

Establishing the extent of patient non-adherence to prescribed medication

The Aston Medication Adherence Study (AMAS)

Pharmacy Practice Research Group School of Pharmacy Aston University http://www1.aston.ac.uk/adherence

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Slide 1

Today's Event

To highlight the findings from the AMAS.

Content:

- Introduction to the event.
- Introduction to the project.
 - Overview of HoBtPCT's population and demographics.
 - Overview of the three stages of the project (including methodology).
- Summary of findings from Stage A of the project.
- Summary of findings from Stage B of the project.
- Summary of findings from Stage C of the project.
- Overview of recommendations.
- Acknowledgements.
- Questions.



Introducing the Project Team...

Aston University Team:

- Professor Chris Langley Professor of Pharmacy Law and Practice and a registered pharmacist.
- Dr Joe Bush Lecturer in Pharmacy Practice and a registered pharmacist.
- Jane Haworth Research Pharmacist.
- Alpa Patel Project Administrator responsible for the day-to-day management of the project and the primary point of contact for enquiries.

Support from the PCT Steering Group.



Project Aim and Objectives

Aim - To develop an easy way to routinely identify those groups of patients who do not take their medicines regularly.

Objectives:

- To evaluate systematically the published evidence from national and international sources concerning measures to identify poor adherence to medicines and measures to improve adherence within patient groups.
- To establish the extent of non-adherence to prescribed medication across HoBtPCT within the adult population within four treatment groups (dyslipidaemia, type 2 diabetes, hypothyroidism and prophylaxis of thrombosis).
- To assess variations in levels of adherence between different patient groups.
- To identify facilitators and barriers to adherence amongst various patient groups.
- To design a system for the routine identification of low adherence amongst patients.
- To suggest possible mechanisms for improving adherence to prescribed medication amongst patients.



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Why HoBtPCT?





Characteristics of HoBtPCT

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.

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.



Project Stages

Stage A.

 Stage A involved a systematic review of the published work.

Stage B.

• Stage B examined anonymous prescribing data from GP surgeries extracted from the PCT's central system.

Stage C.

• Stage C involved examination of the aspects of adherence in the patient population.



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Project Overview – Stage B (1)

Focussed on patient groups and medication where there is a strong evidence base of effectiveness.

Disease states under investigation:

- Dyslipidaemia.
- Type 2 diabetes.
- Hypothyroidism.
- Prophylaxis of thrombosis.

There is a strong evidence base for the effectiveness of drug treatment for these conditions and supporting clinical measurements are routinely taken for monitoring purposes.



Project Overview – Stage B (2)

The prescribing records were manipulated to allow for the calculation of Medication Possession Ratios (MPRs). For cholesterol data, comparison with clinical measurements will then provide another measure of adherence.

An analysis of the correlation between adherence as measured by medication prescribing records and as measured by individual clinical measurements will then be conducted with the aim of assessing the predictive validity of such a model for identifying poor adherence.



Project Overview – Stage C (1)

Stage C – Patient aspects of adherence.

Exploratory focus groups – mixture of self-selection and invitation.

Our stipulated model was supplemented by a self-reported measure of medication adherence.

Questionnaires measuring patient medication adherence were administered to a sample of patients identified from the analysis of prescribing records from Stage B.



Project Overview – Stage C (2)

This approach used the previously validated Morisky Medication Adherence Scale.

• Provides an assessment of adherence behaviour in HoBtPCT.

Data from this stage of the research was used in conjunction with the quantitative model discussed previously to assess the validity of our measures of medication adherence.

Triangulation of the results from all data collection instruments (prescribing data analysis, clinical measurements and patient questionnaires) enhanced validity of model.



Project Overview – Stage C (3)

Questionnaire – example questions:

- 1. Do you sometimes forget to take your [health concern] pills?
- 2. People sometimes miss taking their medications for reasons other than forgetting. Thinking over the past two weeks, were there any days when you did not take your [health concern] medicine?
- 3. Have you ever cut back or stopped taking your medication without telling your doctor, because you felt worse when you took it?

Seven yes/no responses; one 5-point Likert scale.



Project Overview – Stage C (4)

Questionnaires were sent to approximately 4,000 individuals in a range of languages.

• English.

• Punjabi.

• Urdu.

• Bengali.

Each "pack" was sent by the PCT and came with a reply-paid envelope for return to the project team at Aston University.

The identity of the respondent cannot be known by the project team.



Project Summary

Examine published knowledge on medication adherence.

Look at adherence patterns amongst the population of HoBtPCT by examining prescribing data.

Obtain the views of the population through engagement with the project:

- Participation in focus groups (volunteer).
- Participation in focus groups (invitation).
- Completion of questionnaire (invitation).

Needed to ensure maximum engagement from the community.



