

Fielding the CAHPS® Clinician & Group Survey

Sampling Guidelines and Protocols

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Documents Available for the CAHPS Clinician & Group Survey

This document is part of a comprehensive set of instructional materials that address implementing the Clinician & Group Survey, analyzing the data, and reporting the results. All documents are available on the Agency for Healthcare Research and Quality's Web site: www.cahps.ahrq.gov. For assistance in accessing these documents, please contact the CAHPS Help Line at 800-492-9261 or cahps1@westat.com.

For descriptions of these documents, refer to *What's Available for the Clinician & Group Survey 3.0*.

Questionnaires

- *CAHPS Clinician & Group Survey: Overview of the Questionnaires*
- *Clinician & Group Survey 3.0* (Adult and Child, English and Spanish)
- *Clinician & Group Survey 2.0* (Adult and Child, English and Spanish)
 - *12-Month Survey 2.0*
 - *Patient-Centered Medical Home Survey 2.0*
 - *Visit Survey 2.0*

Supplemental Items

- *Supplemental Items for the Adult Survey*
- *Supplemental Items for the Child Survey*
- *About the Health Literacy Item Set for Clinicians & Groups*
- *About the Cultural Competence Item Set*
- *About the Health Information Technology Item Set*
- *About the Patient-Centered Medical Home (PCMH) Item Set*

Survey Administration Guidelines

- *Preparing a Questionnaire Using the CAHPS Clinician & Group Survey*
- *Fielding the CAHPS Clinician & Group Survey*
- *Sample Notification Letters and Emails for the CAHPS Clinician & Group Survey*
- *Sample Telephone Script for the CAHPS Clinician & Group Survey*
- *Translating CAHPS Surveys*

Data Analysis Program and Guidelines

- *CAHPS Analysis Program (SAS)*
- *Preparing and Analyzing Data from the CAHPS Clinician & Group Survey*
- *Instructions for Analyzing Data from CAHPS Surveys*

Reporting Measures and Guidelines

- *Patient Experience Measures from the CAHPS Clinician & Group Survey*

Introduction

This document explains how to field the CAHPS Clinician & Group Survey and gather the data needed for analysis and reporting. It provides instructions and advice related to the following topics:

- Constructing the sampling frame.
- Choosing the sample.
- Maintaining confidentiality.
- Collecting the data.
- Tracking returned questionnaires.
- Calculating the response rate.

These instructions apply to the Adult and Child versions of this survey.

The CAHPS Clinician & Group Surveys can be used to assess care at three levels: the individual provider, the practice site/clinic, or the medical group. As illustrated in the graphic below, a practice site/clinic is based on a single geographic location. A medical group may contain multiple practice sites/clinics and is defined by a specific list of providers.

Figure 1. Three Levels of Sampling

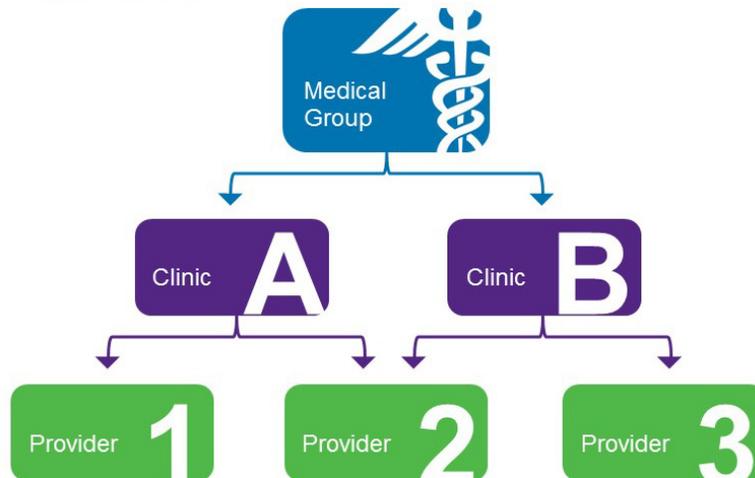


Figure 2. Summary of Key Recommendations for Administering a Clinician & Group Survey

Administration	To generate the standardized data necessary for valid comparisons, the survey should be conducted by a third-party vendor according to the CAHPS guidelines specified in this document.
Sampling frame	Age (Adult: 18 and over; Child: 17 and under) and had a visit with an individual provider, practice or medical group.
Collection mode	Mail, telephone, email (with mail or telephone), or mixed mode protocols
Sample size	Varies, depending on whether sampling is done at the level of the individual provider, practice, or medical group. In general, to produce statistically valid comparisons, the sample needs to be large enough to yield 50 completed questionnaires per provider or 300 completed questionnaires per medical group. The recommended sample size when sampling at the practice site level depends on the number of providers at each site; see Figure 4 for specific recommendations.
Target response rate	40 percent

Sampling Guidelines

These sampling guidelines will help you understand who is eligible to be included in the sample frame for a CAHPS Clinician & Group Survey. They also explain how to select a sample. By following these guidelines, you can be confident that your results will be comparable to those produced by other vendors and survey sponsors (organizations that fund or oversee the administration of the survey).

All users of the Clinician & Group Survey can submit their survey results to AHRQ’s CAHPS Database and obtain comparative data reports. Adherence to the administration guidelines is particularly important if you want to submit your results to the CAHPS Database.

For more information on the CAHPS Database, visit <https://cahpsdatabase.ahrq.gov>.

Defining the Sample Frame: Eligibility Guidelines

The sample will be drawn from a list of individuals (adults age 18 and older, or children 17 and younger) who have received care from a given provider, practice site, or medical group during the specified time interval. The list is called a sample frame.

The best source of sample information for a given survey sponsor depends on which data source has the most accurate and complete data. Health plans or purchasers of care may have administrative or billing data to identify individual patients. In some instances, the data to identify individual patients may be found only in the records of medical practices. It may be necessary to pull data from two or more sources in order to have both up-to-date contact information and the ability to connect the visit to a specific provider.

