

## Forecasting Patient Demand for NHS Continuing Healthcare

**Funded by** the NHS London Procurement Programme

**Start date:** October 2009

**End date:** February 2013

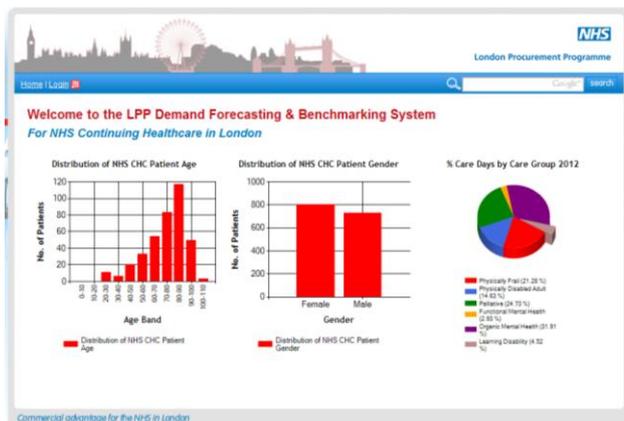
**Website:** [www.lppdemandplanning.co.uk](http://www.lppdemandplanning.co.uk)

### Brief

NHS Continuing healthcare is provided to those with chronic illness, physical or mental disability. The complex needs of patients combined with the on-going nature of such care gives rise to high costs and presents management challenges for NHS organisations. Furthermore, changes in demographics as a result of population ageing, together with shifts in key social trends, cause further concern as the implications of such effects on future patient demand and ultimately cost are highly uncertain.

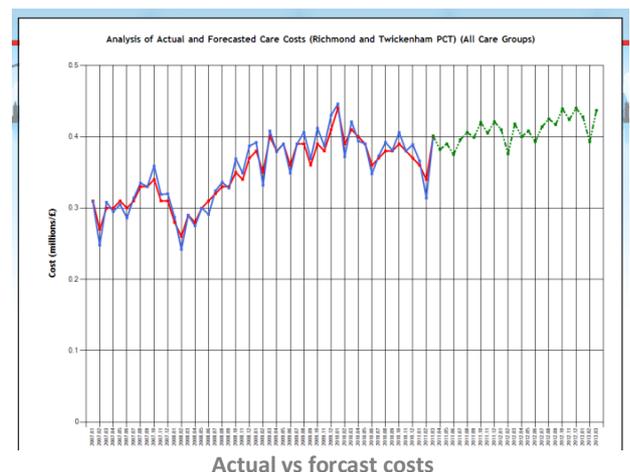
### Our approach

We began the project using problem structuring methods to identify existing practices relating to demand management in NHS continuing healthcare and how such work fed into related workstreams – including early contracting negotiations with private sector providers. Based on the need to integrate with existing data systems and provide a streamlined way for commissioning teams to generate forecasts based on changes in several factors – we developed an online web-based forecasting system which could be used to generate graphs and reports of future spend and demand for care across six categories of care and under different provision types and future scenarios.



Welcome screen

The system was developed using historic patient data provided by London NHS organisations and used a secure role based access control policy to enable different privileges to be granted to either data or commissioning teams. The completed system was separated into three logical components – including data, analysis and presentation – to ensure flexibility in the future with respect to addition of new features and so that each component could be independently tested for accuracy and reliability of the results. The analysis engine used data uploaded over the web in the correct format to generate outputs depending on the report selected by the user from one of the analysis, forecasting, insight or benchmarking nodes. To carry out the forecasting of patient demand or cost, a comprehensive range of forecasting methodologies we implemented – including: Exponential Smoothing; Holt-Winters Exponential Smoothing; Linear Regression Analysis; Single Layer Artificial Neural Networks; and Grey Systems Prediction.



Actual vs forecast costs

### Benefits

- Provides commissioning teams with increased informational advantage
- Statistical evidence to support strategic decision making
- Deeper understanding of cost over the lifetime of each patient
- Identification of opportunities to generate savings through block contracting
- Greater knowledge of length of stay patterns by different patient cohorts.
- Superior insight into patient pathways through care

### Contacts

Prof. Thierry Chausalet or Philip Worrall:

[HSCMG@westminster.ac.uk](mailto:HSCMG@westminster.ac.uk)