Summary of findings from Stage A (1)

Adherence is "the extent to which the patient's behaviour matches agreed recommendations from the prescriber" (Nunes et al., 2009).

While the measurement of adherence may be complex, it is estimated that non-adherence to medicines prescribed for long-term conditions in developed nations occurs in 30-50% of patients.

There are a wide variety of diverse factors that can impact on adherence behaviour. The majority of such factors appear to be focussed in two dimensions: social/economic factors and therapyrelated factors.

- Social/economic factors such as age, ethnicity and socioeconomic deprivation. These factors are particularly salient when considered in the context of the population served by HoBtPCT.
- Therapy-related factors such as the choice of agent, the number of regular medicines and the complexity of the dosage regimen.



Summary of findings from Stage A (2)

The literature on interventions to improve adherence highlights the lack of consistently effective strategies to improve adherence.

Some strategies – such as simplification of the drug regimen, reminders and some pharmacist-led interventions – show some degree of effectiveness but the positive effects tend to be transient and dissipate upon cessation of the intervention.

A consistent relationship between improved adherence and treatment outcomes has been demonstrated across disease states including in hypercholesterolaemia and type 2 diabetes.

Improvement in adherence rates would not only lead predictably to improvements in treatment outcomes but would also lead to decreased health costs through decreasing utilisation of health services by non-adherent patients.



Summary of findings from Stage B

The computer model worked for three conditions and was able to generate MPRs linked to individual patient demographics.

Over 1 million individual prescription issues were analysed to generate the patient "runs":

- Diabetes 489,379.
- Dyslipidaemia 278,894.
- Hypothyroid 239,609.

The model didn't work for the prophylaxis of thrombosis group (patients taking warfarin) as the recorded data were incomplete.

Clinical data were extractable for cholesterol levels.

Correlation was seen between adherence level and cholesterol reduction.



