

Fielding the CAHPS® Clinician & Group Surveys

Sampling Guidelines and Protocols

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Introduction

This document explains how to field the CAHPS Clinician & Group Surveys and gather the data needed for analysis and reporting. These instructions apply to all versions of this survey (Adult and Child 12-Month, Adult and Child Expanded 12-Month with Patient-Centered Medical Home (PCMH) Items, and Adult Visit). Any differences in the specifications for these instruments are noted where applicable.

You will find 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

Information and instructions related to analysis and interpretation of survey data is included in the **Instructions for Analyzing Data from the CAHPS Surveys**: https://www.cahps.ahrq.gov/~media/Files/SurveyDocuments/CG/Prep_Analyze/2015_Instructions_for_Analyzing_Data.pdf.

Summary of Key Requirements for Administering the Clinician & Group Surveys

Survey	Guideline Specifications
Administration	
Survey	CAHPS Clinician & Group Surveys: Adult and Child 12-Month, Adult and Child Expanded 12-Month with PCMH, and Adult Visit questionnaires
Data Collection	
Administration	To generate the standardized data necessary for valid comparisons, the Consortium recommends that the survey be conducted by a third-party vendor according to the CAHPS guidelines specified in this document.
Collection mode	Mail, telephone, email (with mail or telephone), or mixed mode protocols are recommended.
Sample size	To produce statistically valid comparisons, the sample needs to be large enough to yield 45 completed surveys per clinician or 300 completed surveys per medical group. Site-level sampling recommendations are currently being developed.
Response Rates	The recommended or target response rate is 40 percent.
Completion criteria	A questionnaire is complete if it has responses for 50 percent or more of the key items. (See Appendix B for more information).
Data Analysis	
Case-Mix Adjustment	Data are recommended to be adjusted for age, education, and self-reported health status. Sponsors have the option of adjusting data for other variables as well.

Sampling Guidelines

These sampling guidelines will help you understand who is eligible to be included in the sample frame for the CAHPS Clinician & Group Surveys. 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 sponsors and vendors.

Users of the Clinician & Group Surveys can submit their survey results to AHRQ's CAHPS Database (the 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://www.cahps.ahrq.gov/CAHPS-Database.aspx>.

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 (see below). The list is called a sample frame.

The source of sample information will vary by survey sponsor. The decision will depend on which organization 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 to be able 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 medical clinic, site of care, or a practice.

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

- Include only patients who have had **at least one visit to the selected provider in the target time frame**. The target timeframe is 12 months for the 12-Month Survey and 3 months for the Visit Survey. These target time frames were chosen to make the sample frame as inclusive as possible and to promote comparisons of data across commercial, Medicare, and/or Medicaid enrollees. This time frame is also known as the look back period.
- The sampling frame is a person-level list and not 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 the patient's most recent visit for inclusion in the sampling frame.
- **If you are administering one of the adult questionnaires**, include all adults 18 years or older.

- **If you are administering the child questionnaire**, 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 receiving care from the practice, site/clinic or provider. Similarly, include all patients regardless of health plan enrollment status—if a patient has disenrolled from the health plan, he or she should still be included in the sampling frame as long as the other sampling criteria are met.
- To identify the sampling frame, use the anticipated start date of data collection to determine the reference period. For example, if you are using the 12-Month Survey and your anticipated start date is September 1, 2011, include all those who have had at least one visit since September 1, 2010.
- Allow the **sample frame** to include multiple individuals from the same household, but the **sample** you draw should not have more than one person (adult or child) per household. In other words, the sample that is selected for data collection should be **de-duplicated** to ensure that only one person per household receives a survey.
- All CAHPS survey items have been designed for the general population. Appropriate screening items are included for items targeted to assess a specific experience. In order to ensure that results are comparable to those produced by other sponsors and vendors, targeted sampling, such as selecting only patients with particular conditions or experiences, is not recommended.
- In order to administer the survey, the name of the provider must be available, even if you are surveying at the site/clinic or practice level. If the sampling frame does not accurately identify the provider that the patient saw, you may want to select a larger sample to account for errors in connecting health care received to a specific provider. For example, errors can occur if administrative billing data are used for the sampling frame and visits with physician assistants or nurse practitioners are billed under the supervisory physician.

