11. APPENDIX E: CONSUMER SURVEY

Consumer perceptions of service quality, actual service quality and intention to return can all be considered as domains or proxies of consumer satisfaction with service. A survey of pharmacy consumers was conducted to gauge consumer satisfaction where consumers were recruited as they exited sampled pharmacies. In this section, the findings of the survey are described including the characteristics of consumers surveyed, their visiting and use patterns of pharmacies in general and a specific sampled pharmacy, their perception of service delivered and the quality of service together with some outcome measures that might be expected to be related to compliance with QCPP standards. These measures were self-reported non-adherence and pharmacy knowledge of previous adverse drug events experienced by a consumer. The service quality measures are compared between consumers of accredited and non-accredited pharmacies.

11.1 PILOT SURVEY FINDINGS

Of the 200 questionnaires distributed, 150 usable responses were received (75% response rate overall). Consumers who responded to the pilot questionnaire were more likely to be female (63%). Overall, both male and female respondents tended to be over 45 years of age. For 81% of respondents, the surveyed pharmacy was their main pharmacy. Approximately 67% of respondent had been visiting the surveyed pharmacies for more than 2 years while only 13% had used the pharmacy for less than 6 months. Overall, respondents made a mean of 7.3 visits to the pharmacy over the preceding 3 months (median of 4 visits with a range of 0-72 visits). In the preceding 3 months, 23% of respondents had only visited the surveyed pharmacy while 26% and 22% had visited one or two other pharmacies, respectively, in that time (and 20% had visited 3 or 4 other pharmacies). Only 7% of respondents had visited the pharmacy for non-health care reasons. Prescriptions were filled for 81% of respondents. About 33% of people with prescriptions had at least one new prescription filled while 65% had at least one repeat prescription filled.

About 72% of respondents who said that they had had a new prescription dispensed at pilot pharmacies reported some counselling associated with the prescription, most commonly, advice on how to take a medicine. However, for consumers getting a repeat prescription filled, only 36% reported any counselling. Of the counselling points, consumers with repeat prescriptions were most likely to be asked whether a medication was still working well. For OTC items, 71% of respondents purchasing these medicines reported some counselling, mostly related to previous product use (a screening question for direct product requests) or advice on product selection. Of note is that since 65% of consumers had a repeat prescription and only 36% of these reported any of the 3 counselling points, there appears to be considerable room for further follow-up and feedback to consumers presenting repeat prescriptions.

Thirty-eight percent of respondents reported ever experiencing a symptom or health problem they thought was caused by a medicine they were taking. Of people ever experiencing these effects, only 48% said the pharmacist at the surveyed pharmacy was aware of the reaction.
If a consumer responded ‘yes’ to any of the four questions about adherence (forget to take medicines, being less careful about taking medicines or stopping taking medicines if they feel better or they feel worse), they were categorised as non-adherent. Only 39% of consumers answered ‘no’ to all 4 of the adherence questions; 34% answered ‘yes’ to a single question while 28% answered ‘yes’ to 2 or more questions. Intelligent non-adherence (stopping a medicine when they felt worse) was most commonly reported. Since one of the goals of a quality service is to help consumers to adhere to their medication regimen, non-adherence could also be considered as an indicator of lower technical quality.

For the questions including SERVPERF, generally, consumers strongly agreed with positive statements about the pharmacist, the staff and the pharmacy, and disagreed with negative statements. Of the SERVPERF items, the highest scoring item was that staff were consistently polite (81.2% of respondents strongly agreed) while the lowest scoring item was that material were easy to read and understand (54.4% strongly agreeing). Responses to the additional questions added about overall satisfaction, willingness to return and variability of service level showed that generally, consumers rated their community pharmacies very highly on these functional quality measures.

Consumers’ perceptions of how often they have received certain types of directive guidance from the pharmacist in the last 3 months were sought. Of the activities rated as being performed ‘very often’, providing information about how to take a medicine was reported most commonly. Checking back to see whether advice was followed was most commonly reported as never being performed. It is apparent that the pharmacists involved in the pilot study are performing quite well in the forms of directive guidance which relate to initial instruction of patients about how to take their medicines but it would seem that the area in which pharmacists weren’t performing so well is that of disease and medication management in the longer-term.

In analysing the performance of the items in the pilot survey, 4 summary variables or scores were calculated:

- SERVPERF questions (first 22 items in Part C). These were summed.
- Counselling received on the day (Part A Questions 8-10). The number of counselling items reported was calculated as a percentage of eligible counselling items (i.e. if only non-prescriptions medicines were obtained, the denominator was 4).
- Directive Guidance questions (top of page 4) – 2 subscales were calculated (the instructional and the goal setting/feedback subscales).
- Sum of the ‘yes’ responses on the Meichenbaum questions (Part B Question 3) about medication adherence.

Using these scales, it was possible to detect differences between individual pharmacies (Figure 11.1 and between groups of pharmacies, based on grouping characteristics such as business size and whether the pharmacy was the main pharmacy for a respondent. Some degree of correlation would be expected between these items and would support the validity of the questionnaire. In Figure 11.1, for example, for Pharmacy No. 9, a high non-adherence rating was associated with low counselling, directive guidance and SERVPERF scores. For individual consumers, irrespective of the pharmacy they had visited, there were correlations in the scales in the directions expected (Table 11.1)
Figure 11.1  Comparison between pharmacies for the quality scores

Table 11.1  Correlations between quality measures in the consumer pilot

<table>
<thead>
<tr>
<th></th>
<th>Spearman's coefficient</th>
<th>SERVPERF</th>
<th>Directive guidance - Instruction coefficient</th>
<th>P value</th>
<th>Directive guidance - Instruction coefficient</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacy ID</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
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<td></td>
<td></td>
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<tr>
<td>2</td>
<td></td>
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<td>3</td>
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<tr>
<td>4</td>
<td></td>
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<td>5</td>
<td></td>
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<td>6</td>
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<td>7</td>
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<td>8</td>
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<tr>
<td>9</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

|                                | Spearman's coefficient | Directive guidance - feedback & goal setting coefficient | P value          | Directive guidance - feedback & goal setting coefficient | P value          |
|                                |                        |                                               |                  |                                               |                  |
| Pharmacy ID                    |                        |                                               |                  |                                               |                  |
| 1                              |                        |                                               |                  |                                               |                  |
| 2                              |                        |                                               |                  |                                               |                  |
| 3                              |                        |                                               |                  |                                               |                  |
| 4                              |                        |                                               |                  |                                               |                  |
| 5                              |                        |                                               |                  |                                               |                  |
| 6                              |                        |                                               |                  |                                               |                  |
| 7                              |                        |                                               |                  |                                               |                  |
| 8                              |                        |                                               |                  |                                               |                  |
| 9                              |                        |                                               |                  |                                               |                  |
| 10                             |                        |                                               |                  |                                               |                  |

|                                | Spearman's coefficient | Total directive guidance score coefficient | P value          | Total directive guidance score coefficient | P value          |
|                                |                        |                                               |                  |                                               |                  |
| Pharmacy ID                    |                        |                                               |                  |                                               |                  |
| 1                              |                        |                                               |                  |                                               |                  |
| 2                              |                        |                                               |                  |                                               |                  |
| 3                              |                        |                                               |                  |                                               |                  |
| 4                              |                        |                                               |                  |                                               |                  |
| 5                              |                        |                                               |                  |                                               |                  |
| 6                              |                        |                                               |                  |                                               |                  |
| 7                              |                        |                                               |                  |                                               |                  |
| 8                              |                        |                                               |                  |                                               |                  |
| 9                              |                        |                                               |                  |                                               |                  |
| 10                             |                        |                                               |                  |                                               |                  |

|                                | Spearman's coefficient | Counselling rate coefficient | P value          | Counselling rate coefficient | P value          |
|                                |                        |                                |                  |                                |                  |
| Pharmacy ID                    |                        |                                |                  |                                |                  |
| 1                              |                        |                                |                  |                                |                  |
| 2                              |                        |                                |                  |                                |                  |
| 3                              |                        |                                |                  |                                |                  |
| 4                              |                        |                                |                  |                                |                  |
| 5                              |                        |                                |                  |                                |                  |
| 6                              |                        |                                |                  |                                |                  |
| 7                              |                        |                                |                  |                                |                  |
| 8                              |                        |                                |                  |                                |                  |
| 9                              |                        |                                |                  |                                |                  |
| 10                             |                        |                                |                  |                                |                  |

|                                | Spearman's coefficient | Meichenbaum coefficient         | P value          | Meichenbaum coefficient         | P value          |
|                                |                        |                                |                  |                                |                  |
| Pharmacy ID                    |                        |                                |                  |                                |                  |
| 1                              |                        |                                |                  |                                |                  |
| 2                              |                        |                                |                  |                                |                  |
| 3                              |                        |                                |                  |                                |                  |
| 4                              |                        |                                |                  |                                |                  |
| 5                              |                        |                                |                  |                                |                  |
| 6                              |                        |                                |                  |                                |                  |
| 7                              |                        |                                |                  |                                |                  |
| 8                              |                        |                                |                  |                                |                  |
| 9                              |                        |                                |                  |                                |                  |
| 10                             |                        |                                |                  |                                |                  |
The main conclusions from the pilot survey were:

- Consumer resistance to the questionnaire was much less than expected. There was an overall response rate of 75% after a single follow-up telephone call.
- The education level of consumers did not appear to be a significant barrier in the pilot. There was however, anecdotal evidence that people who did not speak English did not participate in the pilot. An additional strategy will be required here.
- The questionnaire items generally performed as expected (and thus no reason to adjust the sample size from the power calculation) although improvements were made to some instruments and the questionnaire as a whole. The survey was shortened, repetition was reduced and streaming/filtering of questions was improved. The consent documents were simplified and reduced by 1 piece of paper (by adding consent form to the end of the questionnaire).
- Issues about questionnaire distribution procedures were identified and can be addressed in a wider survey. In particular, recruitment will need to take place outside the pharmacy and without the pharmacy staff recommending to a consumer that they should take part in the survey. Pharmacy influence (as might be seen when pharmacies recruit consumers) resulted in significantly higher SERVPERF scores compared to situations where such influence was less.
- The purpose of the consumer questionnaire was to link the views of consumers to a specific pharmacy (about which the research team would collect other information in other surveys of staff etc). Alternative strategies, such as focus groups, would not be feasible for each of the approximately 60 pharmacies whose consumers are to be surveyed.
- The revised questionnaire measures both technical and functional quality for a transaction and in the longer term. The questionnaire also seeks information on characteristics that might confound or co-vary with the quality measures, such as whether or not the pharmacy is the main pharmacy or just how much and what type of contact a consumer has with that pharmacy. A single telephone survey would not allow all this information to be collected for one individual consumer. Asking 4 different surveys (for each quality type) of 4 different groups of consumers would make the scores for a specific pharmacy much more difficult to interpret.

11.2 RESPONSE TO MAIN QUESTIONNAIRE AND CHARACTERISTICS OF RESPONDENTS

Consumers of 84 pharmacies were surveyed. Questionnaire distribution was incomplete in a number of sites, and in one recruited site, no surveys were distributed. The actual number of consumers recruited and signing consent forms was 2732. After follow-up, 1902 surveys were returned (69.62%). The mean number of questionnaires distributed per pharmacy was 22.6 (small pharmacies mean=17, medium pharmacies mean=24, large pharmacies mean=32) while the mean response rate per pharmacy was 69.3% (median 72%) (Figure 11.2). The response rate did not differ with business size (p=0.7) nor between urban and rural sites (p=0.6). The response rate for pharmacies was higher in pharmacies accredited by 2002 compared to non-accredited pharmacies (74.3% versus 70.6% respectively, p=0.035). This difference was not evident comparing pharmacies who were accredited by 2003 with non-accredited pharmacies (p=0.5).
Figure 11.2  Number of questionnaires returned per pharmacy and response rate per pharmacy

11.2.1 PHARMACIES SURVEYED

The stratified sampling procedure was intended to generate a consumer survey sample that was representative of the nation’s pattern and generally, the pharmacies included in the consumer survey analysis were representative of the national pattern as follows:

- The percentage of pharmacies with a non-owner manager (25%) was similar to that in the census (23.1%) and the proprietor survey (23.5%).
- 83.3% of consumer survey pharmacies were in PhARIA category 1 compared with 81% from the census.
- The distribution of consumer survey pharmacies across the states was not representative of the national pattern but included pharmacies in all but the Northern Territory (Table 11.2)
- The distribution of the consumer survey pharmacies was relatively representative of the national pattern in terms of business size and location type (Table 11.2)
- Banner group pharmacies were 43% of both consumer survey pharmacies and pharmacies nationally.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Category</th>
<th>Sample (% of sample)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Consumer survey</td>
</tr>
<tr>
<td>State</td>
<td>ACT</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>NSW</td>
<td>32.1</td>
</tr>
<tr>
<td></td>
<td>NT</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>QLD</td>
<td>17.9</td>
</tr>
<tr>
<td></td>
<td>SA</td>
<td>10.7</td>
</tr>
<tr>
<td></td>
<td>TAS</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>VIC</td>
<td>28.6</td>
</tr>
<tr>
<td></td>
<td>WA</td>
<td>7.1</td>
</tr>
<tr>
<td>Business size</td>
<td>Small</td>
<td>36.9</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Large</td>
<td>13.1</td>
</tr>
</tbody>
</table>
Table 11.2 continued

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Category</th>
<th>Sample (% of sample)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Consumer survey</td>
<td>Proprietor’s survey</td>
<td>Census</td>
</tr>
<tr>
<td></td>
<td></td>
<td>54.8</td>
<td>51.5</td>
<td>54.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>28.6</td>
<td>31.5</td>
<td>28.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9.5</td>
<td>8.3</td>
<td>8.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.0</td>
<td>8.1</td>
<td>8.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2</td>
<td>0.6</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Since the majority of Australian pharmacies are in PhARIA category 1, it was not possible to draw a sufficiently large sample on pharmacies from categories other than PhARIA 1, however, since a number of PhARIA 1 locations were deemed to be rural in character, sites were assigned to either a metro or a rural group with 10 sites in PhARIA 1 (e.g. Orange, Dubbo and Shepparton, and similar regional centres) being deemed as rural for the purposes of stratification.