Diabetes – an example

	A	B C	D	E	F	G	Н	1	J	К	L	М	N	0	Р	Q	R	S	т	U	V
1	Patient_Id	Age Gender	Religion	Ethnicity	Ethnic Grp	Postcode	Surgery	Language	Start Dt	End Dt	Total_Prscbd	TotalDys	NumPrescps	Mean_MPR	Readcode	quantity r	ate	dose	strength	Drug	As Directed
2	356	33 M	Islam	Pakistani Or British Pakistani	Pakistani	B8	5MX055	English	27/11/2007	07/02/2011	1740	1168	29	0.745	META1787	60	2	1	500	metformin	0
3	434	68 M	Islam	Pakistani Or British Pakistani	Pakistani	B23	5MX015	Unknown	01/06/2007	23/05/2011	1148	1452	41	0.791	f332.	28	1	1	5	sulphonylureas	0
4	434	68 M	Islam	Pakistani Or British Pakistani	Pakistani	B23	5MX015	Unknown	30/04/2004	13/04/2007	2016	1078	24	0.935	f41y.	84	2	1	500	metformin	0
5	434	68 M	Islam	Pakistani Or British Pakistani	Pakistani	B23	5MX015	Unknown	01/06/2007	23/05/2011	2512	1452	44	0.865	f41z.	60	2	1	850	metformin	0
6	454	59 F	N/A	Pakistani Or British Pakistani	Pakistani	B23	5MX109	Unknown	15/12/2003	06/07/2005	1288	569	12	1.132	META1787	56	2	1	500	metformin	0
7	454	59 F	N/A	Pakistani Or British Pakistani	Pakistani	B23	5MX109	Unknown	04/08/2005	18/11/2008	3360	1202	20	0.932	META1787	168	3	1	500	metformin	0
8	454	59 F	N/A	Pakistani Or British Pakistani	Pakistani	B23	5MX109	Unknown	04/02/2010	18/04/2011	196	438	7	0.447	GLTA4960	28	1	1	80	sulphonylureas	1
9	454	59 F	N/A	Pakistani Or British Pakistani	Pakistani	B23	5MX109	Unknown	09/12/2008	18/04/2011	3240	860	13	1.256	META1788	300	3	1	850	metformin	0
10	535	38 M	Islam	Other	Other	B20	5MX109	Unknown	24/05/2010	23/05/2011	756	364	9	0.692	META1787	84	3	1	500	metformin	0
11	548	41 M	Islam	Muslim	Unknown	B12	5MX055	Somali	28/04/2005	24/04/2006	672	361	7	0.931	META1787	84	2	1	500	metformin	0
12	548	41 M	Islam	Muslim	Unknown	B12	5MX055	Somali	29/12/2004	24/04/2006	780	481	10	0.811	GLTA4960	60	2	1	80	sulphonylureas	0
13	584	65 F	N/A	African	African	B16	5MX049	Unknown	15/02/2006	18/10/2006	1344	245	4	0.914	META1787	336	3	2	500	metformin	0
14	584	65 F	N/A	African	African	B16	5MX049	Unknown	16/01/2007	14/04/2010	4480	1184	20	0.946	META1787	224	2	2	500	metformin	0
15	584	65 F	N/A	African	African	B16	5MX049	Unknown	09/06/2010	07/04/2011	1344	302	6	0.742	META1787	224	3	2	500	metformin	0
16	584	65 F	N/A	African	African	B16	5MX049	Unknown	21/02/2006	14/04/2010	5600	1513	25	0.925	GLTA4960	224	2	2	80	sulphonylureas	0
17	717	40 F	N/A	African	African	B19	5MX109	Unknown	20/06/2008	26/02/2009	588	251	7	0.781	META1787	84	3	1	500	metformin	0
18	717	40 F	N/A	African	African	B19	5MX109	Unknown	08/04/2009	18/11/2009	280	224	5	0.625	META1787	56	2	1	500	metformin	0
19	717	40 F	N/A	African	African	B19	5MX109	Unknown	07/12/2010	23/05/2011	336	167	2	0.671	META1787	168	3	1	500	metformin	0
20	717	40 F	N/A	African	African	B19	5MX109	Unknown	29/12/2009	27/09/2010	336	272	3	1.235	META1788	112	1	1	850	metformin	0
21	810	50 M	N/A	African	African	B16	5MX061	Unknown	04/12/2006	06/10/2009	1736	1037	25	0.837	GLTA4960	56	2	1	80	sulphonylureas	0
22	810	50 M	N/A	African	African	B16	5MX061	Unknown	22/09/2006	06/10/2009	868	1110	24	0.782	GLTA31482EMIS	56	1	1	2	sulphonylureas	0
23	871	71 M	Islam	Somali	Somali	B8	5MX033	Somali	12/12/2007	10/05/2011	2520	1245	18	1.012	f35z.	112	2	1	80	sulphonylureas	0
24	988	45 F	N/A	African	African	B21	5MX087	Unknown	28/04/2010	11/04/2011	112	348	2	0.322	META1787	56	1	1	500	metformin	0
25	1170	75 F	Islam	Arab	Arab	B10	5MX010	Arabic	30/11/1994	26/05/1995	5	177	5	0.009	META1787	1	3	1	500	metformin	0
26	1170	75 F	Islam	Arab	Arab	B10	5MX010	Arabic	08/08/1998	29/05/1999	4	294	4	0.007	GLTA4960	1	2	1	80	sulphonylureas	0
27	1170	75 F	Islam	Arab	Arab	B10	5MX010	Arabic	12/07/1995	07/03/1998	25	969	25	0.013	DITA3417	1	2	1	80	sulphonylureas	0
28	1170	75 F	Islam	Arab	Arab	B10	5MX010	Arabic	05/12/1994	26/05/1995	6	172	6	0.009	GLTA1303	1	2	2	5	sulphonylureas	0
29	1170	75 F	Islam	Arab	Arab	B10	5MX010	Arabic	12/07/1995	29/05/1999	29	1417	29	0.01	META1788	1	2	1	850	metformin	0
30	1170	75 F	Islam	Arab	Arab	B10	5MX010	Arabic	05/05/2000	01/09/2003	2352	1214	42	0.969	META1788	56	2	1	850	metformin	0
31	1170	75 F	Islam	Arab	Arab	B10	5MX010	Arabic	22/09/2003	16/04/2009	5880	2033	70	0.964	META1788	84	3	1	850	metformin	0
32	1170	75 F	Islam	Arab	Arab	B10	5MX010	Arabic	04/08/2009	23/05/2011	2184	657	26	1.108	META1788	84	3	1	850	metformin	0
33	1268	84 M	Islam	Muslim	Unknown	B20	5MX055	Bengali	06/09/2004	04/10/2005	504	393	3	0.427	META1787	168	3	1	500	metformin	0
34	1268	84 M	Islam	Muslim	Unknown	B20	5MX055	Bengali	14/11/2005	20/07/2006	560	248	5	1.129	META1787	112	2	1	500	metformin	0
35	1268	84 M	Islam	Muslim	Unknown	B20	5MX055	Bengali	14/01/2008	27/04/2011	1920	1199	8	0.4	META1787	240	2	2	500	metformin	0
36	1268	84 M	Islam	Muslim	Unknown	B20	5MX055	Bengali	06/09/2004	19/08/2005	112	347	2	0.323	GLTA4960	56	1	1	80	sulphonylureas	0
37	1268	84 M	Islam	Muslim	Unknown	B20	5MX055	Bengali	03/01/2006	31/10/2007	616	666	11	0.925	GLTA4960	56	1	1	80	sulphonylureas	0
38	1268	84 M	Islam	Muslim	Unknown	B20	5MX055	Bengali	20/02/2008	08/03/2011	1120	1112	10	0.504	GLTA4960	112	2	1	80	sulphonylureas	0
39	1396	67 F	N/A	Other Asian Background	Asian	B12	5MX107	Unknown	27/09/2005	30/06/2006	448	276	4	1.623	MEM/19420NEMIS	112	1	1	500	metformin	0
40	1396	67 F	N/A	Other Asian Background	Asian	B12	5MX107	Unknown	12/10/2006	18/05/2011	4928	1679	22	0.734	MEM/19420NEMIS	224	2	2	500	metformin	0
41	1479	46 F	Islam	Other Asian Background	Asian	B42	5MX043	Unknown	21/11/2008	09/04/2010	1040	504	11	0.516	f41v.	112	2	2	500	metformin	0
									-,, - 500	1- 1-540					10 A		-				



