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**PATIENT PREFERENCES FOR SELF-MANAGEMENT OF
WARFARIN THERAPY**

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Abstract

Patient self-management (PSM) is increasingly being advocated as a means of increasing patient choice and autonomy. One clinical area where PSM is currently being considered is the management of patients receiving warfarin, a drug commonly prescribed for conditions such as atrial fibrillation. Regular patient monitoring is required and the development of near patient testing has made PSM feasible. To date there has been very little research into the attitudes and preferences of patients on warfarin for PSM. The authors have undertaken a randomised controlled trial involving 617 patients allocated either to PSM or routine care. Data were collected on clinical effectiveness, costs and quality of life. In addition, patient preferences for PSM were explored using:

- a contingent valuation questionnaire (sent to all study patients)
- focus groups (selected PSM patients only)
- a discrete choice experiment to elicit preferences for various aspects of PSM (sent to all PSM patients).

PSM is associated with a higher mean cost per patient and there was little difference in clinical effectiveness and quality of life. Strong preferences were indicated for the 'personal' benefits of PSM, such as a greater sense of independence and control. Half of respondents indicated a willingness to pay out-of-pocket to receive PSM. Self-management interventions appear to deliver benefits that are not captured in conventional 'health' measures. This paper reports the strength of preference for such benefits but also considers the normative question: should such benefits be of concern to us when seeking to inform public sector resource allocation questions?

Introduction

Patient self-management (PSM) is increasingly being advocated as a means of increasing patient choice and autonomy. One of the objectives of self-management is to empower patients with the knowledge and skills they need to treat their own illness. The NHS Plan states that, in the future, patients will have far greater information about how they can look after their own health. In addition, the “Expert Patient” Programme will be extended and professional training will have much more emphasis on supporting self-care, particularly to help people manage chronic conditions.¹

Two clinical areas where self management plans are advocated, and in many cases implemented, are asthma² and diabetes³. In the case of diabetes, patients can monitor their glucose levels at home using a portable glucometer. Over time, the cost of the equipment has decreased and test strips are available on prescription.

PSM is currently being considered as a model of care for patients receiving anticoagulation therapy (predominantly warfarin), commonly prescribed for atrial fibrillation and mechanical heart valves.⁴ Very serious (i.e. life threatening) adverse events can be associated with warfarin therapy and so regular patient monitoring is required in the form of a blood test, to measure the International Normalised Ratio (INR), to ensure adverse events of a thrombotic or haemorrhagic nature are minimised. Currently the majority of patients attend primary or secondary care clinics. However, the development of reliable near patient testing (NPT) devices for INR estimation has made PSM feasible. The next stage is the investigation of patients’ ability to manage their own therapeutic monitoring, as it is essential that the INR can reliably be measured within home settings, and also that patients are able to interpret the INR result and alter therapy as appropriate. Alongside the investigation of clinical effectiveness, assessing the cost-effectiveness of PSM of anticoagulation is also essential, particularly with current technology (e.g. Coaguchek, Roche Diagnostics) costing approximately £450 per machine and test strips priced at about £2.50 each. Given the serious nature of the self-management responsibility being offered to patients taking warfarin, it is essential that their attitudes and preferences for PSM are explored and understood.

This paper reports the results of new empirical work carried out to elicit the patient preferences for PSM of warfarin therapy, and in the light of the clinical and cost outcomes of a large randomised controlled trial, discusses the normative question of whether alternative measures of patient benefit should be of concern when seeking to inform public sector resource allocation questions.

The SMART Trial: an overview

The SMART (Self-Management of Anticoagulation, a Randomised Trial) study aimed to determine the clinical and cost-effectiveness of PSM in comparison with standard care. It was the first UK trial powered to detect a significant clinical end point, where patients were randomised to PSM or standard care only after eligibility for PSM was determined, thus enabling PSM to be evaluated against standard care in terms of clinical and cost effectiveness. Within the trial, in order to elicit patient attitudes and preferences in relation to PSM, three methodologies (focus groups, contingent valuation and discrete choice experimentation) were employed in order to investigate how strongly patients felt about PSM, whether they were willing to pay for PSM and the type of self-management they would prefer.