Because of the numbers available from which to draw a sample, a 5 level stratification was used where the larger business sizes in rural areas were merged as a single stratum. Table 11.3 shows the distribution of pharmacies accredited and non-accredited at 18 September 2002 (the grouping used to sample sites) and at 7 July 2003.

Table 11.3  Distribution of accredited pharmacies across strata

<table>
<thead>
<tr>
<th>Accredited as at 18 Sept 2002</th>
<th>Accredited as at 7-Jul 2003</th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metro small business</td>
<td>Metro medium business</td>
<td>Metro large business</td>
<td>Rural small business</td>
</tr>
<tr>
<td>No</td>
<td>14 (32.6%)</td>
<td>14 (32.6%)</td>
<td>4 (9.3%)</td>
</tr>
<tr>
<td>Yes</td>
<td>10 (24.4%)</td>
<td>15 (36.6%)</td>
<td>4 (9.8%)</td>
</tr>
<tr>
<td>Accredited as at 7-Jul 2003</td>
<td></td>
<td></td>
<td>1 (4.8%)</td>
</tr>
<tr>
<td>No</td>
<td>3 (19.0%)</td>
<td>10 (47.6%)</td>
<td>3 (14.3%)</td>
</tr>
<tr>
<td>Yes</td>
<td>12 (31.7%)</td>
<td>19 (30.2%)</td>
<td>5 (7.9%)</td>
</tr>
<tr>
<td>Total</td>
<td>24 (28.6%)</td>
<td>29 (34.5%)</td>
<td>8 (9.5%)</td>
</tr>
</tbody>
</table>

11.2.2 CONSUMER CHARACTERISTICS

All but 47 respondents gave their age group on the questionnaire while gender was known for all but 13 respondents. Sixty-six percent of respondents were female, a rate similar to that found in the pilot survey (63%). The majority of pharmacy consumers were aged 45 years or older (67%); in the pilot survey 62% were 45 years or older. More male pharmacy consumers were 45 years or older (74%) than female consumers (64%) (Figure 11.3).
Figure 11.3  Age distribution of respondents overall and by gender

Pharmacy consumers surveyed were generally regular consumers of that pharmacy.
- For 75% of consumers, the pharmacy at which they were recruited was their main pharmacy.
- For younger consumers, particularly those under 25 years, the pharmacy was less likely to be their main pharmacy (p<0.001).
- Approximately 68% of respondents had been visiting the surveyed pharmacies for more than 2 years while only 16% had used the pharmacy for less than 6 months and 9.5% less than 1 month.
- People had used a pharmacy for a longer period of time were more likely (p<0.0001) to indicate that it was their main pharmacy (Table 11.4).

Table 11.4  Duration of custom (how long has the consumer been visiting this pharmacy) versus main pharmacy or not

<table>
<thead>
<tr>
<th>Main pharmacy?</th>
<th>Duration of custom</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 1 month</td>
<td>1-6mths</td>
</tr>
<tr>
<td>Yes</td>
<td>32 (18.0%)</td>
<td>66 (51.6%)</td>
</tr>
<tr>
<td>No</td>
<td>146 (82.0%)</td>
<td>62 (48.4%)</td>
</tr>
<tr>
<td>Total</td>
<td>178</td>
<td>128</td>
</tr>
</tbody>
</table>

Overall, respondents made a mean of 7.7 visits to the pharmacy in the preceding 3 months (median 5, range 1-99); 95% of respondents visited no more than 20 time in 3 months. Respondents had also visited a mean of 1.4 other pharmacies (median 1, range 0-36) in that time with 37% visiting no other pharmacy.

At their most recent visit to the pharmacy (note that consumers were recruited on exit from the pharmacy), 74% had visited to get medicines for themselves therefore 26% visited the pharmacy for another purpose (including obtaining medicines for another person). Of these 1442, 77% had a prescription filled for themselves (23% of all respondents had a new prescription and 48% had a prescription for a continuing medicine filled). Non-prescription medicines alone were sought by 17% with 41% of all respondents buying a non-prescription medicine for themselves.
In the preceding 3 months, 83% of respondents had used any prescription medicines. Of these 1603 respondents, 81% had had prescriptions filled at the sampled pharmacy and 1450 (90.5%) reported the number of different prescribed medicines they used regularly (mean 2.85, median 2, range 0-30) (Figure 11.4).

![Figure 11.4 Number of regular prescribed medicines used for respondents who had used any prescription medicines in the preceding 3 months](image)

The number of different prescription medicines used regularly can be a proxy for burden of illness as can the number of long-standing conditions for which regular medicines are taken (excluding contraception). In this survey, 1381 of the respondents who had used any prescription medicines in the preceding 3 months reported a mean of 1.8 conditions (median 1 condition, range 0-11); 23% had no long-standing conditions for which they used regular medicines. Some 24% of respondents reported having either diabetes or asthma, both conditions that might be expected to trigger higher levels of pharmaceutical care. Similarly, recent hospitalisation might also be expected to trigger higher levels of pharmaceutical care; 23% of those responding to a question on hospitalisation in the preceding year indicated at least one hospital admission.

11.3 DEPENDENT VARIABLES FOR ANALYSIS - CONSUMER PERCEPTIONS OF SERVICE RECEIVED AND SERVICE QUALITY

A number of consumer satisfaction and other potential impact measures were derived from the consumer survey responses (Table 8.5). Service quality has a number of domains:

- Technical quality – what the consumer receives.
- Functional quality – how the consumer receives it.
- Transactional quality – short term quality associated with one transaction.
- Long term quality – quality associated with past experiences of the service in the longer term.

11.3.1 TRANSACTIONAL QUALITY - THE MOST RECENT VISIT

Consumers were asked to whether specific counselling had been received at the most recent visits (a measure of transactional technical quality) and whether they had been given any written information about medicines or health issues (e.g. Consumer
Medicines Information). Most consumers presenting a new prescription (92.8%) received at least one of the counselling points listed in Table 11.5 but approximately 1 in 2 consumers (48.9%) with prescriptions for continuing medicines and 1 in 4 (24.0%) of consumers buying non-prescription medicines did not report that they had received any of the specified counselling/questioning.

Table 11.5 Counselling results

<table>
<thead>
<tr>
<th>Type of medication service</th>
<th>Counselling point</th>
<th>% reporting counselling point</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEW prescription dispensed (n=442)</td>
<td>Advice on how to take the medicine</td>
<td>89.4</td>
</tr>
<tr>
<td></td>
<td>Advice on possible side effects or precautions</td>
<td>67.2</td>
</tr>
<tr>
<td></td>
<td>Asked about other current medications</td>
<td>53.6</td>
</tr>
<tr>
<td></td>
<td>Asked about prior allergies or reactions to medicines</td>
<td>50.7</td>
</tr>
<tr>
<td>CONTINUING prescription dispensed (n=915)</td>
<td>Asked how you were taking the medicine</td>
<td>33.7</td>
</tr>
<tr>
<td></td>
<td>Asked if the medication was still working well</td>
<td>37.7</td>
</tr>
<tr>
<td></td>
<td>Asked if any side effects were/are being experienced</td>
<td>28.3</td>
</tr>
<tr>
<td></td>
<td>Asked about other current medications</td>
<td>31.1</td>
</tr>
<tr>
<td>Non-prescription medication sale (n=787)</td>
<td>Asked about previous use of the product</td>
<td>59.5</td>
</tr>
<tr>
<td></td>
<td>Given advice in choosing a product</td>
<td>62.5</td>
</tr>
<tr>
<td></td>
<td>Advice on possible side effects or precautions</td>
<td>47.8</td>
</tr>
<tr>
<td></td>
<td>Asked about other current medications</td>
<td>43.3</td>
</tr>
</tbody>
</table>

The rates for prescription counselling were generally higher in this survey compared to the pilot survey (11.1). In the census, 58.3% of pharmacies reported including asking about the previous use of the product when counselling for a non-prescription item.

When an overall counselling score for all applicable items was calculated, the mean counselling score was 42% but the median was 25% (n=1411). This score was also categorised into low (score <25%), moderate (25-74%) and high (>74%) (Figure 11.5).

![Overall counselling score distribution](image)

**Figure 11.5** Distribution of counselling score (% of applicable items) for counselling received at the most recent visit

Some 20% of respondents did not answer the question about receiving written information at the most recent visit. Of those who did respond, overall, 22% reported being given written information. When the consumer indicated that they had a
prescription for a new medicine, 34% reported being given written information (p<0.001 compared with no new medicines) while 16% of consumers with only continuing prescriptions (no new medicines nor non-prescription items for themselves) received written information at their most recent visit.

Consumers were asked to rate their perceived or functional quality about their most recent transaction along three domains, waiting time, level of help received and an overall rating of the quality of the service. Consumers generally rated these domains as "excellent" or "very good" (Figure 11.6). Since these ratings were highly correlated, only the transactional overall service quality rating was subsequently examined in other analyses:

- Level of help versus waiting time (rho=0.698, p<0.0001 n=1479).
- Level of help versus overall service quality (rho=0.892, p<0.0001 n=1479).
- Overall service quality versus waiting time (rho=0.676, p<0.0001 n=1489).

The overall rating of quality was further aggregated to a nominal measure – excellent or not.

![Figure 11.6 Frequency distributions for transactional function quality ratings](image)

### 11.3.2 PERCEPTION ABOUT SERVICE GENERALLY (LONGER TERM QUALITY)

#### 11.3.2.1 Technical quality

Directive guidance scores were calculated for 1240 respondents who had had prescriptions filled at the pharmacy in the preceding 3 months. The distributions of the directive guidance sub-scores for the factors and the whole scale are shown in Figure 11.7:

- The median score for the 8 items included in the scale was 60% (equivalent to each of the 8 items making up the scale having been experienced ‘sometimes’ in the preceding 3 months).
- For factor 1, the median percentage score was 75%, equivalent to three of the items being experienced ‘often’ and the remaining items ‘sometimes’.
The activities covered by the items in factor 2 were experienced much less frequently; the median score was 40% (equivalent to all 4 items being experienced ‘rarely’ in the preceding 3 months).

Note that a percentage score of 20 reflects that the respondent indicated that they had never received any of the directive guidance included in a given factor or the overall score – 11.7% had a score of 20% for the items that were included in the basic directive guidance factor, 32.7 scored 20% for the advanced directive guidance factor and 11.4% score 20% for the whole 8-item scale. Since the absolute values of skewness and kurtosis for the distributions of the factor scores (regression factor scores from the factor analysis) were lower than for the summed sub-scale items, factor scores and the sum of the 8-item scale as a percentage of maximum possible score were used in subsequent analyses.

Figure 11.7 Frequency distributions for the directive guidance variables

Self-reported compliance questions were completed by 1543 of the respondents who had used any prescription medicines in the preceding 3 months with 56.4\%\textsuperscript{56} reporting non-compliance to at least one of the 4 questions:
- forget to take medicines (28.5\% yes).
- being less careful about taking medicines (19.0\% yes).
- stopping taking medicines if they feel better (16.5\% yes).
- stopping taking medicines if they feel worse (35.5\% yes).

\textsuperscript{56} This rate (56\%) was similar to that found in a recent QMC study of older veterans.
Twenty-eight percent answered ‘yes’ to one question, 17% to two questions, 7% to three and 4% to all four questions. Intelligent non-compliance (stopping a medicine when they felt worse) was most commonly reported. Since one of the goals of a quality service is to help consumers to adhere to their medication regimen, non-adherence could also be considered as an indicator of lower technical quality. Self-reported non-adherence was assessed by two measures derived from the 4 questions, the number of ‘yes’ responses were summed and a nominal ‘any non-adherence’ measure was derived if any ‘yes’ response was given.

Consumers were asked about another medication misadventure indicator, experiencing an adverse drug effect (ADE) (symptoms or health problems they thought were caused by medicines including side effects or allergies) with 35% (n=643) of the 1837 respondents indicating they had experienced an ADE. Of these, 45% indicated that the sampled pharmacy knew of these ADEs (of 626 respondents) with 36% indicating that they had experienced the ADE in the last year. Since several of the QCPP standards relate to maintenance and perusal of patient profiles including ADE history, pharmacy knowledge of a previous ADE is also a quality measure.