30,949 rows of data from 9,445 unique patients

Dyslipidaemia – an example

	A	В	С	D	E	F	G	Н	1	J	К	L	М	N	0	Р	Q R	S	T U	V
1	Patient_Id	Age	Gender	Religion	Ethnicity	Ethnic Grp	Postcode	Surgery	Language	Start Dt	End Dt	Total_Prscbd	TotalDys	NumPrescps	Mean_MPR	Readcode	quantity rate	e dose	strength Drug	As Directed
2	83	38	М	Islam	Pakistani Or British Pakist	Pakistani	B16	5MX102	English	03/10/2006	04/05/2011	1428	1674	11	0.853	bxd5.	84	1 1	40 statir	ns O
3	83	38	м	Islam	Pakistani Or British Pakista	Pakistani	B16	5MX102	English	16/02/2005	01/09/2005	224	197	4	1.137	w974.	28	1 1	10 statir	is O
4	83	38	М	Islam	Pakistani Or British Pakista	Pakistani	B16	5MX102	English	15/12/2005	03/07/2006	168	200	2	0.84	bxkx.	84	1 1	10 statir	is O
5	313	38	м	N/A	Arab	Arab	B19	5MX105	Unknown	18/06/2008	25/03/2009	56	280	2	0.2	bxd2.	28	1 1	20 statir	is O
6	347	47	М	Islam	Pakistani Or British Pakista	Pakistani	B8	5MX105	Urdu	12/08/2004	14/09/2005	252	398	3	0.633	bxd5.	84	1 1	40 statir	is O
7	347	47	м	Islam	Pakistani Or British Pakista	Pakistani	B8	5MX105	Urdu	31/05/2006	08/06/2007	252	373	3	0.676	bxd5.	84	1 1	40 statir	is O
8	347	47	м	Islam	Pakistani Or British Pakista	Pakistani	B8	5MX105	Urdu	27/02/2008	11/11/2009	588	623	7	0.944	bxd5.	84	1 1	40 statir	is O
9	409	39	М	N/A	Pakistani Or British Pakista	Pakistani	B18	5MX061	Unknown	18/07/2005	05/08/2009	1204	1479	39	0.814	ATTA30131EMIS	28	1 1	20 statir	is 0
10	409	39	М	N/A	Pakistani Or British Pakista	Pakistani	B18	5MX061	Unknown	01/11/2004	03/05/2011	1800	2374	52	0.758	FECA1203NEMIS	30	1 1	267 fibrat	es 0
11	409	39	м	N/A	Pakistani Or British Pakista	Pakistani	B18	5MX061	Unknown	08/09/2009	03/05/2011	420	602	5	0.698	ROTA15069NEMIS	84	1 1	10 statir	is 0
12	437	47	м	Islam	Pakistani Or British Pakista	Pakistani	B26	5MX053	English	09/01/2002	30/09/2003	588	629	13	0.935	ATTA30130EMIS	28	1 1	10 statir	ns 0
13	437	47	м	Islam	Pakistani Or British Pakista	Pakistani	B26	5MX053	English	18/08/2004	12/09/2005	336	390	6	0.862	ATTA30130EMIS	56	1 1	10 statir	is 0
14	437	47	M	Islam	Pakistani Or British Pakista	Pakistani	B26	5MX053	English	26/07/2006	25/06/2007	336	334	4	1.006	SITA10078BRIDL	84	1 1	20 statir	ns O
15	437	47	M	Islam	Pakistani Or British Pakist	Pakistani	B26	5MX053	English	27/07/2007	14/06/2010	924	1053	11	0.877	SITA29406EMIS	84	1 1	40 statir	is 0
16	494	68	M	N/A	English	White British	B42	5MX100	English	10/09/1999	12/04/2011	3256	4232	66	0 769	SITA10076BRIDI	1	1 1	10 statir	is 0
17	507	71	F	Islam	Somali	Somali	B7	5MX033	Somali	08/05/2007	19/10/2007	112	164	2	0.683	bxd5	28	1 1	40 statir	is 0
18	507	71	F	Islam	Somali	Somali	B7	5MX033	Somali	10/07/2009	06/05/2011	672	665	8	1 011	bxd5	84	1 1	40 statir	is 0
19	607	41	M	Islam	African	African	B7	5MX010	English	16/03/2005	09/01/2007	476	664	17	0 717	ATTA30131EMIS	28	1 1	20 statir	is 0
20	607	41	M	Islam	African	African	B7	5MX010	English	06/02/2007	25/09/2008	560	597	20	0.938	SITA10078BRIDI	28	1 1	20 statir	is 0
21	607	41	M	Islam	African	African	87	5MX010	English	11/01/2010	14/04/2011	504	458	9	1.1	SITA29406EMIS	56	1 1	40 statir	is 0
22	806	52	M	N/A	African	African	B11	5MX110	Unknown	15/03/2004	21/09/2004	224	190	5	1 179	SITA10078BPIDI	28	1 1	20 statir	5 0