Sample Frame Elements	
The following information (data elements) should be included in the sample frame that a sponsor provides to the vendor.	
Adult Questionnaire	Child Questionnaire
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 at time of survey administration	Date of birth of child at time of survey administration
	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)
E-mail 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 of site where patient was seen	Name of site where patient was seen
Indicate if the provider is the patient's assigned PCP (optional)	Indicate if the provider is the child's assigned PCP (optional)
Date of most recent visit	Date of most recent visit

Recommended Number of Completes

In order to determine the size of the sample, you first need to determine the level of sampling and how many completed surveys are required to obtain usable information at that level. The CAHPS Clinician & Group Surveys can be used to assess care at the individual provider, practice site/clinic, or medical group level. 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.

- Individual providers: 45 completed surveys per provider.**
 For applications of the survey intended to report or assess performance for individual providers, the Consortium recommends at least 45 completed surveys per provider.
- Practice site or clinic: In development.**
 The CAHPS Consortium is currently developing a recommended number of completed surveys for assessing care at the practice site or clinic level. The recommended number of completed surveys will be based on the number of providers at the site. These recommendations will be available in Fall 2011.

- **Medical group: 300 completed surveys.**

For applications of the survey intended to report or assess performance for a larger entity, such as a multisite medical group, with no interest in assessing individual physicians, we refer to analyses conducted for the CAHPS Group Practice Surveys,¹ which preceded the Clinician & Group Surveys, and were confirmed with data from the CAHPS Database. Consequently, the Consortium recommends a minimum of 300 completed surveys per medical group.

The recommendations regarding the number of completed questionnaires per provider and group apply across all instruments for the core survey items. The number of completed surveys required to analyze some supplemental items may be higher as you may need more completed surveys to achieve the number of completed **responses** for some supplemental items.

Reasoning behind the recommendations. These recommendations are based on data regarding the number of completed questionnaires necessary to achieve adequate provider-level reliability for a measure. That is, how many completed surveys does one need to reliably distinguish among different providers? To answer this question, CAHPS investigators examined data from multiple field trials as well as data from the CAHPS Database.

The provider-level reliability coefficient indicates the extent to which the patients of a given provider agree with one another in terms of their reported experiences with that physician compared to the amount that physicians differ from one another. The reliability coefficient can take any value from 0.0 to 1.0, where 1.0 signifies a measure for which every patient of a physician reports an identical experience to every other patient with that provider. The 0.70 reliability level is the minimum reliability necessary for “high stakes” purposes such as public reporting or payment, given the unacceptably large errors around estimated scores below this threshold. Higher levels of reliability are preferable, but 0.70 was selected as the minimum level of reliability necessary to balance the sample size with the need for reliable estimates.

The sample sizes “per provider” that are required to achieve this threshold will vary across areas and markets. In more than a dozen field tests of the CAHPS Clinician & Group Surveys, all initiatives achieved or surpassed 0.70 reliability for the core composite measures with 45 completed questionnaires per provider. In some markets and provider populations, it has proven possible to achieve 0.70 reliability with fewer responses. For example, in one market, completed questionnaires from 35 patients per provider were adequate to achieve 0.70 reliability on the “communication” composite and on each of the individual items contained in that composite; in another market, 45 surveys per provider were required to meet that threshold.^{2,3}

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

² Hays RD, Chong K, Brown J, et al. 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.

³ Safran DG, Karp M, Coltin K, et al. Measuring patients’ experiences with individual primary care physicians: Results of a statewide demonstration project. *J Gen Intern Med* 2006 Jan;21(1):13-21.

See **Appendix A** to see the data supporting the CAHPS Consortium's recommendation.

