

**Torbay Care Trust
Whole Health, Housing and
Social Care System
Modelling
Phase One Report**

September 2010

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1 Introduction

1.1 Purpose of this report

This report has been produced by Finnamore Limited as commissioned by Torbay Care Trust (TCT) and Torbay Council. Its purpose is to set out the findings of a whole health and social care system modelling exercise which has been carried out to understand future demand and costs for each of the health and social care services operated by both TCT and housing units commissioned by the council.

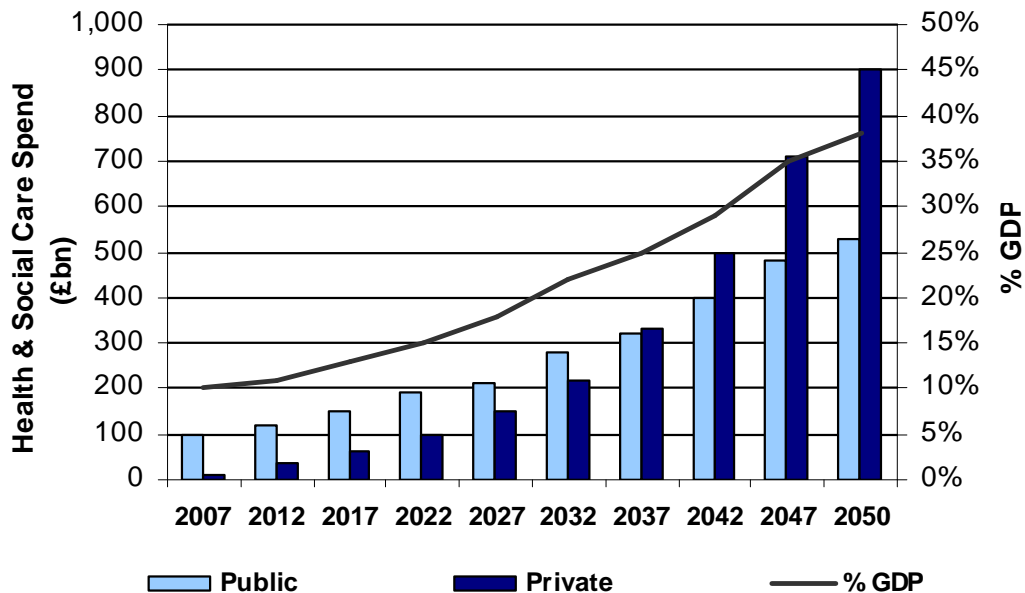
The exercise was requested in light of the publication of 'Under Pressure' and the forthcoming Comprehensive Spending Review.

The report also provides a number of examples from other health communities of initiatives that have been introduced to reduce demand for, and the costs of, health and social care services. We recommend that TCT and the council consider these examples in their future planning, but have not attempted to forecast the impact of any such initiatives at this stage.

1.2 Context

The population of Torbay is both increasing and ageing. Torbay already has a population which is substantially older than the English average, resulting in above average demand for health and social care services provided by TCT and Torbay Council. At the national level, demand and expectations are rising – the graph below (figure 1) presents a long-term view of how UK health and social care costs could increase as a direct result: Torbay is often said to be 'ten years ahead of the rest of England' in terms of its local demographics.

Figure 1 : Health and social care cost forecasts to 2050



The costs as represented on the graph will clearly be unaffordable at any level.

In February 2010 the Audit Commission published 'Under Pressure', which focuses on the financial challenges for councils of an ageing population. The Audit Commission demonstrates the case that improved health and wellbeing reduces demand for services, and that this can counter the increased demand arising from a continuing rise in older population i.e. the increase behind the sharp rise in health and social care costs outlined on the graph above. 'Under Pressure' also makes clear that councils and their partners, including health, must co-operate to tackle the main causes of social care need, including: health and mobility problems; poor housing; social exclusion etc.

At the national level it is clear that the country cannot afford the predicted rise in health and social care costs. The financial crisis and resulting downturn in public finances has simply brought forward the need to make substantial changes to reduce demand and costs by requiring health and social care commissioners to reduce spend. Exactly how much will need to be saved will become clearer in the autumn with the publication of the Comprehensive Spending Review.

1.3 The health and social care model

At the heart of our approach to this work has been the construction of a model designed to show demand and costs relating to each service commissioned by TCT and housing commissioned by Torbay Council.

