



# Whole system activity & financial modelling

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## The whole health and care system activity and financial model

- The purpose of activity and financial modelling is to illustrate the potential impact, under different scenarios, of introducing new models of care on the use and costs of publically funded health and social care. The model:
  - Provides a taxpayer view of the costs of provision compared to allocations received by commissioners;
  - Provides a health and social care commissioner 'view' of the impact of new care models on the quantity of activity commissioners need to commission and the costs to commissioners, of this activity;
  - Provides a provider 'view' of the impact of new care models on the quantity of activity each main provider is expected to deliver and the associated impact on provider capacity and finances.
- The model covers all services within the 'system' – the definition of the 'system' used by the NEH&F vanguard is all health & social care services commissioned by the CCG, NHSE and county councils for people registered with NEH&F GPs. Previous versions of the model have been extended to include housing and other related local authority services.
- The model allows the user to run a 'do nothing' counterfactual base case which shows the impact:
  - Of demographic change, new housing & other growth factors on activity and commissioner costs;
  - Of inflation and marginal cost changes on the costs of provision;

to determine the size of the financial challenge facing the system over the next 5 and 10 years.

## The whole health and care system activity and financial model (2)

- The financial gap is shown divided between the 'commissioner gap' (QIPP) and the 'provider gap' (CIP), although we emphasise the 'taxpayer gap'.
- Scenarios can then be run to show the potential for new models of care (and other savings schemes) to close the gap. Key to these scenarios is:
  - Firstly understanding the potential for new models of care to shift activity to new settings of care e.g. expressing scenarios in terms of activity reduced – this is done by a combination of benchmarking, review of the evidence base and engagement with local clinicians (assumptions are linked to logic models);
  - Secondly understanding what new activity is needed to achieve the shift – this is done by asking the question, “what substitute activity is required for each bed day/ A&E attendance etc, no longer provided?”
- There is no limit to the number of scenarios that can be run, but we recommend three (best case, worst case and most likely case).
- The model can be linked to more detailed workforce and capacity models, and is designed to be used to underpin commissioner and providers operational and strategic planning for 2016/17 onwards.

Summary health and social care system financial gap

Financial gap	Financial gap					
	16/17	17/18	18/19	19/20	20/21	24/25
Taxpayers' view	-30,994	-50,189	-70,488	-92,494	-117,490	-208,766
Commissioners' view	-24,462	-27,839	-31,569	-34,494	-39,321	-53,791
Providers' view	-6,532	-22,350	-38,919	-58,000	-78,169	-154,975
Check	-30,994	-50,189	-70,488	-92,494	-117,490	-208,766
	0	0	0	0	0	0

	19/20 financial gap				
	CCG	NHSE	HCC	SCC	Total
Taxpayers' view	-61,698	-21,408	-6,918	-2,470	-92,494
Commissioners' view	-29,134	-3,984	-854	-523	-34,494
Providers' view	-32,564	-17,424	-6,064	-1,947	-58,000
Check	-61,698	-21,408	-6,918	-2,470	-92,494
	0	0	0	0	0

% reduction in costs needed to achieve 1% surplus (taxpayers' view)	8.0%	11.7%	15.1%	18.4%	21.8%	31.2%
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The model summarises the financial gap split between the:

- 'taxpayers' view' of the gap based on the combination of commissioner allocations (income to the NHS from the taxpayer) and the costs of providing health & care;
- 'commissioners' view' of the gap based on commissioner allocations and predicted future costs to commissioners based on PbR and other contracts;
- 'providers' view' of the gap based on provider income (commissioner' costs) and the estimated future actual costs of providing health and care.

SUMMARY V3f - taxpayer view (provider costs and commissioner allocations)				Activity											
Service	POD	Provider	Currency	16/17	17/18	18/19	19/20	20/21	25/26	16/17	17/18	18/19	19/20	20/21	24/25
<b>CCG COMMISSIONED SERVICES</b>															
Acute	Admitted patients	Frimley Health	Admissions	53,307	55,246	57,596	59,699	61,996	71,493	74,088	77,717	81,780	85,913	90,187	109,731
		Royal Surrey	Admissions	6,323	6,529	6,779	6,997	7,244	8,210	6,357	6,664	6,984	7,315	7,651	9,057
		London trusts	Admissions							0	0	0	0	0	0
		Other providers	Admissions	6,371	6,580	6,826	7,049	7,289	8,194	11,881	12,405	12,997	13,581	14,194	16,842
	Outpatients	All	Attendances	415,595	429,478	445,948	460,635	476,978	541,126	35,514	37,819	40,301	42,952	45,670	54,899
A&E		All	Attendances	62,828	64,828	67,175	69,225	71,515	80,769	7,714	8,191	8,701	9,240	9,791	11,697
		Frimley Health		0	0	0	0	0	0	0	0	0	0	0	0
		Royal Surrey		0	0	0	0	0	0	0	0	0	0	0	0
		London trusts		0	0	0	0	0	0	0	0	0	0	0	0
		Other providers		0	0	0	0	0	0	0	0	0	0	0	0
	Ambulance services	All								5,951	6,357	6,787	7,248	7,735	9,257
	Other acute	All								9,206	9,834	10,499	11,213	11,966	14,320
	Reconciling line									2,100	2,243	2,395	2,558	2,730	3,267
<b>Sub-total Acute</b>										<b>152,809</b>	<b>161,230</b>	<b>170,444</b>	<b>180,019</b>	<b>189,925</b>	<b>229,070</b>