Once a user has experience in measuring a particular provider population and establishes the number of “completes” required to achieve provider-level reliability of 0.70 or higher for each measure to be used, it may be possible to target somewhat smaller numbers per provider. Until that time, we recommend that users obtain 45 completed surveys per provider and compute the physician-level reliability of each metric (composite and/or item-level) that will be used for reporting or other purposes.

Calculating the Sample Size

The sample size you need for your survey 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 Consortium recommends at least a 40 percent response rate. This figure is based on extensive experience with partners and field trials regarding what is possible with a reasonable amount of effort and expense. Sponsors and vendors that follow the recommended protocols for sampling and data collection, including followup with nonrespondents, typically achieve response rates of 40 percent or higher. It is also important to begin with as accurate a sampling frame as possible.

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 in saying that the sample is not biased. Differences in response rates across units of interest (physicians or medical groups) are also a concern, because the bias may differ across units.

Survey sponsors should track the unit-level response as well as the overall response as they field the survey.

Sample Size Calculation: Individual Providers

As already discussed, to have a sufficient number of responses for analysis and reporting, you need to select enough individuals to obtain approximately 45 completed questionnaires per provider. Assuming that you achieve a response rate of 40 percent, you need to start with a minimum sample size of 113. Figure 1 shows this calculation.

Figure 1: Calculation of Estimated Sample Size Needed to Assess Individual Providers

Goal	45 completed surveys
Target response rate	40 percent (= 0.40)
Minimum sample size needed	$(45/0.40) = 113$ per provider

Because response rates can vary widely, however, a sponsor may need to field as few as 90 or as many as 150 surveys. 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 one or more of the providers do 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. Carefully consider reporting or using provider-level data that are based on less than 45 completed surveys.

Sample Size Calculation: Practice Sites or Clinics

As noted earlier, this section will be updated once final recommendations are established for the number of completed surveys at the practice site/clinic level.

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 2 shows this calculation.

Figure 2: Calculation of Estimated Sample Size Needed to Assess Medical Groups

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

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 one or more of the groups do 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. Carefully consider reporting or using practice- or group-level data that are based on less than 300 completed surveys.

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 the plan and contact records from the medical group or clinician office. When information from two sources differs, sponsors and their survey 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 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 number for telephone administration, and email addresses for Web-based administration). When you have incomplete address information or reason to believe that this information may be inaccurate, sponsors and/or vendors may be able to use other sources, such as CD-ROM directories, Internet sources, or directory assistance, to clean the sample file.

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 Consortium recommends the following modes:

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

Based on user experience, we anticipate that survey sponsors who employ one of these modes will achieve response rates that approximate 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.

The Consortium is aware that many organizations already conduct patient surveys to gather information for internal quality improvement purposes. These organizations use several different modes of survey administration, most of which include mail or telephone-based administration. The Consortium's support of the use of multiple

modes of survey administration is intended to minimize disruption to current survey processes. Thus, organizations that conduct mail surveys can continue using mail, those that conduct telephone surveys can continue using telephone, and likewise for other modes (see below)—with the caveat that, if data are not collected using the recommended modes, the results will not be comparable to data gathered with those modes.

Preliminary data suggest that response distributions for a substantial number of items are a function of the modality in which the items are administered. For example, patients may give more positive reports and ratings of care when the data are collected by telephone as opposed to mail.⁴ The Consortium is currently collecting and analyzing data in order to assess the need for procedures for data adjustments as a function of each survey mode and to enable the team to develop such procedures.

Other Modes

The CAHPS Consortium also did preliminary testing of interactive voice response (IVR), also known as telephone audio computer-assisted self-interviewing, or T-ACASI. However, further study of this mode is required before the Consortium can recommend it. This mode should be used with caution because the implications of using it are not yet fully known. If a sponsor uses IVR to collect data, the ability to compare results may be limited.

At this time, the CAHPS Consortium cannot recommend in-office distribution. Research has indicated that in-office distribution leads to results that are not comparable to other recommended modes.⁵ Incomplete distribution rates, lower response rates, and declining distribution rates were observed for in-office distribution. Finally, there were significant mode-physician interaction effects, which suggest that data cannot be pooled, then adjusted to account for these differences.