The purpose of this health and social care system model is to provide a modelling tool using which TCT can understand:

- The impact on demand for individual services from forecast demographic change over the next ten years.
- The impact on demand for individual services from changes in disease prevalence over the next ten years.
- Links between individual TCT and council services to inform how changes to one service will have a knock on impact on other public services.
- The potential impact of initiatives aiming to reduce demand for services.
- The potential impact on costs and capacity of initiatives to improve efficiency within services.

Overall, the model will allow its users to understand how demand is likely to grow over the next ten years, and the actions TCT and the council can take to mitigate any increase in demand for health and social care.

The model encompasses all health and social care services, plus housing. It is planned that further modelling will be carried out to extend the model to all other council funded services likely to be affected by the ageing population.

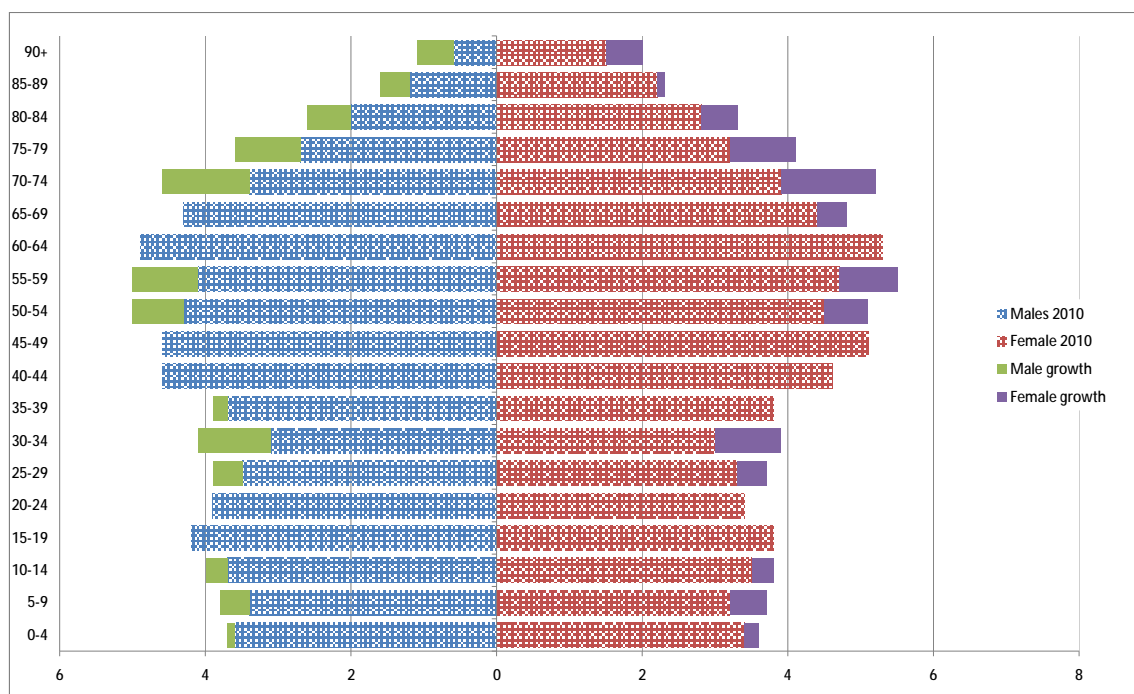
2 Forecast demographic change in Torbay

2.1 Demographic trends

As stated earlier, Torbay already has a population which is older than the English average. Nevertheless the local population is forecast to age further over the next ten years.

The population pyramid diagram below (figure 2) illustrates the current age structure of the Torbay population, and the anticipated change by 2020.

Figure 2 : Torbay population pyramid



Whilst the number of people living in Torbay is expected to increase by a modest 7% to 144,000 by 2020, most of this increase will be amongst the age groups making the highest demands upon services.

Table 1 : Population forecasts by age bands 2010 to 2020

'000's	2010	2011	2012	2013	2014	2015	2020
0-19	28.8	28.6	28.5	28.5	28.6	28.6	29.6
20-64	74.2	74.4	74.1	74	74.1	74.1	74.9
65-84	26.8	27.4	28.3	29	29.6	30.2	32.5
85+	5.5	5.6	5.7	5.9	6.1	6.2	7.1
Total	135.3	136	136.6	137.4	138.4	139.1	144.1

The largest percentage increases in population are 29% - amongst the over 85s, and 23% in the 65 to 84 age group.

