Uniform Patient Satisfaction Survey Questions for Home Infusion Providers

A Research Study

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ABSTRACT

BACKGROUND

Patient satisfaction as a measure of provider quality has existed in the infusion industry for decades, driven by accreditation standards and the value derived from regularly assessing one's services from the customer's perspective. Conversely, there is a void in the availability of validated and reliable home infusion patient satisfaction questions that generate highly accurate results with less potential for measurement error and misinterpretation. This lack of standardization limits opportunities to conduct industry-wide benchmarking.

PURPOSE

This study was conducted to obtain uniform and validated home infusion-specific patient satisfaction survey questions.

METHODS

Fifteen patient satisfaction survey questions identified by the National Home Infusion Association (NHIA) in 2012, as being representative of home infusion services were rigorously reviewed in this study to determine validity and reliability. An expert panel of 15 people knowledgeable about home infusion was recruited and consented for participation. Delphi methodology was used to validate and establish consensus for the questions to be included in the uniform patient satisfaction survey. The panel was asked to rate, modify, and add patient satisfaction questions in three separate surveys. A seven-point Likert scale was used to rate each of the 15 questions according to its importance. Consensus was defined as achieving a mean score of 5.0 or greater, and standard deviation of less than 1.40 for each question. The validated survey questions were pilot tested on five home infusion patients. The patients were phone interviewed to determine survey difficulties. Test-retest was used to determine survey reliability. The responses on two identical surveys were compared by calculating a correlation coefficient and percentage of matched responses.

RESULTS

A diverse expert panel of home infusion professionals completed three rounds of surveys in this study. In addition to gaining consensus on 11 home infusion patient satisfaction questions, home infusion terminology and question rating scales were assessed. The consented survey questions involved aspects of the patient home infusion experience including the level of satisfaction with the overall home infusion treatment, staff, equipment cleanliness and instructions, understanding of medication side effects, and financial responsibility. The survey pilot test provided additional feedback that led to further changes to the survey, including separating one question into two, resulting in 12 final questions. Using patients, questions were tested-retested for reliability. A correlation coefficient of .90 was achieved indicating a strong correlation between tests 1 and 2. Additionally, patients matched responses on tests 1 and 2 averaged 92.27%, confirming survey reliability.

DISCUSSION

In addition to importance rating the patient survey questions, panel members provided their opinion on each question. This insight provided rich information which led to the dissection of each question. The end result is a survey that will provide actionable information about the home infusion patient experience.

CONCLUSION

The validated survey questions will be released to home infusion providers by the National Home Infusion Foundation (NHIF). Having reliable data from a validated instrument, home infusion providers can make evidence-based decisions that will improve the patient experience. Uniform data sets can be combined with the benefit of an enhanced statistical power and greater sample heterogeneity, creating industry-wide benchmarking and research opportunities to advance the home infusion field.

BACKGROUND

Over the past 20 years, patient satisfaction surveys have gained increasing attention as meaningful and essential sources of information for identifying gaps and developing an effective action plan for quality improvement in health care organizations. Furthermore, for the past two years, health care reform has brought a number of models of health care delivery forward for evaluation, all trying to achieve the triple aim: improving the experience of care, improving the health of populations, and reducing per capita costs of health care. A critical voice in the success or failure of these new health care delivery models is that of the patient. This voice is so critical, that measurement and reporting of patient satisfaction has been deemed a mandatory requirement for all Accountable Care Organizations (ACOs) and Medicare providers.

Patient satisfaction as one measure of provider quality has existed in the infusion industry for many years, driven in part by accreditation standards and also by the value derived from regularly assessing one's company's service from the customer's perspective. However, there is a void in the availability of validated and reliable home infusion patient satisfaction questions.

Home infusion needs a set of uniform survey questions that can be used universally across the industry; allowing for data from several sites to be collected, combined, and analyzed, making the results more powerful. In addition, it would provide a larger sample size and the ability to analyze and correlate the survey data with variables of interest, such as demographics, clinical factors, and geographic location. And, in a strategic benefit, the results of such a process can be used to support and advance the home infusion profession.

For all of these reasons, the National Home Infusion Foundation (NHIF) funded a project aimed at developing a uniform and validated set of home infusion patient satisfaction survey questions to serve as the "core" questions for all patient satisfaction surveys industry wide. The results of the NHIF study are presented in this article.