Patients aged 18 years and over with a long-term indication for warfarin were recruited from 48 general practices in the West Midlands. After giving consent, patients were randomised either to 'self-management' (PSM arm) or to 'usual care'. Patients in the PSM arm attended at least two training sessions to ensure they had a theoretical understanding of anticoagulation and INR monitoring, could measure their INR reliably and were able to adjust their warfarin dose. All PSM patients judged as being 'capable' to undertake self-management were given equipment to carry out home testing for 12 months; those patients allocated to the PSM arm but who were judged unable to undertake self-management continued to receive routine care. PSM patients were asked routinely to perform a test every two weeks unless their test result indicated that a dosage change was required, in which case an additional test the following week was required. Assessments by study researchers were carried out at 3 monthly intervals to ensure PSM was being undertaken correctly. As part of the trial, data were collected on INR results, adverse events and resource use, including relevant primary and secondary care contacts, anticoagulation clinic visits and resources required to undertake PSM. The measure of clinical effectiveness was

therapeutic control in terms of percentage of time within therapeutic range. The planned economic evaluation approach was for both a cost-effectiveness analysis (i.e. cost per time in range) and a cost-utility analysis (i.e. cost per QALY) to be conducted. Data on EQ-5D were collected at baseline (i.e. patient entry into the study), 6 months and 12 months, and QALY scores for individual study patients were calculated for all patients where complete data were available using linear interpolation. All main trial analyses were conducted using an intention to treat approach.

A total of 617 patients were recruited to the study, 337 randomised to PSM and 280 control patients. The flow of patients throughout the study is shown in the CONSORT trial diagram in Figure 1. Of those patients allocated to the PSM arm, 193 completed 12 months of self-management. The study result on effectiveness was that there was no important or significant difference between PSM and routine care; for PSM the time in range result was 70% and for the control arm the figure was 68% during the study period. There was no difference in the number of serious adverse events between groups. In addition, the mean QALY scores were not significantly different between groups (0.748 QALYs in the PSM arm and 0.725 QALYs in the control arm). However, unsurprisingly PSM was considerably more expensive than routine care (mean NHS plus patient costs: £462.73 vs. £179.80). The results strongly suggest that, using traditional criteria to judge cost-effectiveness, PSM is not a cost-effective alternative. However, if patient preferences for PSM are very strong, this raises the question that non-health aspects of benefit might be used to justify the additional expenditure.

Investigation of preferences

Focus groups

Focus groups are a form of group interview that use the communication between group participants to generate data. The method is highly effective in exploring people's knowledge, experiences and attitudes, and is widely used to examine experience of disease and health services.⁵

Two focus groups were held with PSM patients taking part in the SMART trial. Patients were sent a letter of invitation and the participants comprised patients willing and able to attend. The groups were conducted at the University Department of Primary Care & General Practice by the lead author and a colleague with extensive experience in qualitative work. The group sessions lasted for approximately 2 hours and were taped and transcribed in full. Participants were generally encouraged to explore issues about PSM that were important to them and in order to achieve this the facilitators used a series of open ended questions about the routine anticoagulant clinic, warfarin side effects, experiences of carrying out PSM within the study, willingness to continue PSM and issues of payment. Transcribed data were analysed using qualitative content analysis to generate categories and explanations.⁶

Fifty-three patients were invited to attend. Twenty-one patients expressed interest in attending and whilst 17 indicated availability on the specified dates only 14 attended. The first focus group had 8 participants (5 male, age range: 32 to 80 years), and the second group had 6 participants (5 male, age range: 55 to 77 years).

Routine care and side effects of warfarin

Patients reported both positive and negative experiences of their usual model of anticoagulant care. Issues of time and inconvenience were important to those attending hospital clinics. Although the actual blood test was quick, waiting time was very long in crowded areas and patients reported parking problems. Participants were in agreement that GP clinics provided an excellent and convenient service, although access to appointments outside working hours could be a problem. The main themes to emerge from discussions about side effects were fear/worry and inconvenience, although most reported that the side effects of warfarin were something they got used to. The main fears concerned being in “strange places”, having medical procedures and being uncertain if a symptom was treatment related. Inconvenience related to the profusion of blood during a bleed and the length of time for bleeding to stop.

