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Introduction

Chairman's Forward

I am pleased, on behalf of the Project Board, to submit this Review of the Northern Ireland Ambulance Service to the Department of Health, Social Services and Public Safety.

For many years our ambulance service has made an important contribution to the health care system in Northern Ireland. For much of the past thirty years, this contribution was often made in a most demanding and difficult environment.

It is however widely recognised, within the Service and beyond, that much of what may have previously served us well is no longer appropriate. An ambulance service is a means to an end and is not an end in itself. It therefore has to respond to two key contexts. One is set by people's clinical needs and their expectations. The other is created by the increasing capability of our health care systems generally and by, in particular, the changing environment of our acute hospitals. Both these contexts are changing in a dynamic way and the ambulance service must respond to this. Also, the huge potential presented by technology presents major opportunities that must be harnessed.

It is in the nature of any ambulance service to respond to challenges: that is what ambulance crews do on a daily basis. This Review establishes a series of challenges for our ambulance service and everyone who works in it. It also sets a challenge for everyone in Northern Ireland in that it recommends fundamental changes to what has been our understanding of the way in which the ambulance service had traditionally operated. The Review proposes no less than a radical transformation of current arrangements and sets out a clear vision of the type of service the people of Northern Ireland need for a new millennium. To be effective our ambulance service has to be different. Accepting the need for change is the challenge that everyone living in Northern Ireland must accept.

In almost every aspect it is a time of real opportunity for the Service to address the opportunities for change. We are at the start of a new millennium. We also have in place, for the first time in over 25 years, a Local Assembly. And in drawing together the whole public safety agenda our new government arrangements provide an unprecedented opportunity for a very real enhancement of our emergency services overall through real and effective collaboration.

In taking forward the Review we have attempted to meet our terms of reference. Beyond that we have been keen to build on the spirit of government's 'best value' agenda. This has meant that we have seriously challenged current ambulance practice and thinking; made robust comparisons with what is happening outside Northern Ireland; and consulted widely to find out what ambulance staff, people and their representatives think. I look forward to the process being continued in an open and transparent way.

In submitting this Review I want to state the obvious and emphasise that the success of our recommendations depends on people. We will continue to rely on the skills, ability and commitment of everyone who works in the ambulance service. A key part of the challenge for the Ambulance Service is to ensure that the current level of core skills, competencies and levels of commitment are developed and encouraged. That leads me to stress how critical it is to pay proper attention to the implementation of our recommendations. I have continually emphasised our belief that our ambulance service, in conjunction with the rest of our health and personal social services, has to take a very dramatic leap forward. It is however naïve to expect such a change to be achieved overnight. Our report therefore strongly urges a phased rather than a "big bang" approach to change. What should remain non-negotiable however is the need to have most of that dramatic change in place within the next five years.

Finally, I want to formally recognise the range and level of contributions to the Review. I thank everyone who made a submission or who engaged in discussion with us. I am particularly grateful to all those people and organisations from beyond the formal health and social care system who came forward to offer what were often new and fresh insights. My particular gratitude goes to my colleagues on the Project Board who devoted such time and effort to this task over the past months. I had a good team and it was a pleasure to work with them. Central to the production of the Report were the Review staff, Brian McNeill and Rebecca Getty. The breadth and depth of this Report offers only a limited insight into the crucial contribution and related workload of these outstanding members of staff. Neither the Report nor I can do justice to their enthusiasm and commitment to the task over the past fifteen very demanding months.

Thomas Frawley.

T J Frawley
Project Board Chairman

Executive Summary

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BACKGROUND

2.1 This Review of the Northern Ireland Ambulance Service (NIAS) was commissioned by the then Minister for Health, Mr John McFall, in October 1998. Central to its terms of reference were the need to identify opportunities and resources required to improve patient services provided by the Ambulance Service. These were to take full account of the:

- Current and projected levels of emergency and non-emergency demands for ambulance services, including the need to facilitate the strategic shift in acute hospital services
- The achievement and maintenance of the current and proposed new performance standards
- Current and anticipated technological developments
- The need for increased separation of emergency and non-emergency transport services

2.2 Parallel with the development of the National Health Service over the past half century, the Ambulance Service in Northern Ireland has progressively broadened and deepened its range of activities. In 1995 the four Area Board Ambulance Services were merged to form a single NI-wide Ambulance Trust. However, not all the proposed benefits of the formation of a single Trust have been achieved.

2.3 In 1998/99, NIAS managed a fleet of 243 vehicles. It employed over 700 staff and responded to almost 67,000 emergency and over 38,000 urgent calls during the year. In addition, the Patient Care Service undertook almost 274,000 journeys. Whilst structured as a single Trust, NIAS continues to organise itself on the basis of four Divisions: these precisely mirror the areas covered by the four Health and Social Services Boards.

THE DRIVERS FOR CHANGE

2.4 NIAS operates in the ever changing pre-hospital care sector, of the Health Service. Key changes influencing this environment can be summarised as:

- The growing recognition that ambulance services should be a central part of any emergency care system
- Increasing demands for emergency care

- An increased emphasis on setting and meeting robust and equitable performance standards

- Acceptance that emergency responses should reflect individual patients' clinical needs and target resources at those who need them most

- Recognition that the overall effectiveness of emergency care can be heavily influenced by what is provided in the pre-hospital phase

- The huge potential offered by technology in terms both of delivering pre-hospital care and effectively managing ambulance resources

- The implications of all the above for the training and development of ambulance personnel

2.5 In the more local Northern Ireland context these key influences are supplemented by a series of specific factors and changes. Most important amongst these are:

- The ongoing reconfiguration of acute hospital services with an increasing emphasis on the concentration of acute services in fewer hospitals

- Reviews of specialist services which consistently argue for the provision of such services on a limited number of sites. Examples of this are major trauma; some paediatric services; and cancer services

- The recommendations of a range of professional bodies which support concentration and specialisation as essential steps to improved care

2.6 The Review Project Board consulted widely on both the current and future performance of NIAS. This consultation ranged across and beyond the formal health and social care system. Among the main views put forward by those consulted were:

- The proposed changes to acute hospital services must be reflected in Ambulance Service arrangements

- The funding arrangements for NIAS need to be revisited

- Significant investment is needed in the ambulance fleet; equipment; technology and control systems; staff training; and clinical audit and governance systems

- Innovative responses should be developed so that current and prospective performance standards can be achieved

- The A&E service should be separated out from the Patient Care Service

- Strategic links with other emergency services should be examined.

TOWARDS AN IMPROVED EMERGENCY AMBULANCE SERVICE

2.7 The Review Project Board proposes the design of an improved emergency ambulance service, the key components of which are the introduction of call prioritisation and adoption of new performance standards.

2.8 Call prioritisation is an effective way of dealing with emergency calls. It has been widely adopted by ambulance services in the UK and USA. By using a software package – a medical priority dispatch system - the 999 call taker can prioritise calls into categories as shown below and then dispatch the most appropriate response. The introduction of this system could help save lives.

Category A:	Immediately life-threatening
Category B:	Not immediately life-threatening but potentially serious
Category C:	Neither life threatening nor serious, requiring an urgent rather than an emergency response.

2.9 It is proposed that ambulance response times could be improved through increased resources and the use of additional deployment points. A four phased implementation plan is recommended and is outlined below:

PHASE	PROPOSED PERFORMANCE STANDARDS	TARGET DATE by	ADDITIONAL RESOURCES REQUIRED (1)	COST PER ANNUM
1	Respond to 50% of all 999 calls within 8 minutes by Area Health Board	End 2001	Nil – Target to be achieved by improving availability of A&E vehicles	Nil
I2	Respond to 50% of all 999 calls within 8 minutes by Local Government District	End 2003	356.88 hours plus 20 additional deployment locations	£4.2M
3	Respond to 75% of Category A calls within 8 minutes and respond to Category B calls within current Patient Charter Standards by Local Government District	End 2005	231.36 hours	£1M - £2.7M (2)
4	Respond to 90% of Category A calls within 8 minutes and review current Patient Charter Standard response for Category B calls	Date to be set post Phase 3	Analysis to be completed pending impact of Phase 3	To be assessed

(1) Additional hours of ambulance cover required each day to meet the targets. Hours of cover were calculated using an interactive modelling tool.

(2) Depending on the types of vehicle used.

2.10 It will be essential in future that the availability and distribution of ambulances and crews reflects variations in patterns of demand. Different working and deployment arrangements will be needed, including a move away from the traditional concept of ambulance vehicles being permanently based in static ambulance stations. The

Review recommends that a further 20 deployment locations across NI are identified. Other proposals to aid the achievement of new performance targets and enhance the current level of service include:

- Community-based first responder schemes where NIAS-trained volunteers can provide basic life support. This will require a significant community training input from NIAS

- Greater use of other emergency services personnel to provide advanced first aid and defibrillation skills and act as co-responders

- The introduction of a range of rapid response vehicles (cars and/or motorcycles) to complement traditional emergency ambulance vehicles

- Enhanced integration across the whole emergency care system to ensure patients receive appropriate care and advice on a timely basis

2.11 The Review concluded that the provision of an air ambulance service would not bring significant added value to Northern Ireland's emergency care services.

SEPARATING EMERGENCY AND NON EMERGENCY WORK

2.12 Currently NIAS provides both emergency and routine patient transfer services. Based on present use, an A&E ambulance is available on average, 50% of the time, for emergency work. This is due to it either already responding to an A&E call or being engaged in routine work. In the UK, the majority of ambulance services have separated their emergency and non-emergency functions.

2.13 The Review recommends that such a split should take place in NI. In addition it recommends that A&E services be commissioned at a NI-wide level and Patient Care Services commissioned and planned at a more local level. The creation of a free-standing Patient Care Service is estimated to cost £1.34M annually (plus the cost of additional vehicles). There are however likely to be significant compensatory savings for the A&E ambulance service.

THE AMBULANCE FLEET AND ESTATE

2.14 NIAS current fleet is 243 vehicles. Among the issues identified by the Review in relation to fleet were the lack of dedicated fleet management expertise; the absence of an appropriate vehicle replacement programme; and failure to identify an optimal fleet size commensurate with NIAS' current operational requirements. These issues must be addressed.

2.15 The current NIAS estate comprises headquarters; 28 stations; four control centres; and a regional training centre. Many of these facilities are not owned by NIAS. Many do not meet current standards and several are now inappropriately sited. NIAS needs to develop an estates strategy which will reflect the fundamental changes recommended for the Service.

COMMUNICATIONS AND INFORMATION TECHNOLOGY

2.16 Effective communication between the patient/caller; the ambulance vehicle/crew; and the receiving hospital department or other destination, must underpin any ambulance service. Central to communication are ambulance control centres and systems.

2.17 NIAS currently has four control centres. The technology in these centres is at, or near, the end of its useful life. Following a detailed technical appraisal the following options for improvement are proposed:

- NIAS should move to a single emergency ambulance control centre
- The current mobile radio infrastructure should be fully replaced by 2004
- The new infrastructure should support voice and data communication
- Future command and control systems must be capable of supporting additional applications, for example, priority dispatch and geographical information systems
- A comprehensive IT-based management information system is urgently required for NIAS to inform the development of a dynamic management system.

2.18 In order to implement the above, NIAS must develop an IT/IS strategy. Careful consideration will need to be given to the human resource implications of rationalising control centres. The potential for improved collaboration with the other emergency services should also be considered.

2.19 The cost of implementing the recommendations for the improvement of control and communications are estimated to be in the region of £1.1M in capital. The revenue costs are projected as approximately £0.2M recurring.

SKILLS DEVELOPMENT, TRAINING AND CLINICAL EFFECTIVENESS

2.20 As well as considering key aspects of the Service's operational performance, the Review also focused on the area of clinical effectiveness. The effectiveness of any ambulance service relies on the skills; competence; and commitment of its staff. Significant developments in training have taken place over the past twenty-five years and a wide-ranging training regime, reflecting national standards, is now in place. A changing service however requires changing skills. The Review therefore broadly recommends the following:

- NIAS develops a training strategy which promotes continual revision to the way in which training is delivered

- A series of new training modules are introduced to meet changing clinical need

- The adoption of the extended paramedic training syllabus as a priority

- The introduction of a process of clinical supervision to ensure the implementation of accepted good practice

2.20 NIAS should also look to how ambulance staff training could be developed within Northern Ireland's third level education institutions.

2.21 Clinical governance (how the Trust should ensure the quality of its clinical care) forms the final building block for the Review in this area. A Clinical Governance Committee should be set up to develop clinical audit; quality and effectiveness initiatives; risk management; and research and development within the Trust. It is essential that a full time Medical Director be appointed.

EMERGENCY PLANNING

2.23 NIAS must have the capacity to respond to major incidents if and when the need arises. In order to reflect government policy and good practice in this area, NIAS needs to:

- Carry out its emergency planning on a NI-wide basis in collaboration with other emergency services

- Have appropriate staff and management capacity to respond to a major incident

- Have available command and control communication vehicles as well as mobile equipment, possibly on a shared basis with other emergency services

2.24 The Review recommends that A&E staff undertake a specialist course known as Major Incident Medical Management Support training (MIMMS).

HUMAN RESOURCES AND MANAGEMENT ISSUES

2.25 NIAS currently relies on some 700 people to deliver its Service. The need for enhanced training and skills development and the major change management agenda which face NIAS have already been highlighted. NIAS must ensure that it has the management capacity to continue to provide a service and implement these significant changes at the same time.

2.26 All of these factors point to the necessity for NIAS to develop a human resources strategy. Among its key elements should be staff recruitment, deployment, welfare and reward; employee relations; communication across the Trust; and organisation and management development. Central to all of this is the need for the creation and implementation of a performance management framework. This is seen as

essential if government policy; the recommendations of this Review; and Trust plans and strategies are to be put into practice on the ground.

2.27 As the above suggests, particular attention should be given to the management of the Service as its role, direction and strategies change. Fundamental to the success of the recommendations of this Review are:

- The commitment to, and ownership of, the strategic change agenda by NIAS Trust Board
- The setting and delivery of clear managerial objectives and agreed timescales
- The implementation of management information systems to enable dynamic performance management

COLLABORATION WITH OTHERS

2.28 NIAS is not the only emergency service in Northern Ireland. Nor is it the only ambulance service on the island of Ireland. Apart from the frequent shared focus of their day-to-day work, the Ambulance, Police, Coastguard and Fire Services have much to gain from sharing communications; management; IT; training; and estate facilities. Some cross-border ambulance collaboration is already underway and work should proceed to ensure that there is seamless emergency ambulance care right along the border. Finally, the Review urges that the recent bringing together of the Public Safety agenda at governmental level in NI should be reflected at operational level within the emergency services, in proactive as well as in reactive ways.

MORE EFFECTIVE COMMISSIONING

2.29 A central thrust of this Review is the belief that the commissioners of emergency ambulance services in NI should come together and commission services at a corporate, NI-wide level. The historic four-Board approach has resulted in both an inconsistent approach to ambulance services and some duplication of effort. Capital planning for ambulance replacement has been particularly poorly served by the current disparate arrangements.

2.30 The Review recommends that the four Area Boards and the Department of Health, Social Services and Public Safety, come together to commission emergency ambulance services. The Patient Care Service should meanwhile be commissioned at a more local level.

CONCLUSION

2.31 If the service provided by NIAS is to be improved, the design and implementation of an improved emergency care system will require a systematic approach to the prioritisation of emergency calls; faster ambulance responses, better trained staff and the development of wide whole systems approach. Investment in control and communications is essential to support this.

3 Terms of Reference/Membership of the Project Board

INTRODUCTION

3.1 In common with other ambulance services the Northern Ireland Ambulance Service has had to deal with a significant rise in A&E demand over the last few years. In parallel the pattern of activity of acute services is changing, bringing with it additional demands for ambulance services, particularly emergency services.

3.2 Achievement of current performance standards established by the Patients and Clients Charter have presented difficulties, particularly in some rural areas, resulting in increased public concern and dissatisfaction with ambulance services. The Government's commitment to the introduction of new response times in Northern Ireland will present a further challenge for ambulance services.

3.3 The Department of Health and Social Service's "Regional Strategy For Health and Social Wellbeing 1997-2002" endorsed by the document "Well Into 2000" indicates that the Department expects to see progress towards a future pattern of significantly fewer acute hospitals serving larger populations. Implementation of this strategic objective will involve restructuring of acute hospital services with significant implications for the delivery of ambulance services.

3.4 As a consequence. the then HSS Executive, Health and Social Services Boards and NIAS commissioned a strategic review of Northern Ireland's Ambulance Service provision to agree a common agenda for the future.

3.5 The Terms of Reference for the Review were as follows:

- To undertake a comprehensive review to identify cost-effective opportunities and associated resources required to improve patient services which take full account of the:
  - Current and projected levels of emergency and non-emergency demands for ambulance services, including the need to facilitate the strategic shift in acute hospital services;
  - Achievement and maintenance of current and proposed new performance standards;
  - Current and anticipated technological developments;

- Need for increased separation of emergency and non-emergency transport services.

- To produce clear, practical and costed recommendations for the future deployment of ambulance service resources within the following categories:

  - Use, skill mix and deployment of staff;
  - Skills/training requirements;
  - Location and suitability of ambulance service estate;
  - Equipment/technology/fleet

- To identify opportunities to reconfigure services from a regional perspective not tied to current commissioning and providing arrangements. The work undertaken resulting in "The Future Management of Ambulance Services in NI – Merger Proposals" document should form the baseline for this analysis.

- To explore the potential for greater collaborative working and co-operation in the provision of emergency services with other statutory and voluntary groups and identify opportunities to maximise this. This should include a review of cross border working arrangements to ensure maximisation of available resources in the longer term.

- To consider the potential implications of the proposed revised ambulance performance standards (Priority Dispatch Model) and make recommendations on the steps and implications of implementation in Northern Ireland.

- From the information which should already exist within NIAS, undertake a benchmarking exercise to determine costs, service delivery standards, skill mix and staffing levels across all urban and rural environments.

- To examine alternative models of management and delivery of ambulance services in the United Kingdom which have direct applicability to the Northern Ireland context.

MEMBERSHIP OF THE PROJECT BOARD

3.6 The following were appointed as members of the Review Project Board:

Chairman

Mr Thomas Frawley, General Manager, WHSSB

Members

Mr Paul Blair, Director of Trauma, Royal Victoria Hospital

Mrs Madeline Coulter, Assistant Director of Finance, SHSSB

Mr Iain Deboys, Director of Contracts, NHSSB

Dr Eugene Deeney, GP, Belleek

Mr Joseph Lusby, Director of Business Services, Foyle HSS Trust

Mr Paul McCormick, Chief Executive, NIAS Trust

Mr Sean McGovern, A&E Consultant, The Ulster Hospital

Dr Denis McMahon, Deputy Director, DHSS&PS

Dr Adrian Mairs, Medical Officer, DHSS

Mr Gron Roberts, Chief Executive, Essex Ambulance Trust

Mr Robert Sowney, Clinical Nurse Specialist, SHSSB

Dr David Stewart, Director of Public Health, EHSSB

Project Manager

Mr Brian McNeill

Project Assistant

Miss Rebecca Getty

Historical Background to NIAS

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THE AMBULANCE SERVICE : ITS PLACE IN HISTORY

4.1 An ambulance service as a concept is not new. During the Crusades of the 11th Century for instance, the Knights of St John received first-aid instructions from Arab and Greek Doctors. This enabled the Knights to provide relief for the wounded of both sides in tents close to the battlefield. Subsequent to this, the battlefields of Europe were where emergency medical care as an approach developed. Soldiers picked through the bodies of the dead and injured after battle - frequently on the basis of being paid a small reward for saving the lives of injured comrades.

4.2 The Vietnam War stimulated huge and dramatic advances in terms of emergency medical care. Ultimately, almost 98% of soldiers receiving such care survived. By the end of the 1960s paramedic care in the Vietnam jungles was of a significantly higher quality than that available on the highways of the USA.

BARON DOMINIQUIE LARREY

In Napoleon's time, the Surgeon-in-Chief of the Grand Army, Baron Dominiquie Larrey, created the first army medical corps. He instructed his corps, with trained attendants and equipment, to move out from field hospitals and search for and give aid to the wounded where they lay, returning them to the field hospitals by stretcher hand-carts and wagons. However, the mortality for soldiers who received wounds in battle was horrendous. An open leg or arm fracture was regarded as a sentence of death, with the only question being would death occur before or after an amputation. Over 40% of wounded with all kinds of open fractures in the Franco-Prussian war (1870 - 71) died. Of 13,000 amputations performed by the French, some 10,000 patients died.

An effective ambulance service is not just about getting there: it is about bringing effective care to patients and/or bringing patients to effective care.

DEVELOPMENTS IN NORTHERN IRELAND

4.3 Northern Ireland has also benefited from the international advances made in ambulance systems and approaches. Some of the major key events in the development of the Northern Ireland Ambulance Service (NIAS) over the past half century are summarised below:

Pre 1948	Ambulance services provided by a variety of agencies, including health committees, councils, boards of guardians, St John Ambulance and some area fire services	*Fleet made up of 65 ambulances and 5 cars* *Approximately 100 staff employed* *Approximately 44,300 patients carried*

1948	Ambulance services become part of the NHS in Northern Ireland and responsibility for ambulance services passed to the Ambulance Services Committee	*Role of ambulance service clearly defined under the Health Service Act* *Fleet expanded to 82 vehicles by 1950* *Significant increase in activity (approximately trebled by 1951)*
By 1973	Responsibility for ambulance services passed to Sub-Committee of the Finance and General Purposes Committee of the Eastern Health and Social Services Board	*Fleet expanded to 176 vehicles* *Total staff 339* *Training carried out in Wrenbury Hall, Cheshire*
1974	National performance targets introduced	
1979	Basic training commences at NI Ambulance Training Centre, The Beeches, Belfast	
1983	Four area ambulance services created	*Control Centres operational hours extended to provide 24 hour cover, 7 days a week*
1984	Defibrillation training initially introduced by Northern Area Ambulance Service	
1988	Paramedic training introduced initially by Eastern Area Ambulance Service	
1992	Eastern Area Ambulance Service staff granted freedom of Belfast City	
1993	Eastern Area Ambulance Service given HSS Trust status	

A BELFAST BREAKTHROUGH IN THE 1960s

In 1966 Dr F Pantridge and his colleagues in Belfast responded to the observations that most patients with treatable ventricular fibrillation suffer their fatal arrhythmias outside hospital. This stimulated the idea that defibrillators should be brought to the patients in ventricular fibrillation. The defibrillators carried as part of the pioneering rapid response system he developed were therefore made to be light, portable, robust and battery driven. The model of mobile coronary care developed by Dr Pantridge in 1966 encouraged optimal packaging and portability. This allowed defibrillation to develop into the standard practice common in paramedic teams throughout the Western world.

1995	Ambulance services in Northern Ireland merged to form the Northern Ireland Ambulance Service Trust	*68,000 emergency calls annually (over 180 per day)* *37,000 urgent calls* *30 stations* *over 600 staff*

THE EMERGENCE AND DEVELOPMENT OF THE NIAS TRUST

4.4 In 1994 the then Minister of Health and Social Services appointed the Chairman of the Eastern Ambulance Service HSS Trust to bring forward proposals for the amalgamation of the four existing ambulance services into a single regional service. In order to achieve this remit, a project management group undertook a comprehensive review of the four services. This included specially commissioned appraisals of key areas such as training; control and communications; estate; information technology; and occupational health.

4.5 The work of the project management group culminated in the publication of a comprehensive document entitled "The Future of Ambulance Services in Northern Ireland – Merger Proposals". The Report recommended that the four area ambulance services should be merged to form a single regional service. In light of this the Northern Ireland Ambulance Service HSS Trust was launched on 1st April 1995.

4.6 The recommendation to merge the four services was made on the basis of several significant benefits identified through the comprehensive review. These were:

- The creation of a more effective and responsive ambulance service.
- The guarantee of a locally responsive service.
- The amalgamation would yield significant savings and produce a more effective service capable of high quality performance.
- The disappearance of "borders" – improved collaboration and more effective deployment of ambulances.
- A more slimline management structure.
- Access to existing accommodation would result in no increase to current overheads.
- Strategic vision and focus would be sharpened with strategic objectives set and measures of quality and operational standards developed.
- Better operational management.

- Improved fleet management.
- Development of an estate management strategy in order to prioritise a programme of replacement, improvement and upgrading.
- A strategic approach to training and management development.
- The development of staff underpinned by a process of appraisal and performance review, robust human resource policies and open two-way communication with staff and staff representatives.

4.7 Many of the areas highlighted from the work of the original merger project management group remain central to the functioning of a quality driven, performance based, ambulance service of the 21st century. In light of this, the terms of reference for this Review required the Project Board to evaluate NIAS' progress in achieving the original benefits identified above. The Project Board concluded that whilst some headway has been made, there are still substantial deficits five years after the initial merger. This view is shared by NIAS itself.

4.8 One of the key benefits identified stated that "amalgamation would yield significant savings and produce a more effective service capable of high quality performance." These savings have not been realised and, indeed further investment has been requested and received from the four Area Health Boards to support NIAS over the last five years. NIAS have stated that this situation has risen because the original projected savings and economies of scale identified in the merger proposal were overly optimistic and as a result have proved to be unrealistic and unsustainable.

5 Current Ambulance and Emergency Care Arrangements

THE NIAS TRUST: CURRENT CONFIGURATION

5.1 The NIAS Trust works to the following mission statement:

> *"The NIAS Trust will consistently meet the ambulance care needs of all people of Northern Ireland by:*
>
> - *Delivering high clinical standards and excellence in pre-hospital care*
> - *Treating people at all times with dignity and respect.*

The Project Board believes this to be an appropriate mission statement. However it is felt that NIAS should consider reflecting in its mission statement the need for the ambulance service to strengthen its partnership with other parts of the health and social care services.

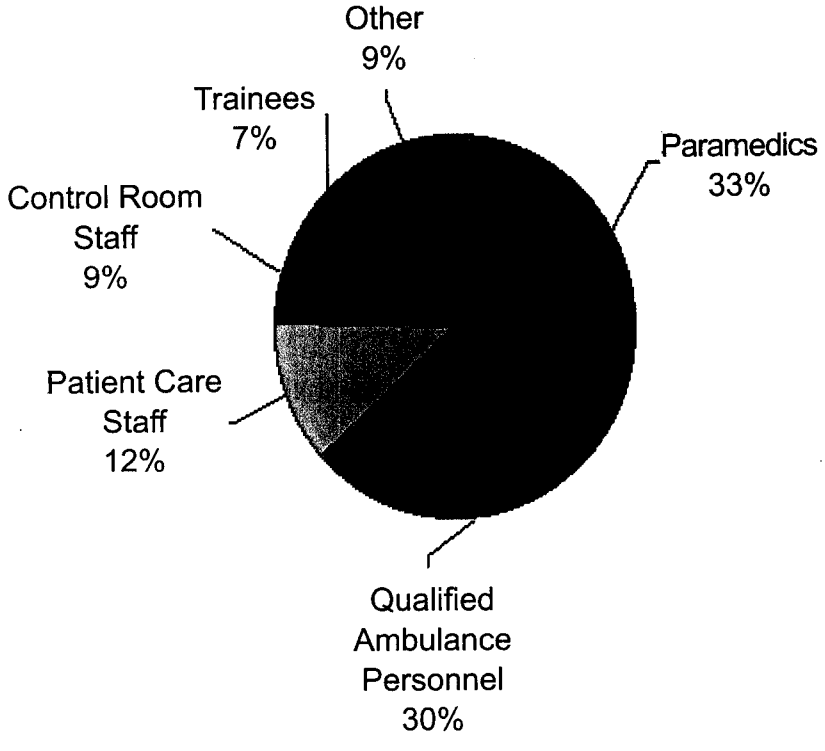
5.2 NIAS has identified the following key aims to help deliver its mission:

- Achieve excellence in pre-hospital patient care and clinical delivery
- Respect the dignity of patients and show sensitivity to their needs
- Develop continuous improvement in clinical standards through the application of progressive skills programmes at the Regional Ambulance Training Centre
- Ensure the responsiveness and accessibility of the Service throughout Northern Ireland
- Provide effective and reliable communications between service users and service providers so as to ensure effective, efficient and economic deployment of resources
- Promote a working environment for staff which is safe, fair and open.

5.3 A profile of NIAS is given below:

NIAS: THE POSITION IN 1998/1999

Area Covered:	Over 5,600 square miles
Number of Stations:	28 Province wide
Population Served:	Over 1.6 million people
Emergency Service Activity:	66,751 emergency calls
	38,148 urgent calls
Patient Care Service Activity:	273, 856 non-urgent journeys
Fleet:	137 Accident & Emergency ambulances
	81 Patient Care Service ambulances
Total Staff Employed:	704 made up of:

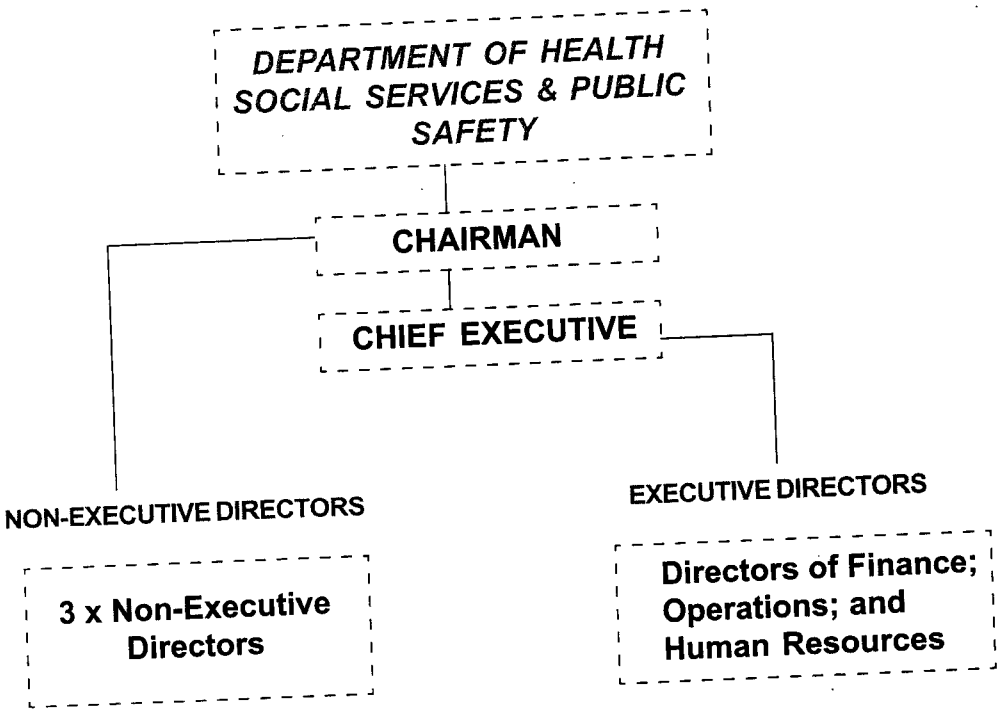


5.4 As is the case with all 19 health and social service trusts in NI, the NIAS Trust Board carries overall responsibility for the strategic direction and performance of the Service. The Trust Board's main responsibilities are to:

- Determine the overall strategy of NIAS and approve the policies and procedures to meet the objectives of the Trust
- Monitor the implementation of policies including adherence to professional standards, good practice and quality standards
- Monitor the performance of NIAS to make sure that activity, cost and quality outcomes are achieved
- Ensure that NIAS remains financially viable and operates within accepted standards of corporate governance
- Represent the interests and decisions of NIAS externally
- Control the appointment, appraisal and remuneration of senior executives.

5.5 The structure of the NIAS Trust is as follows:

NIAS TRUST STRUCTURE



HOW RESOURCES ARE USED

5.6 NIAS is split into four divisional areas - Eastern; Northern; Southern; and Western. Each Division meets the needs of the catchment population of its local Health and Social Services Board. For example, the Eastern Health and Social Services Board purchases ambulance services on behalf its residents from the Eastern Division of NIAS. A brief breakdown on the make up of the four Divisions is given below.

Eastern Division

5.7 Due to the size of the population in this area, the Eastern Division is split into two sub-divisions known as the Eastern City and Eastern Country. Within the Eastern Division as a whole, there are a total of 182 NIAS staff employed to provide the Accident and Emergency Service, with an additional 48 staff supporting the Patient Care Service.

5.8 The Division covers a total area of around 700 square miles and provides services to a population of 650,000 people. One Area Ambulance Control Centre based at Knockbracken Healthcare Park controls activity for seven full time ambulance stations and two sub-stations. The stations are based at Ardoyne; Broadway; Knockbracken; Templemore Avenue; Lisburn; Newtownards; and Downpatrick with two sub-stations located at Seaforde and Bangor Hospital.

5.9 Particular areas of potential risk within Belfast are the harbour (which is situated in a highly industrialised area) and the City Airport (the second busiest airport in Northern Ireland). Aldergrove International Airport, although outside the EHSSB area, is also principally served by Belfast ambulance stations. In addition there are a number of CIMAH (Control of Industrial Major Accident Hazards) sites identified within Belfast which pose a significant risk in this densely populated area.

Eastern Division: Activity 1998/99

STATION	SQ MILES	POPULATION SERVED	NO OF CALLS 1998/99	
			A&E	*Urgent*
Ardoyne	50	297,300	6,566	2,641
Broadway			8,855	2,485
Templemore			6,192	2,598
Knockbracken			2,278	1,579
Lisburn	653	108,660	2,788	1,429
Newtownards		189,660	6,047	4,109
Downpatrick		56,683	1,917	1,023

Northern Division

5.10 The Northern Division of the NIAS provides an ambulance service to people living in the Northern Health and Social Services Board area. The Division's Area Control Centre is based at Holywell Hospital in Antrim and controls activity for nine ambulance stations. These are based at Antrim; Ballycastle; Ballymena; Ballymoney; Coleraine; Cookstown; Larne; Magherafelt; and Whiteabbey. There are currently 158 NIAS staff employed within the Division. The population of the Northern Division is approximately 420,000.

5.11 The Northern Division covers approximately 1,700 square miles and is split by the River Bann which limits the main east-west access routes within the Division to Coleraine; Aghadowey; Kilrea; Portglenone; and Toombebridge. The opening of the Antrim Area Hospital in 1994 has brought about a progressive change in the profile of services delivered. Standard ambulance routes have changed from local hospitals to the new Area Hospital, particularly for the delivery of specialist treatments.

Northern Division: Activity 1998/99

Station	Sq Miles	Population Served	No of Calls	
			A&E	Urgent
Antrim	464	49,100	1,636	1,040
Ballymena		58,100	2,265	1,958
Ballycastle	540	14,900	482	378
Ballymoney		24,800	785	574
Coleraine		54,500	1,730	909
Cookstown	462	31,700	848	674
Magherafelt		37,500	860	718
Whiteabbey	223	114,600	3,822	2,578
Larne		30,200	1,492	1,175

Southern Division

5.12 The Southern Division serves the population of the Southern Health and Social Services Board. The Division has one Area Control Centre based at Craigavon Area Hospital and six ambulance stations based at Armagh; Banbridge; Craigavon; Dungannon; Kilkeel; and Newry. A total of 121 NIAS staff are employed within the Division. The Division's area covers 2,000 relatively compact square miles. Its population is approximately 300,000.