Connecting health care received to a specific provider is necessary even if you are only interested in assessing patients' experiences with a practice site, clinic, or medical group. This information is used in the first question on the survey to define "this provider" for the respondent to assess. If the source of the sampling frame does not accurately identify the provider that the patient saw, you may want to oversample to account for errors. Such errors can occur if, for example, you use administrative billing data for the sampling frame and visits with physician assistants or nurse practitioners are billed under the supervisory physician.

Please review these guidelines for determining whom to include in your sample frame:

- Include only patients who have had **at least one visit to the selected provider/practice in the target time frame**. The target time frame, or look-back period, for the Clinician & Group Survey 3.0 is 6 months. This target time frame is intended to make the sample frame as inclusive as possible and to standardize data collection for comparisons of results.
- To determine the look-back period for your sampling frame, use the anticipated start date of data collection. For example, if you are using a look-back period of 6 months and your anticipated start date is September 1, 2015, include all those who have had at least one visit since March 1, 2015.
- The sampling frame is a person-level list rather than a visit-level list. Therefore, patients should appear only once in the sampling frame regardless of how many visits they have had in the look-back period. Use their most recent visit for inclusion in the sampling frame.
- If you are administering the Adult Survey, include all adults 18 years or older.
- If you are administering the Child Survey, include all children 17 years or younger.
- Draw the sample irrespective of reason for visit and duration of patient-provider relationship so that the full range of patients is represented.
- Include all patients who meet the sampling criteria even if they are no longer currently receiving care from the practice site/clinic or provider. Similarly, it is not required that the patient have the same insurance coverage the patient had at the time of the visit, even if the health plan is providing data for the sampling frame. Therefore, a patient who has disenrolled from the health plan can be included in the sampling frame as long as the patient meets the other sampling criteria.
- Allow the **sample frame** to include multiple individuals from the same household, but do not include more than one person (adult or child) per household in the final **sample** for which the survey will be administered. In other words, be sure to de-duplicate the sample to ensure that only one person per household receives a survey.

To ensure that results are comparable, do not target specific patient populations, such as patients with particular conditions or experiences, when you draw the sample. All CAHPS survey items have been designed for the general population. The survey includes appropriate screening items for questions that are designed to assess a specific experience. If you need to analyze data results by a specific patient population and do not expect to get a sufficient number of responses for that subgroup, then you can supplement your general population sample with a targeted oversample. But you must pull a general population sample first, before any oversampling is done.

Figure 3. Sample Frame Elements

The following information (data elements) should be included in the sample frame that a survey sponsor provides to the vendor.

Adult Survey	Child Survey
Unique patient ID	Unique patient ID
Name of person (first and last names in separate fields)	Name of child (first and last names in separate fields)
Date of birth	Date of birth of child
	Parent or guardian’s name
Gender	Gender of parent or guardian
Complete address (includes street address, city, state, and ZIP Code each in a separate field)	Complete address of parent or guardian (includes street address, city, state, and ZIP Code each in a separate field)
Telephone number with area code (if available)	Parent or guardian’s telephone number with area code (if available)
Email address (if available)	Parent or guardian’s email address (if available)
Indicate if Spanish-language materials are required (if known)	Indicate if Spanish-language materials are required (if known)
Name and unique ID of medical group	Name and unique ID of medical group
Name and unique ID of provider seen	Name and unique ID of provider seen
Name and unique ID of site where patient was seen	Name and unique ID of site where patient was seen
Indicate if the physician is the patient’s assigned primary care provider (optional)	Indicate if the physician is the child’s assigned primary care provider (optional)
Date of most recent visit	Date of most recent visit

Recommended Number of Completes

The level of sampling determines how many completed questionnaires are required to obtain usable information. (“Questionnaires” are the survey instruments that have been mailed or are administered by telephone or online. Appendix B explains how to determine whether the returned questionnaire is “complete.”) A minimum number of completed questionnaires are required for each level to ensure that the results are statistically reliable:

- **Individual providers: 50 completed questionnaires per provider.**
At least 50 completed questionnaires per provider are recommended if the survey will be used to report or assess performance for individual providers.
- Practice site or clinic: Varies by the number of providers.
- For the practice site or clinic level, the recommended number of completed questionnaires is based on the number of providers at the site.

Figure 4. Number of Completed Questionnaires Required for Practice Sites or Clinics

Number of Providers	Number of Completed Questionnaires
1	50
2	100
3	150
4-9	175
10-13	200
14-19	250
20 or more	300

- **Medical group: 300 completed questionnaires.**
For applications of the survey intended to report or assess performance for a larger entity, such as a multi-site medical group, with no interest in assessing individual physicians or practice sites, a minimum of 300 completed questionnaires per medical group is recommended. This recommendation is based on analyses conducted for the CAHPS Group Practice Survey that preceded the CAHPS Clinician & Group Survey;¹ these analyses were confirmed with data from the CAHPS Database.

The recommendations regarding the number of completed questionnaires per provider, practice site, and group apply to the survey with **core items only**. If your

¹ Solomon LS, Hays RD, Zaslavsky AM, Ding L, Cleary PD. Psychometric properties of a group-level Consumer Assessment of Health Plans Study (CAHPS) instrument. *Med Care*. 2005 Jan;43(1):53-60.

survey includes supplemental items, which often apply to a relatively small subset of the overall sample, a higher number of completed questionnaires may be needed to generate enough responses to those items for the purposes of analysis and reporting. Generally speaking, to yield a level of reliability for supplemental items that is consistent with that of the core items, at least 100 responses per item are needed at the group-level and 50 response per item are needed at the individual physician level.

Reasoning behind the recommendations. These recommendations are based on studies of the number of completed questionnaires necessary to achieve adequate provider-level, practice-level, or group-level reliability for a measure. That is, how many completed questionnaires are needed to reliably distinguish among different units of measurement (such as individual providers or practices)? To answer this question, the CAHPS team examined data from multiple field trials as well as data from the CAHPS Database.