3 Future demand and costs of services

3.1 Introduction

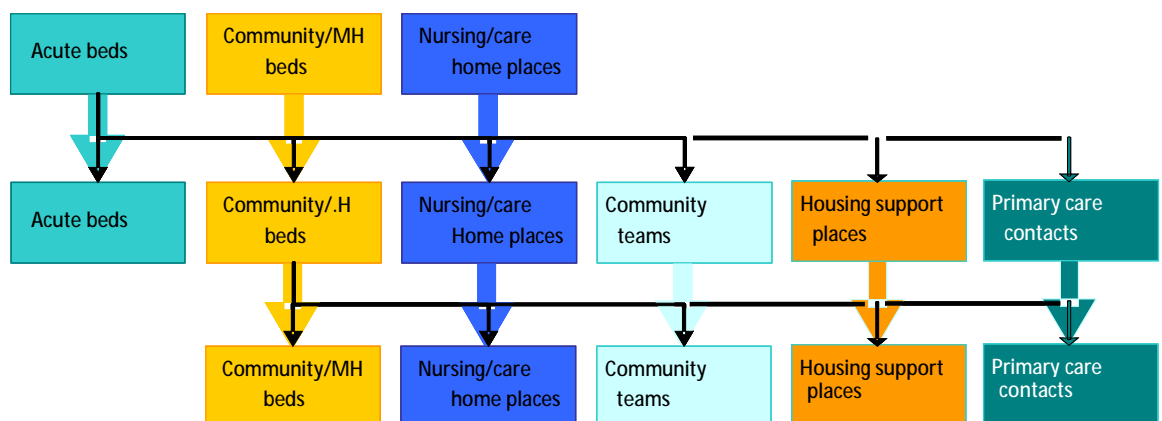
A 'base case' was run through the health and social care model to assess predicted demand (as measured by service activity) and costs of health and social care services. The base case is derived by:

- Taking historic demand, using the most recently available activity and cost information for each service.
- Adjusting historic demand for demographic change to predicted activity numbers and costs for the next ten years. The impact of demographic change has been applied at a service level using individual patient information where available and, where not available, by agreeing which age groups each service primarily serves.

We used TCT's Board report to define each 'service', and matched costs and activity on a service by service basis as far as possible – for a number of services reliable activity data was not available, so our modelling was based on service costs alone.

The model has been built to allow further scenarios to be run based upon changes in disease prevalence and changes to service efficiency, and to show the impact of schemes designed to reduce admissions to hospital. The following diagram illustrates links between services which come into play as demand for individual services is varied.

Figure 3 : Service links



However, the following sections discuss the 'base case' only.

