

# Application of a Discrete Choice Experiment Approach to Support the Design of a Hepatitis C Testing Service in Primary Care

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Hepatitis C Testing in Community Pharmacies

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## **Abstract**

### Background

Ascertaining the acceptability of healthcare provision to service users is an important factor in promoting service uptake, especially for populations who are reluctant to access care. This study identified the attributes of a Hepatitis C (HCV) testing service for people prescribed Opioid Substitution Therapy (OST) and used their expressed preferences to guide design of a service, using an applied health economics approach.

### Materials and Methods

Preferences of OST users were elicited using a discrete choice experiment. Important attributes for HCV testing were partly pre-determined by the research question and also identified using literature review and focus groups. Predetermined attributes included choice of provider and financial incentives. Other important attributes were place of testing; travel distance; attitudes and staff undertaking testing; waiting time for test results and incentive payment. The relative importance of defined attributes was assessed in 103 OST users attending 6 pharmacies from Dundee.

### Results

OST users preferred testing at their “own pharmacy”, by their drug worker, followed by their general practitioner (GP). Use of another pharmacy was the least preferred option. Being treated with dignity and respect was valued most highly, with waiting time for test results and travel distance also important. Financial incentives were not considered important.

### Conclusions

This study provides evidence that OST users prefer testing at their own pharmacy. The addition of a pharmacy to the providers offering HCV testing may increase uptake and support policies to eliminate HCV from our communities. Being treated with dignity and respect was highly valued and this suggests that testing uptake can be increased by developing positive relationships between OST users and test providers. Financial incentives were not found to be important.

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## Introduction

The World Health Organisation Guidelines on Testing for Hepatitis B and C establish critical enablers for the provision of efficient and effective services. Suggested best practice includes implementation of simplified, decentralised care pathways, with task-shifting to non-specialised staff (WHO 2017). Additionally such services should be delivered in a way that is acceptable to service users, especially for populations who are reluctant to access care. It is important also to consider testing as part of the continuum of care to HCV cure rather than an isolated step (WHO 2016).

In developed countries, people who inject drugs (PWIDs) are the major group affected by hepatitis C (HCV) infection (WHO 2016). In communities where heroin is the principle drug injected research suggests that around 40% of people prescribed Opioid Substitution Therapy (OST) are infected (Aspinall, Doyle, Corson, Hellard, Hunt, Goldberg...Hutchinson 2015; Edlin, Kresina, Raymond, Carden, Gourevitch, Cheever, Cargill 2005). In current HCV testing and treatment pathways within the United Kingdom, less than 10% of the OST population are tested for HCV and a similar pattern is seen across the world: a depressing repetition of waterfall plots shows people with HCV infection are lost to care at each step (Iveson, Grebely, Catlett, Cunnigham, Dore, Maher 2017).

The barriers that prevent uptake of HCV testing and treatment have been characterised as system-level, practitioner-level and patient level (Grebely, Oser, Taylor, Dore 2013). At the system level services may still be based on a configuration designed to identify people suitable for interferon based treatment, with conventional pathways containing multiple steps (Arora, Thornton, Murata, Deming, Kalishman, Dion... Qualls 2011). These pathways may be further complicated by required actions by specific practitioners allowing access to services or remuneration for those services. At the practitioner level these restrictions also apply. Prejudice against PWIDs also operates with many practitioners having the expectation that people will not adhere to medical treatment. Health practitioners may not perceive HCV treatment as a legitimate activity within their practice and may not have the necessary skills and knowledge to be confident in discussing HCV treatment with the client group (Treolar, Newland, Rance and Hopwood 2010). At the patient level, people taking methadone may live in poverty and experience stigmatising and discriminating behaviour (O'Gorman, Driscoll, Moore, Roantree 2016). The need to travel to attend clinics decreases the numbers of people being tested (Astell-Burt, Flowerdew, Boyle, Dillon 2011; Monnet, Ramee, Minello,

Joost, Carel, Di Martino 2008; Papatheodoridis, Tsochatzis, Hardtke, Wedeyer 2014) and proximity to services may be more important in rural communities. People who inject drugs may have shifting priorities between HCV treatment and other activities, may not have the relevant information about the treatment efficacy and side-effects of Direct Acting Antiviral (DAA) Medicines, may not seek out testing and treatment and may experience anxiety and confusion when offered opportunistic testing (Jones, Atkinson, Bates, McCoy, Porcellato, Beynon...Bellis 2014). Low levels of health literacy may limit understanding of their health, illness and treatments (Kalichman, Benotsch, Suarez, Catz, Miller, Rompa 2000).

