



How We Rate Hospitals

Patient Ratings

August 4, 2009

Overview

Hospital Patient Ratings are based on survey data collected by the Centers for Medicare & Medicaid Services (CMS). Hospital CAHPS, or HCAPHS, is a more recent addition to the Consumer Assessment of Healthcare Providers and Systems (CAHPS) family of surveys administered by CMS. The development of the survey and data analysis methods followed sophisticated and well-accepted survey and statistical methodologies. Data are collected using a standardized survey instrument, by the hospitals themselves, or by CMS-approved and trained vendors contracted by individual hospitals. Data are delivered to a centralized data bank, where they are analyzed and prepared for public reporting. Results are reported publicly each quarter, based on the most recently available four quarters' data; for example, the June 2009 release, which we posted in August 2009, is based on the 12-month period ending September 2008.

The HCAHPS results reported by CMS are statistically adjusted for mode of survey administration chosen by each hospital (mail, telephone, interactive voice response, or mixed-mode) and for each hospital's patient mix (age, education, self-reported health, language other than English, service line, length of time between discharge and survey completion, and admission through the ER).

For each hospital, data summaries are available for 10 measures, reflecting communication with doctors and nurses, receiving help from hospital staff, communication about new medications, pain management, room and bathroom cleanliness, quietness, discharge planning, and two overall questions about the hospital experience.

Consumer Reports' Patient Ratings include scores for 8 of these measures, and an overall score based on the average of the two overall measures.

The Hospital Consumer Assessment of Healthcare Provider Services Survey

The Consumer Assessment of Healthcare Providers and Systems (CAHPS) family of surveys was launched in 1995. The intent was to develop a standardized survey that could measure and report the quality of health plans from the consumer's perspective. The CAHPS family of surveys now includes a hospital survey (HCAHPS), which is the basis of our Patient Ratings.

To help consumers make informed choices about hospitals, the Centers for Medicare & Medicaid Services (CMS) partnered with the Agency for Healthcare Research and Quality (AHRQ) to develop a standard instrument to measure patients' perspectives on hospital care—the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey. While many hospitals have collected information about patient's experiences, no standard instrument or reporting requirement existed to allow direct comparison among hospitals.

To develop HCAHPS, a set of candidate questions, based on the Institute of Medicine's nine domains of care¹ was developed from existing survey instruments on patient experience of care² as well as a call for measures posted in the *Federal Register*. The final survey tool that was developed can be found at <http://www.hcahpsonline.org/surveyinstrument.aspx>. The final HCAHPS survey asks questions about the following eight domains regarding a patient's hospital experience, six of which are composites of more than one question, and two overall items:

- **Communication with Nurses**

During this hospital stay, how often did nurses treat you with courtesy and respect?

During this hospital stay, how often did nurses listen carefully to you?

During this hospital stay, how often did nurses explain things in a way you could understand?

- **Communication with Doctors**

During this hospital stay, how often did doctors treat you with courtesy and respect?

During this hospital stay, how often did doctors listen carefully to you?

During this hospital stay, how often did doctors explain things in a way you could understand?

- **Responsiveness of Hospital Staff**

During this hospital stay, after you pressed the call button, how often did you get help as soon as you wanted it?

How often did you get help in getting to the bathroom or in using a bedpan as soon as you wanted?

- **Pain Management**

During this hospital stay, how often was your pain well controlled?

During this hospital stay, how often did the hospital staff do everything they could to help you with your pain?

¹ Goldstein L, et al. Measuring Hospital Care from the Patients' Perspective: An Overview of the CAHPS Hospital Survey Development Process. *Health Serv Res.* 2005;40:1977-1995.

² Castle, NG et al. Review of the literature on survey instruments used to collect data on hospital patients' perceptions of care. *Health Serv Res.* 2005 Dec;40(6 Pt 2):1996-2017.

- **Communication About Medications**

Before giving you any new medicine, how often did hospital staff tell you what the medicine was for?