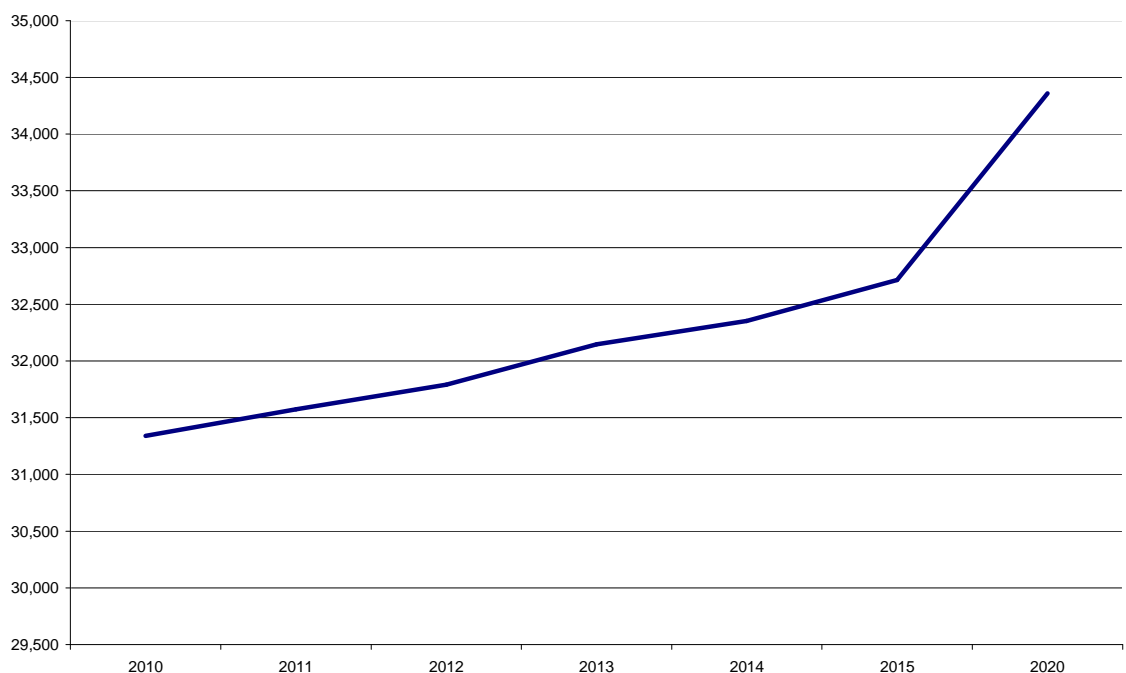
3.2 Overall conclusions

The Torbay population will increase by 6.5% between 2010 and 2020. This increase will be concentrated amongst older people resulting in a predicted 11% increase in costs to TCT (from £290m to £321m) and an increase of 4% in the costs of 'Torbay Supporting People'. These cost increases are stated at 2010 prices, and are before the impact of inflation i.e. the need for efficiency savings assumed in national tariffs will be on top of these amounts.

3.3 Acute and mental healthcare

TCT currently commissions £102m worth of services from acute providers. Admissions to these providers (predominantly South Devon Healthcare) for patients paid under national tariff are predicted to increase by 10% as shown below.

Figure 4 : Inpatient and day case admissions and costs



Costs will rise by a similar percentage from £47m to £53m. Services for other patients (mainly out patients, but also those patients receiving direct access diagnostic tests and non-tariff services) will also experience increased demand resulting in costs increasing by 7%.

Acute hospital costs are rising at a rate only slightly higher than the rate of total population change (+6.5%) because the impact on demand of an ageing population will be partly offset by lower percentage increases in demand for services from other population groups such as young children and mothers.

People with mental health and learning disability problems account for approximately 11% of current TCT spend. Just under half of this amount is spent with Devon Partnership Trust. These costs are expected to rise in line with overall population change (+6.7%).

Most other commissioned acute and tertiary care is also expected to increase in line with overall population change. The only major exception will be the cost and demand for continuing care where we expect to see increases of closer to 23% reflecting the focus of this service on the elderly.

3.4 Primary care

Demand for GP consultations has been increasing steadily at a national level over and above the increase we would expect to see generated by demographic change (for example the average number of GP consultations per year has risen from 4 to 5.5 per person over the last 15 years). This trend should be expected to carry on. Our baseline modelling does not include this factor, although this could be easily added if required.

We have modelled changes in demand due to changes in local demographics. This suggests that demand for and the costs of GP and pharmacist services will increase by almost 11% by 2020.

Demand for dental services and high street opticians will increase at a lower rate, most likely almost 7%. Once again the relative differences in increase reflect the age profiles of users of each service.