Survey Administration Cost and Time

Costs associated with administering the CAHPS Clinician & Group Surveys will vary depending on the mode or mix of modes. Based on data from three of our test sites, we estimate a cost per completed survey of \$8.00 for mail administration. Cost per completed survey for mixed mode or telephone administration will be higher. Based on a target of 45 completed surveys, the cost of a mail survey would be \$360 per clinician. In our experience with other CAHPS surveys, this cost is likely to decrease over time as larger scale surveying is done and vendors become more accustomed to the surveys.

The time required to administer the Clinician & Group Surveys can be estimated from our tests of telephone administration as well as data on the self-administration of CAHPS surveys of similar length. Based on these estimates, the time of administration is approximately 12 to 15 minutes. This length is consistent with the administration time of other CAHPS surveys containing a similar number of items.

⁴ 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.

⁵ Anastario MP, Rodriguez HP, Gallagher PM, et al. A randomized trial comparing mail versus in-office distribution of the CAHPS Clinician and Group Survey. *Health Serv Res* 2010;45:1345-59.

Data Collection Protocols

This section provides you with a protocol for collecting responses by mail with telephone followup and email with mail followup. You can adapt this protocol to a mail-only, a telephone-only survey, or email with telephone followup. At this time, an email-only survey protocol 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). We recommend that any sponsor who deviates from these protocols employ sufficient followup or additional attempts to obtain a completed survey to achieve a response rate of 40 percent.

The CAHPS Consortium does not specify a cut-off period for the field period as different sponsors will require more or less time to achieve the desired response rate. On average, survey field periods are no shorter than 10 weeks and no longer than 14 weeks.

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, is 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

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

⁶ Adapted from McGee J, Goldfield N, Riley K, Morton J. Collecting information from health care consumers, Rockville, MD: Aspen Publications, 1996.

survey. For an example, see the *Sample Notification Letters for the CAHPS Clinician & Group Surveys*:

https://www.cahps.ahrq.gov/~media/Files/SurveyDocuments/CG/Admin_Survey/1361_C&G_sample_letters.pdf.

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).
- 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** sponsor's name—such as the name of a government agency, where applicable—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 survey instead of sending a postcard only to nonrespondents 10 days after the survey 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. The *Sample Notification Letters* contain a sample reminder card.
- **Send a second questionnaire with a reminder letter and a postage-paid envelope to those still not responding 3 weeks after the first mailing.** The *Sample Notification Letters* contain a sample reminder letter.

Telephone Protocol

The Clinician & Group Surveys must be modified for telephone administration. The *Clinician & Group Surveys and Instructions* provides a sample telephone script,

including instructions and an introductory statement, which you should adapt to the questionnaire you are fielding: *Sample Telephone Script for the CAHPS Clinician & Group Survey*: https://www.cahps.ahrq.gov/~media/Files/SurveyDocuments/CG/Admin_Survey/1362_CG_tel_scrip.pdf.

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 by the CAHPS Consortium indicates that telephone-only administration is associated with more positive reports and ratings of care. The direction of this effect is not uncommon in comparisons of mail-only and telephone-only survey administration. Further testing is needed before we can determine if and how 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. A sample is provided in the *Sample Notification Letters*.
- **Train the interviewers before they begin interviewing.** The interviewer should not bias survey responses or affect the survey results. (See box with advice regarding the training of interviewers.)
- **Attempt at least six times to contact each respondent.** 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

We recommend 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*: https://www.cahps.ahrq.gov/~media/Files/SurveyDocuments/CG/Admin_Survey/1362_CG_tel_scrip.pdf.
- 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 collecting data through the Internet and offers some advice for making this process as effective as possible. The CAHPS Consortium does not recommend an email-only protocol at this time. The email protocol should be followed by a complete mail or telephone protocol.

Also, the CAHPS Consortium does not recommend mailing a letter with a link to a Web-based survey. Previous research and experience has shown this to be ineffective. Following the tips below should help achieve a high response rate and reliable data.

