

Modelling Step-Up and Step-Down Bed Numbers for Henley

1. Introduction

This paper sets out the methodology used to determine the likely total number of step-up/step-down beds needed for the local Henley population in the proposed new model of ambulatory care.

It uses a month by month record of current bed usage. Should the proposed model of care be taken forward, we would expect there to be a further level of more detailed analysis and modelling in line with Oxfordshire's approach to commissioning any new service.

2. Modelling Methodology

The methodology used is in four stages;

1. Number of patients with a local postcode (RG4, RG8 and RG9) admitted into any Oxfordshire community hospital each month (excluding specialist stroke pathway beds, which are provided only in Abingdon and Witney)
2. The number of patients from the RG4, RG8 and RG9 area with an Oxfordshire GP who are
 - i. Admitted into the RRBH and;
 - ii. Require step-up or step-down care but;
 - iii. Do not currently access Oxfordshire community hospital beds
3. Based on these figures, what the expected number of beds would be once the following modelling is applied as detailed below;
 - i. The expected impact of the new model (i.e. what percentage of patients are expected to be managed in an ambulatory pathway that currently access or should access a community hospital bed as part of the current model of care) on the number of beds needed
 - ii. The average length of stay (this will determine the utilisation rate; i.e. how many patients per month per bed)
 - iii. Impact of predicted seasonal variation on number of beds needed

4. Findings

The findings of applying this methodology to RG4, RG8 and RG9 patients are as below;

a. Patient numbers accessing community hospitals

Patients admitted into any Oxfordshire Community Hospital with the relevant postcodes are detailed as below for Full Year 2015 (FY15):

Admissions by Hospital Per Month

	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	TOTAL
Abingdon	2	2	2			1	1				1	1	10
Didcot										1			1
Townlands	6	7	6	4	14	5	5	5	5	9	6	6	78
Wallingford	2	3	6	3	1	2	2		2	3		3	27
Witney	1		1		1	1		1					5
Total	11	12	15	7	16	9	8	6	7	13	7	10	121

This is the combined total of patients transferred from the RBBH and from the OUH for these postcodes.

It is worth noting that the usual seasonal variation of higher admission rates in winter does not appear to apply in this instance. The data for 2014/15 is showing that admissions during this year were higher during the summer months.

b. Patients in RBBH not accessing Oxon community hospitals

RBBH's sit-rep return on delayed transfers of care for FY15 consistently reports 1 or 2 patients at any given time delayed awaiting non-acute bed-based care (i.e. a community hospital or intermediate care bed).

This does not tally with anecdotal commentary from clinicians about the numbers waiting for an Oxfordshire community bed in RBBH; and it is suggested that a joint clinical audit is undertaken to understand the difference between formally reported and anecdotal numbers.

For the purposes of this initial modelling, 2 patients are added to the monthly totals needing local community hospital admission, pending the audit described above.

c. Impact of New Model of Care on Bed Numbers

The percentage reduction in bed numbers needed is suggested as a range, based on two parameters derived from local clinical audit. These two audits provide two likely scenarios if the proposed ambulatory model is applied; a best and a worst case scenario.

It is important that this spectrum is used in the modelling to mitigate either positive or negative bias in bed numbers if only one of the methodologies were to be applied. The two pieces of evidence and their origin are explained below;

- Application of Philips' principles for frail elderly care; this model is in place in both Abingdon and Witney EMUs. These consistently have the following outcomes for patients;
 - 80% supported home same day
 - 10% admitted to acute bed
 - 10% admitted to a step-up bed locally

If one assumes (for sake of caution) that everyone admitted into an acute bed will need a step-down bed as part of their recovery pathway, **20% of current admissions for this local population would need an inpatient stay in a step-up /step-down bed**

- **Audit of current patient case-mix admitted to Oxfordshire community hospitals:** This reviewed patients waiting for a community hospital bed in OUH, and identified what percentage could be supported home if sufficient capacity to support people at home were available in the local community. This indicated that around 35% of patients waiting for a community bed could be managed with sufficient support to be discharged from acute to home. **This model suggests that 65% of current admissions for this local population would need an inpatient stay in a step-up/step-down bed**

d. Calculating Bed Utilisation

The current average length of stay in Peppard ward is 29 days (including delayed transfers of care). Where Delayed Transfers of Care are excluded, the average length of stay is 19-22 days. On other community hospitals where a mix of step-up and step-down beds are in place, the relatively short stay required in a step-up bed (typically 3-5 days) means that the overall average length of stay is lower, at 14 days.

Using these two parameters, **the utilisation rate for the new model of care step-up / step-down beds is likely to be in the range of 14-22 days.**

e. Expected Bed Numbers Required in the New Model

The calculation for modelling the required number of step-up and step-down beds for the Henley population is thus as below;

$$\begin{aligned}
 & \text{(Current RG admissions to Oxon community hospitals)} \\
 & \quad + \\
 & \text{Current DTOCs waiting for Oxon community hospital in RBBH)} \\
 & \quad \% \\
 & \text{Impact of new model (range 20 – 65% of current admission numbers)} \\
 & \quad \% \\
 & \text{Predicted utilisation rate (25-50% reduction in average length of stay)} \\
 & \quad = \\
 & \text{Predicted bed numbers required}
 \end{aligned}$$

This is set out for each month as below;

Lowest scenario												
	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15
Current Numbers in Oxon CH beds	11	12	15	7	16	9	8	6	7	13	7	10
Number waiting in RBBH for non-acute bed	2	2	2	2	2	2	2	2	2	2	2	2
New model reduces admissions to 20%	2.6	2.8	3.4	1.8	3.6	2.2	2	1.6	1.8	3	1.8	2.4
New model reduces length of stay by 50%	1.3	1.4	1.7	0.9	1.8	1.1	1	0.8	0.9	1.5	0.9	1.2
Number of beds needed	1.3	1.4	1.7	0.9	1.8	1.1	1	0.8	0.9	1.5	0.9	1.2
Highest scenario												
	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15
Current Numbers in Oxon CH beds	11	12	15	7	16	9	8	6	7	13	7	10
Number waiting in RBBH for non-acute bed	2	2	2	2	2	2	2	2	2	2	2	2
New model reduces admissions to 65%	8.45	9.1	11.05	5.85	11.7	7.15	6.5	5.2	5.85	9.75	5.85	7.8
New model reduces length of stay by 25%	6	7	8	4	9	5	5	4	4	7	4	6
Number of beds needed	6	7	8	4	9	5	5	4	4	7	4	6

5. Conclusions

Tending towards a cautious evaluation of the likely impact of the proposed model of care for Henley, it would appear that 5-8 step-up / step-down beds are needed for this population.