METHODS: INSTRUMENT DEVELOPMENT AND VALIDATION

Expert Panel Validation

The survey items for the first draft of the *Uniform Patient Satisfaction Survey Questions for Home Infusion Providers* were determined by the NHIA Data Initiative Outcomes Subgroup. Using a methodical approach, the subgroup's first step involved gathering home infusion satisfaction surveys (n=10) from active members of the National Home Infusion Association (NHIA) and comparing the questions on each survey. After noting the commonalities, the group identified the 15 most common patient satisfaction questions.

Next, the 15 questions were included in the 2012 NHIA Definitions Survey to determine if they were representative of the home infusion industry. Respondents were asked if their company includes the question, or something similar, in their patient satisfaction survey and to describe the response scale used by their organization. According to survey results (n=84), the 15 home infusion patient satisfaction questions listed in Exhibit 3 were included in at least 50% of the respondents' company surveys. The survey response scale most often used was a Likert 5-point strongly agree/disagree scale with 5 designating "strongly agree" and 1 designating "strongly disagree." Based on the results of this systematic review, the first draft of the *Uniform Patient Satisfaction Survey Questions for Home Infusion Providers* included the 15 patient satisfaction questions along with a Likert 5-point agree/disagree scale as the response option for each question.

Delphi methodology, which draws on the collective wisdom and opinion of an expert panel, was used to assess the 15 questions for their validity and importance. [1, 2] As shown in Exhibit 1, a diverse, volunteer expert panel of 15 people knowledgeable about home infusion was recruited through NHIA email announcements, website notices, social media and print journal articles. Relying on their judgement, the expert panel assessed the patient satisfaction survey questions by answering the question, "Is the instrument (survey) really measuring the concept we assume it is measuring?" Panel members gave their responses via electronic or paper survey and when the process was complete, had determined which of the 15 patient satisfaction questions were important for the survey, if the wording of the question was appropriate, if additional questions needed to be included, and if there was agreement with the survey response scale. For this study, three expert panel survey rounds were needed to achieve consensus. Consensus was achieved if the question's mean score was 5.0 or greater and the standard deviation was less than 1.40.

EXHIBIT 1. EXPERT PANEL (N=15) DEMOGRAPHICS

	n	Percent
Gender		
Male	4	26.7
Female	11	73.3
Age Group		
30-39	4	26.7
40-49	6	40.0
50-59	3	20.0
60-69	2	13.3
Profession		
Pharmacist	5	33.4
Physician	2	13.3
Nurse	4	26.7
Researcher	1	6.6
Other	3	20.0
Also home infusion patient*	2	13.3
Home Infusion Experience (Years)		
5 or Less	4	26.7
6-10	4	26.7
11-15	4	26.7
16-20	1	6.6
20 or More	2	13.3
Region		
South	6	40.0
Southwest	1	6.6
Northeast	3	20.0
West	1	6.6
Midwest	4	26.7

*In addition to their profession, two panel members were also home infusion patients.

Patient Pilot Testing

To determine the clarity of the survey questions, and subsequent internal validity, survey questions achieving consensus by the expert panel were pilot tested with a patient panel. [3] For this phase of the study, home infusion patients were recruited by several NHIA provider members. The providers were given an overview of the study objectives and protocol, subject eligibility criteria, and a sample script to use when contacting potential patients.

The provider made the initial contact with the prospective patient to assess interest and obtained permission to refer them to the study team. Five patients were identified as eligible and ultimately signed an acceptance letter. Phone interviews were scheduled with each patient who was instructed to complete the pilot test survey according to their most recent home infusion experience, one hour in advance of the interview.

The pilot test was not concerned with the respondent's answers to the questions, but rather with the difficulties the respondents had in answering the questions. In the phone interview the patient was asked three questions about each survey question: 1) Is the question understood? 2) Is there one obvious answer to the question? and 3) Is the scale used to answer the question appropriate? If the patient answered "no" to any of these questions, the survey question was discussed further. Finally, the patient was asked if any of the survey questions were offensive or insulting and if there were any suggestions to improve the survey.

