

**Strategic Commissioning Framework
(incorporating and building on the
outputs from modelling work to
determine long term care needs for
older people in Leeds)**

Leeds Department of Social Services

www.thewholesystem.co.uk

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Preface

This strategic framework has been developed with a view to establishing the context for two key activities. First the setting of targets for the Local Authority in regard to the commissioning and provision of key services for older people and their long term care needs and second in facilitating more detailed negotiations with care providers about what services will actually be purchased and where.

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Executive Summary

1 Background

This report reflects the context, process and outcomes from a project to inform the commissioning of long-term care for older people in Leeds¹. As well as considering total levels of need it also addresses specific factors relating to older people with mental health needs.

In addition to this report two dynamic whole systems models have been developed using ithink© software, one for older people in total and one for older people with mental health needs. These are driven by published demographic profiles for Leeds but reflect the project team's understanding of the local systems and processes at work in Leeds.

The process undertaken has resulted in a greatly enhanced understanding of the different factors that impact on the supply and demand for services for older people. A common language and more closely aligned mental map of the local system will facilitate discussion and debate as services for this important client group are developed in coming years.

The Department of Health model projects a 23% increase in long term care needs between 2000 and 2020. However, with a fall in dependency rates of 1% a year the level of need remains broadly level. A further shift from residential to home care would reduce the level of need for institutional care.

Assumptions underlying a reduction in dependency rates relate to a range of strategic changes that are not easily quantified. They include additional support at home through home care and support from carers as well as the impact of the National Service Framework to improve and lengthen healthy living. This work has sought to explore these factors in the local context.

2 Long term care needs of older people

The modelling took an inclusive approach to long-term care that recognised the need for services supporting people 'where they live' whether this is in their 'family home', sheltered or extra care housing or residential/nursing homes. The key outputs from the exercise needed to gauge the direction and magnitude of changes for long term-care in total and any shift between where this care should be provided.

The model developed by the team reflected distinct 'sectors' that would influence the quantity and balance of long term care needed:

- The demographic drivers that reflected the increase in the population of older people;
- A sector reflecting the capacity of local communities, including carers, to support older people;
- The impact of the acute sector and related rapid response, rehabilitation and intermediate care services;
- The nature and capacity available for providing long term care away from institutional settings;

¹ The work was commissioned by Leeds Social Services and was undertaken by Peter Lacey and Paul Gisborne from Woodville Consultancy (www.woodville-consultancy.co.uk).

- The capacity of the residential and nursing home sector.

The modelling was based on Office for National Statistics demographic trends for Leeds, non-elective activity assumptions from the National Beds Enquiry, local intermediate care capacity developments and current levels of long-term care in Leeds.

Over the short to medium term assumptions of growth in key sectors were modified as follows:

- Non-elective (emergency) admission for older people reducing from 2% to 1% a year (in line with national expectations/targets);
- Increases in intensive home care reduced from 10% to 5% a year in line with local expectations;
- A levelling off of capacity in Intermediate Care and shift toward a balance between step-up and step-down services compared with a current 60/40 split in favour of step-down.

Based on these assumptions and local demographic data the model identifies a small reduction in admissions to care homes in the short term (to 2005) followed by a rise to 2008 but with no further rise to the end of the modelling period at 2021. To balance this level of care home provision the model suggests the need for an average of approximately 50 new units of supported extra care housing a year across the city to ensure demand and supply are kept in equilibrium.

The modelling highlighted the need for close monitoring of new pathways developed by the introduction of intermediate care and extra care housing. Both will have an impact on the length of time people remain at home but will, in turn, impact on the type of services required in care homes including respite and more intensive levels of care. The model suggests that whilst the number of admissions to care homes rises slightly over the modelling period the number of beds required may fall slightly due to the impact of these changes.

The costs to Social Services of key elements of the long-term care sector as derived from the modelling exercise suggests a rise from £70M in 2002 to £76M in 2005 and £83M in 2010 (equivalent to an annual increase of 2.15% in real terms). Intensive home care costs would, however, account for 27% of these costs in 2002 rising to 35% in 2010 (requiring an increase in non care home provision of long term care of 5.4% a year in real terms). The equivalent increase in care home provision would be 0.7% a year in real terms although this would should be profiled at the end of the period.

The exercise broadly confirmed participant's expectations of the need to sustain a healthy care home sector at similar levels but with a modified focus on higher level care needs; the need to be pro-active at the interface with the acute sector with close monitoring of pathways in aggregate to inform future planning; the need to review the way we monitor the uptake of more intensive packages of care across a range of settings.

3 Older people with mental health needs

The underlying demographic and prevalence rates for mental health conditions in old age produce different future profiles of demand:

- The total number of people with dementia in Leeds is only projected to rise slightly at the end of the modelling period (2015 forward) but this masks a steady rise in the number of men throughout the period balanced by a fall in the number of women to 2015. The

proportion of people with dementia who are men rises from 34% to 40%;

- Up to 2010/11 there is no increase in the number of older males in Leeds with depression or anxiety whilst for females there is a fall of about 8%. Beyond that point there is a rise in both males and females with depression or anxiety of 17% and 11% respectively.

Because of the different profiles and care needs of people with dementia this group provided the focus for modelling.

Four levels of need were identified for modelling purposes ranging from people with a mild dementia supported by generalist health and social care in the community through to people needing specialist long-term care in a residential or nursing care setting. The outputs of the model were designed to determine the number of people needing care at the different levels, with a particular focus on the proportion maintained at levels 1 & 2 and the absolute numbers requiring care at levels 3 & 4.

Four interventions were modelled with their impact on the underlying model being based on evidence from the literature:

1. The introduction of comprehensive assessment and intervention at the point of an older person being admitted for general hospital treatment following a non-elective admission;
2. The introduction of new drugs (based on evidence on effectiveness of Ebixa);
3. Decommissioning of day centres and re-investment in more flexible carer support;
4. Introducing a programme of family counselling and support for carers of people with dementia.

On the baseline scenario the proportion of people sustained at levels 1 & 2 was 76% at the end of the period with an additional 150 people supported intensively at home and 25 less supported in an institutional setting. The introduction of assessment and intervention increased the proportion at levels 1 & 2 to 78.3% with a significant reduction in the number of people in institutional care (163 less at the end of the modelling period) whilst the programme of family counselling had a similar impact on the proportion at levels 1 & 2 but with a larger reduction in the number of people supported intensively at home.

In summary, whilst current levels of long term care provision for older people with dementia may not be adequate, there is no evidence of growing demand based on current prevalence and projected demographic change. In addition there is evidence that new interventions can have a positive impact on maintaining people at home through focussing on the needs of both the person with dementia and on their immediate informal carer network.

It may therefore be necessary to undertake short-term investment in support for older people with dementia to address any current shortfalls (perhaps targeted at increasing skill levels in mainstream institutional care settings). Future investment, however, will need to be focussed on the type of well-evidenced interventions described in this framework.

4 Conclusion

This framework provides a direction of travel for the commissioning of long-term care for older people in Leeds. It identifies a picture that is not dissimilar to that described in national studies but has been developed in a participative

way that has had the benefit of identifying underlying assumptions and 'beliefs' about the way in which the local system works. It concludes in broad terms that:

- There are no short-term pressures from demographic change and medium to longer-term pressures are modest until the very end of the planning period (2015 forward). For people with dementia the most significant factor in planning for the future is an anticipated shift toward there being a higher proportion of men with long term care needs;
- With realistic levels of ongoing investment in very sheltered or extra care housing along with appropriate support there is currently an adequate supply of care homes. There would, however, be an expectation that nursing care would become more intense and focussed on shorter periods at the very end of people's lives and that both nursing and residential care units will need to become more flexible in the use of their capacity with shorter stays and increased use for respite and intermediate/rehabilitative types of care;
- That there is significant potential for investment in supporting older people with dementia in an integrated and care managed way in the community, in care homes and during acute (general and mental health) hospital phases of illness.

1 Introduction

1.1 Background

Providing long term care for older people is a key component of the statutory responsibilities of Social Services Departments. This Strategic Commissioning Framework sets out the broad direction for how Leeds Department of Social Services will fulfil this responsibility in partnership with the health sector, independent and voluntary sector providers and service users and their carers.

The framework is the product of a piece of project work that took the long view on demand and supply for a range of mainstream provision for older people². It's objective was *"to develop a 'whole systems' model to explore both the demand for long term care and its supply over a 20 year period"*. It therefore looked forward to 2021 in broad demographic terms and to 2006 in more detail.

In doing this it sought to recognise the known aspirations and published evidence of what older people are, and may in the future, be wanting. This, however, in no way replaces the need for local involvement of older people and their carers in the refinement and making real of the direction set out in this document.

1.2 National studies of long term care needs of older people

The Department of Health has recently undertaken a project with similar aims to this study, though at a national level³. It identified trends in the number of residential places and nursing beds in England between 1995/6 up to 2000 and then projected demand forward to 2020. It's findings were that:

- Between 1995/6 and 2000 (and for all age groups) there was a 2% fall in total nursing beds, but a 13% rise in nursing beds in mental nursing homes.
- There was a 6% rise in residential places in residential care homes.
- The total number of contact hours for home care increased by 65% between 1992 and the year 2000. The proportion provided directly by local authorities, however, has fallen to 44%.
- At the same time the number of households receiving homecare also fell by 25%.
- The proportion of households in receipt of home care services who received intensive homecare stood at 18% in the year 2000.
- On the basis of no change in patterns of care or dependency, the number of older people in residential and nursing homes is projected to rise by 23 percent between 2000 and 2020.
- If dependency rates fell by 1% per year, however, the projected number of older people in institutional care would remain roughly constant over the same period.
- In addition a shift in the balance of care from residential to home care further reduces the projected increase in demand for institutional care.

² See Appendix 1 for participants.

³ The Residential Care and Nursing Home Sector for Older People: An Analysis of Past Trends, Current and Future Demand. DoH, 2002.

- The report also found there to be sufficient supply of institutional care to meet estimated demand in most regions based on the assumptions above.
- In analysing local variations in supply and demand of residential care the study found that demand for supported independent sector residential nursing home care for older people is associated with fee levels and the availability of alternative services, such as Homecare and district nursing. Fee levels, local average earnings, local property prices and the average size of care homes is associated with the supply of independent sector residential and nursing home care for older people.

As a development of this approach the Alzheimer's Research Trust and the London School of Economics PSSRU undertook a subsequent piece of work that considered the needs of older people with cognitive impairment over the period to 2031⁴. It concluded that the number of people with cognitive impairment is projected to increase at a faster rate than the numbers of people with only a functional disability and that unless effective treatments are developed the number of older people with cognitive impairment and the services they require will be significantly greater in 2031. It suggested the need for an increase in home care hours by 67% and institutional placements by 63% to 2031 although the largest growth was in the latter part of the period and no assumptions about changes to the current balance of services and access rates were made.

A further study undertaken by the Personal Social Services Research Unit (University of Kent) and the London School of Economics has been published in the Health Statistics Quarterly of winter 2001. Its findings suggested:

- The need for a 65% increase in institutional places between 1996 and 2031, with most of the rise period between 2010 and 2031.
- There would need to be a 48 percent increase in the number of homecare hours over the same period.
- Expenditure on long-term care would need to rise by around 148% in real terms between 1996 and 2031.

Finally a study on older people and inequalities in the North West of England⁵ set the national context and identified the key factors that need to be taken into account when trying to look at future needs for long-term care for older people to be the numbers of older people, their household type, dependency levels and present levels of both formal and informal care. It also identified some of the characteristics of projected household make-up with a significant growth in older men living alone (by over two thirds to just over 1M between 1996 and 2021) compared with only a marginal increase for women living alone.

Such changes will have important implications for the provision of social care. In particular the decrease in multi-generational households will reduce the availability of family living in the same household as older relatives and so able to provide informal care. However, the rising divorce rates may mean that older people have more adult children to call on for help, because of the existence of both natural and step-children.

⁴ Cognitive impairment in older people: its implications for future demand for services and costs. January 2003.

⁵ Older People and inequalities in the North West of England, J Drever, NW Public Health Observatory, 2002.

Together these studies provide a useful background against which to consider a local model of demand and supply for long term in Leeds that reflects the particular demographic and market factors relevant to the city.

1.3 Policy context

Recent years have seen key policy developments that will impact significantly on the long-term care needs of older people. These include:

- The National Service Framework for Older People;
- Promoting Independence;
- Modernising Social Services;
- Fair Access to Care;
- Revisions and alignment of responsibilities for Continuing Care;
- Building Capacity and Partnerships in Care;
- Best Value.

The National Service Framework for Older People (NSF) introduced eight standards to improve the services that older people receive and to remove variations in the standards of care and access to services. Whilst the NSF did not address the specific issues arising from the long term institutional care needs of older people its emphasis on person-centred care, ending age discrimination, intermediate and rehabilitative care and active aging all re-enforce the move to encouraging more independent living.

Promoting Independence places an emphasis on rehabilitation including slow stream, extra care housing, supporting people and intensive service arrangements.

