

NHS Borders Whole Systems Bed Modelling Tool – Stage 1 report

1 Introduction

The purpose of this report is to describe the initial stages of engagement in the development of a 'bed modelling tool' for NHS Borders. At an early stage in this process it has been recognised that the unique contribution of this work will be to provide NHS Borders with a strategic capacity modelling tool that is distinct from, but feeds and is fed by more operationally oriented tools. In the light of this it is proposed that a working title for the 'product' of this work would be the NHS Borders *Whole System Capacity Model*. It will therefore be referred to as such from this point on.

The key elements of the project brief can be summarised as:

- To provide a 'one-off' response in identifying bed requirements in the context of the development of the BECC;
- To develop a modelling tool that can be used to explore wider questions of redesign in the context of 'Getting Fit for the Future';
- To provide training and support to people locally in the development and use of the tool.

A 'concept model' is described at the end of this report. Feedback from this report and subsequent discussion at the Steering Group and second stakeholder workshop will enable the development of the tool in line with this. An emerging approach has been devised that seeks to retain the Whole Systems Capacity Model to be used at a strategic level whilst using the modelling approach to develop sub-models that address specific issues and/or enable assumptions underlying the strategic model to be made explicit.

The initial components of the work covered by this report are:

- The output from an initial set of one-to-one discussions;
- A review of local and national material relevant to the brief;
- The discussion and outputs from the initial stakeholder workshop held on the 1st November.

2 Approach to the project

Whole systems modelling is a process that engages with stakeholders to explore, share and make more explicit their assumptions about how services work as part of the local system. As such it provides a tool for ongoing partnership development and strategy implementation. It enables participants to:

- Anticipate system behaviour and therefore impact in a 'safe' environment;
- Identify key levers in a change process;
- Enable delays and feedback to be identified and built in to our understanding of system behaviour;
- Provide an approximation of future requirements.

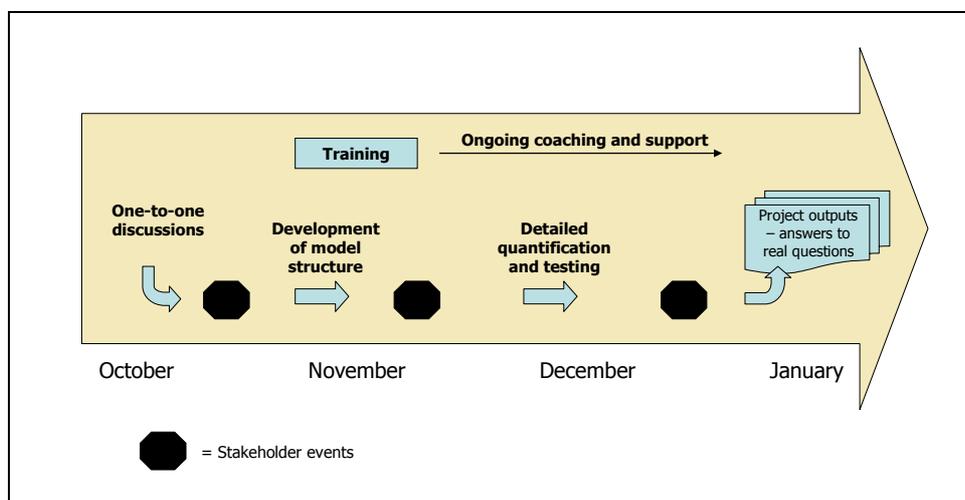
The approach being used to develop the Whole Systems Capacity Model is therefore one of ongoing engagement through one-to-one discussions and a

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series of three stakeholder workshops. The workshops are designed to provide key staging points for the project, namely:

1. To explore project boundaries, key issues, the nature of desired outputs and overall architecture.
2. To review the concept model, consider an initial 'high level' simulator and to explore key areas where system behaviour will or should change.
3. To 'road-test' the tool by exploring scenarios and identifying any outstanding development needs.

The need for the project to run in parallel with the development of an outline business case for the BECC may influence timescales but the initial outline project plan identifies a delivery date for the Whole Systems Capacity Model being at the end of January 2007. This is illustrated below.