Southern Division: Activity 1998/99

Station	Sq Miles	Population Served	No of Calls	
			A&E	Urgent
Armagh	560	53,000	948	1,044
Banbridge	309	37,400	399	445
Craigavon	See Banbridge	78,500	2,843	1,738
Dungannon	See Armagh	46,900	1,129	1,183
Kilkeel	455	See Newry	399	410
Newry	See Kilkeel	84,500	2,319	1,575

Western Division

5.13 The Western Division boundary corresponds with that of the Western Health and Social Services Board. The Area Control Centre is based at Altnagelvin Area Hospital and controls the activity of crews in six ambulance stations at Altnagelvin; Castlederg; Enniskillen; Limavady; Omagh; and Strabane. The area extends across 3,000 square miles and the population is approximately 272,000. There are 120 ambulance staff employed in the Division.

5.14 The local geography, and particularly the travel/transport difficulties posed by the presence of many mountains and lakes, for example, Sperrin Mountains and Lough Erne, presents specific problems for the Ambulance Service in the Western district.

Western Division: Activity 1998/99

Station	Sq Miles	Population Served	No of Calls	
			A&E	Urgent
Altnagelvin	151	102,800	4,826	2,213
Castlederg	See Omagh	See Omagh	243	305
Enniskillen	732	54,700	1,223	1,195
Limavady	229	30,900	691	548
Omagh	441	46,900	1,279	1,105
Strabane	336	36,100	631	490

CURRENT PERFORMANCE STANDARDS

5.15 The national minimum standard for the provision of ambulance services – as set out in the Patient's Charter – is based on a system devised by Operational Research Consultants. This is commonly referred to as ORCON. The present ambulance performance standards for Northern Ireland are as follows:

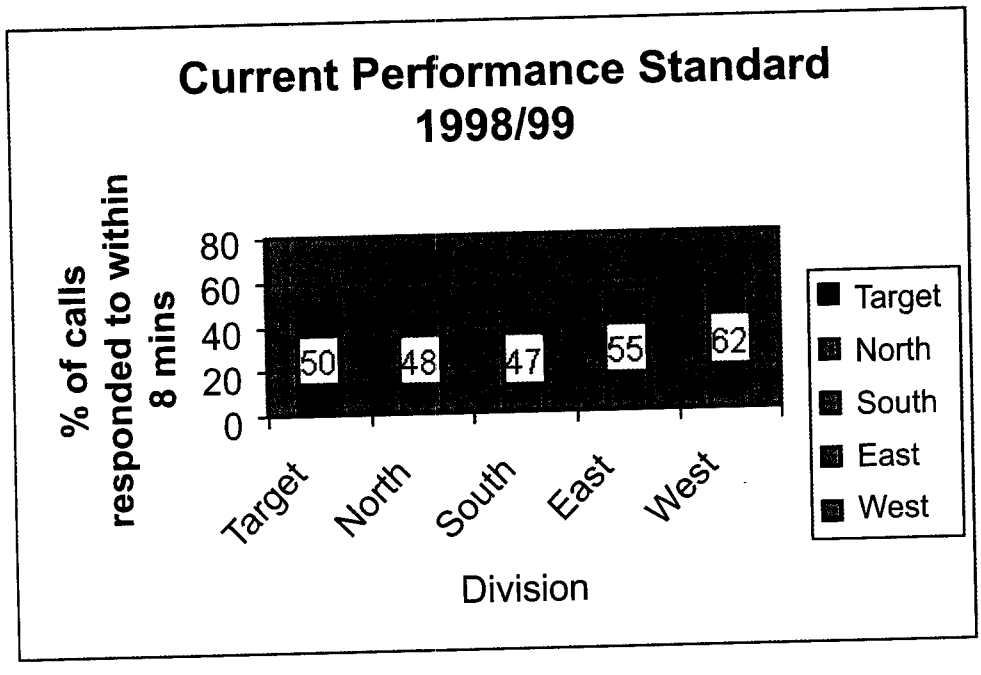
- 95% of emergency calls to be answered within 18 minutes in an urban area, and within 21 minutes in a rural area. This is a Patients Charter Standard

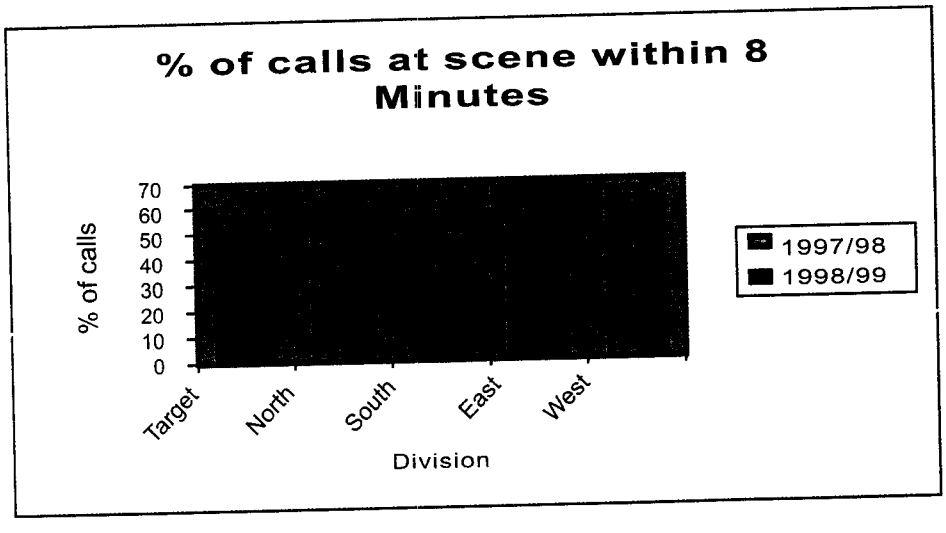
- 50% of emergency calls to be answered within 8 minutes in all areas

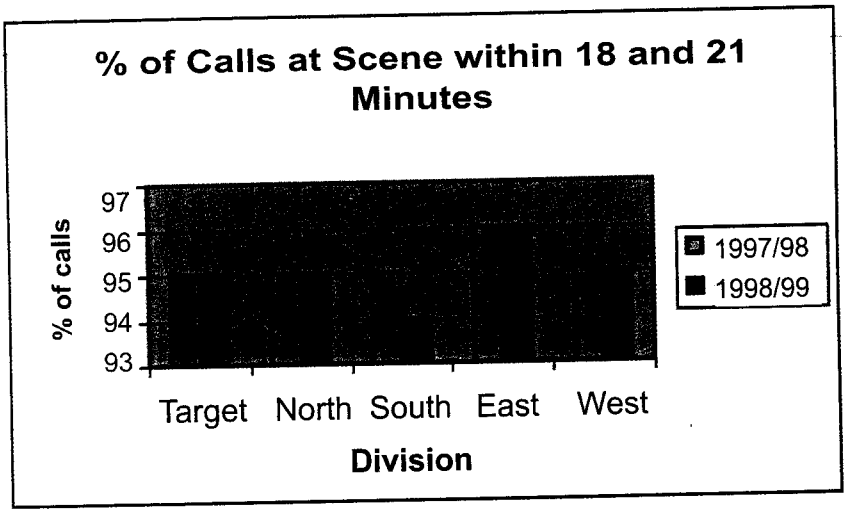
- In 95% of calls by doctors classified as "urgent", ambulance services are required to deliver patients to hospital within 15 minutes of the arrival time specified by the doctor.

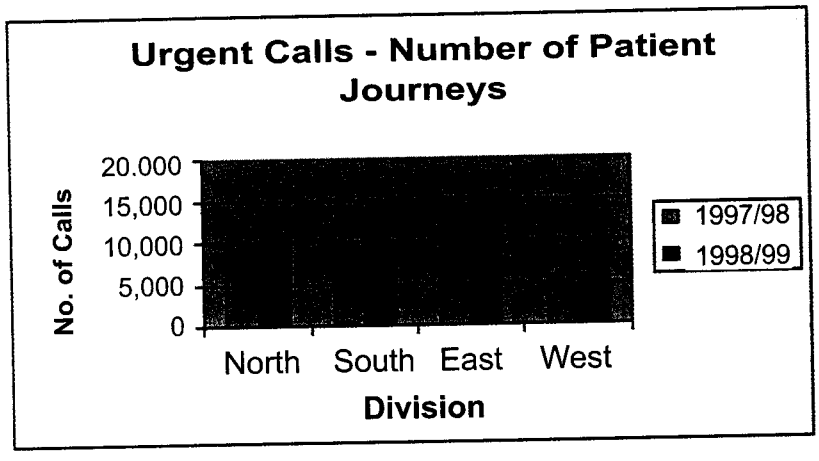
In Northern Ireland, the Eastern Division is the only division which is classified as urban. The Northern, Southern and Western Divisions must meet the performance standards set for rural areas.

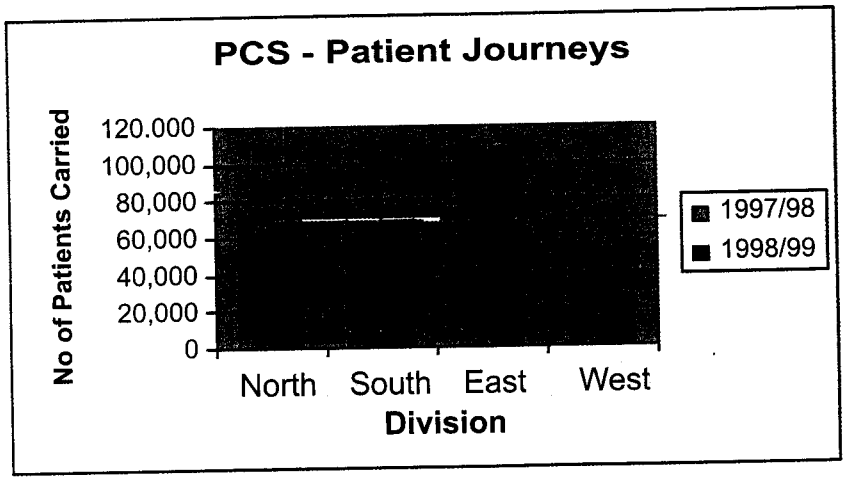
5.16 Current performance against the "eight minute standard" across all four NIAS Divisions in 1998/99 is shown below:






% of Calls at Scene within 18 and 21 Minutes
% of calls
97
96
95
94
93
Target
North
South
East
West
Division
1997/98
1998/99


Urgent Calls - Number of Patient Journeys
No. of Calls
20,000
15,000
10,000
5,000
0
North
South
East
West
Division
1997/98
1998/99


PCS - Patient Journeys
No of Patients Carried
120,000
100,000
80,000
60,000
40,000
20,000
0
North
South
East
West
Division
1997/98
1998/99

Changing Face of Pre-Hospital Care

6

MODERN PRE-HOSPITAL CARE

6.1 The birth of pre–hospital care in the USA is considered to have occurred in 1965 following a surge in the mortality rate from road traffic accidents (RTAs). The foundations were then set for the formation of the Emergency Medical Services (EMS). The size and complexity of modern emergency medical systems, with specialist centres, mobile intensive care units and air ambulances, reflects the geography and demography of the region they serve.

6.2 There is no single definitive model of pre-hospital care that can be transferred to meet the local needs of Northern Ireland as consideration must be given to the particular historical service and topographical circumstances. However, many models, if not all, contain elements that are worthy of consideration in the local context.

AMBULANCE SERVICES AS PART OF AN EMERGENCY CARE SYSTEM

6.3 One concept being developed in other emergency systems that has particular reference for NI, is the need for hospital and pre–hospital components to work together to create an effective system of care for the most critically ill or injured. It is now accepted that improved patient outcomes require a "whole systems" approach. Ambulance services are an essential component of delivering emergency medical care outside healthcare facilities. In deciding how they should provide a service, ambulance services must take note of the way associated hospitals and other healthcare facilities are organised and operate. In relation to future ambulance arrangements in Northern Ireland, this is particularly important when changes to acute hospital services are being considered.

THE EMERGENCY DEMAND DILEMMA

6.4 In most developed countries demand for emergency healthcare has grown significantly, particularly over the past decade. Having established themselves as key providers of patient care, through the development of paramedics and expertise in information and communications technology, ambulance services are now experiencing pressures similar to those felt by other NHS agencies. To cope with the rise in demand, ambulance services must increase their capacity and competence while at the same time prioritising more effectively the demands made upon them.

6.5 Designed to identify the greatest clinical need when demand exceeds resources, call prioritisation systems are increasingly being introduced by ambulance services in the UK. They are not designed to decide whether or not an ambulance vehicle is the most appropriate response to a call but simply to determine the urgency of the response required.

6.6 NIAS is currently involved in a project commissioned by the Northern and Eastern Health and Social Services Boards which aims to co-ordinate all emergency medical admissions received from GPs. An Emergency Admissions Co-ordination Centre has been set up within Eastern Ambulance Control to handle GPs' requests for admission and is responsible for allocating the most appropriate available bed to the patient within the ten acute hospitals in the two Boards' areas. This integrated approach by primary care providers and NIAS, is an example of making more effective use of ambulance resources while achieving better management of available beds. When completed this project should be evaluated and, if seen to deliver, its objectives should be rolled out across NI. Further detail regarding this project is given in paragraph 7.9.

Emergency Response Times

6.7 Ambulance service performance has historically been measured by speed of response. Although ambulance services' ability to respond to incidents is time critical, the current standards for ambulance services as set down in the Patient Charter Standards are often criticised for lack of clinical relevance. In endeavouring to meet these standards, undue emphasis is often placed on 999 calls. These can be at the expense of requests from general practitioners, which often reflect a more urgent medical need.

6.8 In 1996 a review of ambulance response times led the Westminster Government to set new targets based on call prioritisation. These are due to be implemented by the year 2001 in England. The Government recognised that setting the same targets for service provision in rural and urban areas presented practical difficulties to ambulance services. However, it was also recognised that to continue to maintain separate targets for different geographical areas was advocating inequity of service provision in relation to life threatening situations. Alternative systems might therefore need to be developed to provide earlier assistance in rural areas. The proposals for the introduction of new performance standards, which are based on the management of pre-hospital cardiac arrest, are explored more fully later in this Report.

Managing Demand: Alternative Approaches

6.9 The continuing rise in emergency demand in Northern Ireland (an increase of 5.7% between 1997/98 – 1998/99) has prompted much discussion about the need to develop a more systematic response to emergency and urgent need. Rising public expectations; increasing costs; and pressure for improvements in performance, are seen as main factors which ambulance services should

consider as influencing demand. In a report issued by the Chief Medical Officer, London, in 1997, it was indicated that telephone helpline pilots, such as NHS Direct, were successful, in that they helped people to access the most appropriate level of healthcare and advice for their clinical condition.

6.10 The introduction of priority-based systems and new response time standards allows the opportunity to develop a variety of responses based on actual clinical need. Such systems would also ensure that resources are concentrated on responding more efficiently to priority patients suffering from life threatening problems who therefore require a quicker and/or more intensive response.

6.11 NIAS currently responds to every emergency call with a fully manned and equipped A&E vehicle. This is often unnecessary. An alternative model that could be initiated to meet demand is the use of single-manned rapid response cars or motorcycles. In this model, suitably trained personnel would respond to a call and assess the patient's condition. Following assessment, the responder would then decide the most appropriate pathway of care for the individual concerned. When making such a decision the responder would consider a variety of factors. For example, does the patient require transport to a healthcare facility? If so, what is the best mode of transport to meet their need? The responder may however decide that an another agency would be better placed to deal with the specific case in question. In this case the patient would be referred accordingly, for example, to a community nursing, social services or a mental health team.

6.12 Alternatively, following on-scene triage, it may be apparent that the patient's own home is the most appropriate setting for treatment. In the future it should not be beyond the capacity of the emergency care system to ensure that crews are adequately equipped to make safe decisions regarding the treatment of patients in their own home or their referral onto more appropriate healthcare providers. In order to support such a system, it would be necessary to enhance crew skill levels, expertise and judgement and to develop robust procedures and protocols.

6.13 Spreading the cost of maintaining emergency ambulance availability by widening the Service's potential for contributing to primary healthcare is also being examined. In the UK and the USA, there have been a number of experiments based on widening the role of paramedics. Such schemes can be particularly advantageous in rural areas where appropriately skilled 'community paramedics' can be employed to enhance community nursing services, while still providing essential emergency cover.

Clinical Effectiveness

6.14 Many patients benefit from pre-hospital interventions each day in NI although the effectiveness of some interventions have to date been poorly evaluated. A notable exception is pre-hospital intervention in the case of cardiac arrest where the benefits of early defibrillation have been clearly demonstrated. Details of cardiac arrest outcomes can be recorded using the internationally

accepted Utstien template, which enables meaningful comparisons to be made.

6.15 Many published studies of serious trauma have led to opposing conclusions in relation to pre-hospital intervention. Some studies would advocate quick removal of casualties to hospital, whilst others support treatment at the scene. This highlights the need for ambulance services to build on the preliminary work that has been undertaken in relation to clinical audit. Assessment of clinical effectiveness should provide clear evidence of what does and does not influence patient morbidity and mortality. It should also shape service provision and treatment protocols.

Education and Training

6.16 Pre-hospital staff training in the Northern Ireland Ambulance Service, like services in the UK, is based on a practical and mainly uni-disciplinary basis. There has been criticism of this approach as it is felt that insufficient attention is paid to developing clinical judgement and underpinning knowledge. Skill decay has already been identified as a problem and the need to strengthen aspects of continuing education has been recognised. Many ambulance services are addressing this need through multi-disciplinary trauma and other specialist life support courses.

6.17 Support is also growing for a shift of emphasis from traditional training courses to more academic based professional education, with stronger links to medical and nursing training. It is anticipated that such a move would prepare ambulance staff for playing a wider role in patient care, giving them increased responsibilities. This would promote multi-skilling and lifelong learning. The creation of a generic emergency care worker should also be considered.

Technology in Pre-Hospital Care

6.18 Technological advances, such as mobile defibrillators, have made dramatic improvements to the effectiveness of pre-hospital care. Recent technological advancements include the ability to transfer data and images from the scene of an incident to receiving departments. An example, of this is the transfer a patient's 12 Lead ECG result to a Coronary Care Unit, using telemetry links.

6.19 Possibly the greatest impact of advancements in information technology can be seen in the systems employed by modern ambulance service control centres. Many centres have now incorporated such features as telephone advice systems; computerised call handling; automatic vehicle location (AVL); and predictive analysis systems. Future developments made possible by a new standard for digital radio communications known as DTRS (see Section 13) will enable the integration of multimedia technologies with an effective radio and telephone communication network.

CONCLUSION

6.20 As we enter the twenty first century, the face of pre-hospital care has the potential to change beyond recognition. The introduction of new initiatives, coupled with advancements in technology, offer ambulance services a variety of ways of meeting both the requirements set down by the Government and the expectations of the general public. A flexible approach to pre-hospital care increases the efficiency and effectiveness of service delivery. The adoption of new models of care, in conjunction with an integrated approach to pre-hospital and hospital care, are key components in NIAS' ability to meet future demands. Future success is also reliant on a move to modern technological systems for command and control and on increased clinical audit of patient outcomes. In order to deliver a high quality service in the future, NIAS must be part of the transformation that pre-hospital care is currently undergoing and be able to adapt and change accordingly.

The Need for Change

7

INTRODUCTION

7.1 The changes to acute service provision in Northern Ireland which may impact on the provision of ambulance services are outlined below. They are considered in turn as follows:

- The regional policy framework and Area Board Reviews
- Regional service reviews which are being carried out
- Reports and recommendations from professional bodies
- Developments in primary care
- Developments in clinical practice
- Technological issues from a clinical perspective.

REGIONAL POLICY FRAMEWORK AND BOARD REVIEWS

7.2 The future pattern of acute hospital care will be shaped by the New Assembly. However, current policy in relation to acute care is set out in *the Regional Strategy for Health and Social Wellbeing 1997 – 2002* and in the document *Well into 2000*. These complementary documents emphasise that the quality of hospital care is paramount and explain the need for a concentration of specialised services on fewer hospital sites. At the same time they emphasise that there should be a wide range of more routine procedures provided locally.

7.3 The Regional Strategy states that future acute inpatient care will be built around the core framework of the major teaching hospitals - the Royal Victoria Hospital and the Belfast City Hospital - and the other major hospitals in each Board area i.e. Altnagelvin, Antrim, Craigavon and the Ulster Hospitals. *Well into 2000* asked Area Boards to review the pattern of provision of acute inpatient services in their areas. These reviews have now been completed and their major recommendations are described below.

Eastern HSS Board

7.4 The Eastern Board reviewed its acute services in 1993. Since that time a number of major decisions have been taken regarding hospital services in the

Eastern Board area. The Acute Hospitals Reorganisation Project (AHRP) began, in 1994, to work on the reorganisation of services in the Belfast City Hospital (BCH) and the Royal Group of Hospitals (RGH). Following this, in 1997, breast services moved to the BCH, while colorectal surgery moved to the RGH. Oral surgery transferred to the RGH in 1998.

7.5 The RGH has been designated as the Regional Trauma Centre and, as a result, fracture services were moved there from BCH in November 1999. There are also plans to concentrate A&E services at the RGH. New admission arrangements would then be needed for the BCH. This could mean that patients would be admitted to the hospital through an emergency admissions unit. The infectious disease service at Belvoir Park Hospital transferred to the RGH in 1997. The oncology service in Belvoir, comprising inpatient and outpatient radiotherapy and chemotherapy, will transfer to a new state of the art oncology centre at BCH. This will open in 2003. In addition, the Eastern Board has considered the potential impact of the changes proposed in *Putting it Right* (see paragraph 7.12 below). Its assessment is that, if these strategic changes are to take place, it would be important to ensure sufficient bed capacity within the Board area. For this reason the provision of acute services would need to continue for some time at both the Lagan Valley and Mater Hospitals. Elsewhere in the Eastern Board area, Bangor and Ards hospitals have been developed as community hospitals.

7.6 There are plans to build a new local hospital in Downpatrick, as well as a health resource facility in Newcastle. The new hospital in Downpatrick could be completed by 2002. Acute admissions to the hospital would cease at that time. It is expected that the new hospital would have GP beds and a range of other services; including outpatient and diagnostic services; PAM services; day case surgery; ambulatory paediatrics; and a minor injury unit. The facility at Newcastle, which could open in 2001, would provide GP and elderly assessment beds; outpatient clinics; and a minor injury service.

7.7 A major public consultation exercise has been carried out regarding the site of a new Belfast maternity unit, which would bring together the maternity services now provided at the Royal Maternity Hospital (at the RGH) and the Jubilee Maternity Hospital (at the BCH). It would probably be three to five years before a new unit would open. The consultation also sought views on an interim arrangement, including a possible early centralisation at the Royal Maternity Hospital. A decision on the outcome of the consultation exercise is awaited.

Northern HSS Board

7.8 The Northern Board's review of acute services recommended the concentration of acute inpatient services at two hospitals, the Antrim Area Hospital and the new Causeway Hospital at Coleraine. The other two hospitals in the Northern Board area which currently provide acute inpatient care, the Mid Ulster and Whiteabbey hospitals, would stop providing such care. They would in future provide a range of services, including outpatient and diagnostic services; surgical day procedures; a minor injury service; and

possibly GP beds. Inpatient consultant-managed assessment and rehabilitation services for older people would be provided in Whiteabbey. Oral surgery services would be retained in the Mid-Ulster area. In addition, it is proposed that outpatient and diagnostic services, as well as a minor injuries service, would be provided in Larne and in Ballymena. The possibility of introducing GP beds at both of these sites is also suggested.

7.9 New arrangements are being developed for the admission of adult medical and general surgical emergencies in the Eastern and Northern Board areas. These arrangements will seek to make best use of existing capacity and to manage the workload more effectively. An Emergency Admissions Centre is being established for the Eastern and Northern Board areas. This will be located within Eastern ambulance control centre. This will provide a bed bureau service; be responsible for monitoring capacity; and have an information role. Work is currently underway to determine the most appropriate arrangements for distributing acute admissions. It is further proposed that a system of continuous take-in, for medical patients, will commence at the Belfast City Hospital and the Royal Victoria Hospital as part of these new arrangements.

Southern HSS Board

7.10 The Southern Board acute review also recommended the concentration of acute inpatient care at two hospitals, Craigavon Area Hospital and Daisy Hill Hospital. It proposed that South Tyrone Hospital, the only other hospital currently providing acute care in the Southern Board, would stop providing such care. In future South Tyrone Hospital could provide a range of outpatient and diagnostic services; PAM services; a minor injury service; day case surgery; psychiatric day care; and ambulatory paediatrics as well as inpatient beds for geriatric assessment, rehabilitation and long stay. Early last year, inpatient maternity services were temporarily transferred out of South Tyrone Hospital following concern about safety. In October 1999, because of severe staffing problems, a temporary change in Accident & Emergency services was introduced, with emergency ambulances being redirected to other Accident and Emergency Departments in the area. The Accident & Emergency unit in South Tyrone Hospital is currently operating as a minor injury unit. There has also been a temporary rebalancing of surgical work between South Tyrone Hospital and Craigavon Area Hospital, with more serious cases being concentrated in Craigavon.

Western HSS Board

7.11 Following its review of acute services, the Western Board has recommended that acute services in the western area of Northern Ireland (emergency; in-patient; day case; and out-patient) should be provided through Altnagelvin Area Hospital and a new hospital to be located in the south west quarter of Northern Ireland. These hospitals would work within a network of services including primary care; community care; area and regional specialist hospital services. The Review report does not indicate the precise site of the new hospital. In the meantime the Board proposes to work with Sperrin Lakeland

Trust, and other key stakeholders, to secure an interim pattern of acute services based around the current hospitals that meets appropriate quality standards and that will be compatible with the Board's recommended future model of services.

7.12 The Ministerial publication *Putting it Right* considered the issues facing the acute hospital service in Northern Ireland. It further developed thinking on the future of acute care and proposed the development of a network of care stretching from primary care through local hospitals and on to area and regional hospitals. It went on to suggest that acute inpatient care should be concentrated in the two major Belfast teaching hospitals, the four area hospitals; and in three local hospitals (Causeway Hospital, Daisy Hill Hospital and either Tyrone County Hospital or the Erne Hospital). Other local hospitals would provide outpatient and diagnostic services; day procedures, including day case surgery; a minor injury service; and GP beds. It predicted an increase in day case surgery from the current level, of just over 50% of all elective surgical work, to around 80% in the future.

7.13 The new model for acute care envisaged in *Putting it Right* suggested that the Lagan Valley Hospital and Mater Infirmorum Hospital would each provide a range of local hospital services, in partnership with the BCH and RGH, and that the nature of these services would change over time. In the long term it was expected that specialist inpatient services for the population of Greater Belfast would be concentrated in the Belfast City Hospital, the Royal Group of Hospitals and the Ulster Hospital Dundonald. *Putting it Right* also proposed a devolution of orthopaedic surgery and neurology services from the centre to the area hospitals.

7.14 No decisions have yet been taken on the recommendations contained in the Board reviews nor on the proposals contained in *Putting it Right*. However, these reports have been produced in light of the various factors which are likely to affect the quality and sustainability of acute hospital services in the future. They therefore provide a useful guide to the likely future shape of the acute hospital service.

7.15 It should be noted that while a service may transfer to another hospital, it does not follow that all of the patients would necessarily transfer to that hospital. Some patients may, for a variety of reasons, attend a different hospital e.g. although acute inpatient services in Whiteabbey hospital might transfer to Antrim, some patients who currently attend Whiteabbey hospital would instead be admitted to Belfast hospitals as they are closer. In addition, it has been observed in some areas that when acute services transfer from one hospital to another, the expected increase in admissions in the receiving hospital has not fully materialised.

SERVICE REVIEWS

7.16 In addition to the suggested reorganisation of acute hospital care set out above, there have been a number of specific service reviews that could

impact on the ambulance service. These include reviews of major trauma; the acutely ill child; paediatric surgical services; cardiology; neurology; and the reorganisation of cancer services. The potential impact of each of these is discussed briefly below.

Major Trauma

7.17 A report on the management of major trauma was endorsed by the DHSS in 1994, although its recommendations have not yet been formally adopted. The report estimated that at least 350 patients suffering from major trauma are brought to hospitals in Northern Ireland each year. The most common cause of major trauma was found to be road traffic accidents. It recommended that, outside Greater Belfast, patients with major trauma should be taken by the ambulance service to the nearest appropriate acute hospital. This was defined as one with immediate availability of consultant surgeons and anaesthetists; on site laboratory services; and 24 hour radiography cover. Some accute hospitals do not meet these requirements.

7.18 Within Greater Belfast the report recommended that all patients sustaining major trauma within a 15 mile radius of a hospital providing the necessary regional services (i.e. the Royal Group of Hospitals) should be taken directly to that hospital. In the event of this report being implemented, it would mean that patients who have sustained major trauma should not be brought to Whiteabbey Hospital, Lagan Valley Hospital, the Belfast City Hospital or the Ulster Hospital. As this would have an important impact upon the Ambulance Service, it is important that any decisions taken to implement the recommendations are discussed with NIAS.

The Management of Patients with Head Injuries

7.19 A recent report from the Royal College of Surgeons recommended that patients with a head injury should be admitted only to hospitals that have a range of specified facilities including 24-hour head scanning; on-call radiologists; and image transfer facilities. The report details the categories of patients who require transfer to a neurosurgical unit. The development of local guidelines for the management of such patients in Northern Ireland is currently under discussion.

Cancer Services

7.20 The Belfast City Hospital and Royal Group of Hospitals are being developed as the cancer centre, which will manage patients from across Northern Ireland who require complex cancer care or who have rare cancers. The cancer centre will also provide cancer care to patients within their local catchment who have more common cancers. Radiotherapy and some chemotherapy services at Belvoir Park Hospital will transfer to the Belfast City Hospital. The four area hospitals are being developed as cancer units. They will provide care to patients with the more common cancers. Chemotherapy for most patients with common cancers such as breast, colorectal, ovarian and lung is already being devolved from the centre to the cancer units. This means that

many patients will no longer have to travel to Belfast to receive such treatment. These changes in cancer services, will impact upon the PCS within NIAS.

The Acutely ill Child

7.21 The Working Group on Hospital Services for the Acutely ill Child has recommended that children with anything other than minor injuries should not be taken to Accident and Emergency Departments which do not have appropriate paediatric backup. Appropriate backup is seen to be an onsite paediatric unit. The Group's report states that the main focus for acute paediatric hospital care should be at the Royal Belfast Hospital for Sick Children and at the Ulster; Antrim; Altnagelvin; and Craigavon hospitals. However, the report states that smaller paediatric units outside the five main centres will be required for the foreseeable future in order to allow access for geographically isolated populations. These units would not exist as discrete entities, but rather be twinned with one of the five main units. The need for a regional neonatal and a regional paediatric intensive care retrieval service is emphasised.

Paediatric Surgical Services

7.22 The Report on Paediatric Surgical Services recommended that general paediatric surgery should be concentrated on a smaller number of sites, essentially those which have paediatric inpatient services. These are the Royal Belfast Hospital for Sick Children and the Ulster; Antrim; Coleraine/Causeway; Altnagelvin; Erne; Craigavon; and Daisy Hill hospitals. It also recommended that all children under one year of age, requiring surgery for appendicitis or inguinal hernia, and all children suspected of having an intussusception should be referred to the Royal Belfast Hospital for Sick Children. The report lists a number of other conditions which require regional referral.

7.23 The recommendations relating to children with major trauma echo those made for adults in the review of major trauma which is described in sections 7.17 and 7.18. Children with major trauma within Greater Belfast should all be taken to the Accident and Emergency Department at the Royal Belfast Hospital for Sick Children. Children with major trauma outside the Greater Belfast area should be taken to the nearest appropriate acute hospital. The report also recommended the need for appropriate transport arrangements to be developed for the transfer of babies and children between hospitals and to the RVH for management.

High Risk Pregnancy Report

7.24 This report recognised the strategic drive towards concentrating specialist acute services on a limited number of sites with an adequate infrastructure to maintain the highest quality of specialist care. It noted that some women with high risk pregnancies are currently confined in smaller consultant obstetric

units that do not have the range of on site facilities to ensure the safest possible environment. It recommended that units without adequate neonatal facilities should not plan to book women for delivery when there is a likelihood that neonatal support will be required. Units without such support must have written guidelines for transferring patients. It recommended that a regional transfer service should be created and based at the centre. This would transfer patients to and from the regional centre and between other units.

Neurology Review

7.25 A group has been established to review neurology services in Northern Ireland. Its first meeting was in December 1998. It has been asked to provide advice to the Department of Health, Social Services and Public Safety on the strategic direction for the organisation and provision of adult neurology services and to make recommendations on appropriate models for the future delivery of inpatient, day case and outpatient neurology services. The review group is expected to submit a report of its findings to the Chief Medical Officer by spring 2000.

REPORTS AND RECOMMENDATIONS FROM PROFESSIONAL BODIES

7.26 A number of recent reports from the medical Royal Colleges, the BMA and other organisations representing doctors will have an impact on the way acute hospital services are organised. They are therefore of relevance to the future operation of the ambulance service and are considered below.

The Royal College of Physicians

7.27 This College has recommended that the medical needs of the population can be met most effectively and efficiently by hospitals serving 200,000 to 300,000 people. Such an arrangement is described as providing reasonable access for the majority of the population to emergency and secondary referral services. It is recognised that the need for specialised and highly specialised care (tertiary care) will continue to be required and will cover populations of one million or more. The role of community hospitals is expected to develop.

British Medical Association (BMA)

7.28 The BMA has acknowledged the unsustainability of the current arrangements for the provision of acute care. Its report *Leaner and Fitter* considers the future delivery of acute hospital service. It believes that rationalisation of hospital services through market forces has not materialised. A modelling exercise tested five options against the current provision of 17 hospitals in an unspecified area of the United Kingdom. It concluded that the best pattern of service for a population of 2 million people was one with five district general hospitals and three other hospitals. The benefits of concentrating services were discussed and were seen to include better quality of care; a reduction in

variations in medical practice; and the ability to concentrate resources and high cost equipment.

Royal College of Surgeons

7.29 In an examination of the provision of emergency surgical services, the College recommended that such a service should be organised and financed for a population of 450 - 500,000. This would allow:

- A consultant based emergency service
- 24 hour seven day availability of operating and imaging facilities dedicated to emergencies
- Cost-effective use of expensive modern high technology equipment; and optimum experience for surgical trainees in the care of emergencies
- Integrated emergency ambulance services
- Admission of emergency patients to a unit with the skills and resources required.

The Provision of Acute General Hospital Services

7.30 Much of the above work by the Royal Colleges and the BMA has been further developed by a joint working party representing each of these organisations. This group concluded as follows:

- The present distribution of hospitals providing acute and emergency medical and surgical care needs to change if patients are to benefit fully from recent advances in acute care
- The ideal unit for fully comprehensive medicine and surgery is a hospital or integrated group of hospitals serving a population of 450,000 - 500,000
- A hospital serving a population of 250,000 - 350,000 is the most effective size to provide most of the acute services for medicine and surgery

The British Association for Accident and Emergency Medicine

7.31 A recent report from the above Association pointed out that Accident and Emergency Departments require the following on site services: intensive care; anaesthetics; acute medicine; general surgery; trauma; and orthopaedics. There should also be rapid, easy access to child health; 24 hour access to imaging (including CT); and laboratory services on site. Where these services are absent the A&E service would not be recognised for training. The Association recognised that some rationalisation and centralisation of emergency services would be appropriate. It recommended that ambulance crews, both in transit and at the scene, should have direct communications with senior doctors who are experienced in pre-hospital care

and who have a good knowledge of local paramedic protocols. In addition, there should be agreed guidelines indicating which cases should be discussed in this manner. The basic principle should be that where there is any delay or difficulty, then medical advice should be available. Similar guidelines should be prepared to ensure that Accident and Emergency Departments are warned of patients en route to the department for whom advance preparation is required. The following recommendations were also made:

- Regular meetings should be held between the Accident and Emergency Department and local ambulance crews and managers to review activity. A formal audit procedure should be in place to monitor the standards of care

- A&E staff should have an active role in the training of ambulance service personnel.

