of the year. The month of October was the highest in 2000 and December the lowest. Slightly more accidents occur on Friday, Saturday and Sunday than on other days of the week.

Source: National Roads Authority, 2001
Northern Ireland road accidents and casualties (in total) have increased by 30% since 1990 despite noticeable decreases in the number of deaths and severely injured persons.

The distribution of accidents and casualties indicates that the largest number of incidents in NI occur between 8am and 7pm, at the end of the week, during the winter months:

- Three quarters of the total casualties occur between 8am and 7pm.
- The peak numbers of casualties coincide with the a.m. and p.m. peak traffic hours.
- In terms of accidents, the peak occurrences can be observed towards the end of the week / weekend period
- Throughout the years, the winter months (November, December and January) recorded the highest number of accidents.

Source: Road Traffic Accident Statistics 1999-2000, Royal Ulster Constabulary
Almost 50% of total road accident injuries in NI occurred in the Belfast police divisions (A, B, D & E).
APPENDIX E: HEMS Survey

<table>
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<th>Question 1:</th>
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<tr>
<td>Name of organisation</td>
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<th>Question 2:</th>
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<td>Type and number of rotary aircraft</td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>Type / Make / Model</td>
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<th>Question 3:</th>
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<td>Hours of operation</td>
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<td>Tick a box</td>
<td></td>
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<tr>
<td>Daylight only</td>
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<tr>
<td>24 hours / all weather</td>
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<td>Operational capability</td>
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<td>Tick a box</td>
<td></td>
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<tr>
<td>Fully VFR</td>
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<tr>
<td>Fully IFR</td>
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<td>Total staff at this base</td>
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<tr>
<td>Full time</td>
<td>Part time</td>
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<th>Question 6:</th>
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<td>Typical / Normal HEMS crew consist / compliment</td>
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</tr>
<tr>
<td>Number</td>
<td></td>
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<tr>
<td>Doctors</td>
<td></td>
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<tr>
<td>Nurses</td>
<td></td>
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<tr>
<td>Paramedics / Emergency Medical Technicians</td>
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<tr>
<td>Pilot(s)</td>
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<td>Date of establishment of the service</td>
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<td>Call out procedure</td>
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<td>Tick a box</td>
<td></td>
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<tr>
<td>“Emergency services number”</td>
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<tr>
<td>eg 999 / 911 / 000</td>
<td></td>
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<tr>
<td>Ambulance / Police / Fire Dept. dispatch etc</td>
<td></td>
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<tr>
<td>Hospital initiated</td>
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<tr>
<td>Either of the above</td>
<td></td>
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<thead>
<tr>
<th>Question 9:</th>
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<tbody>
<tr>
<td>Is clinical / medical co-ordination involved directly in HEMS “call out”?</td>
<td></td>
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<tr>
<td>YES</td>
<td>NO</td>
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<th>Question 10:</th>
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<tbody>
<tr>
<td>Is operational crew located with the aircraft?</td>
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<tr>
<td>YES</td>
<td>NO</td>
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<tr>
<th>Question 11:</th>
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<tbody>
<tr>
<td>Is medical crew located with the aircraft?</td>
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<td>YES</td>
<td>NO</td>
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<tbody>
<tr>
<td>Is medical crew dedicated to the HEMS or sourced from hospitals on a part-time or rotation basis?</td>
<td></td>
</tr>
<tr>
<td>Dedicated</td>
<td>Part-time</td>
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<tr>
<th>Question 13:</th>
<th></th>
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<tbody>
<tr>
<td>What is the road distance from the helicopter base to the nearest trauma centre / major hospital?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>kilometres</td>
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</table>
Question 14:
Does the trauma centre / major hospital nearest to your base have a helipad on-site?
YES ☐ NO ☐
If YES, how many metres is it from helipad to Emergency Department / A&E Department entry
metres
If NO, how far away from the helipad / ‘set down’ area is the Emergency Department / A&E Department entry
metres

Question 15:
What are the major roles of the helicopter service operated by your organisation?
Medical (trauma / inter-hospital transfers etc) ☐
Search & Rescue ☐
Support of law enforcement ☐
Training ☐
Support to counter disaster ops. ☐
Fire fighting ☐
VIP / Governmental tasks ☐
Other ☐

Question 16:
Total number of operational missions in past year
Year ☐
Number of missions ☐

Question 17:
Total flying hours in past year
Hours (including training hours) ☐

Question 18:
Total training missions in past year
Number of missions ☐

Question 19:
Total training hours flown in past year
Hours (including training hours) ☐

Question 20:
What are the mean / average and standard response times for the HEMS (time from call receipt to helicopter launch)
Mean ☐ mins. Standard ☐ mins.