Within study PSM

The main reasons for taking part in the study were having the opportunity to take control of their management, altruism and having the chance to do something different. Participants were very positive about the training they received, and valued

training in a group due to ability to share problems and experiences and give each other support. There were no major problems using the machine once patients had some practice, although individuals reported some minor problems getting blood onto the test strip.

Frequency of testing was an important issue to all participants, although there was no consensus of opinion on the length of time between tests. Within the trial the period between tests was 2 weeks, 1 week with a dosage change, which was more frequent than in routine care. Some thought this was too frequent, stating there could be a danger of over-correction as the body would not be given enough time to react to the change in dose, and thought the time between tests should be similar to routine care. Other participants were happy with frequent testing, preferring to test themselves when they perceived their INR levels to have changed. All patients were happy with carrying out quality control checks but there was disagreement about how the checks should be carried out. Some liked doing the tests at home without supervision, others preferred tests under supervision at the surgery to get immediate feedback and having the opportunity for discussion if something was wrong.

Support was very important to PSM patients, with within-trial support provided by the trial team. The main theme to emerge was the importance of having someone at the end of the phone, which patients found reassuring. In terms of support outside trial conditions, patients regarded having someone who was an expert in warfarin as being important as well as having easy access to support. There were differing views about who should provide the support. Some patients were happy with getting support from their GP surgery, as advice would be close to their medical records and from someone who knew them well. Conversely, others were worried there may not be enough expertise in the surgery, access may not be easy and doctors may not have the time.

Payment for PSM

Many patients did not agree about the issue of paying to be able to do self-management. For those who did not agree with paying, the main reasons were the expense of buying the machine, not wanting to pay on principle, and being happier with going to their usual clinic instead. Some participants weighed up the costs of self-management with the costs of running clinics within the NHS, and thought self-

management would save money by saving laboratory and staff costs, therefore should be available for free. Patients who were prepared to pay stated they were saving time and money with respect to not having to travel to the clinic and not forgoing work time.

“I was going to do it originally and I backed out because I weighed up the cost and I can’t afford it”

“ I would have thought... that the cost of us doing a test would be significantly less than the cost of us going to the surgery”

“I’m self-employed, the amount of money I lose by going to the hospital, paying to park, finding out there’s a queue a mile long, giving up, going home because I can’t afford to stay. I’d rather pay for this, get it over and done with in the morning...go out and do some work”

When asked how much they were willing to pay per year for self-management, again there was a split between individuals unhappy at paying and those willing to contribute. Negative responses included not regarding it as a realistic question, already paying for health care via income tax and not being in a financial position to pay. Those who engaged in the exercise and were willing to put a value on self-management suggested a cost per month would be easier to think about in terms of budgeting. Costs per year started at £10 a year, with others prepared to pay £50 or £100.

Overall, patients were positive about PSM, many felt in control of their treatment and appreciated the convenience of testing when and where they wanted to. Negative comments concerned the restrictions within the trial, issues of cost and some patients simply preferred to go to a health care provider for their blood test.

“...I get more when I go to the GP...they keep a check on me and I feel more check on me and I feel more confident by going there you know”

“you don’t have to panic if you think your reading is going off the scale you can do a quick test, not so easy at the surgery”

“I like to feel I am actually having control over my own warfarin destiny as it were.”

Postal survey: Methods

A postal questionnaire was sent to all study participants. Patients were excluded if they were no longer in the study due to death, having moved, discontinuation of warfarin or suffered a serious adverse event. Patients in the control group were sent a WTP questionnaire. PSM patients were sent a questionnaire containing a WTP question and a discrete choice experiment. Patients in the PSM arm who had returned to routine care during the 12 months were sent the WTP questionnaire only. Both questionnaires also contained questions on the patient's preferred model of anticoagulant care (hospital, general practice or PSM), time to fill in the questionnaire, level of difficulty to complete the questionnaire and also contained a space for any other comments.