3 Context

Nationally the 'Fit for the Future' (NHS Scotland, May 2005) document sets an overall strategic direction for the NHS in Scotland. The key messages within this document are:

- Ensuring sustainable and safe local services;
- Becoming less hospital and more community focussed;
- Developing preventative, anticipatory care rather than reactive management;
- Improved integration across the whole system;
- Modernising through use of appropriate technology;
- Developing new skills to support local services;
- Developing options with people not for them.

Locally these themes have been the subject of development and implementation over recent years. There has been an active programme to ensure community hospital capacity is 'fit for purpose' in the context of wider local community services. In relation to emergency or unscheduled care this has also led to the consideration of options for a reconfigured A&E, out of hours and acute receiving

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unit into a Borders Emergency Care Centre (BECC) – anticipated to be operational in 2011. Local characteristics of the health system relevant to the development of the Whole Systems Capacity Model include:

- A General Hospital with increasing levels of activity (2005/06 saw an increase of 5% in inpatient and episodes and 8% for day cases) and potentially increasing levels of acuity (average length of stay rising slightly in 2005/06 from 5.1 to 5.2 days);
- Generally good performance against key targets such as waiting times for treatment, delayed discharges etc;
- Higher levels of challenge in unscheduled care with A&E attendances and admissions rising (9% and 15% up respectively in '05/06) with some difficulty therefore in always achieving the 95% target for patients being admitted or discharged from A&E within 4 hours;
- Increasing levels of occupancy (up from 78% to 80% in '05/06) as well as concerns that the way in which occupancy is measured on a midnight count does not best reflect the busiest time of the day;
- Significant community hospital capacity now located in four local communities plus a 'community hospital' ward at BGH. Capacity is used for two distinct functions, GP admission and BGH discharge to 'slow stream' rehabilitation or 'continuing care'. Activity, utilisation and throughput differ significantly for these two groups.

The BECC provides the immediate local planning context for the Whole Systems Capacity Model in that the tool will need to confirm or challenge current capacity assumptions surrounding the BECC in the light of:

- Existing and anticipated trends in the rates of access to BGH unscheduled care services including the impact of demographic changes;
- Targets such as A&E waits, delayed discharges, elective waiting times etc and 'best practice' or benchmark data that informs capacity requirements;
- Changes in 'behaviour' for the system that can be demonstrated as resulting in more appropriate responses to people's needs that are consistent with efficient use of resources, for example designing new pathways for clients that minimise delays.

These considerations need to be made over the short, medium and longer term to ensure current 'viability' of the existing system, an appropriately sized BECC in 2011 and ongoing sustainability of the model beyond that date. The key components of capacity that need to be aligned within the system relate to the BECC itself, the BGH bed base, community hospital capacity and community services including long stay care.

4 Emerging issues

4.1 Stakeholder workshop – 1st November 2006

The objectives for this first workshop were:

- To describe and demonstrate the approach to the development of the bed modelling tool.
- To identify desired outcomes for the modelling tool.
- To identify the broad outline of the system under investigation.

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- To secure engagement in the project roll-out.

The agenda and participants in this session are identified in the appendix to this report. Two small groups were formed to address the following questions:

1. What are the key questions that need to be answered by the 'bed modelling tool'?
2. What 'end product' do you think would best help in taking the BECC and 'Getting Fit for the Future' forward?

Issues that emerged through this process are grouped in the table below.

Theme:	'Issue':
Use of the tool	<ul style="list-style-type: none"> • There was a need to distinguish this tool from plans for other tools at a more operational level, for example the 'bed management tool' and the 'theatre management tool'. • The tool would need to inform risk management strategies, i.e. given certain preconditions what was the likelihood of exceeding available capacity and what action should be taken. Again there was a distinction between 'strategic' and 'operational' risk considerations with the emphasis here being on the strategic although with the possibility that 'sub-models' reflecting different operational conditions could be used to inform the broad assumptions underlying the tool. • The tool is primarily a 'test bed' for different strategies and should be used, for example, to explore changing pathways in DME, improved effectiveness of rapid response, changes in day case processes etc. • The tool should be used to identify meaningful performance indicators that help in managing the whole system.
Outputs from tool	<ul style="list-style-type: none"> • The tool should be used primarily to explore the consequence of <u>different</u> 'behaviours', i.e. it should not be designed to simply project forward current trajectories but identify the impact of changes in pathways and system design that required people to work in different ways. • Using the above approach the model needs to identify those changes that would need to take place to enable the opening of the BECC to release capacity within BGH. • The 'level of detail' required from the model would be explored as it is developed but the initial assumption (based on availability of data) would be that the model would reflect capacity requirements by specialty within BGH and by key function either in the BECC, Community Hospitals or community services. • The model needs to address issues of seasonality and variation in capacity requirements.