Question 21:
What are the total annual costs of your operation (local currency)

Question 22:
What are the sources of funds for the operation of the HEMS
National / State Government ☐
Local Government / Municipality ☐
Commercial Sponsorship ☐
Community Sponsorship ☐
Donations (public and private) ☐
Other ☐

Question 23:
Is your operation subject to independent ‘audit’ of the appropriateness of HEMS flights / missions?
YES ☐ NO ☐

THANK YOU
APPENDICE F: Examples of HEMS Aircraft

The aircraft utilised for dedicated SAR operations which occasionally provide HEMS-type services vary significantly; from an aircraft relatively widely used in dedicated EMS activity through to a large aging helicopter more common in military and specialist industrial activities (e.g. oil rig transfers)

**Eurocopter AS365N Dauphin 2 / EC 155**
Twin engine mid-sized utility helicopter
Max. seating for 13 passengers (with 1 pilot) – EC 155 (pictured) – standard seating for 14 including 1 or 2 pilots

**Sikorsky S-61** as operated by CHC in Ireland.
Flight-crew of 2. Main cabin seating has a capacity of 26-30 persons in non-SAR configuration.
**Eurocopter EC 135**

Light twin turbine utility helicopter
- seating capacity 5-7 persons

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**Augusta A109**

Light twin corporate and utility helicopter
- seating capacity for 8 persons

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**Eurocopter AS 355**

Twin engine mid sized utility helicopter
MD 902 Explorer
Light twin helicopter
- maximum seating capacity for 10

BO 105 DB
Light utility helicopter
- maximum seating capacity for 5

BO 105 DBS
Light utility helicopter
- maximum seating capacity for 6

Bell 412
Medium twin utility helicopter
- seating capacity for 15
**BK 117 B-2**

Twin engine utility helicopter
- maximum seating capacity for 10 persons

**Aerospatiale SA 365 Dauphin**

Mid size utility helicopter
- standard accommodation for 10 persons

**Agusta A119 Koala**

Light utility helicopter
- standard accommodation for 8 persons
EC 135 internal configuration options
EC 135 internal configuration
Photographs in this report sourced from Booz Allen Hamilton, NIAS, Bond Air Services and The International Directory of Civil Aviation 2001/2002
APPENDIX  G: Summary of literature review key findings
Estimated that 13 extra patients annually with major trauma could have survived due to use of London HEMS (ref 1)

Study indicates that ‘better outcomes’ for severe trauma cases over ground ambulance (ref 1)

Indications of improvement in care due to limiting the need to do a secondary move of a patient at a later time (ref 2)

The UK evidence is that there can be significant public support for a helicopter ambulance service (ref 2)

‘At scene’ patients sustained a significantly better survival rate compared with the national outcome standard (ref 3)

In general, patients benefit from HEMS only if there is a significant reduction in ‘out-of-hospital’ transport time (ref 4) On average, patients transported by helicopter from locations within the outer air zone arrived at the trauma center 13 minutes sooner than those transported by ground ambulance (ref 4)

There can be substantial reductions in transfer times from the scene of an accident to A&E departments by helicopter (ref 5)

Airway management at the scene has been identified as the crucial factor in survival to hospital (ref 5)

Inter-hospital transfer by helicopter in the UK has been reported to have benefits in patients with a wide range of diagnoses (ref 5)

Pre-hospital time was less for patients transported by air than ground transports (ref 6)
The evidence indicates that if they are operated, it should be on a regional basis in a secondary responder role, in which they are called out at the request of emergency personnel at the scene or at a primary receiving hospital and not in a primary responder role, in which they are activated by ambulance service dispatchers acting on information from 999 calls from the public (ref 5).

The amount of time from the call for transport until arrival at the hospital was less for helicopter transports (ref 6).

Air transport had more patients with reduced chest pain on arrival (ref 6).

Air patients spent an average of 2 fewer days in hospital than did ground patients (ref 6).

Helicopter transport benefits the cardiac patient with decreased chest pain as a result of more treatments en route: decreased time from the call until arrival resulting in decreased time to intervention and shorter pre-hospital time and hospital stay (ref 6).

Shorter hospital stays and less stops in the Emergency Department among the helicopter group also saved money (ref 6).

In rural remote areas HEMS systems offers a greater means of medical assistance with a significantly larger action range (ref 7).

More and more, the flight emphasis is on primary transport of patients already stabilised by ground rescue squads (ref 7). Transporting the patient quickly to a hospital where often both the capability and capacity to manage the patient is important (ref 7).

Intensive care transport has become another major domain of helicopters which offers fast long distance transport without dangerous and destabilizing transfers from ground transportation to the aircraft and back (ref 7).

Overall 1.7% of patients were felt to have been potentially harmed, **17.3% to have benefited** and 81% to have had no attributable benefit related to the helicopter use (ref 8).