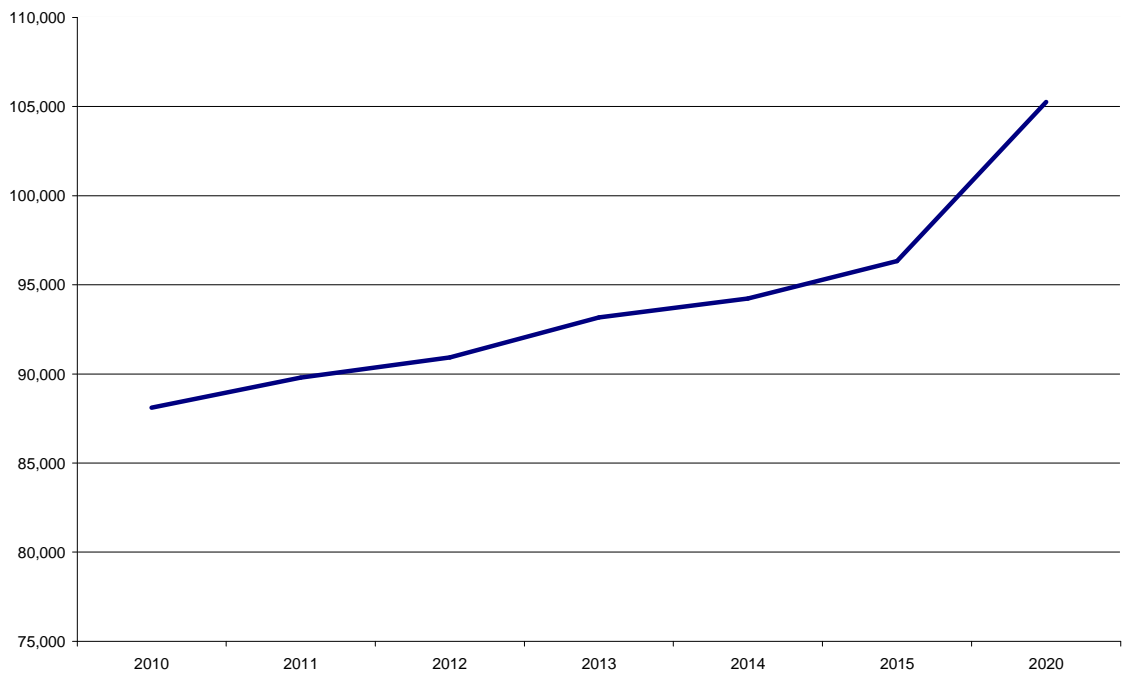
Overall we expect the costs of primary care to rise from the current £54m to £60m.

3.5 Community health and social care services

TCT commissioners commission £27m worth of community health and social care from TCT's provider arm and a further £29m of services from other providers (the largest element being older people's residential care). These community services are expected to experience the largest increases in demand and, therefore costs, across the whole cohort of health and social care services in Torbay.

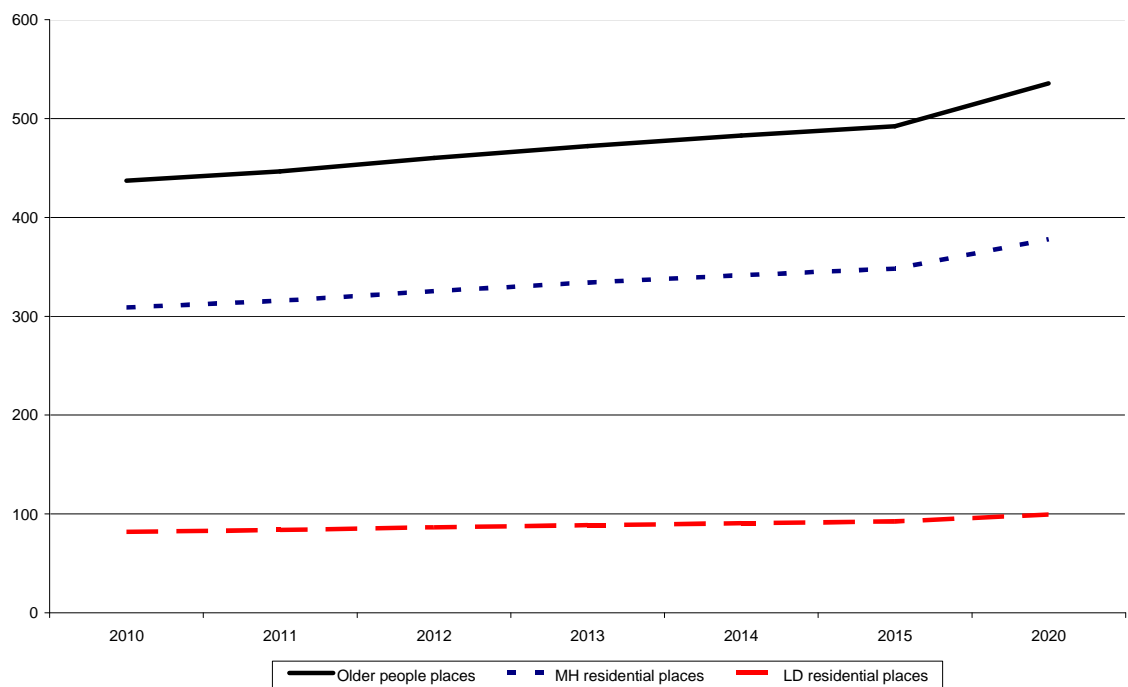
These services serve primarily older people. They will, therefore, be most exposed to pressures from the rapidly growing number of people aged over 65 living locally. We expect demand for most of these services to rise by between 20% and 25% depending on the precise population group served. The increase in demand for district nurse contacts (from 88,000 to 105,000) illustrates the trend for one of the larger services provided by TCT.