Delivery of HCV testing and treatment through community-based care pathways has been shown to be feasible (Wade, Veronese, Hellard, Doyle 2016) and dried blood spot testing (DBST) has been demonstrated to increase the uptake of testing from high-risk populations (Coats & Dillon 2015; Taheri 2010; McAllister, Innes, Mcleod, Dillon, Hayes, Fox 2014). Testing in community environments in risk groups, can result in high levels of linkage to care (Tait, Stephens, McIntyre, Evans, Dillon 2013). The use of DBST in non-traditional environments has dramatically increased detection of HCV (Morana, Zelenev, Lombard, Marcus, Gibson, Altice 2014).

With appropriate training HCV testing can be carried out by a range of personnel, including community pharmacists (The Hepatitis C Trust 2016). Pharmacy provision has particular potential for the OST population as they have daily interactions with pharmacies. However, little is known about whether OST users would find testing at pharmacies acceptable and what other aspects of testing are important to them. To optimise uptake, it is crucial that HCV testing is designed in line with users' preferences (WHO 2016).

In this study, a Discrete Choice Experiment (DCE) was used to elicit the preferences of service users who access OST from pharmacies, to help co-produce the design of an HCV testing service. DCEs are a commonly used stated preference technique for eliciting patient preferences for healthcare services in order to understand what attributes of a service are important and the relative importance of these attributes (Kjaer 2005).

The design of a service often requires trade-offs between attributes that are important to patients. For example, HCV testing can be provided at a pharmacy but the waiting time to test results may be longer compared to HCV testing by GPs. DCEs can elicit and quantify how patients make trade-offs between these attributes. DCEs are rooted in Lancaster's theory which relates the utility or value of goods and services to the characteristics or attributes of the goods or services. DCEs present individuals with a series of hypothetical choices between different service configurations which vary in a number of characteristics or

attributes (for example location of testing, waiting time etc). DCEs are also based on random utility theory (RUT) which means that the choice behaviour of individuals is assumed to be probabilistic rather than deterministic. This means that the utility (or value) of the healthcare service has a systematic component (such as the attributes) that can explain the choices individuals make within the DCE and a random component which include unobserved factors that can explain choices such as psychological factors.

A DCE approach has recently been used to elicit service user preferences for HCV treatment efficacy, the occurrence of adverse treatment effects and the degree of treatment burden (Mühlbacher, Bridges, Bethge and Nubling 2017). However no work has been identified that considers service users' preferences in terms of HCV testing and how they may trade off the different attributes of the testing, such as provider (location), travel distance and waiting time for results. The use of DCEs to predict uptake of treatment for new pathways of care is also a useful feature of this technique when addressing the need to deliver on the ambition to eliminate hepatitis C as a public health concern (Quaife, Terris-Presholt, Di Tanna, Vickerman 2018)

## Materials and methods

The aim of this discrete choice experiment was to elicit OST user's preferences for HCV testing, in order to aid the design of a testing service that was acceptable to use from their perspective. The attributes and levels in the DCE were selected following recommended practice (Reed Johnson, Lancsar, Marshall, Kilambi, Mühlbacher, Regier...Bridges 2013). A number of attributes were predetermined by the research question. The aim of the DCE was to examine whether OST users may prefer HCV testing in pharmacy over other settings and provider of testing was therefore a pre-determined attribute. We were also interested in assessing the potential of using financial incentives, therefore financial incentive was also a pre-determined attribute (WHO 2016). A review of existing literature was undertaken to identify other attributes of HCV testing that are important to individuals. The themes identified through this process included medical and community clinic provision; travel distance from the clinic; the requirement for attendance at a remote site; the experience of stigmatising behaviour; the use of point of care testing and difficulties with taking venous samples (Wade, Veronese, Hellard, Doyle 2016; Harris and Rhodes 2013; Arain and Robaeys 2014; Jones, Atkinson, Bates, McCoy, Porcellato, Beynon...Bellis 2014).

