

Frequency of HbA1c test requests in primary care – an analysis of hospital laboratory data

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Introduction

- The National Institute for Health and Care Excellence (NICE) guidelines recommend testing HbA1c at 2-6 month intervals¹.
 - The Quality and Outcomes Framework (QOF) reimburse General Practitioners for testing HbA1c every 12 months (every 15 months prior to 2009).
 - Some people with uncontrolled diabetes may not be receiving appropriate levels of testing² to maintain good glycaemic control which may lead to health complications³.
 - In some cases more frequent testing may be clinically appropriate and may benefit some patients^{4,5}.
 - There is little information about HbA1c testing patterns in primary care and associations with change in HbA1c.
- Objective:** This study aims to report the utilisation of HbA1c tests and establish how HbA1c testing frequency impacts on glycaemic control.

Methods

- This was a retrospective cohort study of HbA1c test requests from primary care to the John Radcliffe hospital laboratory in Oxford between January 2004 and December 2013.
- 71,308 patients with only one test request were omitted from the analysis.
- Testing frequency according previous HbA1c and percentages of tests carried out less than 60 days or more than 366 days from the previous test were reported.
- Results were analysed in 2 year windows over the 10 year period to examine trends in testing intervals over time.
- Levels of significance between groups were tested using two-sample t-test and tests of proportions with p≤0.05 considered to be significant.
- Change in HbA1c stratified by patient's previous HbA1c level was plotted against testing interval using methods described by other researchers³.