Figure 5 : District nursing contacts



Total spend on TCT provider arm services is expected to rise from £27m by 21% to almost £33m.

Commissioners will also face financial pressures due to rising demand for services commissioned from third parties – these include residential care for older people and people with learning disabilities or mental health problems. The graph below illustrates expected changes in demand for each category of residential and nursing home care between now and 2020.



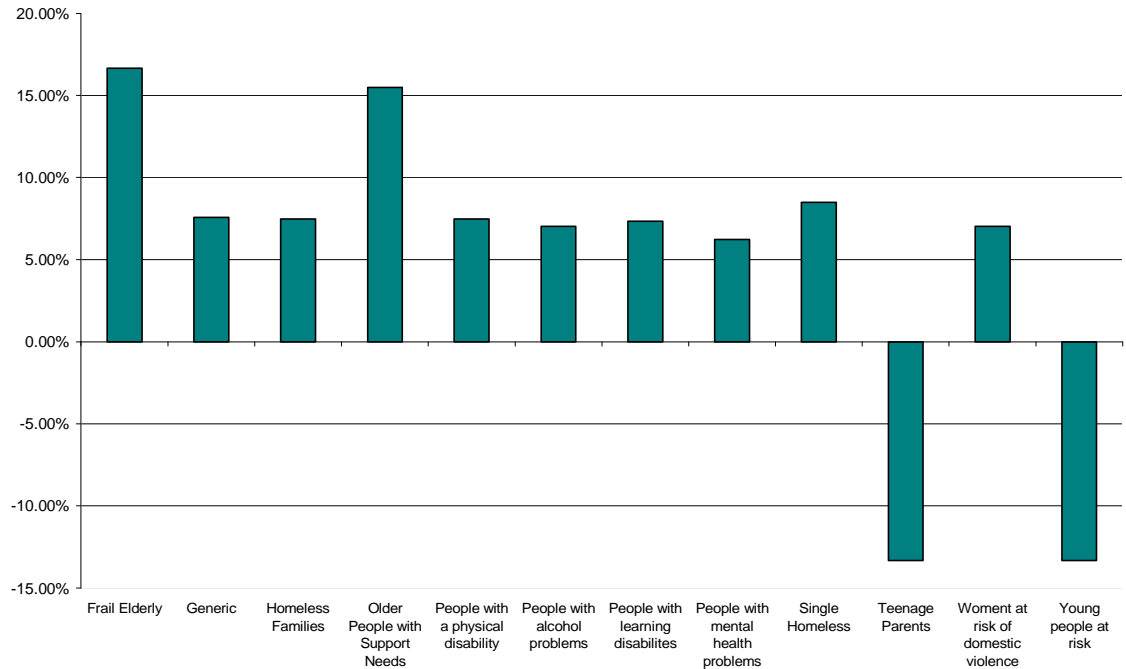
Not surprisingly, the increase will be most pronounced in relation to nursing and residential places (shown together on the graph) for elderly people.

3.6 Torbay Supporting People

Torbay Council currently commissions just over 1,800 units of accommodation for vulnerable people. A wide range of needs are catered for ranging from women at risk of domestic violence to older people. A recent report, 'Evidencing the Financial Benefits of the Supporting People Programme in Torbay', provides evidence to support an expansion of the scheme. However, our modelling has focused on the impact of demographic change only on this provision.

Overall demographic change will increase need by 10% to just over 2,000 units of accommodation. But the rate of change will vary substantially by service. For example the under 18 population is expected to reduce in size, so we forecast a reduced need for places for teenage parents. By contrast we expected demand for places for the frail elderly to rise by 16%. The ten year percentage change for each category is shown in the bar chart below.

Figure 6 : Forecast ten year change in demand



3.7 Summary of base case

Nearly all TCT commissioned services and supporting people accommodation will experience higher levels of demand by 2020 due to demographic change alone. Rates of increase will vary significantly depending upon which age group individual services focus on. Nevertheless overall TCT and the council as commissioners face a substantial challenge in balancing budgets whilst responding to demand.

The next section of this report provides an introduction to some of the initiatives introduced into other health and social care communities in response to similar demand and cost pressures.