## Focus Group Series

In order to test the relevance of these possible attributes to the target group and to explore whether there were any other important attributes, a focus group series was undertaken with

service users to establish their views of current services and especially of their experiences of using community pharmacies to access care (Radley, Melville, Easton, Williams and Dillon 2016). Seven focus groups with a total of 41 participants (Table 1) were undertaken during 2015, in a range of settings, aiming to gain a diversity of views and experiences, until no new data (saturation) were achieved. Participants were people prescribed OST by the specialist substance misuse service in Tayside, who provide the majority of care for this group. Participants discussed comparative experiences of partners, family and associates who had undertaken testing and treatment for HCV.

Recruitment to the focus groups concentrated on the following variables:

- Place of Residence –large urban / other urban / accessible small town
- Service Users detained by the Criminal Justice System
- Perspectives of male and female service users
- Perspectives of peer mentors (service users at an advanced stage of recovery)

Sessions were open-ended and ranged from 70–100 minutes. The first focus group served as an internal pilot to test the discussion guide. The seventh focus group with peer mentors was undertaken to provide perspective on the findings from this study. In the local service configuration, peer mentors are experienced service users who have received ORT for a number of years and are further along a recovery pathway: we listened to their reflections and perspectives on the themes that had emerged.

Data from each focus group were digitally recorded and transcribed verbatim, before being coded and analysed by two researchers. Analysis drew on the constant comparison method, which was operationalised within a general thematic approach (Richie and Spencer 1994).

Focus group participants described a range of attributes that had significant overlap with those identified from the literature: stigma, waiting times, confidentiality of results and positive relationships with service providers.

The final attribute list included the pre-determined attributes (who does the testing (provider) and incentive payment) as well as the most important other attributes identified through the literature review and focus groups (whether treated with dignity and respect; travel distance; and waiting time to test results). The larger the number of attributes, the greater the cognitively complexity of the DCE and therefore the total number of attributes was kept to a manageable level. Plausible levels were assigned to each attribute based on focus group responses and the local context for factors such as laboratory turnaround and travel

distance. Table 2 presents the attributes and their levels. Figure 1 shows an example of a discrete choice scenario considered by participants.

Given the number of attributes and their levels, the total number of possible combinations is equal to 512. This was reduced to 16 choice sets using a D-efficient main effects design with flat priors created in SAS (Statistical Analysis Software) (Burgess, L and Street D 2005). An opt-out was included in each choice set. The design is presented in Appendix 1.

### Design of the Questionnaire

The final study questionnaire contained three sections: Section 1 ascertained participants' preferences on the levels within the 5 attributes; Section 2 presented the 16 discrete choices; Section 3 collected details of patient demography including age, sex, educational level and employment. The cognitive burden of the choice sets in the questionnaire was of especial concern, because of awareness of potential issues with comprehension, literacy levels and attention spans in the respondent group (Borisova and Goodman 2004). Think aloud interviews were undertaken with 7 individuals to test the wording and check the understanding of the questionnaire design. Respondents completed the questionnaire in the presence of one of the researchers who provided support where required (Kronenberg, Slager-Visscher, Goossens, van den Brink, van Achterberg 2014). The administration of the questionnaire in a familiar environment was also chosen, to reduce participant stress and enable access.

A total of 103 participants within six pharmacies in Dundee City that they used to access OST completed the questionnaire. All participants completed a consent form before completing the questionnaire.

### Estimation procedure

In each choice set an individual was presented with a choice between three options (j): test A, test B or no test. It assumed that individuals will choose the option that they value most highly, that is, the option they receive the highest utility from.

