

Modelling the whole system for delayed discharges

Audit Scotland/ISD/Tayside Partnership¹

Stakeholder Event 1 – 29th March 2004

Event report: initial view on boundaries and summary of issues identified

1 Introduction

The stakeholder event was the first of a series of five during 2004 aimed at exploring the dynamics of a local system with respect to delayed discharges of care. The Tayside Partnership had been selected by Audit Scotland and ISD Scotland to participate in the project to enable local experience to directly influence the outcomes of the review at a national level.

Both Audit Scotland and ISD Scotland have invested in training in systems modelling and begun to use the approach. This project provides a first major opportunity to engage with a local partner in Scotland using this approach².

The overall approach for the project consists of:

- Stakeholder events to ensure participation and capture of the 'whole system' in the modelling approach;
- Parallel development of capability in systems modelling using itthink software;
- An 'iterative' process of knowledge capture, model development and feedback to the group;
- Encouragement to explore the dynamics of a single 'whole system' as well as focus on key areas for their potential to impact on how the system behaves;
- Being informed by sub-group working and the capture of best practice from other locations where helpful.

The programme for the first event is contained in appendix 1. The objectives were:

- To establish a practical and theoretical baseline from which to develop a whole systems model;
- To agree the key parameters for the model in terms of timescale, level of detail and key issues;
- To identify the initial components of a high level qualitative map of the system as understood by participants.

¹ NHS Tayside, Dundee City Council, Angus Council and Perth and Kinross Council.

² The development of capacity in system dynamics and systems modelling is being supported by The Whole Systems Partnership. More details about the approach can be found on their website at www.thewholesystem.co.uk

The presentation material used at the workshop, including a brief introduction to system dynamics and modelling, is included as appendix 2 to this report. The rest of this report outlines the discussion, issues and outputs from the event.

2 Boundaries

In undertaking a systems modelling approach to exploring an issue it is vital that working assumptions about system boundaries are agreed at the outset. This task was introduced and then undertaken in small groups with subsequent plenary discussion and consensus forming.

2.1 Definition and targets

For delayed discharge the participants identified the following definition:

“A patient who is clinically fit to move to a more appropriate setting to meet their needs having had an assessment of need in line with the discharge protocol.”

There was a feeling amongst participants that whilst there was both national and local concern that delayed discharges at their current levels were unacceptable there was no ‘science’ behind the target setting or, in some cases, little evidence base for local projects and their impact (short and long term) on headline delayed discharge figures.

Part of the objective for this project should therefore be identifying and setting more realistic targets that are understood in their local context. Having achieved the set target for the end of March 2004 of 150 there was now an expectation of a 20% reduction each year for the next three years. This would equate to the following figures:

March 2005 = 120

March 2006 = 96

March 2007 = 77

This trajectory can be used to compare outcomes from the modelling work that will explore local action and its impact on current levels of delayed discharges.

2.2 System boundaries

The next element of the boundary being set relates to how wide the net is spread in identifying factors that will affect delayed discharges. The approach does not seek to ‘model the whole world’ but only that part of the system that will have material impact on the area of investigation.

Testing where this boundary lies will be the subject of ongoing work during the project but the following elements of the system were considered for inclusion:

1. Prior to hospital admission and generic community support including:
 - a. GP referrals, casualty, Rapid Response etc;
 - b. Support at home from professional or family carers;
 - c. Out of hours provision;
 - d. Early intervention schemes;
 - e. Public health initiatives.

2. During the hospital stay including:
 - a. Assessment, discharge planning, family involvement etc;
 - b. Staffing requirements and levels, information flows etc;
 - c. Capacity requirements;
 - d. Continuation of a co-ordinated care pathway.
3. Post-hospital including:
 - a. Care home capacity;
 - b. Rehabilitation;
 - c. Housing;
 - d. Community resources;
 - e. Supporting discharge.

Throughout the process consideration would need to be given to the impact on clinical staff as well as on patients and carers.