'Modernising Social Services' (1998) set out priorities for improvement: promoting independence, improving consistency and providing convenient, user-centred services. These would be achieved by improving protection, raising standards in the workforce, partnerships (particularly with health services) and delivery and efficiency.

Building Capacity and Partnerships in Care has emphasised the importance of forging real partnerships and strategic alliances with the independent sector in the provision of long term care needs.

The Priorities and Planning Framework produced by the Department of Health for 2003-2006 identifies one of its 12 high-level strategic names as being:

To improve the quality of life and independence of older people so that they can live at home wherever possible, by increasing by March 2006 the number of those supported intensively to live at home to 30% of the total being supported by social services at home or in residential care.

The local modelling work described in this report suggests that steady progress had already been made up to 2001/02 toward this target with a rise from 16% in 1997/98 to nearly 22%. Further, more rapid progress was being made during 2002/03.

Finally capacity planning for social services across England has recently been supported by the release of a national model identifying indicative levels of residential care, extra care housing, home care and intermediate care for 2005/06. The indicative growth identified in this model will, undoubtedly, form part of the performance management framework for Local Authorities. An initial appraisal of the targets suggests that the assumptions of the model in this

report are consistent with, and provide a robust approach to validating any marginal discrepancies with the national assumptions.

Together these national drivers make this the time right to explore in more detail the long term care needs of people in Leeds, building on what has already been achieved in partnership working with health and the independent sector and setting out a broad commissioning framework for the medium to long term.

1.4 Local context

In addition local developments in services and changes in the market are impacting on the nature of long term care available or required by older people in Leeds. These factors include pressures in the Leeds Care Market including residential and nursing home provision, the development of intermediate care and rapid response services and the Supporting People programme.

It is hoped that this Strategic Commissioning Framework will provide a new platform on which to build. The Framework will, however, need to remain flexible and responsive to further policy or service developments. It will also need to 'roll-forward' over time to enable more detailed planning to take place and to give sufficient lead time for what are often long term, strategic decisions that need to be taken by both public sector and independent and voluntary sector organisations.

2 The approach to developing a local model

The approach adopted in developing a local model sought to combine a learning process for those involved in the commissioning and provision of care for older people and sound, evidence based, projections of future demand for services. Three workshops were held with the project team to identify the boundaries of the work, build a common understanding of the system under investigation and explore initial findings. In addition, and as a result of the initial workshops, a further two meetings of a smaller group were held to explore a complementary model for older people with mental health needs.

The outputs from this process have been:

- Two dynamic whole systems models of future need using ithink© modelling software;
- This report summarising key commissioning issues;
- A group of people across the services with an enhanced and more closely aligned understanding of the issues relating to the long term care needs of older people in Leeds.

The approach involved:

5. The identification of the key issue in question and the initial development of a qualitative model of the system as understood by a multi-professional group;
6. The development of a qualitative model;
7. Feedback of qualitative models and the exploration of potential consequences and feedback mechanisms operating in the system;
8. The identification of appropriate data sources to enable the qualitative model to simulate possible behaviour of the whole system in the real world;
9. The development of a simulation model that illustrates the behaviour of the whole system and enables key learning points to be derived by the multi-professional group.

The way in which this approach is reflected in the workshop programme is shown in Figure 1.

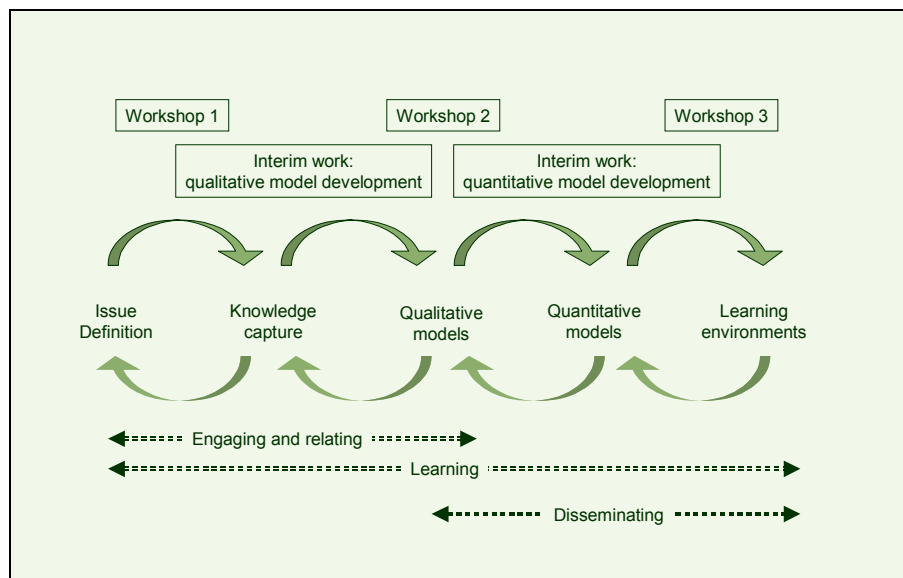


Figure 1 Workshop programme for model development

2.1 The challenges of determining future need

Determining future demand and supply for long-term care is a complex and challenging task. There is a mix of quantifiable and qualitative factors to be taken into account - there are no simple answers. Table 1 identifies a range of these factors that were suggested during the project work to develop this framework.

	Short/medium term (1-5yrs)	Longer term (5-20yrs)
'Consumer' issues	Increasing understanding of services by older people and their relatives/carers. People's expectations for old age and where they want to live.	Increased development of 'community capacity'. An increased emphasis on living independently.
Provision of services	Understanding current capacity. The need to identify and respond to geographical gaps in services. Funded Nursing Care and continuing care policy developments. National Care Standards driving up quality but affecting costs and viability. Mainstream services that are increasingly available 24/7. Developments and improvement to access for out of hours and emergency services.	Human resources – recruitment and retention. The provision of appropriate and quality housing.
Commissioning	Falling confidence in the care market. Fair Access to Care. Increased partnership working.	The National Service Framework for Older People. The unknown concerning political decisions about funding long term beyond the short term.

Table 1 The challenges in determining future need for long term care

From this assessment it is clear that there are several short-term issues that will impact on long term care needs. Determining the precise impact on the local market is challenging, for example to what extent will the new arrangements around Funded Nursing Care impact on fee levels and then have a knock-on effect on viability.

Equally some of the longer-term issues can only be considered in broad outline. For example the expectations that people in their 50's now will have of the care sector in the longer term cannot be precisely determined although the likelihood that these expectations will be radically different from that for older people today is strong.

2.2 Definitions and the nature of long term care

2.2.1 Long term care

'Long term care' needs to be understood more broadly than the perhaps traditional focus on nursing and residential care home provision. In a policy context that emphasises the importance of sustaining people's ability to live independently for as long as possible there should be no automatic assumption that long term care and living independently are mutually exclusive.

The provision of long term care to people who retain independence in their own home, whether this is their family home or part of a housing scheme particularly developed for older people, is a policy priority. The overlap in Figure 2 therefore illustrates the growing number of people who will be living independently whilst receiving long term care. The remainder of the right hand circle represents people in care homes and the remainder of the left hand circle people who are not in need of long term care.

This Framework considers the needs of all older people needing long term care irrespective of where they live, that is the whole of the right hand circle.

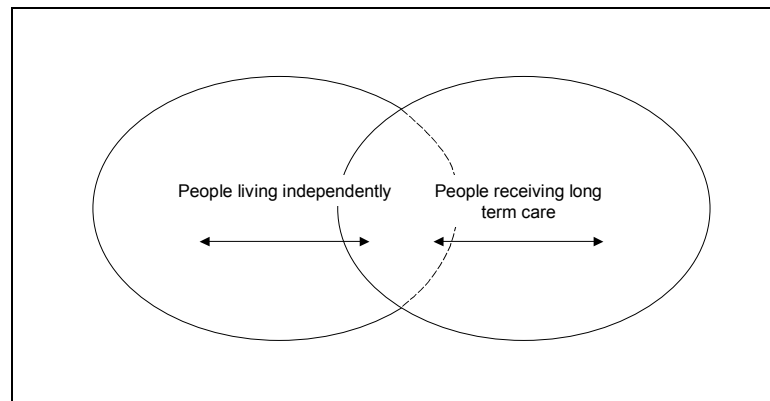


Figure 2 Understanding long term care

2.2.2 Client group

The work undertaken to determine the nature and extent of long term care required by the people of Leeds should include the needs of those not yet at retirement age. However, at this stage the approach has relied on demographic information and service initiatives that predominantly reflect the needs of older people. Similar work would need to be undertaken to identify the needs of 'hard to reach' groups and the differential requirements of key ethnic minority groups.

2.2.3 Services

In line with the understanding of long term care outlined above the modelling work underpinning this framework sought to identify which local services would be included in within the scope of 'long term care'. These should include:

- Nursing Homes;
- Residential Homes;
- Extra Care Housing;

- Retirement/sheltered Housing;
- Carer support services, including respite and family placement;
- Intensive home support; and
- Specialist day centres.

Figure 3 illustrates the shifting balance of the total long-term care market and the potential shift within that market. No assumptions were made at the outset of the project work of the scale and balance of the factors that will influence the size of the respective markets. There was, for example, no assumption that the balance of additional demand from an aging population will be fully offset by increased support for independent living leading to a reduction in demand for residential long-term care.

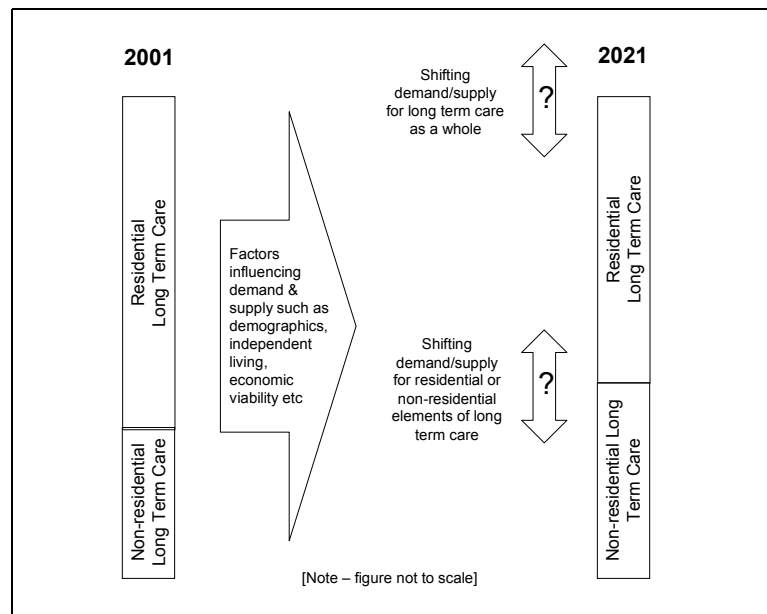


Figure 3 The nature and extent of ‘Long Term Care’

2.3 Factors influencing the demand and supply of long term care

An output from this framework includes an enhanced ability to understand and influence the development of the market for long term care. As a baseline for this it has been important to identify current factors that influence demand and supply for long term care. Table 2 identifies a range of factors, many of which indicate a direction rather than a measurable quantity of impact.

	Increase in demand or supply for long term care	Factors influencing the home/institutional balance of demand or supply	Decrease in demand or supply for long term care
Demand for long term care	<p>Increasing number of older people including changes in ethnic minority groups.</p> <p>Possible continued reductions in volunteering and impact on community capacity.</p> <p>Potential reduction in the ratio of carers to very old people.</p> <p>Willingness of families, carers and neighbours in supporting independent living at home.</p>	<p>People exercising choice to live at home.</p> <p>Increasing availability, affordability and acceptance of technology and 'smart homes' to monitor people who may be at risk.</p> <p>Increased availability and confidence and effectiveness of out-of-hours and emergency responses.</p>	<p>Changes in community capacity to support independent living.</p> <p>Greater use of intermediate care to improve people's capacity to live independently and minimise inappropriate admissions to hospital or to long-term care.</p> <p>Medical advances and improvements in rehabilitation techniques.</p> <p>New drugs, for example in the treatment of dementia.</p>
Supply of long term care	<p>New developments in Extra Care Housing.</p> <p>New developments in sheltered housing.</p>	<p>New models of care being developed away from institutional settings.</p>	<p>Increased quality requirements resulting in some providers not being viable.</p> <p>'Natural turnover' in residential and nursing home sector.</p>
Key outcomes or measures	<p>Potential demand for different types of long-term care provision.</p> <p>Balance of demand and supply over the longer term.</p> <p>Total anticipated value of market and balance of costs between public sector and individuals for long-term care based on projections.</p> <p>Proportion of people receiving long-term care outside the residential or nursing home sector.</p> <p>Maintenance of Independence.</p>		

Table 2 Factors influencing the demand and supply for LT care

2.3.1 Issues influencing the supply of long term care

The following key factors were identified:

- The care home sector was under significant pressure and would probably undergo a rationalisation over the short to medium term followed by the development of a wider more flexible range of options provided by fewer care organisations operating in consortia;
- There is, and will likely remain, a distinction in the expectations and ability to pay between those making financial provision for old age and those unable to do so;

- Home care will increasingly shift to smaller numbers of more intensive input requiring the development of alternative low cost, flexible and probably local provision for basic needs;
- Home based respite could be used in a more planned and preventative way rather than needing to respond to crisis and ending up as a short cut to residential care.