Reliability Testing

The survey's reliability was determined by test-retest method which involved administering the same survey to six individuals on two separate occasions, approximately one week apart. Test-retest estimates the stability of an instrument (survey) by showing the extent to which its scores are consistent over time. Accordingly, the higher the reliability, the less susceptible the scores are to random daily changes.[4] Four of the patients who pilot tested the survey were also involved with this step. After comparing the results from the first and second survey, the percentage of matched responses for each patient was calculated and a reliability coefficient was determined, which indicated the extent of the relationship between two sets of survey scores.
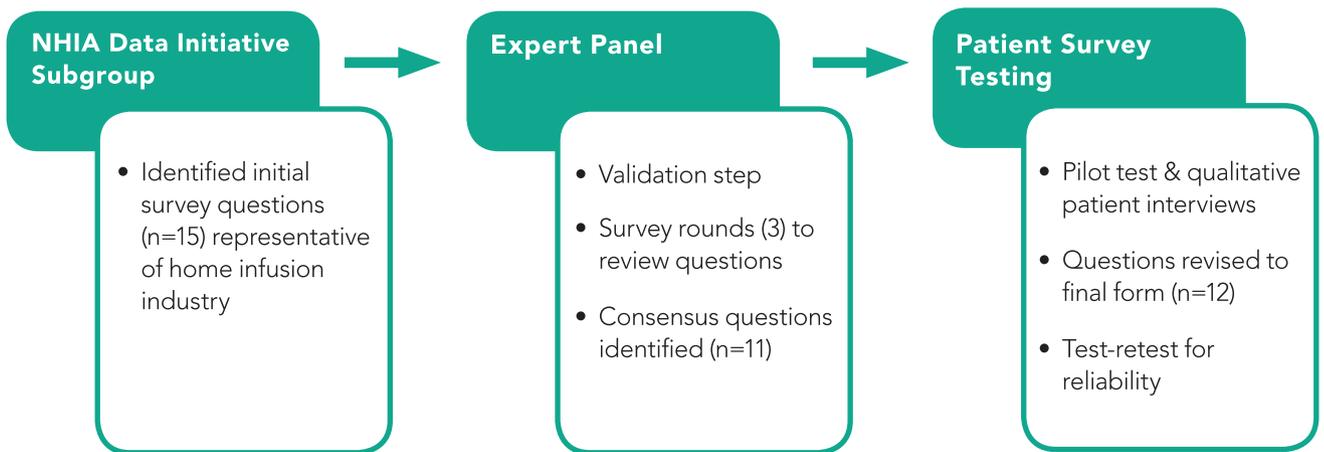
Exhibit 2 provides a summary of the process used to develop the *Uniform Patient Satisfaction Survey for Home Infusion Providers*.

STUDY RESULTS

During Round 1, the expert panel rated each question according to its importance in the patient satisfaction survey (see Exhibit 3) and were asked to provide alternate wording of the question, edits, and other recommendations that would improve each question on the *Uniform Patient Satisfaction Survey for Home Infusion Providers*. There were strong opinions on including additional questions and the deletion of others along with recommended changes to the rating scale used for some of the patient satisfaction questions. Panel members were also concerned about a lack of consistency in the use of home infusion terminology in the patient survey, specifically, the terms used to describe "home infusion services" and "home infusion therapy." Most of the questions were edited according to these recommendations.

In Round 2, the expert panel once again rated the patient satisfaction questions except that: 1) the questions included the mean and standard deviation from Round 1, 2) were edited according to panel recommendations, and 3) the terms used to describe "home infusion services" and "home infusion therapy" were reviewed. After this round, a patient satisfaction question achieved consensus and was included in the *Uniform Patient Satisfaction Survey for Home Infusion Providers* if the mean score was 5.0 or greater and the standard deviation was less than 1.40. Nine patient satisfaction questions achieved this rating, which meant that two patient satisfaction questions were in position to be deleted: "The services met my needs and expectations" and

EXHIBIT 2. STUDY DIAGRAM

NHIA Data Initiative Subgroup
- Identified initial survey questions (n=15) representative of home infusion industry

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Expert Panel
- Validation step
- Survey rounds (3) to review questions
- Consensus questions identified (n=11)

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Patient Survey Testing
- Pilot test & qualitative patient interviews
- Questions revised to final form (n=12)
- Test-retest for reliability