- The model summarises historic and forecast future activity, income and costs by service line (as defined by users);
- The working assumption is that any activity recorded can be included in the model, but we apply common sense to the level of detail used;
- Future projections are based on demographic growth, housing growth, 'other' growth, tariff and cost inflation, and marginal costs all applied at HRG or service line level to provide a 'do nothing' counterfactual forecast;
- Scenarios are user defined and are run against the baseline 'do nothing' scenario.

Acute Assumptions																
REFRESH ASSUMPTIONS	★ Aldershot assumptions								Farnborough assumptions							
Emergency Admissions	14/15	15/16	16/17	17/18	18/19	19/20	20/21	25/26	14/15	15/16	16/17	17/18	18/19	19/20	20/21	25/26
% Reduction in admis.	-								-							
Aged 0-19	-								-							
Aged 20-64 with:																
0 LTCs	-								-							
1 LTCs	-								-							
2-4 LTCs	-								-							
5+ LTCs	-								-							
Aged 65-79 with:																
0 LTCs	-								-							
1 LTCs	-								-							
2-4 LTCs	-								-							
5+ LTCs	-								-							
Aged 80+																
0 LTCs	-								-							
1 LTCs	-								-							
2-4 LTCs	-								-							
5+ LTCs	-								-							

- Scenarios are based on either changes in care settings (via changes to admission rates and LOS) or efficiency (e.g. new to follow-up ratios);
- These are applied at a level defined by the user – in this case by population segment (based on age band and the number of LTCs) & by locality;
- Admission avoidance assumptions can be based on avoiding ‘average LoS’ admissions or the shortest LoS admissions first.

Reallocation of non-elective activity

★  Bed days to reprovide (2016/17)

*Reallocated activity for non-elective inpatient activity. Reallocation shown below is for 2016/17 activity but reallocation will apply to all subsequent years.*

	16/17	Farnham Hospital			Fleet Hospital			Acute OP			District Nursing		
		(%)	OBDs per OBD	16/17	(%)	OBDs per OBD	16/17	(%)	OP 1st attds per OBD	16/17	(%)	Hours per OBD	16/17
Aldershot	17,560			-			-			-			-
Aged 0-19	1,503			-			-			-			-
Aged 20-64 with:													
0 LTCs	1,918			-			-			-			-
1 LTCs	2,067			-			-			-	25%	1	517
2-4 LTCs	1,924			-			-			-	45%	2	1,732
5+ LTCs	15			-			-			-	50%	2	15
Aged 65-79 with:													
0 LTCs	240			-			-			-			-
1 LTCs	866			-			-			-	25%	1	217
2-4 LTCs	3,714			-			-			-	50%	2	3,714
5+ LTCs	273			-			-			-	50%	2	273
Aged 80+													
0 LTCs	248			-			-			-			-
1 LTCs	823			-			-			-	25%	1	206
2-4 LTCs	3,561			-			-			-	50%	2	3,561
5+ LTCs	408			-			-			-	50%	2	408
Total	17,560			-			-			-			10,642

- Where activity is avoided (occupied bed days in this example), the model considers what new activity type substitutes for the avoided activity;
- In this example 17,560 avoided OBDs are replaced by 10,642 district nurse contacts;
- All assumptions should be agreed by users and relevant clinicians, and draw on logic models.

## What makes the model different?

We are not claiming that whole system modelling is unique, but our approach has a number of features which combine to differentiate it:

1. The emphasis above all on the taxpayer view of financials which is entirely consistent with the national push for whole system sustainability;
2. The recognition of that providers will be left with stranded costs in the short to medium-term;
3. The emphasis placed on the marginal costs of the substitute services/ additional capacity required as treatment settings shift;
4. The inclusion of 100% of taxpayer spend really emphasises the point that financial sustainability will not be achieved by just focusing on acute (in one example acute spend totals just 38% of total spend across health & social care, so clearly acute can never deliver 100% of the efficiencies needed)
5. The 'sensible' level of detail model e.g. a pragmatic mix of HRG level data where possible and assumptions applied to activity flows at a more summary level, and a recognition that modelling the minutia of PR tariffs is 'missing the point';
6. The degree to which customers can make choices about model parameters and features such as scope, marginal costs, activity shifts, services interdependencies etc.