2.3.2 Issues influencing other parts of the system

The following key factors were identified:

- Intermediate care services were relatively young and would increase in capacity and flexibility in coming years;
- Changing patterns of employment will affect both workforce and, in the longer term, peoples expectations for different patterns of paid work into older age;
- Technical advances in both drugs and treatment will enable people to live more independently longer into old age;
- Investment in housing and the development of a people rather than buildings focus should enable more flexible responses to people's needs.

The further detail provided by this workshop in relation to the understanding of the system and the potential influences on demand or supply of long-term care will be assimilated into the model and prepared for the third workshop.

3 The modelling approach for older people

The understanding developed by the team of people involved in the project was applied to a model building process that sought to link known quantifiable influences with some of the softer issues. Appendix 4 provides the 'wiring' of the model, which was broken down into different sectors as outlined below. The model represents flows of people through the system as influenced by demographic drivers and building capacity. It consists of five sectors:

- The demographic sector allows for the changes of population make-up to drive the model over the 20 year period;
- The carer support and community capacity sector simulated the impact of support in this sector on admissions to LT care but is also driven by the demographic sector in terms of the ratio of carers to people needing carer support;
- The 'people living independently' sector is designed to reflect those people receiving long-term care but living independently. This sector will allow for the impact of new services such as extra care housing to be explored;
- The 'people living in an institutional setting' sector reflects the Nursing and Residential Care sector;
- The hospital sector, which generates potential admissions to the LT care sector.

3.1 Development of the model

The model itself was built through an iterative process of capturing and feeding back people’s mental maps of the system. The final model architecture was based on a development of the groups understanding of the nature of long term as illustrated in Figure 2. This development recognises the key influences of demographic changes and the impact of hospital care and intermediate care, as shown in Figure 4. Translating this into a systems model representing the flow of people through a system requires a further development of the model as illustrated in Figure 5.

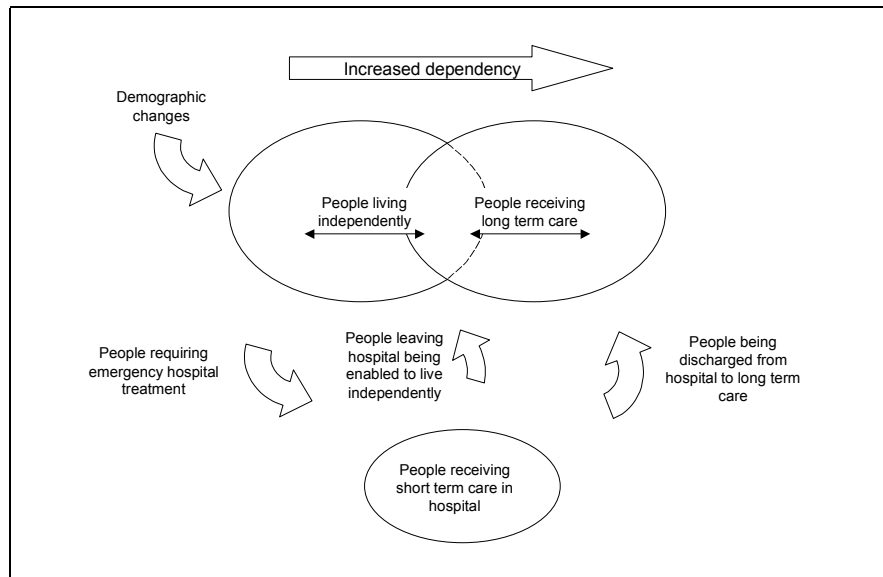


Figure 4 Illustration of the role of the hospital and the overlap of independent living and people receiving long term care.

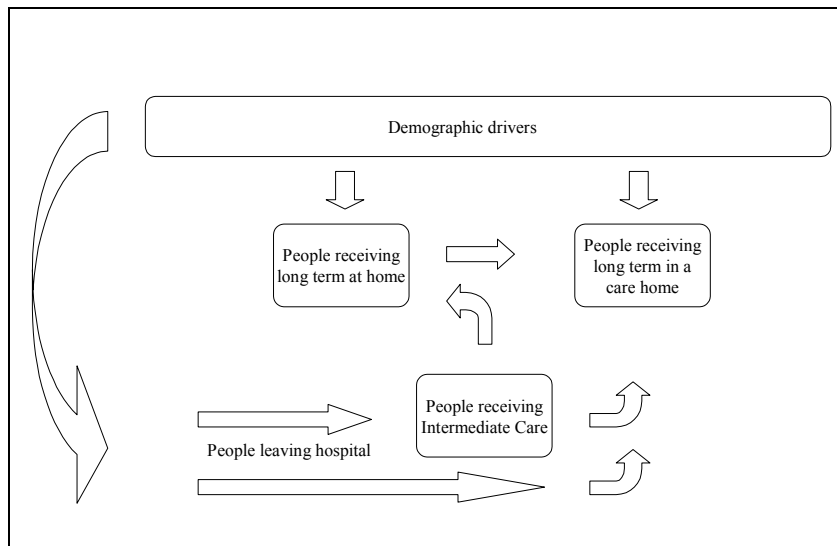


Figure 5 Model framework suitable for simulation.

3.2 The model assumptions

3.2.1 Key data sources

Modelling data was obtained from the following key sources:

- Office for National Statistics demographic trends for Leeds on an annual basis for 1996 to 2021 broken down into 5 year age bands;
- National Beds Enquiry database of hospital activity for over 65 year olds (in appropriate age bands) and rate of non-elective admissions;
- Recent, current and projected capacity for Intermediate Care;
- Current levels of long term care.

Each provides a robust platform of key drivers that is consistent with the understanding of the whole system arising from the workshop process.

3.2.2 Modelling assumptions

In addition certain assumptions had to be made based on the availability of other data and the groups understanding of future trends:

- Current numbers of self funders in Nursing Homes per 1,000 population and by age group reflects the overall demand for care home provision;
- The rate of growth in demand for non-elective hospital care and consequent impact on admissions to long term care beyond 2004/05 reduces from 2% a year to 1% to reflect the impact of the NSF;
- The recent rate of increase in intensive home care of c.10% a year reduces to 5% a year;
- The balance for Intermediate Care between diversion from hospital and facilitating discharge shifts from 40/60 to 50/50 between 2001 and 2006.

Each of these assumptions is capable of being modified in the modelling software and linked database to test sensitivities and develop further our understanding of the behaviour of the model as it reflects what might be expected.

3.3 Model behaviour and outputs

3.3.1 Model behaviour and learning

Some of the key characteristics of the model are identified in the table below.

Model behaviour	Learning
The model projects the current rate of demand for long term care, driven by demographic changes and modified by the ratio of 65-74 year olds to over 85 year olds as an indication of the capacity for caring in the community.	Due to a fall in over 85 year olds between 2000 and 2004 demand for long term care and the capacity for caring move in favourable directions. In the longer term the significant increase in 65 to 74 year olds beyond 2011 increases community capacity to care and does not impact on demand for long term care until beyond the end of this model.
The availability of intensive home care and future projections provide an increased opportunity for this demand to be diverted to more independent living settings.	Current projections suggest that the growth in diversion stimulated by intermediate care cannot be accommodated by the anticipated growth in intensive home care. Additional units of extra care housing or very sheltered accommodation at the rate of approximately 50 units per year are likely to be needed.
The rate of increase in non-elective hospital admissions for older people drives demand for institutional long-term care. However, this demand is modified by the provision of intermediate care.	Estimates of the proportion of people being diverted from care home admissions and the rate at which people passing through intermediate care go on to need intensive home care on a long-term basis have been estimated. Future monitoring of these services should incorporate such pathway measures to aid in planning and evaluating their impact.
The increase in people living independently but receiving levels of intensive long term care reduces capacity requirements for care homes but does not necessarily reduce the number of admission as it is assumed that such people will need to spend a period, but a shorter period, in a care home at some point.	The impact on care homes in terms of turnover and levels of care likely to be needed in the longer term need to be explored. The model suggests that whilst the number of people being admitted to care homes from hospital will continue to increase the number admitted from home after a period of long term care also increases but is compensated for by reductions in those being admitted direct from home.

3.3.2 Model outputs

The model is able to demonstrate the impact of demographic trends on demand for long term care, the impact on the overall demand for long term care, the balance of requirement for long term care and the potential capacity required to meet the growing need for long term care in non-residential settings. Figure 6 illustrates the demographic drivers behind the model.

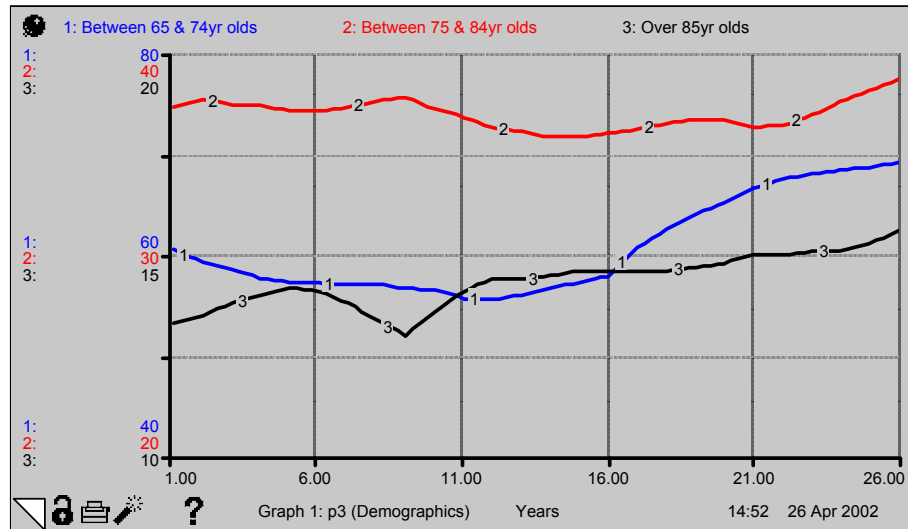


Figure 6 Demographic drivers for the model⁶

The demand for care home places is reflected in Figure 7 below.

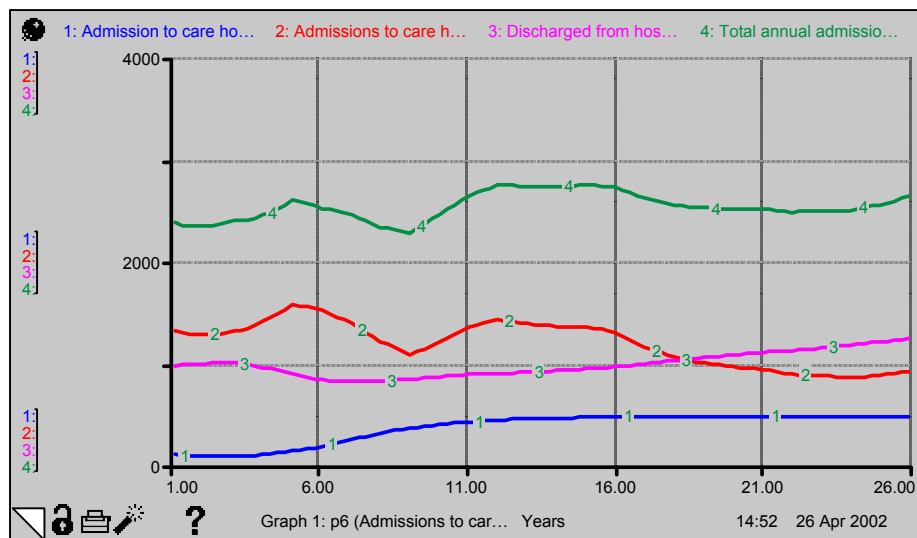


Figure 7 Demand for care home places⁷

⁶ Vertical axis in thousands, horizontal axis starts year 1 = 1996 through to year 26 = 2021.
⁷ 1 = Admission to care home from independent living long term care provision; 2 = Admission to care home from home; 3 = Admission to care home from hospital; 4 = Total admissions to care homes.

3.4 Likely financial implications of the change in demand and balance of long term care likely to be provided

In order to gauge the likely financial implications of the model a range of assumptions were made about the average weekly cost of care in different settings as well as the cost of specific intermediate care interventions. Details of these assumptions are described in Appendix 5.

A summary of the baseline outcomes from the modelling work is identified in Table 3.

	2002	2005	2010
Intensive home care	£19M	£26M	£29M
Supported residential care	£26M	£25M	£27M
Supported nursing home care	£25M	£25M	£27M
TOTAL	£70M	£76M	£83M

Table 3 Relative costs to Social Services of key elements of the long-term care sector as derived from the modelling exercise.

The table reflects the outcomes from the overall capacity requirements in suggesting an increase in the budget for intensive home care between 2002 and 2010 of just over 50% with more modest increases in residential and nursing home support of 4% and 8% respectively. This takes no account of any changes in fee levels.