EXHIBIT 3. EXPERT PANEL RATING OF INITIAL 15 HOME INFUSION PATIENT SATISFACTION SURVEY QUESTIONS

	Mean*	SD
1. The equipment provided/delivered was clean and in good working order.	6.47	.80
2. The equipment and supplies provided were adequate to meet my home infusion needs.	5.80	1.83
3. The medications, equipment, and supplies were delivered on time.	6.53	1.02
4. Instruction was adequate for whom to call if I had a problem.	6.73	.57
5. The response received to calls for assistance after regular business hours was satisfactory.	6.20	1.32
6. The services provided met my needs and expectations.	5.80	1.83
7. I was informed of the possible side effects of the medication I received.	6.73	.44
8. The instructions were adequate to teach me or my caregiver how to give the intravenous (IV) medications.	6.93	.25
9. The nurses were knowledgeable regarding my infusion therapy.	6.53	.80
10. The nurses were on time.	5.40	1.58
11. The explanation of my financial responsibilities was adequate.	6.07	.77
12. I was included in decisions regarding the planning of my care.	6.00	1.46
13. I was satisfied with the overall experience of receiving IV therapy at home.	6.20	2.04
14. I would recommend this service to my family and friends.	6.47	1.54
15. Home Infusion Personnel	6.40	.80

15. Home Infusion Personnel

	Courteous	**Helpful**
	5=Very Courteous	**5=Very Helpful**
	1=Not Courteous	**1=Not Helpful**
	NA=Not Applicable	**NA=Not Applicable**
Delivery Personnel	5 4 3 2 1 NA	5 4 3 2 1 NA
Billing Personnel	5 4 3 2 1 NA	5 4 3 2 1 NA
Pharmacists	5 4 3 2 1 NA	5 4 3 2 1 NA
Nurses	5 4 3 2 1 NA	5 4 3 2 1 NA

*7=Extremely Important, 1=Extremely Not Important

"Staff was knowledgeable about my home infusion medications." Prior to deleting the questions, the expert panel was asked if the questions should be removed. Both questions received the same results with nine (60%) respondents indicating the question should be removed.

During Round 3, panel members were asked to re-evaluate the following five survey questions that did not score high enough to reach consensus in Round 2, but that the study team believed were worthy of another review after being edited according to the panel's recommendations.

QUESTION 1: THE EQUIPMENT AND SUPPLIES MET MY HOME INFUSION THERAPY NEEDS.

Panelists felt the question was too general, or that it was duplicative of other questions related to home infusion equipment. Others commented that the wording and scale were appropriate. In Round 3 of the expert panel survey, more than half (60%) of the respondents agreed to not include the question in the patient satisfaction survey.

QUESTION 2:

I understood the instructions provided for:			
How to wash my hands.	Yes	No	NA
How to give the home infusion medication(s).	Yes	No	NA
How to care for the IV catheter.	Yes	No	NA
How to store the home infusion medication(s).	Yes	No	NA
How to use the home infusion equipment.	Yes	No	NA

This question did not score high enough in Round 2 to achieve consensus. The question was significantly revised after Round 1 to solicit feedback from patients

about the instruction provided to them for specific tasks. Further edits were made based on panelist feedback from the Round 2 survey. Respondents were asked to rate the survey question in terms of its importance in providing valuable information to home infusion providers; it reached consensus in Round 3 with a mean score of 6.13 (SD=.88).

QUESTION 3: I KNEW WHEN TO EXPECT MY NURSE.

Some panelists commented that meeting patient's expectations for nurse arrival is difficult, especially when nursing services are contracted with a different company. Others commented that knowing when to expect the nurse is important to patients, especially early on in therapy. More than half (60%) of the expert panel members agreed that the question should not be included in the patient satisfaction survey.

QUESTION 4: MY INPUT WAS CONSIDERED IN DECISIONS ABOUT MY HOME INFUSION THERAPY.

Some panelists commented that patients are often not knowledgeable enough about infusion therapy to discuss personal preferences. Others felt the question was appropriately worded to determine whether the care provided was inclusive of patient's individual wishes. Slightly more than half (53.33%) of the panelists felt that question should not be included in the patient survey.

QUESTION 5: I WOULD RECOMMEND THIS HOME INFUSION COMPANY TO MY FAMILY AND FRIENDS.

Based on panelist feedback in Round 2, the patient rating scale was changed to a 5-point Likert scale. Some panelists commented that the question is not relevant because patients often do not have the opportunity to recommend home infusion services to their family and friends. Others considered

this an essential question because it can provide information about whether the patient was generally satisfied with the provider's services. In Round 3, most panelists (80%) agreed that the question should be included in the patient survey.