The utility that an individual (*i*) receives from an option ( $V_{ij}$ ) is a function of the attributes and levels included in the DCE:

$$V_{ij} = (\beta_0 + \sigma_0)Test_{ij} + (\beta_1 + \sigma_1)Other\ pharmacy_{ij} + (\beta_2 + \sigma_2)GP_{ij} + (\beta_3 + \sigma_3)DrugWorker_{ij} + (\beta_4 + \sigma_4)Respect_{ij} + (\beta_5 + \sigma_5)Travel_{ij} + \beta_6 Time_{ij} + (\beta_7 + \sigma_7)Money_{ij} + \varepsilon_{ij}$$

“*Test*” is the alternative specific constant which takes on the value of 1 if the option is either Test A or Test B and 0 if the option is No test. “*Other pharmacy*”, “*GP*” and “*Drug worker*” are the provider, “*Respect*” is whether treated with dignity and respect, “*Travel*” is the travel distance in miles, “*Time*” is the waiting time for results in weeks and “*Money*” is the amount of money they receive if they take the test in pounds and  $\varepsilon_{ij}$  is the random error term.  $\beta$  and  $\sigma$  are the parameters to be estimated. The  $\beta$ s represent the average marginal utility of changes in the attribute. These can be interpreted as follows. For the quantitative attributes, a one unit increase (for example, a 1 week increase in waiting time) reduces utility by the size of the  $\beta$ . The qualitative attributes (provider and respect) are modelled using dummy coding. In this case the coefficients represent the difference in utility between the attribute level (for example drug worker) and the base category (for example own pharmacy). The  $\sigma$ s represent the individual specific preference variation for the attributes. A statistically significant  $\sigma$  indicates that individuals vary in terms of how they value the attribute. The distribution of the coefficients was assumed to be normal. A fixed parameter was assumed for waiting time to stabilise the estimation process and allow for easier estimation of the willingness to wait (see below). This means that respondents were assumed to have the same negative preference for waiting time. The model was estimated using mixed logit regression in Stata using maximum simulated likelihood with 3000 Halton draws.

The relative importance of the attributes was assessed by estimating willingness to wait, calculated by dividing the estimated coefficient values of the attributes with the coefficient value of the waiting time attribute. This indicates how much longer individuals are willing to wait for a unit change in an attribute. For example,  $(\beta_4/-\beta_6)$  indicates how much longer individuals are willing to wait for their test results if they are treated with dignity and respect.

## Results

The sample characteristics of the respondents completing the discrete choice questionnaire are shown in Table 3. The sample closely mirrors the characteristics found in OST population in Dundee for the parameters of age (median age range 30-40 years), educational level (completed secondary school) and employment (registered unemployed or unable to work due to disability). The sample however contains approximately fifty per cent female respondents, whereas females represent around a third of the base population.

Test A was chosen in 39.5% of choice sets, Test B in 48.8% of choice sets and in 11.6% of choice sets the respondents chose no test. Analyses of the “No Test” option identified that 68% of respondents did not choose this option for any of the discrete choice sets. Three



percent of the respondents selected “No Test” for between 13 and 16 of the discrete choice sets.

Table 4 shows the regression results. The results show that individuals prefer to be tested at their own pharmacy. The coefficient on drug worker is not statistically significant indicating that own pharmacy and drug worker are equally preferred. Other pharmacy is the least preferred option. Being treated with dignity and respect, waiting time for test results and travel distance are all important to individuals. The sign of the coefficients is as expected with OST respondents preferring to be treated with dignity and respect, shorter travel distance and shorter waiting times for tests results. Money received is not significant suggesting that the use of financial incentives may not increase uptake of testing. There was statistically significant preference variation for provider (other pharmacy, GP and drug worker) and being treated with dignity and respect. There was no significant preference variation for travel distance or money received. Further analysis (including latent class modelling) suggested that preference heterogeneity was not associated with any of the observed individual characteristics

Table 5 provides further insights into the relative importance of the attributes by estimating the willingness to wait. Being treated with dignity and respect is of particular importance to individuals. They are willing to wait an additional 9.2 weeks for their test result if they are treated with dignity and respect. They are willing to wait an additional 3.9 weeks for their test result if the test is taken at their own pharmacy instead of another pharmacy and 2.4 weeks if the test is taken at their own pharmacy instead of their GP.