Cardiology Review

7.32 A Review of Cardiology Services in Northern Ireland has just been completed but has not yet been published. It has proposed that a more integrated system for providing cardiology services should be introduced. This could involve the development of five local cardiac networks, where neighbouring hospitals co-ordinate their activities. Each hospital providing acute medical services would continue to provide acute cardiology services. However, within each network, one hospital would have a more comprehensive range of facilities.

7.33 The Cardiology Review recommended that for patients suffering from chest pain, diagnosis; pain relief; defibrillation; and thrombolysis should be available as quickly as possible. It went on to state that Mobile Coronary Care Units (MCCUs) should continue to provide a first line emergency medical service to patients with acute chest pain and that all staff in MCCUs must have appropriate training in advanced life support. Where staffing permits, a doctor-led model might continue. The possibility of a nurse or paramedic-led service should be considered if a doctor-led model is not the preferred option. In order to provide quality emergency care to patients suffering a heart attack in more remote areas, it is suggested that a combined approach may be required. This could include:

- The dispatch of an emergency vehicle equipped with a defibrillator, thrombolysis and other drugs

- The attendance of a general practitioner to provide clinical expertise regarding diagnosis and treatment and to administer appropriate drug therapy

- An IT link with a Cardiology Unit to facilitate digital transfer of ECG for interpretation.

The Report also urged better public education to alert people to the significance of chest pain and to reinforce the message that emergency services should be called promptly. It highlighted a potential impact on the training needs of emergency ambulance crews and possibly the need for new digital technology to allow the transfer of information from more remote locations to a coronary care unit.

CHANGES IN PRIMARY CARE WHICH MAY IMPACT ON AMBULANCE SERVICE PROVISION

7.34 There have been significant changes in the organisation and delivery of primary care which may impact on ambulance service provision. Again a number are discussed below.

Out-of-Hours Services

7.35 Over the past 2-3 years a major change has occurred in the way out-of-hours services are provided by many GP practices, with the development of co-operatives which cover significantly larger geographic areas. New centres have been established where patients can come for assessment and advice following discussion with the GP on call.

Development of Local Hospitals/Ambulatory Care Centres

7.36 The development of local facilities with a significant GP involvement as well as a wide range of diagnostic and outpatient facilities was proposed in *Putting It Right.*

DEVELOPMENTS IN CLINICAL PRACTICE WHICH MAY IMPACT ON AMBULANCE PROVISION

7.37 Four key development areas are considered below:

Fracture Services

7.38 Inpatient fracture surgery is only carried out by orthopaedic surgeons in Altnagelvin Hospital, the Royal Victoria Hospital and the Ulster Hospital, Dundonald. Currently patients who arrive at other hospitals, with fractures that require inpatient treatment, are admitted under the care of general surgeons. Here they receive preoperative care while awaiting admission and transfer to a hospital with fracture beds. This situation is unsatisfactory and patients who need inpatient treatment for fractures should be admitted to the care of an orthopaedic surgeon, in a hospital where they will receive definitive treatment, on the day of injury.

7.39 The orthopaedic surgeons are proposing that patients, presenting to an Accident & Emergency Department in a hospital without an inpatient fracture

service, should have the fracture confirmed by x-ray and then be transferred immediately by ambulance to an appropriate hospital ie: Altnagelvin Hospital, the Royal Victoria Hospital or the Ulster Hospital. Any new system would have to be developed in collaboration with the Ambulance Service.

Developing the Interface

7.40 A major issue for the Review to consider is how to develop the interfaces between the ambulance teams and hospital teams both in Accident & Emergency and in specialist clinical areas. There is a recognised need to create more concrete links between medical and nursing staff and ambulance staff. This would facilitate better development and targeting of the skills of the ambulance staff. Developments are occurring at a rapid rate within many clinical areas and there is a clear need to ensure that ambulance protocols are continually updated with close hospital/ambulance collaboration.

Evidence Based Care/Care Pathways

7.41 There is an increasing emphasis on the promotion of evidence-based care and the development of agreed care pathways for patient management. An essential component is the pre-hospital phase and there is therefore a need to ensure that GPs and ambulance teams are involved in care pathway development.

The Inter-hospital Transfer of Critically ill Patients

7.42 There is strong clinical support for the development of a service that will ensure the safe transfer of critically ill patients between hospitals in Northern Ireland. Currently it is the responsibility of referring hospitals to organise the transfer of critically ill patients to other hospitals and to provide an escort. As indicated above, recently published local reports on paediatric and maternity services have recommended the establishment of an organised transportation service. This is also the view of the Clinical Resource Efficiency Support Team (CREST) and it is supported by a number of national publications.

7.43 There is a need for a neonatal service, a paediatric service and a service for critically ill adults. The neonatal service could be based at the regional neonatal intensive care unit. A neonatal service requires the transportation of trained personnel (as well as a neonatal transport incubator and equipment) from the regional unit to the referring hospital. There are a number of health and safety issues relating to the transportation of neonates in ambulances. The incubator and equipment are heavy and they cannot be loaded onto, and properly secured within, all types of emergency ambulance. A lack of standardised equipment contributes to the problem. The most cost-effective way of ensuring the rapid transportation of the neonatal team, with its equipment, to a referring hospital still needs to be determined and will require liaison between all those with an interest in providing this service.

7.44 The paediatric service could be based at the regional paediatric intensive care unit in the Royal Belfast Hospital for Sick Children. The transfer team could

take portable equipment with it by car and rendezvous with an emergency ambulance at the referring hospital. An adult transfer team could be based at the regional intensive care unit in the Royal Group of Hospitals. It too could travel by car and rendezvous with an emergency ambulance at the referring hospital for the journey back to base.

TECHNOLOGICAL DEVELOPMENTS FROM A CLINICAL PERSPECTIVE

7.45 Two areas of technological development are considered to have potential significance for ambulance provision. These are communication; and clinical support and IT systems. Each are discussed briefly.

Communication

Reliable, enhanced methods of communication between ambulances; between ambulances and controls; and between ambulances and Accident & Emergency/Clinical Departments need to be in place. These should include protocols for providing advice to front line ambulance staff and providing hospitals with advance warning of patient reception.

Clinical Support and IT Systems

Information technology can be used to provide additional advice to staff on scene. Through advanced IT and communications systems paramedics could receive on line advice and guidance on protocols. A prime example of this is the use of telemedicine to support the administration of pre-hospital thrombolysis.

Audit Commision Report: A Life in the Fast Lane

7.46 The above Report which was published in 1998, described how ambulance services should deal with current pressures whilst ensuring value for money. The Review Project Board considered the recommendations of the Report in the context of the Strategic Review of NIAS.

CONCLUSION

7.47 This Section has indicated that many current issues in the provision of clinical services in Northern Ireland will impact on the future level and nature of ambulance provision. The main issues which have emerged are:

- The ambulance service needs to become more integrated with clinical services in the hospitals to ensure that there is a joint team approach to the management of emergencies.

- The development of technologies may impact significantly on future ambulance service provision. The NIAS would require ongoing expert advice in this area.

7.48 The specific implications for the ambulance service are likely to be as follows:

- Patients will be brought to only those hospitals with appropriate acute services on site: this will mean increased journey times in some areas
- Transport for patients between hospitals will reduce since patients will be admitted to the most appropriate hospital in the first instance
- Transfer protocols and by-pass policies for ambulances need to be instituted to ensure the delivery of patients to the most appropriate rather than the nearest hospital
- Suitable transport will be required to move patients to local hospitals for rehabilitation
- Expansion of outpatient; therapeutic; and diagnostic services at local hospitals will mean fewer people will have to travel to the area or regional hospitals for these services
- More patients may require transfer to the regional centres in Belfast
- Direct radio links will need to be established between ambulances with on-board paramedics and the receiving Accident and Emergency Department
- Developments in primary care may lead to consideration of patient transport arrangements to out-of-hours centres: they also present new opportunities for communication and telemedicine links between GP on-call centres and vehicles; ambulance; and hospital services.

Consultation Process

8 Methodology and Summary Feedback

INTRODUCTION

8.1 The consultation process for the Strategic Review of NIAS aimed to ensure that the views and opinions of relevant parties (both external and internal to the Service) were taken into account. In order to do this a series of presentations, meetings and written communications was undertaken with a wide variety of groups. The following were invited to have input into the consultation process for the Review:

- Health and Social Services Councils
- Health and Social Services Boards
- Health and Social Services Trusts
- General Practitioners
- Local Medical Committees
- Clinical Consultants
- Northern Ireland Assembly Members
- Department of Health & Social Services
- Borough and District Councils
- Cross Border Ambulance Services
- NIAS Staff
- Trade Unions
- Northern Ireland Fire Brigade (NIFB)
- Royal Ulster Constabulary (RUC)
- Voluntary bodies

A small proportion of correspondence was also received directly from members of the public.

8.2 Outside of the many issues raised by those involved in the consultation process, strong support and appreciation of the service provided by NIAS was expressed. Summaries of the main issues raised by the consultation process are detailed below. These were identified by the majority of participants in the consultation process as areas which must be considered as part of the Strategic Review of NIAS.

IMPACT OF CHANGES IN REGIONAL ACUTE HOSPITAL SERVICES

8.3 The need to ensure that recommendations for change to NIAS are in keeping with the changes being made in acute hospital services was clearly recognised. Particular attention was drawn to the following issues:

- Closure of some Accident & Emergency Departments
- Closure of some Maternity Units
- Introduction of Fracture Clinics and a Regional Rehabilitation Service
- Increase in number of renal patients requiring transport (often out of hours)
- Changes in the structure of Cancer Services
- Changes in the type of acute services provided in certain hospitals
- Impact of the Cardiology Review
- Impact of the Trauma Review
- AHRP (Acute Hospital Review Project)
- Pre-hospital thrombolysis.

LIMITED EVIDENCE OF ACHIEVING BENEFITS OUTLINED IN TRUST MERGER PROPOSAL DOCUMENT (1994)

8.4 Several references were made to the seeming failure by NIAS to deliver on many of the benefits outlined in the 1994 merger proposal document *'The Future Management of Ambulance Services in Northern Ireland'*. Specific comments focused on the following areas:

- Lack of integration of service delivery across the four Board areas.

- Insufficient numbers of managers and lack of management development.

INADEQUATE FUNDING OF NIAS

8.5 Many respondent groups involved in the consultation process acknowledged the need for additional funding to be made available to NIAS, not only to implement the recommendations to be made in the Review, but also to maintain the current level of service provided. The issue of the inequity of funding between the Northern Ireland Fire Brigade (NIFB) and NIAS was also highlighted in several responses, as was the current method of funding NIAS. The view was expressed that NIAS should ideally be centrally funded by one source in the future.

LINKS WITH FIRE AND OTHER EMERGENCY SERVICES

8.6 Closer collaboration with the Northern Ireland Fire Brigade and other Emergency Services was seen to be important by many of the respondents. The suggested integration varied from the sharing of facilities; combined communication systems and joint training, to a complete amalgamation of the two Services. The benefits of either total or partial integration were suggested as:

- Reduced management and overhead costs
- Access to higher standard facilities (stations) for NIAS staff at stations
- Central joint funding would reduced inequities between the two Services
- Potentially a more efficient and effective service would be provided to general public
- Access to modern communication and mapping systems.

SEPARATION OF A&E AND PCS SERVICES

8.7 It was clear from the responses analysed that users of both tiers of NIAS (ie: the A&E and PCS Services) are unhappy with the present structure. There were a wide variety of suggestions for change in relation to this issue.

8.8 Both tiers of the Ambulance Service ie: the A&E and PCS are currently seen to undermine each other's roles and responsibilities. A number of reasons were cited:

- Inappropriate vehicle booked for a call eg: A&E vehicle booked when PCS transport would have been more appropriate
- 999 response time not met due to vehicle being involved in PCS work
- Inappropriate vehicle used due to lack of availability of an appropriate vehicle eg: PCS vehicle sent to carry out inter-hospital transfer
- A&E vehicles being misused due to unavailability of PCS service eg: transport of patients home from hospital clinics after 5pm. It was suggested that this could be overcome by an extension to PCS hours
- Patients discharges/transfers being delayed due to absence of appropriate vehicle

8.9 The current system of PCS management is not efficient for several reasons. These include the planning constraints imposed by Board boundaries (journeys often duplicated across Boards); poor use of fleet; poor fleet management; and difficulties entailed by many users regarding bookings. PCS should in future be separately managed either within NIAS as a single Patient Care Service for Northern Ireland under local contracts with Trusts, or through locally developed transport services.

8.10 PCS hours of service need to be reviewed and redefined to fulfil the needs of patients. Central to this is an expansion of current working hours. The introduction of an intermediate care tier would be welcomed. This could be in the form of a multi-purpose vehicle that could transport patients whose medical condition does not warrant the skills of a paramedic or technician. Other suggestions included:

- PCS could be better managed by its commissioners (eg: Trusts, GPs etc).
- PCS could be integrated with the current Social Services transport system
- PCS should provide transport for respite patients/clients
- If the voluntary car scheme is to be continued, reimbursement for voluntary drivers should be increased to encourage more people to participate.

In rural areas it was suggested that the concept of having separate A&E and PCS Services is somewhat idealistic due to the lower activity levels.

PERFORMANCE STANDARDS

8.11 There were several issues raised in relation to the performance standards set by the Government. Specifically these were:

- NIAS' inability to meet the current ORCON Standards in many rural areas is not acceptable.

- It was suggested that it would be unlikely that NIAS will be able to achieve the new proposed performance standards in the future (eight minute response for 75% of life threatening calls) due to a lack of resources and poor deployment of vehicles. This was also considered unacceptable. It was felt that consideration should be given to vehicle deployment; station locations; and out-posting of crews; especially in rural areas.

- Performance standards based on response times only are not an effective method of performance measurement because they allow no quantification of quality of service delivered nor feedback regarding outcomes.

- Performance standards should be agreed between NIAS and its service users and achievement monitored against targets on an on going basis.

- The introduction of 'First Responders' to aid NIAS in achieving performance standards was seen as a logical progression for the future, providing that their role would be only to be on scene in the quickest time and that NIAS backup was activated in the usual manner.

- The placement of defibrillators within the community was seen as a positive move, with community-based training being given by NIAS.

- The issue of the migration of ambulance resources to specialist centres and clinics during peak times of the day which results in depleted levels of cover in rural areas needs to be addressed.

RATIONALISATION OF CONTROL CENTRES

8.12 A strong emphasis was placed on the need to review the current control centre structure within NIAS. The number of control centres - four, one in each Board area - should be reduced as:

- Improved IT eliminates the need for four separate controls, especially if a Priority Dispatch System were adopted
- One control centre would ensure standardised and equitable treatment of all calls across all Board areas
- Overhead and running costs would be significantly reduced

There was some debate as to the exact number of control centres needed in the future and also whether the PCS control facility should be located on an alternative site or within A&E control. There was support for the introduction of a Priority Despatch System (PDS) which would ensure allocation of the most appropriate skill mix to the call.

IMPROVEMENTS IN FLEET AND EQUIPMENT

8.13 The current state of NIAS fleet received significant criticism with an emphasis being put on both the inconvenience of vehicle/equipment breakdowns and public safety. Age; mileage; regular maintenance; and the lack of a fleet manager were highlighted as areas to which NIAS should pay particular attention. It was suggested that more multi-purpose vehicles (especially for use by the PCS) should be procured for the future, with careful consideration being given to appropriate size and capacity for the various user groups for example, wheelchair users.

TRAINING NEEDS OF NIAS STAFF

8.14 Many references were made to the future training needs for NIAS staff to ensure that staff have the skills and competencies to deliver a high quality service. Specific references were made to the following issues:

- Staff, particularly paramedics, are currently not utilising all of their skills. It was recognised that this is linked to the use/abuse of A&E ambulances and their crews, along with natural skills decay
- More integrated training and closer working relationships with Accident & Emergency Departments is needed.
- Integrated multidisciplinary training, both within NIAS and with other Emergency Services, would be of benefit

- Collaborative training with cross border ambulance service staff should be undertaken on an ongoing basis in a variety of guises, including Major Incident Planning and joint MIMMS, PHTLS and communication training

- Recruitment and training of staff must be to defined standards

- Training must be given to support specialist mobile transfers eg: paediatrics, neonates and critically ill patients

- Staff need training to help them deal with a wider variety of conditions in the community: this will forge closer links with the primary care groups

- Pre-Hospital Life Support Training (PHLTS) should be a priority

- A clear training programme should be identified for staff with monitoring of progress undertaken.

- NIAS management needs to recognise the importance of training and allocate sufficient funding for training resources

CLINICAL GOVERNANCE AND AUDIT

8.15 The issue of current practice within NIAS and perceived weaknesses in audit and clinical outcome were raised in several responses received. The need for more clearly-defined protocols and procedures was emphasised. Explicit areas for attention suggested include:

- Standard practices and procedures across Northern Ireland must be adopted and adhered to by NIAS staff: compliance should be ensured by relevant supervisory managers at all levels of the Service; continuing quality improvement should be the principle aim

- A formal system of clinical governance must be introduced and maintained with input from other healthcare professionals where appropriate

- Best practice should be verified by benchmarking with other ambulance services. Value for money (VFM) should also be quantified in this way

- By-pass protocols must be agreed between clinicians and NIAS

- Consideration should be given to public perception and expectation of service delivery

A formal policy should be adopted for dealing with complaints on a timely basis.

TECHNOLOGICAL DEVELOPMENTS AND SYSTEMS

8.16 The need for NIAS to invest in new technology for various operational areas was clearly identified. These included systems for the management of dispatch and deployment of resources, for example computer-aided dispatch models and the introduction of PDS. A geographical mapping system (GIS) as utilised by the Northern Ireland Fire Brigade was also seen as a priority for investment. In addition, the need to provide compatible communication links with Accident & Emergency Departments; control centres; and crews, was highlighted. Compatibility with cross border ambulance services communication systems was also deemed necessary in the future.

8.17 The benefits of an on-line booking service were emphasised and the development of a bed management system, administered by NIAS was suggested. The adoption of a priority dispatch system was supported, providing the following issues were taken into account and dealt with appropriately prior to going 'live':

- Adequate training would need to be given to staff on the adopted system
- Robust risk management exercises should be undertaken prior to implementation of specific systems

Despite receiving an element of bad press elsewhere in the UK, the use of a telephony helpline such as 'NHS Direct' was strongly supported by respondents. The need for a publicity campaign aimed at educating users of the Service was also recognised.

FURTHER ISSUES HIGHLIGHTED

8.18 The following issues were also identified as relevant to the Review by some consultees:

Air Ambulance

8.19 Most support for the use of a dedicated air ambulance came from the more rural areas. A small proportion of clinicians also advocated the use of such a resource. However the larger number of responses did not consider the use of an air ambulance as a priority for the future and stated that additional resources should be invested in improving land-based ambulance cover. It was recommended that a cost benefit analysis should be carried out prior to any definitive conclusions being drawn regarding this issue.

Northern Ireland Road Infrastructure

8.20 Again most emphasis on the need to examine the current and proposed infrastructure of roads, together with the use of a road mapping system, came from more rural areas. This issue is specified in the terms of reference for the Review.

NIAS Management Structure

8.21 The need to have a robust management structure within NIAS was highlighted, as was its subsequent ability to implement recommendations made by the Review. In addition the need for an appropriate make up of NIAS staff to deliver the service in the future was stressed. The need for the current part time Medical Director post to be made full time was identified and it was felt that such a move would continue to improve relationships between clinical professionals and NIAS.

Educating and Informing the General Public

8.22 There were a number of references to the inappropriate use of ambulance resources by the general public. Respondents offered some explanations for this and importantly also indicated that there were many instances where professionals from within the HPSS were also guilty of using the Service inappropriately. Explanations for this ranged from a genuine lack of knowledge to an intentional disregard for the criteria that should be applied when calling on ambulance resources. It was felt that these issues demonstrate a need for an internal and external education and information programme for both the general public and HPSS staff.

Review of Inter Hospital Transfer Service

8.23 The clinical aspects of inter-hospital transfers are referred to in paragraph 7.42 of this Report. Service users, both external and internal, raised additional issues under this heading. These included NIAS' ability to provide transport on a timely basis to facilitate patient care and to release scarce hospital resources for other patients. A particular comment was made as to the perceived low level of priority attributed to inter-hospital transfers by NIAS.

8.24 An additional issue raised was the current costing arrangements. It was felt better use of resources and additional control of transport costs would be achieved if the hospital from which patients were transferred incurred the cost rather than the current arrangement whereby the receiving hospital is liable.

Retrieval Teams

8.25 Alongside the comments focusing on inter-hospital transfers there was a clear opinion, particularly from specialist regional centres, that retrieval teams should be established to facilitate the transfer of complex cases such as

neonates and patients with head injuries. Respondents were emphatic that any new arrangements must be reliable, safe and provide high quality care.

Collaboration with other Healthcare Professionals

8.26 The need for improved collaboration and integration with other health care professionals was a common theme throughout the consultation process. Collaboration within community settings as well as with acute services was seen as being important if patients were to receive the optimum level of care.

Cross Border Working Arrangements

8.27 Some reference has already been made to the potential for co-operation with ambulance services in the Republic of Ireland in areas such as communication systems; shared training; development of protocols etc. Respondents indicated that there was also potential co-operation in some other areas. The aim of cross Border collaboration was seen as providing an effective ambulance service to the people living in Border areas. This could involve patients being treated in hospitals outside the jurisdiction in which they live. To facilitate co-operation a number of suggestions were made:

- A standing forum with representation from the North Western Health Board, the North Eastern Health Board and NIAS should be set up to look at developments on an ongoing basis
- It would be beneficial to develop a database of relevant information for use by ambulance services in Border areas
- There is a need for agreed protocols and procedures to be applied both sides of the Border
- There should be a commitment to build on the successful cross Border project which has just been completed by NIAS and the North Eastern Health Board under the auspices of Collaboration and Working Together Group (CAWT).

PROJECT BOARD MEMBERSHIP

8.28 Several respondent bodies reflected their disappointment at the lack of public representation on the Review Project Board

ADDITIONAL ISSUES RAISED BY NIAS EMPLOYEES

8.29 As providers of the Service rather than users, NIAS staff raised many of the issues already highlighted above. In addition, they drew attention to the following:

- The quality of communication within NIAS must be improved

- More flexible working hours should be introduced, especially for PCS staff, to allow more efficient and effective service delivery

- A training development strategy must emerge from the Review that ensures NIAS becomes a learning organisation with training and development initiatives ongoing across the whole Service: these should be delivered on a more local basis rather than confined to the Regional Training Centre

- The opportunity to access Third Level Education should be made available to ensure that NIAS staff have the same opportunity as other ambulance personnel in the UK and Europe

- Consideration should be given to the introduction of a Third Level Education programme to facilitate school leavers by bridging the period from leaving school to the minimum age of entry (21 years) to NIAS

- Staff believe that if NIAS is to achieve the professional standard that is required, then a much more innovative and modern approach to training and education is required. This could include modular training through distance learning; video conferencing; and the use of CD Roms etc

- An opportunity for more integrated working arrangements with A&E staff and other healthcare professionals would be welcomed by ambulance personnel

- An analysis of the high levels of sickness absence within NIAS should be undertaken and the reasons for it established. The analysis should include an evaluation of the impact of sickness absence on staffing levels and on patient care

- Additional administrative staff should be employed to allow managers to deal more effectively with operational issues on a daily basis

- Both the current management capacity of NIAS and its organisational structure should be examined and key actions identified to address any weaknesses

- NIAS management needs to pay more attention to the personal safety of its staff, especially front line crews

- The human resource implications of any recommendations for change need to be carefully considered against the projected benefits

- Inequities between the NIFB and NIAS should be reduced. Specific reference was made to funding levels; staff facilities; pay and conditions; and the status of each Service.

8.30 Appendix 2 provides a full list of those who participated in the consultation process.

Emergency and Patient Care Systems

Options for Improvement of A&E Service

9

INTRODUCTION

9.1 Providing a timely and appropriate response to emergency (999) and urgent calls (arranged by GPs) is the primary purpose of all frontline ambulance services. People who call 999 expect the ambulance to arrive quickly. Similarly GPs, when booking an ambulance (urgent calls) need to have confidence that their patients will be transported to hospital within the time agreed with ambulance control.

9.2 Increasingly meeting emergency response times is challenging, particularly in large rural areas with dispersed populations. The level of performance depends on the ambulance service's ability to ensure that there are an appropriate number of staff and vehicles available in the right locations to meet anticipated levels of demand. Traditionally there has been great emphasis placed on the level of resources based at local ambulance stations. Today with modern communications and technology, locating ambulances in areas of high demand rather than having them on standby within stations can assist in achieving better response times. The challenge therefore, for any ambulance service, is to meet the required performance standards with the minimum number of hours of ambulance cover.

OVERVIEW

9.3 This section of the Report describes the proposals for the design of an improved emergency care system for NIAS. It proposes improvements in call taking and dispatching; response times; and in the provision of a more equitable ambulance service for the population of NI.

9.4 The key components of this proposed new system are summarised below. They should be implemented in the order in which presented.

Key Components:

- *Call Prioritisation*: An improved way of dealing with emergency calls, whereby calls are prioritised according to the urgency of the call, with 'life-threatening calls' receiving priority over others. This is the cornerstone for the proposed new system and is implemented using a computerised software package (see over)

- *A Priority Dispatch System*: A software package which enables ambulance control to prioritise calls and dispatch the most appropriate response using a triage system.

- *New Response Times*: An outline of the rationale for the new response times as set for the categories of calls is described in paragraphs 9.17 to 9.19 below.

- *Setting New Response Time Targets for Northern Ireland*: A description of a four phase implementation plan is given in paragraph 9.20. It describes how the new proposed response targets were modelled to identify the additional resource requirement. It also describes how current and additional levels of ambulance cover should be managed, to ensure effective and efficient utilisation of an expensive resource. Consideration is given to the effects of possible changes in the configuration of Accident & Emergency services and potential increase in demand for ambulance services. The proposed implementation phases can be summarised as follows:

Phase 1: To be achieved by the end of 2001

Meet current Patient Charter Standards in all Area Health Boards **BY**:

Responding to 50% of all 999 calls within 8 minutes

and

Respond to 95% of all 999 calls within 18 and 21 minutes

Phase 2: To be achieved by the end of 2003

Respond to 50% of all 999 calls within 8 minutes at Local Government District level

and

Continue to meet the 95% Patient Charter Standard

Phase 3: To be achieved by the end of 2005

Respond to 75% of potentially life threatening calls (Category A), within 8 minutes at Local Government District level

and

Respond to non-life threatening calls (Category B) within current Patient Charter Standards

Phase 4: Target date to be set after Phase III has been completed

Respond to 90% of Category A calls within 8 minutes at Local Government District level

and

Respond to non-life threatening calls (Category B) within current Patient Charter Standards

In order to achieve Phase 3 above, it is anticipated that call priorisation would need to have been implemented by the end of 2002. In addition, having completed Phase 4, current Patient Charter Standards for Category B calls should be reviewed.

- *Complementary Systems of Care*: An exploration of innovative ways of improving pre-hospital care and thus improving patient outcomes.
- *An Integrated Emergency Medical Care System*: A whole systems approach to improving emergency care which emphasises the importance of integration with other health care providers particularly A&E services.

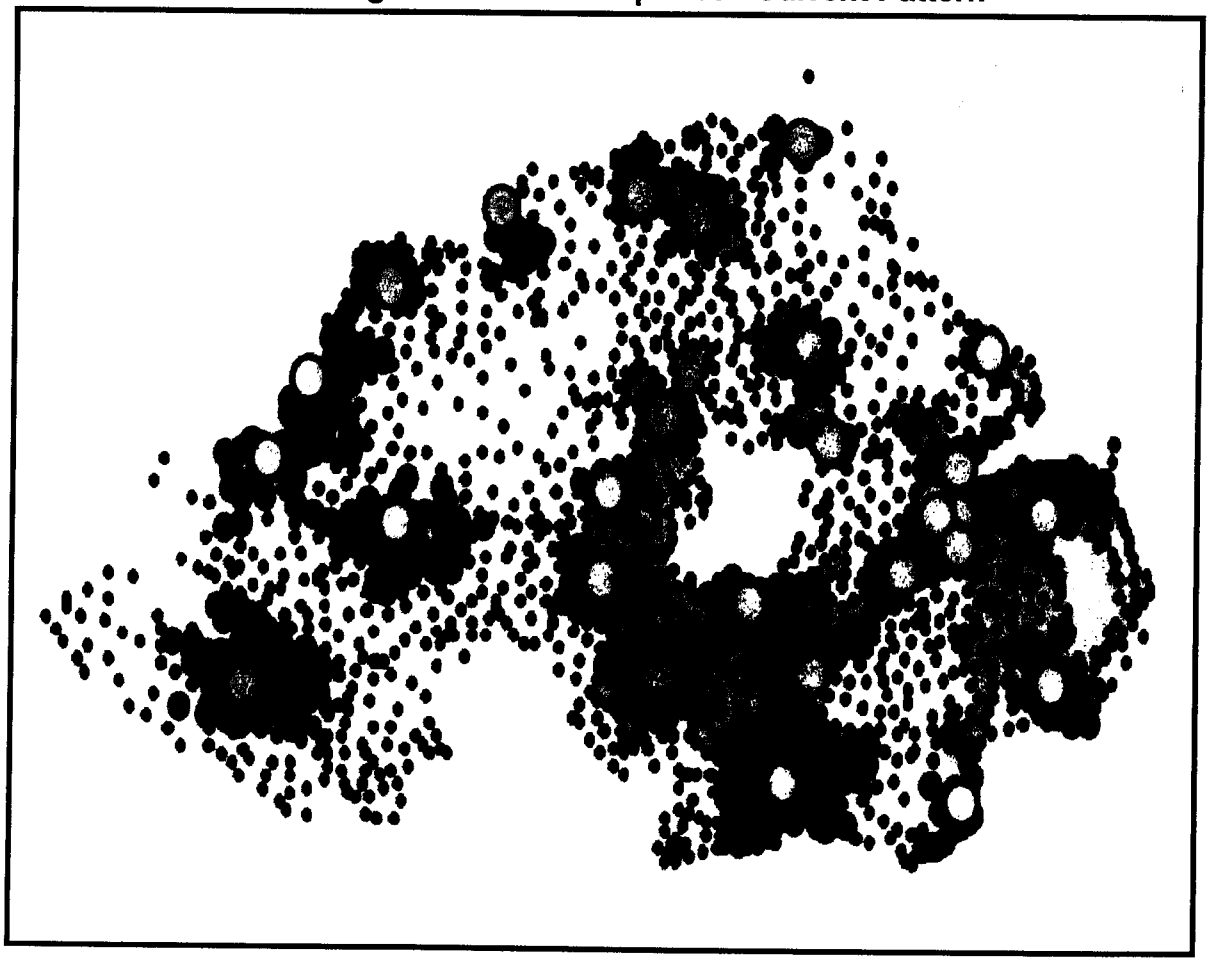
9.5 There is a strong case for making changes to the present system of measuring ambulance performance standards. However, communities must be assured that any proposed changes in call handling, dispatching and measurement of NIAS' performance will mean that all of NI will receive an improved service.

A REVIEW OF AMBULANCE PERFORMANCE STANDARDS

The Case for Change

9.6 The timing of an ambulance response commences from the moment an ambulance controller receives an emergency call and includes the time taken to activate an ambulance crew. On reviewing NIAS performance against the current Patient Charter Standard of 50% of all 999 calls being responded to within 8 minutes or less, it became apparent that for the current level of resources and vehicle utilisation pattern, those communities located in close proximity to an ambulance station will have a higher probability of receiving an 8 minute response. This is illustrated by the map below where the dense cluster of blue dots indicate those communities which would receive an 8 minute response. As the map illustrates, enumeration districts in the more rural areas of NI, will have a lower probability of receiving an 8 minute response.

Achieving an 8 Minute Response - Current Pattern



9.7 Improving response times to those areas currently out of range involves the consideration of many factors. These include call management; population density in rural and urban areas; traffic density; road networks; the location of Accident and Emergency Services; the availability of ambulance resources; and the effectiveness and reliability of communications and IT systems.

Call Prioritisation

9.8 There is a now a clear consensus among the medical profession and ambulance personnel that more clinically relevant standards should be introduced. The present standards require the same response to all emergency calls and fail to differentiate between those that are potentially life threatening and those that are not. Clearly greater focus on improved response times, in particular an appropriate response to life threatening calls, could save lives.

9.9 It is important however, that any new systems that are introduced secure public confidence. Clinical need is not dictated by where an emergency occurs and consequently it is difficult to justify the present system, which allows different standards for response times, in rural and urban districts. In the future it is proposed that all 999 calls should be divided into three categories as follows:

Category A: Immediately life threatening (victims of illness or trauma who may benefit from life saving help on scene within minutes)

Category B: Not immediately life threatening but potentially serious

Category C: Not life-threatening or serious (requiring an urgent rather than emergency response, by ambulance or other means)

9.10 Recent research on the epidemiology of 999 calls suggests that the typical distribution of 999 calls for each category is as follows:

Category A calls – 25%
Category B calls – 60%
Category C calls – 15%

As described above, Category A calls are emergency conditions which are, or may be, immediately life threatening but where rapid intervention and effective treatment by front line ambulance staff or other appropriately skilled personnel, could affect the outcome. A full description of Category A calls is provided in Appendix 3.

Priority Dispatch Systems

9.11 Priority Dispatch Systems (PDS) are computer–support systems that help prioritise calls into the categories as described above. By using this system call takers can quickly identify situations where a life may be at risk. PDS are now widely used in most developed health care systems.

9.12 The aim of PDS are to improve patient care by targeting resources at those who will benefit most. An additional benefit of PDS, are they enable ambulance control officers to provide pre-arrival advice and instruction to callers. This has been found to have a significant impact on the clinical outcomes for patients.

9.13 A study was recently undertaken to evaluate the safety and reliability of two priority-based systems currently in operation in ambulance services in the UK. These were the Criteria Based Dispatch (CBD) and the Advanced Medical Priority Dispatch (AMPD) systems. The study concluded that, although there was a 1 in 2200 chance of a 999 call being 'under prioritised' using the systems, this represented a much smaller risk to patients than existing practices whereby calls are simply answered in the order in which they are received. The study also acknowledged that, in comparison to non-priority based systems (which are currently in operation in Northern Ireland) priority based systems resulted in an overall improvement in response times to patients with high priority conditions.

9.14 It is therefore recommended that a Priority Dispatch System be adopted by NIAS. The implementation of this recommendation would deliver the following benefits:

- Critically ill patients would be responded to more effectively, speedily and efficiently
- The use of pre-arrival instructions would help those on scene prior to the arrival of an ambulance crew

Both measures should result in a significant improvement in patient outcomes.