Contingent valuation

Contingent valuation uses survey techniques to obtain a monetary estimation of the willingness of individuals to pay for the health technology or service under consideration, and this enables a cost-benefit analysis (CBA) to be undertaken.⁷ Individuals are asked questions in order to obtain their maximum willingness to pay (WTP) for a particular technology or intervention under consideration. Different techniques are available to elicit the value including open-ended, payment card, dichotomous choice and the payment ladder approach.

A total of 512 patients were mailed a questionnaire. The questionnaire contained an explanation of what PSM entailed and the purpose of asking the WTP question. A payment scale approach was used. Values were from top to bottom £0, £0.50, thereafter to £10 in units of £1, to £80 in units of £5 and to £100 in units of £10. The full wording of the WTP question can be found in Appendix A. Subjects wishing to express a valuation in excess of £100 were requested to write in the appropriate amount. Respondents were asked to tick the maximum monthly amount they were willing to pay, and were also asked for reasons for their responses to the WTP question. A coding framework for the written comments was developed. The focus group discussions established that cost per month was more acceptable than annual cost. Information on gender, age, education level and ethnicity was already available for patients. Income information was not collected.

Discrete choice experiment

Discrete choice experiments⁸⁹ make an assumption that a health technology or service can be described by its characteristics, and an individual's valuation will depend on the levels of these attributes. The technique allows the trading between attribute levels, and can determine the relative importance of each attribute and estimate whether an attribute is important. Once the attributes and appropriate levels have been identified, alternative scenarios can be constructed, and respondents presented with a number of choices, and for each, asked for their preferred one. Cost can be included as an attribute in order to determine WTP indirectly. Choices are thought to most closely represent real life decisions, and therefore this discrete choice approach has been preferred in health care.

A discrete choice experiment was conducted in order to determine what was important to patients in the way PSM was organised given that there is no standard model of care. It is important to emphasise that the DCE was not undertaken in order to establish the strength of preference for PSM in itself, rather to understand the most preferred model of PSM provision.

Attributes and their levels were selected using the data generated by the focus groups (Table 1). Training was included in order to determine who patients would prefer to be trained by, experienced PSM patients trained as "Expert Patients" or health care professionals. Frequency of testing was an important factor therefore different frequencies were presented, with the assumption there would be a finite number of prescribed test strips. The nature of the support patients would receive was included as it was a key issue for patients, with no agreement as to who should provide it, therefore two options were presented. One option was their usual clinic where the staff know them and have access to their medical records but are only available at specific times. The other option was a telephone help-line similar to NHS Direct, with expert help and available at all times, but with no access to their medical records. Quality control is essential for PSM, however patients did not agree whether they should carry this out under supervision therefore supervised and unsupervised options were given. Finally cost was included, not only to determine the importance of this attribute, but also for comparison with the results from the contingent valuation question.

There were a total of 128 hypothetical scenarios available. An orthogonal fractional factorial design was used in order to avoid serious correlations between attributes and resulted in 16 possible scenarios. Scenario one was anchored, with scenario two varied throughout the questionnaire. An example of one of the DCE options is given in Appendix B. Two versions of the questionnaire were produced, each with 9 choices. Each choice between pair-wise options was taken as an individual observation and analysed in this way. Given the non-independence of the data provided by the same respondent, a random effects probit model was used. The questionnaire was sent to the 206 PSM patients who were still carrying out self-management at the time of mailing, with an equal split between the two versions of the questionnaire.

Postal survey: Results

A total of 512 questionnaires were mailed, 230 to control patients and 282 were sent to patients allocated to PSM. At the time of mailing, 78 PSM patients had returned to routine care and were mailed the contingent valuation question only. 204 PSM patients had completed or were still undertaking self-management and were sent both the contingent valuation and discrete choice experiment. A total of 421 questionnaires were returned (82.2% response) and 395 were returned completed (77.1% response). For completed questionnaires, data were not available for 28 respondents as questionnaires were returned without an identifier. Excluding the anonymised questionnaires, 201 (71.3%) PSM patients and 166 (72.2%) control patients returned completed questionnaires. Where results are presented by trial arm, an intention to treat analysis has been undertaken, therefore the PSM arm includes patients who have returned to routine care in addition to those undertaking PSM at the time of mailing.