23	806	52	M	N/A	African	African	B11	5MX110	Unknown	25/10/2005	24/07/2007	616	637	11	0.967	SITA10078BRIDI	56	1 1	20 statir	is 0
24	806	52	M	N/A	African	African	B11	5MX110	Unknown	02/08/2007	03/03/2011	1400	1309	25	1.07	SITA29406EMIS	56	1 1	40 statir	s 0
25	1017	35	M	Suppi Muslin	African	African	B11	5MY081	Arabic	22/08/2005	18/05/2011	1400	63/	2.5	0 707	ATTA30130EMIS	56	1 1	10 statir	13 0 NE 0
25	1017	35	M	Sunni Muslin	African	African	B11	5MX081	Arabic	30/10/2008	11/10/2010	560	711	10	0.707	SITA20406EMIS	56	1 1	40 statir	
20	1017	25	M	Suppi Muslin	African	African	B11	5MY001	Arabic	02/08/2007	25/07/2008	290	257	10	0.700	SITA10076BDIDI	56	1 1	10 stati	
27	1017	25	M	Sunni Muslin	African	African	B11	5MY081	Arabic	15/12/2010	23/07/2008	112	107	2	1.047	E7TA152/QNEMIS	56	1 1	10 Statii	nibe O
20	1100	55	M	John Mushin	Other Acian Rackground	Arrican	B12	EMV010	Arabic	13/12/2010	11/05/2011	1026	1400	27	0.725		20	1 1	10 ezeti 40 statir	111DE 0
29	1100	50	M	Islam	Other Asian Background	Asian	B12	EMV010	Arabic	12/05/2007	02/11/2004	209	1409	57	0.755		20	1 1	40 Statin	
30	1100	50	NA NA	Islam	Other Asian Background	Asian	B12	SIVINU10	Arabic	13/00/2003	02/11/2004	308	01	11	0.000	PRTA10455HILLI	20	1 1	10 Statii	
21	1108	20	IVI M	Islam	Other Asian Background	Asian	B12	SIVIAU10	Arabic	07/02/2005	09/05/2005	20	1477	25	0.508	PRIAI0450HILLI	20	1 1	20 Statin	15 0
22	1108	50	IVI M	Islam	Other Asian Background	Asian	D12	DIVIAU10	Arabic	23/12/1998	08/01/2003	010	14//	22	0.554	PRIASU/USEIVIIS	1	1 1	40 Statin	15 1
35	1108	50		Islam	Other Asian Background	Asian	B12 B13	SIVIXU10	Arabic	22/11/2004	24/05/2007	100	915	25	0.705	RUTAISU09INEIVIIS	28	1 1	10 statir	15 U
34	1114	51	r	Islam	Other Asian Background	Asian	812	SMX010	Arabic	19/07/2004	10/03/2005	168	234	6	0.718	ATTASUISTEMIS	28	1 1	20 statir	
35	1114	51	r	Islam	Other Asian Background	Asian	B12	SIVIXU1U	Arabic	18/03/2003	19/11/2003	196	246	/	0.797	SITA100/8BRIDL	28	1 1	20 statir	is U
36	1114	51	F	Islam	Other Asian Background	Asian	812	5MX010	Arabic	25/06/2007	30/11/2009	/28	889	26	0.819	STTA29406EMIS	28	1 1	40 statir	is O
37	1114	51	F	Islam	Other Asian Background	Asian	B12	5MX010	Arabic	26/05/2005	06/03/2007	644	649	23	0.992	ROTA15069NEMIS	28	1 1	10 statir	is 0
38	1114	51	F	Islam	Other Asian Background	Asian	B12	5MX010	Arabic	11/12/2009	05/05/2011	448	510	16	0.878	EZTA20281NEMIS	28	1 1	40 ezeti	nib∉ 0
39	1119	50	М	Islam	Arab	Arab	B10	5MX010	Arabic	01/07/2006	30/10/2006	112	121	4	0.926	ATTA30132EMIS	28	1 1	40 statir	ns O
40	1119	50	М	Islam	Arab	Arab	B10	5MX010	Arabic	26/09/2007	04/05/2011	980	1316	35	0.745	ATTA30132EMIS	28	1 1	40 statir	is O
41	1126	58	F	Islam	Other Asian Background	Asian	B12	5MX010	Arabic	07/04/2003	25/01/2007	1400	1389	50	1.008	ATTA30130EMIS	28	1 1	10 statir	is O
42	1126	58	F	Islam	Other Asian Background	Asian	B12	5MX010	Arabic	24/09/2007	25/02/2008	140	154	5	0.909	SITA10078BRIDL	28	1 1	20 statir	is O
43	1126	58	F	Islam	Other Asian Background	Asian	B12	5MX010	Arabic	26/03/2008	04/05/2011	1008	1134	36	0.889	SITA29406EMIS	28	1 1	40 statir	is O
44	1126	58	F	Islam	Other Asian Background	Asian	B12	5MX010	Arabic	14/02/2007	28/08/2007	196	195	7	1.005	SITA10076BRIDL	28	1 1	10 statir	is 0



