

## **Attachment for 1.18 of Instrument and Ratings IDM Forms**

### **Patient-Mix Adjustment Factors for In-Center Hemodialysis CAHPS (ICH CAHPS) Mode Experiment Survey Results**

The Centers for Medicare & Medicaid Services (CMS) began publicly reporting ICH CAHPS Survey results on the Dialysis Facility Compare (DFC) link on the [Medicare website](https://www.medicare.gov/) (<https://www.medicare.gov/>) in October 2016. In 2020, Medicare.gov transitioned from the DFC to the compare tool on Medicare.gov. ICH CAHPS Survey results are currently refreshed or updated on Care Compare on Medicare.gov twice each year and are based on data from the two most recent semiannual surveys.

Prior research has shown that patients' assessment of the health care they receive may be affected by both the survey data collection mode and patient characteristics. In 2022, CMS and the ICH CAHPS Coordination Team conducted a randomized Mode Experiment with a sample of hemodialysis patients to determine whether they respond differently based on data collection mode. Data collected during the ICH CAHPS Mode Experiment were also used to determine which, if any, patient characteristics (patient-mix) affect patients' assessment of the hemodialysis they receive. Similar to past ICH CAHPS Mode Experiments, the results of this ICH CAHPS Mode Experiment showed differences in responses attributable to patient-mix characteristics and data collection mode. Therefore, patient-mix and mode adjustments will be made on ICH CAHPS Survey results that are publicly reported using selected patient characteristics identified during the Mode Experiment and data collection mode.

During each ICH CAHPS public reporting period, CMS and its Coordination Team will use data from the two most recent semiannual ICH CAHPS Surveys to derive the patient-mix adjustment factors using coefficients obtained from Ordinary Least Squares regression models for the top- and bottom-box scores for each of the two global ratings and the two multi-item measures. Patient-mix adjustment factors will be calculated directly from these regression coefficients for each individual survey item by multiplying the coefficients by negative one ( $-1.0$ ). The coefficients that will be used to adjust for survey mode is based on the results of the Mode Experiment. CMS will use the coefficients to adjust the raw scores calculated on each measure

from data collected in each semiannual survey. The ICH CAHPS scores that will be publicly reported are the weighted<sup>1</sup> average of the two most recent semiannual ICH CAHPS scores.

### **Calculating the Patient-Mix Adjusted Global Ratings and Multi-Item Scores**

Four sets of numbers are needed to calculate an ICH facility's adjusted score for the two individual global rating measures (the dialysis center staff and dialysis center) and the individual survey questions included in each of the two multi-item measures. These are (1) the "raw score," or the ICH facility's mean on the respective ICH CAHPS outcome before adjustment (top- or bottom-box score for the global rating measures and individual survey questions comprising the multi-item measures); (2) the national-level patient-mix adjustment (top- and bottom-box adjustment factors for the global rating measures and individual survey questions comprising the multi-item measures); (3) the ICH facility's means on the patient-mix characteristics variables; and (4) the national mean on the patient-mix characteristics variables.

The adjusted score for the ratings measures and a given individual survey question that is included in one of the two ICH CAHPS Survey multi-item measures is the sum of a series of products in the equation below, where each product multiplies the adjustment by the deviation of the ICH facility's mean on a given patient-mix characteristic from the national mean on that characteristic.

$$Y' = y + a1(h1 - m1) + a2(h2 - m2) + a3(h3 - m3) + \dots + a26(h26 - m26) + a27 \times h27 + a28 \times h28 + a29 \times h29$$

where

$y'$	is the facility's adjusted top-box score for a ratings measure or the individual ICH CAHPS question included in the multi-item measure.
$y$	is the facility's "raw score," or mean on the respective unadjusted top-box ICH CAHPS ratings measure or question included in the multi-item measure.
$a1$ to $a26$	are the national-level patient characteristic adjustments, for the global ratings measures and individual questions that comprise the multi-item measures.

---

<sup>1</sup> The scores are weighted using the number of respondents, thus a score derived from more respondents will have more influence in the average score that is publicly reported.

a27 to a29	are the national-level survey mode adjustments for the global ratings measures and the individual questions that comprise the multi-item measures.
h1 to h26	are the facility's mean proportions of patients with each of the patient characteristics in the same row.
h27 to h29	are the facility's proportion for a given mode. This value will always be 0 or 1 because, within a given facility, all surveys are completed by either phone, mail, phone with mail follow up, or web with mail follow up.
m1 to m26	are the national mean proportions of patients with each of the patient characteristics.

The facility's patient-mix adjusted scores for the ratings measures or an individual survey question, as described in the formula above, are adjusted for differences between a facility's patient composition according to the ICH CAHPS patient-mix characteristics and the overall national composition of ICH patients on these same characteristics. This adjustment, which allows consumers to compare different ICH facilities based on the same overall patient composition, is made by subtracting the national mean—the “m”s in the equation above—for a given patient characteristic from an ICH facility's share of patients on this same patient characteristic—the “h”s in the equation above—and then multiplying the difference by the patient-mix adjustment factor—the “a”s in the equation above. The following is a fictitious example of adjusting for patient-mix.

- If overall (nationally), 56% of survey respondents are male, but 58% of the respondents from an ICH facility are male, then the adjustment factors for this ICH facility are multiplied by the difference between the ICH facility's patient composition versus the overall national patient composition.
- The score for each of the ICH CAHPS ratings and multi-item measures for the ICH facility in this example is calculated as 58% minus 56%, or 2%. Also, suppose for the rating of dialysis center staff, the top-box adjustment factor for males is 4.646 (males were 4.646% less likely to report a “9” or “10” in the rating of their dialysis center staff).
- To obtain the top-box rating of the dialysis center staff for the ICH facility in this example, we multiply 4.646 times 2% to get 9.29%. In this example, the adjustment for sex for the top-box rating of the dialysis center staff for this ICH facility is 9.29%.

As demonstrated in the formula and example above, whether the scores for a given facility are adjusted upward or downward for a given measure depends on the patient-mix adjustments and the patient-mix of that facility relative to the national average patient-mix.

After each facility's patient-mix adjusted score is created for the ratings measures and individual survey questions, the facility-level multi-item measure scores are formed from the average of these facility-level adjusted scores for the individual survey questions that comprise a given multi-item measure. This creates the semiannual patient-mix facility-level ratings and multi-item measure scores. The two most recent semiannual patient-mix facility-level multi-item measure scores are then averaged to produce the current ICH CAHPS scores that are publicly reported.

For public reporting purposes, the final adjusted ICH CAHPS score is rounded to the nearest integer and expressed as a percentage (e.g., 70%). Note that middle-box scores are computed by subtracting the sum of patients who provided top- and bottom-box scores from 100.