Table 2 shows the characteristics of all respondents. The mean age of respondents was 68.2 years (sd=11.2), with ages ranging from 29 to 89. The majority (94.8%) of respondents were white British. Table 3 reports the model of care preferred by respondents overall, and by the trial arm the patients were originally allocated to. The mean time taken to fill in the WTP questionnaire was 9.3 minutes and 16.4 minutes for the combined WTP and DCE questionnaire. For the WTP questionnaire, 194

(82.0%) said the questionnaire was easy to complete and only 6 (2.6%) found completion difficult. Of the respondents to the combined WTP and DCE questionnaire, 83 (51.6%) found completion easy and 23 (14.3%) reported completion as being difficult.

Contingent valuation

A total of 395 completed contingent valuation questionnaires were returned. 28 (7.1%) respondents did not select any WTP value. Of those who chose a value, 185 (50.4%) were not willing to pay any amount for PSM. Amounts above zero ranged from £0.50 to £100. One respondent chose £100+ but did not indicate the value, therefore a value of £100 was used in the analysis. The distribution of WTP values is shown in Figure 2. For patients who were not willing to pay, there were 74 (40%) protest responses. The themes within these responses were:

- Having “paid into” the NHS therefore any treatment should be free
- The perception that by doing self-management NHS money was being saved
- Warfarin is required to treat chronic and life-threatening conditions therefore should be free
- Diabetics do not have to pay to self-test.

Non-protest zeros were predominantly due to lack of finances to pay for self-management, often due to the patient being on a pension, and not wanting to do self-management. The characteristics of respondents giving zero WTP values and protest responses can be found in Table 2.

The mean WTP value including protest responses was £5.28 a month and excluding protest responses £6.62 a month. Table 4 shows mean WTP values for a number of patient characteristics, both with and without protest responses. Patients in the PSM arm were willing to pay more than control patients, and patients below the age of 65 were also willing to pay more. There was no difference between genders. As expected, patients who stated PSM was their favoured model of anticoagulant care were willing to pay more per month than those preferring routine care or not having a preference. Mean WTP values rose with increasing educational level.

Discrete choice experiment

A total of 161 (78.2%) questionnaires containing the discrete choice experiment were returned with 143 respondents making at least one choice. 38 respondents (26.6%) chose scenario 1 for all nine choices in the questionnaire. Table 5 shows the results of the probit model with random effects. The ρ coefficient, stating the proportion of total variance contributed by the patient level variance component was 0.293 and statistically significant ($p < 0.001$). The interpretation of this is that the random effects model was appropriate in this case. The coefficients for the attributes quality control, support and cost were statistically significantly different from zero. However, the coefficients for frequency of testing and training were not. This result on frequency of testing might relate to the qualitative finding of two distinct groups of patients: those who want very frequent testing (i.e. 'the worriers') and those wanting infrequent testing (i.e. 'the chilled'). As currently specified, the model gives an 'average' result across all patients.

The sign of the coefficients are explained as follows:

- Training: the negative sign indicates a preference for training by health professionals.
- Frequency of testing: the positive sign indicates a preference for a longer time between tests
- Support: the positive sign indicates a preference for support from the patient's clinic
- Quality control: the positive sign indicates a preference for supervised quality control at the clinic
- Cost: the negative sign indicates a preference for lower cost

Table 6 shows the marginal rates of substitution between cost and other attributes. The suggestion is that great value is attached to having the quality control aspects of the PSM supervised.

Discussion

This paper reports 'work in progress'. Areas where further analysis are currently planned include:

- Further exploration of the WTP values using a regression-based approach, to explore variation by respondent characteristic
- Further exploration of the DCE data, for example:
 - to identify lexicographic / non-trader response patterns
 - to explore variation by respondent characteristics using interactions between respondent characteristic variables and the attributes
- Using the WTP data and the cost data from the main economic evaluation in order to conduct a full cost-benefit analysis

Finally, we are conscious that the analysis reported in this paper makes a number of important value judgements concerning *whose* values about *what* are important and relevant. “... the relevance of the data generated must be placed in its appropriate normative context – largely that of a tax-financed health care system with a high degree of cross subsidisation.”¹⁰ The study has investigated the values that *patients* place on *non-health* aspects of service outcomes. “Whilst patients *ex post* might place a relatively high value on ‘non-health’ attributes ... tax-payers *ex ante* might value a more limited (and possibly more health-focused) set of attributes.”¹⁰

At this stage we would like to use this paper to generate further discussion to help inform a subsequent process of data analysis and interpretation.