9.15 It is essential to emphasis that Priority Dispatch Systems will not be used to make 'no send' (ie: no response is dispatched) decisions. They are based on dispatching an appropriate response, in an appropriate timeframe to each individual call.

Response Times

9.16 The emphasis in a modern pre-hospital care system is focused on ensuring the provision of an appropriate response to the patient in a time appropriate to the clinical risk. For the new performance standards, Category A, B and C calls can be responded to in the first instance, by an ambulance or other means.

9.17 Based on historical patterns it is likely that signs and symptoms which indicate that the patient is unconscious or suffering a potential or actual cardiac arrest, will account for the most significant number of Category A calls. Supporting evidence from research into cardiac care, indicates that if ambulance intervention is to be clinically effective, then a response time of no longer than 8 minutes is essential. Systems of emergency care designed to cope with cardiac arrest are equally effective at dealing with most other life threatening emergency situations where pre-hospital intervention may achieve an improved clinical outcome.

9.18 For this reason, an 8 minute response time target has been adopted widely by many ambulance services for all life threatening calls. In line with this for example, the new performance standards set for English Ambulance Services are based on reaching a milestone of 75% of life threatening emergencies (Category A) within 8 minutes, by March 2001. Response times for Category B patients should be similar to the current Patient Charter Standards, which ensures that there is no erosion of standards through the introduction of call prioritisation. Consideration should be given to a review of these response times prior to Phase 4.

9.19 Category C calls, as outlined above, are defined as not life threatening or serious and therefore require an urgent rather than an emergency response. In the future it is anticipated that healthcare professionals should agree on a local basis the types of call which should be categorised as 'C' and then describe acceptable standards of response times. The current system whereby only doctors, dentists and midwives may submit a suggested response time when booking urgent calls is also likely to continue. Ambulance controllers must however be required to route all calls through the priority dispatch system to ensure that each agreed response is an appropriate one.

IMPROVING ON CURRENT PERFORMANCE STANDARDS

Setting New Performance Standards for the Northern Ireland Ambulance Service

9.20 The Project Board recommends that improvements in performance could be achieved through a four-phase implementation process. Each phase has a clearly defined target that must be achieved prior to the commencement of the next phase. This will allow the full impact of achieving each phase to be assessed, along with the other benefits that will be realised through the implementation of the other recommendations in this Report, for example, the separation of the PCS and A&E Services. This approach will ensure efficiency; effectiveness; and value for money from A&E ambulance resources and is outlined overleaf:

Phased Implementation Plan for Achieving Improved 999 Response

PHASE	PERFORMANCE STANDARD	LEVEL OF ACHIEVEMENT	TARGET DATE BY
1	Respond to 50% of all 999 calls within 8 minutes	Area Health Board	End 2001
2	Introduce call prioritisation Respond to 50% of all 999 calls within 8 minutes	Local Government District	End 2002 End 2003
3	Respond to 75% of Category A calls within 8 minutes Respond to Category B calls within current Patient Charter Standards	Local Government District	End 2005
4	Respond to 90% of Category A calls within 8 minutes Review current Patient Charter Standard response for Category B	Local Government District	Date to be set post Phase 3

Establishing the Resource Requirements

9.21 It is recognised that to meet both the old and the new performance standards there is a need for a combination of greater efficiency within the ambulance service, new approaches to deployment and increased ambulance resources. Difficulties arise however when attempting to quantify these requirements. To assist in estimating these requirements, a newly developed interactive modelling package known as 'Simplified Modelling of Spatial Systems - Ambulance Version' (SMOSS- Ambulance Version) developed by Dr Tony Hindle of the University of Lancaster, was applied for each of the four phases of the target set by the Review Project Board.

9.22 Although it is accepted that modelling operational ambulance activity has some limitations, having reviewed the alternatives, it was the Project Board's opinion that this process was the best way of bringing objectivity to the exercise. To ensure the validity of the tool, experienced NIAS officers were invited to participate in the work. Having viewed the results generated, these officers gave their support to the utilisation of SMOSS – Ambulance Version.

9.23 The SMOSS model aimed to mirror the normal behaviour of the A&E ambulance service operating within NI, subject to a variety of variables and parameters. During a normal shift, A&E ambulance vehicles and crews are required to participate in the transport of patients with various conditions, in addition to providing emergency cover. The organisation of A&E crews'

activity is the responsibility of ambulance controllers. They must ensure that an A&E vehicle is dispatched to an emergency call as a matter of priority, whilst also ensuring that more routine patient transport requests are carried out as necessary.

9.24 A survey carried out by NIAS showed that during daytime (8am - 4pm) the **average** emergency ambulance was not available to respond to 999 calls for approximately 50% of the time, due to being engaged in other activities. That is, the crew were already involved in responding to an emergency or urgent call; or were carrying out patient transfers; or were participating in other non-urgent work. Across the Province, this non-availability ranged from 30% to 70% depending on the locality. The concept of an average A&E ambulance having a 50% effective capacity (availability) is important. Any changes in the operational management of the Service, which improves the availability of A&E ambulances to respond, could potentially reduce the level of additional resources required to meet each of the targets set in the proposed implementation plan. A prime example of an operational change would be the transfer of non-emergency and non-urgent work from the A&E tier ie: the separation of A&E from PCS.

9.25 The SMOSS model was used to determine the additional resources needed to achieve each of the targets set in the four phase implementation plan, as below. Again, each phase must be reviewed on completion. A unit hour of additional care can be defined as "an ambulance crew manning a fully equipped emergency ambulance for one hour".

Phased Implementation Plan for Achieving Improved 999 Response

PHASE	PERFORMANCE STANDARDS	LEVEL OF ACHIEVEMENT	TARGET DATE (By End Of)	ADDITIONAL HOURS OF COVER PER DAY
1	Respond to 50% of all 999 calls within 8 minutes	Area Health Board	2001	No additional resources. Target to be achieved by improving availability of A&E vehicles
2	Respond to 50% of all 999 calls within 8 minutes	Local Government District	2003	356.88 hours plus 20 additional deployment locations

PHASE	PERFORMANCE STANDARDS	LEVEL OF ACHIEVEMENT	TARGET DATE (By End Of)	ADDITIONAL HOURS OF COVER PER DAY
3	Respond to 75% of Category A calls within 8 minutes Respond to Category B calls within current Patient Charter Standards	Local Government District	2005	231.36 hours
4	Respond to 90% of Category A calls within 8 minutes Review current Patient Charter Standard response for Category B	Local Government District	Date to be set post Phase 3	Analysis to be completed pending impact of Phase 3

MANAGING OPERATIONAL RESOURCES

Maximising Available Hours of Cover to Match Demand

9.26 Precisely how the recommended additional hours of ambulance cover per day, throughout NI, to meet phases 2 and 3, should be allocated between stations will require further research and analysis of operational activity. This should be undertaken by NIAS. This should then be used to develop a dynamic operational plan, which must include the following elements:

- The scheduling of resources to reflect variations in demand by time of day and day of week. Many services experience peaks in demand for a few hours during the day (as a result of GPs' home visits); in the early hours of the morning; and, increasingly, at weekends.

- The scheduling of resources to meet seasonal variations in demand. Key influences here include increases in demand over the winter months; variations in population density over holiday periods; and adverse weather conditions affecting journey times.

- The positioning of ambulances in areas of high demand. This is a dynamic process and ambulance locations and/or positions will change depending on predicted demand throughout each 24 hour period. This is explored in more detail later.

- The improvement of activation times. This can be achieved through investment in modern control and communication systems and the introduction of new call handling and dispatch procedures

- The provision of more flexible responses appropriate to clinical need.

- Dealing with patient incidents expeditiously. Routine analysis of time spent at the scene and at hospitals, may identify excessive delays for particular stations or hospitals

- Ensuring that there are adequate levels of relief staff to maintain levels of cover.

- Working towards improving ambulance availability, by reducing the amount of non-emergency and non-urgent work being completed by A&E ambulance crews.

9.27 In order to achieve phase 1 of the implementation plan, it may be necessary for some additional investment to be made to the current PCS resource level to effect the required increase in A&E availability. For the phase 2 proposal to add 356.88 additional hours of A&E ambulance cover per day is based on a modelling exercise and will go some way towards addressing inequities. It will not however, provide a complete solution. Clearly low numbers of calls and the rural nature of some parts of NI make it necessary to develop supportive and complementary ways of providing an effective response. These could include community first responder schemes which are discussed later.

Strategic Deployment of Ambulances

9.28 In addition to an increase in resources, the SMOSS model recommended that a further 20 locations should be identified within Local Government Districts from which A&E ambulances could be deployed. As explained above these 'extra' locations are over and above the existing 28 ambulance stations in Northern Ireland. In some areas sub-locations have already been identified by NIAS and are included in the extra 20 locations resulting from the SMOSS modelling process.

9.29 Historically crews usually return to their base stations after completing a call. However, the SMOSS model identified that performance standards could be improved by relocating a proportion of ambulance resources, normally based at a home station, to more strategic deployment points. These could be for either the whole or a part of a shift, pending demand. The location of these additional points should be taken into consideration in the NIAS Estates Strategy (see Section 12) as should the potential for sharing facilities with other healthcare providers and/or other emergency services.

9.30 In some areas, better response times could be achieved by introducing a system of 'dynamic standby'. This system operates by siting crews at points which historically have proven to have a high incidence of calls. Crews would

remain in the allocated vicinity for short periods of time, based on assessment of historical patterns of activity and the overall demand for services in the area at that time. The introduction of dynamic standby would involve close liaison between crews, control officers and operational managers to ensure suitable location points are identified and an appropriate duration for standby periods established. It must be emphasised that the introduction of dynamic standby would be dependent on safe and reliable communication systems and the use of new IT applications such as Geographic Information Systems and Automatic Vehicle Location Systems.

Responding to Life Threatening Incidents

9.31 Using the interactive SMOSS modelling tool, a mechanism was developed to improve response to all 999 calls. Building on this, a further recommendation is to introduce call prioritisation and to reach a 75% response level (in 8 minutes) to life threatening (Category A) incidents, in as many LGD as possible.

9.32 One possible strategy for improving performance in terms of life threatening incidents would be to continue to add resources and locations until the 75% levels are reached. However, because of diminishing returns eventually increasing resources and locations becomes very expensive and ineffective. Consequently complementary approaches need to be sought. These could include first-responder, and co-responder schemes and other innovative solutions, as discussed in more detail later.

9.33 One variation that had been modelled was to prioritise the response to Category A incidents and add extra resources specifically dedicated to responding to these calls. The model showed that these resources would be best deployed as a 'roving' resource. The term roving can be used to describe either an A&E vehicle or a single manned paramedic response unit or a combination of both, patrolling specific geographic zones and responding only to Category A calls as they occur. It is anticipated that these specialist resources would be of benefit in some of the more rural areas, though it must be emphasised that they would have a very low utilisation rate.

9.34 The SMOSS model estimated that an initial requirement of an extra 231.36 hours of ambulance cover per day - over and above the 356.88 extra hours required to implement the 50% strategy - would be required if progress is to be made towards achieving the 75% target.

9.35 The SMOSS model further estimated that the number of Category A incidents that could be met 'within target' would increase by 1,201 per annum overall if these additional resources were put in place. In terms of performance at a more global level, it estimated that the NIAS would reach 71% of Category A incidents in the Eastern Board; 58% in the Northern Board; 67% in the Southern Board; and 73% in the Western Board. However, to be successful, this approach would need to be augmented by other co-operative and collaborative "first-responder" schemes. Determining the optimal balance of

this combination of initiatives would require further research beyond the scope of this present Review.

Changes to the Provision of A&E Services

9.36 There are several important services that directly interact with the emergency ambulance service and therefore affect how NIAS operates. Probably the most critical of these are Accident & Emergency Departments and in particular how they are configured. Any reduction in Accident & Emergency locations has the effect of increasing the distances (and therefore travel times) covered by A&E ambulances when conveying patients to the most appropriate treatment centre. Proposals are currently being discussed which may result in the closure of some Accident and Emergency Departments within NI. When the potential closure of Accident and Emergency Departments was modelled, there was an estimated 36% increase in travel time for the delivery of service per day. To account for this, the SMOSS model identified that an additional 60 hours of A&E ambulance cover per day, would be needed to maintain the current level of service.

Sensitivity Analysis

9.37 The impact of increases in demand of 2% and 4% respectively were analysed using SMOSS. The percentage increases were then applied to NI as a whole, projecting the impact on emergency **and** urgent demand. It is estimated that to ensure the maintenance of current performance targets given a 2% increase in demand, 20.5 hours per day of additional A&E cover would be required. For a 4% increase in demand, 37.6 additional hours of cover per day would be necessary.

Other Benefits

9.38 The model estimated that the total distance travelled by NIAS vehicles in any one day could be reduced by approximately 250 miles, by increasing as proposed, the number of locations from which ambulances could be activated. Without the proposed resource level changes (that is, with the addition of 20 extra locations only) the model estimated that the availabilty of A&E ambulances would increase by around 8%. However, if combined with the resource level increase identified, the level of availability of A&E ambulances was estimated to rise by at least 33%.

COMPLEMENTARY SYSTEMS OF CARE

9.39 Modelling clearly indicates that, even with significant investment, the rural nature of some parts of Northern Ireland makes the achievement of an 8 minute response time impossible. In such areas, the development of pre-hospital care response arrangements supported by the local community and/or a co-response from other emergency services could provide an effective and sustainable approach for the delivery of immediate assistance.

Aside from support for rural communities, the development of community self help makes a positive contribution to improving clinical outcomes, especially in dealing with cardiac arrest for all parts of NI.

Community First Responder Schemes

9.40 First responders are usually members of the general public, working in a voluntary capacity. These volunteers have been selected and trained by an ambulance service to provide basic life support and, in the event of a cardiac arrest, to use an automatic defibrillator. First responder schemes are in wide use throughout the world.

9.41 In the event of a Category A life-threatening call in an area where a first responder scheme operates, ambulance control would firstly dispatch an ambulance and then alert a first responder to the scene. All first responder schemes set up in Northern Ireland would be controlled by, and be accountable to, NIAS. NIAS would be responsible for ensuring that:

- Competence and skills levels of first responders were kept up to date
- The necessary equipment was provided and maintained
- Practical call out arrangements have been made
- Appropriate liability arrangements are in place

9.42 It is recommended that the NIAS explore the feasibility of using first responders to attend life-threatening emergencies in areas which cannot normally be reached in the 8 minute ambulance response time target.

Community Training Programmes

9.43 Continuing with the community self help theme, NIAS should explore the potential for using members of the public to provide bystander Cardiac Pulmonary Resuscitation (CPR). Through public education and training programmes, NIAS would have the opportunity of increasing the number of people who have basic life support skills. In addition, it would provide an ideal forum in which to educate the general public on how to access NIAS in the event of an emergency; describe how calls are prioritised; and reinforce the importance of providing clear and accurate information. Involving communities at this level would be a proactive way of engaging in transparent and positive dialogue that would improve public confidence and trust in NIAS. Ultimately the quality of service should also improve under such a programme. The Department of Health should urgently seek advice on the current initiative in the western area of Scotland, where local authorities and health authorities are combining to pilot CPR training for school children aged between 14-18 years.

Co–Responders

9.44 Quite often members of the Police, Fire or Coastguard arrive before an ambulance crew. These personnel could be trained in extended first aid and defibrillation skills and act as co–responders, either prior to the arrival of an ambulance crew or when dealing with a multi-casualty incident

Rapid Response Vehicles

9.45 To deliver cost effective emergency care, NIAS should develop the use of single manned rapid response units (e.g. car or motorcycle). An experienced ambulance person arriving on scene and assessing an incident could make a number of decisions, appropriate to the patient's needs. This could include resolving the following:

- Does the patient need transport to a treatment centre? If so, which would best meet their needs?
- What would the most appropriate form of transport be?
- Does the patient need further emergency treatment at all? For example, having liaised with the control centre, access to an alternative agency such as community nursing, social services or a mental health team, may be deemed more appropriate.

9.46 Where NIAS has dispatched a rapid response vehicle; or a first responder, a fully equipped ambulance must also be dispatched to transport the patient (unless it is not required). To ensure that there is no reduction in the level of service from that currently provided, it is recommended that this ambulance should arrive within the present Patient's Charter Standard times of 18 and 21 minutes.

Air Ambulances

9.47 Helicopters do have advantages when used as air ambulances. They allow quick primary response and backup to the scene; fast transport to and between hospitals; and better access to remote locations. Consequently, in some cases, air ambulances can help save patient lives or improve their condition.

9.48 Helicopters also offer some operational benefits to ambulance and other emergency services, particularly those operating in rural areas and increasingly where traffic congestion is a problem. They can be used not only to directly access the scene of an emergency but also are particularly valuable as a method of retrieval or transfer between hospitals. In addition, their usage is a way of retaining ground ambulance cover in its local operational area where significant journey times are involved in patient transfers. However there are also limitations on the use of helicopters particularly weather, ground conditions and darkness, that impact on their utilisation.

9.49 Historically in the UK, the Royal Air Force, Army and Navy have always responded positively to requests made by emergency services for the use of military helicopters for patient transfers either between hospitals or as part of a rescue operation. However, the primary use of these helicopters is for military duties and consequently the Ministry of Defence requires that requests are kept to a minimum. Generally, ambulance services which utilise a military helicopter are charged the full operating cost.

9.50 Since the late 1980s however, a number of commercial helicopter operators have entered into partnerships with health service bodies to provide dedicated air ambulance services. The first example of this was a dedicated air ambulance, funded by charitable sources, which was launched by Bond Helicopters, in conjunction with Cornwall Ambulance Service. Whilst some funding difficulties were experienced initially, this air ambulance did become firmly established and continues to operate.

9.51 Shortly after this, the London Hospital gained sponsorship for a helicopter manned by a doctor. Express Newspapers initially funded this project. Other voluntary funded schemes have been developed over the last few years and today there are now nine areas in Great Britain with access to a dedicated helicopter air ambulance and four others that can use police aircraft. In England all the dedicated schemes are successfully maintained by charitable funding. However in Scotland the aircraft are fully funded from Government sources.

9.52 The usual arrangement is that the aircraft, pilot and engineering support are contracted from an experienced helicopter company which also assumes full responsibility for insurance and other areas on the aviation side of the operation. Ambulance services generally provide the two paramedics and medical equipment, which are financed from NHS funds.

9.53 Whilst the existing schemes have demonstrated some operational advantages of a dedicated air ambulance, there is still no conclusive evidence to show that the clinical benefits are commensurate with cost. There is little doubt that speed of retrieval has a beneficial effect, particularly in serious head injury and trauma cases. However, such injuries are infrequent. When this is balanced against high operating costs, health service professionals and health authorities tend not to be persuaded that helicopters represent a greater priority than the other types of fundamental investment that are recommended in the Review.

9.54 In conclusion, the financial implications of running a dedicated air ambulance are substantial. In the face of so many other competing priorities, both within NIAS and across the wider HPSS, it is unlikely to attract Government funding.

9.55 Call prioritisation provides ambulance services with the opportunity to identify minor emergencies where an ambulance attendance and journey to hospital might not be the most appropriate response. The continuing growth in demand for emergency healthcare presents particular problems that affect the whole system. Taking patients to hospital merely to find out if they needed to go there, inconveniences the patient; wastes expensive resources; and places unnecessary pressures on hospital Accident and Emergency Departments. This tends to result in poor a quality of service, particularly in rural communities, where lengthy journeys are often involved. However even minor emergencies usually require some form of assessment and/or intervention. Creating alternatives must therefore be an important strategic objective. The key elements of such an alternative system should include the following:

Providing Simple Access to the Healthcare System

9.56 Patients should not be discouraged from seeking help but should be encouraged to access the right service for their needs. Presently, many patients do not do this as they are unaware of the full range of services available to them. Providing a range of telephone contact points is one way of enlightening patients and helping them to direct their self referral to the most appropriate service. NHS Direct is an example of a telephone helpline that aims to ensure that the general public can get appropriate advice and information on health matters and, if necessary, access the healthcare system, in the most effective and efficient way.

Telephone Triage and Triage on Scene

9.57 The development of telephone triage systems for GP out-of-hours services would ensure that patients with serious conditions are quickly redirected to NIAS. Some patients require on scene triage before decisions can be made about the most appropriate source of definitive help. Triage systems and categories, which are common to all professionals, would ensure consistency of treatment.

Options of Response

9.58 An integrated emergency medical system would be capable of determining and initiating different responses according to the nature of the patient's need. This includes different skills and different transport options.

Improved Referral Arrangements

9.59 Patients tend to make their initial contact with a variety of different care providers. It is therefore important that those who receive that initial call are in a position to refer patients to the most appropriate service provider following initial triage. For example, a patient with central chest pain who calls their GP

should receive an emergency ambulance response, whilst a patient with a blocked catheter who rings 999 should receive a visit from a district nurse.

The Development of Treat and Leave Protocols

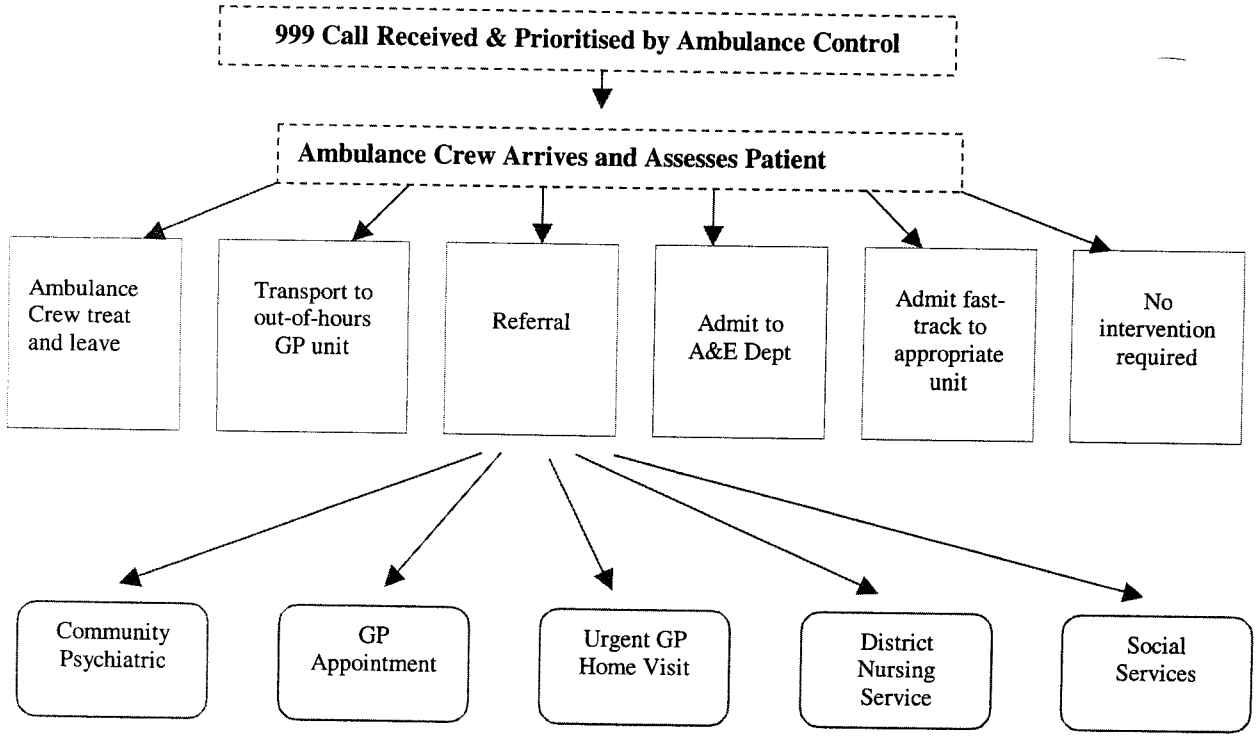
9.60 Following on scene triage, some patients will not require transport to a treatment centre. This is because the responder giving advice, treatment, or assistance can deal with their situations. The improved skill levels of both technicians and paramedics now mean that a patient can be given a wider range of treatment prior to being transported to hospital. NHS guidelines do allow ambulance crews the option of not conveying patients if this is believed to be the most appropriate course of action. However, currently there are limited guidelines for ambulance personnel to follow to assist in making decisions in respect of leaving a patient at the scene or referring them to an alternative care provider.

Options of Definitive Care

9.61 While many patients who access the healthcare system may not need to travel to reach the right type of definitive care, others will. An integrated system would allow transportation of patients to a range of places, for example, specialist accident and emergency units; acute hospitals; minor injuries units; psychiatric day units; or social services support units. It would also allow decisions to be made on the most appropriate and cost effective form of transport to be used.

9.62 The Ambulance Service is the first point of contact for approximately 70% of the patients that it transports. The majority of these patients need assistance for medical and social rather than injury-related problems. Currently almost all patients are transported to Accident & Emergency Departments due to a lack of suitable alternatives. Greater integration with primary care providers would allow for joint development of agreed clinical guidelines, providing ambulance staff access to a range of primary care services and skills. This would support the transportation of patients to alternative locations and/or allow ambulance crews to treat and leave according to strict protocols. The following flow chart outlines how such a system might operate in the management of a 999 call.

An Improved Integrated System for the Management of Ambulance Calls



EQUALITY

9.63 The primary reason for modelling response times as outlined in this Section is to ensure a consistently high level of service across all parts of Northern Ireland, regardless of factors such as religious belief, political opinion or gender. The analysis demonstrates that it would be possible to improve response times across most of Northern Ireland through the addition of ambulance resources in key areas. However, these additional resources would not be spread right across Northern Ireland and there may be potential secondary impacts. It will, therefore, be necessary to conduct a full equality impact assessment before new resources are deployed or before existing units are moved.

9.64 Using additional ambulance resources to ensure target response times in all areas would not, of itself, prove an effective use of available resources. The lack of geographical accessibility of some areas, means that the addition of ambulance resources there, would only provide marginal benefits. In these areas it will be necessary to consider alternative options, in order to ensure equity.

CONCLUSION

9.65 The need to ensure that NIAS is able to improve emergency response times; cope with increasing demand; and respond to wider changes in the health care system, was a critical driver in the decision to carry out a strategic review of the Ambulance Service. If patient outcomes are to be significantly improved, the design and implementation of an improved emergency care

system will require a systematic approach to the prioritisation of emergency calls, faster ambulance responses, better trained staff and the development of a wider 'whole systems' approach. Investment in control and communications systems is essential to support this.

9.66 The Project Review Board wish to emphasise that in its view the introduction of new performance standards as described, is a political decision which can only be taken by the Minister, the Health and Social Services and Public Safety Committee and the Executive Committee of the Department of Health. This is because prioritised dispatch, which is the essential underpinning for any new performance standards, requires political endorsement, additional investment and a public education campaign.

FINANCIAL IMPLICATIONS

9.67 The SMOSS modelling of activity suggests that the current level and location of resources is incapable of achieving the 8 minutes standard at 50% in all areas of Northern Ireland. In order to address this the Model indicates that the level of ambulance resources needs to be increased. This can be achieved in two ways:

- Increasing the capacity of the existing ambulances by focusing the A&E ambulances on 999 and urgent work only.
- Adding additional ambulance resources where necessary, to increase existing capacity to a level at which the 8 minute standard can be achieved.

Projected costs of implementing the 4 Phase Plan

PHASE	ADDITIONAL HOURS OF COVER PER DAY	PROJECTED COST PER ANNUM
1	None – To be achieved through redeployment of existing capacity	None
2	356.88 hours	£4.2M
3	231.36 hours	£2.7M if fully-equipped A&E vehicles are employed ***OR*** £1M if Rapid Response vehicles are employed
4	To be assessed following completion of Phase 3	To be assessed

9.68 It is important to note that the projected costs are based on the results of modelling current ambulance availability. Any operational changes which improve the availability of A&E ambulances such as the separation of emergency and non emergency work will reduce the level of investment required in the A&E tier.

9.69 In order to cope with variations in demand levels and possible reconfiguration of Accident & Emergency Departments, it will be necessary to vary the level of ambulance resources. It must be understood that such decisions will have additional cost implications, particularly for the A&E ambulance service.

9.70 The other schemes of care such as first responder schemes should be considered for pilot studies and must be funded adequately.

RECOMMENDATIONS

- NIAS should adopt the proposed 4 phase implementation plan in order to improve ambulance response times and provide a more equitable service
- NIAS must develop an operational plan which will ensure effective and efficient management of operational resources
- NIAS should introduce a priority based dispatch system by the end of year 2001
- NIAS should be funded for the additional resources to account for changes to the future provision of A&E Services and increases in demand
- NIAS should identify a further 20 locations within Local Government Districts from which to deploy A&E ambulances
- NIAS should introduce a system of 'dynamic standby' in order to improve response times
- NIAS should consider the use of A&E vehicles and/or single manned paramedic response units, for patrolling specific geographic zones to respond to life threatening calls
- NIAS should explore the feasibility of using first responders to complement the Ambulance Service by providing an initial response to life-threatening calls
- NIAS should consider training Police, Fire and Coastguard personnel in advanced first aid and defibrillation skills to allow them to act as co–responders
- NIAS should organise education and training sessions in basic life support skills for the general public

10 Future Patient Care Services

INTRODUCTION

10.1 The value of a non-emergency ambulance service (Patient Care Service) supporting the health care system can not be underestimated. The NIAS Patient Care Service (PCS) transported and provided appropriate care for 273,856 patients last year. The terms of reference for this Review include the requirement to assess the potential for the separation of PCS from the A&E tier of the Ambulance Service. The idea of separating the two services is not new and has already taken place in most ambulance services in the UK. There is no doubt, that the current system maximises use of resources, but this is done at the cost of reducing the effective capacity of the A&E tier, to respond to emergencies. In practice the dependence on A&E crews to move patients who do not require the skills of a paramedic or technician, is also unreliable. Emergency and urgent work takes priority, often-resulting in patients who were booked to travel in an A&E vehicle being late for appointments and experiencing unacceptable delays in getting home. This represents the worst possible scenario for both tiers of the Service, and ultimately provides a poor quality service for the patient.

THE NEED FOR CHANGE

10.2 There is a strong case for the proposal to split A&E and PCS services. For example:

- The DHSS Management Executive Operations Directorate circular *HSS(OP1) 6/92 'Emergency Ambulance Services and Non–Emergency Patient Transport Services in NI, Strategic Objectives and Good Practice Guidance'* supports the separation of the services.

- *The Future Management of Ambulance Services in NI: Merger Proposal,* recommends 'the development, through separate management arrangements, of patient transport services'. This document also recommends that a 'tiering of the Service should be further developed' and identifies the benefits that such a move would achieve.

10.3 The NIAS *Strategic Direction 1999–2004* states that one of its objectives is " ...to strengthen the Patient Care Services position as the preferred provider to the hospital Trusts by working to secure the continuous separation of the Patient Care Services from the Accident and Emergency Service".

10.4 The modelling of emergency and urgent activity using the SMOSS Model (Section 9) confirmed that the removal of non-emergency and non-urgent work from the A&E crews has the potential to reduce the additional resources required to improve 999 response times. A survey completed by NIAS showed that during 8am – 4pm on a typical day A&E crews operating throughout NI were unavailable to respond to a 999 call on average 50% of the time. This is due to their being engaged in other activities, such as already responding to an emergency or urgent call; carrying out patient transfers; or participating in other work, including transporting patients who should be carried on PCS vehicles.

10.5 An example of the impact of the reallocation of routine work can be seen where a PCS vehicle with stretcher capability, operating from 10am – 6pm five days a week, has been introduced as a pilot at the Royal Victoria Hospital (RVH). Dealing with internal transfers only, the pilot has helped increase the availability of A&E crews significantly.

10.6 Some difficulties identified with separation of the services include:

- The need for design and application of stringent criteria, which will ensure that patients' needs are best met
- Potentially low utilisation of emergency crews, particularly in the rural areas where demand tends to be lower.
- Identifying the level of investment required to bring the "stand alone" PCS up to an acceptable standard
- The need for a larger fleet of multi-functional vehicles and additional manpower
- The current operating hours of the PCS must be reviewed and extended to avoid PCS work being transferred to A&E ambulances in the evenings and at weekends
- Ensuring effective command and control of PCS

10.7 In order to protect the interests of the patient, any proposals for A&E vehicles to carry only emergency and urgent (as identified by GPs) patients, would require a comprehensive review of the current booking process for ambulance transport. To ensure that non emergency and non urgent patients receive the most appropriate mode of transport, those responsible for booking ambulances may need to complete a more structured assessment of patients' needs, with a particular focus on mobility and medical condition. Currently insufficient information is often provided to ambulance control staff regarding patients specific requirements and needs. As a result, a significant proportion of patients' transported by A&E vehicles (as inter-hospital transfers, admissions, or conveyed to health care facilities for specialist investigations) do not require paramedic or technician care during the journey.

CONSULTATION FEEDBACK – SEPARATION OF A&E AND PCS

10.8 The Project Board completed extensive consultations with Borough and District Councils; Health and Social Services Councils; Health and Social Services Boards; and Health and Social Services Trusts. It was clear from the responses analysed that users of both tiers of NIAS (ie: the A&E and PCS Services) are unhappy with the present structure. There were a wide variety of suggestions for change in relation to this issue. The emerging themes are summarised below, **together with justifications as given by the respondents**:

- Currently both tiers of the Service are impacting on each other's roles and responsibilities. There are a number of reasons for this:
  - Inappropriate vehicle booked for call eg: A&E vehicle booked when PCS transport would have been more appropriate
  - Inappropriate vehicle used due to lack of availability of appropriate vehicle eg: PCS vehicle sent to carry out inter-hospital transfer
  - A&E vehicles being misused due to unavailability of PCS service eg: transport of patients' home from hospital clinics after 5pm.
  - The current system of PCS management is not efficient for several reasons. These include the four Board area approach (journeys often duplicated across Boards areas); inefficient use of fleet; inefficient fleet management; and difficulties experienced by users regarding bookings

- Changes need to be made to the management of Patient Care Services these include:
  - PCS should in the future be separately managed, either within or outside NIAS
  - PCS hours of service need to be reviewed and redefined to fulfil needs of patients
  - PCS would be better managed by their commissioners (eg: Trusts, GPs etc).
  - PCS could be integrated with the current Social Services transport system

10.9 A focus group held with representatives from NIAS Patient Care Service reinforced the need for change. Emerging themes from this meeting were the following:

- The PCS is under resourced
- PCS should liaise more closely with commissioners and users of the service
- PCS should be managed separately, preferably without regard to Board boundaries. Currently this service is viewed as a low priority in comparison to other Ambulance Service business
- Improvement must be made to the quality of service
- There are significant variations in the service being delivered within each Division. For example, the Eastern Division has a separate planning team; operates double-manned wheelchair vehicles; and has a unique 'high dependency tier' which works closely with the A&E tier to release capacity to meet demand for 999 and urgent calls. A similar intermediate care tier is used in some services in the UK and contributes significantly to protecting the A&E resource.

THE WAY FORWARD

10.10 There is strong support for the complete separation of emergency and non-emergency (PCS) transport services. In light of this, the Project Board recommends that:

- The A&E and PCS tiers of the NIAS should be separated
- More effective links must be developed between Patient Care Service providers; hospital and community services; and purchasers; in order to improve both the efficiency and the quality of the service
- Commissioning for Patient Care Services should be transferred to the acute and community Trusts, with the involvement of GPs
- Trusts should design the specification of their Patient Care Service requirements and ensure accountability for their delivery.
- Service level agreements for the provision of Patient Care Service should have an agreed process for annual revision against performance targets.