11.3.2.2 Functional quality

For the questions including the modified SERVPERF items, generally, consumers strongly agreed with positive statements about the pharmacist, the staff and the pharmacy, and disagreed with negative statements. The modified SERVPERF examines the consumers perceptions of service quality and to a lesser extent, the technical quality of the service since consumers may not fully understand the technical nature of the service. A study manipulating the service scenario found that consumers generally reported poor technical quality when functional quality was poor. When functional quality was good, consumers were less able to detect poor technical quality. (Holdford & Schulz 1999). Therefore, a high SERVPERF score does not mean that a service has superior technical quality.

The factor analysis gave 2 factors for the modified SERVPERF scale (Factor 1- meeting service needs and Factor 2 – improvement unnecessary) together with a summated score (as a percentage of maximum possible score) (Figure 11.8). The factor analysis factors scores and the logit of the total scale score were used in subsequent analysis to overcome some of the ceiling effects associated with the scale.

Responses to the additional questions added about overall satisfaction, willingness to return and variability of service level showed that generally, consumers rated their community pharmacies very highly on these functional quality measures (Figure 11.9) and so, three additional nominal measures were derived:

- Strongly disagree or not for negatively worded items.
- Strongly agree or not, for intention to return for all pharmacy needs.

As a measure of the impact of the program on consumer awareness of QCPP, consumers were asked whether they had noticed differences between pharmacies that were accredited and those that were not (response categories were yes, no and ‘don’t know whether the pharmacies I visit are QCPP accredited). A measure of awareness of QCPP was derived by grouping ‘yes’ and ‘no’ responses versus ‘don’t know’ responses - 11.6% of 1803 consumers giving a usable response were aware of QCPP. Whether the consumer noticed differences between accredited and non-accredited...
sites was derived by grouping ‘no’ and ‘don’t know’ versus ‘yes’ responses – 5.0% said yes, they had noticed differences. This result could be expressed as the positive finding that 43% of those consumers who are aware of QCPP have noticed differences between accredited and non-accredited pharmacies, however, the number of consumers who noticed differences due to QCPP is 91 of the 1803 usable responses. The finding may well be a halo effect rather than a true reflection of recognition of the impact of QCPP:

- Of the 209 people aware of QCPP, those that reported noticing a difference due to QCPP indicated higher functional and technical quality (p<0.05) (Transactional – counselling received, intention to return, SERVPERF factor 1 score and directive guidance factor 2 score).
- Of the 91 people noticing a difference due to QCPP, 27 (42%) has used a pharmacy that was not accredited at the time of the survey and for 19, the pharmacy was their main pharmacy.

![Frequency distributions of modified SERVPERF factors and total scale scores](image-url)

*Figure 11.8 Frequency distributions of modified SERVPERF factors and total scale scores*
11.4 IMPACT OF ACCREDITATION STATUS

Simple, unadjusted for clustering or covariates, between group comparisons were made for the service quality variables of interest based on the accreditation status at September 2002 and July 2003 of the sampled pharmacies (Table 11.7). Pharmacies that were accredited as at September 2002 (early and mid adopters) performed significantly better across a number of quality measures than non-accredited pharmacies:

- The level of counselling received on the day (low, moderate or high). Note that directive guidance scores were not different.
- The modified SERVPERF factor 1 score (meeting service needs). The total score approached significance.
- Intention to return to the specified pharmacy was stronger both for the whole scale and the nominal variable.

As more pharmacies became accredited, those that were accredited in July 2003 performed significantly better than non-accredited pharmacies across a larger number of quality measures:

- The difference in the level of counselling received increased. This was largely due to the higher performance of those who became accredited in the interval, although those pharmacies who had been accredited at both times still performed better than those who were still not accredited by July 2003. Some of the specific counselling items were addressed at the most recent visit were also addressed to a higher level (Table 11.6), predominantly the non-prescription medicines counselling, an area targeted by the SMA visits.
- Consumers also reported higher transactional functional quality.
- The provision of basic directive guidance (factor 1) and overall directive guidance was higher in accredited pharmacies again largely due to higher performance by pharmacies who became accredited in the interval. Pharmacies that became accredited also performed better for more advanced directive guidance (Factor 2) than either always accredited pharmacies and still unaccredited pharmacies.
- The modified SERVPERF factor 1 score (meeting service needs) and the total score were significantly better for accredited pharmacies, although this effect was largely due to performance differences between pharmacies who were always accredited and those who were still unaccredited at the time of the survey.
- Consumer intention to return was still higher for accredited pharmacies although the largest difference was between pharmacies who were always accredited and
those who were still unaccredited at the time of the survey, with pharmacies who became accredited having intermediate performance.

- Consumers of accredited pharmacies were less likely to agree that service could improve (or that service levels varied a lot between visits).

The higher service quality performance (particularly technical quality) of pharmacies who became accredited between September 2002 and July 2003 may well reflect the influence of the assessment process on practice patterns and an awareness that by becoming accredited, pharmacies may receive an Standards Monitoring Assessment (SMA) visit.

A number of other quality measures were not related to accreditation status nor were any trends evident:

- Receiving any written information on medicines or health at the most recent visit (e.g. Consumer Medicines Information leaflets).
- Self-reported non-adherence.
- Pharmacy knowledge of a consumer’s ADE.
- Awareness of QCPP or being able to notice a difference between accredited and non-accredited pharmacies.
- Modified SERVPERF Factor 2 (improvement unnecessary).
- Service level varies a lot between visits.

No difference in the first two items suggests that QCPP has not influenced the CMI distribution behaviour of pharmacies or their attention to non-adherence of consumers, both specific counselling activities. Given the limited and often local promotion of QCPP to the wider public, it is not surprising that accreditation status made no difference to the consumer recognition of QCPP. Since the SERVPERF Factor 2 and service varying between visit variable were correlated ($\rho=-0.525 \ p<0.001 \ n=1821$), consumer dissatisfaction relating to unmet expectation may not be different between accredited and non-accredited pharmacies.

### Table 11.6  Counselling results for specific items versus accreditation status

<table>
<thead>
<tr>
<th>Type of medication service</th>
<th>Counselling point</th>
<th>% reporting counselling point</th>
<th>Accredited 2002</th>
<th>Accredited 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NEW prescription dispensed (n=442)</strong></td>
<td>Advice on how to take the medicine</td>
<td>87.8</td>
<td>91.3</td>
<td>89.3</td>
</tr>
<tr>
<td></td>
<td>Advice on possible side effects or precautions</td>
<td>63.8</td>
<td>71.4</td>
<td>66.7</td>
</tr>
<tr>
<td></td>
<td>Asked about other current medications</td>
<td>50.4</td>
<td>57.7</td>
<td>53.3</td>
</tr>
<tr>
<td></td>
<td>Asked about prior allergies or reactions to medicines</td>
<td>48.0</td>
<td>54.1</td>
<td>51.6</td>
</tr>
<tr>
<td><strong>CONTINUING prescription dispensed (n=915)</strong></td>
<td>Asked how you were taking the medicine</td>
<td>31.5</td>
<td>36.1</td>
<td>35.5</td>
</tr>
<tr>
<td></td>
<td>Asked if the medication was still working well</td>
<td>37.5</td>
<td>38.0</td>
<td>40.2</td>
</tr>
<tr>
<td></td>
<td>Asked if any side effects were/are being experienced</td>
<td>27.1</td>
<td>29.6</td>
<td>29.8</td>
</tr>
<tr>
<td></td>
<td>Asked about other current medications</td>
<td>29.2</td>
<td>33.3</td>
<td>32.6</td>
</tr>
<tr>
<td><strong>Non-prescription medication sale (n=787)</strong></td>
<td>Asked about previous use of the product</td>
<td>59.6</td>
<td>59.4</td>
<td>61.6</td>
</tr>
<tr>
<td></td>
<td>Given advice in choosing a product</td>
<td>63.5</td>
<td>61.5</td>
<td>65.0</td>
</tr>
<tr>
<td></td>
<td>Advice on possible side effects or precautions</td>
<td>46.6</td>
<td>49.1</td>
<td>50.1</td>
</tr>
<tr>
<td></td>
<td>Asked about other current medications</td>
<td>43.4</td>
<td>43.3</td>
<td>46.1</td>
</tr>
</tbody>
</table>

*p=0.054, **p<0.01, †p<0.05
## Table 11.7  Summary of accreditation status comparisons of quality measures unadjusted for covariates

<table>
<thead>
<tr>
<th>Domain</th>
<th>Quality Measure</th>
<th>Accreditation @ Sept 2002</th>
<th>Accreditation @ July 2003</th>
<th>Change in accreditation status between Sept 2002 and July 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTQ</td>
<td>Counselling received on the day - % of applicable counselling received (higher score better)</td>
<td>Yes: Median = 33.3 (IQR 0.0-75.0) N=749. No: Median = 25.0 (IQR 0.0-75.0) N=662 Mann Whitney test p = 0.656</td>
<td>Yes: Median = 37.5 (IQR 0.0-75.0) N=1039. No: Median = 25.0 (IQR 0.0-75.0) N=372 Mann Whitney test p = 0.002</td>
<td>Still not accredited: Median = 25.0 (IQR 0.0-75.0) N=372 Always accredited: Median = 33.3 (IQR 0.0-75.0) N=749 Became accredited: Median = 50.0 (IQR 0.0-91.7) N=290 Kruskall Wallis test p = 0.038</td>
</tr>
<tr>
<td></td>
<td>Counselling received on the day - level of counselling received (low, moderate, high)</td>
<td>Yes: Low = 34% Mod = 38% High = 28%. No: Low = 38% Mod = 30% High = 32% Chi-square test p = 0.009</td>
<td>Yes: Low = 33% Mod = 36% High = 31%. No: Low = 45% Mod = 28% High = 27% Chi-square test p = 0.001</td>
<td>Still not accredited: Low = 45% Mod = 28% High = 27%. Always accredited: Low = 34% Mod = 38% High = 28% Became accredited: Low = 30% Mod = 33% High = 37% Chi-square test p &lt; 0.001</td>
</tr>
<tr>
<td></td>
<td>Received written information on health or medicines</td>
<td>Yes: Yes information = 23% No: Yes information = 22% Chi-square test p = 0.615</td>
<td>Yes: Yes information = 23% No: Yes information = 20% Chi-square test p = 0.244</td>
<td>Still not accredited: Yes = 20%. Always accredited: Yes = 23%. Became accredited: Yes = 23% Chi-square test p = 0.484</td>
</tr>
<tr>
<td>TFQ</td>
<td>Overall service quality - 5 level scale (higher number better performance)</td>
<td>Yes: Median = 5 (IQR 4-5) N=732. No: Median = 5 (IQR 4-5) N=648 Mann Whitney test p = 0.656</td>
<td>Yes: Median = 5 (IQR 4-5) N=1015. No: Median = 5 (IQR 4-5) N=365 Mann Whitney test p = 0.036</td>
<td>Still not accredited: Median = 5 (IQR 4-5) N=365 Always accredited: Median = 5 (IQR 4-5) N=732 Became accredited: Median = 5 (IQR 4-5) N=283 Kruskall Wallis test p = 0.233</td>
</tr>
<tr>
<td></td>
<td>Overall service quality - excellent or not</td>
<td>Yes: Excellent = 63% No: Excellent = 63% Chi-square test p = 0.988</td>
<td>Yes: Excellent = 65% No: Excellent = 60% Chi-square test p = 0.089</td>
<td>Still not accredited: Excellent = 60%. Always accredited: Excellent = 63%. Became accredited: Excellent = 68% Chi-square test p = 0.85</td>
</tr>
<tr>
<td>LTTQ</td>
<td>Directive guidance Factor 1 score – basic guidance (higher number better performance)</td>
<td>Yes: Mean = -0.024 ± SE 0.040 N=639 No: Mean = 0.026 ± SE 0.042 N=572 T test p = 0.386</td>
<td>Yes: Mean = 0.038 ± SE 0.033 N=879 No: Mean = -0.100 ± SE 0.057 N=332 T test p = 0.033</td>
<td>Still not accredited: Mean = -0.100 ± SE 0.057 N=332 Always accredited: Mean = -0.024 ± SE 0.040 N=639 Became accredited: Mean = 0.201 ± SE 0.060 N=240 ANOVA p = 0.001 (Bonferroni post hoc: still not vs. became accredited p = 0.001, always vs. became accredited p = 0.009)</td>
</tr>
</tbody>
</table>
### Table 11.7 continued

