

**Establishing the extent of patient non-  
adherence to prescribed medication in  
the Heart of Birmingham teaching  
Primary Care Trust (HoBtPCT)**

**The Aston Medication Adherence Study (AMAS)**

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**EXECUTIVE SUMMARY**

## Executive Summary

1. The aim of this project was to examine non-adherence to prescribed medicines within the area covered by the Heart of Birmingham teaching Primary Care Trust (HoBtPCT).
2. HoBtPCT provides healthcare services for approximately 300,000 people in the geographical centre of Birmingham. The area covered by the PCT incorporates Birmingham city centre and numerous 'inner-city' wards including Aston, Ladywood, Nechells and Sparkbrook. HoBtPCT plans and develops services with in excess of 170 General Practitioners (GPs) operating from approximately 75 practice premises.
3. The population served by HoBtPCT is disproportionately young with almost a third of the resident population under 19 years of age. Seventy per cent of people in HoBtPCT are from Black and Minority Ethnic groups – the highest proportion of people from BME groups of any PCT in England.
4. A review of the literature has highlighted the paucity of research examining medication adherence in large populations in the UK. In its geographical setting, population size and diversity, this project may be unique.
5. The project methodology involved the analysis of aggregated prescribing data from the 76 GP practices within HoBtPCT supplying data to the interim electronic patient record (iEPR). The data retrieved covered the period between 2000 and 2010. A software programme was devised to calculate individual patient Medication Possession Ratios (MPRs) for all medication runs of interest. Although not a definitive indicator of adherence to a medication regimen (as the data does not indicate whether the prescribed medication was dispensed and/or subsequently taken by the patient), a low MPR value is a reliable indicator of non-adherence.
6. The validity of the calculated MPRs were investigated by triangulation of a selection of the results with both corresponding clinical values from the supplied data, and self-reported medication adherence as measured by the Modified Morisky Scale<sup>©</sup> (MMAS-8) questionnaire.
7. It has been demonstrated that by using currently available aggregated data from general practice prescribing systems within the area covered by HoBtPCT, it is possible to develop a computerised tool to calculate individual patient Medication Possession Ratios (MPRs) for oral pharmacotherapy used in the treatment of diabetes, dyslipidaemia and hypothyroidism.
8. The effectiveness of the developed methodology for the calculation of the MPR and its subsequent use in identifying those patients with low adherence levels to their medication was successfully validated by triangulation with both a self-reported measure of adherence via a patient questionnaire, and through the analysis of specific patient clinical values.
9. Overall adherence levels were around two-thirds for diabetes drugs and dyslipidaemia drugs, increasing to three-quarters for hypothyroid drugs when all runs were examined. However, it should be remembered that these figures are based on just one interaction in the patient pathway (that between the prescriber and the patient).

10. When limiting to last run of a drug, increases in the adherence figures outlined in #9 above were observed to just over two-thirds (around 70%) for diabetes and dyslipidaemia and around four-fifths for hypothyroid. Individual drug adherence rates were similar to the condition-level adherence rates, with metformin (for all runs) and fibrate (for all and last runs) adherence rates being slightly lower.
11. Following-on from the development of the computerised tool, it was employed to examine the adherence patterns of patients within HoBtPCT who take oral pharmacotherapy for the treatment of diabetes, dyslipidaemia and hypothyroidism. These analyses have identified a number of patient demographics which can be used as indicators of low adherence to oral medication within these groups and key recommendations from the project (see #13 below) have indicated the specific patient groups to target with any support interventions.
12. In addition, the project has identified a number of improvements which could be made to the data recorded within general practice prescribing systems. This would enable more accurate models to be produced for demographic factors where coding was low, and enable the extension of the model into other conditions and other dosage forms.
13. In conclusion, the project has made the following Recommendations:

**RECOMMENDATION 1:** In order to expand the model to enable the identification of non-adherence in other treatment areas, and for other dosage forms, it is recommended that a review of currently recorded dosage information within general practice prescribing systems is undertaken to ensure sufficient information is present for the calculation of individual patient Medication Possession Ratios (MPRs).

**RECOMMENDATION 2:** It is recommended that any intervention or support provided for patients taking oral pharmacotherapy for diabetes, dyslipidaemia and hypothyroidism specifically includes patients with the following characteristics to address the low adherence levels exhibited by these demographic groups:

- Patients younger than 60 years of age.
- Patients whose religion is coded as 'Islam'.
- Patients whose ethnicity is coded as one of the Asian groupings or coded as 'Caribbean', 'Other Black' and 'African'.
- Patients whose primary language is coded as Urdu or Bengali.
- Patients whose postcodes indicate that they live within the most socioeconomically deprived areas of HoBtPCT (as measured by IMD 2010 scores).

**RECOMMENDATION 3:** It is recommended that improvements in the routine coding of (a) a patient's religion and (b) a patient's language are made within general practice prescribing systems.

**RECOMMENDATION 4:** Further research of the patient demographics of surgeries identified with low overall adherence scores is undertaken to gain a better understanding of the specific barriers to adherence exhibited by patients of these surgeries. This analysis should be made with specific reference to the patient demographics highlighted in

Recommendation 2 and also explore any differences between the surgery repeat prescription ordering processes.

**RECOMMENDATION 5:** To allow increased validation of the data analysis model, it is recommended that a review of currently recorded clinical values within general practice prescribing systems is undertaken to ensure sufficient information is present for the validation of calculated Medication Possession Ratios (MPRs).

**RECOMMENDATION 6:** Further expansion of the use of MPR data into other treatment groups should be accompanied by a corresponding analysis of both (a) relevant clinical data and (b) self-reported adherence levels via the Modified Morisky Scale© (MMAS-8) questionnaire.

**RECOMMENDATION 7:** Consideration should be given to the use of the Modified Morisky Scale© (MMAS-8) questionnaire within general practice surgeries or other healthcare locations (for example, community pharmacies) where a healthcare professional suspects adherence may be a problem to assist in the identification of low adherence levels in patients taking oral pharmacotherapy for diabetes, dyslipidaemia and hypothyroidism.

**RECOMMENDATION 8:** Further research is needed to ascertain the best method(s) for providing sufficient information to patients about their pharmacotherapy at the point of initial consultation with their general practitioner.

**RECOMMENDATION 9:** The role of the pharmacist in the management of long-term oral pharmacotherapy should be enhanced to support general practitioners in the management of patient therapy. Initiatives which can be made available through community pharmacies, such as the New Medicines Service (NMS), should be further investigated by HoBtPCT to help patients better manage their pharmacotherapy for chronic conditions.

**RECOMMENDATION 10:** The specific factors relating to adherence to medication highlighted by patients in this report from the focus group analysis should be taken into consideration when further examination of low-adherence within specific demographic groupings is undertaken (see Recommendation 2).