## Discussion

This study has examined OST users' preferences for hepatitis C testing using a discrete choice experiment, as a method to increase the acceptability of healthcare provision to service users (WHO 2017). It provides supporting evidence of the importance of considering a range of factors when working to improve treatment access (Harris and Rhodes 2013). The results indicate that individuals prefer to be tested at their own pharmacy or by their drug worker. These two options are preferred to testing by GP or other pharmacy. Being treated with dignity and respect was the most important attribute with waiting time for test results and travel distance also being important to individuals. Being treated with dignity and respect was found to be the most important attribute for test decision making.

In this study, money received did not have a significant effect, suggesting that the use of financial incentives may not increase uptake of testing. However, it may be the case that respondents in our DCE ignored the incentives attribute because payments to produce

changes in health behaviour remain controversial; individuals feel shame in accepting money for treatment of their stigmatised condition. Monetary incentives have been found to be helpful in promoting testing for HIV (Rakotonarivo, Schaafsma, Hockley 2016); a recent study has found that financial incentives could be applied to support treatment adherence in HCV care (Wohl, Allmon, Evon, Hurt, Reifeis, Thirumurthy...Mollan 2017). A small pilot study of incentives to promote HCV testing in a prisoner and parole population found little discernible effect from offering incentives (Grebely, Oser, Taylor and Dore 2013). This is in line with our DCE results but further evidence on the effectiveness of incentives in HCV testing is clearly required.

This study adopted accepted best practice in the use of qualitative methods to inform attribute selection (Zaller, Patry, Bazerman, Noska, Kuo, Kurth, Beckwith 2016; Kjaer 2005). The use of focus groups provided the researchers with a range of perspectives on the experiences of methadone users when using pharmacies as a service. The focus group series identified time as one of the important attributes. The value of time has previously been assessed in patients prescribed OST (Clark, Determann, Petrou, Moro, Bekker-Grob 2014) and is thought to be a good method of measuring relative importance. We used willingness to wait for test results as a 'currency' for expressing the relative importance of the different attributes of HCV testing. Willingness to wait has also been used with this patient group to evaluate treatment attendance (Borisova and Goodman 2003).

Respondents in the focus group series reacted strongly to the issue of stigma and discrimination. This finding was also identified in the subsequent discrete choice experiment, where a service in which respondents were treated with respect was valued highly. This suggests that getting providers to develop more positive relationships with OST users may be the most effective way to increase uptake of HCV testing.

A number of limitations are noted for this study. Firstly, the DCE choices were hypothetical. Individuals' real choices (the choices they would make in real life) may not always be the same as the choices they make in a hypothetical DCE. This is referred to as hypothetical bias and is a general limitation of DCEs. However, a recent review suggests that DCEs can make reasonable predictions of health related behaviour (Quaife, Terris-Presholt, Di Tanna, Vickerman 2018). Secondly, the lived experience of stigma was pre-dominant in the focus group discussions and also the most important attribute within the DCE. The strength of this response meant that being treated with dignity and respect was the first concern of participants and may have been a dominant attribute within the DCE. As a result the other attributes may have had little or no impact on decision-making. As it is not possible to

robustly assess whether any of the attributes are dominant within a DCE (Lanscar and Louviere 2006), this should be explored further using qualitative research.

The cognitive burden of the choice sets questionnaire was carefully assessed by the authors, who were cognisant of potential issues with literacy, comprehension and attention span (Kronenberg, Slager-Visscher, Goossens, van den Brink, van Achterberg 2014). The method requires that the participant makes a series of decisions between a series of sixteen alternatives, in order to estimate which attributes are most important in decision-making. Strategies such as administration of the questionnaire by one of the authors, was used to ensure that respondents were able to provide accurate responses. Female participants were relatively over-represented amongst those choosing to take part in the DCE. The choice-set questionnaires were administered in the consulting rooms of pharmacies, where the female participants could obtain privacy to express their views.