Figure 1 – Numbers of HbA1c tests by year

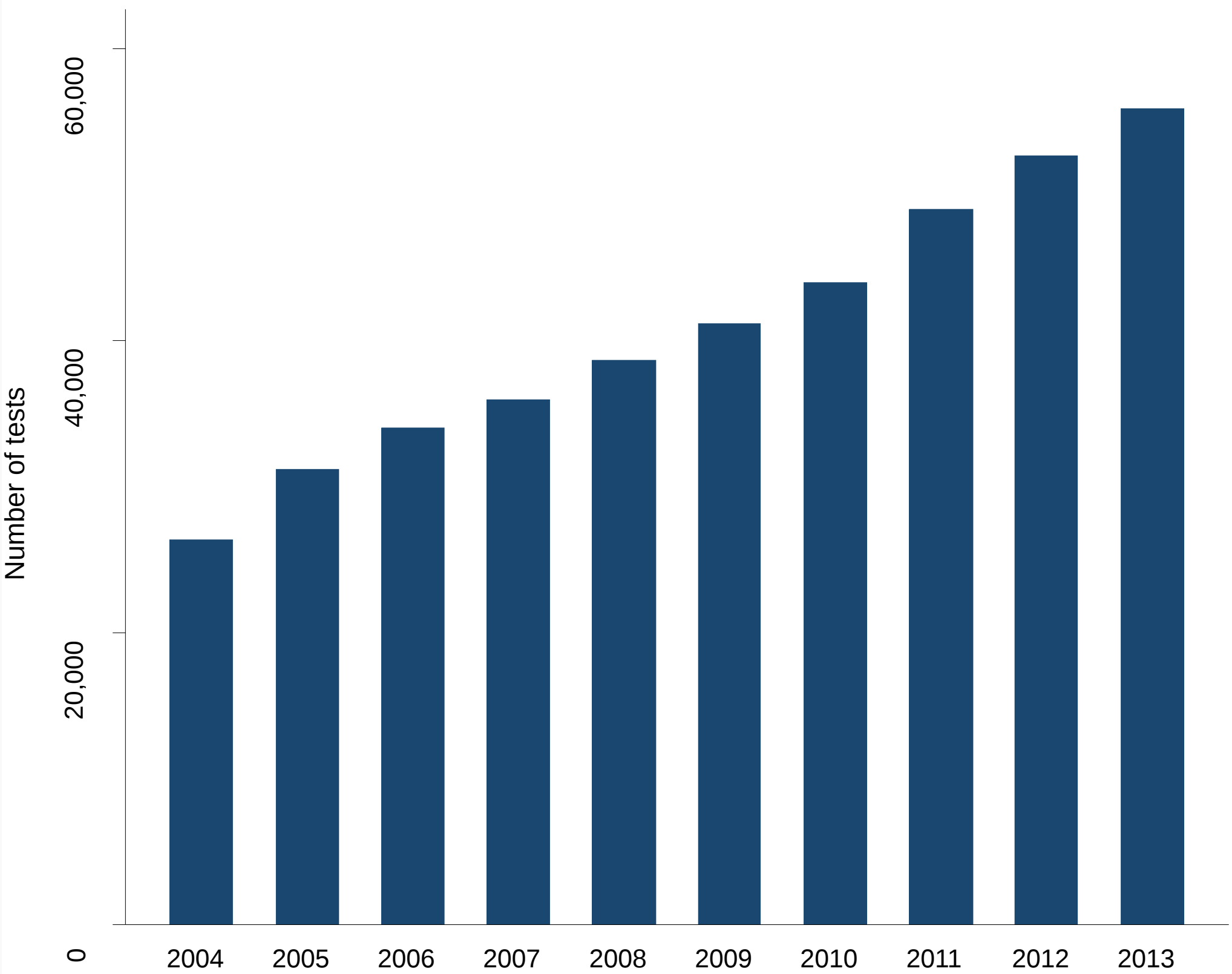


Table 1 – Summary of results of HbA1c test requests

	All requests
Total number of patients	49,957
Total number of tests	408,869
Number of GP surgeries	106
Age *	61.9 ± 15.3
Number of women	22,931 (45.9%)
Number of requests per patient *	8.2 ± 6.7
HbA1c % *	7.38 ± 1.59
Test interval (days) *	219 ± 188
Number of tests <60 days	26,107 (6%)
Number of tests >366 days	48,299 (11.8%)