PROPOSED MODEL FOR THE DESIGN OF A FUTURE PCS SERVICE

10.11 The following components should form part of any future model:

Service Level Agreement

The service level agreement should include as a minimum the following elements:

- Flexibility to allow for variations in activity
- Commitment for a minimum of three years
- A specification detailing the patient information required by the Ambulance Service
- Protocols and systems to identify patients who may be at risk if PCS vehicles are delayed
- Responsibilities of the purchaser and the provider in relation to the agreement set out.

Service Standards

The specified service standards should include:

- Arrival time versus appointment time
- Patient waiting time after treatment
- Agreed specified arrangements for day care units
- Time spent on the vehicle by the patient
- Criteria of comfort and timeliness, ensuring that patients will be transported in appropriate vehicles without detriment to their medical condition.

Performance Monitoring and Reporting

Purchasers and the Patient Care Service should work together to monitor performance in relation to the service level agreement.

EQUALITY

10.12 If, as recommended, non-emergency services are funded and operated on a more local level, the need for rigorous monitoring of standards will be extremely important, particularly in ensuring that a high level of service is provided across all parts of Northern Ireland, to ensure that the requirements of a new equality agenda are met. In determining the re-allocation of funds for the separation of A&E and PCS services, it will be important that a full equality impact assessment is carried out.

CONCLUSION

10.13 The A&E and PCS services should operate as two separate entities with the A&E tier being funded centrally and the PCS being funded and operating on a more local level. The main advantages of this configuration would be:

- Minimising the number of expensive A&E resources required to meet the performance targets
- Offering an enhanced quality service to non-emergency patients by avoiding the current situation where ambulances are withdrawn from non-emergency work in order to deal with emergency calls.
- Local solutions to local problems being facilitated
- A more sensitive funding mechanism being developed for the provision of ambulance services as a whole for Northern Ireland.

FINANCIAL IMPLICATIONS

10.14 In order to achieve greater capacity in the A&E service there needs to be a clear definition and separation of the workloads of the respective tiers. To do this will require the PCS tier to absorb the non emergency activity redistributed from the A&E tier.

10.15 A study carried out in 1997 revealed that in one Board area the cost of replacing the non-emergency workload carried out by A&E staff would be an additional £334,000 per annum of PCS costs, with a need for 10 additional vehicles to be purchased or leased. If this approach is extrapolated to the whole of Northern Ireland it would require recurrent expenditure of £1,336,000 over and above the cost of the capital of the vehicles.

10.16 It has been highlighted in Section 9 of this Report that a reduction in the non-emergency workload of A&E staff will have a beneficial effect within existing A&E resources. This could also reduce the additional ambulance resources required for achieving the new proposed A&E performance targets.

RECOMMENDATIONS

- The A&E tier of the NIAS should be separated from the PCS tier
- More effective links should be developed between PCS providers; hospital and community services; and purchasers, in order to improve both the efficiency and the quality of the Service
- Commissioning for PCS should be transferred to acute and community Trusts, with the involvement of GPs
- The responsibility for PCS specifications should be devolved to Trusts to ensure accountability for its delivery.
- Service level agreements for the provision of PCS should be reviewed annually against agreed performance targets.

The Ambulance Fleet Services: A&E and PCS Services

11

INTRODUCTION

11.1 It is the expectation of the general public and the Government that NIAS meets Patient Charter response times. An essential factor in achieving this objective is the ability of the Ambulance Service to operate a safe and reliable fleet.

11.2 Specialist ambulance vehicles are expensive to procure and maintain. They must at all times meet the various Road Traffic Acts; comply with legislation associated with fleet operations; and satisfy health and safety standards.

11.3 It is recognised that there have been difficulties in the past few years since the merger of the four ambulance services into a single Trust. A major problem has been the reliability of NIAS fleet which has been the subject of much media attention. The predominant causes of these difficulties have been an ageing fleet profile and problems in securing funding for vehicle replacement. However the contribution from the Department of Health and Health Boards in terms of the release of additional capital to assist NIAS in resolving these difficulties since the merger should be acknowledged. Having assessed the current situation, it is the Project Board's opinion that NIAS must address the remaining difficulties associated with its fleet, these largely concern the lack of proactive fleet management. This is a critical aspect of the Trust's responsibilities.

FLEET MAINTENANCE AND MANAGEMENT ARRANGEMENTS

Current

11.4 Both in-house and external contractors carry out the maintenance of NIAS fleet. Due to its location (Broadway, Belfast) the in-house department is primarily utilised by the Eastern Division with the other Divisions using local contractors in their areas. When a vehicle requires maintenance work, it is taken off the road and replaced with one of the Division's spares. Due to the geography of the area and the specialist nature of the fleet, this 'down time' for the vehicles is often significant. In addition, some vehicles can only be maintained by certain garages to ensure validity of their warranties.

11.5 The management of NIAS fleet is the responsibility of the Director of Operations. Day to day management is delegated to Divisional Managers and

Station Officers, these arrangements are completely inadequate to address a fundamental part of the Trust infrastructure.

Future

11.5 Ambulance services have now recognised the need to ensure that there is a department within the organisation responsible for fleet management and maintenance. Commonly ambulance services employ a Fleet Manager. At present, NIAS does not have a dedicated manager or support team responsible for the procurement, maintenance and quality assurance of its fleet and ancillary equipment. Consequently, the current fleet management arrangements are completely inadequate. To ensure best practice in fleet management and vehicle maintenance NIAS must:

- Secure professional fleet management expertise
- Improve its fleet management information
- Implement a replacement policy shaped by whole life costs of vehicles
- Move towards standardising vehicles
- Have a regular cost effective maintenance programme

THE AMBULANCE FLEET

11.7 The table below describes the type, number and function of vehicles currently in service within NIAS.

NIAS Current Fleet (1999)

FLEET	NUMBER	FUNCTION
A&E Vehicles	135	Blue light vehicles used for responding to 999 and urgent calls. Equipped with 2 stretchers
Cardiac Vehicles	2	Specialised vehicles for the emergency transportation of cardiac teams to the scene, followed by transportation of patient. Equipped with 1 stretcher
PCS Vehicles	77	Used for transportation of patients to and from treatment centres. Includes minibuses, wheelchair coaches and tail-lift vehicles
High Dependency	4	Used for transportation of patients with chronic illnesses to and from treatment centres. Equipped with 2 stretchers

Ambulance Cars	20	Provide rapid response to incidents for officers. (Total includes 7 lease vehicles)
Major Incident Vehicles	2	Mobile command and control and emergency equipment vehicles used for support in the event of a major incident
Miscellaneous	3	Includes maintenance, courier and Land Rover
TOTAL	**243**	

VEHICLE REPLACEMENT CRITERIA

11.7 In line with Government guidelines, NIAS should replace its vehicles according to set criteria, as shown below.

Government Vehicle Replacement Criteria

FLEET	REPLACEMENT CRITERIA
Accident & Emergency Vehicles	Over 7 years old ***OR*** 140,000 miles travelled
Patient Care Service Vehicles	Over 5 years old **OR** 70,000 miles travelled

11.9 In April 1995, when the four ambulance services were merged into a single Trust, a review of vehicles in need of replacement due to age was carried out. That review identified the following:

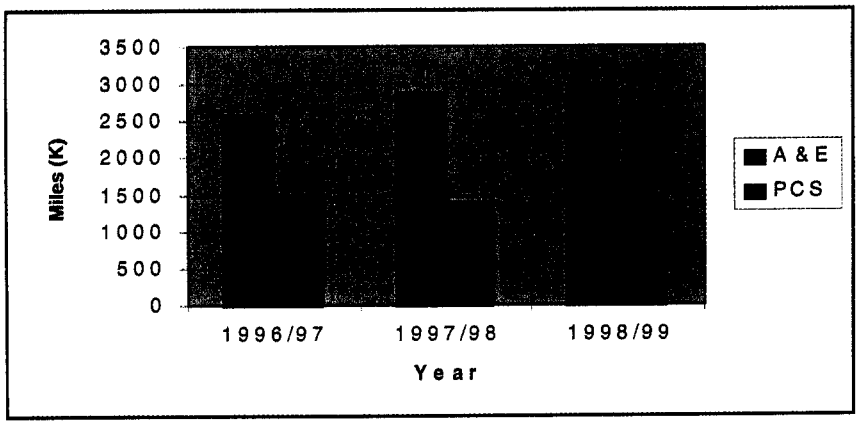
Fleet Position as at 1st April 1995

VEHICLE TYPE	NUMBER DUE FOR REPLACEMENT	% OF TOTAL FLEET
Accident & Emergency Vehicles	27	20%
Patient Care Service Vehicles	43	50%

11.10 In addition to influencing the replacement programme, vehicle mileage is a contributory factor to maintenance and running costs. Since 1996 NIAS has experienced a 14% increase in the overall mileage covered by its A&E fleet.

This is illustrated below. The highest marginal increases were seen in the A&E mileage in the rural divisions.

Mileage of NIAS A&E and PCS Fleet



VEHICLE PROCUREMENT

Capital Funding

11.11 Prior to the creation of a singular Ambulance Trust, the four Area Health Boards funded the replacement of vehicles within their own areas. This disparate funding arrangement did not result in equitable vehicle replacement programmes across the Province, with some Area Boards viewing the procurement of new vehicles as less of a priority than their counterparts in other areas.

11.12 Since the merger, the NIAS Trust, in common with all HSS Trusts, has received an annual capital allocation based on its income. Capital income is the only source of funding for ambulance vehicles and currently amounts to an allocation of £500K per annum. However for the financial year 1999/2000 the allocation has been set at £140K. Due to the nature of the Trust's responsibilities such an approach to capital allocation is not considered acceptable, as it does not allow for an ongoing vehicle replacement programme to be put in place.

11.13 The capital funding required to cover the replacement of vehicles since 1995 has been made available through annual slippage monies from the Department of Health and the transfer of revenue to capital by Area Health Boards. The capital expenditure since 1995/96 is shown below:

	£'000
1995/96	500
1996/97	500
1997/98	2,760
1998/99	500
1999/00	140

NOTE:

1. *In 1998/99 an additional £260K capital was transferred from the Southern HSS Board, making a total of £560K for investment in fleet, in that year.*

2. *In 1999/2000 an additional £500K has been allocated from the initial tranche of £3M funding identified by the then Department of Health for the improvements in Ambulance Services, plus an additional £135K transferred from the Northern HSS Board, making a total of £775K for investment in fleet in-year.*

3. *On 1999/2000 an additional £200K has been provided by the Western HSS Board for investment in PCS vehicles.*

11.14 The £975K capital allocated for 1999/2000 has been earmarked for the purchase of 24 PCS vehicles and five officers cars. A Private Finance Initiative (PFI) business case has been submitted to the DHSS&PS for approval in respect of A&E vehicle purchase. It is anticipated that this will allow 24 A&E vehicles to be replaced this year.

Vehicle Replacement Plans

11.15 In order to ensure the future provision of a safe and reliable service and minimise running costs, NIAS aims to reduce the age of its A&E fleet to under five years. It has designed a replacement cycle programme to meet this objective. It is anticipated that this programme will be reviewed biennially. This biennial review should take account of the implementation of the new response targets; the recommendations for improvement of the A&E service; and the future arrangements for the provision of PCS. This may require additional ambulance cover, possibly in the form of rapid response vehicles. These are less expensive than specialist A&E vehicles.

11.16 Funding for the future replacement of vehicles is being sought through PFI leasing schemes as well as public sector capital.

11.17 The proposed replacement programme is based on the current fleet size. It is anticipated that changes in the operational deployment strategy of the Service (as discussed in Section 9 of this Report) will influence the number, size and types of vehicles required in the future. The main influences will be:

- As vehicles are replaced to meet the guidelines, the average age of the fleet will reduce. This should in turn allow for a reduction in the ratio of frontline operational A&E vehicles to spares. Surplus vehicles could be converted at minimal cost, to high dependency vehicles, which would deal with non urgent and non emergency work.

- Improvements in maintenance arrangements should reduce vehicle downtime and allow the fleet to be rationalised.

CONCLUSION

11.18 It is recommended that NIAS obtains specialist external expertise to identify an optimal fleet size, commensurate with its current operational requirements. From this baseline, a fleet management strategy should be designed which will take account of the proposed phased investment for improvement of response time targets (as discussed in Section 9).

11.19 It is recommended that a fully funded vehicle replacement programme be put in place as a matter of urgency. The programme should be reviewed biennially to ensure optimum fleet size. The current fleet of 135 A&E vehicles is not sustainable. Future arrangements must ensure vehicle profile and therefore future investment, is accordant with the achieving of performance targets.

11.20 It is recommended that NIAS reviews its current fleet management arrangements. The Service needs to have in place a fleet department, managed by a fleet manager with appropriate technical support to complete minor repairs and quality assure contract work. The department should be supported by a computerised fleet management information system.

11.21 NIAS must ensure that there are effective arrangements for minor repairs and quality assurance of maintenance work on vehicles and ancillary equipment (tail-lifts, ramps, trolleys etc). Improvements in these arrangements should result in a reduction in the amount of time vehicles are out of service.

11.22 In addition to ensuring the provision of a safe dependable fleet, the fleet department should also be responsible for securing value for money in respect of the procurement and maintenance of NIAS' fleet.

FINANCIAL IMPLICATIONS

11.23 Based on current fleet size, the public capital requirements would be £1.7M per annum, based on a five-year replacement cycle. However, a PFI approach could offer more cost-effective options for financing such replacements. In addition, there is an urgent need for the current fleet size to be rationalised. If this were achieved, it could have a significant impact on the cost of fleet replacement.

RECOMMENDATIONS

- NIAS must commission an external specialist with expertise in this area, to identify an optimal fleet size, commensurate with its current operational requirements
- NIAS should develop a fleet management strategy which takes account of the proposed phased investment plan for the improvement of response times (as discussed in Section 9)
- NIAS must put in place a fully funded vehicle replacement programme a matter of urgency. The programme should be reviewed biennially to ensure optimum fleet size
- NIAS must establish a fleet department and appoint a fleet manager. The department must be supported by appropriate technical support and have a computerised fleet management information system
- NIAS fleet manager must be responsible for securing value for money in respect of the procurement and maintenance of the fleet
- NIAS must ensure that effective arrangements are in place to carry out minor repairs and quality assurance of maintenance work on vehicles and ancillary equipment (tail-lifts, ramps, trolleys etc)

The Ambulance Estate

12

INTRODUCTION

12.1 A basic contributory factor to an ambulance service's ability to achieve its performance standards is the siting and location of its ambulance stations. NIAS, as shown in the tables below, does have some problems regarding the location of its stations. These have developed for a variety of reasons such as increased traffic, changes in demography etc. Similarly many stations are in a poor state of repair and fall short of acceptable standards.

12.2 A basic breakdown of the estate currently used by NIAS for ambulance station locations is presented below. The location and ownership of each part of the estate across each of the four Divisions are identified and brief comments made as appropriate.

Northern Division

Station	Location	NIAS Owned	Comments
Whiteabbey	Whiteabbey Hospital	No	Recently refurbished Requires additional security
Larne	Moyle Hospital	No	Recently refurbished but poorly sited with poor access for A&E vehicles
Antrim	Masserene Hospital	No	Recently extended and refurbished
Ballymena	Braid Valley	No	Recently refurbished
Magherafelt	Mid-Ulster Hospital	No	Building in poor condition and requires replacement urgently
Cookstown	Orritor Road	Yes	Recently upgraded
Coleraine	Coleraine Hospital	No	Discussions are ongoing with Causeway Trust as to the future location of this station following the relocation of services to the new Causeway Hospital.
Ballymoney	Route Hospital	No	As Coleraine Station above
Ballycastle	Dalriada Hospital	No	Recently refurbished and extended

Southern Division

Station	Location	NIAS Owned	Comments
Newry	Daisy Hill Hospital	Yes	New station recently opened
Kilkeel	Mourne Hospital	Yes	Recently upgraded
Craigavon	Craigavon Hospital	No	Requires refurbishment
Banbridge	Banbridge Hospital	No	Well located but requires upgrading
Armagh	Tower Hill Hospital		Poor access for A&E vehicles from Hospital
Dungannon	South Tyrone Hospital	Yes	Requires some upgrading

Eastern Division

Station	Location	NIAS Owned	Comments
Knockbracken	Knockbracken Healthcare Park	No	Poorly sited and in very poor condition. Requires replacement urgently
Templemore Avenue	Templemore Avenue, Belfast	No	In very poor condition and requires replacement urgent
Broadway	Royal Victoria Hospital	No	In very poor condition and requires redevelopment. Access poor for A&E vehicles
Lisburn	Lagan Valley Hospital	No	Recently relocated to refurbished accommodation
Downpatrick	Downe Hospital	No	Inappropriately sited and in poor condition
Ardoyne	Crumlin Road, Belfast	Yes	Recently upgraded and fairly well situated
Newtownards	John Street, Newtonwards	Yes	Recently upgraded and fairly well situated
Bangor (substation)	Bangor Hospital	No	Improved accommodation has recently been provided, however this location is only sufficient for an outpost station

Western Division

STATION	Location	Owned by NIAS	Comments
Londonderry	Altnagelvin Hospital	Yes	Recently upgraded and reasonably well appointed
Limavady	Roe Valley Hospital	No	In poor condition and in need of replacement
Strabane	Londonderry Road	Yes	Recently upgraded and reasonably well appointed
Enniskillen	Erne Hospital	No	Requires upgrading. Access is also poor for A&E vehicles
Omagh	Omagh Hospital	Yes	Recently upgraded and reasonably well appointed
Castlederg	Derg Valley Hospital	No	The Derg Valley Hospital site has been declared available for disposal. It is likely that this will happen in the next 2-3 years and alternative accommodation must be sought

12.3 It is clear that out of the 28 locations used as station bases, a number are not considered to be satisfactory. Problems which need to be addressed include:

- Stations not meeting current standards - this may be in relation to health and safety or other issues such as no separate provision for female staff
- Stations inappropriately sited: this may be due to increased road traffic blocking access routes, or simply a migration in population densities away from the original station siting
- Inadequate security for vehicles and/or personnel
- Many stations occupied by NIAS are owned by other HPSS Trusts: it is predominately these stations which fall below current standards.

12.4 NIAS' four control centres are located at Knockbracken Healthcare Park; Holywell Hospital; Altnagelvin Hospital; and Craigavon Area Hospital. With the exception of the Craigavon control, which requires work to be undertaken to meet current standards, all centres are in good condition.

12.5 The Trust's estate also includes its headquarters, which are rented from the Eastern Health and Social Services Board. This location is detached from other pivotal functions of the Ambulance Service such as the emergency control centres. It is not considered appropriate for the headquarters of an emergency service.

12.6 NIAS' regional training centre is currently situated at The Beeches in Belfast. This accommodation is rented from another body and over the last few years, has become a less and less appropriate setting for NIAS training. The need for alternative accommodation has been recognised.

CONCLUSION

12.7 In order to ensure a structured management plan is followed, there is a need for an estates strategy to be developed by NIAS. This should encompass all properties utilised by the Trust, leased facilities as well as those that are that are NIAS owned. Adequate funding would also need to be identified in order to support the implementation of the strategy, once developed.

12.8 The strategy must also consider the implications of the introduction of new deployment models aimed at improving response times. This primarily concerns the need to identify an additional 20 deployment locations for A&E crews, in accordance with the recommendations made in Section 9 of this Report. NIAS should explore the potential of sharing such facilities with other emergency services.

12.9 NIAS should identify suitable alternative accommodation for its headquarters and regional training centre functions. Again the potential for sharing facilities with other emergency services should be examined.

RECOMMENDATIONS

- NIAS must develop an estates strategy and support its implementation with adequate funding. The strategy should take into account the implications of the introduction of new deployment models.
- NIAS should identify suitable alternative accommodation for its headquarters and regional training centre functions.
- The potential for sharing facilities with other emergency services should be examined.

The Infrastructure Required by NIAS

13

INTRODUCTION

13.1 When reviewing the communications requirements of NIAS in its entirety, there is a need to incorporate the benefits of the latest technologies (designed to industry standards) to ensure rapid, reliable and cost effective communication. Such communication may be in voice and/or data format and could be made between ambulance vehicles, hospitals and other locations. As part of the Review, the Project Board examined the arrangements for ambulance control and communication, including opportunities for collaboration with other emergency services. The Project Board then sought to identify the level of investment necessary to modernise the system.

13.2 In order to ensure that accurate and up to date information was available to inform the analysis of NIAS' current position with regard to this area, the Project Board appointed Mason Communications Ltd to undertake an appraisal study covering a series of defined options. This section of the Report details the findings of the "Control and Communication Appraisal Study" which was carried out and includes recommendations on the way forward.

THE CURRENT POSITION

13.3 The Appraisal Study concluded that current technology within NIAS was either at, or nearing, the end of its useful life. The radio communication systems implemented five years ago are now obsolete and no longer fully supported by the manufacturers. Although the four area ambulance services became a single ambulance service Trust in 1995, most of the existing systems and processes remain configured to serve the original four Board areas. There was very little evidence of the integration needed to establish a communication system which would effectively span all Board areas.

13.4 NIAS Trust inherited four area ambulance control and communication centres employing a total of 60 staff. The centres are located at:

- Belfast - Eastern Division
- Antrim - Northern Division
- Craigavon - Southern Division
- Londonderry - Western Division

13.5 Each control centre is equipped with telephone, radiotelephone and basic computer support. Currently inter-operability between centres is limited.

CONTROL CENTRE OPTIONS

13.6 The Project Board's aim was to identify those options which would increase efficiency; offer best value for money; and modernise the current NIAS ambulance control and communication systems. A major factor here was the need to establish the optimum number of control centres for Northern Ireland. As an integral element of the Appraisal Study, information was gathered in order to model the current activity processes and provide a baseline to determine the effects of both technology and different control centre configurations. The data or information collected related, in general, to the following areas:

- Staffing
- Types of incident
- Incident statistics
- PABX logging information
- Survey of activities
- Activity duration

13.7 The four control centres currently in operation use a variety of different equipment and operational procedures. The Appraisal Study highlighted that it would be advantageous to NIAS if uniform working practices were introduced across the four Board areas. In addition to this, there are a number of gains to be made from consolidating operations into a smaller number of control centres. An analysis of current and projected activity by NIAS identified that a single control centre would allow:

- Better use of resources with a more even workload
- More efficient and uniform call handling, with minimum call queuing times, especially for emergency and urgent calls
- The development and adoption of common practices and procedures
- The separate management of PCS planning and control functions which has the potential to achieve efficiency savings
- Reduced technical and revenue costs

13.8 Although the actual technical solution does not directly affect the decision as to the optimum control centre configuration, the supporting technology will have an impact on overall costs. The costs associated with implementing the correct level of supporting technology for a single control centre, as recommended in the Appraisal, were compared to those for the current four centre configuration. The estimated capital costs for a single centre were £140,000 compared to £560,000 for the four centres. This does not include staff costs. A comparison of revenue costs estimated £30,500 for a single

control compared with £92,000 for the four control centres. These are again exclusive of staff costs; mobile radio network and command and control application.

13.9 An emergency service is measured in terms of its efficiency and effectiveness in handling incidents. Having looked at the options of four, two and one control centres for NIAS, it was concluded that a single control centre would provide the most efficient service. It is therefore recommended that NIAS move to a single communications control centre to handle all A&E operations. It is also recommended that the planning and communications function for the PCS service be separated from that of the A&E service. Future arrangements for PCS planning and communications should take account of the proposed recommendations for operational management of the PCS service. Planning and communications could be managed at Trust level, or alternatively, Trusts may wish to share access to a central planning and communications centre.

STAFFING OPTIONS

13.10 The recommendation that NIAS moves to a single control centre, effectively splits the A&E and PCS functions and also assumes a major investment in new technology. In the current set up of four control centres, a total of eight staff are on duty during the busiest eight hour period of the day, with responsibility for A&E call handling and dispatch activities. The Appraisal Study identified that this could be reduced to five staff in a single control centre. This staffing level would allow NIAS to provide only the same level of service as at present. It does not take account of the need for management and supervisory roles which would be essential for the success of the system.

13.11 The introduction of PDS would result in longer call handling times. This would require one additional control officer to maintain the same level of service as at present during busy periods.

13.12 From the Appraisal Study, it was reasonable to assume that the current level of service provision could be improved. When the concept of a single control centre was modelled as part of the Study, there was a clear indication that, if the current levels of staff were retained, there would be an increase in efficiency. This additional capacity should allow for a more structured approach to be taken to staff breaks. It is anticipated that this, in return, would result in greater staff alertness; improved productivity; and accuracy. As shown by the Appraisal Study, these factors are hard to quantify but do have an impact on the effectiveness of control centre operations.

13.13 It is recognised that a move to a single control centre would involve significant human resource issues. NIAS will need to address these. In the long term it is anticipated that there will be significant savings on staff costs. However, in the short term, there will be transitional staff costs involved.

13.14 The Southern Division of NIAS operates on an eight-hour shift pattern, whereas the other three Divisions work on a twelve-hour shift pattern. As they are involved in a safety-critical business, it is essential that control staff are

alert at all times. In light of the recommendation that NIAS move to a single control centre, it is felt that a 12 hour shift pattern would not be suitable due to the increase in the overall workload.

13.15 The efficiency gains of a single consolidated control centre are likely to lead to lower staffing level requirements in periods of low activity. For example, there are currently nine staff on duty across the four Board areas during the night. However, in a single control centre scenario, this level of staffing could not be justified.

13.16 The Appraisal modelled the effect on staffing levels within a single control centre of the introduction of new applications and technology. The applications modelled were Calling Line Identity (CLI) and Priority Medical Dispatch (PMD). The results indicated that the introduction of a PMD system would require an additional member of staff because the A&E call handlers would be required to provide on-line advice which increase the length of the telephone call.

13.17 In conclusion, realigning to a single control centre would mean fewer staff would be required to maintain the current level of service. However in the context of an overall review of NIAS the following issues need to be considered:

- A review of staffing levels for a single control to improve productivity and service delivery
- A single control room will have higher overall workloads and therefore may require shift patterns to be revised
- It is essential to maintain separate management and supervisory functions, across call handling; dispatch; and planning processes
- Investment in ongoing training for new systems must not be underestimated. For instance it will be mandatory for staff to complete regular training on the PMD system

OPTIONS FOR FUTURE LOCATION OF CONTROL CENTRE

13.18 There are a number of options available to NIAS with regard to the location of a single communications control centre. These include:

- Refurbishment of an existing communication control centre, provided it meets future staff accommodation and technology requirements
- A purpose-built or refurbished centre at a NIAS location, which does not currently have a control centre situated on it

- A purpose-built or refurbished centre at a location which could potentially facilitate a future joint communication control centre for NIAS and other emergency services, including the Northern Ireland Fire Brigade

13.19 In the short term, the refurbishment of an existing control centre would minimise changes required to the mobile radio system. In the longer term, a location that has the capacity to support collaboration with other frontline emergency services would be advantageous, especially with the implementation of a mobile communications infrastructure supporting all emergency services.

STANDBY CONTROL OPTIONS

13.20 The recommendation that the communication control function of the PCS is detached from that of the A&E, coupled with the migration to a single control centre, highlights the requirement for NIAS to identify a standby or back up control centre. Various options for this should be considered including:

- The identification of a separate location for the communications control function of the PCS which could double as the standby location for the A&E function
- Standby control centre facilities could be made available at NIAS headquarters
- The feasibility of joint standby control facilities with the NIFB should be explored.

CURRENT TECHNOLOGY

13.21 Of the current systems, only the mobile radio base station infrastructure; vehicle radio equipment; and supporting backbone network would be considered as suitable for retention in the short to medium term. It is recommended that to protect future investment, replacement systems must adopt open architectures and industry standards, as well as affording defined upgrade paths.

TECHNICAL RESOURCES & MANAGEMENT ARRANGEMENTS

13.22 Implementation of the radio and communications recommendations would identify a wide range of technologies that will require high levels of integration and on-going technical management. It is recommended that NIAS puts in place appropriate arrangements for the management and support of IT and communications. These arrangements should include a clearly defined

management role within NIAS for IT and communications. It is envisaged that this role should include:

- Responsibility for developing and maintaining an IT and communications strategy
- A capacity to manage all IT service provision and maintenance contracts associated with IT and communications.

SPECIALIST SUPPORT ARRANGEMENTS FOR IT AND COMMUNICATIONS

13.23 NIAS needs to determine the most appropriate provision of the 'hands-on' support required. This may include:

- Employment of suitable staff with the specific level of expertise
- The setting-up of an agreement with the RUC Technology Group responsible for communications; the NI Fire Brigade; and other front-line emergency services for the provision of appropriate technical support. This would achieve economies of scale and source appropriate expertise.
- Outsourcing all or some aspects of IT and communications support.

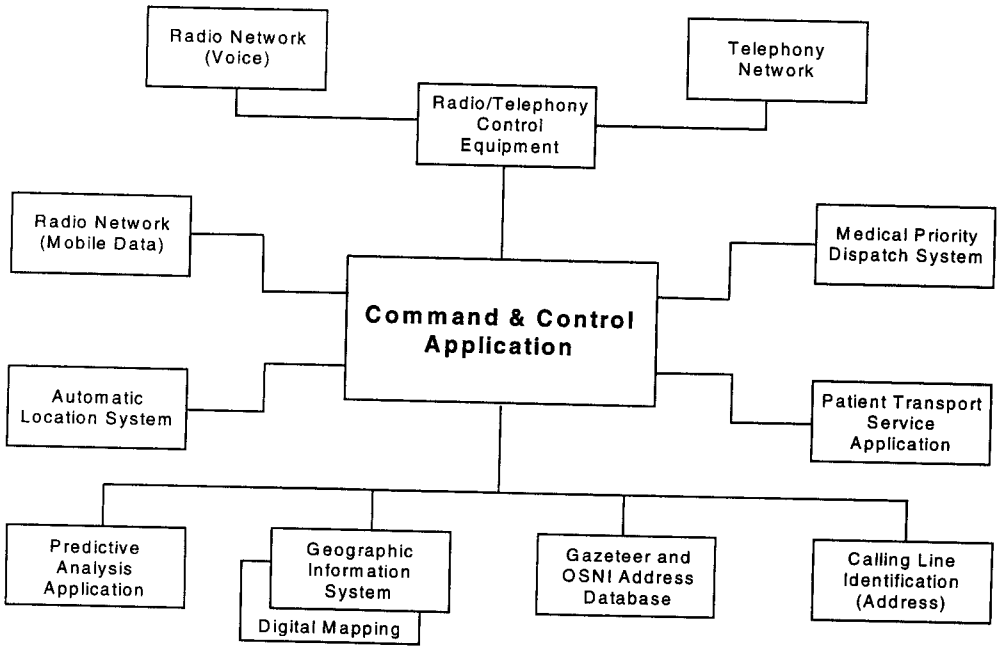
TECHNOLOGY OPTIONS

13.24 To support communications control centre operations, NIAS would need to meet a range of IT and communication requirements including:

- Mobile communications
- Telephony
- IT/IS requirements and wide area network

The overall system components are summarised in the diagram overleaf which is followed by more detailed descriptions of each element. It should be stressed that the diagram does not illustrate the full range of inter-working necessary between each of the systems/applications.

Overall System Configuration



MOBILE COMMUNICATIONS

13.25 Mobile communications are a constantly changing area of technology. The VHF radio communications network currently used by NIAS meets the greater part of the Service's requirements with regard to voice and status information. However, it is anticipated that the VHF system will have reached the end of its life by 2004. In addition, the DTI-RA (Department of Trade & Industry Radio Communications Agency) has indicated that firm plans must be in place by 2004 for the migration of all radio links currently assigned in the 1.5GHz radio band. This is in compliance with international agreements, which, from 2007, will allocate this spectrum for Terrestrial Digital Audio Broadcasting (T-DAB). As a consequence of this change, the NIAS link bearer network, which primarily supports the mobile radio network used, would be seriously affected. An alternative model must therefore be developed. Because of the complexity of the task, NIAS and other emergency services such as Fire and Police, need to start this work as soon as possible.

13.26 It is recommended that NIAS looks towards a full replacement of the mobile radio infrastructure by 2004. The replacement system should support both voice and mobile data transmission. Mobile data uses an advanced, high-speed data transmission system to relay information directly between ambulances and the control centre. The existing VHF radio network is unable to support mobile data transmission. The benefits of utilising mobile data in the provision of an effective ambulance service are summarised in the table opposite.

Benefits of Using Mobile Data

Area of Benefit	Performance Improvement
Pre-Hospital Care	Better informed crew Improved speed & accuracy of information Secure communication for patient details Earlier arrival at the incident
Response to Emergency Calls	Faster dispatch of resources & response to incidents No congestion of radio channels Improved capacity of controllers
Value for Money	Accurate activity reporting & analysis Better resource planning and financial modelling Reduced administration time More cost effective deployment of resources
Crew Safety	Accurate location Congestion free communication

13.27 The introduction of mobile data into NIAS would require either the implementation of a self-provisioned infrastructure or the purchase of the service from an outside provider. The costs of either option would be significant. Because of these potentially high costs, it is recommended that NIAS considers a phased approach to the introduction of mobile data.

13.28 The initial step of such a phased approach could commence with a pilot in the Eastern City Division. The Eastern City Division deals with the highest number of incidents and only four base station sites would require equipment to provide area wide coverage. The estimated cost of the pilot would be £220,000 for equipment and implementation, with £24,000 revenue costs. The benefits of such an approach would be:

- If NIAS puts in place the necessary communications control infrastructure to support mobile data and automatic location with interfaces to command & control and geographic information system (GIS) these applications could be then used again on the DTRS network. This is discussed in more detail in the next paragraph.

- Initial capital outlay is minimised whilst NIAS has the opportunity to put in place processes and procedures which make best use of mobile data.

THE DTRS RADIO STANDARD

13.29 Currently, if mobile voice and data communications are required, disparate systems need to be implemented, or services contracted. The DTRS standard will provide a solution to this difficulty, providing the basis for a mobile communications infrastructure supporting both voice and data. DTRS is an open European standard for digital radio designed primarily to meet the requirements of the emergency services. During the course of the Appraisal Study, meetings were held with the RUC Technology Group to ascertain its position with regard to the implementation of a DTRS infrastructure in Northern Ireland. It was confirmed that there are plans for the introduction of a digital trunked infrastructure in 2001. Roll-out should be complete by 2003, at which point 'sharers' could be realistically introduced onto the system. The RUC Technology Group is managing this project in collaboration with the other emergency services.

13.30 It is recommended that NIAS ensures that it has suitable representation and input into the RUC Technology Group responsible for implementing the DTRS network implementation project. Such representation should ensure that the requirements of NIAS are taken into account and that a suitable replacement to the current VHF network is identified prior to its replacement date of 2004. The sharing of a DTRS infrastructure would remove the need for NIAS to:

- Procure a replacement radio system: it is likely that the DTRS network would be provided as part of a service level agreement
- Significantly upgrade the existing bearer network due to international frequency changes
- Maintain both a mobile radio and supporting bearer network
- Contract for the use of hill-top sites as these costs would be included as an integral element of the service where appropriate.

13.31 There would be significant additional benefits from migrating to a shared DTRS infrastructure. These would include:

- Utilisation of a single infrastructure supporting both voice and data simultaneously
- The use of the same frequency band for both vehicle and handheld radio equipment
- Improved infrastructure providing better coverage for handheld radio equipment
- The ability to communicate with the other emergency services at incidents, especially major incidents, where co-ordination is essential

- The provision of radio communications for NIAS as a fully managed service without maintenance, system management or upgrade.