The model also identifies some of the financial outcomes for the NHS in terms of Intermediate Care and Funded Nursing Care. With regard to the former the model assumes no increase in Intermediate Care capacity from 2003. The indicative level of spend therefore remains at approximately £4M. In terms of Funded Nursing Care, and assuming no significant shifts in the balance across the three levels, the indicative levels of spend rise from c.£6.3M in 2002 to £6.8M by 2010.

3.5 Initial conclusions from the modelling exercise

The modelling process:

- Broadly confirmed participants expectations of the need to sustain a healthy care home sector at similar levels to today;
- Suggested a key driver (apart from demography) to be acute sector activity thus focussing attention and importance on intermediate care;
- Also highlighted the fact that some targets may sometimes be unhelpful in developing services, for example intensive home care defined as more than 10 hours per week drew attention away from the need to develop a broader and more flexible sector of care focussed on minimising risk and maximising independent living.

4 Modelling the needs of older people with mental health needs

4.1 Profiling different levels of need over time

During the process of modelling the needs of older people outlined in section 3 above it became clear that the underlying assumptions and the system of care for older people with mental health needs were sufficiently different to warrant separate attention. It was therefore agreed to undertake this second phase of work to identify the needs of these people.

The same baseline data for demographic profiles for Leeds (projected to 2021 by sex and 5 year age bands) was used. However, two additional sources of information were identified to gauge prevalence, namely:

- Prevalence rates for treated depression, anxiety and schizophrenia based on ONS publication (Key Health Statistics from General Practice 1998) by sex, age and deprivation;
- Prevalence estimates for dementia by age and sex (Health Care Needs Assessment, Stevens & Raftery, Radcliffe Medical Press, 1994).

Together these provided a comprehensive assessment of the total numbers of older people likely to be suffering from mental health problems into the future. The prevalence rates are identified in Tables 4 & 5 below.

Age Group	Male	Female
60-64	1.6%	0.5%
65-69	2.2%	1.1%
70-74	4.6%	3.9%
75-79	5.0%	6.7%
80-84	12.1%	13.5%
85+	21.5%	26.2%

Table 4 Percentage of population expected to suffer from dementia

Age Group	Depression		Anxiety		Schizophrenia	
	Male	Female	Male	Female	Male	Female
65-74	35.6	88.9	38.7	97.6	2.2	3.8
75-84	45.8	97.3	41.0	103.9	2.3	2.2
85+	45.9	84.3	37.5	86.8	1.1	1.3

Table 5 Prevalence rates (/1,000 pop) for anxiety, depression and schizophrenia

There are some significant differences between these patterns of prevalence that, when combined with population projections, will influence the total number of older people with different types of mental illness. For dementia prevalence rates continue to rise with age whilst for other mental health problems rates fall for the very old. In addition the comparative rates between men and women are different for dementia (where there is a higher percentage for men than for

women in the younger old – reversed in the very old), compared to depression and anxiety where rates for women are in the order of twice those for men.

Coupled with what we know about future demographic profiles for men and women in Leeds we get three very different ‘shapes’ to potential future demand as illustrated in Figures 8, 9 and 10.

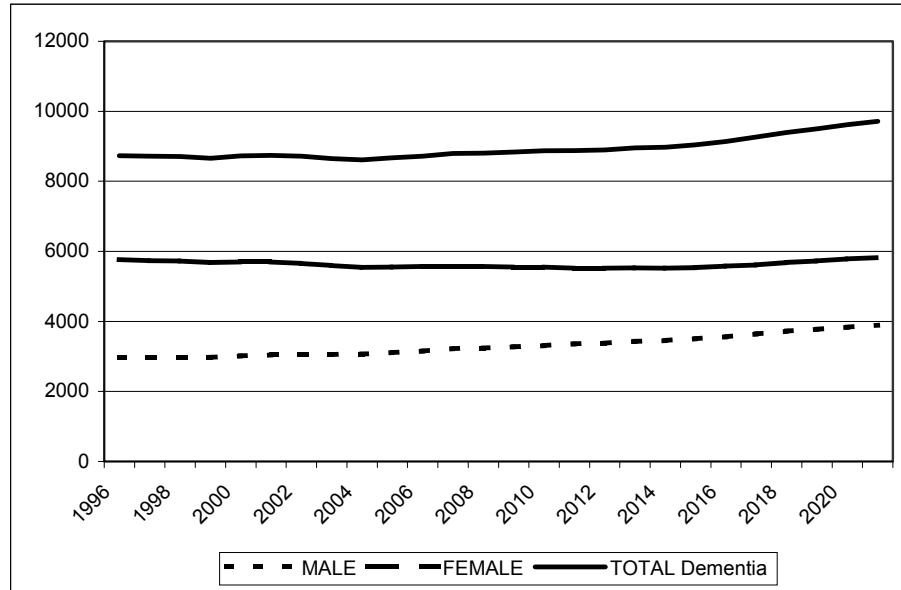


Figure 8 Number of people expected to be suffering from Dementia over time

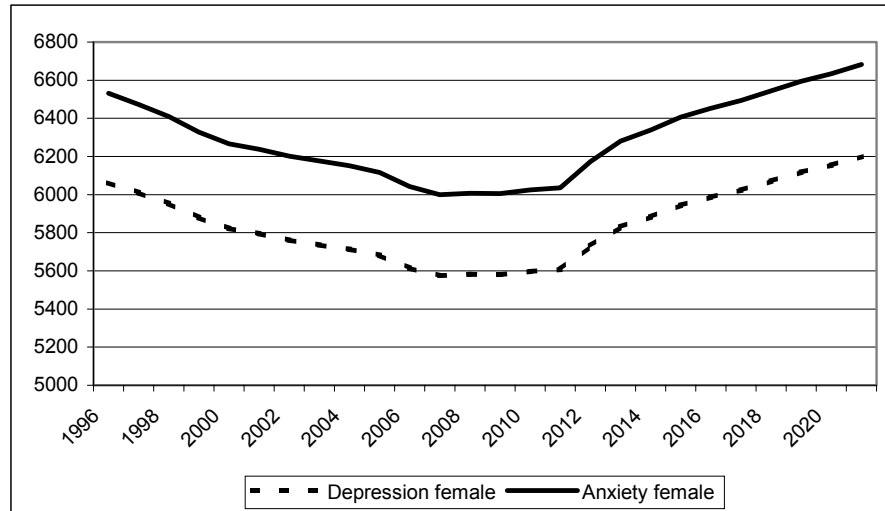


Figure 9 Number of females expected to suffer from depression or anxiety

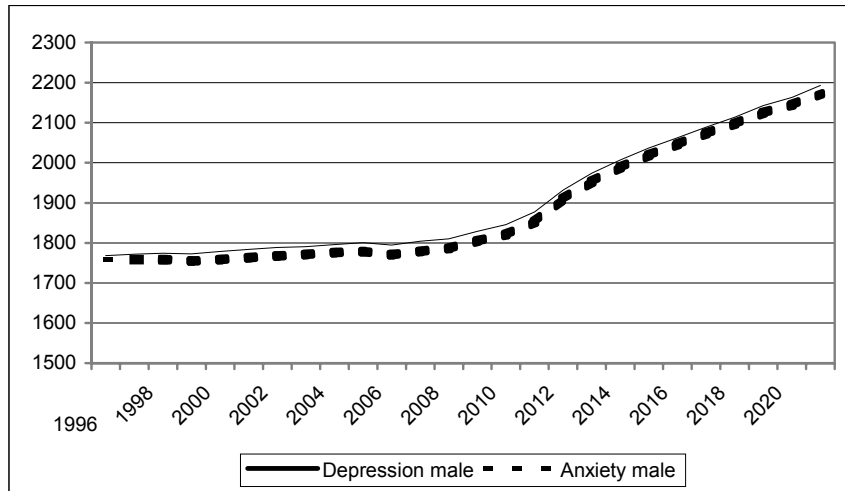


Figure 10 Number of males expected to suffer from depression or anxiety

The graphs above demonstrate that:

- For older people with dementia there is a significant difference in growth between 1996 and 2021 for females (+1%) and males (+31%);
- As a result the number of older people with dementia who are men will rise from 34% to 40%;
- Up to 2010/11 there is no significant increase in the number of older males in Leeds with depression or anxiety whilst for females there is a fall of about 8%;
- Beyond 2010/11 there is a rise in both males and females in depression and anxiety of 17% and 11% respectively.

4.2 Developing a focus for the modelling process

The patterns in prevalence of different mental health needs amongst older people described above serves to distinguish between dementia and non-dementia conditions. When considering the modelling of long term care there is also the significant factor that people with dementia may at some point require residential or nursing home care whilst this is rarely if ever the case for depression or anxiety. There is one significant overlap between dementia and depression that should be recognised and is addressed in the requirements of the National Service Framework. That is the potential mi-diagnosis of depression as dementia. More accurate recognition and diagnosis of depression amongst primary care practitioners should lead to less mis-diagnosis of dementia.

The modelling of long-term care needs for older people with mental health needs therefore focuses on dementia. The modelling reflects a whole population approach although there are groups of people not reflected in the 'high-level' strategic model whose needs should none-the-less not be ignored. These include:

- Younger people with dementia – the importance of early diagnosis and treatment/support should not be ignored. Leaving this until older age leads to significantly enhanced dependency.

- People with a learning disability - have an increased risk of mental illness at any age and with an aging population there comes the challenge of providing appropriate care, currently provided from within Learning Disability services.
- Older people with schizophrenia – whilst prevalence is very low (Table 5 - the expected number of older people with schizophrenia in Leeds is in the order of 300, 200 female and 100 male), a disproportionate amount of professional time can be used in caring for them.

4.3 Modelling the long term care needs for older people with dementia

A detailed description of the modelling processes, logic and assumptions is contained in Appendix 6. This section draws out some of the building blocks and provides an overview of the model and outcomes.

The overall objective agreed by participants in the project was to assess the impact of different interventions on the ability to increase the proportion of people with dementia living at home as opposed to being admitted to a care home. This mirrors the objectives set out in the wider piece of work described in section 3 above.

Four levels of needs were identified:

- Level 1: People with a mild dementia supported by generalist health and social care in the community.
- Level 2: People needing the regular input of specialist mental health professionals but remaining independent in the community and likely to be significantly reliant on the support of a carer(s).
- Level 3: People needing residential care of some sort but not at an intensive or specialist level.
- Level 4: People needing specialist long-term care in a residential or nursing care setting.

The current balance across these levels was established and a generic, high-level map agreed as illustrated in Figure 11 below. This illustrates the movement between levels and some of the interventions likely to influence such transition.

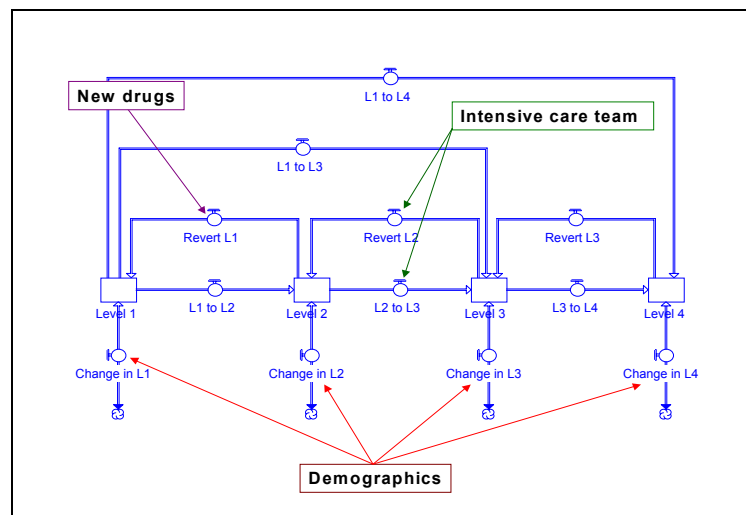


Figure 11 Levels of care and high-level map

The key resource of informal carers was identified as critical to supporting people to live independently. Different interventions or support mechanisms were identified that would impact on the ability of carers to support people at home for longer.

This enabled some simple simulation to be undertaken, for example in regard to the impact of new drugs and the possibility of re-investing day centre resources into carer support. A further critical element of the model described and developed by participants was the impact of targeted rehabilitation for people with dementia who had had an episode of acute physical care. These are all detailed in terms of impact and evidence base in Appendix 6.

The model was able to demonstrate very close alignment with ONS data for population projections under a baseline scenario. The results of different interventions relating to the key resources identified above are summarised in Table 6. Three key indicators are identified for each intervention:

- Change in the number of people expected at level 3 in the model i.e. how many more people would require residential care of some sort;
- Change in the number of people expected at level 4 in the model i.e. how many people would require specialist long term care in a residential or nursing care setting;
- What would the percentage of people maintained at levels of 1 and 2, i.e. able to be maintained in independence through support from formal or informal carers.

Scenario	Change in level 3 (from 1,602 in 2002)	Change in level 4 (from 480 in 2002)	% of people in levels 1 & 2 (from 74.8%)
Baseline – do nothing	+150	-25	76.0%
Comprehensive assessment and intervention	+86	-163	78.3%
New drugs	+89	-19	76.8%
Decommission day centres and invest in carer support	+108	-22	76.5%
Programme of family counselling.	-57	-7	78.4%

Table 6 Impact of different scenarios on proportion of people with dementia living at home

Table 6 suggests that if you do nothing there will be a growth in demand for care at level 3 and a slight fall at level 4. However, because the overall increase in older people with dementia is greater the percentage at levels 1 and 2 rises slightly from 74.8% to 76.0%.