4 Experience from elsewhere

4.1 Introduction

The previous sections have demonstrated that the future is not affordable in terms of forecast costs of increased service provision. TCT and the council need to innovate in service delivery to reduce demand and costs. This means services will need to be redesigned to focus on:

- Prevention.
- Early intervention.
- Minimising the use of institutional solutions such as hospitals and residential care.

This section of the report sets out a number of ideas on what can be done to achieve these three aims. It is important to recognise that all health and social care communities are different; all have differing levels and patterns of service delivery; funding varies; and all are starting from different points. Comparisons of absolute numbers are, therefore, fraught with difficulty and consequently have not been attempted.

The following sections provide some ideas for local consideration. We recommend that these examples are used as scenarios to run through the health and social care model.

4.2 The evidence base

The evidence base for new and innovative services which aim, primarily, at keeping people living independently and treated as far as possible at home, is constantly growing. The evidence presented here has been sourced from:

- Health Services Management Centre (HSMC) Transforming Community Service guides. HSMC read the summaries of 277,801 studies and reviewed more than 18,500 articles in their study.
- Finnamore's critical appraisal of the evidence for remote patient management.
- Partnerships for Older People (POPP) – DH funded national evaluation of the POPP programme.
- Scottish National Telecare Development Programme – evaluation by York Health Economics Consortium (YHEC).
- Cochrane Collaboration reviews.
- Evidence from individual pilots and services.

The evidence can be distilled into 11 areas for consideration – it should be noted that there is some overlap between areas.

4.2.1 Health and wellbeing

HSMC reviewed studies focusing on health and wellbeing - the most successful for improving health and wellbeing focused on physical activity. These involved supervised exercise programmes in health centres or community venues using partnership approaches with leisure facilities, group activities and programmes including weekly or monthly programme checks. The evidence base also suggests that unsupervised programmes and those which did not include charted progress over time, were least likely to be effective for long term gains in physical fitness and weight loss.

4.2.2 Segmentation and targeting of people most at risk of admission

Segmenting people into groups according to different levels of need can identify those who would most benefit from care in the community; more intensive care; and specific services to avoid reliance on hospital services.

A Kings Fund assessment of five 'high performing' organisations running managed care programmes in the US found that four out of five organisations used risk stratification techniques to identify people at high risk and targeted these people for intensive case management.

In England, the Department of Health has funded several investigations of monitoring tools and risk stratification methods, including the development of new indicators and assessment techniques such as the PARR tools for people with long term conditions.

Regardless of the tools used to identify people at high risk of service use, there is consistent evidence that such targeting is beneficial. What is often overlooked is that those at medium risk should also be a priority because without proactive intervention these people may readily move into the high risk category.

There is also evidence that targeting people at risk and offering enhanced care in the community can change the use of hospital services. For example, a 15% reduction in admissions and a 31% reduction in length of stay was claimed in one study¹.

Similarly, a cost-effectiveness analysis found that people at high risk of clinical deterioration or hospitalisation were most likely to benefit from disease management programmes²³.

1 www.hda-online.org.uk/hdt/1101/local.html

2 Rich MW, Nease RF. Cost-effectiveness analysis in clinical practice: the case of heart failure. Arch Intern Med 1999; 159: 1690-700.

4.2.3 Remote patient management

Evidence shows that telemedicine within a disease management plan can improve clinical outcomes and reduce health service utilisation and costs for chronic disease management. Patient satisfaction levels have been high in these trials, with most study participants recording ease of using technology and more empowerment in their health status. American studies based on the Veterans Health Administration show reductions in admissions of 20% and in hospital bed days of 25% linked to remote patient monitoring⁴.

4.2.4 Home visits for older people

Systematic reviews suggest visiting elderly people at home, either as a preventative measure or as follow up after hospital discharge has positive effects on physical, social, and mental health, knowledge and service use. This can also reduce admissions. A randomised trial in the UK assessed a community support scheme for 903 people aged over 75 years. The intervention involved support and practical help from care attendants on the first day following hospital discharge and for up to 12 hours a week for two weeks. Three months after initial discharge, there were no significant differences between groups in physical independence, morale, or death. However, hospital readmission rates within 18 months of discharge were significantly less in the group who received home care. Benefits were particularly high among people living alone. The authors concluded that if home care was provided to everyone discharged from hospital over the age of 75 living alone, an average PCT might expect to save about 23 hospital beds at a net annual saving of £220,000 in the short-term⁵.