17,606 rows of data from 8,568 unique patients

Hypothyroidism – an example

	А	В	С	D	E	F	G	Н	1	J	К	L	М	N	0	P	Q	R	S	Т	U	V
1	Patient_Id	Age Ge	nder	Religion	Ethnicity	Ethnic Grp	Postcode	Surgery	Language	Start Dt	End Dt	Total_Prscbd	TotalDys	NumPrescps	Mean_MPR	Readcode	quantity	rate (dose	strength	Drug	As Directed
2	327	21 F		N/A	Pakistani Or British Pakistani	Pakistani	B19	5MX101	Unknown	09/01/2010	13/05/2011	336	489	6	0.687	f923.	56	1	1	100	Unknown	0
3	327	21 F		N/A	Pakistani Or British Pakistani	Pakistani	B19	5MX101	Unknown	29/06/2009	13/05/2011	280	683	9	0.41	f921.	28	1	1	25	Unknown	0
4	348	47 F		N/A	Iranian	Middle_Eastern	B10	5MX013	Language	12/08/2009	04/05/2011	504	630	6	0.8	LETA17800NEMIS	84	1	1	50	Unknown	0
5	475	65 F		N/A	British Or Mixed British	Mixed_British	B44	5MX100	Unknown	22/07/2009	26/04/2011	560	643	10	0.871	LETA17798NEMIS	56	1	1	25	Unknown	0
6	481	57 F		N/A	British Or Mixed British	Mixed_British	B42	5MX004	Unknown	15/10/2010	22/02/2011	200	130	2	1.538	LETA17800NEMIS	100	1	1	50	Unknown	0
7	492	63 F		N/A	English	White_British	B42	5MX100	Unknown	22/01/2007	21/01/2008	392	364	7	1.077	LETA17798NEMIS	56	1	1	25	Unknown	0
8	492	63 F		N/A	English	White_British	B42	5MX100	Unknown	28/02/2008	26/04/2011	1008	1153	18	0.874	LETA17796NEMIS	56	1	1	100	Unknown	0
9	492	63 F		N/A	English	White_British	B42	5MX100	Unknown	05/08/2004	21/01/2008	1260	1264	23	0.997	LETA17800NEMIS	56	1	1	50	Unknown	0
10	492	63 F		N/A	English	White_British	B42	5MX100	Unknown	16/05/2003	11/06/2004	392	392	7	1	THTA4417	56	1	1	50	Unknown	0
11	507	71 F		Islam	Somali	Somali	B7	5MX033	Somali	08/05/2007	20/04/2011	1456	1443	18	1.009	f923.	28	1	1	100	Unknown	0
12	507	71 F		Islam	Somali	Somali	B7	5MX033	Somali	10/04/2008	16/09/2009	504	524	6	0.962	f922.	84	1	1	50	Unknown	0
13	507	71 F		Islam	Somali	Somali	B7	5MX033	Somali	01/12/2006	09/01/2008	420	404	6	1.04	f921.	56	1	1	25	Unknown	0
14	844	41 F		Islam	Ethnic Category Not Stated	Unknown	B11	5MX082	English	28/11/2003	17/11/2004	168	355	6	0.473	THTA4415	28	1	1	100	Unknown	0
15	1126	58 F		Islam	Other Asian Background	Asian	B12	5MX010	Arabic	20/11/2006	10/07/2008	588	598	21	0.983	LETA17798NEMIS	28	1	1	25	Unknown	0
16	1126	58 F		Islam	Other Asian Background	Asian	B12	5MX010	Arabic	13/07/2009	04/05/2011	532	660	19	0.806	LETA17798NEMIS	28	1	1	25	Unknown	0
17	1126	58 F		Islam	Other Asian Background	Asian	B12	5MX010	Arabic	05/08/2008	04/05/2011	896	1002	32	0.894	LETA17800NEMIS	28	1	1	50	Unknown	0
18	1126	58 F		Islam	Other Asian Background	Asian	B12	5MX010	Arabic	12/12/2000	17/10/2006	2156	2135	77	1.01	THTA4416	28	1	1	25	Unknown	0
19	1216	51 M		Islam	African	African	B21	5MX049	Somali	11/10/2010	14/02/2011	56	126	2	0.444	LETA17800NEMIS	28	1	1	50	Unknown	0
20	1493	49 F		Islam	Other Asian Background	Asian	B12	5MX080	Arabic	24/11/2006	01/04/2011	1624	1589	22	1.022	LETA17796NEMIS	28	1	1	100	Unknown	0