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Table 1 Attributes and levels used in the study

Attributes	Levels
Training	Health professional, Expert patient
Frequency of testing (weeks between tests)	1, 2, 6, 12
Support for test, dose and warfarin queries	Own clinic, Telephone help-line
Quality control	Unsupervised at home, Supervised at clinic
Cost (£)	0, 5, 15, 25

Table 2 Characteristics of respondents, number of WTP zero respondents and WTP protest respondents

Respondent characteristics	n(%) *	WTP zero respondents n (%) **	WTP protest respondents n (%) **
Trial Arm	(n=395)		
Control	166 (42.0)	83 (50.0)	25 (15.1)
PSM	201 (50.9)	86 (42.8)	40 (19.9)
Unknown	28 (7.1)	16 (57.1)	9 (32.1)
PSM patients	(n=201)		
Complete PSM	152 (75.6)	51 (33.6)	17 (11.2)
Withdrew from PSM	49 (24.4)	32 (65.3)	8 (16.3)
Gender	(n=367)		
Male	240 (65.4)	113 (47.1)	42 (17.5)
Female	127 (34.6)	56 (44.1)	23 (18.1)
Age	(n=367)		
<65	115 (31.3)	40 (34.8)	26 (22.6)
65+	252 (68.7)	129 (51.2)	39 (15.5)
Preferred model of care	(n=389)		
Routine care	197 (50.6)	121 (61.4)	36 (18.3)
PSM	169 (43.4)	46 (27.2)	30 (17.8)
No preference	23 (5.9)	13 (56.5)	7 (30.4)
Equivalent education level	(n=395)		
No qualifications	94 (23.8)	47 (50.0)	16 (17.0)
GCSE/O level	119 (30.1)	61 (51.3)	22 (18.5)
A level	75 (19.0)	31 (41.3)	17 (22.7)
Degree level	52 (13.2)	13(25.0)	3 (5.8)
Missing	55 (13.9)	33 (60.0)	16 (29.1)

* % within each main category e.g. Trial arm, PSM patients etc.

** % within each category component e.g. Control, PSM etc.

Table 3 Preferred model of care by trial arm

Model of care	All patients (n=395)	Control (n=166)	PSM (n=201)	Trial arm unknown (n=28)
PSM	169 (42.8)	63 (38.0)	96 (47.8)	10 (35.7)
Hospital	45 (11.4)	22 (13.3)	18 (9.0)	5 (17.9)
General Practice	150 (38.0)	67 (40.4)	73 (36.3)	10 (35.7)
No preference	25 (6.3)	13 (7.8)	10 (5.0)	2 (7.1)
No response	6 (1.5)	1 (0.6)	4 (2.0)	1 (3.6)

Table 4 Mean WTP values by patient characteristics

	Mean (sd) WTP (£) (including protests)	Mean (sd) WTP (£) (without protests)
All respondents	5.28 (9.92), n=367	6.62 (10.70), n=293
Trial Arm		
Control	3.61 (5.60), n=157	4.84 (6.01), n=117
PSM	6.98 (12.74), n=182	8.10 (13.39), n=157
Unknown	3.64 (5.12), n=28	5.37 (5.44), n=19
Completed PSM	8.19 (13.67), n=150	9.53 (14.31), n=129
Withdrew from PSM	1.31 (3.06), n=32	1.50 (3.24), n=28
Gender		
Male	5.42 (10.99), n=220	6.70 (11.86), n=178
Female	5.42 (8.64), n=119	6.71 (9.16), n=96
Age group		
<65	8.86 (14.84), n=112	11.53 (16.01), n=86
65+	3.72 (6.25), n=227	4.50 (6.62), n=188
Preferred model of care		
Routine care	1.79 (3.51), n=175	2.25 (3.80), n=139
PSM	9.32 (13.09), n=164	11.41 (13.64), n=134
No preference	4.26 (6.73), n=23	6.13 (7.37), n=16
Equivalent education level		
No qualifications	3.20 (4.95), n=86	3.94 (5.22), n=70
GCSE/O level	4.43 (6.80), n=110	5.53 (7.19), n=88
A level	7.48 (14.53), n=73	9.75 (15.94), n=56
Degree level	10.28 (15.15), n=46	11.00 (15.42), n=43
Missing	3.04 (4.79), n=52	4.39 (5.23), n=36