3 Vijan S, Hofer TP, Hayward RA. Cost-utility analysis of screening intervals for diabetic retinopathy in patients with type 2 diabetes mellitus. JAMA 2000; 283(7): 889-96.

4 Darkins et al., VA Care Coordination/Home Telehealth Studies 2004-07, in Telemedicine and e-Health, Dec 2008

5 Townsend J, Piper M, Frank AO et al. Reduction in hospital readmission stay of elderly patients by a community based hospital discharge scheme: a randomised controlled trial. BMJ 1988; 297: 544-8.

4.2.5 Partnerships for Older People Projects (POPP)

Partnerships for Older People Projects (POPP) have been running since 2006 across England, funded by the Department of Health. The pilots are aimed at supporting local, innovative schemes for older people. Local authority led, they are based on partnerships with health and the third sector, and are aimed at creating sustainable shifts in resource away from hospital-based crisis care towards community settings.

POPP pilot sites have a demonstrable effect on reducing hospital emergency bed-day use when compared with non-POPP sites. POPP projects are also having an effect on how users perceive their quality of life as a whole. Following the project, users report they see their quality of life as improved.

Users also reported that their health-related quality of life improved in five key domains, (mobility, washing/dressing, usual activities, pain and anxiety), following their involvement in the POPP projects.

An analysis of those sites where data are currently available (11 out of 29 sites) appears to demonstrate the cost-effectiveness of POPP projects.

4.2.6 Case management and community matrons

Community matrons focusing on patients with long-term conditions have helped to reduce admissions in several health communities. For example in Barnet, community matrons focused on COPD/asthma, heart disease, cancer and HIV/AIDS with the result that 100 admissions were thought to have been avoided each year.

4.2.7 Intermediate care

A community based rapid response intermediate care service that works out of hours and which provides a single point of contact to intermediate care services for acute hospital and primary care.

A case study from Milton Keynes shows that 88 acute hospital admissions were avoided each month, saving £400k per annum.

4.2.8 Rapid access clinics

Rapid access medical clinics can be embedded within the hospital based medical assessment units to provide a safe alternative to hospital admission. These clinics help to prevent admission for a cohort of patients referred by GPs as requiring urgent attention.

A review of a service in Livingstone showed that 93% of referred patients were discharged and managed in an ambulatory fashion, representing successful admission avoidance.

4.2.9 Paediatric hospital a home

'Paediatric Hospital at Home' was set up in November 2008 at Walsall Hospitals NHS Trust. A team of three senior paediatric nurses deliver the service visiting patients in their own home for up to two weeks. By focusing on elimination of unnecessary admissions and reducing length of stay a reduction from 36 to 21 inpatient beds was enabled.

4.2.10 Community rehabilitation

There is good evidence to support providing rehabilitation as an outpatient service. For example, a systematic review of randomised trials of outpatient services including physiotherapy, occupational therapy, and multidisciplinary rehabilitation services for people recovering from stroke found that rehabilitation reduced deterioration and increased people's ability to undertake daily activities compared to people recovering in hospital⁶.

4.2.11 End of life care

One randomised trial in the US compared usual care versus an in-home palliative care intervention for people with less than one year to live. The group receiving home based care also benefitted from an interdisciplinary team providing pain and symptom relief, patient and family education, and an array of medical and social support services. People receiving care at home were more satisfied, more likely to die at home, and less likely to visit A&E or be admitted to hospital. This resulted in significantly lower costs of care. The authors concluded that this provides evidence for reforming end of life care⁷. Until recently, the focus of palliative care services has been on cancer and malignant disease. However, there is increasing evidence that everyone nearing the end of their life can benefit from supportive care⁸.

6 Legg L et al. Rehabilitation therapy services for stroke patients living at home: systematic review of randomised trials. *Lancet* 2004; 363 (9406): 312-319 .

7 Brumley R, Enguidanos S, Jamison P et al. Increased satisfaction with care and lower costs: results of a randomized trial of in-home palliative care. *J Am Geriatr Soc* 2007; 55(7): 993-1000.

8 Daley A, Matthews C, Williams A. Heart failure and palliative care services working in partnership: report of a new model of care. *Palliative Medicine* 2006; 20(6): 593-601.