Exhibit 4 provides a summary of the questions that reached consensus during the three expert panel survey rounds. This concluded the work of the expert panel. The patient satisfaction survey was ready to be pilot tested with home infusion patients.

PATIENT PILOT TEST RESULTS

Five home infusion patients participated in the survey pilot test phase of the study. An established script was used for each patient phone interview which averaged 30 minutes in length. After reviewing the patient interview notes, common themes were noted and the following patient satisfaction survey changes were made:

- Questions that pertain to equipment were modified to explicitly refer to infusion pumps.

- Instead of using NA (Not applicable) as a response option in certain questions, a complete statement will be used, for example, "I did not use a home infusion pump" will be substituted for NA.

- The Yes/No question, "I was informed of the possible side effects of the home infusion medication," will be prefaced with "The home infusion nurse or pharmacist…."

- For Question 7, "I understood the explanation of my financial responsibilities for home infusion therapy," the rating scale will be changed from a frequency scale to a Yes/No response.

- After each question, a "comment" section will be added. Patient's want the ability to share their experiences in more detail.

EXHIBIT 4. SUMMARY TABLE: HOME INFUSION PATIENT SATISFACTION SURVEY QUESTIONS ACHIEVING EXPERT PANEL CONSENSUS

	Patient Rating Scale	Round 2 Mean* (SD)	Round 3 Mean* (SD)
1. The home infusion equipment was clean when it was delivered.	Yes/No/NA	6.13 (.88)	--
2. The home infusion equipment worked properly.	Yes/No/NA	6.73 (.44)	--
3. The home infusion medications and supplies arrived before I needed them.	Frequency Scale	6.40 (.71)	--
4. I knew who to call if I needed help with my home infusion therapy.	Yes/No/NA	6.87 (.34)	--
5. The response I received to phone calls for help on weekends or during evening hours met my needs.	Frequency Scale	6.47 (.72)	--
6. I was informed of the possible side effects of the home infusion medication.	Yes/No	6.67 (.47)	--
7. I understood the explanation of my financial responsibilities for home infusion therapy.	Frequency Scale	6.33 (.79)	--
8. I was satisfied with the overall quality of the services provided.	5-Point Likert	6.47 (.96)	--
9. Using the table below, rate your interactions with the listed staff. How often were each courteous and helpful?	Frequency Scale	6.20 (.91)	--

Home Infusion Staff	Courteous	Helpful
	5=Always 4=Very Often 3=Sometimes 2=Rarely 1=Never NA=Not Applicable	5=Always 4=Very Often 3=Sometimes 2=Rarely 1=Never NA=Not Applicable
Delivery Staff	5 4 3 2 1 NA	5 4 3 2 1 NA
Billing Staff	5 4 3 2 1 NA	5 4 3 2 1 NA
Pharmacy Staff	5 4 3 2 1 NA	5 4 3 2 1 NA
Nursing Staff	5 4 3 2 1 NA	5 4 3 2 1 NA

	Patient Rating Scale	Round 2 Mean* (SD)	Round 3 Mean* (SD)
10. I understood the instructions provided for:	Yes/No/NA	5.60 (1.62)	6.13 (.88)

How to wash my hands.	Yes No NA	
How to give the home infusion medication(s).	Yes No NA	
How to care for the IV catheter.	Yes No NA	
How to store the home infusion medication(s).	Yes No NA	
How to use the home infusion equipment.	Yes No NA	

	Patient Rating Scale	Round 2 Mean* (SD)	Round 3 Mean* (SD)
11. I would recommend this home infusion company to my family and friends.	5-Point Likert	6.27 (1.53)	Voted to Retain Question

Frequency Scale: Always, Very Often, Sometimes, Rarely, Never
Likert 5-point scale: Strongly Agree, Agree, Uncertain, Disagree, Strongly Disagree
*7=Extremely Important, 1=Extremely Not Important
-- =Question reached consensus in a previous round

- Question 8, "I was satisfied with the overall quality of the services provided" has characteristics of a summary question, thus it will be moved toward the end of the survey.

- Question 9 involved rating the home infusion staff on their courteousness and helpfulness. Due to the complexity of this question it will be divided into two separate questions.

See Exhibit 6 for the final version of the *Uniform Patient Satisfaction Survey Questions for Home Infusion Providers* that includes the above changes.