Application of the replacement value technique revealed that the helicopter model is much less expensive than the ground model. Cost per patient transported is US$4,475 for the ground system and US$2,811 for the helicopter system (ref 9).
Benefits of Helicopter

- Can fly patients rapidly to one of several tertiary care facilities in the region
- Patients in more remote areas can be accessed easily (ref 9)

Improvements were because of the delivery of medical expertise to the site (ref 13)

Improved survival of severely injured patients and improved outcome for trauma patients when using helicopters for secondary transfer respectively (ref 13)

Helicopter patients received medical attention 25 minutes earlier but arrived in hospital 10-20 minutes later (ref 14) Helicopters have a role in providing emergency cover over large and remote geographical areas and situations inaccessible to land ambulances (ref 14)

Helicopters could be used for distances over 45km (ref 14)

11% were judged to have benefited, gaining 290 – 6 life years (ref 15)

96% of the total of life years gained was achieved in nine patients, six of whom were aged below 7 years (ref 15)

Greatest benefits were gained in the treatment of complicated deliveries and in children with respiratory problems or serious infections (ref 15)

Transport by helicopter may improve the outcome of transported neonates although it will be difficult to prove that it is superior to transport by ambulance (ref 18)

A trend towards increased survival was observed among those transported by helicopter only for patients with TS 5-12, ISS 21-30 (ref 19)

Would hesitate to criticize the use of helicopter transport for more seriously injured patients (ref 19)

Overall 13% reduction in mortality for air transported patients (ref 21)

A 35% reduction in mortality for victims transported directly from the scene with scene score between 4-13. (ref 21)
Air medical services are faster than ground transportation, provide the highest level of prehospital medical care available, and allow rapid access to definitive tertiary care centres (ref 21).

Data suggests that while air medical transportation has a definite benefit, reducing mortality by as much as 35%. This benefit applies to a select group of people (ref 21).

The data strongly supports the utilisation of air medical transportation, under specific circumstances for the care of the sick and injured (ref 21).

Conclusions: assuming that helicopter air medical transport provided a substantial survival benefit for trauma patients. Findings suggest that this service is a cost effective option for the treatment of trauma patients. (ref 22)

The preponderance of recent and previously extant evidence supports an argument that the helicopter emergency medical services transport is associated with significant benefit for some injured patients. (ref 32)

More compelling were the mortality results. In the period before HEMS transport was lost in one region, trauma mortality for the two regions was virtually identical. After the HEMS capability was lost, however, the region without HEMS access experienced a fourfold increase in trauma mortality, whereas mortality remained unchanged in the region with continued HEMS service. (ref 32)
HEMS may be negatively effecting minor trauma cases (ref 1)

No evidence that HEMS was improving chances of survival for the whole group of trauma attended by HEMS (ref 1)

No evidence that HEAS as faster in terms of response times for ‘from call-out to arrival on scene’ (ref 2)

Patients not delivered more quickly to hospitals via HEAS (ref 2)

Inappropriate choice of transport mode (including time to request HEMS) may be negating possible benefits of HEMS (ref 4)

Unless incidents are frequently occurring more than 15 minutes from the nearest land ambulance facility a helicopter is unlikely to improve on land ambulances response times (ref 2)

HEMS may be negatively effecting minor trauma cases (ref 2)

No improvement was shown for patients of acute myocardial infarction (ref 5)

Primary helicopter tasking to trauma cases within 35km of the major trauma centre is seldom beneficial (ref 8)

Benefit of ground ambulance
  o Not limited by climatic conditions
  o The availability of six highly trained teams and six vehicles can respond to more call outs (ref 9)

There were no differences at 30 days for survivors in disability, health status or health care utilization (ref 10)

19% of helicopter transported patients died compared with 15% of those transported by ground (ref 10)

Findings confirm lack of benefit on any of our outcome measures, including mortality, disability, health care utilization and health status of using helicopters for interfacility transport (ref 10)

Little evidence to support primary scene response in the UK by helicopters and their teams from trauma centres (ref 14)

Routine use of helicopters to transfer patients with cardiovascular disease is questionable (ref 15)
For 283 cases, found no additional benefit compared to ground ambulance transport (ref 15)

A ground ambulance is faster if the total distance does not exceed 40km (ref 16)

The costs of ground ambulance transport is only about half that of corresponding helicopter transport (ref 16)

Logistic regression analysis revealed that when adjusting for other risk factors, transportation by helicopter did not affect the estimated odds of survival (ref 17)

When helicopter and ambulance patients were stratified by ISS there was no statistically significant survival advantage for patients transported by helicopter (ref 19) No measurable survival advantage among patients transported by helicopter compared with ambulance (ref 19)

Again no significant advantage for helicopter (ref 19)

The positive effect of helicopter transport on survival was difficult to determine (ref 19)

For low ISS, outcomes are not uniformly better from patients transported by helicopter (ref 19)

No difference for patients at trauma score extremes (ref 21)
APPENDIX H: Maps showing indicative response time bands for possible HEMS options
Indicative access time: 60 minutes range for ‘tertiary response’ HEMS

East coast-based ‘retrieval service’
East coast-based retrieval service plus North West based ‘primary response’ helicopter

Illustrative

‘Primary response’ HEMS
Indicative response times:
30 minutes band

Approx. 50-55% of the island’s population within 30 minutes response time for ‘primary response’ HEMS
East coast-based retrieval service plus North West and South East based ‘primary response’ helicopters

Approx. 80-85% of the island’s population within 30 minutes response time for ‘primary response’ HEMS
Approx. 90-95% of the island’s population within 30 minutes response time for ‘primary response’ HEMS.
East coast-based retrieval service plus North West, South East, Mid West and South West based ‘primary response’ helicopters

Illustrative

Approx. 100% of the island’s population within 30 minutes response time for ‘primary response’ HEMS