- **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. The email should be personalized and contain an individualized ID and password to access the survey as well as a direct link to the online survey. The email invitation should include instructions for completing the survey as well as whom to contact if they have questions. The sample letters and reminders in the *Sample Notification Letters for the CAHPS Clinician & Group Survey* can be adapted for email notifications: https://www.cahps.ahrq.gov/~media/Files/SurveyDocuments/CG/Admin_Survey/1361_C&G_sample_letters.pdf.
- **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. The *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.** The *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.** Users must follow the email protocol with either the **full** mail or the telephone protocol for all nonrespondents to ensure that the final survey responses represent the patient population that was sampled. Not all patients have access to or use email regularly.

Tips for the email:

- Tailor the email, 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 with the name of the intended recipient.
- Have it electronically signed or sent by a representative of the sponsoring organization(s).
- Spend some time on the email, 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 he or she recognizes the email sender.

Regardless of the response rate achieved, it is still necessary to follow the email protocol with a full mail or telephone protocol to ensure that all possible patients have an equal chance to complete the survey. In other words, the sample should not consist of only those patients for which you have an email address.

The email protocol is also applicable when administering the survey through a patient portal.

Tracking Returned Questionnaires

Most vendors have established methods for tracking the sample. You should also set up a system to track the returned surveys 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 and/or on the call record of each telephone case.

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 completed and returned the questionnaire, completed the telephone interview, was ineligible to participate in the study, could not be located, is deceased, or refused to respond. The tracking system should also include the date the survey was returned or the telephone interview completed. 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 response rates 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 CAHPS analyses and reports, this rate is adjusted as shown in the following formula:

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

In calculating the response rate, include those who refused, whom you were unable to reach because of bad addresses or phone numbers, or who could not complete the questionnaire because of language barriers or a person in an institution or who has a developmental or cognitive disability. Listed below is an explanation of the categories included and excluded in the response rate calculation:

Numerator Inclusions:

- **Completed questionnaires.** A questionnaire is considered complete if responses are available for half of the key survey items. For more information about the key items in the Clinician & Group Surveys, see Appendix B of this document.

Denominator Inclusions:

The total number in the denominator should include the following:

- **Refusals.** The individual (or parent or guardian of the sampled child) refused in writing or by phone to participate.
- **Nonresponse.** The individual (or parent or guardian of the sampled child) is presumed to be eligible but did not complete the survey for some reason (never responded, was unavailable at the time of the survey, was ill or incapable, had a language barrier, and so on).
- **Bad addresses/phone numbers.** In either case, the sampled individual (or parent or guardian) is presumed to be eligible but was never located.

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 health system in the last 12 months.

Improving Your Response Rate

Out-of-date addresses, inaccurate telephone numbers, answering machines, gatekeepers, and frequent travel by respondents are common problems. Sponsors and vendors have a number of methods available to them to maximize response rates:

- 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 (e.g., directory assistance, CD-ROM directories, free or subscription-based Internet database services and directories).
- Improve contact rates after data collection has begun (e.g., increase 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 did either mode alone.
- Train interviewers on how to deal with gatekeepers (someone such as a relative who stands between the interviewer and the respondent, making it difficult or impossible to complete the interview).
- Train interviewers on refusal aversion/conversion techniques.

These methods will add to the costs of conducting a survey, but sponsors 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 survey. 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, go to—

- 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

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

Tables 1 through 4 provide estimated physician-level reliabilities at varying sample sizes per physician for each of the Clinician & Group Surveys composite measures and the global rating of the doctor. 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 Consortium has obtained results.

Looking across the tables, one can see that the reliabilities achieved at a given sample size (e.g., 40 per physician) differs somewhat across the groups of physicians. These relationships depend upon the extent to which physicians differ in a given population, 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 45 completes per physician 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 population 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 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.