<table>
<thead>
<tr>
<th>Domain</th>
<th>Quality Measure</th>
<th>Accreditation @ Sept 2002 Accredited yes or no</th>
<th>Accreditation @ July 2003 Accredited yes or no</th>
<th>Change in accreditation status between Sept 2002 and July 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTTQ</td>
<td>Directive guidance Factor 2 score – advanced/ pharmaceutical care guidance (higher score better performance)</td>
<td>Yes: Mean= -0.031 ± SE 0.039 N=639 No: Mean= 0.034 ± SE 0.042 N=572 T test p=0.261</td>
<td>Yes: Mean= 0.025 ± SE 0.034 N=879 No: Mean= -0.067 ± SE 0.052 N=332 T test p=0.136</td>
<td>Still not accredited: Mean= -0.067 ± SE 0.052 N=332 Always accredited: Mean= -0.031 ± SE 0.039 N=639 Became accredited: Mean= 0.175 ± SE 0.068 N=240 ANOVA p=0.009 (Bonferroni post hoc: still not vs. became accredited p=0.013, always vs. became accredited p=0.020)</td>
</tr>
<tr>
<td></td>
<td>Directive guidance total score (% of maximum) (higher number better performance)</td>
<td>Yes: Mean= 56.60 ± SE 0.90 N=650 No: Mean= 58.15 ± SE 0.97 N=590 T test p=0.244</td>
<td>Yes: Mean= 58.38 ± SE 0.77 N=902 No: Mean= 54.55 ± SE 1.29 N=338 T test p=0.010</td>
<td>Still not accredited: Mean= 54.55 ± SE 1.29 N=338 Always accredited: Mean= 56.60 ± SE 0.90 N=650 Became accredited: Mean= 62.98 ± SE 1.42 N=252 ANOVA p&lt;0.001 (Bonferroni post hoc: still not vs. became accredited p&lt;0.001, always vs. became accredited p=0.001)</td>
</tr>
<tr>
<td></td>
<td>Self-reported non-adherence score (lower number better performance)</td>
<td>Yes: Median=1 (IQR 0-2) N=831 No: Median=1 (IQR 0-2) N=730 Mann Whitney test p=0.578</td>
<td>Yes: Median=1 (IQR 0-2) N=1139 No: Median=1 (IQR 0-2) N=422 Mann Whitney test p=0.540</td>
<td>Still not accredited: Median=1 (IQR 0-2) N=422 Always accredited: Median=1 (IQR 0-2) N=831 Became accredited: Median=1 (IQR 0-2) N=308 Kruskall Wallis test p=0.207</td>
</tr>
<tr>
<td></td>
<td>Any self reported non-adherence</td>
<td>Yes: Nonadherence=57% No: Nonadherence =57% Chi-square test p=0.995</td>
<td>Yes: Nonadherence=57% No: Nonadherence =55% Chi-square test p=0.512</td>
<td>Still not accredited: Nonadherence =55%. Always accredited: Nonadherence =57%. Became accredited: Nonadherence =58% Chi-square test p=0.685</td>
</tr>
<tr>
<td></td>
<td>Pharmacy knows about consumer's adverse drug event (ADE)</td>
<td>Yes: Known=46% No: Known =45% Chi-square test p=0.669</td>
<td>Yes: Known=47% No: Known =40% Chi-square test p=0.126</td>
<td>Still not accredited: Known =40%. Always accredited: Known =46%. Became accredited: Known=50% Chi-square test p=0.251</td>
</tr>
<tr>
<td>LTFQ</td>
<td>Modified SERVPERF Factor 1 score ‘meeting service needs’ (higher number better performance)</td>
<td>Yes: Mean= 0.060 ± SE 0.029 N=988. No: Mean= -0.068 ± SE 0.036 N=870 T test p=0.007</td>
<td>Yes: Mean= 0.042 ± SE 0.026 N=1364 No: Mean= -0.115 ± SE 0.048 N=494 T test p=0.004</td>
<td>Still not accredited: Mean= -0.115 ± SE 0.048 N=494 Always accredited: Mean= 0.060 ± SE 0.029 N=988 Became accredited: Mean= -0.005 ± SE 0.056 N=376 ANOVA p=0.006 (Bonferroni post hoc: still not vs. always accredited p=0.004)</td>
</tr>
</tbody>
</table>
### Table 11.7 continued

<table>
<thead>
<tr>
<th>Domain</th>
<th>Quality Measure</th>
<th>Accreditation @ Sept 2002 Accredited yes or no</th>
<th>Accreditation @ July 2003 Accredited yes or no</th>
<th>Change in accreditation status between Sept 2002 and July 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTFQ</td>
<td>Modified SERVPERF Factor 2 score ‘improvement unnecessary’ (higher score better performance)</td>
<td>Yes: Mean= 0.016 ± SE 0.032 N=988 No: Mean= -0.018 ± SE 0.034 N=870 T test p=0.459</td>
<td>Yes: Mean= 0.008 ± SE 0.028 N=1364 No: Mean= -0.022 ± SE 0.042 N=494 T test p=0.577</td>
<td>Still not accredited: Mean= -0.022 ± SE 0.042 N=494 Always accredited: Mean= 0.016 ± SE 0.032 N=988 Became accredited: Mean= -0.014 ± SE 0.055 N=376 ANOVA p=0.755</td>
</tr>
<tr>
<td></td>
<td>Logit of total modified SERVPERF score (lower number better performance)</td>
<td>Yes: Mean= -2.174 ± SE 0.039 N=988 No: Mean= -2.070 ± SE 0.044 N=870 T test p=0.079</td>
<td>Yes: Mean= -2.171 ± SE 0.034 N=1364 No: Mean= -1.999 ± SE 0.057 N=494 T test p=0.010</td>
<td>Still not accredited: Mean= -1.999 ± SE 0.057 N=494 Always accredited: Mean= -2.174 ± SE 0.039 N=988 Became accredited: Mean= -2.163 ± SE 0.069 N=376 ANOVA p=0.035 (Bonferroni post hoc: still not vs. always accredited p=0.037)</td>
</tr>
<tr>
<td></td>
<td>Service varies a lot between visits – 7 item score (lower score better performance)</td>
<td>Yes: Median=1 (IQR 1-4) N=975. No: Median=1 (IQR 1-4) N=855 Mann Whitney test p=0.380</td>
<td>Yes: Median=1 (IQR 1-4) N=1347. No: Median=1 (IQR 1-4) N=483 Mann Whitney test p=0.155</td>
<td>Still not accredited: Median=1 (IQR 1-4) N=483 Always accredited: Median=1 (IQR 1-4) N=975 Became accredited: Median=1 (IQR 1-4) N=372 Kruskall Wallis test p=0.955</td>
</tr>
<tr>
<td></td>
<td>Service varies a lot between visits – strongly disagree or not</td>
<td>Yes: Strongly disagree=55% No: Strongly disagree =54% Chi-square test p=0.486</td>
<td>Yes: Strongly disagree =56% No: Strongly disagree =51% Chi-square test p=0.082</td>
<td>Still not accredited: Strongly disagree =51%. Always accredited: Strongly disagree =55%. Became accredited: Strongly disagree =57% Chi-square test p=0.190</td>
</tr>
<tr>
<td></td>
<td>Intention to return for all pharmacy needs – 7 item score (higher score better performance)</td>
<td>Yes: Median=7 (IQR 5-7) N=981. No: Median=7 (IQR 4-7) N=870 Mann Whitney test p=0.006</td>
<td>Yes: Median=7 (IQR 4-7) N=1358. No: Median=6 (IQR 4-7) N=493 Mann Whitney test p=0.011</td>
<td>Still not accredited: Median=6 (IQR 4-7) N=493 Always accredited: Median=7 (IQR 5-7) N=981 Became accredited: Median=7 (IQR 4-7) N=377 Kruskall Wallis test p=0.137</td>
</tr>
<tr>
<td></td>
<td>Intention to return for all pharmacy needs – strongly agree or not</td>
<td>Yes: Strongly agree=58% No: Strongly agree =52% Chi-square test p=0.011</td>
<td>Yes: Strongly agree =57% No: Strongly agree =50% Chi-square test p=0.007</td>
<td>Still not accredited: Strongly agree =50%. Always accredited: Strongly agree =58%. Became accredited: Strongly agree =54% Chi-square test p=0.016</td>
</tr>
</tbody>
</table>
### Table 11.7 continued

<table>
<thead>
<tr>
<th>Domain</th>
<th>Quality Measure</th>
<th>Accreditation @ Sept 2002 Accredited yes or no</th>
<th>Accreditation @ July 2003 Accredited yes or no</th>
<th>Change in accreditation status between Sept 2002 and July 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes: Median=1 (IQR 1-2) N=977. No: Median=1 (IQR 1-3) N=869 Mann Whitney test p=0.465</td>
<td>Yes: Median=1 (IQR 1-2) N=1354. No: Median=1 (IQR 1-3) N=492 Mann Whitney test p=0.076</td>
<td>Still not accredited: Median=1 (IQR 1-3) N=492 Always accredited: Median=1 (IQR 1-2) N=977 Became accredited: Median=1 (IQR 1-2.5) N=377 Kruskall Wallis test p=0.590</td>
</tr>
<tr>
<td>LTFQ</td>
<td>Overall, service could be better – 7 item score (lower score better performance)</td>
<td>Yes: Strongly disagree=60% No: Strongly disagree =58% Chi-square test p=0.475</td>
<td>Yes: Strongly disagree =61% No: Strongly disagree =55% Chi-square test p= 0.039</td>
<td>Still not accredited: Strongly disagree =55%. Always accredited: Strongly disagree =60%. Became accredited: Strongly disagree =62% Chi-square test p=0.086</td>
</tr>
<tr>
<td></td>
<td>Overall, service could be better – strongly disagree or not</td>
<td>Yes: Aware=12% No: Aware =12% Chi-square test p=0.891</td>
<td>Yes: Aware =11% No: Aware =13% Chi-square test p=0.170</td>
<td>Still not accredited: Aware =13%. Always accredited: Aware =12%. Became accredited: Aware =10% Chi-square test p=0.245</td>
</tr>
<tr>
<td></td>
<td>Noticed differences due to QCMP</td>
<td>Yes: Noticed=5% No: Noticed =5% Chi-square test p=0.901</td>
<td>Yes: Noticed =5% No: Noticed =5% Chi-square test p=0.490</td>
<td>Still not accredited: Noticed =5%. Always accredited: Noticed =5%. Became accredited: Noticed =4% Chi-square test p=0.605</td>
</tr>
</tbody>
</table>
11.4.1 EXAMINING COVARIATES

The strength of the relationship between the consumer and the pharmacy was a covariate for most measures of quality except for awareness of QCPP and recognising differences due to QCPP (p<0.05). The survey instrument sought information on a range of potential ‘relationship’ covariates:

- The number of times the pharmacy had been visited in the last 3 months
- The number of other pharmacies visited in the last 2 months
- How long the consumer had been visiting the pharmacy
- The number of different prescribed medicines taken
- The number of illnesses for which regular medications were taken
- Whether or not the consumer had been in hospital in the last year
- Whether or not the consumer had asthma or diabetes

All of these variables were significantly different between consumers who reported that the sampled pharmacy was their main pharmacy and those for whom it was not the main pharmacy (see Table 11.4 and Figure 11.10). The proportion of respondents indicating that the sampled pharmacy was their main pharmacy also differed significantly by accreditation status (accredited at Sept 2002 p<0.05, accredited at July 2003, p=0.056), and so ‘main pharmacy or not’ was possibly an important covariate of consumer service quality perceptions.

The duration of time the respondent had been visiting the pharmacy (more than 2 years or less) was also a strong predictor of the other ‘relationship’ variables for:

- The number of times the pharmacy had been visited in the last 3 months (p<0.0001).
- The number of other pharmacies visited in the last 2 months (p<0.0001).
- Was this the main pharmacy (p<0.0001).
- The number of different prescribed medicines taken (p<0.0001).
- The number of illnesses for which regular medications were taken (p<0.0001).
Figure 11.11 Boxplots showing differences in consumer-pharmacy relationship variables for duration of use of pharmacy (p<0.0001)

The proportion of respondents indicating that they had been using the sampled pharmacy for more than 2 years also differed significantly by accreditation status (accredited at Sept 2002 p=0.001, accredited at July 2003, p=0.077), and so ‘duration of use of 2 years or not’ was another possibly important covariate of consumer service quality perceptions.

Consumer age was significantly related to all of the service quality variables of interest except the directive guidance total and factor 2 scores, and recognition of QCMP variables. Consumer gender was only significantly related to whether or not the pharmacy knew of the consumer’s ADE and the three directive guidance variables.

Pharmacy characteristics such as business size (incorporating turnover, shop size and number of prescriptions filled/week) and PhARIA category were addressed by the stratification variable. The type of pharmacy location (strip or medical centre versus shopping centre (neighbourhood and major regional centre) was not related to the service quality variables but did differ significantly between accredited and non-accredited groups and so was another potential covariate for which to adjust.

11.4.2 MODELLING OF CONSUMER SERVICE QUALITY

Multivariate modelling techniques were used to compare accredited and non-accredited pharmacies for the service quality variables adjusting for stratification, clustering by pharmacy and covariates.

11.4.2.1 Models adjusting for patient level covariates

Logistic regression (SPSS version 12) was used to adjust for patient level covariates with accreditation status as the dependent variable. The service quality variable was entered into the model together with the two dichotomous visiting pattern variables.
(main pharmacy and duration of use of pharmacy) and consumer age (treated as an interval variable since categories were mostly evenly spaced and the distribution approximated the normal distribution) and gender. Covariates that were non-significant predictors in the model were removed one at a time (except the quality measure) (on the criterion of the least significant Wald statistic; sequential logistic regression with backward elimination) unless the removal of the covariate reduce the model goodness-of-fit. Once the most parsimonious model was established, the significance of the model and the significance of the quality measure as an independent predictor were examined.