Before giving you any new medicine, how often did hospital staff describe possible side effects in a way you could understand?

- **Discharge Planning**

During this hospital stay, did doctors, nurses or other hospital staff talk with you about whether you would have the help you needed when you left the hospital?

During this hospital stay, did you get information in writing about what symptoms or health problems to look out for after you left the hospital?

- **Cleanliness of Hospital Environment**

During this hospital stay, how often were your room and bathroom kept clean?

- **Quietness of Hospital Environment**

During this hospital stay, how often was the area around your room quiet at night?

Two overall questions regarding the patient experience are:

- **Recommend the Hospital**

Would you recommend this hospital to your friends and family?

- **Overall Hospital Rating**

Using any number from 0 to 10, where 0 is the worst hospital possible and 10 is the best hospital possible, what number would you use to rate this hospital during your stay?

HCAHPS Survey Methods and Reporting

Hospitals survey a sample of all patients who are at least 18 years old at the time of discharge and who stayed at the hospital at least one night. The following patients are excluded:

- Patients younger than 18 years old at the time of discharge
- Psychiatric patients
- Patients who died in the hospital
- Patients who did not stay at least one night in the hospital
- “No-Publicity” patients – Patients who request that they not be contacted
- Court/Law enforcement patients (i.e., prisoners)
- Patients with foreign home addresses (excluding U.S. territories – Virgin Islands, Puerto Rico, and Northern Mariana Islands)
- Patients discharged to hospice care (Hospice-home or Hospice-medical facility)
- Patients who are excluded because of state regulations

Hospitals can use one of three sampling methods, with approval from CMS: simple random sampling, stratified proportional random sampling, and stratified disproportionate random sampling (if, for

example, the hospital would like information on a specific service or department that is small, they may need to over-sample patients from that group). If disproportionate random sampling is used, the final data are adjusted to represent the hospital's overall patient mix proportionally.

Hospitals report patient experience data to CMS after the end of each quarter (March, June, September, and December). Given the extensive scrutiny these data are subjected to and the steps in analyzing data from all hospitals in a consistent manner, there is a 9-month time lag between when the data are submitted and when they are released. So, for example, the June 2009 release covers patients' experiences in the 12-month period ending September 2008. The National CAHPS Benchmarking database is the national repository for data from the CAHPS surveys (https://www.cahps.ahrq.gov/content/ncbd/ncbd_Intro.asp?p=105&s=5). The data for hospital ratings are also available as a tool that allows consumers to look up individual hospitals on the Hospital Compare Web site at <http://www.hospitalcompare.hhs.gov>. A summary of state and national scores can be found on the official HCAHPS website, www.hcahponline.org.

Hospitals may administer the survey themselves, or use one of several approved vendors (http://www.hcahponline.org/app_vendor.aspx). Only about 100 hospitals administer their own surveys, with the balance using vendors. Surveys are administered via mail, phone, mixed mail/phone or active interactive voice response. Surveying of sampled patients must be initiated between 48 hours and six weeks (42 days) after discharge, regardless of the mode (telephone, mail or mixed). Distributing surveys to patients before they are discharged is not allowed. In the mail-only administration mode, a second questionnaire is mailed out to the respondent 21 days after the first if no response is received. In the telephone and mixed modes, a total of five telephone calls must be attempted at different times of the day, on different days of the week and in different weeks. No proxy completion on a patient's behalf is permitted. This protocol is designed to achieve, on average, a 40 percent response rate.

Hospitals or their survey vendors collect data directly from discharged patients, and then submit their data to QualityNet (Q-NET) Exchange, a secure data transmission and data warehouse facility operated by the Iowa Foundation for Medical Care, the Iowa Quality Improvement Organization (QIO). After initial screening for basic data errors, Q-NET passes data to the Health Services Advisory Group (HSAG), the QIO for Arizona. HSAG analyzes data from all hospitals, and prepares the results for public reporting on the CMS Hospital Compare Website (www.hospitalcompare.hhs.gov); hospitals have the opportunity to preview their data before this public release.