Table 1. Reliabilities by Sample Size for CAHPS Composites and Global Rating Items (PCPs from large HMO, 2005)

CAHPS Measure	N = 50	N = 45	N = 40	N = 35	N = 30	N = 25	N = 20
Timely appointments	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
Followup	0.86	0.85	0.84	0.82	0.80	0.76	0.72
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

Table 2. Reliabilities by Sample Size for CAHPS Composites and Global Rating Items in Health (Physician Network Organization #1, 2006 Adult PCP)

CAHPS measure	N = 50	N = 45	N = 40	N = 35	N = 30	N = 25	N = 20
Timely appointments	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. Reliabilities by Sample Size for CAHPS Composites and Global Rating Items (Physician Network Organization #2, 2006 Adult PCP)

CAHPS measure	N = 50	N = 45	N = 40	N = 35	N = 30	N = 25	N = 20
Timely appointments	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
Followup	-	-	-	-	-	-	-
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

Table 4. Reliabilities by Sample Size for CAHPS Composites and Global Rating Items (Select U.S. Markets, PCP Sample, 2005-2006)

CAHPS measure	N = 50	N = 45	N = 40	N = 35	N = 30	N = 25	N = 20
Timely appointments	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
Followup	0.79	0.77	0.75	0.73	0.69	0.65	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

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

Table 5 shows you that the 80 percent 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 physician who is estimated at the 75th percentile with a measure having 0.89 reliability (e.g., timely appointments with doctor based on n =45 patients) is probably somewhere between the 64th and 86th percentiles. 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 physician scoring at the 75th percentile from the overall 55th percentile with 80 percent confidence (and from the overall 45th percentile with 95% confidence). Similarly, if one were comparing two individual physicians, 0.70 reliability would permit one to distinguish the 75th and 45th percentiles with 80% confidence and the 75th and 31st percentiles with 95 percent confidence.

Table 5. Approximate 80 Percent Margins of Error in Physician Percentile by Reliability and Estimated Percentile⁷

----- Estimated Percentile -----					
Reliability	25%	35%	50%	65%	75%
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%

⁷ 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 Questionnaire Is Complete

If you plan to apply a definition to determine if a questionnaire is complete, then your first step is to flag the key items. Key items are questions that **all** respondents should answer, including the following:

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

Table 6 lists the key questions from the 2.0 versions of the questionnaires in the CAHPS Clinician & Group Surveys. For a questionnaire to be considered complete, it must have responses for at least 50 percent of the key items, i.e., 14 or more key items in the Adult 12-Month Questionnaires, 15 or more in the Adult Visit Questionnaire, and 22 or more in the Child 12-Month Questionnaire. The 50-percent cutoff is a choice the CAHPS Consortium made to guarantee a uniform definition of a completed questionnaire. For information on the key items in the 1.0 version of the surveys, please contact the CAHPS User Network (1-800-492-9261 and cahps1@ahrq.gov.)

Table 6: Key Questions from the 2.0 Version of the CAHPS Clinician & Group Surveys

Short Item Title	Item # Adult 12-Month	Item # Adult Visit	Item # Child 12-Month
Patient/[Child]* received care from provider named below	1	1	1
Patient/[Child] usually sees this provider for care	2	2	2
How long patient/[child] has been going to this provider	3	3	3
Number of times patient/[child] visited this provider for care in last 12 months	4	4	4
Respondent stayed in exam room with child	--	--	5
Provider told respondent about followup care for child	--	--	10
Patient/[Respondent] phoned provider's office to make an appointment for urgent care [for the child]	5	5	12
Patient/[Respondent] phoned provider's office to make an appointment for nonurgent care [for the child]	7	7	14
Patient/[Respondent] phoned provider's office with a medical question [about child] during regular hours	9	9	16
Patient/[Respondent] phoned provider's office with a medical question [about child] after regular hours	11	11	18
Patient/[Child] saw provider within 15 minutes of appointment time	13	13	20
Time since most recent visit	--	14	--
Patient saw provider within 15 minutes of appointment time for most recent visit	--	15	--
Provider explained things in a way that was easy to understand	14	16	21
Provider listened carefully to patient/[respondent]	15	17	22
Patient/[Respondent] talked with provider about health questions or concerns [about child]	16	18	23
Provider knew important information about patient's/[child's] medical history	18	20	25

