

Scottish Ambulance Service



West Central Division

**Implications arising from
NHS Lanarkshire – Monklands A&E Review**

Implications for the Scottish Ambulance Service

Background

Lanarkshire Health Board advised the Scottish Ambulance Service (SAS) that it was required to review its proposals, developed as part of their Picture of Health (PoH) strategic plan, relating to the redesign of services at Monklands Hospital. The original PoH proposal, specifically in relation to this site, was that the present A & E receiving unit would become a nurse - led service by 2009. Hairmyres Hospital in East Kilbride and Wishaw General Hospital would not be affected in relation to their model of A&E provision.

The review of these original proposals was requested by the Scottish Government Minister for Health & Well Being and required NHS Lanarkshire, and its partners, to develop and evidence options regarding retaining Monklands A&E as a full service

Consequently the Ambulance Service has been asked to provide its views on the options that have been developed, particularly in relation to benefits, risks and opportunity costs. Additionally we were required to provide an indication as to the resource implications arising from the range of proposals.

Methodology

SAS data is derived from the Command and Control System (c3) and therefore a record of each incident is available. This provides such information as the Postcode of where each incident occurred, the date and time, duration of the task and the destination hospital to which the patient was transported.

It has been a long-standing practice within the Service to undertake resource-modelling work in order to ensure that resources continually match demand. The process involves the application of an Operational Research model, produced for the Service in order to determine the required resources for each hour of the week. The process commences by attaching Postcodes to each station and then analysing the average demand by day of the week and hour of the day. The other element required by the model is the average "service time" to complete each incident. This is the time taken from the commencement of the incident to the ambulance becoming free to respond to the next incident. To ensure adequate cover in any area, it is usual to add a return to operational area factor to this service time.

The next stage is to input the required number of resources produced by the model, for each hour, into a commercial shift rostering software package. Allowances can be made to cover staff meal-breaks and to ensure that any roster produced complies with Service Terms and Conditions as well as the European Working Time Regulations.

Modelling Work

1. Demand Analysis

In order to reflect the most current demand placed upon the Service in the Lanarkshire Health Board area, a reference period covering demand over 2006/07 was used. In calculating the effects of a reduction in demand due to the introduction of community paramedic staff and increased levels of patients treated at scene and not requiring transport to hospital, a reduction of 15% was applied to each station for each hour of each day.

It is the Service's experience from similar situations in other Health Boards that the closure of such a facility as an A & E unit leads to an increase in the demand for the Ambulance Service. This is due to the level of public who would have self-presented now requiring transport. Based on experience, the demand for both Coatbridge and Cumbernauld has therefore been increased by an additional 14% for Scenarios A, B & C but not for Scenarios D & E where the proportion of affected patients is less.

2. Average "Service Time"

The baseline average service time is obtained from SAS data for each station for the full year 2006/07. However, in order to model the effect of each scenario, there was a need to establish the additional journey time required to transport patients to an appropriate receiving hospital.

The demand by postcode sector is used to determine the additional journey times for each sector and aggregated up to give an additional average increase or decrease in minutes per journey for each station for each scenario. This is then applied to the total demand for each station to get a revised average service time for each station for each scenario.

The average service time has been calculated for each scenario based on the patient flows. For scenarios A-C, it has been assumed that 25% of the patients currently taken to Monklands would continue to be taken to Monklands and that any additional journey time would only be applied to the remaining 75%. In scenario D, a 67% to 33% ratio has been applied and in scenario E a 90% to 10% ratio.

It is the average service time which is affected by the changes to patient flow in each scenario. We do not model on a 'per journey' basis but on a scenario basis.

Additionally the time for any increased volume of inter hospital transfers (IHT) had to be considered. Using the self-referral figures provided by Lanarkshire less one-third and factoring in the percentage going to either Hairmyres or Wishaw, the average number of journeys per day was calculated. From this, the hours required to cover that was established and based on that coverage, the IHT staffing levels were determined.

3. Application of Operational Research Model

The model is based on queuing theory and utilises as inputs the average demand and average Service Time. Based on a probability it determines the number of ambulances / vehicle crews that are required for each hour of the day for each station in the Health Board area.

Three hourly demand data sets were used; one for the full year 2006/07 including 14% uplift for Coatbridge and Cumbernauld, one for full year 2006/07 without 14% uplift, and one for the full year less 15%.