TEST-RETEST RELIABILITY RESULTS

Reliability testing, using test-retest methodology, was the final step in developing a valid and reliable patient satisfaction survey. After pilot testing the survey and making the recommended changes, this step determined if the survey provides consistent results. For this test, the survey was administered to six home infusion patients on two separate occasions, approximately one week apart. Four of the six patients that participated in the pilot test also participated in the reliability testing. The final version of the survey which included 12 questions with 22 individual responses was used for the reliability test. To ensure that results were not biased, the patient could not have had a home infusion treatment in between taking the surveys. Five of the six patients were 70+ years of age and male. All patients had received an anti-infective medication with two patients also receiving nutrition support and immune globulin. Five of the six patients received their last treatment within the past 12 months.

The test-retest results from the patient surveys were compared using a correlation coefficient after converting nominal and ordinal data to numerical data. Data analysis showed an overall correlation coefficient of .90, indicating a strong correlation between survey 1 and 2. A percentage of matched responses for each patient was also calculated as shown in Exhibit 5. These results confirm survey reliability.

EXHIBIT 5. TEST-RETEST RELIABILITY RESULTS

Patient #	Percent of Matched Responses from Test 1 & 2
1	90.00
2	95.45
3	86.36
4	95.45
5	90.90
6	95.45

DISCUSSION

The final survey questions, as shown in Exhibit 6, will be released to home infusion providers by the National Home Infusion Foundation. While these validated questions should be included in all survey tools, home infusion providers may customize their patient satisfaction surveys by including additional questions specific to their operation.

Future use of the patient satisfaction survey includes the ability to send uniform de-identified data to a central coordination center. Uniform data sets can be pooled with the benefit of an enhanced statistical power, providing greater sample heterogeneity; and to facilitate benchmarking and research opportunities. There will also be the ability to analyze and correlate the survey data with variables of interest, such as demographics, clinical factors, and geographic location. Most important, a strategic benefit of this process is that the analysis of aggregate data from uniform patient satisfaction survey questions can be used to support and advance the home infusion profession as a whole.

REFERENCES

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1. The home infusion pump was clean when it was delivered.

a. Yes
b. No
c. I did not use a home infusion pump.
Comments:_____

2. The home infusion pump worked properly.

a. Yes
b. No
c. I did not use a home infusion pump.
Comments:_____

3. The home infusion medications and supplies arrived before I needed them.

a. Always
b. Very Often
c. Sometimes
d. Rarely
e. Never
Comments:_____

4. I knew who to call if I needed help with my home infusion therapy.

a. Yes
b. No
Comments:_____

5. The response I received to phone calls for help on weekends or during evening hours met my needs.

a. Always
b. Very Often
c. Sometimes
d. Rarely
e. Never
f. I did not need to call for help on weekends or during evening hours.
Comments:_____

6. The home infusion nurse or pharmacist informed me of the possible side effects of the home infusion medication.

a. Yes
b. No
Comments:_____

7. I understood the explanation of my financial responsibilities for home infusion therapy.

a. Yes
b. No
Comments:_____

8. Using the table below, rate how often each staff were courteous.

Scale: 5=Always, 4=Very Often, 3=Sometimes, 2=Rarely, 1=Never, NA – Not applicable

Delivery Staff	5 4 3 2 1 NA
Billing Staff	5 4 3 2 1 NA
Pharmacy Staff	5 4 3 2 1 NA
Nursing Staff	5 4 3 2 1 NA

Comments:_____

9. Using the table below, rate how often each staff were helpful.

Scale: 5=Always, 4=Very Often, 3=Sometimes, 2=Rarely, 1=Never, NA – Not applicable

Delivery Staff	5 4 3 2 1 NA
Billing Staff	5 4 3 2 1 NA
Pharmacy Staff	5 4 3 2 1 NA
Nursing Staff	5 4 3 2 1 NA

Comments:_____

10. I understood the instructions provided for:

How to wash my hands.	Yes No NA
How to give the home infusion medication(s).	Yes No NA
How to care for the IV catheter.	Yes No NA
How to store the home infusion medication(s).	
How to use the home infusion pump	Yes No NA
*NA = Not Applicable	Yes No NA

Comments:_____

11. I was satisfied with the overall quality of the services provided.

a. Strongly Agree
b. Agree
c. Uncertain
d. Disagree
e. Strongly Disagree
Comments:_____

12. I would recommend this home infusion company to my family and friends.

a. Strongly Agree
b. Agree
c. Uncertain
d. Disagree
e. Strongly Disagree
Comments:_____