
CBE ID

0258-4

Title

ICH CAHPS: Quality of Dialysis Center Care and Operations Measure (QDCCO)

Project

Advanced Illness and Post-Acute Care

Endorsement Status

Endorsed with Conditions

E&M Committee Rationale/Justification

When the measure returns for maintenance (5 years), the measure developer will provide a robust logic model illustrating the actions accountable entities can take to improve the patient experience (e.g., focus groups, rapid feedback from vendors to facilities).

Is Under Review

No

Next Maintenance Cycle

Spring 2030

Previous Endorsement Cycle

Spring 2025

Initial Endorsement

Wed, 11/14/2007 - 13:26

Steward

Centers for Medicare & Medicaid Services

1.0 New or Maintenance

Maintenance

1.1 Measure Structure

Instrument + Derived Measure Set

1.1a Instrument or Derived Measure

Derived Measure

1.2 Associated Instrument Lookup

In-Center Hemodialysis Consumer Assessment of Healthcare Providers and Systems (ICH CAHPS) Survey

1.6 Measure Description

The ICH CAHPS Survey is designed to measure the experiences of people receiving in-center hemodialysis care from Medicare-certified dialysis centers. The survey is designed to meet the following three broad goals:

- Produce comparable data from the patient’s perspective that will allow objective and meaningful comparisons between dialysis centers on domains that are important to consumers.
- Create incentives for dialysis centers to improve their quality of care.
- Enhance public accountability in health care by increasing the transparency of the quality of care provided in return for public investment.

Specifically, the survey measures patients’ experiences on topics that are important from the perspective of patients and help them make more informed choices when selecting a dialysis center as well as helping dialysis centers improve the quality of dialysis care for their patients.

The survey is administered semiannually to patients who have received in-center hemodialysis for at least 3 months from Medicare-certified dialysis centers. Data collection for each survey period is 12 weeks. The survey is available in mail-only, phone-only, and mail with phone follow-up.

Survey results publicly reported include two ratings and two measures:

- Global rating of dialysis center staff
- Global rating of dialysis center
- Quality of Dialysis Center Care and Operations measure (QDCCO, calculated from 13 survey questions)
- Providing Information to Patients measure (PIP, calculated from 9 survey questions)

1.6 Measure Description (derived)

The ICH CAHPS Quality of Dialysis Center Care and Operations (QDCCO) measure captures whether dialysis patients feel that their that dialysis center staff communicated well, kept patients as comfortable and pain-free as possible, behaved in a professional manner, and kept the center clean.

The questions included in this measure are:

3. In the last 3 months, how often did the dialysis center staff listen carefully to you?

4. In the last 3 months, how often did the dialysis center staff explain things in a way that was easy for you to understand?
5. In the last 3 months, how often did the dialysis center staff show respect for what you had to say?
6. In the last 3 months, how often did the dialysis center staff spend enough time with you?
7. In the last 3 months, how often did dialysis center staff make you as comfortable as possible during dialysis?
8. In the last 3 months, did you feel comfortable asking the dialysis center staff everything you wanted about dialysis care?
11. In the last 3 months, how often did dialysis center staff check you as closely as you wanted while you were on the dialysis machine?
13. In the last 3 months, how often was the dialysis center staff able to manage problems during your dialysis?
14. In the last 3 months, how often did dialysis center staff behave in a professional manner?
15. In the last 3 months, how often did dialysis center staff explain blood test results in a way that was easy to understand?
21. In the last 3 months, when you arrived on time, how often did you get put on the dialysis machine within 15 minutes of your appointment or shift time?
22. In the last 3 months, how often was the dialysis center as clean as it could be?
31. In the last 12 months, how often were you satisfied with the way they handled these problems?

1.7 Measure Type

Patient-reported Experience Performance Measure (PRE-PM)

1.8 Level of Analysis

Facility

1.9 Care Setting

Other

1.9b Other Care Setting

In-center Hemodialysis Facility

1.10 Measure Rationale

One of the goals of the CMS National Quality Strategy is to foster engagement and to bring the voices of patients to the forefront. As part of fostering engagement, it is critical to hear the voice

of individuals by obtaining feedback from them on in-center hemodialysis (ICH) facility performance and incorporating it as part of CMS's comprehensive approach to quality. Patient-centeredness is a central goal of dialysis care and can be directly measured through surveys of dialysis patients. CMS created the In-Center Hemodialysis CAHPS® Survey, a component of the End-Stage Renal Disease (ESRD) Quality Incentive Program (QIP), to ensure that an assessment of the patient-centeredness of care would be included to monitor dialysis facility performance, promote quality improvement, and inform consumer decision making in the selection of a dialysis facility via public reporting of results. The ICH CAHPS Survey is a standardized survey instrument and data collection methodology for measuring ICH patients' perspectives on their care in Medicare-certified dialysis centers. The survey is administered semiannually to patients who have received dialysis for at least 3 months from Medicare-certified dialysis centers.