DCEs ask respondents to make hypothetical choices. Disparities between revealed and stated preferences have been termed hypothetical bias. Hypothetical bias may originate from a number of sources, including where choice tasks do not fully reflect reality, where respondents have incomplete preferences or if respondents perceive a vested interest in over- or under- reporting the importance of particular attributes (Quaife, Terris-Presholt, Di Tanna, Vickerman 2018). Such an effect may be important for respondents where the lived experience of stigma is such an important factor in decision making.

## Conclusion

Provision of simplified, decentralised care for treatment of HCV is one of the key enablers for achieving the WHO target for HCV elimination (WHO 2016). The use of task sharing with non-HCV specialists is also important to increase the service capacity available for care provision. This study demonstrates the acceptability for provision of testing in community pharmacies and evidence that the addition of a pharmacy to the range of providers offering testing can make a contribution to the elimination of Hepatitis C from our communities. Being treated with dignity and respect was clearly the most important attribute of a testing service and this study provides evidence that uptake of HCV testing can be increased by developing more positive relationships between OST users and providers.

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## Declarations

Study documents were submitted to the East of Scotland Research Ethics Service, who confirmed this work did not require Ethical Approval. Caldecott permission was gained to enable access to and analysis of patient information.

All relevant data are within the paper and its supporting information files.

Reporting Guideline: ISPOR Task Force Report - Constructing experimental designs for discrete-choice experiments: report of the ISPOR conjoint analysis experimental design good research practices task force. *Value in Health* 16 (2013) 3 –13.

### Contributor Statement:

Andrew Radley: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methods Validation, Roles/Writing - original draft; Writing - review & editing

Marjon van der Pol: Conceptualization, Data curation, Formal analysis, Methods, Supervision, Validation, Roles/Writing - original draft; Writing - review & editing

John F Dillon: Conceptualization, Funding acquisition, Resources, Supervision, Validation, Roles/Writing - original draft; Writing - review & editing

### Competing Interests:

Mr Radley: Honorariums from Gilead and Research Grants from Gilead, Bristol Myers Squibb and Roche

Professor van der Pol: research grants from Gilead.

Professor Dillon: Research Grants, Honorariums and research grants from Abbvie, Bristol Myers Squibb, Gilead, Janssen, Merck Roche Sharp & Dohme and Roche

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**Table 1 – Focus group participant profile**

		<b>Number of Participants</b>
Age group at participation	Less than 35 years	17
	35 – 44 years	5
	45 – 54 years	6
	Over 55 years	4
	Did not disclose	9
Sex	Male	31
	Female	10
Participant category	Service User	38
	Carer	3
Focus Group Venue	Large Urban Settlement	10
	Other Urban Settlement	10
	Accessible Rural Town	6
	Prison Educational Centre	7
	Women’s Group	4
	Peer Mentor’s Group	4

Table 2 Definition of attributes and Levels

<b>Time</b>	<b>Distance</b>	<b>Money received</b>	<b>Provider</b>	<b>Dignity/Respect</b>
1 week	0.5 miles	0	GP	Yes
2 weeks	1 miles	£2	Drug Worker	No
3 weeks	2 miles	£6	Usual Pharmacy	
4 weeks	4 miles	£12	Other Pharmacy	

Table 3: Sample characteristics for discrete choice experiment questionnaire

	<b>N</b>	<b>%</b>
<b>Gender</b>		
Male	52	50.5
Female	51	49.5
<b>Age</b>		
Age 20-30	11	10.7
Age 30-40	54	52.4
Age 40-50	32	31.1
Age >50	6	5.8
<b>Education</b>		
Secondary school	65	31.6
Other professional or technical qualification after leaving school	32	15.5
University degree	5	2.4
Missing	1	0.5
<b>Employment status</b>		
Employed	12	11.7
Unemployed and seeking work	44	42.7
Unable to work due to illness or disability	45	43.7
Retired	1	1.0
Missing	1	1.0