2.3 Timescales

There were conflicting considerations with respect to determining appropriate timescales for undertaking the modelling work. Short term (1 year) objectives existed in terms of delivering reductions in delayed discharges whilst it was also recognised that sustaining reductions and achieving systems change could take longer, particularly in the context of demographic, social or economic changes.

The options that are open to the project are:

- To agree on a single timescale for modelling over the medium term that incorporates short term targets (say 3 to 5 years);
- To develop different models, albeit with the same underlying assumptions and architecture, over different timescales to enable investigation of a range of influence on the system that currently produces delayed discharges.

These options would remain under review as the project progressed.

3 Issue definition

The challenge presented by the presence of delayed discharges in the system of care requires us to define the key issues and objectives in undertaking this piece of work. Questions that were considered in these discussion groups have been grouped into 6 key areas:

Policy direction:

- What level of delayed discharges is achievable and/or desirable?
- Are there different definitions, or understandings of when an individual is medically fit for discharge and how do different professional groups interpret and apply this concept and what joint training and development opportunities might this suggest?
- Is the lack of a strategy and policy with regard to intermediate care a significant factor in the level of delayed discharges?
- Is there a lack of shared goals and understandings with respect to the impact of delayed discharges amongst statutory agencies?

- What are the financial consequences of the existing system and of any modification to that system?
- How do legal issues with respect to incapacity impact on delayed discharges?

Service redesign:

- Are there solutions that require alternative forms of accommodation within the system?
- Should the focus of our investigation be on capacity and capability in within home care services?
- To what extent are delayed discharges a function of poor co-ordination between services (e.g. transport, pharmacy, home care, assessment teams etc) for example in 'opening times' or in the mismatch between the availability of places and funding?
- To what extent is the system failure that results in delayed discharges a function of short comings in capacity or in the responsiveness of current services?
- What and how do we redesign in each part of the system in a co-ordinated and managed way?

Systems – quality, outcomes, criteria, assessment:

- Is a focus on delayed discharges only dealing with a symptom of a dysfunctional system?
- To what extent is the problem of delayed discharges a reflection of 'the way we work'?

Public perceptions and expectations:

- How do different approaches to risk taking between services users, their carers and different professional groups impact on delayed discharges?
- What is the impact of choice exercised by clients/patients in the current levels of delayed discharges?

Economics and population:

- What is the impact on delayed discharges of changing demographic patterns alongside socio-economic profiles?

Resources and the balance of care:

- Are we recruiting and training the right balance of staff to help reduce delayed discharges?
- Are the interventions we are designing to reduce delayed discharges happening early enough in the patient pathway?
- How can we move from reactive to proactive solutions?

Key questions that should be addressed by the modelling work include:

1. What is it in the current system that results in delayed discharges?
2. What interventions do we need to make during a patients journey to prevent delayed discharges?
3. How can we improve our use of resources?
4. What is the bigger problem that delayed discharges is a symptom of?

5. What impact does the patient's home condition have on delayed discharges?

In order to provide a focus for the modelling work it is helpful to have a single 'statement' that encapsulates the key issue whilst retaining the range of issues identified above as related or supplementary concerns. At a subsequent meeting of the Project Steering Group it was suggested that this statement and related timescales and boundaries be provisionally agreed as:

Key issue – *What is the best distribution, redesign or development of capacity that minimises the number of patients whose discharge is delayed and maximises outcomes and value for money.*

Timescale – *consistent with 3 years of 20% reductions in DD.*

Boundaries – *immediate services, processes or capacity that impact directly on delayed discharges.*