The unit-level reliability coefficient indicates the extent to which the patients within that unit (e.g., the patients of an individual provider, practice, or group) agree with one another in terms of their reported experiences.² This coefficient can take any value from 0.0 to 1.0, where 1.0 signifies a measure for which every patient (e.g., all patients surveyed for a given practice) reports an identical experience. High levels of reliability are ideal, but achieving higher levels requires more completed questionnaires. To balance the goal of reliability with the need for a feasible sample size, the CAHPS team adopted the widely accepted coefficient of 0.70 as the threshold. In particular, a reliability level of at least 0.70 is strongly recommended for “high stakes” purposes such as public reporting or payment incentives, given the larger errors around estimated scores below this threshold.

The number of completed questionnaires per sampling unit that is required to achieve this threshold will vary across areas and markets. In more than a dozen field tests of the CAHPS Clinician & Group Survey, all testing sites achieved or surpassed 0.70 reliability for the core composite measures with 50 completed questionnaires per provider. (See **Appendix A** for the data used to develop recommendations for provider-level sampling).

In some markets and provider populations, it has been possible to achieve 0.70 reliability with fewer responses. For example, in one market, completed questionnaires from as few as 20 patients per provider were adequate to achieve 0.70 reliability on the “access” composite and on each of the individual items contained in that composite; in another market, 50 questionnaires per provider were required to meet that threshold.^{3, 4} The recommendations for the number of completed

² Compared to the amount that practices differ from one another.

³ Hays RD, Chong K, Brown J, Spritzer KL, Horne K. Patient reports and ratings of individual physicians: An evaluation of the DoctorGuide and CAHPS® provider level surveys. *Am J Med Qual.* 2003 Sep-Oct;18(5):190-6.

⁴ Safran DG, Karp M, Coltin K, Chang H, Li A, Ogren J, Rogers WH. Measuring patients’ experiences with individual primary care physicians: Results of a statewide demonstration project. *J Gen Intern Med.* 2006 Jan;21(1):13-21.

questionnaires are based on the likelihood of achieving sufficient reliability across most scenarios of survey implementation.

Once a survey sponsor has experience with a particular level of sampling, it may be possible to aim for somewhat smaller numbers of completed questionnaires per unit by computing the number of “completes” required to achieve unit-level reliability of 0.70 or higher for each composite and item-level measure. If the highest number of completed questionnaires needed to achieve 0.70 reliability across each composite and item-level measure is less than the number of completed questionnaires recommended in this document, the user may consider reducing the sample size for future survey administration at that sampling level. One caveat is that the number of completed questionnaires needed to achieve 0.70 reliability generally increases over time as a result of reduced variation among units as their performance improves. Therefore, users may want to choose a sample size that is slightly higher than the number obtained in the reliability calculation.

Calculating the Starting Sample Size

The starting sample size you need to achieve the desired number of completed questionnaires should take several factors into account:

- The anticipated response rate.
- The accuracy of the contact information.
- The mode or modes of data collection.
- Any prior surveys of the same or similar populations.
- Expectations about the number of individuals who may be identified as ineligible (see the discussion of response rates in the following section).

Response Rate Goal

The CAHPS team recommends aiming for a response rate of at least a 40 percent. This figure is based on extensive experience with partners and field trials regarding what is possible with a reasonable amount of effort and expense. Survey sponsors and vendors that follow the recommended protocols for sampling and data collection, including followup with non-respondents, can achieve response rates of 40 percent or higher.

Being able to achieve this response rate depends in large part on the accuracy of the sampling frame. If you anticipate that inaccuracies in the sample frame, such as poor contact information (addresses and phone numbers), will decrease the number of questionnaires that reach the sampled individuals, you may need to start with a larger sample size than suggested in the next section on sample size calculations.

A low response rate affects the ultimate sample size, but it is of concern primarily because the lower the response rate, the less confident one can be that the sample is representative of the underlying population. Differences in response rates across units

of interest (individual providers, practice sites, or medical groups) are also a concern, because the sampling bias may differ across units. Survey users should track the unit-level response rate as well as the overall response rate as they field the survey.

Sample Size Calculation: Individual Providers

To have a sufficient number of responses for analysis and reporting, you need to start with enough individuals in the sample to obtain approximately 50 completed questionnaires per provider. Assuming you achieve a response rate of 40 percent, you would need to a minimum sample size of 125 patients per provider. Figure 5 shows this calculation.

Figure 5. Calculation of Estimated Sample Size Needed To Assess Individual Providers

Goal	50 completed questionnaires
Target response rate	40 percent (= 0.40)
Minimum sample size needed	$(50/0.40) = 125$ per provider

However, because response rates can vary, a sponsor may field as few as 90 or as many as 150 questionnaires. If you anticipate that poor contact information (addresses and phone numbers) will decrease the number of questionnaires that reach the sampled individuals, you may need to start with a larger sample.

If a provider does not have a patient base large enough to draw the required sample size, the sample will be all patients who meet all the eligibility criteria. But even under these circumstances, the sample may include only one adult per household. Careful consideration must be given to reporting or using provider-level data that is based on fewer than 50 completed questionnaires.

Sample Size Calculation: Practice Sites or Clinics

As explained on page 5, the number of completed questionnaires sufficient for reporting results at the practice level varies by the number of providers at the practice. Practices with more providers will need a greater number of completed questionnaires. Refer to Figure 4 to see how the number of completed questionnaires rises as the number of providers increases.

Assuming a practice has three providers and a response rate of 40 percent, you would need to start with a minimum sample size of 375 to achieve the recommended target of 150 completed questionnaires. Figure 6 shows this calculation.

Figure 6. Calculation of Estimated Sample Size Needed To Assess Practice Sites or Clinics

Number of Providers	3
Goal	150 completed questionnaires
Target response rate	40 percent (= .40)
Minimum sample size needed	$(150/0.40)=375$ for the practice

If you are sampling for multiple practices, each practice may have a different starting sample size depending on the number of providers at each of the practices.

If a practice does not have a patient base large enough to draw the required sample size, the sample will be all patients who meet all the eligibility criteria. But even under these circumstances, the sample may include only one adult per household. Careful consideration must be given to reporting or using practice-level data that is based on fewer than the recommended number of completed questionnaires.