Table 5 Results of the discrete choice experiment

Attribute	Coefficient (95% CI)	SE	Z score	P value
Training	-0.2077 (-0.4215 to 0.0060)	0.1090	-1.91	0.057
Frequency of testing	0.0235 (-0.0023 to 0.0493)	0.0131	1.79	0.074
Support	0.3310 (0.0998 to 0.5623)	0.1180	2.81	0.005
Quality control	0.4673 (0.2481 to 0.6864)	0.1118	4.81	<0.001
Cost	-0.0882 (-0.1020 to -0.0743)	0.0070	-12.49	<0.001
Constant	-1.0836 (-1.3728 to -0.7943)	0.1476	-7.34	<0.001
Number of observations = 1193; number of groups = 143; observations per group (min/average/max.) = 1/8.3/9; $\chi^2=159.63$ ($p<0.001$); $\rho=0.293$, ($p<0.001$)				

Table 6 Patient marginal rates of substitution between cost and other attributes

Attribute	Extra cost willing to pay (£)	Single level improvement
Training	2.35	From expert patient to health professional
Frequency of testing	0.28	Increase in 1 week interval between tests
Support	3.75	From telephone support to own clinic
Quality control	5.30	From unsupervised to supervised

Figure 1 Study consort diagram

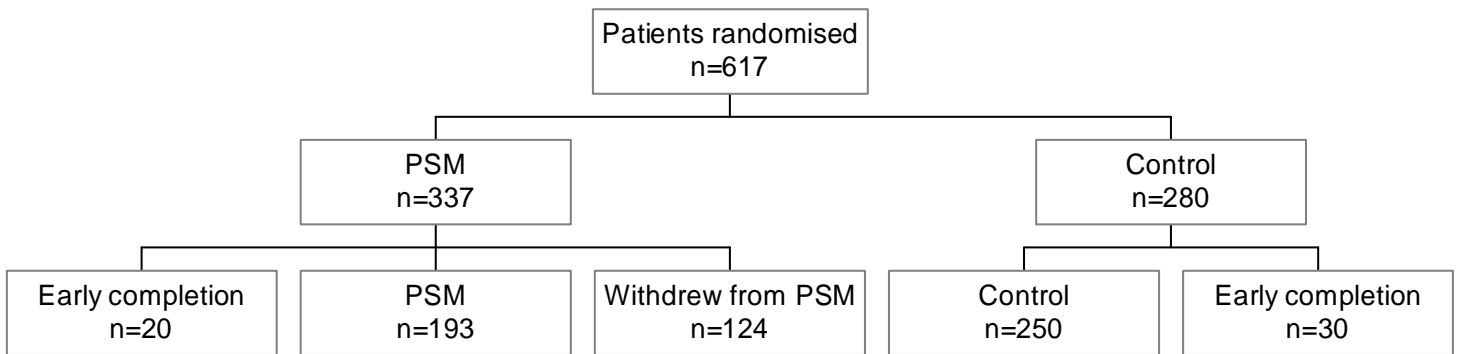
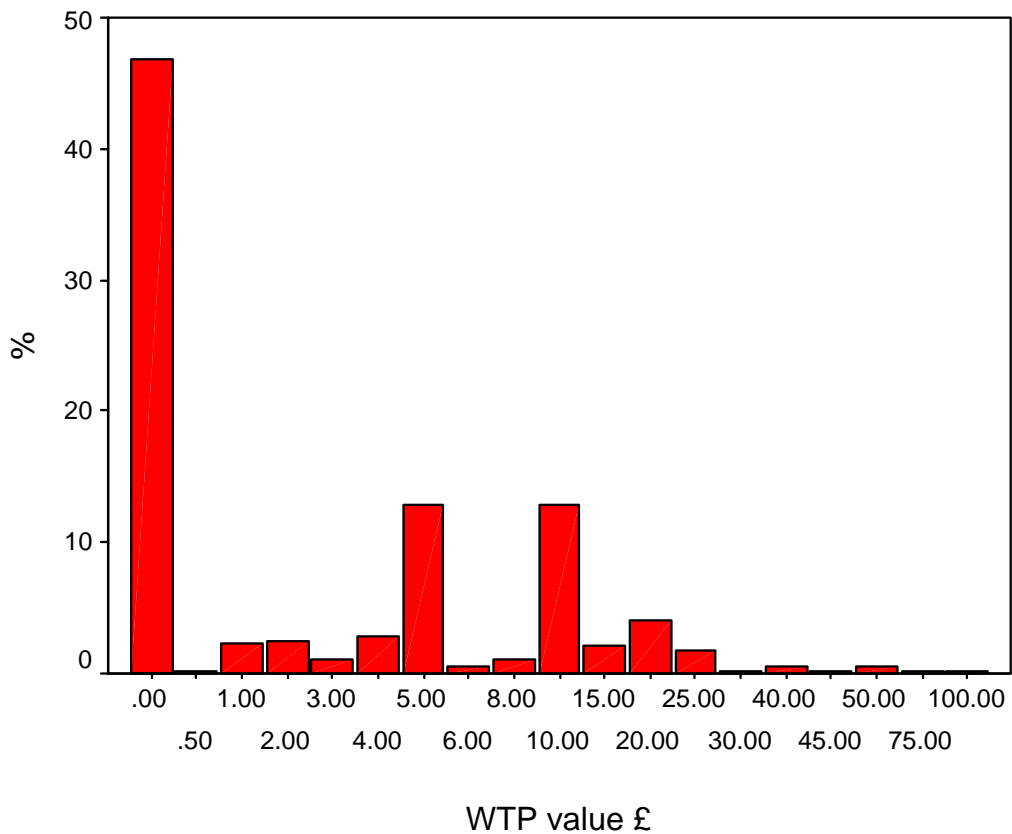


Figure 2 Frequency distribution of WTP values.



Appendix A Willingness to pay question

One way of measuring how valuable patient self-management is to you, is to ask what you would be prepared to give up in order to receive this type of care. That is, how much you would be willing to pay for it. This is simply a way of measuring how strongly you feel about patient self-management of warfarin and how much you would value this type of service. **This exercise is not being carried out to set a charge for this type of care.**