All four interventions modelled showed a reduction in the rise in demand for level 3 care with the programme of family counselling have the most significant impact (207 less people requiring this level of care) and re-investment of day care resources in formal carer support have the least impact (42 less people than the 'do nothing' option).

There was a mixture of outcomes with regard to the change in level 4 care needs with three out of four having similar levels of need. However, the provision of comprehensive assessment and intervention targeted at those older people with dementia who had experienced an acute episode was seen to have a significant impact in reducing the level of need for level 4 care.

All four interventions had the combined effect of increasing the percentage of people helped to live at home. The two interventions outlined above showed the greatest increase with 78.3% and 78.4% respectively following comprehensive assessment and intervention and the programme of family counselling.

Appendix 1 – Participants in the Project

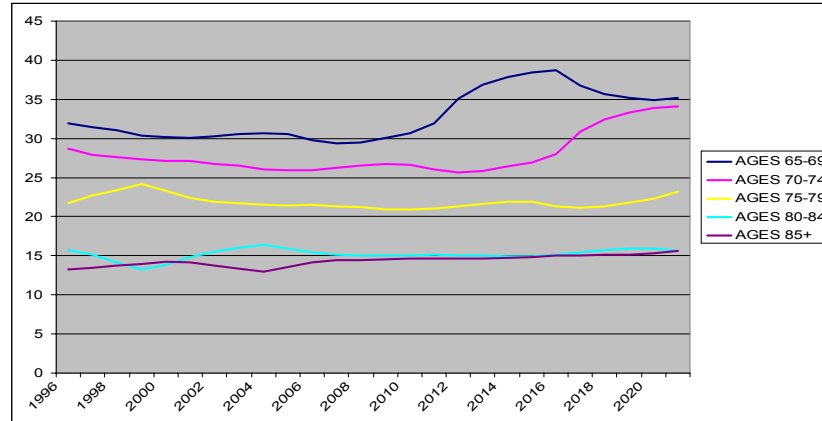
Liz Bradbury, Performance Review Manager, Leeds Social Services
Janine Brown, Modernising Agent for Older People, Leeds Health Authority
Gill Chapman, Joint Care Manager, Leeds Social Services
Ann Marie Coubrough, Leeds West Primary Care Group
Janet Fearnley, Customer Interface for Joint Review, Leeds Social Services
Peter Hodgkinson, Chairman, Leeds Care Homes Association
Dennis Holmes, Adult Services Manager, South Leeds, Leeds Social Services
Jo Kent, Housing & Community Care Project Officer, Leeds Housing Dpt.
Graeme Lee, Care Manager, Springfield Care
Joy Marshall, Planning Manager (Adults), Leeds Social Services
Adam Mitchell, Information Officer, Leeds Social Services
Judith Myhill, Database Manager, Leeds Social Services
Margaret Pease, Resources Manager (Homecare), Leeds Social Services
Jane Price, Information Services Manager, Leeds Social Services
Judith Ramsdale, Independent Consultant, BC & PiC
Janet Somers, Commissioning Services Manager, Leeds Social Services
Specialist input and advice was also received from Dr Tony Dearden,
Consultant in Old Age Psychiatry, Leeds Mental Health Trust.

Appendix 2 – Underlying demographics and nbi data

1 Demographics

Basic demographic data for the city of Leeds has already been obtained from the Office for National Statistics who provide projections for 5yr age bands up to 85 based on 1996 revised census data and projected forward to 2021. Figure 5 shows the output from this data.

Figure 12 Population projections for different age bands between 1996



and 2021

Figure 6 works with that data to provide an indication of the strength and availability of carer support over the same period. To do this two indicators have been used:

1. The ratio of 65/75yr olds to >85yr olds as an indicator of family carer support - 4.56 in 1996, falling to 4.06 in 2001, rising and falling to 3.86 in 2007 and then rising steadily to 4.54 by 2019 before falling off slightly;
2. The ratio of females to males over the age of 85 as an indication of the increase in the rate of older people growing old together and therefore providing mutual support in independent living - falling steadily from 1.92 in 1996 to 1.47 in 2021 suggesting more people living as couples.

Both profiles are shown normalised to the base year 1996, which is set at 100.

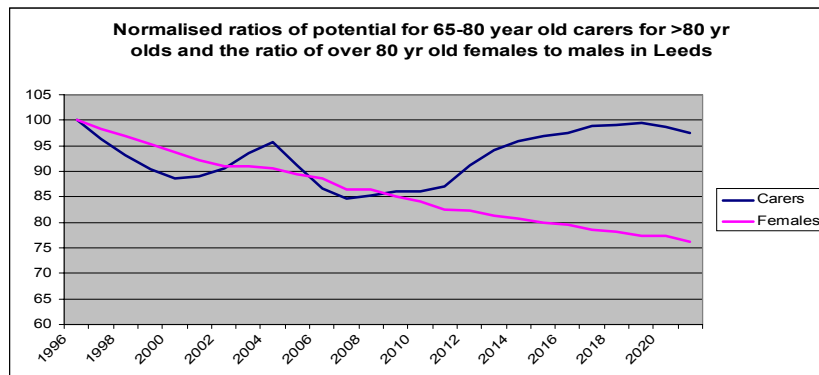


Figure 13 Changes over time in the ratio of 65-80yr olds to >80yr olds and in females >80 to males >80yrs old.

2 National Bed Inquiry database

The following data has been derived from the nbi database using 1999/00 as a baseline.

2.1 Hospital activity

The rate of emergency admissions has been used as an indication of the cohort of patients from whom admissions to LT care are most likely.

	Under 65	65 to 74	75 to 84	Over 85
1999/00 admissions	37,211	8,772	10,800	6,369
Rate per 1,000 pop	60	151	285	462
Assumed annual rate of change to 2003/04	c.1.5%	2.0%	2.0%	2.0%

Table 7 Non-elective admissions to Leeds Hospitals

2.2 Residents in LT care

The following numbers of people in Nursing and Residential Homes is reported in the nbi database for 1999/00 with a projection for 2003/04.

	HA funded NHs	LA funded NHs	LA funded RHs	Self funded NHs	Self funded RHs
March 2000	0	1,329	1,886	400 ⁸	N/A
March 2004 (est)	154	1,232	2,541	1,252	

Table 8 Residents in LT care

2.3 Intensive Home Care

The following table identifies the number of households receiving IHC according to the PSS PAF for 99/00.

	Number in Leeds - 99/00 (& rate per 1,000 >65s)	England average rate (99/00)	Expected number in Leeds – 03/04 (& rate per 1,000 >65s)
IHC	1,784 (16.3)	8.8	1,831 (16.8)

Table 9 Intensive Home Care in Leeds (nbi source)

⁸ October 1st 2001 baseline from Free Nursing Care Determinations exercise.

Appendix 3 – Outputs from discussion groups

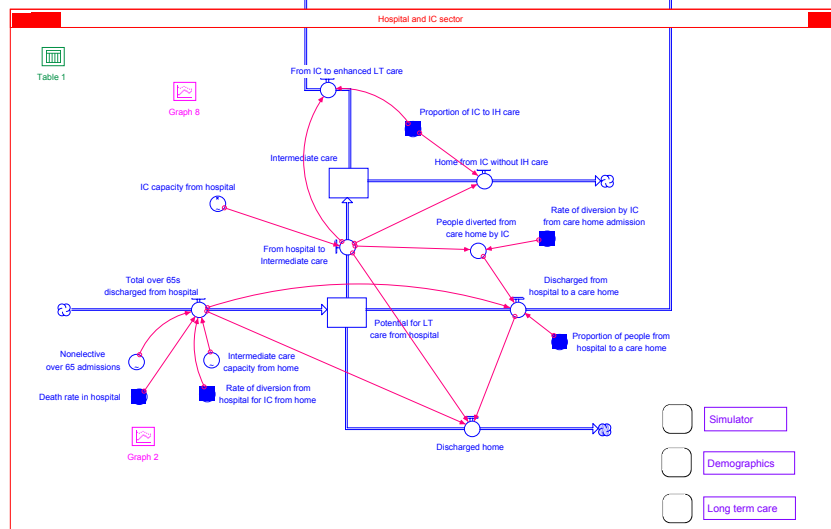
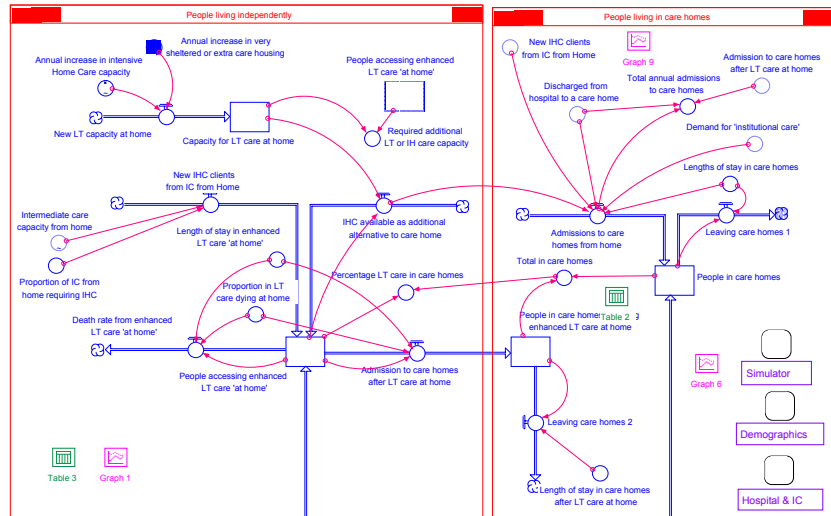
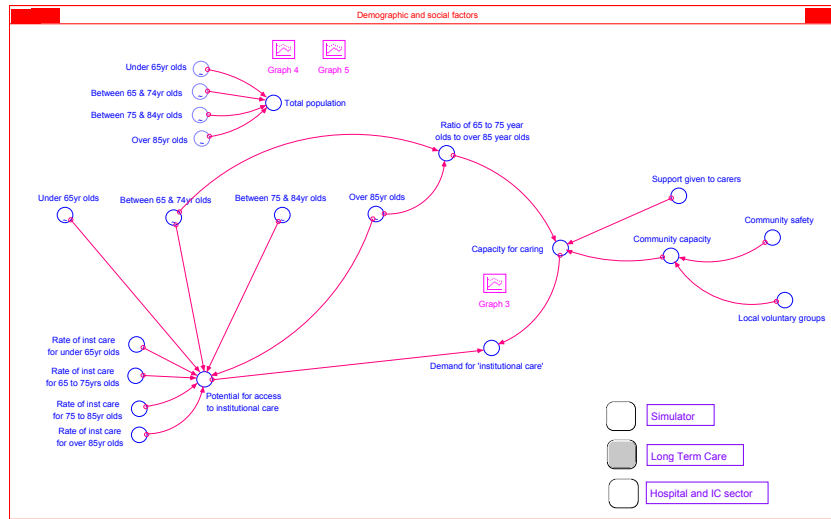
Issues influencing the supply of long term care

Area of long term care	Current position	Anticipated short/medium term changes in capacity	Anticipated longer term changes in capacity
Residential/nursing care	Low vacancy levels.	Need stability for providers and for LA.	Preventative measures could reduce demand.
	Self-funders are providing a cushion for providers.	Diversification of providers reconfiguring to provide different types of care.	Wide range of care situations that evolve in response to people's needs.
	Levels of quality driven by finance.	Quality of life expectations rising amongst older people.	
	High demand from 'low priority' clients.	Need to strengthen neighbourhood schemes to address this demand and divert from residential/nursing home care.	
	Number of beds (c1,700) anticipated to fall due partly to fall in return on capital investment.	Implies smaller number of larger operators. Maintaining reasonable levels may be dependent on guaranteed contracts.	Moves to a 'continuum of provision', for example the retirement village. Development of provider consortia to deliver care.
Home case support services	High percentage of low level input.	Need to address low level needs – cannot withdraw unilaterally without risk to preventative/maintenance care.	Other services developed as low cost/low level so enabling more intensive care to be provided by professional carers.
	Neighbourhood schemes provide services.	Citywide coverage anticipated by 2004 as part of Best Value.	
	'Welfare state' provision expected as of right.	Increased willingness to pay for quality of life.	More flexible ways of funding your own long term care in more independent living settings delaying entry to long term care.
	Current gate-keeping role of service.	Increased rate of self referral and informed choice.	
Home based respite	Currently rationed – used as a fast track to residential care.		Move to using resources earlier ie higher volume at lower cost.