Sample Size Calculation: Medical Groups

To have a sufficient number of responses for analysis and reporting, you need to select enough individuals to obtain approximately 300 completed questionnaires per group. Assuming you achieve a response rate of 40 percent, you would need to start with a minimum sample size of 750. Figure 7 shows this calculation.

Figure 7. Calculation of Estimated Sample Size Needed To Assess Medical Groups

Goal	300 completed questionnaires
Target response rate	40 percent (= .40)
Minimum sample size needed	$(300/0.40)=750$ per group

If a group does not have a patient base large enough to draw the required sample size, the sample will be all patients who meet all the eligibility criteria. But even under these circumstances, the sample may include only one adult per household. Careful consideration must be given to reporting or using group-level data that is based on fewer than 300 completed questionnaires.

Preparing Sample Files for Data Collection

Once the sample has been selected, the vendor assigns a unique identification (ID) number to each sampled person. This unique ID number should **not** be based on an existing identifier such as a Social Security number or a patient ID number. This number will be used **only** to track the respondents during data collection.

As previously noted, some sample frames may not include complete and accurate contact information, requiring the combination of information from two (or more) sources – such as administrative records from a health plan and contact records from the medical group or provider office. When information from two sources differs, survey sponsors and their vendors should consult with each other to decide which

sources of information are most accurate and should be used. This may be a complex, multistep process that requires time and rigorous quality control. In addition, because the survey sponsor may be responsible for some elements of this process and the vendor for others, it is important to carefully coordinate this process.

The pieces of information that are most critical to the success of data collection are accurate and complete patient [parent/guardian] and provider names and contact information appropriate for the mode of administration (i.e., addresses for mail surveys, telephone numbers for telephone administration, and email addresses for online administration). When you have incomplete address information or have reason to believe that this information may be inaccurate, survey sponsors and/or vendors may be able to use other sources to clean the sample file, such as Internet directories.

Data Collection Modes

Each survey sponsor will need to choose the data collection mode that maximizes the response rate at an acceptable cost.

Recommended Modes

Based on field test results, the CAHPS team recommends the following modes:

- Mail only.
- Telephone only.
- Mixed mode (mail and telephone, email and mail, or email and telephone).

Survey sponsors that employ one of these modes using the recommended protocols can expect to achieve response rates of approximately 40 percent or higher.

Results from the field tests, as well as the experiences of organizations that have fielded similar surveys, indicate that the mail with telephone followup method is most effective; results from survey research literature indicate that followup by telephone often adds 10 to 15 percentage points to the response rate.

Other Modes

Recognizing that many organizations are interested in using different modes to administer a patient survey, the CAHPS team has conducted preliminary testing of alternative modes, specifically in-office distribution and interactive voice response (IVR, also known as telephone audio computer-assisted self-interviewing, or T-ACASI). Further study is required before either of these modes can be recommended.

Multiple studies of in-office distribution found that the survey results were not comparable to those collected with recommended modes.⁵ The investigators observed incomplete distribution rates, lower response rates, and declining distribution rates. Finally, there were significant mode-physician interaction effects, which suggests that data cannot be pooled then adjusted to account for the differences.

Because the implications of using these modes are not yet fully known, they should be used with caution. If a sponsor uses one of these modes to collect data, the ability to compare survey results across users may be limited.

Survey Administration Cost and Time

Costs associated with administering the CAHPS Clinician & Group Survey will vary depending on the mode or mix of modes. Based on data from three test sites, the CAHPS team estimated a cost per completed questionnaire of \$8.00 for mail administration. Cost per completed questionnaire for mixed mode or telephone administration will be higher. Based on a target of 50 completed questionnaires, the cost of a mail survey would be \$400 per provider.

The time required to administer the Clinician & Group Survey is approximately 12 to 15 minutes. This estimate is based on tests of telephone administration as well as data on the self-administration of CAHPS surveys of similar length.

Data Collection Protocols

This section provides a protocol for collecting responses by mail with telephone followup and email with mail followup. You can adapt this protocol for mail-only, telephone-only, or email with telephone followup. At this time, an email-only mode is not recommended.

A survey sponsor may choose to deviate from these protocols (perhaps by mixing mail and another mode or by omitting the postcard reminder). In that case, the sponsor may have to conduct sufficient followup, i.e., additional attempts to obtain a completed questionnaire in order to achieve a response rate of 40 percent.

On average, survey field periods are approximately 10-14 weeks. Since different sponsors will require more or less time to achieve the desired response rate, there is no specific cut-off point for the field period. Additionally, data collection should not be stopped if the target number of completed questionnaires is achieved. The data collection protocol should be completed as planned to ensure comparability of the results.

⁵ For one example, see: Anastario MP, Rodriguez HP, Gallagher PM, Cleary PD, Shaller D, Rogers WH, Bogen K, Safran DG. A Randomized Trial Comparing Mail versus In-Office Distribution of the CAHPS Clinician and Group Survey. *Health Services Research*. 2010;45:1345–1359.

Maintaining Confidentiality

Privacy assurances are central to encouraging respondent participation. Survey vendors should already have standard procedures in place for maintaining the confidentiality of respondents' names and minimizing the extent to which identifying information, such as names and addresses, are linked to the actual survey responses. For example, the individual ID numbers that are used to track the survey must not be based on existing identifiers, such as Social Security numbers or employee ID numbers. Many survey vendors require employees to sign statements of confidentiality ensuring that they will not reveal the names of respondents or any results linked to specific individuals.

There are several opportunities during the survey process to explain to respondents that their responses are kept strictly confidential. The key avenues are the advance and cover letters and interviewer assurances during telephone interviews.

Mail Protocol

Mail Protocol

This section reviews the basic steps for collecting data through the mail and offers some advice for making this process as effective as possible.⁶

- **Set up a toll-free number** and publish it in all correspondence with respondents. Assign a trained project staff member to respond to questions on that line. It is useful to maintain a log of these calls and review them periodically.
- **Send the respondent the questionnaire with a cover letter and a postage-paid envelope.** A well-written, persuasive letter authored by a recognizable organization will increase the likelihood that the recipient of the questionnaire will complete and return it within the deadline. The cover letter should include instructions for completing and returning the questionnaire. For an example, refer to *Sample Notification Letters and Emails for the CAHPS Clinician & Group Survey*.