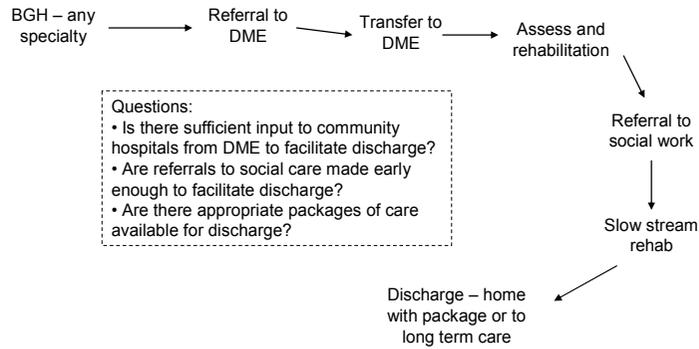
Theme:	'Issue':
Nature of the tool	<ul style="list-style-type: none"> • The tool would need to focus on the inter-dependencies and impact across the system, for example in relation to the impact (both ways) between elective and unscheduled care pathways. • The tool should include community hospital capacity. • The tool needs to reflect current and future projections for delayed discharges. • The tool should reflect the different 'characteristics' of different types of resource and, where appropriate, reflect constraints within the system, for example beds in different places will require different levels or patterns of staffing. • The tool should not be a 'financial model'. • The tool needed to be able to take account of significant developments outside Borders, for example the new Children's Hospital in Edinburgh. • The tool, and local competence in using the tool, should have some capability to explore new scenarios not currently anticipated.

A second session of the workshop explored some 'illustrative' pathway changes that demonstrated the possible methodology and the areas where change of system behaviour/pathways could be best explored in the Whole System capacity Simulator. These are reproduced on the following pages to inform the next steps. A recurring set of challenges emerge from these pathways, namely:

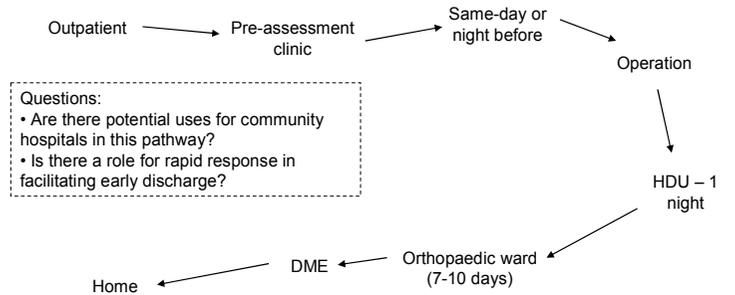
- Doing things 'early in the pathway' and avoiding repetition;
- Exploring ways in which community hospitals (with appropriate staffing) can be used to their full potential;
- Thinking through the contribution/role of care in the community and particularly social care or long term care admissions;
- Taking opportunities to redesign the 'front-end' now before the BECC is developed;
- Identifying when and where medical input is critical to facilitate movement along the pathway.

The strategic whole system capacity simulator will need to reflect many of the issues and challenges that this element of work has highlighted.