TELEPHONY

13.32 Every incident commences with an incoming telephone call. The presentation of these calls to the control centre operators is vital to the efficient operation of a communications and control centre. The current telephony platforms in use are both disparate and outdated. In addition there is a need for an integrated telephony system for the whole of NIAS and not just for the control function. Many technological advances have also taken place with regard to telephony, resulting in a significant amount of information being available to a call taker before even speaking to the caller. Examples of this include:

- Calling Line Identification (CLI)

  For fixed telephone equipment the caller's line number can be displayed. This information can then be used to identify the particular area the caller is located in or, using a reverse telephone directory, to provide an initial indication of the caller's address. For mobile telephones it is now possible to identify which cell a call is being made from and therefore to accurately locate the caller.

- EISEC (Enhanced Information Service for Emergency Calls)

  New developments in call handling technology can now provide the name and address of a caller to a call taker, within five seconds of receipt of the call.

13.33 It is also possible to interface to the command and control application which provides address information with a GIS application. This facility enables call dispatchers to locate the caller's address, while the call taker begins dialogue with the caller. The system immediately identifies the nearest available ambulance which can then be pre-alerted and respond to the incident.

13.34 NIAS needs to put in place a common telephony platform to provide an integrated voice network. Currently there are disparate telephony switches in operation, of which only the Eastern Control switch could be upgraded and reused at NIAS headquarters. A new Meridian Option 61 switch is recommended for the control and communications centre. It is also recommended that the current telephony switches are replaced with a common telephony platform providing an integrated voice network. This platform should support all the telephony features and facilities required to operate an efficient emergency service.

TELEPHONY CALL LOGGING

13.35 Call logging provides statistics enabling assessment of the level of service being provided by NIAS. The information collated includes time taken to answer calls; call duration; numbers of calls; and their distribution. It provides a standard means of measurement for the emergency services and allows targets to be set for:

- Time to answer 999 calls
- Time to answer other urgent calls
- Time to answer other calls.

These measures would allow NIAS to monitor control centre staffing levels against activity and to ensure that staffing is appropriate to the level of incoming calls at various times of the day. This is important information if NIAS is to be able to proactively manage the service it is providing to the public. Consequently it is recommended that call logging facilities are implemented at the communications control facility.

INTEGRATED RADIO AND TELEPHONY CONTROL

13.36 It is common for emergency services to utilise an integrated radio and telephony control system. Such systems provide for the integration and presentation of radio and telephony traffic onto a number of operator consoles in the control room. The presentation is such that it allows high levels of flexibility in operational terms: operators are able to select access to both radio and telephony channels, as well as providing inter-connect facilities.

13.37 NIAS' existing radio control equipment requires urgent replacement. The specification for the replacement of this equipment needs to detail the requirement for a solution based on an open system architecture which would support an interface with a DTRS network and provide a high level of integration with the command & control application and telephony network. It is recommended that NIAS puts in place a common telephony platform, providing an integrated voice network. The voice network should be planned to allow extensions out to ambulance stations as an integral element of the corporate network. The provision of an integrated radio and telephony control solution is essential to the development of NIAS.

COMMUNICATIONS WITH ACCIDENT & EMERGENCY DEPARTMENTS

3.38 The importance of implementing systems that can facilitate communications between Accident and Emergency Departments and NIAS personnel has also been recognised. The proposed integrated radio and telephone applications

would enable communication using both voice and data as required. This would allow crews to forward information prior to their arrival at an Accident and Emergency Department. Conversely it would allow crews to access specialist on-line medical advice when required.

IT/IS Requirements

13.39 The current IT/IS infrastructure for NIAS is based on old technology which has limited operational benefits. The present infrastructure is in need of replacement, with little (if any) of the present equipment been suitable for retention and incorporation into the future system. The IT/IS requirements for NIAS can be categorised as follows:

- IT/IS strategy
- Applications
- Hardware
- Networking and infrastructure
- Training.

IT/IS STRATEGY

13.40 The Project Board was disappointed that NIAS had not developed an IT/IS strategy for the organisation. The development of an IT/IS strategy is central to the development and management of systems within any organisation. At present NIAS does not have in place a formal IT/IS strategy and would need to address this issue. The IT/IS strategy should clearly identify both the hardware and software applications required to support the operation of NIAS in the short and medium terms: it should therefore cover at least the next five years. The strategy would need to encapsulate the requirements of NIAS as a whole, including:

- Ambulance Service headquarters
- Ambulance stations
- Communications control centre(s)
- External connectivity (NHSNet, other agencies, etc)

13.41 Having examined applications currently in use across NIAS, the strategy would then need to identify suitable new applications. These should be considered in terms of their ability to aid NIAS in meeting its objectives. They should therefore cover the areas identified below:

- Specific areas such as payroll; fleet management; bed management; patient transport system; command & control; and management information

- Office applications and their networking (eg Microsoft Office, Lotus etc); office automation facilities including e-mail; PC networking; and remote dial-in facilities.

- The generation of management information to support performance monitoring and appropriate returns to commissioners and the Department of Health

It is recommended that NIAS develop an IT/IS Strategy to achieve short and long term objectives for the next five years. Such a strategy should be continually updated in the future.

APPLICATIONS

13.42 The main focus of this part of the Review was on the command and control system. The current application (which is an 'incident management' rather than a 'command and control' system) and supporting infrastructure, are quite old. The suppliers of the current system has indicated to NIAS that it will not be developed any further and that they intend to withdraw their technical support in the future. It is recommended that NIAS replaces its current incident management application with a more modern command and control application. The new application should be able to support the range of elements of functionality shown below. A phased approach should be taken with regard to its procurement. The elements required include:

- **Windows Interface:** The application needs to support a more intuitive user interface including 'drop down menus' and selection fields which reduce human input errors caused when entering text.

- **Call Handling:** This element supports speedy input of caller and incident details. In more advanced systems, use is made of the historical information held on the system to suggest relevant details that can speed up data entry.

- **Call Line Identification (CLI):** As CLI and EISEC become more readily available, the automatic insertion of telephone and address details can assist in faster address verification and improved information accuracy.

- **Dispatching:** The dispatching of resources to incidents in a quick and efficient process, supported by other modules such as GIS, Automatic Vehicle Location System (AVLS) and resource management.

- **Resource Management:** The management of resources for any ambulance service is a key factor and knowing a vehicle's location at any time is essential. This element is generally supported by AVLS and GIS modules to determine the location. It also allows information to be displayed visually.

- **Priority Dispatch System (PDS):** This system is gaining rapid acceptance in the handling of 999 emergency calls. Using a proven software package, it allows the call handler to prioritise calls as either life-

threatening; serious; or non urgent. The most appropriate response is then despatched, while the dispatcher provides on-line advice to the caller.

- **Rostering:** Ambulance services currently operate increasingly more complex rostering schedules so that staffing levels can be matched with incident activity throughout the day. Applications are now available which can assist with this task. Typically, these are independent modules that integrate with the main command & control application.

- **Gazetteer:** Sometimes referred to as a geobase, this application holds information regarding all streets; premises; and locations within the operational area.

- **Geographical Information System (GIS):** This is a system which provides geographically related information. It is based on up-to-date Ordnance Survey mapping information. The system facilitates the identification and mapping of fixed and mobile ambulance resources as well as the location of incidents.

- **Management Information System (MIS):** A Management Information System is the central database which holds the core information for NIAS in its entirety. For example, management and operating statistics can be captured and stored on it. The following features are common elements of MIS systems:

    - Fleet management
    - Staff records/rostering system
    - Management information reports

- **Automatic Vehicle Location System (AVLS):** This application is increasingly being used to support the identification of the nearest resource to an incident and is again integrated with the GIS.

- **Mobilising based on Historical Information:** A number of ambulance services working in primarily urban populations have recognised the benefits of using historical information to place resources in areas where it has been statistically proven that an incident is likely to occur. The strategic location of resources in this way contributes to improved response times.

- **Mobile Data:** Mobile data terminals are becoming more common in vehicles, allowing for the two-way exchange of information and a more efficient use of radio systems. Data messaging is also more accurate than plain speech.

NETWORKING AND INFRASTRUCTURE

13.43 An enterprise-wide voice and data network would enable NIAS control to connect with voice and data networks from remote fixed locations (eg: hospitals and regional offices). The advantages of such a network include:

- Free calls between sites
- Two way voice call from mobile units to any user within the network global e-mail system
- Possibility of setting up an Intranet for all ambulance service personnel
- Possibility of single point of connection to the Internet
- Possibility of connection to other databases (eg patient health records)
- Possibility of advanced information on A&E patients to be transferred to appropriate hospitals and consultants.

It is recommended that NIAS considers an enterprise-wide voice and data network which would provide an opportunity for all NIAS locations to have secure access to appropriate applications and information management systems. This could be considered in collaboration with the Northern Ireland Fire Brigade.

TRAINING

13.44 With the implementation of new systems the training needs of staff cannot be overlooked. The Review showed that frequently within NIAS, systems have gained reduced user acceptance due to a lack of quality training. Training must be provided as part of a structured programme which ensures skills are upgraded continually. Skills can be categorised into two types:

- End User Skills - to ensure that systems are operated effectively
- Technical Support Skills - to ensure that technical support is available.

13.45 It is recommended that NIAS, as part of any systems procurement, ensures that a training strategy is produced that identifies staff training requirements; time schedules; and costs. Costs for current and on-going training must be included within any budget.

COLLABORATION

13.46 With current Government policy working to achieve 'joined-up government' and an emphasis on 'best value', the Ambulance Service must ensure that any opportunities for collaboration with, primarily, other emergency services is thoroughly investigated.

13.47 There are a number of potential and real opportunities to share communications and IT systems with the other services. These include:

- A multi-agency DTRS radio infrastructure
- Working with the Northern Ireland Fire Brigade to:
  - Investigate a shared mobile data infrastructure as an interim to the multi-agency DTRS solution;
  - Lever benefits from the recently implemented Province-wide Fire Brigade voice and data network, including access to paging services;
  - Reduce revenue costs where both Services require access to the same data sets eg: mapping systems
  - Share common management and finance applications;
  - Identify the practicalities of the provision of technical support which can be shared between the two Services; and
  - Put in place the framework to allow a shared communications control centre to be a reality in the future.

13.48 There are significant benefits which can be gained from the sharing of IT and communications facilities. To this end, it is recommended that the Ambulance Service monitor closely the three multi-agency communication pilots currently underway in England. These are funded by the NHS through the Government's 'Invest to Save' initiative.

13.49 Through regular meetings between senior personnel in the Fire and Ambulance Services it will be possible to put in place a framework for closer IT and communications collaboration which will benefit both parties. Such a framework should ensure that areas where collaboration can be achieved, without significant cost or compromise to the integrity of either service, are identified and appropriate steps put in place to identify an acceptable migration strategy.

IMPLEMENTATION TIME FRAME

13.50 There is an urgent need for the radio control equipment and the command and control application to be replaced. This must be seen as a priority. However, this work cannot be completed in isolation as the choice of location for the new control centre will have a major impact on the overall timescales for the project.

13.51 An equality impact assessment will also be required in order to assess secondary impacts on areas such as employment.

FINANCIAL IMPLICATIONS RECOMMENDATIONS

13.52 In putting together a draft budget for the implementation of the highest priority technical requirements, costs associated with buildings (and their potential refurbishment) and personnel (either for technical support or working in the control centre) have been excluded. A breakdown of the other elements involved is provided below:

Budgetary Costs for Implementation of Highest Priority Technical Requirements

OPTION	COST
Data Network Requirements	
Command & Control Application (excludes separate GIS, mobile data interface, & medical priority dispatch)	
Radio Network Change	
Radio Control Equipment	
Telephony including call logging	
Medical Priority Dispatch	
Total Capital Cost	£1,100,000
Total Revenue Cost (including maintenance)	£ 225,000

13.53 The recommended solution would require an initial capital budget of about £1.1m for the procurement of equipment. In addition NIAS should budget, as a minimum, an additional 10% for services which would be required to produce requirement specifications and for the management of the overall procurement process. As indicated above, the costs and programme for building refurbishment were considered as being separate from the costs in the Appraisal Study. NIAS must however, put in place appropriate support to

manage the overall project and ensure that the process is managed within defined time and budget constraints. The costs provided identify initial capital costs with full revenue costs. The next step for NIAS would be to build up an overall capital and operating expenditure profile which should include all costs associated with staff; buildings; technology; and support. The following should be considered:

- Other available health service sites
- Potential collaboration with other organisations including public and private partnerships
- The potential of the standardisation of shift patterns to provide more efficient use of resources and achieve improvements in quality
- The potential long term benefits resulting from the rationalisation of four sites to one

13.54 In addition, the human resource issues impacting on existing staff would need to be carefully considered and planned for, to ensure that an effective service can be maintained.

RECOMMENDATIONS

- NIAS should move to a single communications control location
- NIAS should undertake an option appraisal to identify the most appropriate location for a single communications control centre as a matter priority
- The communication and control operations of the A&E tier of the Service must be separate from those of PCS
- NIAS should urgently develop plans, in conjunction with relevant partners, to facilitate the replacement of the mobile radio system prior to migration at the end of 2004
- NIAS should actively participate in any sharers' forum for the RUC-led DTRS project
- NIAS must replace its existing command and control application and radio control equipment as a matter of urgency
- NIAS must replace its existing disparate telephony switches with a common telephony platform
- NIAS must develop and implement an IS/IT strategy

RECOMMENDATIONS (Continued)

- NIAS should consider implementing an enterprise-wide voice and data network
- NIAS should adopt appropriate logging and system management processes
- NIAS should explore the potential for further collaboration with other emergency services
- NIAS should develop closer collaboration with the Fire Brigade and Police Authority in IT and communications
- NIAS must ensure that new technology is based on open industry standards which will allow future expansion and upgrades
- NIAS must ensure that appropriate technical support is available either within the Trust or on a facilities management basis

14 Clinical Skills Development

INTRODUCTION

14.1 An effective ambulance service is one that brings together the appropriate technology and the appropriate people. Properly skilled people are fundamental to the success of any ambulance service. This Section focuses on the area of clinical skills development within NIAS.

14.2 The aims of this Section are to:

- Review the current skill mix and work roles of operational staff
- Review the current arrangements for the organisation; management; training; and development of NIAS operational staff
- Identify the deficiencies in the current provision of training for NIAS
- Assess the impact of changes in current medical practice, technology and service provision on the training and development of ambulance staff
- Make recommendations on the future provision of training for NIAS staff, having regard to effectiveness, efficiency and quality

EQUALITY

14.3 In developing clinical skills, a key consideration should be the potential impact on ethnic minorities. As part of the Review process, the Multi-cultural Resource Centre was contacted for advice. A number of important issues were raised including the need:

- For links with ethnic minority groups to ensure that services are culturally sensitive
- To produce, and encourage the utilisation of, multilingual information leaflets
- For training to ensure that, where there is a language barrier, treatment is not impeded
- To be aware of specific cultural issues which may have an impact on treatment (eg. Muslim women would wish to be treated by female health professionals)

- To encourage the introduction of anti-racist and race awareness training for health professionals.

In order to ensure that clinical skills are developed appropriately, it will be important that NIAS develops links with ethnic minority groups, initially through the Multi-Cultural Resource Centre.

A BACKGROUND TO AMBULANCE TRAINING

14.4 In the early 1960s the need for improved training and better equipment for ambulance services was realised at a national level. To this end, in 1963, the Minister of Health set up a working party charged with making recommendations on ambulance training and equipment. The final report for the training element was issued in 1966 and recommended the following:

- All new entrants to the Service should complete a six week basic training course
- All staff should undertake a refresher course every three years
- All staff should undertake a period of attachment to Accident and Emergency Departments

The recommendations were accepted and, in 1969, twelve training centres throughout the UK facilitated courses to the new standards. Staff completing the course were awarded the Millar Certificate for Ambulance Personnel.

14.5 From the early 1970s, staff from Northern Ireland travelled to GB to train for the Millar Certificate in ambulance training centres. In 1973 the first Northern Ireland ambulance training officers were appointed to work at The Beeches, Belfast. The first courses held were induction training and post proficiency training. In 1978 driver training was added to the syllabus. In 1979 the training school in Belfast was accredited to deliver the basic six-week course. Since then ambulance training has steadily progressed with all staff on frontline ambulances being trained in the use of defibrillators. The first Northern Ireland paramedics received their training in 1990.

14.6 Up until 11th April 1995 a moratorium had been in place on the approval of new ambulance centres. When this was lifted it allowed ambulance services to develop their own training centres provided that they met the National Health Service Training Directorate (NHSTD) quality standards and processes. The training framework and common core syllabus which came into effect on 1st April 1997, established five awards. These were:

- *The NHSTD Ambulance Paramedic Award*
- *The NHSTD Ambulance Technician Award*
- *The NHSTD Ambulance Care Assistant Award*
- *The NHSTD Ambulance Tutor Award*
- *The NHSTD Ambulance Driving Tutor Award.*

14.7 The standards described in the core training adopted by NIAS were designed to meet the requirements of law; the Institute of Health and Care Development (IHCD) Ambulance Standards; the then HSS Executive; and the operational requirements of the Trust. The basic in-service training for the ambulance service was designed by the National Health Service (NHS); the National Health Service Training Directorate (NHSTD); and the Department of Health. The non-strategic operational functions of the NHSTD, including the awarding body, were taken over by the National Health Service Agency and the IHCD. Executive responsibility for ambulance training lies with the National Health Service Executive. It is required by the Secretary of State to ensure an appropriate training and qualification structure for the ambulance service is in place.

14.8 The only legislation that mentions the delivery of care by ambulance paramedics is the Prescription Only Medicines Order (1983). This specifically refers to the IHCD paramedic award, which it recognises as the only ambulance qualification approved by the Secretary of State. An application has been approved which will enable ambulance paramedics to become state-registered under the Council for the Provisions Supplementary to Medicine (CPSM). This proposed registration for paramedics will provide an enforceable means of ensuring that only those who have met national standards of training and competence – and can show that they have been maintaining these standards – will be able to describe themselves as "state-registered". This proposal represents a step forward towards ensuring the safety and protection of the public from unqualified or unsuitably trained individuals. All paramedics employed by NIAS will eventually be required to be CPSM registered.

THE CURRENT OPERATIONAL SKILL MIX

14.9 Prior to the early 1960s, the mobile ambulance service in NI was essentially retained for accident and emergency calls and hospital admissions only. A subsequent growth in demand resulted in the employment of a small number of staff specifically to deal with these calls. Prior to 1967, all ambulance staff were trained in first aid and could have been assigned to an emergency or to an outpatient ambulance. After 1967, when the Millar ambulance aid training was introduced on a national basis, the local services sustained this practice until the national salary structure agreement in 1986. The salary structure agreement reduced the basic working week from 40 to 39 hours. Emergency staff were recruited from the ranks of the non-emergency service and externally. The current skill mix within NIAS comprises:

- Patient Care Staff who deal with non-urgent and non-emergency work
- Qualified Ambulance Persons (technicians) who provide basic ambulance aid and defibrillation skills

- Paramedics who provide extended ambulance aid skills including defibrillation, intubation and the administration of drugs and fluids

14.10 The evolution of the paramedic has had a significant impact on skill mix and workforce planning arrangements. Paramedics are recruited from the ranks of technicians. All technicians are eligible to sit paramedic pre-entry examinations after successfully completing 12 months post qualification probation and gained a further 12 month's field experience. In line with Government policy, NIAS strove to meet the target of one paramedic on every A&E ambulance vehicle by 1996. This national target was set in 1990 and was extended to Northern Ireland in 1992.

CURRENT TRAINING ARRANGEMENTS

14.11 The Regional Ambulance Training Centre is accredited by the IHCD and provides training leading to IHCD Awards. The training team comprises three instructors based at the Centre and a Divisional Training Officer based in each of the Northern, Eastern, and Western Divisions. The team is managed by the Head of Training, who reports to the Director of Human Resources. One administrative officer supports the training team at the regional training centre.

The Role of the Local Ambulance Paramedic Steering Committee

14.12 As stipulated in the Ambulance Services Paramedic Training Manual, all ambulance services must establish a Local Advisory Paramedic Steering Committee (LAPSC). The current Steering Committee for NIAS is chaired by Professor Jennifer Adgey, Consultant Cardiologist.

14.13 The purpose of the LAPSC is to:

- Monitor and audit the standards of training and operational practice of ambulance paramedics
- Approve the tutors (medical, nursing and ambulance services) who take part in the training
- Advise on all ambulance paramedic matters and approve local protocols and procedures
- Advise and assist in the selection of candidates
- Approve the arrangements for paramedic training
- Approve the local arrangements for the three yearly reassessment course and the annual intermediate reassessments.

Patient Care Service Staff Training

14.14 Patient Care Service (PCS) training is aimed at staff who care, and are responsible for, the transportation of the elderly; the infirm; or those with special needs. The training is provided for all staff recruited by NIAS to work in the Patient Care Service. Training consists of a course in advanced driving techniques (one week) and basic ambulance aid (two weeks). On completion of the training, participants are able to provide quality transportation and care for non-emergency patients.

Driver Training Programme

14.15 All staff at Patient Care Service grade undertake 40 hours of driver training which covers aspects of driving common to non–emergency situations. All operational staff engaged in A&E duties are required to undertake the driver training Programme Two. This is an 80-hour driving course specifically designed for aspects of driving common to both non-emergency and emergency situations.

Ambulance Technician Training

14.16 Ambulance technician training for NIAS is an eight week course divided into three modules. On successful completion of this training, ambulance staff undertake a work-based assessment programme over a 12-month period.

Paramedic Training

14.17 Ambulance staff must successfully complete technician training prior to undertaking paramedic training. NIAS offers paramedic training in accordance with the syllabus defined by the IHCD. The syllabus is split into three stages, which cumulatively require a minimum of 360 hours.

STAGE ONE: Anatomy, Physiology and Patient Management – 80 hours minimum

STAGE TWO: Ambulance Paramedic Skills; Theory and Practice – 120 hours minimum

STAGE THREE: Hospital Secondment -160 hours minimum

Ambulance services are responsible for ensuring the reassessment of the paramedics they employ. To maintain their professional qualification, paramedics must attend an accredited training centre within 36 months of completion of Stage 3 of the paramedic training course. Further reassessments then take place on a three yearly basis. This is a mandatory requirement under the IHCD regulations and is fully endorsed by the LAPSC.

The benefits of this training are:

- It ensures the practical and theoretical competency of paramedics
- It enables the Service to update staff on new legislation
- It addresses those procedures that have not been regularly practised and therefore require specific attention as identified through the clinical audit profile.

The hospitals currently participating in paramedic training for NIAS are Altnagelvin; The Ulster, North Down and Ards; RGH; The Mater; Antrim Area and Daisy Hill.

14.18 During the three year period, ambulance paramedics must receive at least one day per year of formal assessment of skills followed, if necessary, by remedial training. Facilities must be made available, if required, to second an ambulance paramedic for a period of hospital training, after consultation with the Chairperson of the Local Ambulance Paramedic Steering Committee. This training is designed to ensure professional competency and is a mandatory requirement. Staff who have completed a three yearly reassessment are not required to complete the annual assessment.

Post-Proficiency Training

14.19 The purpose of post-proficiency training is to ensure that ambulance staff maintain a high level of competency in the performance of their duties. It is a requirement under the terms and conditions of employment that ambulance staff undergo post-proficiency training in the form of 10 days over five years, at a training facility approved by the Regional Training Centre. This training ensures that ambulance technicians and paramedics are provided with the opportunities to strengthen their existing skills and knowledge and to become familiar with the latest developments in patient care and ambulance procedures.

Technician Annual Defibrillation Training

14.20 All ambulance technicians are trained in cardiac arrhythmia recognition and defibrillation. The defibrillator is also used to monitor cardiac conditions, trauma and for general diagnostic monitoring. This training ensures that all ambulance technicians are competent in health and safety procedures in relation to the use of cardiac defibrillators and are conversant with current European and local resuscitation protocols.

The Drivers For Change

14.21 It is evident that NIAS faces many challenges today and in the future. The main factors influencing change were discussed in detail in Section 7 and 8, and largely relate to changes in clinical practice and technological developments. They also include:

- Rising public expectations creating a demand for improvements in the quality of the service and the skills and resources employed
- The increasing interest of the media in the provision of ambulance services
- Changes in social activities and behaviour of the population
- Changes in demographic patterns
- Complying with clinical governance guidelines

THE WAY FORWARD

14.22 The review of clinical skills within NIAS was completed by a sub- group of the Project Board in conjunction with the Medical and Human Resource Directors of NIAS. The sub-group recommended that NIAS continue to adopt the IHCD framework for the development and provision of education training and certification of ambulance personnel.

14.23 It is recommended that the IHCD framework should be revised to include the following additions:

- A further week on to the "Driver Two" programme to ensure consolidation of skills; facilitate inclusion of simulated of emergency drives; and collaborative training with the Police Driver Training Unit on emergency escort techniques
- The Technician Course to be followed by a period of in–hospital training in the following: Accident & Emergency Department, Paediatric Department, Coronary Care Unit, Operating Theatres and Maternity Ward
- Technicians to undertake a period of orientation on operational frontline duties on completion of their basic training. During their probationary year they should complete a competency map and undertake regular tours of duty with a clinical supervisor

The IHCD has launched a revised paramedic syllabus, which has been clinically endorsed by the Joint Royal Colleges and the Ambulance Services Liaison Committee. The structure of the syllabus has been changed to take a

more functional, rather than subject led, approach. The new syllabus includes paediatric care, obstetrics and gynaecology, and trauma management. It is recommended that the NIAS adopt this new paramedic syllabus from its available date of April 2000

REGIONAL AMBULANCE TRAINING CENTRE

14.24 The Regional Ambulance Training Centre at The Beeches, Belfast is accredited by the IHCD and, as such, is licensed to provide training leading to IHCD Awards. In order to maintain its accreditation it is required to undergo periodic reassessment. NIAS was successfully re-accredited in September 1997, after a recommendation to improve the quality of record keeping. This recommendation has been implemented by the introduction of a computerised record keeping system.

14.25 As stated before the Regional Ambulance Training Centre employs a regional training manager, six training officers (three of whom are based out in Divisions) and an administrative assistant. The facility includes two training rooms with a maximum seating capacity of 12; a small resuscitation suite; and three offices. The residential facility comprises of a 17 bedroom block, with very basic facilities. Ambulance training is now organised and provided on a modular framework. The existing facilities do not allow flexibility in catering for large numbers and some elements of training could be provided more cost effectively if larger premises were available. In addition to this, the facilities for administration; keeping records; and storage of equipment are unsatisfactory.

14.26 It is recommended that NIAS explore the possibility of identifying new regional training facilities ideally as a joint ambulance headquarter/control room facility. Alternatively there is potential for this to be done on a shared basis with the Northern Ireland Fire Brigade, which is currently in the process of developing a new training centre at Boucher Road, Belfast.

TRAINING PLANS

14.27 The current recruitment and selection process and the disparate allocation of funds to the training department does not enable the Trust to formulate a long term training plan. It is recommended that a more strategic approach to the planning and organisation of courses is taken. This should be taken forward by the Regional Ambulance Training Centre, in partnership with the Human Resources Department. Training plans should be developed for ambulance staff in association with divisional managers and station officers so that courses can be properly and cost effectively organised on an annual basis. The manpower plan for operational staff must factor in sufficient staff levels to enable the release of personnel for training whilst continuing to meet operational requirements.

TRAINING RESOURCES ON STATION

14.28 The level of equipment and the training facilities available on stations varies considerably. Continual revision of protocols is essential to prevent skill erosion. This can be done through simulation using training aids. It is recommended that advanced life support training equipment is made available for all staff on station.

PROPOSED NEW TRAINING MODULES

14.29 All new proposed training modules should be introduced into NIAS under the auspices of the LAPSC and the Medical Director. The primary objective of adopting this modular approach to training is not only to improve skills and underpinning knowledge, but also to forge closer links between ambulance staff, clinicians and the nursing profession in local acute hospitals. The training modules recommended for NIAS are presented below:

Post-Proficiency Training

Post proficiency training of 10 days every five years is the minimum acceptable. A progressive Service, which must ensure that its staff can deal with the issues presented in a rapidly developing pre-hospital care environment, will require more post-proficiency input. The Review therefore recommends that:

- Special clinical training is devised to radically improve the clinical skills and abilities of accident and emergency staff. The emphasis should be on trauma management, cardiac care, assessment skills and equipment training

- Further post proficiency training should be in the form of an annual clinical skills development module of a minimum of two days per year over five years

- There should be more emphasis on supporting post-proficiency training with work based training

Work Based Training and Assessment

NIAS is committed to developing a competency based training and assessment programme for all A&E staff, in order that training objectives can be met in the work place, in a more cost-effective way. The additional benefits of this training are:

- The ability to perform to a recognised standard in the workplace environment

- Improved quality of care being delivered to patients

- Continual assessment in the workplace

Pre-Hospital Trauma Life Support Training (PHTLS)

The PHTLS course provides a philosophical overview to trauma care, stressing the need to identify and consider the multi-system trauma patient as a unique entity with special and specific needs. These needs may, at times, require an approach that varies from, or exceeds traditional treatment for specific injuries. To this end, the PHTLS course emphasises the need for:

- Rapid assessment of the critical trauma patient
- Treatment for shock and hypoxia
- On scene time to be minimised
- Rapid transportation to an appropriate hospital

Research has shown that using systems of care such as PHTLS significantly improves patient outcomes, thus reducing morbidity and mortality. In addition it results in shorter in-hospital stays which are reflected in reduced costs to the NHS as a whole. The LAPSC is keen to see this training extended to all A&E ambulance staff. This system, which has been internationally adopted, is presented as a complete, regularly-updated package which can be developed and expanded.

Major Incident Medical Management and Support (MIMMS)

MIMMS is a 20 hour multidisciplinary course which provides a structured approach to the major incident scene and to dealing with multiple casualties. The course covers every aspect of the organisation of services, management and support with particular emphasis on:

- Overview, guidance and outline response
- Organisation
- Preparation
- Medical management
- Medical support
- Practical skills

Pre – Hospital Paediatric Life Support

This course is designed to teach providers a systematic approach to the assessment and management of the seriously ill or injured child within a pre-hospital setting. The course is multidisciplinary, designed for doctors, nurses and paramedics. It lasts for two days and has a strong practical emphasis, with small group instruction for key practical skills and patient management scenarios in a realistic environment. There is a summative knowledge and competence-based assessment and re-certification is recommended within three years.

Obstetrics training

NIAS is currently working with Queens University in developing a pre-hospital obstetrics module for paramedics. It follows the framework outlined in the extended paramedic syllabus, ensuring that it is consistent with obstetrics practice in NI.

THE INTRODUCTION OF CLINICAL SUPERVISION

14.30 The Department of Health has defined 'clinical supervision' as a formal process for professional support and learning which enables individual practitioners to develop knowledge and competence; assume responsibility for their own practice; and enhance consumer protection and safety of care in complex clinical situations. NIAS must ensure that standards of clinical practice are adhered to and implemented by personnel. This can be achieved through teaching; assessing and reinforcing in the field; good clinical practice; and the development of clinical networks. Feedback from crews in the field is also vital to the application of such good practice. This can best be achieved by the creation of a clinical supervisor grade to ensure that staff are competently and confidently providing patient care to the required standard. The clinical supervisors would be a new grade of staff and would aim at developing the supervision, training and assessment skills of those members of staff interested in playing an active role in clinical management. Clinical supervisors would have responsibility for managing a small team of staff on station. It is recommended that NIAS develop a new clinical supervisor grade, which will allow management to influence clinical performance and introduce a culture which promotes personal responsibility

14.31 In order to implement and maintain such a system of clinical supervision the following will be necessary:

- Thorough preparation and training of clinical supervisors
- Availability of sufficient resources (time, facilities and personnel)
- Development of good relationships based on mutual trust and respect between the clinical supervisors and the staff they are supervising

- Clinical supervision should be made part of the ethos and culture of the Trust and a requirement for all staff involved in the delivery of patient care

- Regular evaluation of the process and outcomes of clinical supervision by the Clinical Governance Committee.

CONTINUING PROFESSIONAL DEVELOPMENT FOR AMBULANCE STAFF

14.32 The quality of care provided by pre-hospital care personnel in dealing with emergency calls is dependent on the appropriate use of knowledge and psychomotor skills. Traditionally ambulance training has been focused on short intense and regular refresher courses with appropriate use of skills and knowledge being derived from operational experience. Much attention has been focused recently on the benefits of Continuing Professional Development (CPD) for the medical and nursing profession. In the UK CPD is already mandatory for nurses and may soon be for physicians. Little attention however has been given to the provision of CPD for pre-hospital care personnel. Most services concentrate on audit of patient report forms to ensure compliance with protocols and skills practice, rather than on relating care to patient outcome. However, there is clear evidence that CPD improves physician performance and can have beneficial effects on outcome. It is in place in most emergency medical systems in the USA.

14.33 The purpose of CPD education is to:

- Prevent knowledge and skills deterioration

- Present advances in clinical practice

- Evaluate the knowledge and skill of ambulance professionals

- Orientates ambulance personnel to new protocols and protocol changes

- Share organisational strategic plans, problems and goals

- Provide an opportunity for feedback from ambulance personnel

It is recommended that NIAS implements a CPD programme for all A&E staff. This should take the form of set minimum number of hours for each grade. The total hours undertaken should include a mandatory input to meet proficiency or re-certification requirements. Any outstanding hours should be used to address each individual's training needs and allow for personal professional development. The CPD programme should be clinically orientated and expand on the initial training. The programme should be

planned with the Medical Director of NIAS to ensure that all areas of the common core syllabus are included.

14.34 There are a wide variety of formats for CPD programmes, including case reviews; hands on skill review sessions; formal lectures; multidisciplinary courses; and self instructional programmes. Discussion and interaction are desirable to make the CPD relevant to ambulance personnel and to develop clinical decision making. Periodic formal evaluation of skills and knowledge is also necessary as this re-establishes and verifies a minimum competency level.

FUTURE EDUCATION FOR AMBULANCE STAFF

14.35 The education and training of ambulance staff has been the subject of much debate in the UK over recent years. There is a growing realisation that paramedics may need to exercise higher levels of clinical judgement and become more integrated into the mainstream healthcare system, strengthening their links with the medical, nursing and other paramedical professions. The current training system has been criticised on issues such as skills maintenance; continuing education; clinical standards; clinical judgement; quality; and isolation from mainstream clinical education.

14.36 The development of the future paramedic practitioner identifies an urgent need for the current academic standards within the Service to be improved. The emphasis should move towards education in clinical subjects and addressing ways of developing clinical judgement. To achieve this, paramedic training needs to be incorporated within mainstream medical and nursing training. As part of their training, paramedics need additional exposure to the multitude of medical and surgical emergencies. This would better equip them to deal with such conditions by improving their understanding of the rationale behind assessment, decision making and treatment. These aims could be achieved through developing closer links with the medical and nursing professions via clinical networking, or through the development of third level education programmes.