Three sets of revised service times were applied to these demand levels depending on the scenario. The combination of these is set out below for each scenario:

Scenario	Demand Profile	Revised Service Time
A, B & C	Full year 2006/07 plus 14% Cumbernauld & Coatbridge	25% retained at Monklands
D	Full year 2006/07	67% retained at Monklands
E	Full year 2006/07	90% retained at Monklands
A,B & C less 15%	Full year 2006/07 less 15% plus 14% Cumbernauld & Coatbridge	25% retained at Monklands
D less 15%	Full year 2006/07 less 15%	67% retained at Monklands
E less 15%	Full year 2006/07 less 15%	90% retained at Monklands

4. Vehicle Crew Staff

The numbers generated for each station under the "Crews Required" heading are then entered to a shift rostering software package in order to generate a shift pattern. The software requires parameters to be set in terms of minimum and maximum shift lengths to be used; average working week hours; minimum break between shifts; preferred shift start and finish times. In accordance with current Service Terms and Conditions incorporating Agenda for Change, meal breaks have been built into the required level of cover to be provided.

Utilising these rosters it is possible to determine the number of staff and vehicles required, inclusive of Relief Staff. This is then compared with current levels based on 2006/07 establishment.

The WTE for each station under each scenario have been summarised in Appendix A.

Of Note:

The Emergency referral centre is being progressed by a sub group work stream (lead by Heather Knox) under the direction of the West of Scotland Regional Planning Group.

Given that the absolute direction of the emergency referral centre (ERC) has not yet been agreed or to what extent the SAS will be involved there is a concern that this presents a level of risk for this element of the underpinning model (currently the SAS are assisting with looking at the set up/software programmes/data links/IT support etc through our General Manager, IT: Ian Shanley). The SAS understands, and is comfortable with, the assurances that this issue is being managed through NHS Lanarkshire's risk management process.

This area of risk has been identified by the SAS at various meetings and will continue to be discussed and considered/scoped in more detail at a range of sub groups to develop its feasibility, risks, benefits, costs etc as options progress

Costing of Scenarios

Full costs for each scenario have been provided in Appendix B.

All costs are based on current Agenda for Change unsocial arrangements and salary bandings. If these change for any reason, then the costs for each option would require to be adjusted.

All costs are based on 2007/08 prices. Once date of implementation is known, these costs would require to be adjusted.

Under each scenario where a reduction of 15% hospital attendance has been factored in, it is a pre-requisite that the costs of 6 community paramedic staff required to affect this 15% redesign will be met up front.

Scenario Appraisals

Scenario A

Emergency Referral Service will direct patient groups to the right place the first time. This will include 999 calls and appropriate referrals from NHS24. This scenario will also require GPs and paramedics to triage and direct patients to the most appropriate place.

A&E will provide a See & Treat service, with resuscitation and stabilization of presenting patients if required. Patients requiring acute treatment on an inpatient basis will be stabilized and transferred. There will be no Critical Care or Anaesthetics presence in the A&E department and no Acute Medicine or Surgery.

The A&E department will be staffed by a MINTS team, senior A&E medical staff (rotating from within NHS Lanarkshire) and other middle-grade medical staff. Out of hours, including weekends, there will be middle-grade medical staff supported by A&E consultants remotely from other sites, a HECT team, and a resident medical officer (RMO) for the hospital. We would also integrate the Primary Care Out of Hours service, having GPs available in the A&E department

SAS Response to Scenario A

Benefits

Opportunity to deliver a service which is more considered and appropriate to the patients needs. This model drives and supports a more holistic approach, particularly for patients presenting via 999, to delivering the principle of providing the patients with care options which are as local as possible whenever possible

Risks

There is significant clinical risk regarding the management of patients who self present to Monklands with an illness or injury that cannot be managed within the scope and resources of the A&E Dept. or indeed the hospital. The contingencies required to ensure the appropriate and timely transfer of these patients needs to be robust if an acceptable level of clinical risk is to be achieved.

It must also be noted that the development of any transfer service needs also to ensure, in all but exceptional circumstances, no impact on the current standard of ambulance service delivery in Lanarkshire.

Opportunity Costs

This option has the potential to release some opportunity costs that would help develop and deliver the see and treat capability of the Ambulance Service. Consequently this would support the earlier, broad description, of the benefits that may be realised.

Scenario B

As per Scenario A - plus access to a short-stay ward/facility for up to twelve hours. This facility would be managed by A&E staff.

SAS Response to Scenario B

Benefits

As described in Scenario A

Risks

The risk regarding inter hospital transfers is reduced due to the increase in numbers of patients being definitively managed at Monklands. Additionally those transfers still required could be better planned due to a more accurate clinical picture of their condition being gained during the 12 hour assessment period.