Tips for the letter:

- Tailor the letter, including language that explains the purpose of your survey, the voluntary nature of participation, and the confidentiality of responses.
- Note that a refusal to participate will not affect an individual's health care.
- Personalize the letter with the name and address of the intended recipient.
- Have it signed by a representative of the sponsoring organization(s).

⁶ Adapted from McGee J, Goldfield N, Riley K, and Morton J. *Collecting Information from Health Care Consumers*, Rockville, MD: Aspen Publications, 1996.

- Spend some time on the cover letter, checking it for brevity and clarity, and ensuring that there are no grammatical or typographical errors.

Tips for the outside envelope:

- Make it look “official” but not too bureaucratic; it must not look like junk mail.
- Place a **recognizable** name—such as the name of a health system, medical group, or government agency—above the return address.
- Mark the envelopes “change service requested” in order to update records for respondents who have moved and to increase the likelihood that the survey packet will reach the intended respondent.
- **Send a postcard reminder to nonrespondents 10 days after sending the questionnaire.** Some vendors prefer sending a reminder postcard to all respondents 3 to 5 days after mailing the questionnaire instead of sending a postcard only to nonrespondents 10 days after the questionnaire is mailed. Their reminder postcards serve as a thank you to those who have returned their questionnaires and as a reminder or plea to those who have not. The reminder postcard is an inexpensive way to increase your response rate. *Sample Notification Letters* contain a sample reminder card.
- Send a second questionnaire with a reminder letter and a post-paid envelope to those still not responding 3 weeks after the first mailing. *Sample Notification Letters* contain a sample reminder letter.

Telephone Protocol

The Clinician & Group Survey must be modified for telephone administration. *Sample Telephone Script for the CAHPS Clinician & Group Survey* provides a sample telephone script, including instructions and an introductory statement that you can adapt to the instrument you are fielding.

When administering the survey by telephone, a vendor can use either a computer-assisted telephone interviewing (CATI) script or a paper-and-pencil method.

Note on mode effects: Research conducted in collaboration with the CAHPS team indicates that telephone-only administration is associated with more positive reports and ratings of care.⁷ The direction of this effect is not uncommon in comparisons of mail-only and telephone-only survey administration. Further testing is needed before

⁷ Hepner KA, Brown JA, Hays RD. Comparison of mail and telephone in assessing patient experiences in receiving care from medical group practices. *Eval Health Prof.* 2005 Dec;28(4):377-89.

we can determine if and how survey users should adjust data collected using telephone-only mode.

- **Check telephone numbers.** Check the telephone numbers of sample respondents for out-of-date area codes and partial or unlikely telephone numbers. All survey vendors should have standard automated procedures for checking and updating telephone numbers before beginning data collection.

After extensive tracking, you may still be left with some respondents who do not have a working telephone number, or for whom you have only an address. Delivery of a package containing the questionnaire by an overnight service, such as a Priority Mail or Federal Express, can be an effective method of drawing attention to the need to complete the questionnaire.

- If following up on a mailed questionnaire, initiate telephone contact with nonrespondents 3 weeks after sending the second questionnaire. You may want to send a letter to respondents in advance to let them know that you will be contacting them by telephone. An example of an advance letter is provided in *Sample Notification Letters*.
- **Train the interviewers before they begin interviewing.** The interviewer should not bias survey responses or affect the survey results. (See the box below for advice regarding the training of interviewers.)
- **Attempt to contact each respondent by telephone at least six times.** The vendor should make at least six attempts unless the respondent explicitly refuses to complete the survey. These attempts must be on different days of the week (both weekdays and weekends), at different times of the day, and in different weeks.

Training Interviewers

The CAHPS team recommends the following key procedures for conducting standardized, nondirective interviews:

- Interviewers should read questions exactly as worded so that all respondents are answering the same question. When questions are reworded, it can have important effects on the resulting answers. Please refer to *Sample Telephone Script for the CAHPS Clinician & Group Survey*.
- When a respondent fails to give a complete or adequate answer, interviewer probes should be nondirective. That is, interviewers should use probes that do not increase the likelihood of one answer over another. Good probes simply stimulate the respondent to give an answer that meets the question's objectives.
- Interviewers should maintain a neutral and professional relationship with respondents. It is important that they have a positive interaction with respondents, but there should not be a personal component. The primary goal of the interaction from the respondent's point of view should be to provide accurate information. The less interviewers communicate about their personal characteristics and, in particular, their personal preferences, the more standardized the interview experience becomes across all interviewers.
- Interviewers should record only answers that the respondents themselves choose. The CAHPS instrument is designed to minimize decisions that interviewers might need to make about how to categorize answers.

Training and supervision are the keys to maintaining these standards. Although these principles may seem clear, it has been shown that training, which includes exercises and supervised role playing, is essential for interviewers to learn how to put these principles into practice. In addition, interviewers may not meet these standards unless their work is monitored. A supervisor should routinely monitor a sample of each interviewer's work to ensure that the interviewers are, in fact, carrying out interviews using prescribed standards and methods. When you are hiring a survey vendor, the protocol for training and supervision should be among the top criteria you consider when choosing among data collection organizations.

Email Protocol

This section reviews the basic steps for contacting respondents via email to invite them to take an online survey and offers some advice for making this process as effective as possible. The CAHPS team does not recommend an email-only protocol at this time. Regardless of the response rate achieved through email alone, the email protocol must be followed by a full mail or telephone protocol for nonrespondents to ensure that all patients in the sample have an equal chance of completing the survey and that the respondents are representative of the patient population. For the same reason, the sample should not consist of only those patients for which you have an email address.

Note: This email protocol is also applicable when administering the survey through a patient portal.