Patient-Mix and Mode Adjustments

To assess the impact of mode of survey mode and certain patient-level characteristics on HCAHPS, CMS conducted a large-scale, randomized mode experiment using 45 hospitals from around the nation. HCAHPS researchers examined the impact on HCAHPS measures of patient characteristics not under control of the hospital: service line (medical, surgical, or maternity care), age, education, self-reported health status, language other than English spoken at home, emergency room admission, and percentile response order, also known as "relative lag time," which is based on the time between discharge and survey completion. HCAHPS researchers chose not to adjust for length of stay, in order not to remove the potential effect of intensity of care on patient responses. They also

investigated the effect of mode of survey administration (mail, phone, IVR, or mixed-mode) on HCAHPS scores.

Based on this randomized experiment, researchers developed a regression-based model for adjusting the survey responses for a hospital's mode of survey administration and for patient mix. Mode adjustments are fixed across survey administrations. The randomized experiment also led to the selection of the important patient variables: age, self-rated health, education, service line (medical, surgical, maternity), interaction of age with service line, relative lag time, admission through the emergency room, and language other than English spoken at home.³ Age, self-rated health, and education are the most important patient-level adjusters, and language is the smallest. The patient mix adjusters are estimated within each hospital, including a hospital main effect, separately for each survey item, and are estimated anew each quarter. The adjusters are generally stable over time, and patient mix adjustments on average make less of a difference than mode adjustments. Adjustments for mode and patient-mix are made separately for each quarter's data, and then the most recent four quarters' adjusted data are averaged for reporting.

For more information on the mode and patient-mix adjustments, see <http://www.hcahponline.org/modeadjustment.aspx>.

Consumer Reports' HCAHPS data analysis and presentation

The data

After centralized data analysis, CMS reports statistics for 10 measures for each hospital:

1. How often did doctors communicate well with patients?
2. How often did nurses communicate well with patients?
3. How often did patients receive help quickly from hospital staff?
4. How often did staff explain about medicines before giving them to patients?
5. How often was patients' pain well controlled?
6. How often were patients' rooms kept quiet at night?
7. How often were patients' rooms and bathrooms kept clean?
8. Were patients given information about what to do during their recovery at home?
9. How do patients rate the hospital overall?
10. Would patients recommend the hospital to friends and family?

Measures 1-7 are based on questions with possible responses of never, sometimes, usually, or always. For these 7 measures, CMS reports the percentage of responses in 3 categories: Always, Usually, or (sometimes or never). Measure 8 is yes/no; CMS reports the percentage of patients responding "yes". Measure 9 is on a scale of 0-10; CMS reports the percentage of responses in each of 3 categories: 9-10, 7-8, and 6 or below. Measure 10 has possible responses of definitely no, probably no, probably yes, or definitely yes; CMS reports the percentage of responses that were definitely yes, probably yes,

³ O'Malley, AJ et al. Case-mix adjustment of the CAHPS Hospital Survey. *Health Serv Res.* 2005;40:2162-2181.

or no. These percentages, after patient-mix and mode adjustments, are reported as whole numbers. We do not have access to more detailed data or summaries.

Sample size considerations

For each hospital, CMS reports the survey response rate and whether the number of completed surveys was 300 and above, 100-299, or below 100. The number of completed surveys is not the same as the number of responses to individual survey items. While most items have response rates in the range of 90-95% of completed surveys, a few items do not apply to all patients (e.g. pain management and information about new medications), and have response rates as low as 65% of completed surveys. Individual item response rates or sample sizes are not available.

Because CMS has a public reporting requirement based on these data, they publish all hospitals' data, regardless of sample size, on the Hospital Compare website. For hospitals with fewer than 100 responses, CMS provides a footnote warning the reader that results may not be reliable because of sample size.