11.4.2.1.1 Technical quality

The findings for counselling received on the day and longer term directive guidance received suggest that as more pharmacies were accredited by July 2003, that technical quality, as reported by consumers, has gradually improved.

Counselling received on the day. The percentage of applicable counselling items received by consumers at their most recent pharmacy visit was not significantly different between pharmacies accredited and non-accredited in September 2002, after adjusting for patient covariates. This measure of technical quality was significantly different between pharmacies accredited and non-accredited in July 2003, after adjusting for patient covariates (Table 11.8). For every unit increase in the percentage score, the odds of the consumer’s pharmacy being accredited in July 2003 was multiplied by 1.004 times. When the 3-level categorical variable was considered, counselling was a significant predictor of accreditation at 2002 as well, with the receipt of a moderate level of counselling increasing the likelihood of the pharmacy being accredited in 2002 by 1.4 times. Receiving a low level of counselling reduced the likelihood that the pharmacy was accredited in 2003 by 33.5%. These findings suggest that accredited pharmacies had a higher level of counselling than non-accredited pharmacies after adjusting for patient differences.

Table 11.8 Logistic regression on accreditation status for receipt of counselling at most recent visit after adjusting for patient level covariates

<table>
<thead>
<tr>
<th>Accreditation @ Sept 2002 Model $\chi^2$ = 14.76 df=5 p=0.011 N=1362</th>
<th>Model</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>OR</th>
<th>OR 95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accredited</td>
<td>Gender (male)</td>
<td>-0.184</td>
<td>0.114</td>
<td>2.581</td>
<td>1</td>
<td>0.108</td>
<td>0.832</td>
<td>0.665-1.041</td>
</tr>
<tr>
<td></td>
<td>Main pharmacy (yes)</td>
<td>0.198</td>
<td>0.155</td>
<td>1.633</td>
<td>1</td>
<td>0.201</td>
<td>1.219</td>
<td>0.900-1.653</td>
</tr>
<tr>
<td></td>
<td>Age (decades)</td>
<td>0.049</td>
<td>0.033</td>
<td>2.158</td>
<td>1</td>
<td>0.142</td>
<td>1.050</td>
<td>0.984-1.121</td>
</tr>
<tr>
<td></td>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.219</td>
<td>0.134</td>
<td>2.657</td>
<td>1</td>
<td>0.103</td>
<td>0.803</td>
<td>0.618-1.045</td>
</tr>
<tr>
<td></td>
<td>% of applicable counselling received</td>
<td>0.000</td>
<td>0.001</td>
<td>0.003</td>
<td>1</td>
<td>0.954</td>
<td>1.000</td>
<td>0.997-1.003</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>-0.179</td>
<td>0.240</td>
<td>0.557</td>
<td>1</td>
<td>0.455</td>
<td>0.836</td>
<td></td>
</tr>
<tr>
<td>Accredited</td>
<td>Gender (male)</td>
<td>-0.166</td>
<td>0.115</td>
<td>2.079</td>
<td>1</td>
<td>0.149</td>
<td>0.847</td>
<td>0.676-1.061</td>
</tr>
<tr>
<td></td>
<td>Age (decades)</td>
<td>0.046</td>
<td>0.033</td>
<td>1.919</td>
<td>1</td>
<td>0.166</td>
<td>1.047</td>
<td>0.981-1.118</td>
</tr>
<tr>
<td></td>
<td>Main pharmacy (yes)</td>
<td>0.216</td>
<td>0.156</td>
<td>1.933</td>
<td>1</td>
<td>0.164</td>
<td>1.242</td>
<td>0.915-1.684</td>
</tr>
<tr>
<td></td>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.238</td>
<td>0.135</td>
<td>3.108</td>
<td>1</td>
<td>0.078</td>
<td>0.788</td>
<td>0.605-1.027</td>
</tr>
<tr>
<td></td>
<td>Counselling received (low, mod, high)</td>
<td>8.633</td>
<td></td>
<td>2</td>
<td></td>
<td>0.013</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low level or not</td>
<td>-0.029</td>
<td>0.136</td>
<td>0.045</td>
<td>1</td>
<td>0.832</td>
<td>0.972</td>
<td>0.745-1.268</td>
</tr>
<tr>
<td></td>
<td>Moderate level or not</td>
<td>0.327</td>
<td>0.138</td>
<td>5.567</td>
<td>1</td>
<td>0.018</td>
<td>1.386</td>
<td>1.057-1.818</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>-0.283</td>
<td>0.242</td>
<td>1.367</td>
<td>1</td>
<td>0.242</td>
<td>0.753</td>
<td></td>
</tr>
</tbody>
</table>
Table 11.8 continued

<table>
<thead>
<tr>
<th>Accreditation</th>
<th>Model</th>
<th>Gender (male)</th>
<th>B</th>
<th>S.E.</th>
<th>Wald df</th>
<th>Sig.</th>
<th>OR</th>
<th>OR 95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accredited @</td>
<td></td>
<td></td>
<td>0.168</td>
<td>0.131</td>
<td>1.654</td>
<td>1</td>
<td>0.198</td>
<td>1.183</td>
</tr>
<tr>
<td>July 2003</td>
<td></td>
<td>Main pharmacy (yes)</td>
<td>0.389</td>
<td>0.169</td>
<td>5.314</td>
<td>1</td>
<td>0.021</td>
<td>1.475</td>
</tr>
<tr>
<td>Model $\chi^2$</td>
<td>18.39</td>
<td>Age (decades)</td>
<td>-0.072</td>
<td>0.038</td>
<td>3.568</td>
<td>1</td>
<td>0.059</td>
<td>0.931</td>
</tr>
<tr>
<td>df=5 p=0.002</td>
<td></td>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.176</td>
<td>0.151</td>
<td>1.367</td>
<td>1</td>
<td>0.242</td>
<td>0.838</td>
</tr>
<tr>
<td>N=1362</td>
<td></td>
<td>% of applicable counselling received</td>
<td>0.004</td>
<td>0.002</td>
<td>5.998</td>
<td>1</td>
<td>0.014</td>
<td>1.004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Constant</td>
<td>0.941</td>
<td>0.269</td>
<td>12.289</td>
<td>1&lt;0.001</td>
<td>2.563</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accreditation</th>
<th>Model</th>
<th>Gender (male)</th>
<th>B</th>
<th>S.E.</th>
<th>Wald df</th>
<th>Sig.</th>
<th>OR</th>
<th>OR 95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accredited @</td>
<td></td>
<td></td>
<td>0.193</td>
<td>0.132</td>
<td>2.160</td>
<td>1</td>
<td>0.142</td>
<td>1.213</td>
</tr>
<tr>
<td>July 2003</td>
<td></td>
<td>Age (decades)</td>
<td>-0.076</td>
<td>0.038</td>
<td>3.906</td>
<td>1</td>
<td>0.048</td>
<td>0.927</td>
</tr>
<tr>
<td>Model $\chi^2$</td>
<td>29.71</td>
<td>Main pharmacy (yes)</td>
<td>0.420</td>
<td>0.169</td>
<td>6.150</td>
<td>1</td>
<td>0.013</td>
<td>1.521</td>
</tr>
<tr>
<td>df=6 p&lt;0.001</td>
<td></td>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.204</td>
<td>0.151</td>
<td>1.824</td>
<td>1</td>
<td>0.177</td>
<td>0.815</td>
</tr>
<tr>
<td>N=1362</td>
<td></td>
<td>Counselling received (low, mod, high)</td>
<td>17.363</td>
<td></td>
<td>2</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low level or not</td>
<td>-0.408</td>
<td>0.152</td>
<td>7.188</td>
<td>1</td>
<td>0.007</td>
<td>0.665</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate level or not</td>
<td>0.193</td>
<td>0.164</td>
<td>1.384</td>
<td>1</td>
<td>0.239</td>
<td>1.213</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Constant</td>
<td>1.198</td>
<td>0.274</td>
<td>19.090</td>
<td>1&lt;0.001</td>
<td>3.312</td>
<td></td>
</tr>
</tbody>
</table>

Receipt of written information on health or medicines was unrelated to accreditation status (for either 2002 or 2003) after adjusting for patient level covariates (Table 11.9).

Table 11.9 Logistic regression on accreditation status for receipt of written information after adjusting for patient level covariates

| Accreditation | Model | Main pharmacy (yes) | B     | S.E.  | Wald df | Sig.      | OR     | OR 95%CI |
|----------------|-------|                      | 0.197 | 0.155 | 1.612   | 1         | 0.204  | 1.217    | 0.899-1.649 |
| Accredited @  |       | Duration of use (<2 yrs) | -0.218 | 0.134 | 2.644   | 1         | 0.104  | 0.804    | 0.618-1.046 |
| Sept 2002      |       | Age (decades) | 0.049 | 0.033 | 2.185   | 1         | 0.139  | 1.050    | 0.984-1.120 |
| Model $\chi^2$ | 14.76 | Gender (male) | -0.184 | 0.114 | 2.574   | 1         | 0.109  | 0.832    | 0.665-1.042 |
| df=5 p=0.011   |       | Received written information (yes) | 0.011 | 0.133 | 0.007   | 1         | 0.933  | 1.011    | 0.780-1.312 |
| N=1362         |       | Constant         | -0.184 | 0.230 | 0.638   | 1         | 0.424  | 0.832    |          |

| Accreditation | Model | Main pharmacy (yes) | B     | S.E.  | Wald df | Sig.      | OR     | OR 95%CI |
|----------------|-------|                      | 0.413 | 0.168 | 6.021   | 1         | 0.014  | 1.511    | 1.087-2.101 |
| Accredited @  |       | Duration of use (<2 yrs) | -0.173 | 0.151 | 1.310   | 1         | 0.252  | 0.842    | 0.626-1.313 |
| July 2003      |       | Age (decades) | -0.082 | 0.038 | 4.738   | 1         | 0.029  | 0.921    | 0.855-0.992 |
| Model $\chi^2$ | 13.75 | Gender (male) | 0.170 | 0.131 | 1.694   | 1         | 0.193  | 1.185    | 0.918-1.531 |
| df=5 p=0.017   |       | Received written information (yes) | 0.184 | 0.155 | 1.413   | 1         | 0.235  | 1.202    | 0.888-1.627 |
| N=1362         |       | Constant         | 1.104 | 0.259 | 18.239  | 1<0.001   | 3.017  |          |          |

**Directive guidance.** Adjusting for patient level covariates did not substantially change the picture of the results for directive guidance from Table 11.7. There was no difference in the level of directive guidance between pharmacies accredited and non-accredited in 2002 but as more pharmacies became accredited by July 2003, accredited pharmacies gave higher levels of basic directive guidance and directive guidance overall compared to non-accredited pharmacies.
### Table 11.10 Logistic regression on accreditation status for directive guidance given to consumers by pharmacies after adjusting for patient level covariates