- **Set up an email address or toll-free telephone number** that respondents can contact with questions and publish it in all correspondence. Assign a trained project staff member to respond to questions that are submitted. It is useful to maintain a log of these emails/calls and review them periodically.
- **Send the respondent an email with a link to the online survey.** A well-written, persuasive message authored by a recognizable organization will increase the likelihood that the recipient of the survey invitation will complete it within the deadline. The email should be personalized and contain an individualized ID and password to access the survey as well as an individualized direct link. The email invitation should include instructions for completing the survey and explain who to contact if recipients have questions. *Sample Notification Letters and Emails for the CAHPS Clinician & Group Survey* include examples of email content that can be adapted.
- **Send an email reminder to nonrespondents 7-10 days after sending the initial email invitation.** The email reminder serves as a thank you to those who have completed their survey and as a reminder or plea to those who have not. *Sample Notification Letters* contain a sample reminder card that can be used as a template for the email reminder.
- Send a second email reminder to those still not responding 2-3 weeks after the initial email invitation. *Sample Notification Letters* contain a sample reminder letter that can be used as a template for the reminder email.
- Follow this email protocol with either the full mail or telephone protocol for everyone who has not completed the survey online. Survey sponsors must follow the email protocol with either the full mail or telephone protocol for all nonrespondents to ensure that the final survey responses represent the patient population that was sampled since not all patients have access to or use email regularly. The CAHPS team does not recommend including a link to a Web-based online survey in a mailed letter; previous research and experience have shown this to be ineffective.

Tips for the email:

- Tailor the email message, including language that explains the purpose of your survey, the voluntary nature of participation, and the confidentiality of responses.
- Note that a refusal to participate will not affect an individual's health care.
- Personalize the email message with the name of the intended recipient.
- Have the email electronically signed or sent by a representative of the sponsoring organization(s).

- Spend some time on the email message, checking it for brevity and clarity, and ensuring that there are no grammatical or typographical errors
- To increase the likelihood that participants will respond to the email, it is helpful to have corresponded with the participant previously via email so that they recognize the email sender.

Tracking Returned Questionnaires

Most vendors have established methods for tracking the sample. You should also set up a system to track the returned questionnaires by the unique ID number that is assigned to each respondent in the sample. This ID number should be placed on every questionnaire that is mailed, on the call record of each telephone case, or incorporated into the unique link for online surveys.

To maintain respondent confidentiality, the tracking system should not contain any of the survey responses. The survey responses should be entered in a separate data file linked to the sample file by the unique ID number. (This system will generate the weekly progress reports that sponsors and vendors should review closely.)

Each respondent in the tracking system should be assigned a survey result code that indicates whether the respondent:

- Returned the mail survey,
- Participated in the telephone interview,
- Responded to the online survey,
- Was ineligible to participate in the study,
- Could not be located,
- Is deceased, or
- Refused to respond.

The codes should also indicate whether the questionnaire is complete, partially complete, or incomplete.

- **Complete questionnaire:** A questionnaire is considered complete if responses are available for at least half of the key survey items and at least one reportable item.
- **Partially completed questionnaire:** A questionnaire is considered partially complete if responses are available for at least one reportable item, but less than half of the key items. It is important to keep track of partially completed questionnaires because they should be included for analysis and reporting.
- **Incomplete questionnaire:** A questionnaire is incomplete if the individual did not answer at least one reportable item.

For more information about the key and reportable items in the Clinician & Group Survey, see Appendix B of this document.

The tracking system should also include the date the questionnaire was returned (for mail surveys) or answered (for telephone and online surveys). The interim result code reflects the status of the case during the different rounds of data collection, and the final result code reflects the status at the end of data collection. These result codes are used to calculate the response rate as shown in the next section.

Calculating the Response Rate

In its simplest form, the response rate is the total number of completed questionnaires divided by the total number of individuals selected for the sample. Calculating your response rate is helpful in determining a more accurate starting sample size for future survey administration. For the CAHPS Clinician & Group Survey, the goal is a response rate of at least 40 percent.

To calculate the response rate, use the following formula:

$$\frac{\text{Number of completed questionnaires}}{\text{Total number of individuals surveyed} - (\text{deceased} + \text{ineligible})}$$

Listed below is an explanation of the categories included and excluded in the denominator of the response rate calculation.

Denominator Inclusions:

The denominator should include:

- **Respondents.** The individual returned a questionnaire, whether complete, incomplete, or partially complete.
- **Refusals.** The individual (or parent or guardian of the sampled child) refused to participate in writing or by phone.
- **Nonresponses.** The individual (or parent or guardian of the sampled child) is presumed to be eligible but did not complete the questionnaire for some reason (e.g., never responded, was unavailable at the time of the survey, was ill or incapable, had a language barrier).
- **Bad addresses/phone numbers.** In either case, the sampled individual (or parent or guardian) is presumed to be eligible even if you are unable to locate them.

Denominator Exclusions:

- **Deceased.** In some cases, a household or family member may inform you of the death of the sampled individual or child.

- **Ineligible.** The sampled individual or child did not receive care from the participating medical group or practice site in the last 6 months.

Increasing the Number of Responses

Out-of-date mailing and email addresses, inaccurate telephone numbers, voicemail, gatekeepers, and frequent travel by respondents are common problems. Sponsors and vendors have a number of methods available to them to maximize the number of responses:

- Improve initial contact rates by making sure that addresses and phone numbers are current and accurate (e.g., identify sources of up-to-date sample information, run a sample file through a national change-of-address database, send a sample to a phone number look-up vendor).
- Use all available tracking methods for correcting contact information (e.g., directory assistance, CD-ROM directories, free or subscription-based Internet database services and directories).
- Take steps to improve contact rates after data collection has begun (e.g., increase the maximum number of calls, ensure that calls take place at different day and evening times over a period of days, mail second reminders, use experienced and well-trained interviewers).
- Consider using a mixed-mode protocol involving both a mail and telephone data collection procedure. In field tests, the combined approach was more likely to achieve a desired response rate than either mode alone.
- Train interviewers on how to deal with gatekeepers.
- Train interviewers on refusal aversion/conversion techniques.