Table 4: Regression results for the discrete choice experiment

	<b>Coefficient (<math>\beta</math>)</b>	<b>p-value</b>	<b>Standard deviation of the random parameters (<math>\sigma</math>)</b>	<b>p-value</b>	<b>Difference in utility between best and worst level</b>	<b>Relative size of utility difference</b>
<b>Test</b>	4.1687	<0.001	4.0466	<0.001		
<b>Test location</b>					0.959	21.7%
Other pharmacy	-0.9240	<0.001	1.1801	<0.001		
GP	-0.5518	0.002	0.9328	<0.001		
Drug worker	0.0348	0.835	0.7130	<0.001		
<b>Treated with dignity and respect</b>	2.1515	<0.001	1.9891	<0.001	2.152	48.7%
<b>Travel distance (miles)</b>	-0.2345	<0.001			0.704	15.9%
<b>Waiting time for results (weeks)</b>	-0.1138	0.003			0.398	9.0%
<b>Money received (£)</b>	0.0174	0.104			0.209	4.7%
N	4932					
Pseudo R <sup>2</sup>	0.2739					
AIC	2005.354					

Table 5: Willingness to wait analysis

WTW	Additional weeks willing to wait for test result	
	Mean	95% confidence interval <sup>*</sup>
Having test at own rather than other pharmacy	3.9	1.8 - 6.1
Having test at own pharmacy rather than GP	2.4	0.7 - 4.0
Having test at own pharmacy rather than drug worker	0.1	-1.3 - 1.6
Being treated with dignity and respect	9.2	4.9 - 13.5
Reduce travel distance by 1 mile	0.5	0.1 - 0.8
Receive an additional £1 for taking test	0.1	0.0 - 0.2

<sup>\*</sup> estimated using the delta method

Figure 1 Example of choice set

	<b>Test A</b>	<b>Test B</b>
<b>Where?</b>	<i>Your Usual Pharmacy</i>	<i>Your GP</i>
<b>Treated with Dignity &amp; Respect?</b>	YES	NO
<b>Travel Distance?</b>	<i>Half a Mile</i>	<i>2 miles</i>
<b>Time to get Results?</b>	<i>Two weeks</i>	<i>One Week</i>
<b>£ You Receive?</b>	£2	£4

  

<b>Which Test Would You Take? (✓only one)</b>	<b>Test A</b> <input type="checkbox"/>	<b>Test B</b> <input type="checkbox"/>	<b>No Test</b> <input type="checkbox"/>
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Appendix 1. DCE design

Option	Choice	Provider	Respect	Distance	Wait	Money
Test A	1	Drug worker	No	4	4	2
Test B	1	Other pharmacy	Yes	2	2	6
Test A	2	GP	No	1	2	0
Test B	2	Own pharmacy	Yes	2	3	12
Test A	3	Other pharmacy	No	2	1	2
Test B	3	Drug worker	Yes	1	2	6
Test A	4	Other pharmacy	Yes	0.5	2	2
Test B	4	Drug worker	No	2	4	0
Test A	5	Other pharmacy	Yes	1	4	0
Test B	5	GP	No	4	1	6
Test A	6	GP	Yes	4	3	0
Test B	6	Drug worker	No	1	1	2
Test A	7	Other pharmacy	Yes	4	3	6
Test B	7	GP	No	2	2	12
Test A	8	Drug worker	Yes	2	3	0
Test B	8	Own pharmacy	No	4	4	12
Test A	9	Other pharmacy	No	4	2	0
Test B	9	GP	Yes	0.5	4	6
Test A	10	GP	No	0.5	3	12
Test B	10	Own pharmacy	Yes	4	2	2
Test A	11	Other pharmacy	Yes	1	1	12
Test B	11	Own pharmacy	No	2	2	6
Test A	12	GP	No	1	1	6
Test B	12	Drug worker	Yes	0.5	2	12
Test A	13	Drug worker	No	0.5	3	2
Test B	13	Own pharmacy	Yes	1	4	12
Test A	14	GP	Yes	1	3	2
Test B	14	Other pharmacy	No	0.5	4	6
Test A	15	Own pharmacy	No	1	3	2
Test B	15	Drug worker	Yes	4	1	12
Test A	16	GP	Yes	2	4	2
Test B	16	Own pharmacy	No	1	3	12