We only present Patient Ratings for hospitals with at least 100 completed surveys; smaller samples do not produce reliable Ratings.

Converting the data to Ratings

For the first 7 measures for each hospital, we calculated the percentage of “always” or “usually” responses (e.g. 92% of respondents reported that their doctors always or usually communicated well) as the sum of the “always” and “usually” percentages reported by CMS. For discharge planning, we used the percentage of patients who said they were given instructions on what to do during their recovery at home.

We used these percentages as the basis for scores for the first 8 measures (the last two are used in creating an overall score), using the following intervals for the 5 categories:

Better	5	95% - 100%
	4	90% - 94%
	3	85% - 89%
	2	80% - 84%
Worse	1	79% or below

These intervals were chosen with several guiding principles. First, we judged that a hospital for which 95% or more of respondents said “always” or “usually” to a measure qualifies as superior performance.

Second, the subsequent intervals are based on statistical significance. Even for a question in an individual hospital with as few as 65 responses, a rate of 89% (a score of **3**) is significantly less than a rate of 95% (a score of **5**) ($p=0.04$) and a rate of 79% (a score of **1**) is significantly less than a rate of

90% (a score of 4). At that sample size, a rate of 84% (a score of 2) does not differ significantly from 90% (a score of 4; $p=0.111$); but for $n=100$, that difference is significant as well (0.040).

Third, these intervals provide good discrimination among hospitals and among the response distributions for each of the measures.

Overall Score

We calculated our overall score as the arithmetic mean of these two measures:

- The percentage of respondents who would Definitely recommend the hospital
- The percentage of respondents who gave the hospital an overall rating of 9 or 10

Data Limitations

The survey tool and methods of data collection have been carefully researched and validated. However, unlike other Consumer Reports Ratings, we do not collect these data ourselves, and so the actual implementation of the data collection and analysis is not in our control. We rely on the Centers for Medicare & Medicaid Services (CMS), who oversees all aspects of the survey, to train hospitals and vendors in how to collect the data, to investigate how the survey is actually implemented for each hospital, and to analyze the data.

There may potentially be quality control issues that do not meet the high standards that Consumer Reports generally applies to its own data. Data collection is decentralized—in part to accommodate the legacy of data already collected by hospitals from patients—which gives hospitals the ability to continue asking additional questions not in HCAHPS or to tailor additional questions to their specific quality improvement efforts (if they do include additional questions on the survey, CMS requires the HCAHPS items to appear first, to reduce the chance of response bias from the other questions). This decision is also related to cost—hospitals pay for or conduct the data collection themselves and this allows them to piggyback objectives.

To achieve standardization, CMS, the Health Services Advisory Group, and the National Committee for Quality Assurance provide detailed survey administration requirements in the HCAHPS instruction manual (Quality Assurance Guidelines, V4.0, available at www.hcahpsonline.org), training programs, site visits, data audits and analyses, and vendor certification processes (<http://www.hcahpsonline.org/qaguidelines.aspx>).

The array of survey vendors involved in data collection introduces another set of concerns. While vendors are required to follow a strictly outlined set of procedures, there may be some inconsistencies in survey administration of which we are unaware, and over which we have no control. We do not provide Patient Ratings for hospitals which are identified by CMS to have discrepancies in their data collection.

Finally, the Consumer Reports Health Ratings Center was only allowed access (by CMS) to the summarized results of their data analysis, preventing us from validating the data calculations or presenting data to you in alternative ways.

Despite these limitations, after our comprehensive review of the CMS survey methodology, we are confident that their stated methodologies are valid and reliable, and provide important information that allows comparison of patients' experiences in different hospitals on a common set of measures. Our Ratings methodology has been reviewed internally by the Statistics and Data Quality Management and Survey Research Departments, and externally by several leading experts and researchers in the field. Their feedback has been incorporated in the methods described in this document.