Opportunity Costs

As described in Scenario A

Scenario C

As per Scenarios A & B - plus access to a bedded area where patients could be assessed, with a maximum 48-hour stay. Those patients requiring a surgical intervention or a greater medical input would be required to be transferred.

In addition to the A&E staff (in Scenario A) there would be a rotating pool of acute physicians/medical staff that would manage the 48-hour ward, and general surgeons who would undertake a daily ward round.

There would be no Critical Care or Anaesthetics service 24/7 on site.

SAS Response to Scenario C

Benefits

As described in Scenario A

Risks

The risks regarding inter hospital transfers are reduced by the application of the rationale described in Scenario B

Opportunity Costs

As described in Scenario A

Scenario D

The Emergency Referral Centre would be required to direct patients with specific problems to other sites, for example: major trauma and heart attacks other patient groups may be identified through protocols).

The A&E department would have a full complement of A&E staff. There would be Acute Medicine and General Surgery on site, as well as access to 24-hour critical care and Anaesthetics opinions.

There would be a limited range of sub-specialties on site, such as no Paediatrics or Trauma and Orthopaedics.

SAS Response to Scenario D

Benefits

The Emergency Referral Centre would ensure a greater number of patients presenting via 999 would reach their definitive point of care more quickly. The development of patient pathways and protocols for emergency presentations would also ensure greater accuracy in identifying, at the earliest opportunity the most appropriate "site" for the patients needs e.g. patients home, GP/nurse, A&E (Monklands, Wishaw, Hairmyres), inpatient bed (Monklands, Wishaw, Hairmyres).

Risks

The overall number of patients requiring transfer would be reduced in this scenario however the ability of Monklands to deal, in the medium term, with patients who are seriously ill/injured would create another element of clinical risk.

Opportunity Costs

A reduction in the scale of opportunity costs in this scenario impacts on the potential of investment as described in Scenario A

Scenario E

The Emergency Referral Centre would be required to direct patients with specific problems to other sites, for example: major trauma and heart attacks other patient groups may be identified through protocols).

The A&E department would have a full complement of A&E staff and there would be access to critical care beds

General medicine and acute medical receiving - full inpatient service. Elective and emergency general surgery - full inpatient service.

No trauma or orthopaedic service

SAS Response to Scenario E

Benefits

As described in Scenario D

Risks

Broadly as described in Scenario D however clarification is required in relation to the number, and length of stay that could be accommodated by the critical care beds

Opportunity Costs

As per Scenario D

Scenario F

Status quo - service as currently provided from Monklands Hospital

SAS Response to Scenario F

Benefits

As currently

Risks

As currently

Opportunity Costs

As currently

Scenario G

Service as currently provided from Monklands plus the delivery of appropriate, but at this stage unidentified, sub-specialties

SAS Response to Scenario G

Benefits

Assuming the effective input of the Emergency Referral Centre there are potential benefits in more accurate pre-hospital triage and streaming of patients to their definitive point of care.

Risks

As currently however further clarity is required regarding the specific sub-specialties located at each site (Monklands, Wishaw & Hairmyres) to allow accurate mapping of patient journeys

Opportunity Costs

May be effected by the maintenance of Monklands as a level 3 site however to achieve the benefits described earlier in this option a level of investment would be required.

Summary

Of the scenarios described A, B and C are likely to have the greatest impact on the SAS and consequently will require the most significant levels of investment to accommodate increased inter hospital transfer activity and extended journey times.

Scenario F, in relation to the SAS clearly has no impact in terms of additional resource and scenario G is not developed to a stage where we can comment with any clarity on any potential impact.

While the SAS recognises and supports the concept of the Emergency Referral Centre (ERC) it must be noted that the scale of integration and co-ordination proposed is not currently practiced anywhere in the UK. The assumptions of benefits gained from this model to patients and the system as a whole would be unsurpassed however given the pivotal role of the Centre, the complexity of integrating a variety of systems and the absence of evidence from any similar models an element of caution and recognition of some level of risk must be considered when factoring the impact of the ERC.

In order for the Ambulance Service to implement appropriate pre-planning to effect whichever scenario is selected as the preferred option, we would require sufficient advanced involvement and notification to enable a smooth transition for the people of Lanarkshire.

Finally the SAS must register the point that the timescales applied to the development of this piece of work have prohibited an appropriate level of discussion and analysis that would normally inform our assumptions and resource modelling. Consequently any resources and associated costs, while as accurate as possible based on available information, should be considered as indicative.

List of Appendices

Appendix A: WTE Calculations

Appendix B: Cost Calculations & Summary