These methods will add to the costs of conducting a survey, but users need to weigh these extra costs against the risk of obtaining low response rates and, consequently, less representative data.

Once the vendor reaches the potential respondent, other challenges await: people throw away the envelope, sometimes unopened, or set aside the questionnaire but then never complete it. These responses draw attention to the importance of effectively communicating why the person should complete the questionnaire. In addition to persistent followup, make sure that the outside envelope, cover letter, and questionnaire are as attractive and compelling as possible.

For additional advice and guidance, see:

- Appendix C: Enlisting Respondents Who Are Difficult To Reach
- McGee J, Goldfield N, Riley K, Morton J. *Collecting information from health care consumers*. Rockville, MD: Aspen Publications, 1996.

Appendix A: Justification for Recommendations Regarding Number of Completed Questionnaires at the Provider Level

The tables below demonstrate that the ability to distinguish providers at different levels of performance increases as a direct function of reliability.

Tables 1-4 provide estimated provider-level reliabilities at varying sample sizes per provider for each of the Clinician & Group Survey composite measures and the global rating of the provider. Each table presents results from a different field test; these four field tests were selected to be representative of a larger set of organizations for which the CAHPS team has obtained results.

Looking across the tables, one can see that the reliabilities achieved at a given sample size (e.g., 40 per provider) differs somewhat across the groups of providers. These relationships depend upon the extent to which providers differ among the group of providers being compared, which is difficult to predict a priori. For example, the organization described in Table 1 is more heterogeneous than the organization described in Table 2.

As these tables show, while a sample size of 50 completes per provider does not guarantee a reliability of 0.70 for all global ratings and composites, it is reasonably likely to do so for most ratings and composites. Smaller sample sizes in an unknown group of providers being surveyed pose a substantial risk of not achieving this minimum level of reliability for most ratings and composites. These reliabilities are often lower for individual items, which is important to consider if the items may be used for public reporting (i.e., 0.70 reliability should be assured for individual items if they will be reported) and may also be important for quality improvement efforts.

Provider-Level Reliabilities by Sample Size for CAHPS Composite Measures and Global Rating Items: Four Examples

Table 1. PCPs from large HMO, 2005

CAHPS Measure	N = 50	N = 45	N = 40	N = 35	N = 30	N = 25	N = 20
Access	0.90	0.89	0.88	0.86	0.84	0.82	0.78
Communication	0.83	0.81	0.79	0.77	0.74	0.70	0.65
Office staff	0.84	0.82	0.80	0.78	0.75	0.71	0.67
Doctor rating	0.83	0.81	0.79	0.77	0.74	0.70	0.65
Followup	0.86	0.85	0.84	0.82	0.80	0.76	0.72

Table 2. Physician Network Organization #1, 2006 (Adult PCPs)

CAHPS measure	N = 50	N = 45	N = 40	N = 35	N = 30	N = 25	N = 20
Access	0.71	0.68	0.66	0.63	0.59	0.54	0.49
Communication	0.79	0.77	0.75	0.73	0.69	0.65	0.60
Followup	0.75	0.73	0.70	0.67	0.64	0.59	0.54
Office staff	-	-	-	-	-	-	-
Doctor rating	-	-	-	-	-	-	-

Table 3. Physician Network Organization #2, 2006 (Adult PCPs)

CAHPS measure	N = 50	N = 45	N = 40	N = 35	N = 30	N = 25	N = 20
Access	0.88	0.87	0.85	0.84	0.81	0.78	0.74
Communication	0.64	0.61	0.59	0.55	0.52	0.47	0.41
Office staff	0.65	0.63	0.60	0.57	0.53	0.48	0.43
Doctor rating	0.74	0.72	0.69	0.66	0.63	0.58	0.53
Followup	-	-	-	-	-	-	-

Table 4. Select US Markets, 2005-2006 (PCP Sample)

CAHPS measure	N = 50	N = 45	N = 40	N = 35	N = 30	N = 25	N = 20
Access	0.94	0.93	0.92	0.91	0.90	0.88	0.86
Communication	0.79	0.77	0.75	0.73	0.70	0.66	0.60
Office staff	0.85	0.84	0.82	0.80	0.77	0.74	0.70
Doctor rating	0.59	0.57	0.54	0.51	0.47	0.42	0.37
Followup	0.79	0.77	0.75	0.73	0.69	0.65	0.60

The goal of adequate reliability is to make it reasonably likely that apparently large differences in provider-level scores represent true underlying differences and are not due to chance. Table 5 shows confidence intervals for percentile rankings of providers based on reliabilities. Once you know the reliability (e.g., from Tables 1-4), these relationships do not depend on the nature of your provider sample.

Table 5 indicates that the 80% confidence interval around the 75th percentile for a measure having a reliability of 0.89 is 64-86th percentile (75th percentile +/- 11 percentiles). Thus, a provider who is estimated at the 75th percentile with a measure having 0.89 reliability (e.g., timely appointments with provider based on n=45 patients) is probably somewhere between the 64th and 86th percentile. If the reliability of the measure is 0.70 then the confidence interval is nearly twice as large (55-95th percentile). In the latter case of 0.70 reliability, one could only distinguish a provider scoring at the 75th percentile from the overall 55th percentile with 80% confidence (and from the overall 45th percentile with 95% confidence). Similarly, if one were comparing two individual providers, 0.70 reliability would permit one to distinguish the 75th and 45th percentiles with 80% confidence and the 75th and 31st percentiles with 95% confidence.

Table 5. Approximate 80% Margins of Error in Provider Percentile by Reliability and Estimated Percentile⁸

-----Estimated Percentile-----					
Reliability	25th	35th	50th	65th	75th
0.90	10.5%	11.8%	13.1%	11.8%	10.5%
0.89	11.0%	12.4%	13.7%	12.4%	11.0%
0.85	13.1%	14.7%	16.3%	14.7%	13.1%
0.80	15.5%	17.3%	19.1%	17.3%	15.5%
0.75	17.8%	19.8%	21.8%	19.8%	17.8%
0.70	20.0%	22.2%	24.4%	22.2%	20.0%

⁸ Based on a local linearization of the inverse normal distribution. This can be calculated with software such as STATA version 9, Microsoft Excel, or similar software packages.