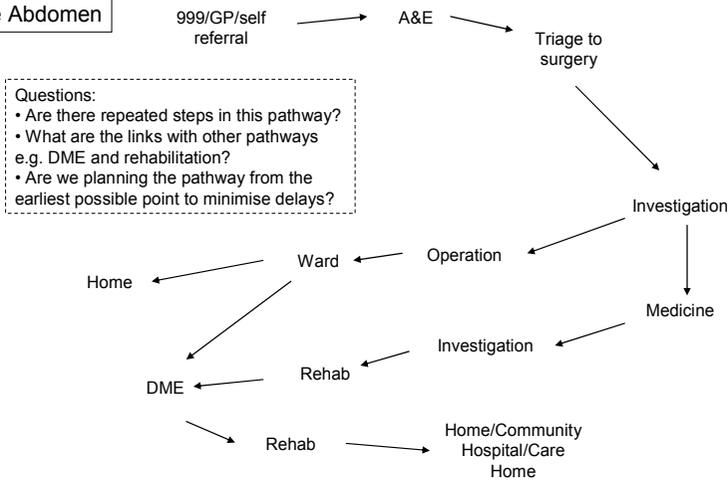
Community Hospital – ‘Continuing Care’



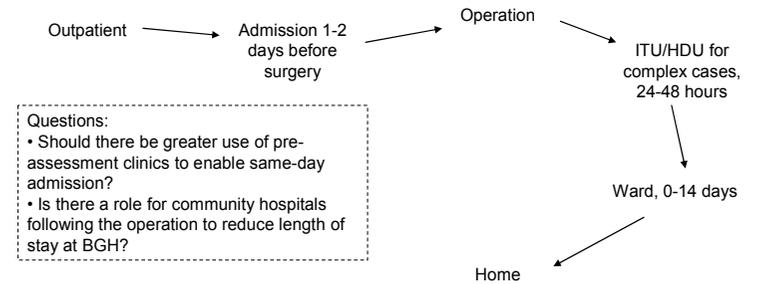
Elective orthopaedic

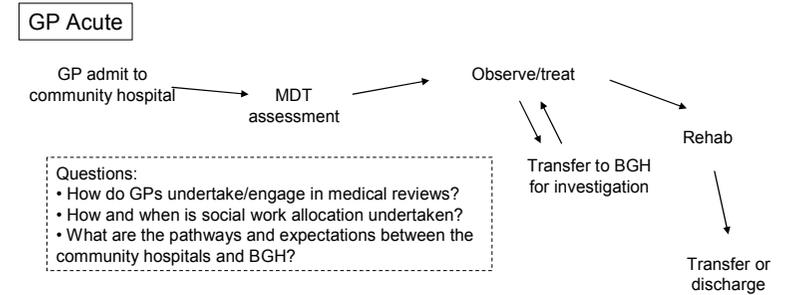
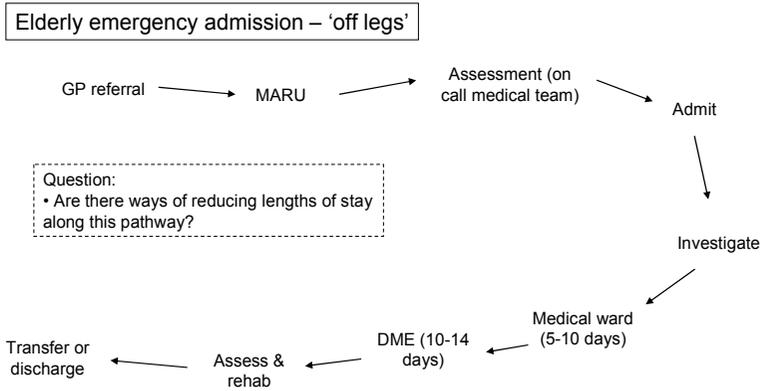
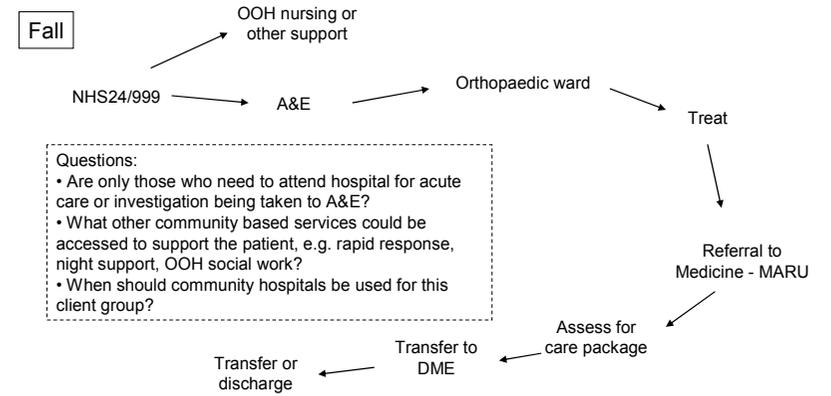
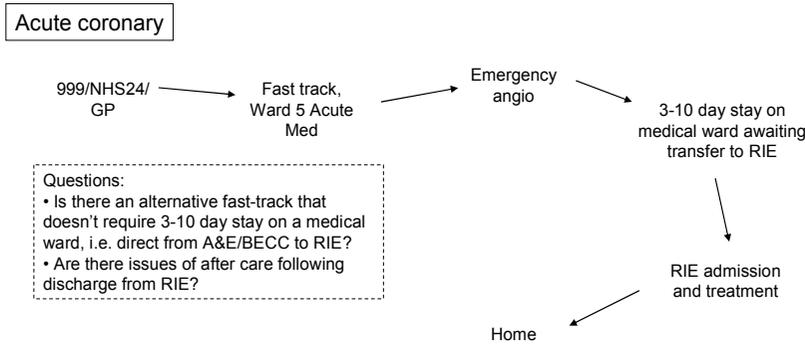