14.37 Clinical networking is the sharing of experience, expertise and resources. The emphasis is on connection and partnership rather than isolation and self-sufficiency; on distribution of resources rather than centralisation; and on maximising the benefits for all patients. The introduction of clinical networks would offer the best basis for an equitable, rational and sustainable, pre–hospital care system. Education programmes could be offered at diploma, certificate and degree level. Some ambulance services in the UK have already taken the lead and have entered into partnerships with universities. For example, University of Wales (BSc in Pre-hospital Care) University of Hertfordshire (BSc in Paramedic Science) and University of Northumbria (MSc Health Services Research). These courses can be undertaken by students before entering the ambulance service, whilst in service, or at postgraduate level.

14.38 It is recommended that NIAS forge links with local Universities to provide further education to certificate and diploma level for existing ambulance staff. It is further recommended that a degree course be developed aimed at school leavers, existing ambulance paramedics and mature students.

THE NIAS TRAINING STRATEGY

14.39 NIAS needs to ensure that it can comply with statutory standards in respect of training. The Service must support the principle of lifelong learning. The delivery of a modern quality service to patients requires appropriate investment in staff. It is recommended that NIAS formulates a training strategy which will:

- Promote continual revision to the way in which training is delivered to staff
- Seek improvement to the design of programmes consistent with the achievement of national standards
- Clearly identify the levels of investment needed in the training infrastructure through an investment plan

14.40 The key objectives of the Trust's training and staff development strategy should therefore reflect the following:

- Continue to reduce loss of life and reduce morbidity, by maintaining and improving quality of care
- Ensure appropriate training and re-certification of all NIAS personnel
- Develop NIAS to meet the challenges arising from changes in medical practice, clinical developments and new technology
- Comply with statutory regulations and health and safety legislation
- Ensure compliance with the regulations and guidelines relating to the administration of drugs and intravenous fluids under the Prescriptions only Medicines Order
- Continue to provide quality training at the Regional Ambulance Training Centre in accordance with the standard set by the Institute of Health Care and Development (IHCD)
- Maintain high morale and motivation among staff and managers and enhance relationships with the medical and nursing profession
- Continue to ensure public confidence in the provision of an ambulance service.

CONCLUSION

There must be a continual review of the delivery of training. Improvements should be sought in the design of training programmes consistent with the achievement of national standards and clinical need.

FINANCIAL IMPLICATIONS

14.41 The training budget for NIAS is agreed independently by each of the four Health Boards, as part of their annual service level agreements. Problems often arise due to each Board having different training priorities. The amount allocated to training is historically based on pre-merger figures, with additional funding being made available for paramedic training. This disparate funding arrangement has inhibited the implementation a long-term training plan which will ensure equitable skill levels and competencies throughout NIAS. It is recommended that there is a unified budget allocated to training which enables NIAS to plan longer term and allocate resources more cost effectively to meet its training needs.

14.42 In addition to the mandatory training budget there will be an ongoing need to identify funds for future changes in skills required by ambulance personnel for instance, paediatric care; new control arrangements; and work based training and assessment. It is essential that the Trust develops a comprehensive training strategy and plan to support the investments in training which may be required.

14.43 It is assumed that clinical supervisor grades would build on the existing paramedic structure. There needs to be an analysis of the appropriate ratio of clinical supervisor grades to operational staff. A number of existing paramedics will graduate to the clinical supervisor grade thereby minimising the long term costs of this approach.

RECOMMENDATIONS

- NIAS must develop a training strategy
- NIAS should relocate their regional training facility to a more appropriate location. Consideration should be given to sharing a facility with the NI Fire Brigade
- NIAS should accept the proposed new training modules and the extension to the IHCD common core syllabus
- NIAS should adopt the new paramedic syllabus on its release
- NIAS should develop a new clinical supervisors grade
- NIAS should introduce a programme of Continuing Professional Development for all operational ambulance staff.
- NIAS should seek to improve the clinical development and education of paramedics. This could be achieved by developing closer links with the medical and nursing professions via clinical networking, or through the development of third level education

15 Clinical Governance

INTRODUCTION

15.1 Clinical governance is the means by which organisations ensure the provision of quality clinical care by making individuals accountable for setting, maintaining, and monitoring performance standards. It places the responsibility for the quality of care jointly on organisations and on individuals within organisations. Clinical care is increasingly complex and requires professionals to develop an intricate network of relationships so that they might appropriately exercise their clinical responsibilities in a collective and joint way. The exercise of individual accountability in a multi-professional clinical environment has never been more relevant. Clinical governance is only one aspect of the Service's over-all risk management strategy. In order to provide a consistent and structured approach to the review of risk management within NIAS, the following should be developed:

- A risk management strategy
- Risk profiling
- Incident reporting
- Patient/client records
- Clinical audit
- Complaints
- Policies and procedures
- Communications
- Supervision of junior staff
- Assessing competence
- Health and safety and related issues
- Claims management

15.2 This Section shows how NIAS can comply with these now mandatory requirements of clinical governance. It does so by looking at the main elements of clinical governance:

- Audit
- Quality initiatives
- Clinical effectiveness initiatives
- Risk management
- Research and development.

The Review proposes setting up a Clinical Governance Committee to assess, develop, and implement each of these activities. Each element of clinical governance activity would thus be equally well developed and capable of influencing practice within the Trust.

THE CLINICAL GOVERNANCE COMMITTEE

15.3 Government policy dictates that clinical governance protocols are in place by 1st April 2000 and to this end NIAS needs to be sure that it can meet its responsibilities in this important area. The audit process should therefore be managed by a specific group of senior personnel and Trust Board members. The group could be called the Clinical Governance Committee and would have the responsibility for monitoring, maintaining and improving clinical standards. The membership of this Committee should be:

- Chief Executive
- Chairman of LPASC / External Medical Consultant
- Director of Human Resources
- Training Manager
- Medical or Clinical Director
- Audit Manager

Other people, either from within the Service or from other outside agencies could be invited to join the Committee whenever appropriate. The meetings of the Committee should be frequent and regular and work to proper minutes and agendas.

15.4 The Committee's starting point should be to complete a "governance profile" against each of the five elements outlined at paragraph 15.2 above. Each element should be assessed according to this template:

- Is it being developed?
- How well is it being developed?
- Is it influencing practice?

ESTABLISH A SYSTEM OF CLINICAL AUDIT

15.5 NIAS, in common with all ambulance services, is obliged to measure and improve clinical performance. Clinical protocols must therefore be regularly reviewed and updated in accordance with current evidence-based clinical practice. Patient care must be monitored both in terms of its delivery and outcome in order to recognise where staff or processes fall short of standards. This would ensure the development and maintenance of high quality care.

15.6 Effective clinical audit in NIAS will require the following:

- The creation of a fully funded Clinical Audit Department comprising an audit manager with adequate clerical and IT support
- The development of a system to collect and collate clinical activity data: this will involve a review and amendment of patient report forms and the defining of a minimum data set to be included on each form. It is recommended that this system is introduced as a pilot to assess user requirements prior to the implementation of any new IT/IS systems.

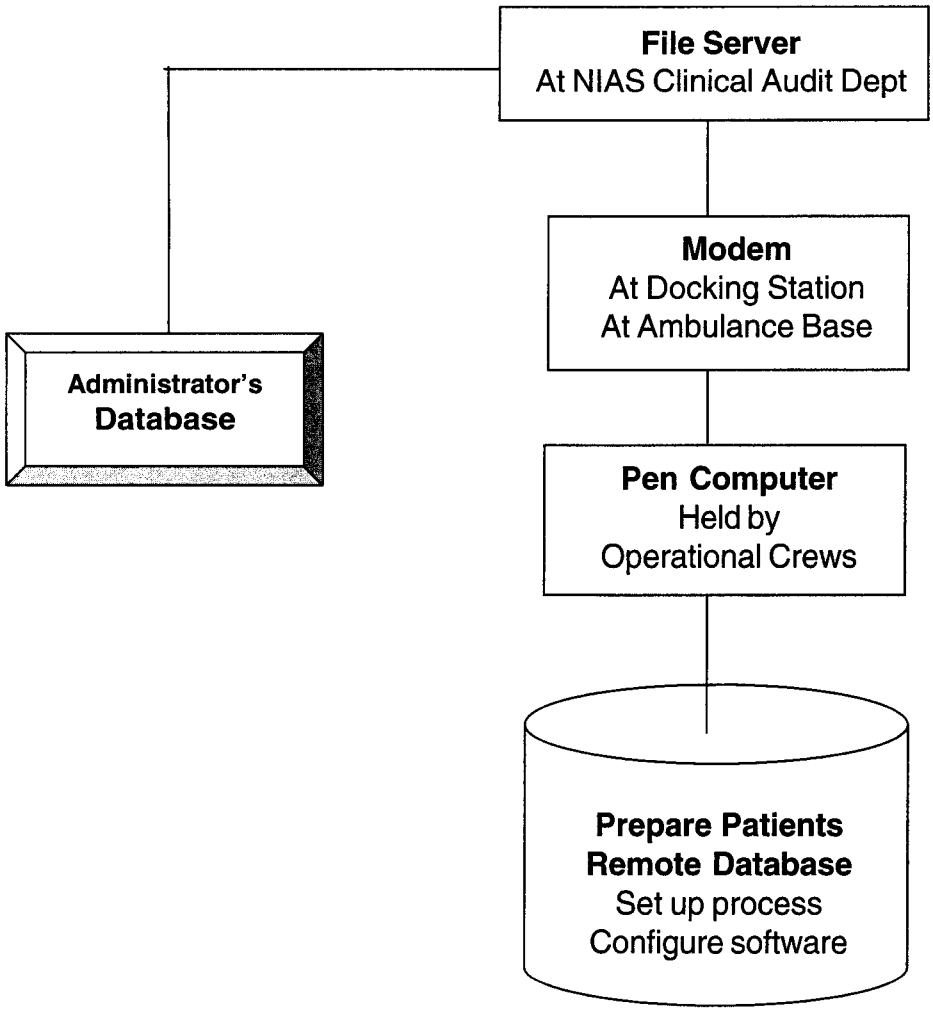
15.7 The effective collection, collation and subsequent analysis of clinical activity data demands the installation of an integrated pre-hospital information system. In essence such a system would:

- Use ambulance-based information technology to log on the details currently manually collected through the patient report form
- Add in supplementary information re location, drug guidance etc
- Transfer these details to the receiving hospital department where they can complement the patient's notes
- Highlight for subsequent review any deficits/gaps in terms of details

- Download, at the end of each shift, all the above information into the NIAS system.

The system can be represented as shown below:

Integrated Pre-Hospital Information System



15.8 The main perceived benefits of the system are:

- Rapid collation and transfer of patient/clinical information
- Easy accessibility from any location
- Critical incident failures, and/or details on specific high risk call categories can be identified

- The monitoring of both the data returns of crews and the quality assurance process itself is facilitated
- Provision of a comprehensive database for audit
- Immediate transfer via the network of any changes to protocols, or other relevant operational information
- The capacity to generate reports on performance; skill use; use of consumables; call profiles; and activity by type and location
- Reduction of the need for storage space and the problems of access to information associated with a paper based system
- All NIAS information will be centrally held in the Clinical Audit Department
- Faster retrieval of information and reduced probability of information being lost
- More accurate stock control

QUALITY INITIATIVES

15.9 Four key tasks are seen as fundamental to the establishment of an NIAS quality regime:

- Establish systems for retraining when deficiencies in the protocols or practice are identified
- Create formal links to share information with, and obtain information from other ambulance Trusts, healthcare professionals and agencies
- Regularly review all new skills and protocols as they are introduced
- Introduce clinical supervision

15.10 Clinical supervision is seen as a formal process for professional support and learning which enables individual practitioners to develop knowledge and competence; assume responsibility for their own practice; and enhance consumer protection and safety of care in complex clinical situations. The only way to ensure that the standards of clinical practice are adhered to and implemented is to teach, assess and reinforce in the field, good practice as determined by the Trust's Clinical Governance Committee. Feedback from the experience of crews in the field is also vital to the application of such good practice. This can most reliably be achieved by the creation of the role of clinical supervisor to ensure that staff are competently and confidently

providing patient care to the required standard. The development of clinical supervisors has been dealt with in Section 14.

CLINICAL EFFECTIVENESS

15.11 The role of the Medical Director is central to the development of clinical effectiveness within NIAS. The Review recommends that NIAS' current part-time Medical Director's post is evolved into a full-time position. Some of the key elements of the Medical Director's role include:

- Giving advice and recommendations to the Trust Board on clinical matters
- Reviewing operational procedures and developing protocols
- Responsibility for Clinical audit
- Liaising with other clinicians
- Dealing with medical complaints
- Establishing areas of clinical risk management
- Providing operational support at incidents
- Fulfilling the role of Medical Incident Officer at major incidents

CLINICAL RISK MANAGEMENT

15.12 A clinical risk management strategy is essential to ensure that patients:

- Receive the highest possible standard of care
- Are treated professionally
- Are treated in accordance with recognised current practice
- Are subject to minimum risk.

Such a risk management strategy must identify; evaluate; monitor; and minimise risk.

15.13 The essential components of a strategy are outlined below:

- A written and agreed risk management strategy
- An executive director with responsibility for clinical risk management

- A clinical incident reporting system
- A policy for rapid follow-up of serious incidents
- An agreed system for the management of complaints
- Appropriate information provided to patients of proposed treatments and verbal consent sought where possible: explanations of possible consequences provided to those not wishing to accept the treatment under the Trust's clinical guidelines
- A comprehensive system for the completion, use, storage and retrieval of patient report forms: record keeping standards monitored throughout the clinical audit process
- An induction/orientation programme for all new clinical staff
- A clinical risk management system.

15.14 A strategy containing these essential components will have seven core elements:

- A system of regular risk assessment of clinical practice
- Reporting of actual or suspected critical, adverse or potentially adverse, or near miss incidents
- Rapid analysis of all complaints and litigation
- Preparation of written clinical standards, guidelines and policies, with regular review of such guidelines and protocols
- An assurance that all staff receive adequate, formal, initial training, appropriate to their position
- The mutual sharing and development of such strategies with other ambulance trusts and healthcare providers and awareness of risk management strategies in other trusts
- The formation of a Clinical Risk Management Group

15.15 The system of risk reduction itself must be subject to regular and formal monitoring. Regular reports on the process and outcome of clinical risk management should be prepared by the Clinical Risk Management Group and submitted to the Trust Board and LAPSC.

RESEARCH AND DEVELOPMENT

15.16 The development of a library containing information regarding current accepted best practice including standard texts, relevant journals and access to clinical databases such Medline, Embase and Cochrane library, is seen as essential. Research of systems should be based on a systematic review process.

SUMMARY

15.17 All NHS Trusts, including ambulance service Trusts, had to introduce a system of clinical governance from April 1999. The key elements of this process as it should apply to NIAS have been highlighted in this Section. Some elements will require further detailed appraisal and discussion. It is recommended that a pilot study for this be implemented as soon as possible. It is also recognised that the implementation of clinical governance involves a major change in culture for NIAS and will involve and impact on every member of staff and management. This will determine further clinical, operational and organisational practice. It is therefore essential that adequate investment is guaranteed for this process.

FINANCIAL IMPLICATIONS

15.18 The additional costs of implementing clinical audit and clinical governance should be supported by a clinical risk strategy led by the Medical Director.

15.19 There will be a need to establish an infrastructure to deliver strong effective clinical governance and audit functions. This should include the creation of a robust audit package.

RECOMMENDATIONS

- NIAS should appoint a full time Medical Director
- NIAS should set up a Clinical Governance Committee with responsibility for the development and implementation of the activities proposed in this Section
- NIAS must establish a Clinical Audit Department
- NIAS must review the current process for collecting and collating data on clinical activity and identify methods of improving it. A pilot scheme aimed at assessing electronic data capture systems, should be undertaken as part of this exercise.

Emergency Planning and NIAS

16

INTRODUCTION

16.1 A major incident is seen as any event (happening with or without warning) causing or threatening death or injury, damage to property or to the environment or disruption to the community, which because of the scale of its effects cannot be dealt with by the emergency services and the public service providers as part of their day to day activities. Over the past 25 years in particular many NIAS staff have experienced such incidents and have had to deliver pre-hospital care in very difficult circumstances. The most recent example of this kind was the Omagh bombing in August 1998. In addition to incidents of this type, emergency services in Northern Ireland, like their counterparts world-wide, face the potential of other manmade and natural disasters, such as aeroplane crashes or major chemical spills. Careful emergency planning is also required for major events, for example, pop concerts or large sporting events. On these occasions, NIAS must ensure that adequate personnel and equipment are on hand to deal with a potential incident, with sufficient back up support easily accessible if necessary.

POLICY AND GUIDANCE ON EMERGENCY PLANNING

16.2 In recognition of the pivotal role that the Ambulance Service holds in dealing with major incidents, the Government requires NIAS to have in place protocols and procedures capable of managing all types of major incident in an effective and efficient manner. Robust emergency planning procedures have thus had to be developed to deal with manmade and natural disasters. This was strongly illustrated in the Innes Review (1997) commissioned by the Emergency Planning Branch of the Northern Ireland Office. The recently published HSS Executive draft Emergency Planning Guidelines (1999) and the proposed National Standards for Civil Protection (1999) now dictate that emergency planning must be an essential constituent of normal service delivery. Additional pressure is expected to arise when the Control of Major Accident Hazards (COMAH) regulations and Stadium and Sporting Events Legislation are introduced in the near future.

16.3 Current Government policy proposes that NHS organisations adopt the concept of Integrated Emergency Management (IEM). Its key feature is that NHS bodies are constantly in a state of general preparedness, which would facilitate them to deal with a major incident at any time. In NIAS' case this means it must be prepared to respond to any such incident anywhere in NI.

Its emergency planning must therefore be carried out on an NI-wide basis where NIAS should:

- Demonstrate a commitment to developing and maintaining effective emergency management arrangements;
- Provide adequate resources to ensure that an emergency response can be effectively delivered;
- Ensure that all those involved in the emergency arrangements are adequately prepared;
- Ensure the delivery of critical services in all reasonable circumstances;
- Ensure that validated emergency arrangements are reviewed and tested at appropriate intervals;
- Ensure that effective liaison for emergency management arrangements takes place with other response agencies.

THE NEED FOR AN EMERGENCY PLANNING DEPARTMENT

16.4 NIAS currently has one senior ambulance officer seconded to emergency planning duties, on a full time basis. This secondment is quite recent and funding for the post is yet to be identified. In addition to emergency planning, the NIAS emergency planning department would be responsible for risk assessment; planning exercises; training; and for organising visits by operational staff to sites which are considered to be of high risk.

OFFICER AVAILABILITY FOR MAJOR INCIDENT RESPONSE

16.5 Current and prospective NHS/HSS guidelines require NIAS to have sufficient officers to manage/respond to major or other incidents requiring the management/supervision of ambulance resources. At present NIAS has one ambulance officer contractually available on an on-call basis within the Eastern Division outside of normal office hours (Monday to Friday, 9.00am – 5.00pm). In the event of a major incident, this cover would be inadequate. NIAS has identified the need for additional on-call officers across the four divisional areas. It is recommended that NIAS extend its current officer on call rota to provide adequate cover throughout Northern Ireland.

TRAINING

16.6 The Northern Ireland standards in civil protection recommend that organisations should:

- Ensure that those involved in the emergency arrangements are adequately prepared
- Ensure that validated emergency arrangements are reviewed and tested at appropriate intervals and that lessons learned are implemented.

16.7 It is impracticable, due to their distinct roles, for the potentially wide variety of organisations which may be involved in a major incident to have a common emergency plan. However, NIAS must ensure that its approach to an incident is in keeping with the other emergency services also on scene. NIAS has already recognised the need to be part of an integrated team in such events as well as the benefits of multi-agency training. In the past few years, NIAS has participated in several major incident exercises, the latest of which took place in May 1999. This particular exercise addressed the need for an integrated multi-agency approach in the Border areas of Ireland.

16.8 In conjunction with other agencies, some NIAS staff have participated in a training course developed to equip them to deal specifically with major incidents. The course, known as MIMMS (Major Incident Medical Management Support), provides staff with the skills needed to assess a major incident scene and apply appropriate command and control procedures. Having assessed how an incident has been handled and extracted any lessons to be learnt, the exercise is completed through a structured debriefing session. The advantages of having participated in this training are acknowledged by the medical profession and emergency services alike. As NIAS plays a pivotal role in such incidents, MIMMS forms a critical element of staff training. To date, only a small percentage of the total 540 operational staff, have had the opportunity to undergo this training. It is recommended that all A&E ambulance staff should complete a one-day MIMMS awareness course.

CONCLUSION

16.9 In light of the leading role that NIAS has in the event of a major incident, ongoing investment in developing the IEM approach should be made. The specialist area of emergency planning will become increasingly important due to factors such as legislative developments; best practice guidance; and public expectations.

FINANCIAL IMPLICATIONS

16.10 Permanent funding must be identified to allow NIAS to ensure that adequate resources can be allocated to fulfil their emergency planning responsibilities.

RECOMMENDATIONS

- NIAS needs to identify dedicated personnel to assume responsibility for developing and maintaining effective emergency management arrangements on behalf of the Trust.
- NIAS must review its current officer on call arrangements to provide adequate cover throughout NI.
- NIAS must ensure that all those involved in emergency planning arrangements are adequately trained and prepared.
- It is recommended that within the new Department of Health and Social Services and Public Safety, NIAS and the NIFB, under departmental sponsorship, identify the optimum approach to major incident planning and responses.

Human Resources

17 A Human Resource Strategy for NIAS

INTRODUCTION

17.1 The ability of NIAS to meet the challenges of providing emergency care to the population of Northern Ireland is dependent on the skills, flexibility, competence levels and, most of all, the commitment of its staff. All personnel - operational, control, administration and support services - should be considered by NIAS as its most important resource.

17.2 To meet the challenges presented to it, a modern ambulance service requires a committed workforce and appropriate investment in staff development and training. This is especially the case for NIAS. Currently there is a perceived lack of investment in NIAS staff. There is therefore a pressing need to invest in the provision of appropriate and timely training for staff at all levels and in their working environments. Gaining staff support and nurturing healthy employee relations are critical if the Trust is to function effectively. NIAS human resources strategy must achieve effective communication and understanding with all parties through both formal and informal mechanisms. The general public must also have realistic expectations of ambulance personnel.

17.3 The area of human resources continues to be shaped by legislation. NIAS must reflect this. The Government has developed and is actively encouraging a number of guiding themes which include partnership with staff organisations; modernisation of working practices; fairness in pay; empowerment; invest to save; equality; and transparency. These themes will be reflected in the regional HSS human resources strategy and must also be taken account of by NIAS.

EQUALITY OF OPPORTUNITY

17.4 Equal opportunities are already a key theme in the development of human resources within the Ambulance Service. NIAS is committed to a culture of diversity and equality of opportunity and, with this in mind, should seek at all times to fulfil its statutory and ethical responsibilities towards current and prospective employees through a process of reviewing its human resource policies. In particular, NIAS must set in place plans for meeting the new statutory obligations on equality and must, as a member of Opportunity 2000, continue to review employment practices and set goals to achieve a balanced workforce.

17.5 It is also recognised that, in implementing the recommendations of this Review, full equality impact assessments will be required in each area with respect to the potential implications for Trust employees and prospective employees.

17.6 Recent equal opportunities monitoring data (January 1999) show that some 57% of employees have a perceived Protestant religious affiliation while 37% have a perceived Roman Catholic religious affiliation (with 6% 'Other'). This is broadly in line with the religious breakdown of the population across Northern Ireland.

17.7 In terms of gender, NIAS has traditionally had a higher percentage of male employees compared to females. Currently approximately 80% of its workforce are men. This is an issue which is being actively addressed by NIAS and a gradual increase in the number of women employees is being achieved. Continuing special consideration should be given to this issue.

17.8 The Review Board's analysis leads it to recommended that NIAS designs a comprehensive human resource strategy that will support change and guide decision making in order to achieve a committed and competent workforce, appropriate to the changing needs of pre-hospital care in Northern Ireland. Human resource management is a strategic approach to acquiring, developing, managing and motivating staff. For a strategic human resources framework to be effective, it must achieve the strategic objectives described below and deliver plans that take account of the various external pressures impacting on the Service.

STRATEGIC HUMAN RESOURCE OBJECTIVES

17.9 The Project Board believes that NIAS should adopt six strategic human resources objectives:

- To recruit and retain the appropriate number of staff to meet the needs of the service
- To provide training opportunities for all staff to maintain a competent workforce with appropriate skill mix in order to deliver a service that is constantly evolving
- To maintain policies for the Service that are consistent with best employment practice and which meet both the needs of the Ambulance Service and the staff who deliver the service
- To fulfil all relevant statutory requirements
- To support pay modernisation, to ensure fair remuneration and encourage self development

- To support organisational development and change to meet the future needs of the Service, its managers and staff.

KEY HUMAN RESOURCE ISSUES

17.10 The following sub-sections outline the key issues which must be included in NIAS human resources strategy in order to achieve the above objectives.

Workforce Plans

17.11 The development of annual workforce plans consistent with the current and future needs of the Ambulance Service are crucial to the effective recruitment and deployment of staff. It is recognised that the workforce establishment requires modernisation, which could be achieved in part by a review of roles and responsibilities. However, it is also recognised that there needs to be an investment in a number of specialist and managerial posts in order to facilitate the management of change arising from the rapidly changing pre-hospital environment.

17.12 NIAS must give careful consideration to its staff 'skill mix' whilst developing its workforce plans. This must take into consideration the principle of a paramedic in every vehicle; the introduction of rapid response units; and other new innovative ways of providing a service.

Recruitment

17.13 Within any organisation it is essential to appoint staff on the basis of merit, against clearly identified standards. NIAS' employment policies and practices must be continuously reviewed to ensure best practice in line with this.

17.14 NIAS should review all pre-entry criteria for employment to ensure that they are consistent with the operational standards required of various posts.

Turnover

17.15 NIAS must recognise the importance of employment security and temporary posts should be kept to a minimum. Where temporary posts are deemed necessary, there must be a supporting rationale and an identified expected duration of employment.

17.16 It should be recognised that currently the retirement age for ambulance service personnel is not in line with that of other emergency services.

Staff Deployment

17.17 NIAS should ensure that the development of a workforce plan will facilitate the appropriate deployment of staff, consistent with the principles of equal opportunity. In line with this, the following recommendations are made:

- NIAS should review the principles underpinning the movement of staff from relief to core rota positions and explore options for improved practices: these should be consistent with developments in best practice in other ambulance services and with legislation.

- NIAS should develop plans for staff deployment consistent with the changing needs of patients in the pre-hospital environment.

- NIAS should review shift patterns and approaches to rostering to meet the operational demands on the service over a typical 24-hour demand period. The rationale for any change should be shared with staff. Any changes to the working environment should take into account the needs of staff. A commitment to staff development and team working is necessary for successful staff deployment.

Employee Relations

17.18 NIAS must commit to a positive employee relations climate, based on effective communication with staff and staff organisations. The Trust should also seek to work in a spirit of partnership with staff organisations. NIAS should continue to support the formal mechanisms for joint working highlighted in the NIAS Recognition Agreement and keep joint working under constant review.

Communication

17.19 It is essential that NIAS shares its plans for the future with its staff. Particular emphasis should be given to the sharing of objectives and targets; future developments and their impact; and supporting analysis. Effective communication with staff should be managed through a range of media. The Trust should continue to recognise that face-to-face communication is valued by all and that two-way communication is a key feature of effective management. In an organisation as dispersed as NIAS, the maintenance of a range of communication channels with staff is essential. To this end, the recently introduced staff newsletter should continue to be produced at least three times per year. NIAS should review the effectiveness of its internal communication and make use of staff surveys to assess the impact of initiatives implemented.

Performance Management

17.20 NIAS should work to develop a system of performance management that encompasses all its staff. This should recognise those components already in place which include the framework for the supervision of clinical skills and associated training records.

Reward and Recognition

17.21 NIAS maintains terms and conditions for staff in accordance with national agreements and has endorsed the 'New Agenda for Pay Framework' issued jointly by management and staff side nationally. NIAS should support research into job evaluation within ambulance services as a key to achieving the objectives of the New Agenda Framework. NIAS should also explore other opportunities for recognition of staff.

Organisation Development and Management Training

17.22 With the continued emphasis on clinical skill development, NIAS should develop a competence framework for staff. This would assist in the preparation of personal development plans and in the appropriate provision of development opportunities. This competence framework should complement the IHCD common core syllabus and also take account of management, supervisory and interpersonal skills.

17.23 There must be a continual review of the way in which training is delivered. Improvements should be sought in the design of training programmes consistent with the achievement of national standards.

17.24 There is a high public expectation of, and confidence in, the competence level of ambulance staff. Staff are currently expected to treat a wide range of emergency conditions, often managing critically ill patients with little direct supervision. Ongoing clinical and technological advances will continue to increase demands on staff. The maintenance and development of their clinical skills must be a priority. Continued investment in the professional development of staff is essential. NIAS must ensure that plans are in place to comply with clinical governance legislation. This issue was examined in more detail in Section 15 of the Review Report.

Health and Welfare

17.25 NIAS should ensure the provision of a range of occupational health services for its staff. There is a need to continually review working practices and conditions to assess their impact on the physical and mental well being of staff. It is important that the environment in which staff work is safe and free from harassment. In addition, it is important that NIAS continue to provide access to the confidential staff counselling service.

17.26 NIAS must recognise that the following are key issues which have the potential to impact upon the health and welfare of its workforce:

- Manual handling
- COSHH
- Physical conditions at work
- Stress

- Sickness absence levels
- Turnover
- Retirement due to ill health

17.27 The current level of sickness absence within NIAS is relatively high at 8%. It is recommended that NIAS reviews the underlying causes of high sickness levels. These must be rigorously explored and appropriate plans developed to 'manage' attendance.

MANAGING CHANGE

17.28 The successful management of change allied with staff commitment and understanding, are critical factors in developing and improving the ambulance service in Northern Ireland. As noted in paragraph 4.7 of this Report, the anticipated benefits of the formation of the NIAS Trust have not been fully realised. This can be partly attributed to an under investment in the management of change associated with the merger. Change affects all aspects of the organisation. Structures; strategies; systems; and practices must be put in place by NIAS and accepted by its personnel.

RECOMMENDATIONS

- NIAS must set in place plans for meeting the new statutory obligations on equality
- NIAS should design and implement a comprehensive human resource strategy
- NIAS should ensure that the development of a workforce plan will facilitate the appropriate deployment of staff, consistent with the principles of equal opportunity.
- NIAS must review the underlying causes for its high sickness levels. These should be rigorously explored and appropriate plans developed to 'manage' attendance.
- Investment should be made in a number of specialist and managerial posts

Organisation and Management Arrangements

18

INTRODUCTION

18.1 The future organisational and management arrangements for NIAS must reflect its changing role; direction; and strategies. This Review considered a whole range of fundamental issues within, and relating to, NIAS. Among these are:

- The focus and shape of the Service
- The separation of A&E and Patient Care Services
- Revisions to the estate and the fleet
- Radical developments in control and communications
- Clinical skills development and governance
- Human resources
- Collaboration with other emergency services
- Commissioning arrangements.

18.2 Developing the capacity and competencies required to implement and manage the type of changes recommended by this Review, would present significant managerial and operational challenges to any organisation. That is particularly so in an emergency service with a relatively small management team and a geographically scattered workforce. Added to this is the overriding priority for NIAS of having to maintain its capacity to respond to the day to day needs of its patients. At the same time the Service is already striving to meet increasing demand; to satisfy greater public expectations; and respond to wider health care changes.

18.3 Managing change on this scale is a task in itself and a significant amount of the evidence presented to the Review suggests that the required organisational capacity and managerial competencies may not currently be available within NIAS. Some internal organisational changes; a solid management development programme; and specialist external support will all be needed it the required change programme is to be successfully implemented.

CRITICAL SUCCESS FACTORS

18.4 If accepted, the Review's various recommendations will need to be developed into an implementation programme. In that process some diagnostic work should also be conducted to evaluate internal competencies and external support. Some critical change management tasks include ensuring that:

- The Trust and other principal stakeholders agree, accept and understand the changes required
- Changes and the reasons for them, are explained simply and clearly to the public
- Changes are clearly explained to staff and their support gained and maintained
- The Trust's Board assumes full ownership and develops its own capacity to lead, support and monitor the changes
- External performance management arrangements are strengthened to promote accountability
- Sufficient time and expertise is devoted to project management
- There are clear managerial objectives, defined responsibilities and robust internal accountability arrangements
- Management information systems are in place to support implementation and monitoring
- The changes are implemented within affordable cost.

ORGANISATIONAL AND MANAGERIAL COMPETENCIES

18.5 During the course of the Review it became increasingly apparent that NIAS has an urgent need to develop and/or strengthen some critical organisational and managerial competencies. The key areas, and their implications, include:

- *Project Management:* Developing and running the recommended change programme will require project management skills
- *Management Information:* NIAS urgently needs to develop its information systems
- *Technological Expertise:* In a Service that relies so heavily on communications systems and information technology for its operational effectiveness the development of expertise in this area is essential

- *Fleet Management*: Vehicles represent a major capital cost as well as the Trust's second largest revenue cost. The availability of technical expertise is particularly important for vehicle safety and reliability and should also prove cost effective in reducing maintenance costs and the fleet size

- *Operational Management and Leadership:* The Trust's operational management structure and capacity needs to be reviewed and strengthened to ensure that the dispersed workforce both feels involved and remains committed to improving and maintaining more demanding standards

- *Human Resource Management, Staff Development and Manpower Planning:* The impact of the changes proposed on staff may demand improved levels of human resource management and capacity. In particular staff development and professional training are areas which will require additional attention.

- *Patient Care Services:* Ensuring strong management arrangements for non-emergency ambulance transport will be essential if it is separated from the A&E tier of the Service. Developing particular managerial skills in specifying and monitoring these arrangements will help ensure that the service is better integrated and fully responsive to the needs of its patients.

- *Clinical Leadership:* The proposed changes are specifically intended to improve clinical quality and service reliability. The need for improved monitoring, audit and research may require additional support and clinical leadership.

- *Strategic Leadership*: The proposed changes require strong organisational and operational leadership from the NIAS Trust Board and senior managers. Some developmental activities may be helpful at that level.

- *Continuous Quality Improvement*: As NIAS is operating in an ever-changing environment, any change programme requires review and modification. To ensure improved quality and cost effectiveness, the principle of continuous quality improvement should permeate the work of NIAS.

- *External/Shared Support:* Although strengthening organisational capacity is a desirable aim, in some specialist areas the use of external consultants or technical support may be the most practical and cost effective approach. It may also be possible to share expertise with other health or public organisations in order to improve value and availability.

CONCLUSION

18.6 Ensuring that NIAS has the necessary management capacity and capability to deliver the change programme will be at least as critical to its success as any of the other forms of investment recommended by the Review.

RECOMMENDATIONS

- If the recommendations made in this Review are accepted, an implementation plan should be developed
- An evaluation of internal competencies within NIAS and the need for external support, should be carried out

19 NI Fire and Police Services and Cross Border Arrangement

INTRODUCTION

19.1 Fire, police and ambulance services all have major core functions, but come together in responses to 999 emergencies. While it is recognised that they are separate organisations, with different command structures, current Government policy is urging them to provide 'joined up', seamless services. Emergency and rescue services are encouraged to examine and test the feasibility of sharing control, communication and other common facilities. Such cross sector working has the potential to improve service responsiveness; increase efficiency; and provide better value for money. Similarly the provision of ambulance services along the Border could be enhanced by improved working relationships between NIAS and ambulance services in the Republic of Ireland.