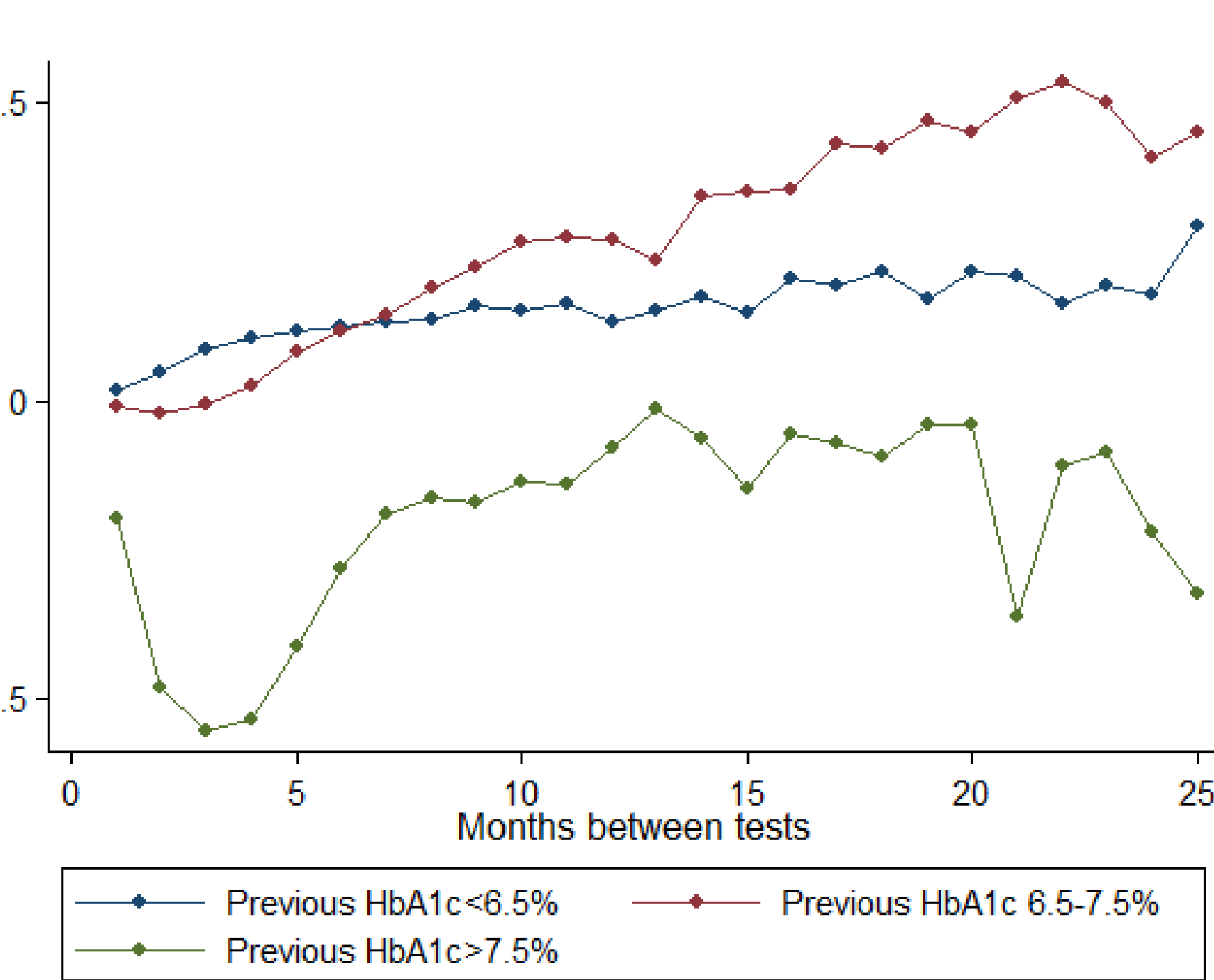
*Results are shown as mean ± SD

Table 2 – Percentage of repeat tests carried out at different test intervals stratified by previous HbA1c

Previous HbA1c	Test Interval in days						Median (IQR) test interval (days)
	<60	60-89	90-119	120-179	180-365	>366	
All tests	7.3%	8.7%	12.4%	20.6%	37.5%	13.5%	182 (111,262)
<6.5% (n=100,906)	5.3%	4.9%	7.5%	17.6%	42.8%	22.0%	208 (154, 351)
6.5-7.5% (n=113,380)	5.5%	6.8%	10.6%	21.9%	43.4%	11.9%	187 (127,255)
7.5-10% (n=116,391)	9.0%	12.4%	17.5%	22.2%	30.3%	8.6%	149 (95, 217)
≥10% (n=78,192)	14.7%	14.5%	16.2%	19.4%	24.8%	10.3%	132 (81, 223)

Results are presented as percent across previous HbA1c category
Yellow highlighted sections indicate testing carried out outside recommended intervals

Figure 2 – Change in HbA1c versus test interval



References

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Results

- 49,957 patients with 408,869 HbA1c measurements were included in the analysis (Table 1).
- There were a mean of 8.2±6.7 test requests per patient over the 10 years and mean HbA1c was 7.38±1.59% (57.2±17.4 mmol/mol).
- The number of HbA1c test requests increased from 26,400 in 2004 to 55,882 in 2013 (Figure 1).
- 21% of repeat HbA1c tests were carried out outside recommended intervals: 7% at less than 60 days and 14% at more than 366 days from the previous test.
- The majority of repeat tests within 60 days were in patients with HbA1c>7.5% (Table 2).
- The majority of repeat tests>366 days were in patients with HbA1c<7.5% (Table 2).
- In 2012-2013 50% (5% in patients with HbA1c≥7.5%) had fewer than 3 tests compared to 44% in 2004-2005 (10% in HbA1c≥7.5%).
- In 2012-2013 the proportion of tests performed more than 15 months after the previous test was 8.1% compared to 1.2% in 2004-2005 and 5.2% in 2006-2007.
- Patients with HbA1c≤7.5% who had their HbA1c re-tested within 3-4 months had the smallest mean increase in HbA1c (Figure 2).
- Patients with an HbA1c>7.5% had the largest decrease in their HbA1c if the interval between their tests was 3-4 months (Figure 2).

Conclusions & Recommendations

- 21% of HbA1c tests in primary care in one locality are taking place outside intervals recommended by guidelines.
- All groups of patients showed the lowest increase (or largest decrease) in HbA1c with a testing frequency of 6 months or less.
- Those whose HbA1c was tested at 2-4 month intervals had smallest increases in HbA1c regardless of previous HbA1c.
- These results confirm findings from our previous work which showed that some patients may benefit from more frequent HbA1c tests⁵.

Limitations

- Some patients in this analysis may not have had diabetes.
- We were unable to examine the influence of medication changes on testing interval or change in HbA1c.