<table>
<thead>
<tr>
<th>Accreditation</th>
<th>Model</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>OR</th>
<th>OR 95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accredited @ Sept 2002 Model $\chi^2=8.55$ df=4 p=0.073 N=1174</td>
<td>Main pharmacy (yes)</td>
<td>0.188</td>
<td>0.194</td>
<td>0.941</td>
<td>1</td>
<td>0.332</td>
<td>1.207</td>
<td>0.825-1.767</td>
</tr>
<tr>
<td></td>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.184</td>
<td>0.147</td>
<td>1.560</td>
<td>1</td>
<td>0.212</td>
<td>0.832</td>
<td>0.624-1.110</td>
</tr>
<tr>
<td></td>
<td>Age (decades)</td>
<td>0.053</td>
<td>0.036</td>
<td>2.184</td>
<td>1</td>
<td>0.139</td>
<td>1.055</td>
<td>0.983-1.132</td>
</tr>
<tr>
<td></td>
<td>Directive guidance Factor 1 - basic</td>
<td>-0.050</td>
<td>0.059</td>
<td>0.715</td>
<td>1</td>
<td>0.398</td>
<td>0.951</td>
<td>0.847-1.068</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>-0.299</td>
<td>0.273</td>
<td>1.197</td>
<td>1</td>
<td>0.274</td>
<td>0.742</td>
<td></td>
</tr>
<tr>
<td>Accredited @ July 2003 Model $\chi^2=9.93$ df=4 p=0.042 N=1178</td>
<td>Main pharmacy (yes)</td>
<td>0.363</td>
<td>0.201</td>
<td>3.273</td>
<td>1</td>
<td>0.070</td>
<td>1.438</td>
<td>0.970-2.132</td>
</tr>
<tr>
<td></td>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.029</td>
<td>0.040</td>
<td>0.533</td>
<td>1</td>
<td>0.465</td>
<td>0.971</td>
<td>0.898-1.050</td>
</tr>
<tr>
<td></td>
<td>Age (decades)</td>
<td>-0.014</td>
<td>0.141</td>
<td>1.896</td>
<td>1</td>
<td>0.169</td>
<td>1.214</td>
<td>0.921-1.600</td>
</tr>
<tr>
<td></td>
<td>Directive guidance Factor 1 - basic</td>
<td>0.136</td>
<td>0.066</td>
<td>4.328</td>
<td>1</td>
<td>0.037</td>
<td>1.146</td>
<td>1.008-1.303</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>0.763</td>
<td>0.262</td>
<td>8.442</td>
<td>1</td>
<td>0.004</td>
<td>2.144</td>
<td></td>
</tr>
<tr>
<td>Accredited @ Sept 2002 Model $\chi^2=10.07$ df=4 p=0.039 N=1174</td>
<td>Main pharmacy (yes)</td>
<td>0.209</td>
<td>0.195</td>
<td>1.153</td>
<td>1</td>
<td>0.283</td>
<td>1.233</td>
<td>0.841-1.807</td>
</tr>
<tr>
<td></td>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.192</td>
<td>0.147</td>
<td>1.711</td>
<td>1</td>
<td>0.191</td>
<td>0.825</td>
<td>0.618-1.101</td>
</tr>
<tr>
<td></td>
<td>Age (decades)</td>
<td>0.056</td>
<td>0.036</td>
<td>2.430</td>
<td>1</td>
<td>0.119</td>
<td>1.057</td>
<td>0.986-1.100</td>
</tr>
<tr>
<td></td>
<td>Directive guidance Factor 2 - advanced</td>
<td>-0.088</td>
<td>0.059</td>
<td>2.224</td>
<td>1</td>
<td>0.136</td>
<td>0.915</td>
<td>0.815-1.028</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>-0.330</td>
<td>0.273</td>
<td>1.460</td>
<td>1</td>
<td>0.227</td>
<td>0.719</td>
<td></td>
</tr>
<tr>
<td>Accredited @ July 2003 Model $\chi^2=5.26$ df=2 p=0.072 N=1211</td>
<td>Main pharmacy (yes)</td>
<td>0.346</td>
<td>0.192</td>
<td>3.247</td>
<td>1</td>
<td>0.072</td>
<td>1.413</td>
<td>0.970-2.059</td>
</tr>
<tr>
<td></td>
<td>Directive guidance Factor 2 - advanced</td>
<td>0.077</td>
<td>0.066</td>
<td>1.346</td>
<td>1</td>
<td>0.246</td>
<td>1.080</td>
<td>0.949-1.229</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>0.673</td>
<td>0.179</td>
<td>14.153</td>
<td>1</td>
<td>&lt;0.001</td>
<td>1.960</td>
<td></td>
</tr>
<tr>
<td>Accredited @ Sept 2002 Model $\chi^2=11.23$ df=4 p=0.024 N=1202</td>
<td>Main pharmacy (yes)</td>
<td>0.273</td>
<td>0.183</td>
<td>2.206</td>
<td>1</td>
<td>0.137</td>
<td>1.313</td>
<td>0.917-1.882</td>
</tr>
<tr>
<td></td>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.188</td>
<td>0.145</td>
<td>1.669</td>
<td>1</td>
<td>0.196</td>
<td>0.829</td>
<td>0.623-1.102</td>
</tr>
<tr>
<td></td>
<td>Age (decades)</td>
<td>0.046</td>
<td>0.035</td>
<td>1.688</td>
<td>1</td>
<td>0.194</td>
<td>1.047</td>
<td>0.977-1.122</td>
</tr>
<tr>
<td></td>
<td>Directive guidance total score</td>
<td>-0.004</td>
<td>0.003</td>
<td>2.416</td>
<td>1</td>
<td>0.120</td>
<td>0.996</td>
<td>0.991-1.001</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>-0.108</td>
<td>0.296</td>
<td>0.133</td>
<td>1</td>
<td>0.716</td>
<td>0.898</td>
<td></td>
</tr>
<tr>
<td>Accredited @ July 2003 Model $\chi^2=10.71$ df=4 p=0.003 N=1206</td>
<td>Main pharmacy (yes)</td>
<td>0.259</td>
<td>0.192</td>
<td>1.826</td>
<td>1</td>
<td>0.177</td>
<td>1.296</td>
<td>0.890-1.886</td>
</tr>
<tr>
<td></td>
<td>Age (decades)</td>
<td>-0.038</td>
<td>0.039</td>
<td>0.959</td>
<td>1</td>
<td>0.327</td>
<td>0.962</td>
<td>0.891-1.039</td>
</tr>
<tr>
<td></td>
<td>Gender (male)</td>
<td>0.157</td>
<td>0.139</td>
<td>1.288</td>
<td>1</td>
<td>0.256</td>
<td>1.170</td>
<td>0.892-1.535</td>
</tr>
<tr>
<td></td>
<td>Directive guidance total score</td>
<td>0.007</td>
<td>0.003</td>
<td>5.826</td>
<td>1</td>
<td>0.016</td>
<td>1.007</td>
<td>1.001-1.013</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>0.538</td>
<td>0.287</td>
<td>3.529</td>
<td>1</td>
<td>0.060</td>
<td>1.713</td>
<td></td>
</tr>
</tbody>
</table>

Adjusting for patient level covariate did not change the pattern of results for self-reported non-adherence, any non-adherence or whether the pharmacy knew of a consumer's previous ADR from the results seen in Table 11.7 – none of these variables were related to accreditation status.

#### 11.4.2.1.2 Functional quality

**Transactional functional quality.** Consumer perceptions of service quality at the most recent visit was significantly different for pharmacies accredited and non-accredited in July 2003, although accreditation status did not affect whether the consumer rated the service quality they received at their last visit as excellent or not.
(Table 11.11). This finding may reflect a gradual improvement in consumer perceptions of service quality as more pharmacies were accredited.

**Table 11.11 Logistic regression on accreditation status for overall service quality at the most recent visit after adjusting for patient level covariates**

<table>
<thead>
<tr>
<th>Accreditation</th>
<th>Model</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>OR</th>
<th>OR 95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accredited @</td>
<td>Main pharmacy (yes)</td>
<td>0.233</td>
<td>0.161</td>
<td>2.093</td>
<td>1</td>
<td>0.148</td>
<td>1.262</td>
<td>0.921-1.731</td>
</tr>
<tr>
<td>Sept 2002 Model</td>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.206</td>
<td>0.136</td>
<td>2.305</td>
<td>1</td>
<td>0.129</td>
<td>0.813</td>
<td>0.623-1.062</td>
</tr>
<tr>
<td>( \chi^2 = 13.88 )</td>
<td>Age (decades)</td>
<td>0.046</td>
<td>0.033</td>
<td>1.875</td>
<td>1</td>
<td>0.171</td>
<td>1.047</td>
<td>0.980-1.118</td>
</tr>
<tr>
<td>df=5</td>
<td>Gender (male)</td>
<td>-0.169</td>
<td>0.116</td>
<td>2.132</td>
<td>1</td>
<td>0.144</td>
<td>0.845</td>
<td>0.673-1.060</td>
</tr>
<tr>
<td>p=0.016</td>
<td>Overall service quality rating</td>
<td>-0.013</td>
<td>0.072</td>
<td>0.032</td>
<td>1</td>
<td>0.857</td>
<td>0.987</td>
<td>0.858-1.136</td>
</tr>
<tr>
<td>N=1335</td>
<td>Constant</td>
<td>-0.151</td>
<td>0.362</td>
<td>0.175</td>
<td>1</td>
<td>0.676</td>
<td>0.860</td>
<td></td>
</tr>
<tr>
<td>Accredited @</td>
<td>Main pharmacy (yes)</td>
<td>0.262</td>
<td>0.160</td>
<td>2.661</td>
<td>1</td>
<td>0.103</td>
<td>1.299</td>
<td>0.949-1.779</td>
</tr>
<tr>
<td>Sept 2002 Model</td>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.214</td>
<td>0.136</td>
<td>2.466</td>
<td>1</td>
<td>0.116</td>
<td>0.808</td>
<td>0.618-1.054</td>
</tr>
<tr>
<td>( \chi^2 = 15.07 )</td>
<td>Age (decades)</td>
<td>0.048</td>
<td>0.033</td>
<td>2.030</td>
<td>1</td>
<td>0.154</td>
<td>1.049</td>
<td>0.982-1.120</td>
</tr>
<tr>
<td>p=0.010</td>
<td>Gender (male)</td>
<td>-0.175</td>
<td>0.116</td>
<td>2.286</td>
<td>1</td>
<td>0.131</td>
<td>0.840</td>
<td>0.669-1.053</td>
</tr>
<tr>
<td>N=1335</td>
<td>Service quality excellent? (excellent)</td>
<td>0.131</td>
<td>0.119</td>
<td>1.220</td>
<td>1</td>
<td>0.269</td>
<td>1.140</td>
<td>0.903-1.439</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>-0.287</td>
<td>0.244</td>
<td>1.376</td>
<td>1</td>
<td>0.241</td>
<td>0.751</td>
<td></td>
</tr>
<tr>
<td>Accredited @</td>
<td>Main pharmacy (yes)</td>
<td>0.398</td>
<td>0.169</td>
<td>5.582</td>
<td>1</td>
<td>0.018</td>
<td>1.490</td>
<td>1.070-2.073</td>
</tr>
<tr>
<td>July 2003 Model</td>
<td>Age (decades)</td>
<td>-0.080</td>
<td>0.037</td>
<td>4.742</td>
<td>1</td>
<td>0.029</td>
<td>0.923</td>
<td>0.859-0.992</td>
</tr>
<tr>
<td>( \chi^2 = 15.43 )</td>
<td>Gender (male)</td>
<td>0.181</td>
<td>0.132</td>
<td>1.896</td>
<td>1</td>
<td>0.169</td>
<td>1.199</td>
<td>0.926-1.552</td>
</tr>
<tr>
<td>p=0.004</td>
<td>Overall service quality rating</td>
<td>0.163</td>
<td>0.078</td>
<td>4.351</td>
<td>1</td>
<td><strong>0.037</strong></td>
<td>1.177</td>
<td>1.010-1.373</td>
</tr>
<tr>
<td>N=1341</td>
<td>Constant</td>
<td>0.360</td>
<td>0.365</td>
<td>0.974</td>
<td>1</td>
<td>0.324</td>
<td>1.433</td>
<td></td>
</tr>
<tr>
<td>Accredited @</td>
<td>Main pharmacy (yes)</td>
<td>0.400</td>
<td>0.174</td>
<td>5.296</td>
<td>1</td>
<td><strong>0.021</strong></td>
<td>1.492</td>
<td>1.061-2.098</td>
</tr>
<tr>
<td>July 2003 Model</td>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.168</td>
<td>0.153</td>
<td>1.211</td>
<td>1</td>
<td>0.271</td>
<td>0.845</td>
<td>0.627-1.140</td>
</tr>
<tr>
<td>( \chi^2 = 14.59 )</td>
<td>Age (decades)</td>
<td>-0.089</td>
<td>0.038</td>
<td>5.436</td>
<td>1</td>
<td><strong>0.020</strong></td>
<td>0.915</td>
<td>0.849-0.988</td>
</tr>
<tr>
<td>p=0.012</td>
<td>Gender (male)</td>
<td>0.181</td>
<td>0.132</td>
<td>1.889</td>
<td>1</td>
<td>0.169</td>
<td>1.199</td>
<td>0.926-1.552</td>
</tr>
<tr>
<td>N=1335</td>
<td>Service quality excellent? (excellent)</td>
<td>-0.169</td>
<td>0.133</td>
<td>1.624</td>
<td>1</td>
<td>0.203</td>
<td>0.844</td>
<td>0.651-1.095</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>1.245</td>
<td>0.275</td>
<td>20.486</td>
<td>1</td>
<td>&lt;0.001</td>
<td>3.472</td>
<td></td>
</tr>
</tbody>
</table>

**Modified SERVPERF.** The logit of the modified SERVPERF was not significantly different between pharmacies accredited and non-accredited in September 2002, after adjusting for patient covariates. This measure of functional quality was significantly different between pharmacies accredited and non-accredited in July 2003, after adjusting for patient covariates. For every unit decrease in the logit of the modified SERVPERF (i.e. an increase in functional quality), the odds of the consumer’s pharmacy being accredited in July 2003 was increased by 10.6% (equal to \((1-0.894)x 100\)). The effects on the overall SERVPERF score were due to differences in Factor 1 (Table 11.12). A unit increase in the factor score increased the likelihood that that a pharmacy was accredited in September 2002 by 11% and accredited in July 2003 by 19%, suggesting a gradual improvement in consumer perceived quality for accredited pharmacies.
### Table 11.12 Logistic regression on accreditation status for the modified SERVPERF after adjusting for patient level covariates