There are no right or wrong answers. The amount you say could be large or small or you may not wish to pay at all. We are interested in your view.

*What is the maximum amount of money you would be willing to pay **per month** to be able to carry out warfarin patient self-management? Assume that the cost includes the machine and all other items e.g. test strips, lancets and quality control.*

Put a tick (✓) next to the **maximum monthly amount** you would pay

£0
50p
£1
£2
£3
£4
£5
£6
£7
£8
£9
£10
£15
£20
£25
£30
£35
£40
£45
£50
£55
£60
£65
£70
£75
£80
£90
£100+

(If £100+ state the exact amount in the space provided below)

£_____

Appendix B An example of a discrete choice experiment question

For choices 1-9, please read both options carefully and choose the **one option** you would prefer and then tick the box below this option. You can only choose one option for each choice. For each choice, option 1 is the same. This exercise may take some time and you will need to think it through carefully.

Choice 1		
	Option 1	Option 2
Training	A health professional	An expert patient
Frequency of testing	Every 2 weeks	Every week
Support	Telephone helpline	Your own clinic
Quality control	Unsupervised at home	Unsupervised at home
Cost	£5/month	£5/month
From choice 1, which option would you choose? (please tick one box only)		
	Option 1	Option 2
	<input type="checkbox"/>	<input type="checkbox"/>