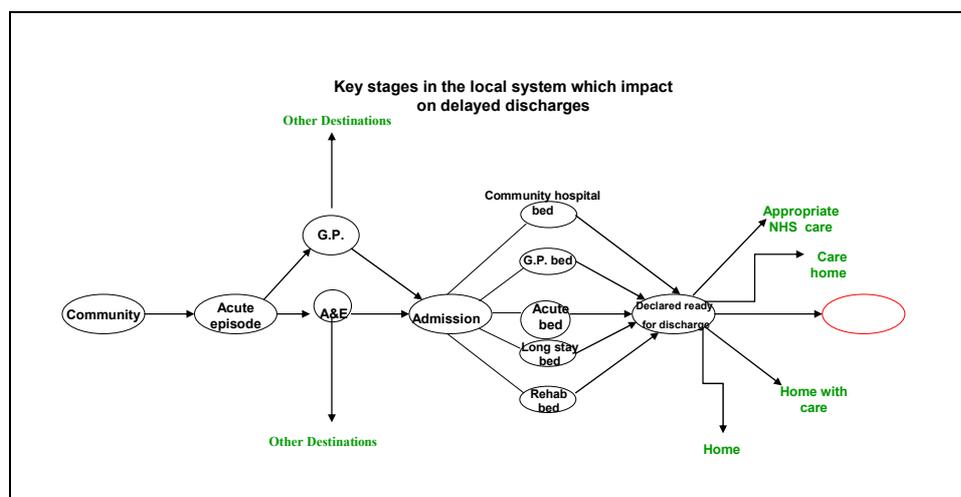
4 Modelling exercise

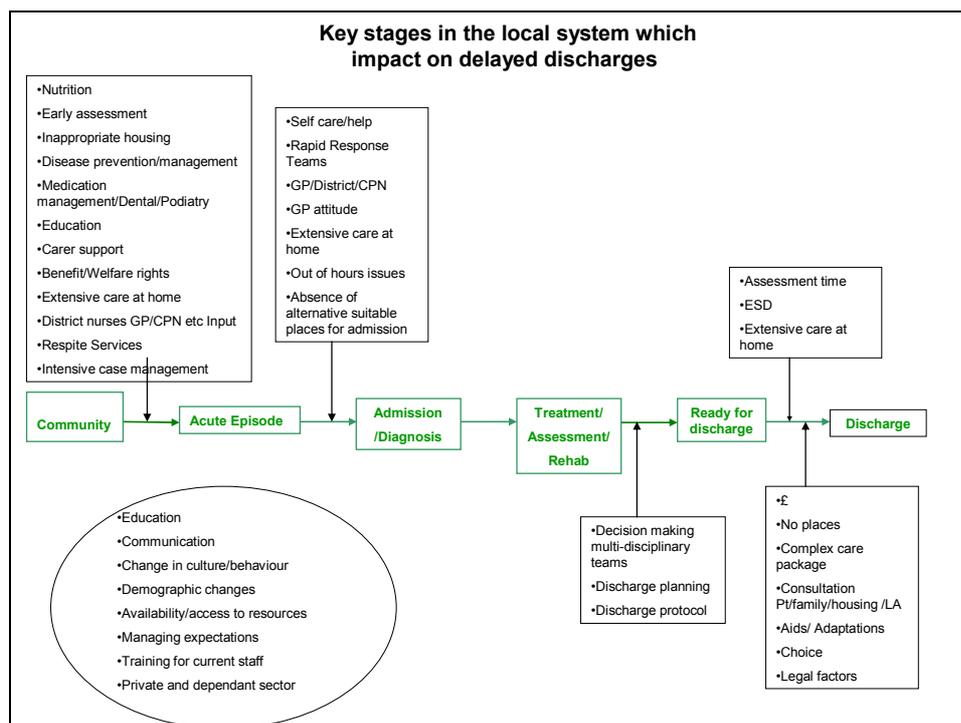
4.1 Modelling the delayed discharge process

During the second session of the first stakeholder event on March 29th, participants were split into three groups and asked to consider the following question:

'What are the key stages in the local system that impact on delayed discharges?'

The groups each had a brainstorming session to discuss the issues, recording all points made on a flip chart. At the end of the event, members of the study Project Team were responsible for analysing the outputs from the sessions. This was done through several meetings involving Mark Diffley and Catherine Vallely from Audit Scotland and Andy Carver from ISD. The results of that analysis are illustrated in the charts below.