Acute Abdomen



Surgical elective





4.2 Themes emerging from one-to-one discussions

We have also had the opportunity to meet with local stakeholders on a one-to-one basis (see appendix for current list) who have identified a similar range of challenges and expectations for the project. These have included:

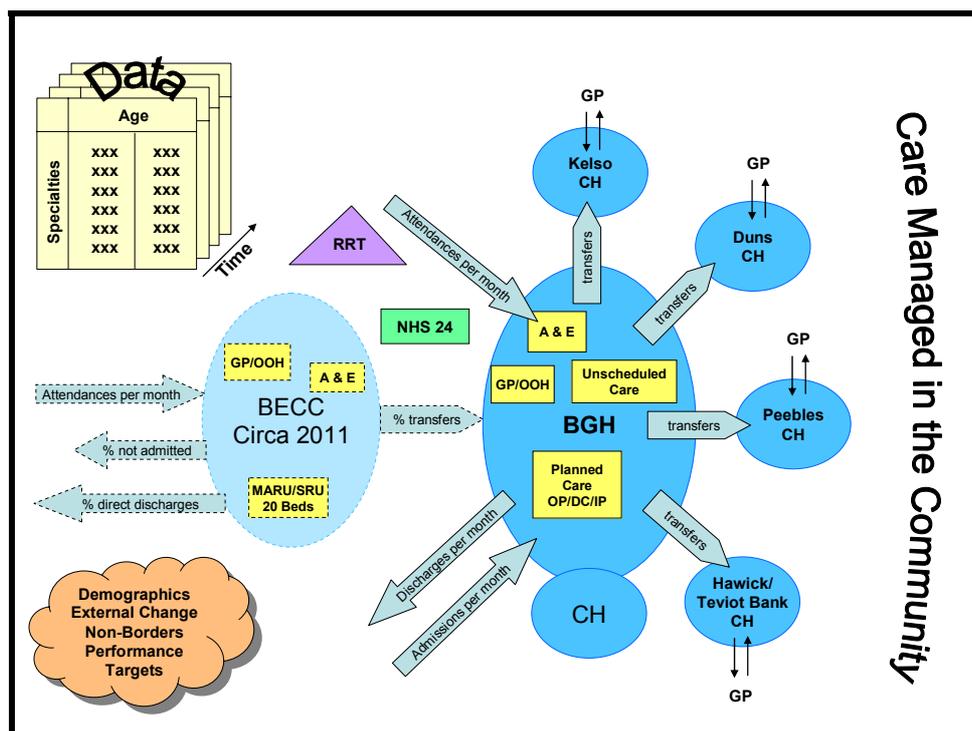
- The need to maintain a focus on strategic decision making concerning bed capacity over the medium to longer term;
- The importance of developing and applying a consistent set of performance measures for the BECC and bed capacity;
- The pragmatic decision that the model should be based on specialties rather than care groups, although the latter may inform how we explore different scenarios based on specialty outcomes;
- The model sensitivity also needs to take account of different levels of acuity, age profiles, length of stay and distinctions between planned and unplanned care;
- Future demographic projections and the impact of such factors as a new railway line to Edinburgh need to be taken into account;
- The expectation that the modelling tool will help the Health Board achieve greater 'whole system' working in meeting its performance targets;
- The availability of local information as a basis for modelling is relatively good given previous and ongoing work on the BECC, community hospital development plans and the Getting Fit for the Future workstreams;
- The need for this work to bring greater clarity and confidence in the initial assumptions and modelling associated with the BECC but in a wider whole systems context and with full engagement of a wide range of local stakeholders;
- The importance of engaging social care in the project to explore overlap and impact of strategies being pursued in the different agencies;
- The expectation that the modelling approach will both address and raise a wide range of questions about future planning and capacity requirements, some of which will be outside the scope of the brief as it relates to the BECC and BGH bed requirements;
- The importance of understanding the key 'balancing acts' between, for example, elective and unscheduled care capacity and BGH and Community Hospitals;
- The need to reflect implications for community services within the process and potentially within the modelling outputs;
- The recognition of constraints within the modelling such that future projections, based on changing behaviour/pathways are understood in the context of such constraints, for example levels of staffing;
- The need to ensure the modelling is sensitive in its assumptions to the need to understand the impact of variation and 'cycles' of activity i.e. daily, weekly, annually;
- Key questions need answering with some clarity, for example, will the opening of the BECC enable the closure of 20 beds in BGH, and on what assumptions?