Issues influencing other parts of the system

Area of system	Current position	Anticipated short/medium term changes in capacity	Anticipated longer term changes in capacity
Finance	Pressures in current system – benefits, funding care, culture of ‘free care’, charging.	Increasing development of ‘two-tier’ system splitting between those who can afford to pay and those reliant on the state.	
Intermediate care	New developing services.	Increasing capacity and different options including the independent sector and NH intermediate care.	Philosophical shift away from hospital/institutional care to home based care.
Transport	Inadequate public transport, car dependent society.	Partnerships with private sector developing.	New ways of delivering care that is less dependent on transport including home based care.
Changing working patterns	Increased competition for workforce amongst key target workforce of older working women.	Major review of pensions and impact on retirement age. Shortage of care workers.	Longer working lives, people without personal finance reliant on state for care.
Drugs and technical advances	Early development of potentially major advances eg dementia and cardiac services.	Growing impact driven by NSFs.	Rising expectations, increased gap between health and social care. Development of remote care – telematics.
Housing	Poor LA stock but large and varied provision – 300,000 dwellings. Poor private sector in some locations.	Moving to local management. Increased investment and new commissioning structure. Convergence of LA and HA rents and quality. Movement to people rather than building focus.	

Appendix 4 – Older people’s model printout



Appendix 5 – Financial assumptions for modelling

Service	Approx weekly cost	Cost to whom	Source
Home care ⁹	See note	SSD	
Intensive home care	£200	SSD – future pooled budget?	Average of 7 sample cases from the Leeds Case Management Team during July 2002.
Community Intermediate Care Beds	£423	Joint health and social care budget	Average weekly rate for commitments during 2001/02.
Community Intermediate Care Services	£250	NHS	
Cost of EPH placement (SSD funded)	£295	SSD	Net unit cost per place for 2001/02 for Leeds EPHs ¹⁰ .
Costs of NH placement (SSD funded)	£421	SSD	Average cost for 2002/03.
Funded nursing care	Levels	NHS	High = £110, Medium = £70, Low = £35.
Extra care housing – housing costs	£268	Housing	Revised estimate for Cardinal 2001/02 (April 2002)

⁹ Costs of home care estimated at £10.70 for in-house and £16.44 for independent sector per hour.

¹⁰ Average cost for independent sector RH is £319 (2002/03)

Appendix 6 – Detailed modelling approach for older people with dementia

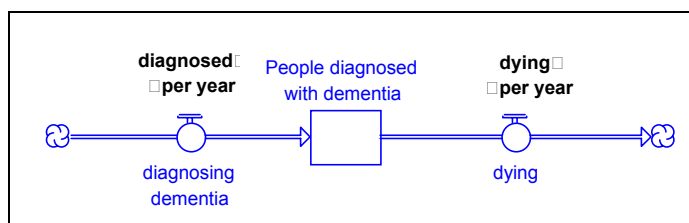
1 Strategic modelling approach

Since strategic performance will be directly influenced by the level of need in the community and the strategic resources that are available at any time, we must understand how to build and maintain, or reduce the level or stock of each resource. To help understand this problem, a resource can be thought of as being held in a tank, or *stock*, where it accumulates.

Resources are built by boosting the *flow* of new resource into the stock, so for instance diagnosing old people with dementia adds to the total number of people recognised as having the condition 'dementia'; recruiting new people adds to a stock of staff, and training those people enhances their level of skill.

At the same time, though, we lose resources. Old people will eventually die, staff will leave for new jobs, and old skills will become redundant. Such losses can be thought of as flowing out of the tank in which they are held.

This idea of stocks and flows is captured in the diagram below.



The 'stock' in the middle holds the number of people diagnosed with dementia we have right now. To the left in the 'cloud' is the outside world, containing people who might be diagnosed with dementia in the future. The 'pipe' flowing into the stock has a 'tap' on it that drives how fast the stock of people diagnosed with dementia is being added to. On the right, another pipe with a tap on it determines how fast we are losing such people from the stock.

If we now put numbers on both pumps and the stock we can see what happens to the time path of people with dementia as seen in Figure 1. In this example, the flow of people diagnosed with dementia per year must be greater than those leaving the stock per year because the time path of people with dementia is rising.

2 Focussing the effort

It is important before engaging in a detailed analysis of a strategic issue to give some clarity to the following critical questions.

- What is the measure of performance that we are trying to improve?
- Why has the historical performance followed the time path that it has?
- Where will the path of future performance take us if we carry on as we are?
- How can we alter that future for the better?

There is consensus that an appropriate measure of performance for providing services for older people with mental health needs is 'the percentage of people

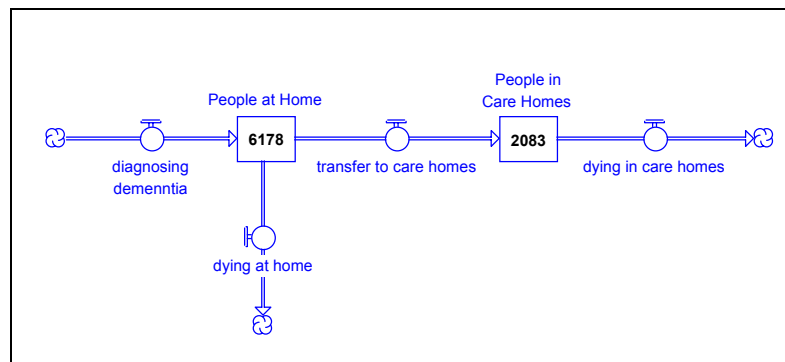
in Leeds with dementia that are able to live at home *and* be cared for in the community’.

Using our rigorous framework to understand how resources *change* over time and keeping with the tangible example of a strategic resource on the demand side of service provision, ‘Older people with mental health needs’. We can now think of such people being in one of two states; either being cared for at home with support in the community or being cared for in an institutional setting.

At present (2002), we estimate that there are 8286 people in Leeds diagnosed with dementia, and that 6178 are ‘at home’ and 2083 are in a ‘care home’.



Now the numbers of people in these states will change according to the strengths of their respective inflows and outflows. There will be rates (people per year) at which people are diagnosed with dementia and at which people with dementia die. Since, dementia is a progressive disease it follows that most people will be cared for at home in the early stages. As the symptoms become more difficult to manage then a proportion of people might be expected to need institutional care. This can be shown diagrammatically, as follows.



Thus, if we can quantify these flow rates (measured in people per year) we can calculate the volumes of people in each state over time. Furthermore, we recognise that we can impact these flow rates by the way we manage other strategic resources, such as carers, respite care and memory clinics. By managing these resources and influencing the flow rates managers are able to exert some control over ultimate performance measures, for example, ‘the percentage of people in Leeds with dementia that are able to live at home *and* be cared for in the community’, our key performance measure.

3 Developing a strategic model

Before we can alter future performance for the better we need to understand and diagnose the existing strategic architecture that is delivering services to older people with dementia to explain how it currently operates.

3.1 Strategic Resources

To do this we need to identify the key strategic resources on both the demand and supply side of the service. At the initial workshop the following strategic resources were identified;

Demand	Supply
Level 1: People with a mild dementia supported by generalist health and social care in the community.	Residential and Nursing Home care Home-based carers Therapeutic treatment
Level 2: People needing the regular input of specialist mental health professionals but remaining independent in the community and likely to be significantly reliant on the support of a carer(s).	Smart homes technology New drugs New therapeutic treatment Smart homes/technology
Level 3: People needing residential care of some sort but not at an intensive level.	Assessment teams and improved risk management Respite for carers Alternatives to acute treatment
Level 4: People needing specialist long-term care in a residential or nursing care setting.	DNA testing – pre-disposition for dementia Memory clinics Awareness raising Improved staff competences Additional provision of day care Transport to and from day-care

Since we know that these resources are interrelated it is pointless to simply list them and rank them in order of importance. If any resource is in bad shape then the whole service could be jeopardised!

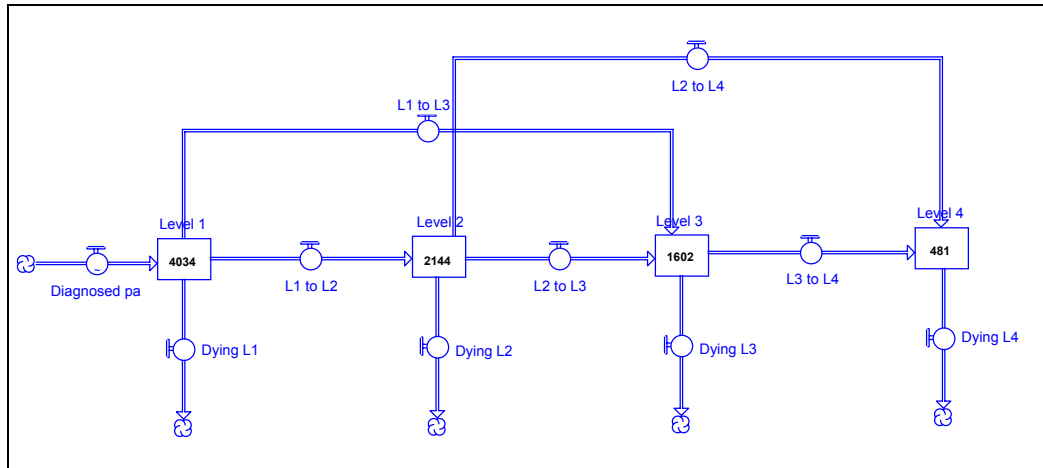
3.2 Developing a Strategic Model

Before examining the supply side resources and their 'impact' on the system we will expand the diagram of 'older people with dementia'.

For convenience we will place people with dementia in one of four categories (Levels 1 – 4)

- Level 1 – people supported at home largely by family and carers – currently estimated at 4,034 (50% of total).
- Level 2 – people supported at home by mental health professionals in partnership with family and carers – currently estimated at 2,144 (26% of total);
- Level 3 – proportion of people in general residential and nursing care with a mental illness (40% of total residents) – currently estimated at 1,602 (18% of total);
- Level 4 – total number of people in specialist EMI nursing home/bed, specialist EMI residential home/bed or receiving continuing NHS care in a community unit for the elderly – currently estimated at 481 (6% of total).

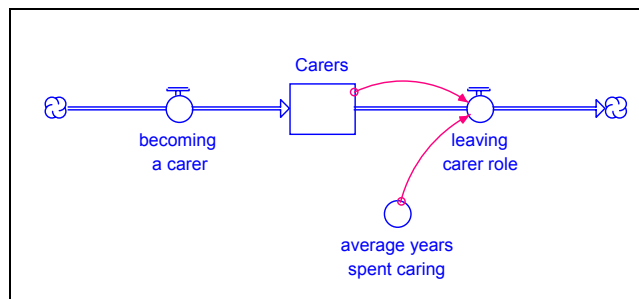
The diagrammatic representation shows people being diagnosed and then progressing through the levels. It also recognises that some people will move directly from Level 1 to Level 3 without receiving any specialist care at home. It also shows that some people will move directly from Level 2 to Level 4. These people are likely to have had a prolonged stay in acute care.



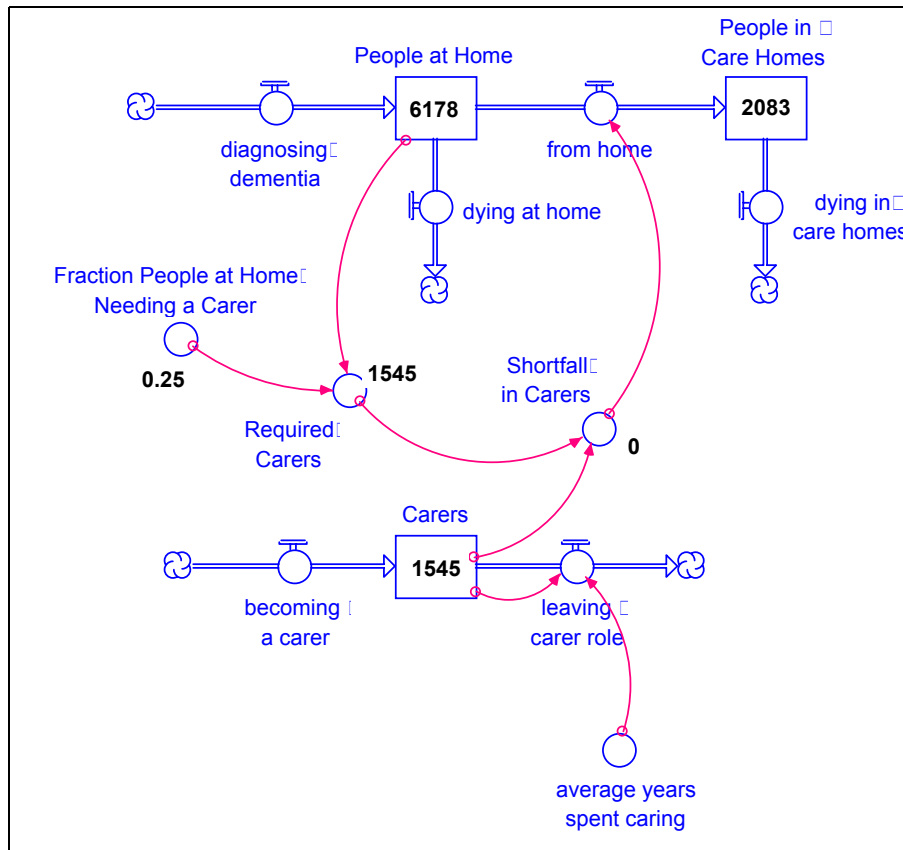
3.3 Supply Side Strategic Resources - Carers

Just as we can measure the number of people with dementia and quantify their rates of 'increase' and 'decrease', so we can use the same framework for supply side resources. For example, to maintain people with dementia at home it is necessary to have a 'stock' of unpaid carers. Unpaid carers will often be family members, friends and relatives. In general, the longer a carer can support a person with dementia the longer that person will be able to live 'at home'.