Appendix B: Determining Whether a Survey Response Is Complete

To determine if a questionnaire is complete, the first step is to flag the key and reportable items in the core survey. Supplemental items are **not** included in the definition of a completed questionnaire.

What are key items? Key items are the survey questions that **all** respondents should answer, including:

- Questions confirming eligibility for the survey.
- The screeners for the questions included in the core composites measures.
- The primary rating question.
- Demographic and other background items.

Table 6 lists the key items from the 3.0 versions of the CAHPS Clinician & Group Survey.

What are reportable items? Reportable items are the questions included in the composite and rating measures. For a list of the reportable items in the core survey, refer to the appendix in *Patient Experience Measures from the CAHPS Clinician & Group Survey*.

Number of key items needed for a complete questionnaire. A questionnaire is considered complete if it has responses for at least 50 percent of the key items and 1 reportable item. The number of key items needed for each version of the survey is as follows:

- Adult Survey: At least 13 key items
- Child Survey: At least 15 key items

Table 6. Key Questions from the 3.0 Version of the CAHPS Clinician & Group Survey

Short Item Title	Item # in Adult Survey	Item # in Child Survey
Patient/[Child]* received care from provider named below	1	1
Patient/[Child] usually sees this provider for care	2	2
How long patient/[child] has been going to this provider	3	3
Number of times patient/[child] visited this provider for care in last 6 months	4	4
Respondent stayed in exam room with child	--	5
Provider told respondent about follow-up care for child	--	10
Patient/[Respondent] contacted provider's office to make an appointment for urgent care [for the child]	5	12
Patient/[Respondent] made an appointment for non-urgent care [for the child]	7	14
Patient/[Respondent] contacted provider's office with a medical question [about child] during regular hours	9	16
Provider explained things in a way that was easy to understand	11	18
Provider listened carefully to patient/[respondent]	12	19
Provider knew important information about patient's/[child's] medical history	13	20
Provider showed respect for what patient/[respondent] had to say	14	21
Provider spent enough time with patient/[child]	15	22
Provider ordered blood test, x-ray, or other test	16	23
Rating of provider	18	25
Patient took prescription medicine	19	--

* The test in brackets refers to language that appears in in the Child Survey.

Short Item Title	Item # in Adult Survey	Item # in Child Survey
Clerks and receptionists were helpful	21	26
Clerks and receptionists were courteous and respectful	22	27
Rating of [child's] overall health	23	28
Rating of [child's] overall mental or emotional health	24	29
Age [child]	--	30
Male or female [child]	--	31
Hispanic or Latino [child]	--	32
Race [child]	--	33
Age of patient/[respondent]	25	34
Patient/[Respondent] male or female	26	35
Highest grade level completed [respondent]	27	36
Hispanic or Latino	28	--
Race	29	--
Respondent's relationship to child	--	37
Someone helped patient/[respondent] complete survey	30	38
Total number of key items	25	29
Number of items needed to be a 'complete' survey	13	15

Appendix C: Enlisting Respondents Who Are Difficult To Reach

It may be difficult to locate some respondents, but it is especially important to interview or receive returned questionnaires from those individuals who might be difficult to reach. They are likely to be different from those individuals who immediately complete and return a questionnaire or who are easily interviewed. They may, for example, be chronically ill, have two jobs, or be different in some other way that is relevant to your results. Unless you maintain a high response rate overall and make efforts to reach them, their views and experiences will be underrepresented.

Sponsors and vendors should discuss this possibility in advance and consider plans to do extensive telephone tracking and locating. You may also want to talk about the timing of interviews. Because the Clinician & Group Survey is a survey of respondents at their homes, interviewers typically work in the evenings and on weekends. However, the survey vendor should provide at least one interviewer during the daytime to maintain appointments made with respondents during the day and try to reach those respondents who do not answer during the evenings (e.g., those who have evening shift jobs). Interviewing during the daytime on weekdays is especially effective and appropriate for surveys of seniors and for surveys that include children in the sample frame.

You are likely to encounter certain types of problems with which you should be familiar. Sponsors and vendors should discuss these issues and agree on appropriate procedures.

Common Problems	Some Guidance
The interviewer reaches a voicemail.	<p>Voicemail is a part of modern life. There is some debate about whether or not it is best to leave a message; unfortunately, there is no right answer to this question.</p> <p>However, you cannot assume that a respondent will call back, so survey vendors should continue to make an effort to reach the respondent. In essence, when an interviewer reaches answering machine or voicemail, it should be handled as though the person were not at home.</p>
The telephone number for the sampled individual is incorrect.	<p>The vendor should make every effort to find the right number:</p> <ul style="list-style-type: none"> • If the person answering the telephone knows how to reach the sampled individual, use that information. • If there is no information about the sampled individual at the provided number, use directory assistance. • If the vendor cannot find a correct telephone number for the individual, and the sponsor has agreed to both mail and telephone methods of data collection, mail the questionnaire.

Common Problems	Some Guidance
The sampled person has moved and the address in the sample is incorrect.	The vendor should make every effort to track down the sampled person. Stamp all mail “Change Service Requested” so that undelivered mail gets returned. If the mail gets returned, refer to sources like Internet directories or national change of address directories to obtain the new address.
The sampled person is temporarily away.	The protocol for this situation will depend somewhat on the data collection schedule. If the person will become available before data collection is scheduled to be concluded, the right procedure is to call back later.
The sampled person does not speak English.	If the questionnaire has not been translated into the respondent’s language, an interview cannot be conducted. For the purposes of calculating response rates, these cases should be considered as “nonresponse” and cannot be excluded from the response rate formula’s denominator.
The sampled person is temporarily ill.	Contact the person again before the end of data collection to determine if he/she has recovered and can participate.
The sampled person has a condition that prevents being interviewed, such as having a visual, hearing, or cognitive impairment.	This person becomes a nonrespondent by virtue of their condition.