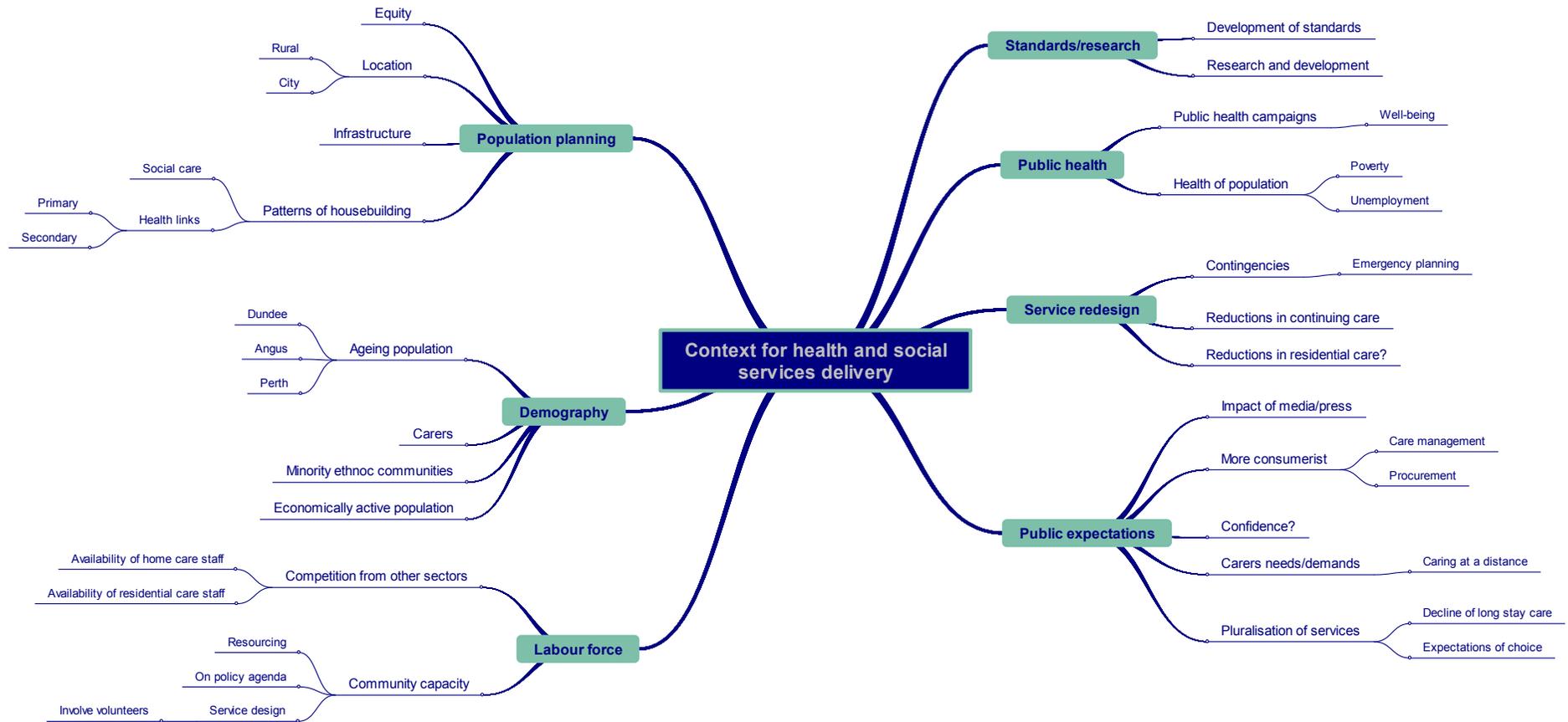
These high level qualitative maps have been used to inform the initial development the model architecture that will subsequently provide a simulation of system behaviour.

4.2 Considering the wider context

As part of the issue definition discussion participants had identified a wide range of issues that may impact on the ability of the local system to achieve and sustain low levels of delayed discharges. These included demographic, social and economic factors. Many of these may be too far removed to have a quantifiable impact on the focus of investigation. However, a fourth group at the event did explore this area by seeking to answer the following question:

‘How do demographic, social and economic factors determine the context in which health and social care services are provided?’