The diagram shows the stock of 'carers' together with its 'inflow', people becoming carers, and its 'outflow', people leaving the role. The rate at which people leave the role (people per year) is influenced by the average years spent caring.



The global number of carers available for caring will have an influence on the number of older people able to be maintained 'at home'. The diagram below demonstrates how the rate of people per year moving from their home to institutional care is influenced by the shortfall in carers, and how the shortfall in carers is influenced by the total number of carers. If we could find a way of increasing the number of years a carer is able to stay in that role then we would decrease the rate in which carers finish in that role and so increase the 'stock' of carers.



We have made an initial assumption that for every four people with dementia there is one unpaid carer living with them or nearby. So the fraction of people requiring a carer will be 0.25. If the required pool of carers falls below the required number then the rate of transfer to institutional care will increase (all other things being equal). Similarly, if we can increase the pool of carers above the normally accepted requirement then we should be able to decrease the rate of transfer to institutional care.

We now have to consider how we might grow the resource of carers. People either become carers or they leave the role. Again each of these rates can be measured in people per year.

It is unlikely that there is much we can do to influence the rate at which people become a carer. We should of course recognise that the rates at which people enter and leave the role of carer will be heavily influenced by demographics over which we have no control. However, the rate at which people leave the carer role is something that we may well be able to influence.

An excerpt from The Times¹¹ explains how new drugs might make a difference.

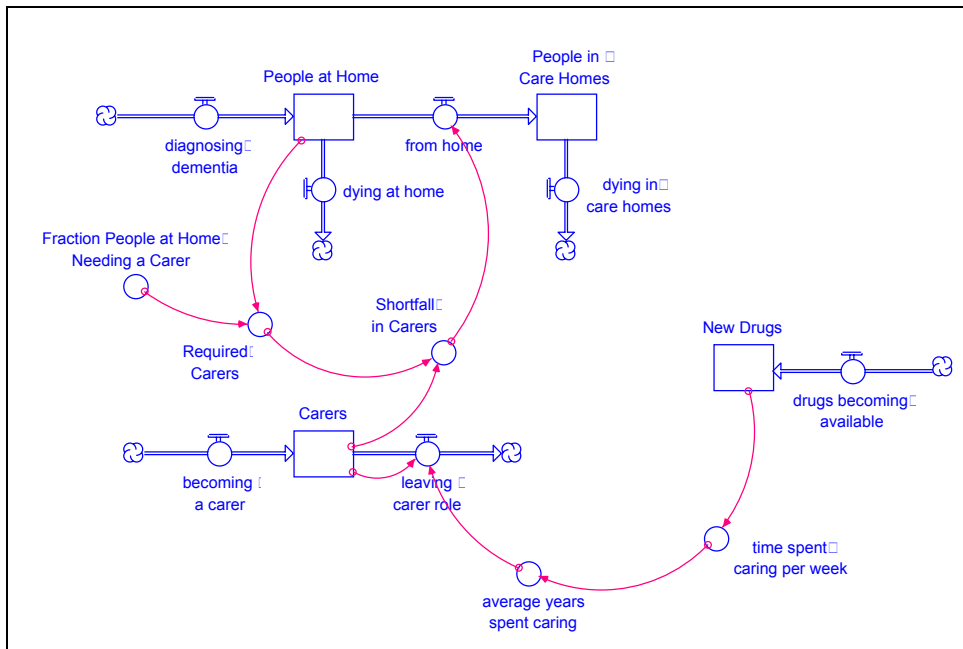
'...A criticism of trials of drugs devised to treat Alzheimer's has been the difficulty in finding an objective measurement that may be used to assess their effect. Although it is encouraging that the patients' carers thought that more than 50 per cent of people taking Ebixa were better able to move around, wash themselves, dress and use the lavatory, and that more than 30 per cent were more able to take a bath or shower, doctors wanted to quantify its effect.

An objective measurement was needed, and one has been found. The time spent by people looking after the patients has been measured and it has been found that it is reduced on average by one-and-a-half hours a day per patient if they are being successfully treated with Ebixa.

¹¹ Aid for an ailing mind, Dr Thomas Stuttford, The Time, 17th October 2002.

This would mean less strain on those who care for sufferers, a financial saving for the NHS, and in some cases should enable patients to stay at home longer.

We have depicted how new drugs would impact the length of time carers can remain in the role on our stock and flow diagram below.



3.4 Other Supply Side Strategic Resources

Having developed a framework for people with dementia placing demand on the services we now need to identify the key strategic resources on the supply side of the service. The initial workshop and subsequent research has identified the following key strategic resources. They are classified as either resources that primarily support or supplement carers or as resources that slow down the rate at which dementia sufferers lose independence. In some cases the impact of the resource has been researched and its effect can be quantified, in others the quantitative effects are not known.

It may not be easy to estimate numerically what rate of change results from the factors that drive it (e.g. what difference the introduction of 30 respite places makes to the length of time a carer can continue to care for a person with dementia). However, such assumptions must be addressed. Managers make judgements based on such assumptions every day, modelling just makes those assumptions explicit. Developing shared clarity is the only way the whole partnership can understand how current and new services operate.

3.4.1 Resources that primarily support or supplement carers of dementia sufferers

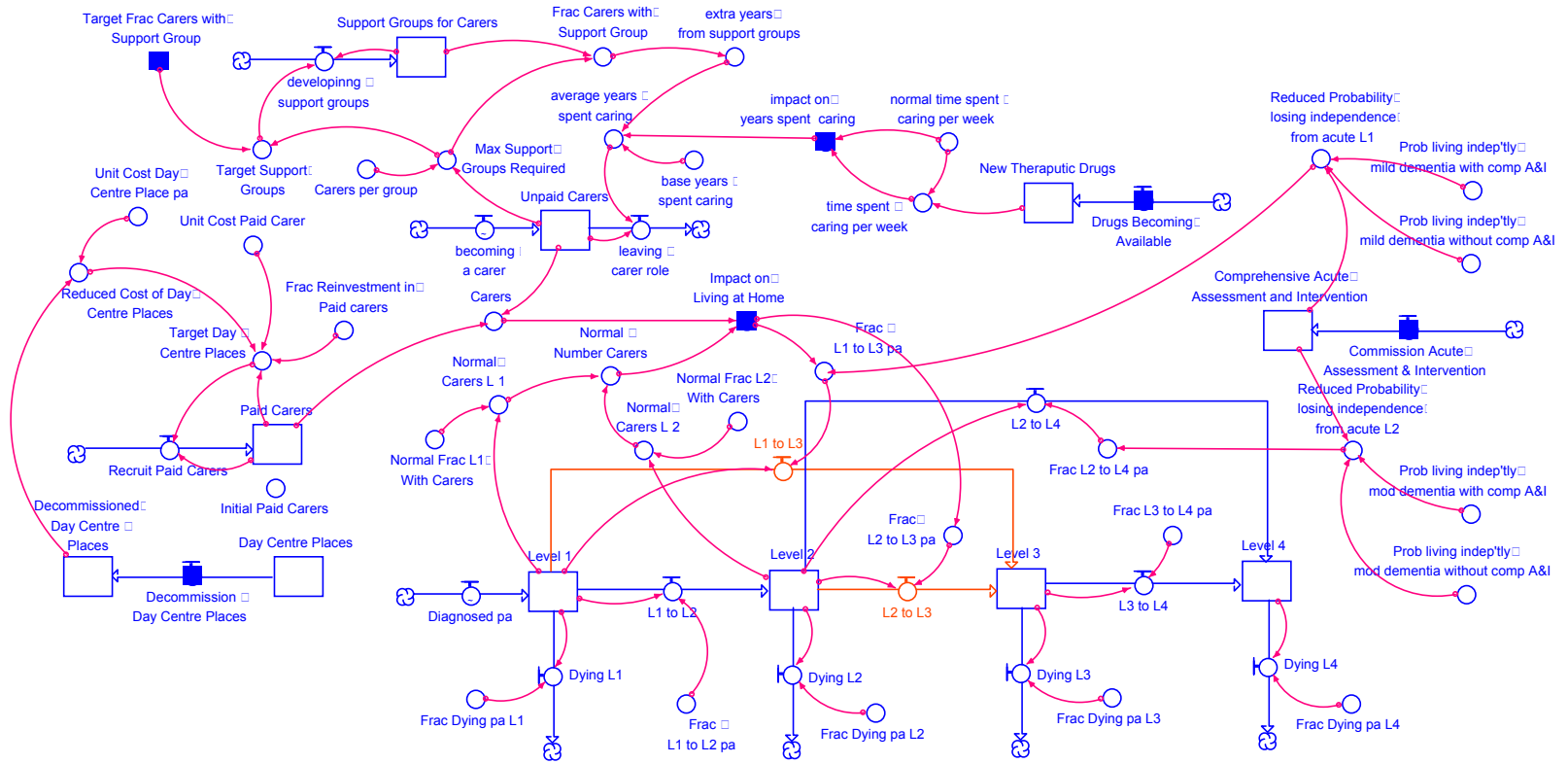
Area	Intervention	Impact	Reference
Support to carers	A programme of 6 family counselling sessions and support groups for carers of people with Dementia.	329 days longer before placement in a Nursing Home compared to control group.	Mittelman MS, et al, JAMA 276(21):1725-31. 1996 Dec 4.
	Respite care	Respite can cause more problems for carers of people with dementia than good if staff do not have specialist skills in caring for people with dementia - if a patient loses a skill (such as continence, or ability to feed himself) whilst in respite, that skill cannot be re-taught.	Project group consensus
	Day care centres	Relies on transport being available. Benefits of day centres are doubtful. There are plans to withdraw day-centre places for re-investment in paid home care (see below)	Project group consensus
	Paid carers	Believed to reduce the amount of time unpaid carers spend caring, thus increasing the number of years a carer can cope.	Project group consensus
Drugs eg Ebixa	Prescribed for people at the worst end of moderately demented.	Reduction in time spent by carers in direct care per day of an hour and a half.	Dr. Thomas Stuttford The Times 17 October 2002

3.4.2 Resources that slow down the rate at which dementia sufferers lose independence

Area	Intervention	Impact	Reference
Rehab in acute hospital	Comprehensive assessment and intervention for people with dementia who were admitted to hospital following a hip fracture.	For moderate dementia length of hospital stay reduced by 100 days and likelihood of living independently 3 months after discharge improved from 17% to 63%. For mild dementia LOS was reduced by 17.5 days and likelihood of living independently increased from 67% to 91%.	Huusko TM et al, BMJ 2000, 321, 1107-1111.
Memory clinics	Early assessment can pick up depression rather than dementia and treat appropriately	May reduce the rate at which people are diagnosed with dementia	Project group consensus

Where we have some empirical evidence of the impact of a resource or service we have included it in a strategic map. The map can be seen in the following diagram.

Long Term Care of Older People in Leeds with Dementia



4 How the strategic map explains performance into the future

4.1 Development of the Model

The model itself was built through an iterative process of capturing and feeding back people's mental maps of the system. This development recognises the key influences of demographic changes and the impact of health and social service resources.

4.1.1 Key Data Sources

Modelling data was obtained from the following key sources:

- Office for National Statistics demographic trends for Leeds on an annual basis for 1996 to 2021 broken down into 5 year age bands;
- Current levels of long term care for older people with dementia.

Each provides a robust platform of key drivers that is consistent with the understanding of the whole system arising from the workshop process.

4.1.2 Modelling Assumptions

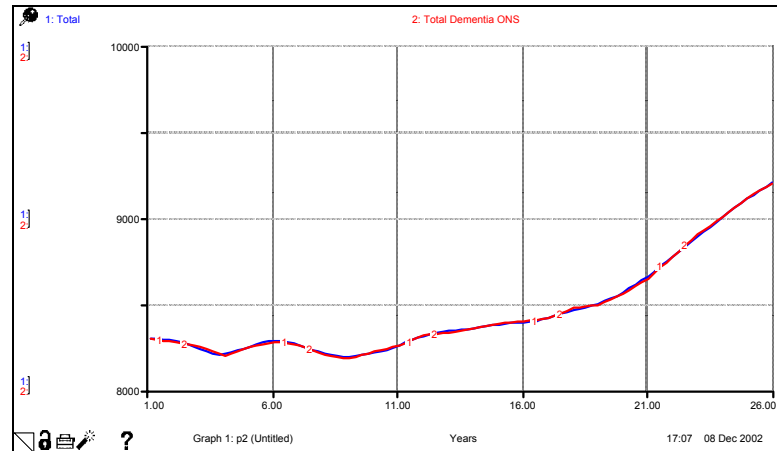
Certain assumptions had to be made based on the availability of other data and the groups understanding of future trends. In some cases data are no more than nominal for illustrative purposes. Using nominal data in this way is useful for group learning. However, more rigorous calibration of data may be required before taking detailed planning decisions. Each of these assumptions is capable of being modified in the modelling software to test sensitivities and develop further understanding of the behaviour of the model as it reflects what might be expected.