<table>
<thead>
<tr>
<th>Accreditation @</th>
<th>Model</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>OR</th>
<th>OR 95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 2002</td>
<td>Model $\chi^2=15.61$ df=3 (p=0.001) N=1822</td>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.253</td>
<td>0.105</td>
<td>5.757</td>
<td>1</td>
<td>0.016</td>
<td>0.776</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>0.110</td>
<td>0.099</td>
<td>1.218</td>
<td>1</td>
<td>0.270</td>
<td>0.896</td>
<td>0.737-1.089</td>
<td></td>
</tr>
<tr>
<td>SERVPERF Factor 1 – meeting service needs</td>
<td>0.105</td>
<td>0.049</td>
<td>4.488</td>
<td>1</td>
<td>0.034</td>
<td>1.111</td>
<td>1.008-1.224</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.254</td>
<td>0.067</td>
<td>14.252</td>
<td>1</td>
<td>0.000</td>
<td>1.289</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accredited @ July 2003</td>
<td>Model $\chi^2=19.46$ df=4 (p=0.001) N=1797</td>
<td>Main pharmacy (yes)</td>
<td>0.189</td>
<td>0.135</td>
<td>1.965</td>
<td>1</td>
<td>0.161</td>
<td>1.208</td>
</tr>
<tr>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.079</td>
<td>0.031</td>
<td>6.372</td>
<td>1</td>
<td>0.012</td>
<td>0.924</td>
<td>0.870-0.983</td>
<td></td>
</tr>
<tr>
<td>Gender (male)</td>
<td>0.208</td>
<td>0.116</td>
<td>3.231</td>
<td>1</td>
<td>0.072</td>
<td>1.232</td>
<td>0.981-1.546</td>
<td></td>
</tr>
<tr>
<td>SERVPERF Factor 1 – meeting service needs</td>
<td>0.176</td>
<td>0.057</td>
<td>9.514</td>
<td>1</td>
<td>0.002</td>
<td>1.193</td>
<td>1.066-1.334</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>1.230</td>
<td>0.183</td>
<td>44.997</td>
<td>1</td>
<td>&lt;0.001</td>
<td>3.420</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accredited @ Sept 2002</td>
<td>Model $\chi^2=13.97$ df=4 (p=0.008) N=1822</td>
<td>Main pharmacy (yes)</td>
<td>0.195</td>
<td>0.120</td>
<td>2.630</td>
<td>1</td>
<td>0.105</td>
<td>1.216</td>
</tr>
<tr>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.249</td>
<td>0.109</td>
<td>5.209</td>
<td>1</td>
<td>0.022</td>
<td>0.779</td>
<td>0.629-0.965</td>
<td></td>
</tr>
<tr>
<td>Gender (male)</td>
<td>-0.110</td>
<td>0.099</td>
<td>1.217</td>
<td>1</td>
<td>0.270</td>
<td>0.896</td>
<td>0.737-1.089</td>
<td></td>
</tr>
<tr>
<td>SERVPERF Factor 2 – improvement unnecessary</td>
<td>0.010</td>
<td>0.048</td>
<td>0.044</td>
<td>1</td>
<td>0.833</td>
<td>1.010</td>
<td>0.920-1.109</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.104</td>
<td>0.122</td>
<td>0.722</td>
<td>1</td>
<td>0.395</td>
<td>1.110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accredited @ July 2003</td>
<td>Model $\chi^2=10.34$ df=4 (p=0.035) N=1797</td>
<td>Main pharmacy (yes)</td>
<td>0.303</td>
<td>0.130</td>
<td>5.429</td>
<td>1</td>
<td>0.020</td>
<td>1.354</td>
</tr>
<tr>
<td>Age (decades)</td>
<td>-0.057</td>
<td>0.030</td>
<td>3.470</td>
<td>1</td>
<td>0.063</td>
<td>0.945</td>
<td>0.890-1.003</td>
<td></td>
</tr>
<tr>
<td>Gender (male)</td>
<td>0.202</td>
<td>0.116</td>
<td>3.058</td>
<td>1</td>
<td>0.080</td>
<td>1.224</td>
<td>0.976-1.535</td>
<td></td>
</tr>
<tr>
<td>SERVPERF Factor 2 – improvement unnecessary</td>
<td>0.028</td>
<td>0.054</td>
<td>0.277</td>
<td>1</td>
<td>0.598</td>
<td>1.029</td>
<td>0.926-1.143</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>1.023</td>
<td>0.168</td>
<td>36.867</td>
<td>1</td>
<td>&lt;0.001</td>
<td>2.781</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accredited @ Sept 2002</td>
<td>Model $\chi^2=14.28$ df=4 (p=0.006) N=1822</td>
<td>Gender (male)</td>
<td>-0.112</td>
<td>0.099</td>
<td>1.259</td>
<td>1</td>
<td>0.262</td>
<td>0.894</td>
</tr>
<tr>
<td>Logit of modified SERVPERF</td>
<td>-0.025</td>
<td>0.040</td>
<td>0.400</td>
<td>1</td>
<td>0.527</td>
<td>0.975</td>
<td>0.901-1.055</td>
<td></td>
</tr>
<tr>
<td>Main pharmacy (yes)</td>
<td>0.176</td>
<td>0.124</td>
<td>2.006</td>
<td>1</td>
<td>0.157</td>
<td>1.193</td>
<td>0.935-1.522</td>
<td></td>
</tr>
<tr>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.239</td>
<td>0.110</td>
<td>4.721</td>
<td>1</td>
<td>0.030</td>
<td>0.787</td>
<td>0.634-0.977</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.062</td>
<td>0.137</td>
<td>0.205</td>
<td>1</td>
<td>0.651</td>
<td>1.064</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accredited @ July 2003</td>
<td>Model $\chi^2=17.49$ df=5 (p=0.004) N=1784</td>
<td>Gender (male)</td>
<td>0.210</td>
<td>0.116</td>
<td>3.239</td>
<td>1</td>
<td>0.072</td>
<td>1.233</td>
</tr>
<tr>
<td>Logit of modified SERVPERF</td>
<td>-0.112</td>
<td>0.047</td>
<td>5.691</td>
<td>1</td>
<td>0.017</td>
<td>0.894</td>
<td>0.816-0.980</td>
<td></td>
</tr>
<tr>
<td>Main pharmacy (yes)</td>
<td>0.164</td>
<td>0.141</td>
<td>1.359</td>
<td>1</td>
<td>0.244</td>
<td>1.179</td>
<td>0.894-1.554</td>
<td></td>
</tr>
<tr>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.147</td>
<td>0.131</td>
<td>1.255</td>
<td>1</td>
<td>0.263</td>
<td>0.863</td>
<td>0.668-1.116</td>
<td></td>
</tr>
<tr>
<td>Age (decades)</td>
<td>-0.077</td>
<td>0.032</td>
<td>5.697</td>
<td>1</td>
<td>0.017</td>
<td>0.926</td>
<td>0.870-0.986</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>1.049</td>
<td>0.218</td>
<td>23.117</td>
<td>1</td>
<td>&lt;0.0001</td>
<td>2.855</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The additional service quality measures as to whether the level of service was variable between visits and overall, whether the service could be better, had a similar pattern of results to those seen in Table 11.7 after adjusting for patient level covariates:

- For accreditation by 2002, the 7-item scale of variable service was not an independent predictor \((p=0.860, \text{model } p=0.001, \text{age and gender excluded})\). The nominal variable (strongly disagree or not) was also not significantly different \((p=0.513, \text{model } p=0.001, \text{age and gender excluded})\).
• For accreditation by 2003, the 7-item scale of variable service was not an independent predictor (p=0.311, model p=0.031, duration of pharmacy use excluded) but there was a trend towards significance (p=0.065) for the nominal variable (strongly disagree or not) so that consumers strongly disagreeing that service was variable were more likely to be from accredited pharmacies (Table 11.13).

• For accreditation by 2002, the 7-item scale of “service could be better” was not an independent predictor (p=0.656, model p=0.003, age and gender excluded). The nominal variable (strongly disagree or not) was also not significantly different (p=0.568, model p=0.003, age and gender excluded).

• For accreditation by 2003, the 7-item scale of “service could be better” was not an independent predictor (p=0.311, model p=0.031, duration of pharmacy use excluded). The nominal variable (strongly disagree or not) was also not significantly different (p=0.176, model p=0.021).

### Table 11.13 Logistic regression on accreditation status for strong disagreement or not that service varies a lot between visits after adjusting for patient level covariates

<table>
<thead>
<tr>
<th>Accreditation Model</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>OR</th>
<th>OR 95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main pharmacy (yes)</td>
<td>0.245</td>
<td>0.133</td>
<td>3.379</td>
<td>1</td>
<td>0.066</td>
<td>1.277</td>
<td>0.984-1.658</td>
</tr>
<tr>
<td>Age (decades)</td>
<td>-0.062</td>
<td>0.031</td>
<td>3.990</td>
<td>1</td>
<td>0.046</td>
<td>0.940</td>
<td>0.884-0.999</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>0.219</td>
<td>0.117</td>
<td>3.507</td>
<td>1</td>
<td>0.061</td>
<td>1.245</td>
<td>0.990-1.565</td>
</tr>
<tr>
<td>Service varies a lot</td>
<td>-0.213</td>
<td>0.115</td>
<td>3.404</td>
<td>1</td>
<td>0.065</td>
<td>0.808</td>
<td>0.645-1.013</td>
</tr>
<tr>
<td>Constant</td>
<td>1.195</td>
<td>0.199</td>
<td>36.219</td>
<td>1</td>
<td>&lt;0.001</td>
<td>3.304</td>
<td></td>
</tr>
</tbody>
</table>

### Intention to return. Consumers of accredited pharmacies expressed stronger agreement that they intended to return to the pharmacy for all their pharmacy needs, after adjusting for patient factors such as duration of use of the pharmacy (Table 11.14). An increase on 1 unit on the 7 item scale increased the likelihood that the pharmacy was accredited by 5.5% for 2002 accredited pharmacies and 7.7% for pharmacies accredited by July 2003. Not strongly agreeing with the statement reduced the likelihood that the pharmacy was accredited in July 2003 by 30%.

### Table 11.14 Logistic regression on accreditation status for intention to return after adjusting for patient level covariates

<table>
<thead>
<tr>
<th>Accreditation Model</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>OR</th>
<th>OR 95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.298</td>
<td>0.106</td>
<td>7.948</td>
<td>1</td>
<td>0.005</td>
<td>0.742</td>
<td>0.603-0.913</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>-0.107</td>
<td>0.100</td>
<td>1.154</td>
<td>1</td>
<td>0.283</td>
<td>0.898</td>
<td>0.739-1.092</td>
</tr>
<tr>
<td>Intention to return (7 item scale)</td>
<td>0.053</td>
<td>0.026</td>
<td>4.078</td>
<td>1</td>
<td>0.043</td>
<td>1.055</td>
<td>1.002-1.111</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.041</td>
<td>0.171</td>
<td>0.057</td>
<td>1</td>
<td>0.811</td>
<td>0.960</td>
<td></td>
</tr>
<tr>
<td>Main pharmacy (yes)</td>
<td>0.168</td>
<td>0.134</td>
<td>1.582</td>
<td>1</td>
<td>0.208</td>
<td>1.183</td>
<td>0.910-1.537</td>
</tr>
<tr>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.264</td>
<td>0.111</td>
<td>5.703</td>
<td>1</td>
<td>0.017</td>
<td>0.768</td>
<td>0.618-0.954</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>-0.108</td>
<td>0.100</td>
<td>1.173</td>
<td>1</td>
<td>0.279</td>
<td>0.898</td>
<td>0.738-1.091</td>
</tr>
<tr>
<td>Intention to return (not strongly agree)</td>
<td>-0.109</td>
<td>0.112</td>
<td>0.946</td>
<td>1</td>
<td>0.331</td>
<td>0.896</td>
<td>0.719-1.117</td>
</tr>
<tr>
<td>Constant</td>
<td>0.172</td>
<td>0.152</td>
<td>1.285</td>
<td>1</td>
<td>0.257</td>
<td>1.188</td>
<td></td>
</tr>
</tbody>
</table>
Table 11.14 continued

<table>
<thead>
<tr>
<th>Accreditation Model</th>
<th>Duration of use (&lt;2 yrs)</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>OR</th>
<th>OR 95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accredited @ July 2003 Model $\chi^2=15.81$ df=4 p=0.003 N=1777</td>
<td>-0.251</td>
<td>0.126</td>
<td>3.958</td>
<td>1</td>
<td>0.047</td>
<td>0.778</td>
<td>0.607-0.996</td>
</tr>
<tr>
<td>Main pharmacy (yes)</td>
<td>-0.227</td>
<td>0.127</td>
<td>3.211</td>
<td>1</td>
<td>0.073</td>
<td>0.797</td>
<td>0.621-1.022</td>
</tr>
<tr>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.088</td>
<td>0.033</td>
<td>7.342</td>
<td>1</td>
<td>0.007</td>
<td>0.916</td>
<td>0.859-0.976</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>0.207</td>
<td>0.116</td>
<td>3.145</td>
<td>1</td>
<td>0.076</td>
<td>1.229</td>
<td>0.979-1.545</td>
</tr>
<tr>
<td>Intention to return (7 item scale)</td>
<td>0.074</td>
<td>0.030</td>
<td>5.970</td>
<td>1</td>
<td>0.015</td>
<td>1.077</td>
<td>1.015-1.142</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>0.214</td>
<td>0.117</td>
<td>3.372</td>
<td>1</td>
<td>0.066</td>
<td>1.239</td>
<td>0.986-1.557</td>
</tr>
<tr>
<td>Intention to return (not strongly agree)</td>
<td>-0.356</td>
<td>0.118</td>
<td>9.113</td>
<td>1</td>
<td>0.003</td>
<td>0.701</td>
<td>0.556-0.883</td>
</tr>
<tr>
<td>Constant</td>
<td>1.053</td>
<td>0.237</td>
<td>19.736</td>
<td>1</td>
<td>&lt;0.001</td>
<td>2.867</td>
<td></td>
</tr>
<tr>
<td>Main pharmacy (yes)</td>
<td>0.400</td>
<td>0.174</td>
<td>5.296</td>
<td>1</td>
<td>0.021</td>
<td>1.492</td>
<td>1.061-2.098</td>
</tr>
<tr>
<td>Duration of use (&lt;2 yrs)</td>
<td>-0.082</td>
<td>0.032</td>
<td>6.401</td>
<td>1</td>
<td>0.011</td>
<td>0.921</td>
<td>0.865-0.982</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>0.207</td>
<td>0.116</td>
<td>3.145</td>
<td>1</td>
<td>0.076</td>
<td>1.229</td>
<td>0.979-1.545</td>
</tr>
<tr>
<td>Intention to return (7 item scale)</td>
<td>0.074</td>
<td>0.030</td>
<td>5.970</td>
<td>1</td>
<td>0.015</td>
<td>1.077</td>
<td>1.015-1.142</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>0.214</td>
<td>0.117</td>
<td>3.372</td>
<td>1</td>
<td>0.066</td>
<td>1.239</td>
<td>0.986-1.557</td>
</tr>
<tr>
<td>Intention to return (not strongly agree)</td>
<td>-0.356</td>
<td>0.118</td>
<td>9.113</td>
<td>1</td>
<td>0.003</td>
<td>0.701</td>
<td>0.556-0.883</td>
</tr>
<tr>
<td>Constant</td>
<td>1.656</td>
<td>0.215</td>
<td>59.415</td>
<td>1</td>
<td>&lt;0.001</td>
<td>5.239</td>
<td></td>
</tr>
</tbody>
</table>