Whilst only limited element of this model will have direct impact on the model being developed to address the key issue identified in 3 above it will provide an invaluable back-cloth against which to consider any longer term, sustainability issues for system capacity and behaviour. As such it remains open for project participants to challenge the process at any point if they feel issues identified in the wider context could have a ‘material’ impact on the system and its behaviour.



Appendix 1 – workshop programme

Modelling the whole system for delayed discharges

Tayside Partnership/Audit Scotland/ISD Scotland

Session 1 – 29th March 2004

Seminar Room – Kings Cross

Outline programme:

| | |
|---|-------|
| LUNCH | 12.30 |
| Welcome and introductions | 1.00 |
| Objectives for the project | 1.05 |
| Local context and issues | 1.15 |
| The approach and timescales for the project (Peter Lacey) | 1.30 |
| Group discussion – issue definition | 1.50 |
| Feedback and plenary discussion from initial group discussion | 2.40 |
| COFFEE & TEA | 3.00 |
| Mapping the local system (small groups) | 3.20 |
| Feedback and discussion | 4.10 |
| Next steps | 4.30 |
| CLOSE | 4.45 |

Appendix 2 – presentation material

Tayside Partnership, Audit
Scotland and ISD Scotland

Modelling the whole system for
delayed discharges - session 1

29th March 2004

Introduction

- Approach:
 - Workshops to ensure participation and capture of 'whole system' in modelling approach;
 - Parallel development of capability in systems modelling using itthink software;
 - 'Iterative' process of knowledge capture, model development and feedback to group;
 - Will encourage exploration of a single 'whole system' as well as focus on key areas for their potential to impact on how the system behaves;
 - Will be informed by sub-group working and the capture of best practice from other locations where helpful.

Workshop programme (1)

- Workshop 1 (29th March):
 - Boundaries and issues defined;
 - High level map of system explored.
- Workshop 2 (24th May):
 - Feedback on initial modelling work;
 - Feedback on best practice visits;
 - Exploring key areas of the system.

Workshop programme (2)

- Workshop 3 (30th August):
 - Further progress on modelling – testing assumptions and exploring model behaviour;
 - Initial consideration of key learning points.
- Workshop 4 (18th October):
 - Presentation of final models and refinement of learning.
- Workshop 5 (22nd November):
 - Presentation of report findings and consideration of next steps.

Objectives for session 1

- To establish a practical and theoretical baseline from which to develop a whole systems model;
- To agree the key parameters for the model in terms of timescale, level of detail and key issues;
- To identify the initial components of a high level qualitative map of the system as understood by participants.

What is Systems Thinking?

- An ability to develop an appreciation of the whole, rather than focus on the part;
- An ability to develop an understanding of the impact of changes in one part of a system on other, sometimes hidden parts.

Goals of the approach

- To capture local systems as they are experienced by local professionals;
- Understand some of the ways in which a local system 'behaves' in response to changes in the environment;
- Explore the qualitative as well as the quantitative characteristics of a local system;
- Create a genuine learning environment built and owned by local professionals.

Modelling

- The model husband?
- A small, plastic, imitation of the real thing!

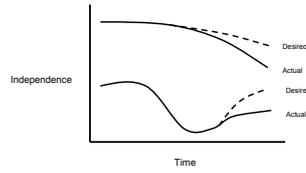


Goals of model building

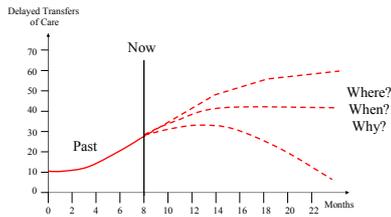
- To build a model of some system with which one can conduct experiments for the purpose of:
 - Better understanding the system's structure and behaviour;
 - Designing robust policies to alleviate problems in the system.

Issue definition

Agreeing what the problem is.



Anticipating the future



Setting the modelling parameters

- Develop a consensus about the parameters of the modelling work:
 - System boundaries;
 - Time horizon;
 - Level of detail.
- A balancing of these three elements will be required to ensure a robust framework within which to model the system.