21	1493	49 F		Islam	Other Asian Background	Asian	B12	5MX080	Arabic	13/06/2006	21/09/2006	112	100	2	1.12	THTA4415	28	1	1	100	Unknown	0
22	1619	66 F		Islam	African	African	B7	5MX095	Unknown	21/12/2006	02/02/2009	532	774	19	0.687	LETA17798NEMIS	28	1	1	25	Unknown	0
23	1619	66 F		Islam	African	African	B7	5MX095	Unknown	19/04/2010	21/03/2011	392	336	7	1.167	LETA17796NEMIS	56	1	1	100	Unknown	0
24	1619	66 F		Islam	African	African	B7	5MX095	Unknown	09/03/2009	04/02/2010	280	332	5	0.843	LETA17800NEMIS	56	1	1	50	Unknown	0
25	1707	57 F		N/A	Pakistani Or British Pakistani	Pakistani	B11	5MX069	Unknown	08/11/2006	03/03/2011	1344	1576	24	0.853	LETA17798NEMIS	56	1	1	25	Unknown	0
26	1707	57 F		N/A	Pakistani Or British Pakistani	Pakistani	B11	5MX069	Unknown	08/11/2006	16/08/2010	1344	1377	24	0.976	LETA17796NEMIS	56	1	1	100	Unknown	0
27	1707	57 F		N/A	Pakistani Or British Pakistani	Pakistani	B11	5MX069	Unknown	28/09/2010	15/02/2011	168	140	2	1.2	LETA17800NEMIS	84	1	1	50	Unknown	0
28	1707	57 F		N/A	Pakistani Or British Pakistani	Pakistani	B11	5MX069	Unknown	02/11/2001	26/04/2005	1344	1271	24	1.057	THTA4417	56	1	1	50	Unknown	0
29	1707	57 F		N/A	Pakistani Or British Pakistani	Pakistani	B11	5MX069	Unknown	16/11/2005	20/09/2006	280	308	5	0.909	THTA4416	56	1	1	25	Unknown	0
30	1707	57 F		N/A	Pakistani Or British Pakistani	Pakistani	B11	5MX069	Unknown	10/06/2005	20/09/2006	448	467	8	0.959	THTA4415	56	1	1	100	Unknown	0
31	2161	62 F		N/A	Ethnic Category Not Stated	Unknown	B18	5MX039	Unknown	16/02/2007	21/08/2008	504	552	8	0.913	LETA17798NEMIS	84	1	1	25	Unknown	0
32	2161	62 F		N/A	Ethnic Category Not Stated	Unknown	B18	5MX039	Unknown	21/12/2009	07/02/2011	252	413	9	0.61	LETA17798NEMIS	28	1	1	25	Unknown	0
33	2161	62 F		N/A	Ethnic Category Not Stated	Unknown	B18	5MX039	Unknown	06/11/2006	01/02/2007	168	87	2	1.931	LETA17800NEMIS	84	1	1	50	Unknown	0
34	2161	62 F		N/A	Ethnic Category Not Stated	Unknown	B18	5MX039	Unknown	24/07/2008	08/06/2010	728	684	20	1.064	LETA17800NEMIS	112	1	1	50	Unknown	0
35	2161	62 F		N/A	Ethnic Category Not Stated	Unknown	B18	5MX039	Unknown	08/07/2010	27/04/2011	1008	293	9	1.72	LETA17800NEMIS	112	1	2	50	Unknown	0
36	2173	40 F		Islam	Somali	Somali	B6	5MX055	English	09/03/2009	09/09/2009	252	184	3	0.457	LETA17798NEMIS	84	1	3	25	Unknown	0
37	2173	40 F		Islam	Somali	Somali	B6	5MX055	English	23/10/2009	07/04/2011	448	531	8	0.844	LETA17796NEMIS	56	1	1	100	Unknown	0
38	2345	71 F		N/A	Caribbean	Carribbean	B20	5MX109	Unknown	25/05/1999	28/10/2003	1568	1617	28	0.97	LETA17798NEMIS	56	1	1	25	Unknown	0
39	2345	71 F		N/A	Caribbean	Carribbean	B20	5MX109	Unknown	06/10/2008	28/04/2009	672	204	4	1.098	LETA17798NEMIS	168	1	3	25	Unknown	0
40	2345	71 F		N/A	Caribbean	Carribbean	B20	5MX109	Unknown	23/07/2009	03/03/2011	1848	588	11	1.048	LETA17798NEMIS	168	1	3	25	Unknown	0