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- The need to fully understand the impact of an older population (both now and in the future), for example in where and how complex cases with co-morbidities such as dementia and stroke should be cared for.

4.3 Initial concept model

Following the assimilation of the initial issues and expectations from the local research, one-to-ones and workshop outputs an initial 'concept model' has been developed to represent, in a qualitative way, how the final tool will seek to reflect the local system. This is illustrated below and will be explored in more detail at the second stakeholder workshop on the 6th December.



5 Next steps

In addition to the development of this report the next steps for the project involve:

- Continuing to meet with individuals who have a contribution to make to the project;
- Delivering training and awareness sessions in systems modelling as the start of the process of building local competencies in the use of the final tool;
- Developing the 'concept model' described above into an initial high level, quantified simulation to demonstrate approach and potential for learning;
- Planning for the second workshop on the 6th December at which further progress will be made in exploring the changes expected in the local system of care that will impact on future capacity requirements.

Appendix

1st November workshop – outline programme

9.15	COFFEE
9.30	Introductions
	Objectives for the project
	Systems modelling – demonstration of approach
	Project plan
9.50	Group work session 1
	Key questions for the modelling & model boundaries
	Desired outcomes for the project
10.20	Plenary discussion – key themes and boundaries for the project
10.45	BREAK
11.00	Group work session 2
	System components, relationships and anticipated behaviour
12.00	Feedback and discussion
12.15	Discussion and agreement of next steps
12.30	LUNCH

1st November – attendance

Michael Pearson, Head of Service Change Rachel Bacon, General Manager, BGH Hamish McRitchie, Consultant Radiologist George Ironside, IM&T	Janice Cockburn, Principal Accountant Steph Black, Performance & Planning Sheila Ruming,
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One-to-on discussions (to date)

Michael Pearson, Head of Service Change Rachel Bacon, General Manager, BGH Hamish McRitchie, Consultant Radiologist Meriel Smith, IM&T	June Smyth, AD of Performance & Planning Ralph Roberts, Director of Integrated Health Services Paul Syme, DME Consultant
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Steering Group members

Michael Pearson, Head of Service Change June Smyth, Asst Director of Performance and Planning Rachel Bacon, General Manager, BGH Jackie Stephen, Head of IM&T	Hamish McRitchie, Consultant Radiologist Erika Reid, Unscheduled Care Lead Jackie Martin, General Manager, Primary and Community Services BECC Project Manager, when appointed
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