Recognition of QCPP. Neither of the variables related to recognition of QCPP (aware of QCPP, notice differences due to QCPP) were significant predictors of accreditation status after adjusting for patient covariates:

- For accreditation by 2002, awareness of QCPP was not an independent predictor (p=0.857, model p=0.001, age and gender excluded). Nor was noticing differences due to QCPP (p=0.976, model p=0.003, age and gender excluded).
- For accreditation by 2003, awareness of QCPP was not an independent predictor (p=0.100, model p=0.007). Nor was noticing differences due to QCPP (p=0.421, model p=0.023).

11.4.2.2 Models adjusting for stratification, clustering and patient level covariates

The linear mixed model procedure of SPSS version 12.0.1 was used to created a nested or hierarchical model to adjust for the effects of clustering and stratification for continuous outcome variables that were significant for accreditation status after adjusting for patient level covariates. Patient and pharmacy level covariates of each dependent variable were included in the model as fixed effects together with the accreditation variable of interest; these were modelled using sums of squares type III and a 95% confidence interval was set for the resulting estimates from the model. The random effect was intercept only. The strata variable (encompassing business size and rural versus urban factors) and the pharmacy identifier were included as subjects. The model used restricted maximum likelihood methods with a scaled identity as the variance structure. Backwards regression was used with the least significant variables in the model being removed one at a time unless its removal reduced model fit. Differences based on accreditation status were significant if, after adjusting for the effects of covariates and clustering, the model estimate for the accreditation group variable was significant (p<0.05).

Of the 10 variables-accreditation status relationships examined for effects after accounting for clustering, 7 were significant after adjusting for patient covariates (Table 11.8,Table 11.10,Table 11.12). After adjusting for clustering on pharmacy and the sampling stratum, two relationships remained significant, with a third just failing to reach significance (Table 11.15). Consumers of pharmacies accredited by July 2003 had a higher modified SERVPERF factor 1 score than non-accredited pharmacies.
indicating that accredited pharmacies performed better in meeting consumer service needs. This relationship was almost significant when pharmacies accredited by September 2002 were compared with those not accredited at that time. Transactional technical quality, as indicated by the percentage of applicable medication counselling received on the last visit, was also higher in pharmacies accredited by July 2003 compared with non-accredited pharmacies. While nested or hierarchical logistic regression could not be performed with available software, it is also likely, given the pattern of effects of clustering, that intention to return would be significantly higher for pharmacies accredited in 2003 than for non-accredited pharmacies.

Table 11.15  Linear mixed modelling to adjust for patient and pharmacy level covariates and clustering

<table>
<thead>
<tr>
<th>Model description</th>
<th>Other variables in the model</th>
<th>Model information</th>
<th>Estimated means for accreditation group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logit of SERVPERF vs. accreditation @ 2002, N=1586</td>
<td>Main pharmacy, duration of use, gender, age, location type, opening hours, entrepreneurial orientation, % of turnover from prescriptions &amp; front of shop</td>
<td>-2 Restricted Log Likelihood=4973.056 AIC=4979.056 AICC=4979.072 CAIC=4998.142 BIC=4995.142</td>
<td>p=0.223  Accredited = -2.049 (95%CI -2.298 to -1.800) Non-accredited = -1.921 (95%CI -2.168 to -1.675)</td>
</tr>
<tr>
<td>Logit of SERVPERF vs. accreditation @ 2003, N=1586</td>
<td>Main pharmacy, duration of use, gender, age, location type, opening hours, owner manager, entrepreneurial orientation, % of turnover from prescriptions &amp; front of shop</td>
<td>-2 Restricted Log Likelihood=4974.150 AIC=4980.150 AICC=4980.165 CAIC=4980.165 BIC=4996.234</td>
<td>p=0.155  Accredited = -2.014 (95%CI -2.240 to -1.789) Non-accredited = -1.845 (95%CI -2.091 to -1.789)</td>
</tr>
<tr>
<td>Factor 1 SERVPERF vs. accreditation @ 2002, N=1586</td>
<td>Main pharmacy, duration of use, gender, age, location type, opening hours, owner manager, entrepreneurial orientation, % of turnover from prescriptions &amp; front of shop</td>
<td>-2 Restricted Log Likelihood=4156.591 AIC=4162.591 AICC=4162.607 CAIC=4181.675 BIC=4178.675</td>
<td>p=0.051  Accredited = -0.112 (95%CI -0.262 to -0.038) Non-accredited = -0.242 (95%CI -0.388 to -0.097)</td>
</tr>
<tr>
<td>Factor 1 SERVPERF vs. accreditation @ 2003, N=1586</td>
<td>Main pharmacy, duration of use, gender, age, location type, opening hours, owner manager, entrepreneurial orientation, % of turnover from prescriptions &amp; front of shop</td>
<td>-2 Restricted Log Likelihood=4155.235 AIC=4161.235 AICC=4161.250 CAIC=4180.319 BIC=4177.319</td>
<td>p=0.028  Accredited = -0.013 (95%CI -0.213 to 0.187) Non-accredited = -0.169 (95%CI -0.447 to -0.147)</td>
</tr>
<tr>
<td>Factor 1 directive guidance vs. accreditation @ 2002, N=1044* (*exclude 4 sites &lt;4 responses)</td>
<td>Main pharmacy, duration of use, gender, age, location type, opening hours, entrepreneurial orientation, % of turnover from prescriptions &amp; front of shop</td>
<td>-2 Restricted Log Likelihood=2935.000 AIC=2941.000 AICC=2941.024 CAIC=2958.821 BIC=2955.821</td>
<td>p=0.739  Accredited = -0.085 (95%CI -0.292 to 0.122) Non-accredited = -0.054 (95%CI -0.255 to 0.146)</td>
</tr>
<tr>
<td>Factor 1 directive guidance vs. accreditation @ 2003, N=1044*</td>
<td>Main pharmacy, duration of use, gender, age, location type, opening hours, entrepreneurial orientation, % of turnover from prescriptions &amp; front of shop</td>
<td>-2 Restricted Log Likelihood=2932.542 AIC=2938.542 AICC=2938.566 CAIC=2956.363 BIC=2953.363</td>
<td>p=0.129  Accredited = -0.013 (95%CI -0.213 to 0.187) Non-accredited = -0.169 (95%CI -0.391 to 0.053)</td>
</tr>
<tr>
<td>Total directive guidance score vs. accreditation @ 2002, N=1067</td>
<td>Main pharmacy, duration of use, gender, age, location type, opening hours, owner manager, entrepreneurial orientation, % of turnover from prescriptions &amp; front of shop</td>
<td>-2 Restricted Log Likelihood=9588.854 AIC=9594.854 AICC=9594.877 CAIC=9612.738 BIC=9609.738</td>
<td>p=0.492  Accredited = 52.16 (95%CI 47.03 to 57.29) Non-accredited = 53.85 (95%CI 48.93 to 58.78)</td>
</tr>
</tbody>
</table>
Table 11.15 continued

<table>
<thead>
<tr>
<th>Model description</th>
<th>Other variables in the model</th>
<th>Model information</th>
<th>Estimated means for accreditation group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total directive guidance score vs. accreditation @ 2003, N=1067</td>
<td>Main pharmacy, duration of use, gender, age, location type, opening hours, entrepreneurial orientation, % of turnover from prescriptions &amp; front of shop</td>
<td>-2 Restricted Log Likelihood=9586.902 AIC=9592.902 AICC=9592.925 CAIC=9610.786 BIC=9607.786</td>
<td>p=0.142 Accredited = 54.56 (95%CI 49.59 to 59.54) Non-accredited = 50.54 (95%CI 44.93 to 56.14)</td>
</tr>
<tr>
<td>% of applicable counselling vs. accreditation @ 2002, N=1343</td>
<td>Main pharmacy, duration of use, gender, age, location type, opening hours</td>
<td>-2 Restricted Log Likelihood=13518.454 AIC=13524.454 AICC=13524.472 CAIC=13543.044 BIC=13540.044</td>
<td>p=0.601 Accredited = 40.08 (95%CI 34.10 to 46.05) Non-accredited = 38.48 (95%CI 32.58 to 44.38)</td>
</tr>
<tr>
<td>% of applicable counselling vs. accreditation @ 2003, N=1343</td>
<td>Main pharmacy, duration of use, gender, age, location type, opening hours</td>
<td>-2 Restricted Log Likelihood=13514.282 AIC=13520.282 AICC=13520.300 CAIC=13538.872 BIC=13535.872</td>
<td>p=0.045 Accredited = 41.45 (95%CI 36.2 to 46.88) Non-accredited = 34.21 (95%CI 27.46 to 40.96)</td>
</tr>
</tbody>
</table>

Key: AIC= Akaike’s Information Criterion; AICC= Hurvich and Tsai’s Criterion; CAIC= Bozdogan’s Criterion; BIC=Schwarz’s Bayesian Criterion. Note, a lower number is better.

The modified SERVPERF factor 1 score was further compared across adopter groups, adjusting for the same covariates. While Factor 1 scores were not significantly different by adopter status (p=0.229), the variable is treated as a series of separate nominal variables in the model, rather than an ordinal variable. An examination of the model estimated means for adopter status does show that as adopter status moves from early through to last adopters, the estimated mean factor score/group declines (Table 11.16). Thus even consumer perception may well be related to some characteristics or behaviours associated with adopter status.

Table 11.16 Estimated model means for adopter group after adjusting for pharmacy and patient clustering

<table>
<thead>
<tr>
<th>Adopter group</th>
<th>Mean</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early</td>
<td>-0.082</td>
<td>-0.260 - 0.097</td>
</tr>
<tr>
<td>Mid</td>
<td>-0.137</td>
<td>-0.310 - 0.036</td>
</tr>
<tr>
<td>Late</td>
<td>-0.218</td>
<td>-0.386 - 0.049</td>
</tr>
<tr>
<td>Last</td>
<td>-0.265</td>
<td>-0.436 - 0.095</td>
</tr>
</tbody>
</table>

11.5 CONSUMER INTENTION TO RETURN

Improving consumer loyalty was one of the aims of QCPP. Consumer intention to return was significantly related to service quality measures:

- Overall counselling on the day (% of applicable items) Rho=0.140 p<0.001 N=1379.
- Transactional functional service quality Rho=0.404 p<0.001 N=1350.
- Receipt of written information (Yes: median intention to return=7 (IQR=6-7); No: median intention to return=7 (IQR=5-7), p<0.001).
- Modified SERVPERF Factor 1 – meeting service needs Rho=0.588 p<0.001 N=1836.
- Modified SERVPERF Factor 2 – improvement unnecessary Rho=0.272 p<0.001 N=1836.
- Sum of total Modified SERVPERF items Rho=0.565 p<0.001 N=1836.
Section 11. Appendix E: Consumer survey

- Factor 1 directive guidance – basic guidance $\rho=0.179$ $p<0.001$ $N=1192$.
- Factor 2 directive guidance – advanced guidance (feedback and monitoring) $\rho=0.204$ $p<0.001$ $N=1192$.
- Sum of modified directive guidance items $\rho=0.284$ $p<0.001$ $N=1219$.
- Non-adherence score (sum of Meichenbaum questions) $\rho=-0.167$ $p<0.001$ $N=1523$.
- Does pharmacy know of consumer’s ADE (Yes: median intention to return=7 (IQR=6-7); No: median intention to return=6 (IQR=4-7), $p<0.001$).

Functional quality measures were more strongly related to intention to return than technical quality measures. Interestingly, receiving advanced directive guidance was more strongly related to intention to return than basic guidance or the basic counselling provided on the most recent visit. Further, consumers with higher non-adherence scores expressed a lower intention to return. Consumers who had received written information at their last visit and whose pharmacy knew of the consumer’s ADE history expressed a greater intention to return than those not given written information or where the ADE history was unknown to the pharmacy.