16,942 rows of data from 5,674 unique patients

Clinical value comparison – an example

2,730 patients had a last episode of simvastatin 40 mg and had at least one pre-dyslipidaemia medication and last episode cholesterol value.





Table 336: Dichotomised percentage reduction of cholesterol (at 5%) against adherence status (based on calculated
MPR).Slide 22

	r	
	Adherent (n=1,940)	Non-adherent (n=790)
5% or greater reduction (n=2,364)	76.2% (n=1,802)	23.8% (n=562)
Less than 5% reduction (or gain) (n≠366)		62.3% (n=228)
Table 337: Dichotomised percentage reduction of ch MPR).	ainst adhe	erence status (based on calculate
	én .,940)	Non-adherent (n=790)
10% or greater reduction (n=2,226)	78.3% (n=1,742)	21.7% (n=484)
Less than 10% reduction (or gain) (n=504)		60.7% (n=306)
Table 338: Dichotomised percentage reduction of ch MPR).	ainst adhe	erence status (based on calculate
	é. ,940)	Non-adherent (n=790)
20% or greater reduction (n=1,798)	82.4% (n=1,481)	17.6% (n=317)
Less than 20% reduction (or gain) (n=932)		50.8% (n=473)
Table 339: Dichotomised percentage reduction of ch MPR).	ainst adhe	erence status (based on calculate
	,940)	Non-adherent (n=790)
30% or greater reduction (n=1,090)	87.3% (n=952)	12.7% (n=138)
Less than 30% reduction (or gain) (n=1,640)	60.2% (n=988)	39.8% (n=652)

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Summary of findings from Stage C (1)

Perspectives on shared decision-making.

"I think you're there to be told what to do because as a lay person you're not aware of what medications are available, you're relying upon your doctor to make the best possible". RP19

"I don't feel part of the decision ... I feel like a beggar, I'm begging for something. Every time I get a new medicine I read and it says the same - don't take it with low blood pressure; and so I went back and he wasn't interested, 'take it or risk heart attack' that was his attitude" RP5



Summary of findings from Stage C (2)

A desire for more information about medicines from the GP at the point of prescribing.

Participants reported consulting other (less reliable?) sources of information such as print media, the internet or friends and family

- "In the papers that they'd actually pulled this one off [statin] because it was killing more people than it was benefits. I stopped it... as far as I know my cholesterol is ok fifteen years later". RP3
- "[The GP] never told me what [the medication] was for or what it did. [I had to go on] the internet and find out. RP12



Summary of findings from Stage C (3)

Frequent changes in generic medicines or pharmacists profiteering

"I don't have faith in the pharmacist... in too many cases that they're [pharmacists] giving dubious medicines, same ingredients, cheaper, making more profit. RP5



Summary of findings from Stage C (4)

Intentional non-adherence in asymptomatic conditions

"I could go two days without taking it and nothing is wrong ... I'm forcing myself because I have to take it". PP32

Unintentional non-adherence with dosage regimens other than "one daily"

"I'm supposed to take one I think during the day, sometimes I forget that ... those in the middle of the day". RP1

"You just don't remember to take your medication, especially your midday one". RP10

"It's the middle of the day if I'm with a group of people and time passes and oops I haven't taken mine". RP19



Summary of findings from Stage C (5)

Infrequent/non-existent medicines reviews

"Not once in my life in those thirty years has anybody said are you still taking them... no doctor has said why isn't your prescription being collected. RP14

Problems with the repeat dispensing process

"I just go to my doctor, fill out the form, I don't say what I want, it's just repeated, it's the same thing every time, in fact they were giving me so much I didn't want and I handed them to the chemist saying I don't need these, tell the doctor I don't need them anymore... just get repeated every month". PP32



Summary of findings from Stage C (6)

Frustration caused by being unable to see 'regular' GP

"You can if you want to wait a month to see my GP. It's the waiting it's very poor". RP15



Overview of Recommendations (1)

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).



Overview of Recommendations (2)

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).



Overview of Recommendations (3)

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.



Overview of Recommendations (4)

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.



Overview of Recommendations (5)

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.



Overview of Recommendations (6)

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.



Overview of Recommendations (7)

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).



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Establishing the extent of patient non-adherence to prescribed medication

The Aston Medication Adherence Study (AMAS)

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