19.2 In exploring potential opportunities for improved collaborative working and co-operation with other emergency services and voluntary bodies, the following organisations were consulted:

- North Western Health Board, Republic of Ireland (NWHB)
- North Eastern Health Board, Republic of Ireland (NEHB)
- Northern Ireland Fire Brigade (NIFB)
- Royal Ulster Constabulary (RUC)
- St John Ambulance
- The British Red Cross

COLLABORATION WITH POLICE

19.3 For the emergency services in NI there are key areas where improved collaboration has the potential for reducing the costs of providing a service for each party. At the present time it is felt that the primary opportunity for NIAS to improve collaboration with the RUC is through sharing the DTRS mobile radio infrastructure. The benefits of this have been discussed in detail in Section 13 of this Report. NIAS should continue to liase with the RUC, particularly to discuss if the proposed reshaping of policing services in NI could present opportunities for collaboration. NIAS should also explore the potential for Police personnel becoming co-responders.

COLLABORATION WITH THE NORTHERN IRELAND FIRE BRIGADE

19.4 There are a number of potential, and real, opportunities to share communications systems and infrastructure with the NI Fire Brigade. These include:

- A shared mobile data infrastructure as an interim to the multi-agency DTRS solution
- The recently implemented NI-wide Fire Brigade voice and data network, including access to paging services
- Reduced revenue costs for applications such as mapping, where both Services require access to the same data sets
- Shared common management and finance applications
- Technical support shared between the two Services
- A framework to examine the potential for a future shared communications control centre
- The sharing of IT and communications facilities such as those included in the three multi-agency communication pilots being run in England and funded by the NHS through the Government 'Invest to Save' initiative.

19.5 From an operations perspective the main potential joint initiatives between NIAS and the Northern Ireland Fire Brigade would include:

- *Sharing of Existing Facilities*

  Much of NIAS estate is below an acceptable standard. NIAS should assess the feasibility of sharing some existing Northern Ireland Fire Brigade facilities, either as joint stations or as standby locations.

- *Joint Ambulance/Fire Stations*

  The Fire Brigade would welcome the opportunity to explore the possibility of building new joint ambulance and fire stations in areas of need and at locations which are strategically suitable to both parties.

- *Training and Training Facilities*

  Training is an area where considerable benefits could be obtained from working together. Some specific issues associated with training that should be reviewed are:

- Removal of duplication in core training modules
- Joint training initiatives
- Co-location of Regional Training Centres

♦ *Emergency Planning*

Consideration should be given to the benefits of sharing emergency planning expertise between the two services.

♦ *Co-Responders*

The Northern Ireland Fire Brigade is considering training firefighters in emergency first aid; basic resuscitation; and defibrillation. These personnel could be used by NIAS as first responders, especially in the more remote areas of NI.

♦ *Emergency Planning*

NIAS should assess the feasibility of sharing core emergency planning expertise with the NIFB.

19.6 It is recommended that senior personnel in the Police, Fire and Ambulance Services meet regularly to put in place a framework for closer collaboration in IT; communications; and operations. Such a framework should ensure that areas are identified where collaboration can be achieved without significant cost or compromise to the integrity of the Services. Appropriate steps can then be put in place to formulate an acceptable migration strategy.

CROSS BORDER COLLABORATION FOR AMBULANCE SERVICES

19.7 Ambulance services on the Republic's side of the Border with Northern Ireland are provided by the North Western Health Board (Donegal, Sligo, Leitrim and West Cavan) and the North Eastern Health Board (Louth, Meath, Monaghan and the majority of Cavan). Currently there are practical, historical and political difficulties which make it difficult to provide seamless emergency ambulance care along the Border. Ambulance providers on both sides of the Border however recognise the benefits of cross Border collaboration and some work has recently been completed to improve working arrangements as part of the CAWT programme.

19.8 In consultation with ambulance service representatives from the North Western and North Eastern Health Boards several key common issues were identified where action could improve the quality of pre-hospital care in those areas. It is recommended that a Cross Border Working Group be set up to address areas of co-operation between the ambulance services. This Group should have appropriate representation at Departmental level to ensure that any proposed developments are implemented. The Group would be

responsible for looking at issues on both a strategic and operational level to include:

- Joint training and education of staff (especially MIMMS training)
- Common piloting of response schemes by Border area ambulance services
- A shared and/or compatible communications systems between the North and South
- Standardisation of equipment
- Standardisation of training skills and competencies for operational and control staff.
- Harmonisation of clinical protocols and operating procedures
- Review of medical legal cover for services working in each others' areas
- Sharing IT and information systems
- Access to common databases and clinical audit projects

CONCLUSION

19.9 Given the desire by Government to reduce duplication and streamline service provision, partnership working is the way forward for organisations with an interest in public safety. Through a review of accident statistics it should be possible to identify activities and areas where the public are at most risk. From this holistic educational and safety programmes should be designed, addressing issues such as:

- Home safety security
- Fire safety
- First aid
- Water safety
- Safe driving
- Road safety
- Alcohol and drug abuse awareness

19.10 These educational programmes could be delivered by any of the emergency services. This joint approach would reduce duplication and focus on the holistic safety message. It would present an opportunity to share expertise. There is little doubt that appropriate collaboration can bring tangible benefits. It should be encouraged and rewarded throughout all emergency services.

RECOMMENDATIONS

- Senior personnel in the Police, Fire and Ambulance Services should meet regularly to put in place a framework for closer collaboration in IT; communications; and operations

- A Cross Border Working Group should be set up to address areas of co-operation between ambulance services serving the populations of Border areas

Future Commissioning Arrangements

Moving To Effective Commissioning

20

INTRODUCTION

20.1 Whilst the principle that health services should be commissioned at the most local level does help to ensure that they are responsive and effective, emergency ambulance services should be regarded as an exception. Much of the cost of an ambulance service is associated with maintaining availability to respond to unpredictable demand. Normal geographical boundaries have little relevance. Indeed organising emergency services on a locality basis brings inflexibility and additional costs. In that respect ambulance services need to be regarded as a "commonwealth" and should be commissioned accordingly. Whilst various stakeholders need to be in a position to influence that commissioning, parochial considerations need to be excluded. The current arrangements and fragmented approach have not been conducive to the strategic and operational effectiveness of NIAS. This Section looks at how commissioning for ambulance services in NI might best be arranged in order to achieve a quality service which is value for money. It should be stressed that the focus in this Section is on the commissioning arrangements for the A&E tier of the Ambulance Service.

CURRENT ARRANGEMENTS – A&E AMBULANCE SERVICE

20.2 Until the establishment of NIAS Trust, ambulance services were directly managed by each of the four Health and Social Services Boards. Since then, the Trust has received its income from annually-renewed service agreements which specify the volume and quality of service to be delivered by the Trust within an agreed financial sum. These agreements have been almost exclusively 'block' contracts, based on historical funding levels. Additional non-recurrent funding has been made available to the Trust towards the end of each year to reflect cost pressures. In some cases the baseline has been uplifted where these pressures have been accepted as recurring and where a Board or Boards have been able to prioritise additional funding for the Service.

20.3 The Area Boards and NIAS have accepted that there are weaknesses in the current system. The recommendations below are built on the experience of Area Board and Trust staff and the steps they believe will improve the planning process. Ambulance services are complex operations and require a multi-disciplinary approach. Whilst the necessary multi-disciplinary skills are present within Area Boards, each Board can afford to devote a small number of officers only to this service. Joint working between Boards therefore has significant benefits. It operates on an informal level at present but should be put on a formal footing with representation from the DHSS&PS.

CAPITAL PLANNING

20.4 Ambulance services differ from many other health and social services in that they require relatively intensive capital investment as a proportion of overall funding. Capital planning requires a longer term view than that which is possible within annually reviewed agreements. Three year service agreements are therefore essential to enable effective planning.

20.5 Capital planning also requires the close involvement of the DHSS&PS, which is directly responsible for capital allocations to Trusts. Support for capital schemes is required from each of the Area Boards because of their revenue consequences. This can be carried out much more efficiently where multi-board teams scrutinise business cases and meet together with the Trust and the DPHSS&PS. Business cases for such schemes are highly complex documents, requiring a continuity of personnel over an extended period of time. This points to the need for a single team, nominated by Boards, to be convened to commission the provision of ambulance services. Again, there should be representation from the DHSS&PS.

THE REGIONAL PERSPECTIVE

20.6 Current funding levels for NIAS largely reflect historical allocations which were made to the separate ambulance services when they were directly managed by the Area Boards. However all A&E ambulance services are required to be available for use on an equitable basis throughout Northern Ireland. Any funding mechanism must therefore reflect the costs of services being available on an open access basis to all, within uniform standards.

FUTURE ARRANGEMENTS

20.7 It is recommended that in the future there should be changes in the way Accident & Emergency services, are commissioned. It is essential that a secure method of funding is provided for these services without a major increase in bureaucracy if commissioning begins to focus on smaller geographical areas. A possible approach is to identify the costs of ambulance services following the Strategic Review and allocate funding on the basis of the agreed regional pattern of the Service, at the same time retaining accountability for responsiveness with local commissioners. Such a change would present an opportunity for an open approach to discussions between Area Boards and with NIAS. This would be on the basis of equitable funding and common quality standards.

20.8 A centralised approach which enables a strategic overview to be taken; pools the skills and knowledge of Area Board staff; and reduces bureaucracy for the Trust; has many advantages. Having local commissioners continue to take the lead will ensure that the planning of these services remains embedded

within that for the whole range of health and social services. It will also maintain their responsiveness to local needs.

20.9 It is recommended that an Ambulance Services Commissioning Group is established with nominees from each of the Area Boards covering all relevant disciplines and a nominee from the DHSS&PS. The Group should be chaired by an Area Board Officer, appointed by the four Area Board Chief Executives. Authorisation of expenditure commitments would remain firmly with each Area Board.

20.10 The functions of the Commissioning Group would be:

- To commission within the framework set by the Review
- To ensure that the Service is adequately funded to deliver the recommendations of the Review and to meet demand within acceptable and agreed quality standards
- To review the Trust's three year business plan on an annual basis and negotiate a three year service level agreement to be signed off by each of the Board Chief Executives and the NIAS Chief Executive
- To ensure that the Trust remains efficient and continues to benchmark its operations against other ambulance services
- To develop efficient planning processes and common monitoring arrangements which streamline business relationships between the Area Boards, the Trust and the DHSS&PS.

PERFORMANCE INDICATORS

20.11 There are many different indicators, which will need to be monitored if the performance of NIAS is to be both efficient and effective. It is recommended that NIAS design a framework of key performance indicators which meet both their own needs and the needs of the commissioning group. The following table provides some examples of indicators that might be used to measure operational performance.

EXAMPLE OF PROPOSED PERFORMANCE INDICATORS

PERFORMANCE INDICATOR	STANDARD/MEASURE
Response Performance	
Response to 999 calls by minute	Based on 4 phase implementation plan
Response to non life threatening emergencies by minute	Based on Patient Charter Standard
Urgent calls at hospital within 15 minutes of agreed time	Based on Patient Charter Standard
Response performance by call dispatcher	To be determined
Activity	
Emergency calls; activations; on scene; patients- urgent patients – high dependency	Actual against contract and percentage variation
Average, maximum, and minimum day transports by A&E	Actual against contract and percentage variation
Number of hours of cover planned, received and effective.	Actual against contract and percentage variation
Non contracted activity	Actual against forecast
Paramedic shifts; number provided	To be determined
At scene time	To be determined
Hospital turnaround	To be determined
Supervision: incidents attended, crew assessments	To be determined
Cost per response	To be determined
Protocol compliance	To be determined
Patient report forms	To be determined
Employee relations; grievances, disputes	To be determined

20.12 In addition to the above examples, other key indicators should be designed to measure performance in:

- Fleet operations
- Stores and supplies
- Estates
- Clinical quality
- Training
- Finance
- Human resources and administration
- External Training

20.13 Clearly NIAS does not exist in isolation and performance must be benchmarked against ambulance services in other parts of the NHS and ambulance services in Southern Ireland.

RECOMMENDATIONS

- An Ambulance Service Commissioning Group should be established with nominees from each of the Area Health Boards covering all relevant disciplines and a nominee from the DHSS&PS

- NIAS should develop a framework of performance indicators that meets both their own needs and that of their commissioners

21 Summary of Recommendations

INTRODUCTION

21.1 This Section brings together the recommendations and other key points made by the Review. They are presented under the various headings of the Report to which they refer.

SECTION 9: OPTIONS FOR IMPROVEMENT OF A&E SERVICES

21.2 The following recommendations are made:

- NIAS should adopt the proposed four phase implementation plan in order to improve ambulance response times and provide a more equitable service
- NIAS must develop an operational plan which will ensure effective and efficient management of operational resources
- NIAS should introduce a priority based dispatch system by the end of year 2001
- NIAS should identify additional resources to account for changes to the future provision of Accident and Emergency Services and increases in demand
- NIAS should identify a further 20 locations within Local Government Districts from which to deploy A&E ambulances
- NIAS should introduce a system of 'dynamic standby' in order to improve response times
- NIAS should consider the use of A&E vehicles and/or single manned paramedic response units, for patrolling specific geographic zones to respond to life threatening calls
- NIAS should explore the feasibility of using first responders to complement the Ambulance Service by providing an initial response to life-threatening calls

- NIAS should consider training Police, Fire and Coastguard personnel in advanced first aid and defibrillation skills to allow them to act as co–responders

- NIAS should organise education and training sessions in basic life support skills for the general public

SECTION 10: FUTURE PATIENT CARE SERVICES

21.3 The following recommendations are made:

- The A&E tier of NIAS should be separated from the PCS tier

- More effective links should be developed between PCS providers; hospital and community services; and purchasers, in order to improve both the efficiency and the quality of the Service

- Commissioning for PCS should be transferred to acute and community Trusts, with the involvement of GPs

- The responsibility for PCS specifications should be devolved to Trusts to ensure accountability for its delivery.

- Service level agreements for the provision of PCS should be reviewed annually against agreed performance targets

SECTION 11: THE AMBULANCE FLEET

21.4 The following recommendations are made:

- NIAS must commission an external specialist with expertise in this area, to identify an optimal fleet size, commensurate with its current operational requirements

- NIAS should develop a fleet management strategy which takes account of the proposed phased investment plan for the improvement of response times (as discussed in Section 9)

- NIAS must put in place a fully funded vehicle replacement programme a matter of urgency. The programme should be reviewed biennially to ensure optimum fleet size

- NIAS must establish a fleet department and appoint a fleet manager. The department must be supported by appropriate technical support and have a computerised fleet management information system

- NIAS fleet manager must be responsible for securing value for money in respect of the procurement and maintenance of the fleet

- NIAS must ensure that effective arrangements are in place to carry out minor repairs and quality assurance of maintenance work on vehicles and ancillary equipment (tail-lifts, ramps, trolleys etc)

SECTION 12: AMBULANCE ESTATE

21.5 The following recommendations are made:

- NIAS must develop an estates strategy and support its implementation with adequate funding. The strategy should take into account the implications of the introduction of new deployment models
- NIAS should identify suitable alternative accommodation for its headquarters and regional training centre functions
- The potential for sharing facilities with other emergency services should be examined

SECTION 13: THE INFRASTRUCTURE REQUIRED BY NIAS

21.6 The following recommendations are made:

- NIAS should move to a single communications control location
- NIAS should undertake an option appraisal to identify the most appropriate location for a single communications control centre as a matter priority
- The communication and control operations of the A&E tier of the Service must be separate from those of PCS
- NIAS should urgently developed plans, in conjunction with relevant partners, to facilitate the replacement of the mobile radio system prior to migration at the end of 2004
- NIAS should actively participate in any sharers' forum for the RUC-led DTRS project
- NIAS must replace its existing command and control application and radio control equipment as a matter of urgency
- NIAS must replace its existing disparate telephony switches with a common telephony platform
- NIAS must develop and implement an IS/IT strategy

- NIAS should consider implementing an enterprise-wide voice and data network

- NIAS should adopt appropriate logging and system management processes

- NIAS should explore the potential for further collaboration with other emergency services

- NIAS should develop closer collaboration with the Fire Brigade and Police Authority in IT and communications

- NIAS must ensure that new technology is based on open industry standards which will allow future expansion and upgrades

- NIAS must ensure that appropriate technical support is available either within the Trust or on a facilities management basis

SECTION 14: CLINICAL SKILLS DEVELOPMENT

21.7 The following recommendations are made:

- NIAS must develop a training strategy

- NIAS should relocate their regional training facility to a more appropriate location. Consideration should be given to sharing a facility with the NI Fire Brigade

- NIAS should accept the proposed new training modules and the extension to the IHCD common core syllabus

- NIAS should adopt the new paramedic syllabus on its release

- NIAS should develop a new clinical supervisors grade

- NIAS should introduce a programme of continuing professional development for all operational ambulance staff

- NIAS should seek to improve the clinical development and education of paramedics. This could be achieved by developing closer links with the medical and nursing professions via clinical networking, or through the development of third level education

SECTION 15: CLINICAL GOVERNANCE

21.8 The following recommendations are made:

- NIAS should appoint a full time Medical Director
- NIAS should set up a Clinical Governance Committee with responsibility for the development and implementation of the activities proposed in this Section
- NIAS must establish a Clinical Audit Department
- NIAS must review the current process for collecting and collating data on clinical activity and identify methods of improving it. A pilot scheme aimed at assessing electronic data capture systems, should be undertaken as part of this exercise

SECTION 16: EMERGENCY PLANNING AND NIAS

21.9 The following recommendations are made:

- NIAS needs to identify dedicated personnel to assume responsibility for developing and maintaining effective emergency management arrangements on behalf of the Trust
- NIAS must review its current officer on call arrangements to provide adequate cover throughout NI
- NIAS must ensure that all those involved in emergency planning arrangements are adequately trained and prepared
- It is recommended that within the new Department of Health and Social Services and Public Safety, the NIAS and NIFB, under departmental sponsorship, identify the optimum approach to major incident planning and responses

SECTION 17: A HUMAN RESOURCE STRATEGY FOR NIAS

21.10 The following recommendations are made:

- NIAS must set in place plans for meeting the new statutory obligations on equality
- NIAS should design and implement a comprehensive human resource strategy

- NIAS should ensure that the development of a workforce plan will facilitate the appropriate deployment of staff, consistent with the principles of equal opportunity

- NIAS must review the underlying causes for its high sickness levels. These should be rigorously explored and appropriate plans developed to manage attendance

- Investment should be made in a number of specialist and managerial posts

SECTION 18: ORGANISATION AND MANAGEMENT ARRANGEMENTS

21.11 The following recommendations are made:

- If the recommendations made in this Review are accepted, an implementation plan should be developed

- An evaluation of internal competencies within NIAS and the need for external support, should be carried out

SECTION 19: NI FIRE AND POLICE SERVICES AND CROSS BORDER ARRANGEMENTS

21.12 The following recommendations are made:

- Senior personnel in the Police, Fire and Ambulance Services should meet regularly to put in place a framework for closer collaboration in IT; communications; and operations

- A Cross Border Working Group should be set up to address areas of co-operation between ambulance services serving the populations of Border areas

SECTION 20: MOVING TO EFFECTIVE COMMISSIONING

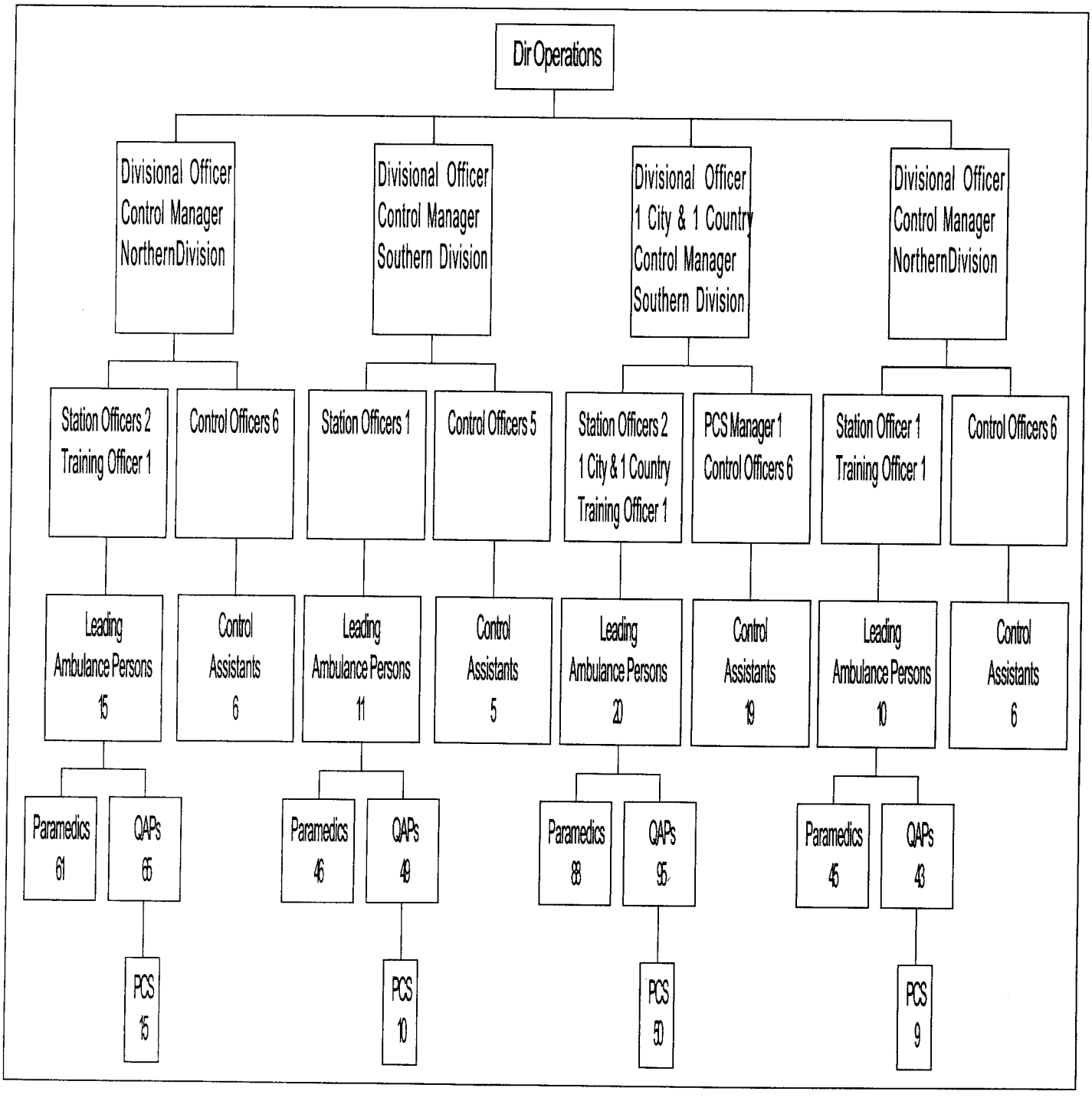
21.13 The following recommendations are made:

- An Ambulance Service Commissioning Group should be established with nominees from each of the Area Health Boards covering all relevant disciplines and a nominee from the DHSS&PS

- NIAS should develop a framework of performance indicators that meets both their own needs and that of their commissioners

Appendices

OPERATIONAL STRUCTURE of NIAS



Appendices

2 PARTIES WHO RESPONDED TO THE INVITATION TO PARTICIPATE IN THE CONSULTATION PROCESS

Health and Social Services Councils

Northern Health and Social Services Council
Southern Health and Social Services Council
Eastern Health and Social Services Council
Western Health and Social Services Council

Health and Social Services Boards

Northern Health & Social Services Board
Southern Health & Social Services Board
Eastern Health & Social Service Board
Western Health & Social Services Board

Health and Social Services Trusts

Altnagelvin Hospitals Health & Social Services Trust
Armagh & Dungannon Health & Social Services Trust
Belfast City Hospital Health & Social Services Trust
Causeway Health & Social Services Trust
Craigavon Area Hospital Group Health & Social Services Trust
Craigavon & Banbridge Community Health & Social Services Trust
Down Lisburn Health & Social Services Trust
Foyle Health & Social Services Trust
Green Park Healthcare Trust
Homefirst Community Trust
Lurgan Health & Social Services Trust
Mater Hospital Trust
Newry & Morne Health & Social Services Trust
North Down & Ards Community Trust
North & West Belfast Health & Social Services Trust
Royal Group of Hospitals & Dental Hospital Health & Social Services Trust
South & East Belfast Health & Social Services Trust
Sperrin Lakeland Health & Social Care Trust
Ulster Community & Hospitals Trust
United Hospitals Trust

General Practitioners and Local Medical Committees

Dr J Porteous, GP, Lisnaskea
Dr B J O'Hare, Castlederg Surgery, Castlederg
Dr N Lynch, Primary Care Locality Co-Ordinator, Fermanagh
Dr M Kennedy, Area GP Co-ordinator for Locality Sensitive Purchasing, Dungannon
Dr M Garvin, Secretary Southern Local Medical Committee
Dr M McCloskey, Chair, Foyle Medical General Medical Care Advisory Committee
Dr D McManus, GP Bangor / Medical Director NIAS
Dr R L Miller, Secretary Eastern Local Medical Committee, Belfast

Medical Consultants

Prof J Adgey, Consultant Cardiologist, Royal Victoria Hospital, Belfast
Ms C H Dearden, Consultant in Emergency Medicine, RVH, Belfast
Mr C R A Fee, Consultant in Emergency Medicine, Craigavon Area Hospital,
Mr W J Gray, Consultant Neurosurgeon, Royal Victoria Hospital
Mr J Jenkins, Consultant Paediatrician, Antrim Area Hospital, Antrim
Mr G Lavery, Consultant Anaesthetist, Royal Victoria Hospital, Belfast
Mr J Maguigan, Consultant Thoracic Surgeon, Royal Victoria Hospital, Belfast
Mr G Marshall, Consultant Surgeon, Erne Hospital, Enniskillen
Mr J B Martin, Consultant in Emergency Medicine, The Ulster Hospital, Dundonald
Mr L Rocke, Consultant in Emergency Medicine, RVH, Belfast
Mr R H Taylor, Clinical Director, Paediatric Intensive Care Unit, RVHSC, Belfast
Mr Brian Nicholls, Consultant in Emergency Medicine, RVH, Belfast

Northern Ireland Assembly Members

Mr S Foster, Ulster Unionist Party,
Mr J Hendron, SDLP
Mr D McCullough, PUP
Mr F Molloy, Sein Fein
Alderman J Shannon, Strangford

District and Borough Councils

Antrim Borough Council
Armagh City & District Council
Ballymoney Borough Council
Belfast City Council
Castlereagh Borough Council
Cookstown District Council
Derry City Council
Ards Borough Council
Ballymena Borough Council
Banbridge District Council
Carrickfergus Borough Council
Coleraine Borough Council
Craigavon Borough Council
Down District Council

Dungannon District Council
Larne Borough Council
Lisburn Borough Council
Moyle District Council
Newtonabbey Borough Council
Omagh District Council
Fermanagh District Council
Limavady Borough Council
Magherafelt District Council
Newry & Mourne District Council
North Down Borough Council
Strabane District Council

Department of Health & Social Services, Dundonald House, Belfast

Miss J Morgan, Emergency Planning
Miss A Clarke, (formerly Project Board Member)

Cross Border Ambulance Services

North Western Health Board Ambulance Service
North Eastern Health Board Ambulance Service

Northern Ireland Ambulance Service

Directors
Senior Officers
Staff Focus Groups

Unions

Mr G Matchett, GMB Union, Northern Ireland
Mr T McMullan, NIPSA, Northern Ireland
Mr D Allister, Transport & General Workers Union, Northern Ireland
Mrs L Kerr, UNISON, Northern Ireland

Voluntary Bodies

St John Ambulance
The British Red Cross

Other

Department of the Environment Road Service
Royal Ulster Constabulary
The Northern Ireland Fire Service

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Mr W Bateman, Department of Health Estates
Mr E Brett, Department of Health Estates
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Dr T Hindle, University of Lancaster
Mr D Nicholl, Mason Communications Ltd
Mr D Swan, Mason Communications Ltd

Appendices

3 CATEGORY A CALLS

Category A should consist of the following more pressing emergency conditions which are or may be immediately life-threatening within 10 minutes of recognition but that are nevertheless amenable to effective treatment by front line ambulance staff.

A1: Adults with chest pain associated with any of the following: pallor, cyanosis, shortness of breath, sweating, nausea, or vomiting; but specifically excluding those for whom the pain is intensified by breathing.

A2: Individuals who are unconscious, fitting or unresponsive for any cause.

A3: Individuals with sever breathing problems who are unable to speak whole sentences.

A4: Individuals who have suffered trauma with penetrating injuries to the head or trunk.

A5: Any individual recognised as having anaphylactic shock.

A6: A woman with severe obstetric haemorrhage.

A7: A child under the age two.

Glossary

Activation Time	The time between ambulance control receiving the call and the ambulance starting to move to the incident.
Advanced Trauma Life Support (ATLS)	A system of care originating in the USA which alerts staff to identify likely injuries in serious accidents, and also gives them additional skills to treat the patient.
BASICS	British Association of Immediate Care Schemes: a national voluntary organisation that co-ordinates the provision of all the various aspects of skilled medical help at the scene of an accident, medical emergency, or during transportation to hospital.
Clinical Governance	Initiative to assure and improve clinical standards at local level throughout the NHS. This includes action to ensure that risks are avoided, that adverse events are rapidly detected, openly investigated and lessons learned, that good practice is rapidly disseminated and that systems are in place to ensure continuous improvements in clinical care.
COSHH	Control of Substances Hazardous to Health
Computerised Gazetteer	Computer software used in modern control rooms which lists and describes places and usually projects the associated detailed maps onto a screen.
Defibrillation	The process of passing electric shock through the heart to restore normal rhythm.
Dynamic standby	A system whereby ambulances are moved around at any time so as to be close to expected/predicted emergency calls.
ECG (electrocardiogram)	A record of the electric impulses resulting from heart muscle activity.

First Responder	A qualified person who is authorised by the ambulance service, and requested by it, to attend life-threatening emergency incidents.
Hypoxia	A medical condition where the patients blood oxygen level becomes abnormally low.
JCALC	The Joint Royal Colleges Ambulance Service Liaison Committee consists of ambulance representatives together with representatives of most of the medical and nursing Royal Colleges outside Scotland.
Local Government District	Specific geographical areas identified under District and Borough Councils
Major Incident	A major incident for health services purposes is one which, because of the number and severity of live casualties that it produces, requires special arrangements.
Mapping Software	Computer software that manipulates data and presents findings in the form of a map.
Minor Injuries Unit	A small unit, often run by nurse practitioners, that provides swift, high-quality, local treatment for patients who do not need the full expertise and facilities of an acute hospital.
MRI Scanner	Magnetic resonance imaging (MRI) scanners produce very detailed diagnostic images without the use of X-rays. At a hospital that does not have its own scanner (often because of the high cost) inpatients may need ambulance transport in order to undergo MRI scanning.
National Response Time Standards	The target time set by the health departments in which an emergency ambulance should reach the patient
Paramedic	A&E ambulance personnel who have been trained in accordance with a nationally defined syllabus.
Patient Care Service	Services for transporting non-urgent patients (such as outpatients and discharged patients) between their homes and hospital.
Primary Care Centre	Diagnostic and treatment facilities provided by some large general practices for their patients.

Priority Dispatch System	A system of prioritising calls according to the apparent urgency of the call, with 'life-threatening situations' receiving priority over others.
Protocols	Instructions and rules regarding the action to take in particular circumstances.
Response Time Failures	Failure to meet the national targets set for reaching an emergency patient. See also *national response times.*
Specialist Centre	A hospital which specialises in treating particular clinical conditions – for example burns, head injuries and cardiac problems.
Standby Point	A designated place, away from a station, where an emergency ambulance is positioned while awaiting a call.
Telemetry	Transmission of data (eg: ECG data) via cellular telephones or land lines.
Training School	Facilities for training ambulance personnel in all aspects of the work that are approved and accredited nationally.

References

1. *Dr Millar Report, HMSO, 1967.*

2. *NHS Training Division (1994),* Ambulance Service Paramedic Training (Manual), *NHS Training Division.*

3. *Department of Health and Social Security (1997),* Health and Well Being: Into the Next Millennium. Regional Strategy for Health and Social Well Being, *DHSS.*

4. *Department of Health and Social Security (1997),* Well into 2000: A Positive Agenda for Health and Wellbeing, *DHSS.*

5. *Arntz, H R et al (1998),* Recommendations of a Task Force of the European Society of Cardiology and the European Resuscitation Council on the Pre-hospital Management of Acute Heart Attacks, *Resuscitation 38: 73-98.*

6. *Alberti, G et al (1998)* National Service Framework: Coronary Heart Disease: Emerging Findings, *Department of Health.*

7. *Health and Social Services Executive (1999),* Review of Cardiology Services (revised draft), *HSS Executive.*

8. *Rawles, J M. (1997),* Quantification of the Benefit of Earlier Thrombolytic Therapy: Five Year Results of the Grampian Region Early Anistreplase Trial (GREAT), *JACC 30:1181-1186.*

9. *The GREAT Group (1992),* Feasibility, Safety and Efficacy of Domiciliary Thrombolysis by General Practitioners: Grampian Region Early Anistreplase Trial, *BMJ 305: 548-553*

10. *Pre-Hospital Care Advisory Group (1999)* Donegal Pre-Hospital Emergency Care Project: Donegal Area Rapid Treatment Study (DARTS), *North Western Health Board.*

11. *Advanced Life Support Group (1996)* Advanced Paediatric Life Support; the practical approach, *BMJ Publishing Group, 2nd Ed.*

12. *Chameides, L & Hazinski, M (1997),* Paediatric Advanced Life Support *Dallas: Academy of Paediatrics and American Heart Association*

13. *Ambulance Service Association (1999)* IHCD Ambulance Personnel Awards: Revised Paramedic Syllabus, *IHCD Health & Care Limited*

14. *Department of Health and Social Services (1999),* Report of the High Risk Pregnancy Group (draft), *DHSS*

15. *British Orthopaedic Association (1997)* The care of severely injured patient in the United Kingdom – An urgent need for improvement, *London: British Orthopaedic Association*

16. *The Royal College of Surgeons of England (1999)* Report of the Working Party on the Management of Patients with Head Injuries, *London: The Royal College of Surgeons of England*

17. Department of Health and Social Services (1993) *Working Group Report on the Management of Major Trauma in Northern Ireland*, DHSS 1993

18. British Association for A&E Medicine (1998) *The way Ahead* British Association for A&E medicine

19. Masons Communications Ltd (1999) *Control and Communications Appraisal Study of the Northern Ireland Ambulance Service*, Masons Communications Ltd

20. Department of Health (1996) *Review of Ambulance Performance Standards: Final Report of Steering Group,* NHS Executive

21. Freeman, H (1995) *Yearbook of Continuing Medical Education,* London: Royal Society of Medicine

22. Manning, P R & DeBakey I (1992*) Lifelong Learning tailored to individual Clinical Practice*, JAMA 268:1135-1136

23. Sleet, R (1992) *Reassessment and Recertification: Training paramedic trainers.* Royal College of Anaesthetists. London Royal College of Surgeons

24. Davis, D A (1992) *Evidence for the Effectiveness of CMS: a review of 50 randomised controlled trials*, JAMA *268:*1111-1117

25. Audit Commission (1998) *A Life in the Fast Lane: value for money in emergency ambulance services,* Audit Commission/HMSO