Initial proportions of dementia sufferers in each of the four levels	Level 1 = 50% Level 2 = 26% Level 3 = 18% Level 4 = 6%
Initial number of day centre places	300
Unit cost day centre place per annum	£2000
Initial number of paid carers	50
Unit cost paid carer per annum	£8000
Fraction of saved 'day centre' cost reinvested in paid carers	100%
Normal fraction of Level 1 dementia sufferers with an unpaid carer	25%
Normal fraction of Level 2 dementia sufferers with an unpaid carer	50%
Base years unpaid carers spend caring	5 years
Normal time unpaid carers spend caring per week	35 hours
Initial support groups for unpaid carers	0
Unpaid carers per support group	12

5 Model Behaviour and Learning

5.1 The effect of demographic changes

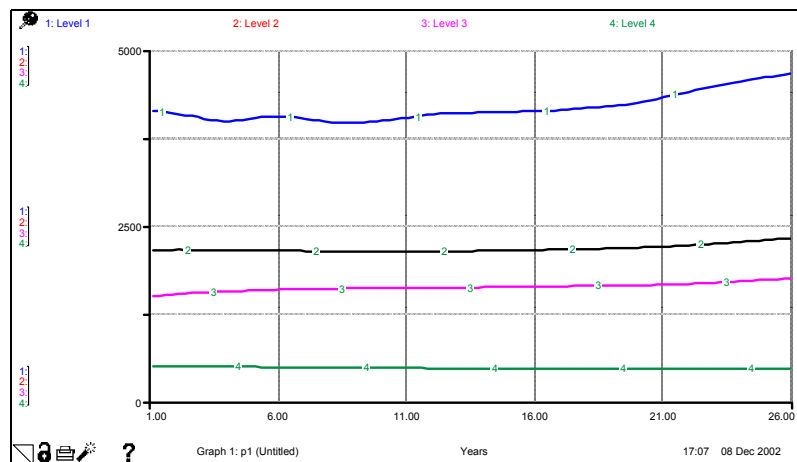
The model has been calibrated to forecast the total number of dementia sufferers in Leeds over a 25 year timeframe, assuming that we carry on delivering services as at present. The variables on the chart are driven by forecasts of demographic change. The chart below compares the output of the model (1) with the ONS forecast data (2).



We can see that both lines on the chart are very close, indicating face validity of the model.

The base year for the simulation is 1996. We can see that the number of dementia sufferers is fairly static in the period 1996-2007, fluctuating within in a range of 8207 and 8299. This is followed by a fairly rapid period of s-shaped growth during 2007 – 2021, where the number rises to 9211 and is continuing to rise beyond this period.

If we assume that dementia sufferers continue to be apportioned in the same level of need as present then the numbers in each level over the 25 years are as seen in the next chart:

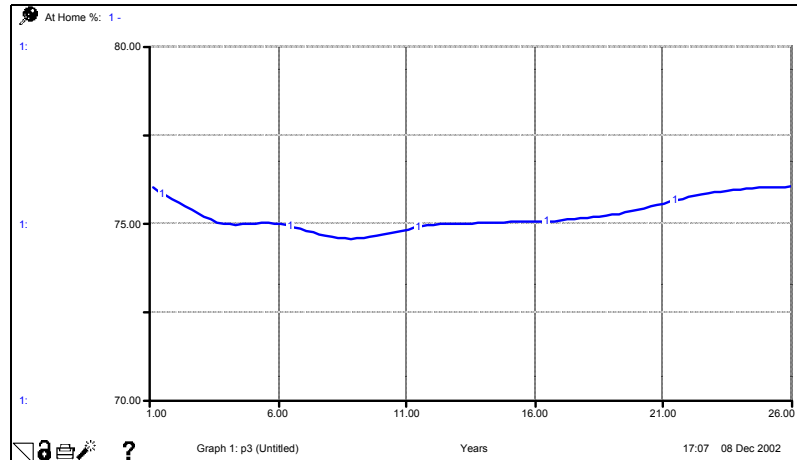


The largest increases come from Levels 1 and 2. However, Level 3 (people needing non-intensive residential care) increases from 1494 to 1752, an overall rise of 17% or 258 beds. There is a small fall of 43 people at Level 4.

5.2 Improving Strategic Performance

Since long-term planning will seek to improve strategic performance, we are likely to want to increase the proportion of people able to live independently in the community rather than in an institutional care setting. This might be done in one of two ways; either by increasing the number of carers and/or slowing down the rate at which people become dependent on services.

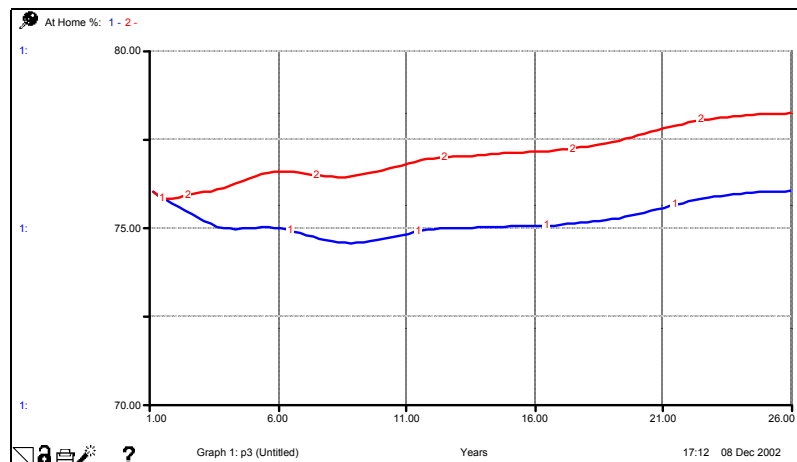
Firstly, assuming that we carry on delivering services as at present we can see that the proportion of people living at home fluctuates in a narrow range of 74.6 – 76.0 %. There is barely any improvement.



We will use this chart as a reference for comparing different strategic interventions. We will test the four interventions for which we have empirical data.

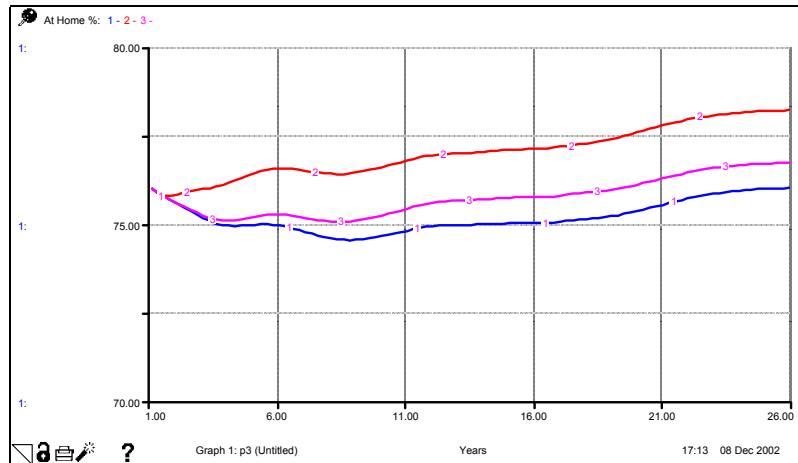
- Commissioning comprehensive assessment and intervention for people with dementia.
- Introducing new drugs e.g. Ebixa.
- Decommission day centre places and reinvest in paid carers.
- Introduce a programme of family counselling sessions and support groups for carers of people with dementia.

5.2.1 Commissioning Comprehensive Assessment and Intervention



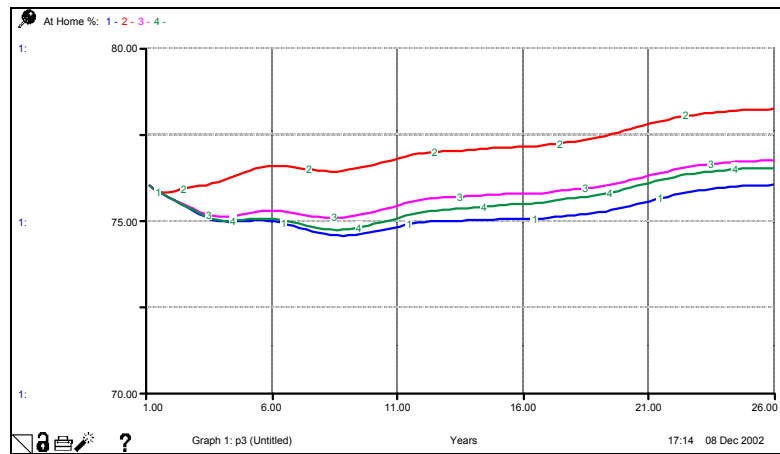
By commissioning comprehensive assessment and intervention at the start of the simulation (line 2) we increase the proportion of people living 'at home' by 2.3 %, representing 209 people, and reduce the number 'in care' by 202 people.

5.2.2 Introducing New Drugs e.g. Ebixa



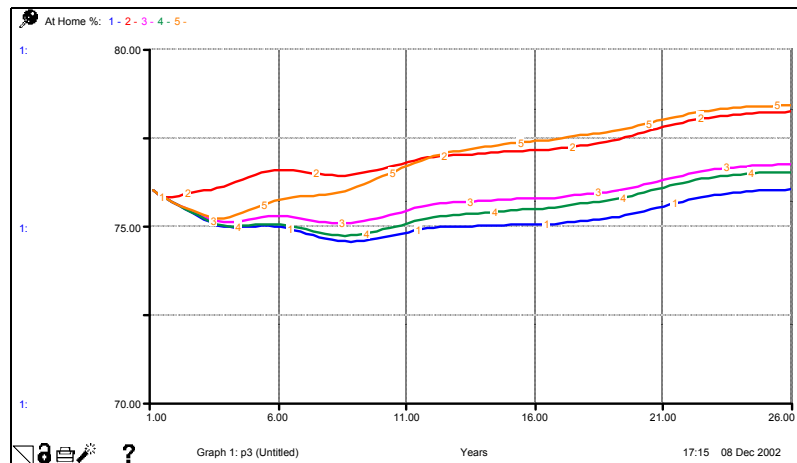
The drug 'Ebixa' has a smaller impact on our performance measure (line 3). We increase the proportion of people living 'at home' by 0.8%, representing 99 people, and reduce the number 'in care' by 56 people.

5.2.3 Decommission Day Centre Places and Reinvest In Paid Carers



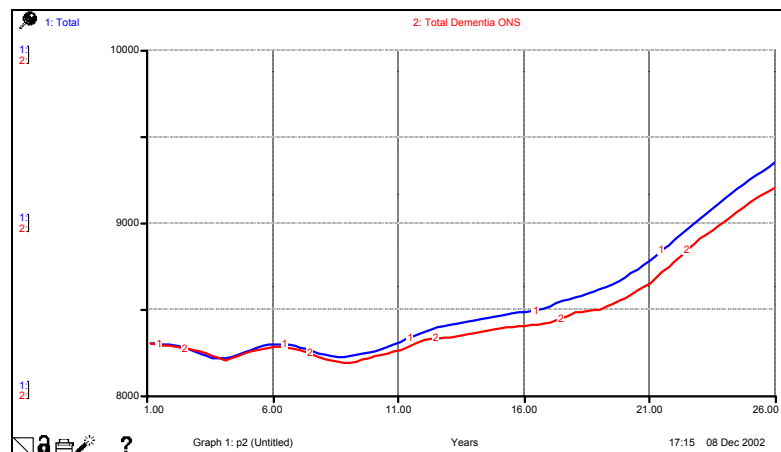
Given our assumptions about carers (see above), we can decommission 'day centre places' at the rate of 20 per year and reinvest 100% of the operational cost of maintaining them in recruiting and retaining 'paid' carers. The impact is a slightly lower increase in people being maintained 'at home'. We increase the proportion of people living 'at home' by 0.5%, representing 67 people, and reduce the number 'in care' by 39 people.

5.2.4 Introduce A Programme Of Family Counselling Sessions And Support Groups For Unpaid Carers Of People With Dementia.



Again, given our assumptions about carers (see above), we could provide every unpaid carer with a programme of family counselling sessions and support groups with a view to extending the period during which a carer can remain in that role. This intervention has the best outcome of the four. We increase the proportion of people living 'at home' by 2.4%, representing 329 people, and reduce the number 'in care' by 189 people.

One point to note is that the more successful we are at keeping people at home the higher will be the global number of people with dementia. This is believed to happen because people 'at home' live longer. Using this same intervention we can see that the model predicts a total number of people dementia at a level of 147 above the ONS prediction.



5.2.5 Multiple Interventions

The simulation model is capable of simulating the effect of multiple or composite interventions. For example, we could test the impact of introducing new drugs together with recruiting paid carers.

Care should be taken when experimenting with multiple interventions and assumptions should be examined carefully because there may well be a relationship existing between the interventions themselves.