Short Item Title	Item # Adult 12-Month	Item # Adult Visit	Item # Child 12-Month
Provider showed respect for what patient/[respondent] had to say	19	21	26
Provider spent enough time with patient/[child]	20	22	27
Provider ordered blood test, x-ray, or other test	21	23	28
Rating of provider	23	25	41
Would recommend provider to family and friends	--	26	--
Respondent and provider talked about child's learning ability	--	--	31
Respondent and provider talked about age-appropriate behaviors	--	--	32
Respondent and provider talked about child's physical development	--	--	33
Respondent and provider talked about child's moods and emotions	--	--	34
Respondent and provider talked about injury prevention	--	--	35
Provider gave information on injury prevention	--	--	36
Respondent and provider talked about how much time child spends on a computer and in front of TV	--	--	37
Respondent and provider talked about child's eating habits	--	--	38
Respondent and provider talked about child's physical activity	--	--	39
Respondent and provider talked about how child gets along with others	--	--	40
Respondent and provider talked about any problems in the household that might affect child	--	--	41
Clerks and receptionists helpful	24	27	42
Clerks and receptionists courteous and respectful	25	28	43
Rating of [child's] overall health	26	29	44
Rating of [child's] overall mental or emotional health	27	30	45
Age [child]	--	--	46
Male or female [child]	--	--	47

Short Item Title	Item # Adult 12-Month	Item # Adult Visit	Item # Child 12-Month
Hispanic or Latino [child]	--	--	48
Race [child]	--	--	49
Age of patient [respondent]	28	31	50
Patient/[Respondent] male or female	29	32	51
Highest grade level completed [respondent]	30	33	52
Hispanic or Latino	31	34	--
Race	32	35	--
Respondent's relationship to child	--	--	53
Someone helped patient/[respondent] complete survey	33	36	54
TOTAL NUMBER OF KEY ITEMS	27	30	43
Number of items needed to be a "complete" survey	14	15	22

* The test in brackets refers to language that appears in the Child Primary Care Questionnaire's version of these questions.

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 people who might be difficult to reach. They are likely to be different from people 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 possible location problems in advance and consider conducting extensive telephone tracking and locating. You may also want to talk about the timing of interviews. Because the Clinician & Group Surveys are administered to respondents in their homes, interviewers typically work in the evenings and on weekends. However, the survey vendor should provide at least one interviewer during the day to maintain appointments made with respondents during the day and to try to reach respondents who do not answer during the evenings (e.g., those who have evening shift jobs). Interviewing during the day 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 an answering machine.	Answering machines are 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. 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 answering machine is reached, the interviewer should assume that the person is not at home.

Common Problems	Some Guidance
The telephone number for the sampled individual is incorrect.	<p>The vendor should make every effort to find the right number:</p> <p>If the person answering the telephone knows how to reach the sampled individual, use that information.</p> <p>If there is no information about the sampled individual at the provided number, use directory assistance.</p> <p>If a correct telephone number cannot be found for the individual, and you are using both mail and telephone methods of data collection, mail the questionnaire.</p>
The sampled person has moved and the address in the sample is incorrect.	<p>The vendor should make every effort to track down the sampled person. Stamp all mail “Address Correction Requested” so that undelivered mail gets returned. If the mail is returned, refer to sources like Internet directories or national change of address directories to obtain the new address.</p>
The sampled person is temporarily away.	<p>The protocol for this situation will depend somewhat on the data collection schedule. If the person becomes available before data collection is scheduled to end, the correct procedure is to call back later.</p>
The sampled person does not speak English.	<p>If the survey 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.</p>
The sampled person is temporarily ill.	<p>Contact the person again before the end of data collection to determine if he/she has recovered and can participate.</p>
The sampled person has a condition that prevents being interviewed, such as having a visual, hearing, or cognitive impairment.	<p>This person becomes a nonrespondent by virtue of his or her condition.</p>