1.10 Measure Rationale (derived)

The ICH CAHPS Quality of Dialysis Center Care and Operations (QDCCO) multi-item measure captures whether patients feel that their dialysis center staff communicated well, kept patients as comfortable and pain-free as possible, behaved in a professional manner, and kept the center clean.

This measure reflects patient experiences with their dialysis facility across a variety of domains that were identified as important to patients and stakeholders based on focus groups and cognitive interviews during the survey revision development phase. This measure will be publicly reported on Medicare.gov Care Compare tool to help ICH facilities with quality improvement and help ESRD patients find high quality dialysis facilities.

1.13 Data Dictionary

Not attached. I attest that all information will be provided where codes and/or value sets are needed (1.14a - 1.15c).

1.14 Numerator

CMS calculates ICH CAHPS Survey measure scores using top-box scoring. The top-box score refers to the percentage of respondents that give the most positive response(s): 12 items in the ICH CAHPS QDCCO measure use a "Never/Sometimes/Usually/Always" response scale where the top-box numerator is the number of respondents who answer "Always." 1 item uses a "Yes/No" response scale where top-box numerator is the number of respondents who answer "Yes."

1.14a Numerator Details

CMS calculates ICH CAHPS Survey multi-item measure scores using top-box scoring. The top-box score refers to the percentage of respondents that give the most positive response(s) (answers: Always or Yes).

12 items in the ICH CAHPS QDCCO multi-item measure use a “Never/Sometimes/Usually/Always” response scale where the top-box numerator is the number of respondents who answer “Always.” 1 item uses a “Yes/No” response scale where top-box numerator is the number of respondents who answer “Yes.”

The QDCCO measure is composed of responses to the following survey items:

- In the last 3 months, how often did the dialysis center staff listen carefully to you?
- In the last 3 months, how often did the dialysis center staff explain things in a way that was easy for you to understand?
- In the last 3 months, how often did the dialysis center staff show respect for what you had to say?
- In the last 3 months, how often did the dialysis center staff spend enough time with you?
- In the last 3 months, how often did dialysis center staff make you as comfortable as possible during dialysis?
- In the last 3 months, did you feel comfortable asking the dialysis center staff everything you wanted about dialysis care?
- In the last 3 months, how often did dialysis center staff check you as closely as you wanted while you were on the dialysis machine?
- In the last 3 months, how often was the dialysis center staff able to manage problems during your dialysis?
- In the last 3 months, how often did dialysis center staff behave in a professional manner?
- In the last 3 months, how often did dialysis center staff explain blood test results in a way that was easy to understand?
- In the last 3 months, when you arrived on time, how often did you get put on the dialysis machine within 15 minutes of your appointment or shift time?
- In the last 3 months, how often was the dialysis center as clean as it could be?
- In the last 12 months, how often were you satisfied with the way they handled these problems?

1.15 Denominator

ICH CAHPS Survey respondents are adult eligible patients who received dialysis care from an in-center hemodialysis facility during the sampling window. A survey is defined as completed when at least 50 percent of the questions applicable to all patients are answered. The denominator for the ICH CAHPS QDCCO measure is the number of respondents with completed surveys who

answer at least one item within the multi-item measure over the 2 semiannual periods being publicly reported.

1.15a Denominator Details

ICH CAHPS Survey respondents are adult eligible patients who received dialysis care from an in-center hemodialysis facility during the sampling window. A survey is defined as completed when at least 50 percent of the questions applicable to all patients are answered.

The denominator for the ICH CAHPS QDCCO multi-item measure is the number of respondents with completed surveys who answer at least one item within the multi-item measure over the 2 semiannual periods being publicly reported.

1.15b Denominator Exclusions

Cases are excluded from the multi-item measure denominator if:

- Patients are under 18 years of age
- Patients' eligibility is unclear in mail survey
- Patients are not currently receiving dialysis
- Patients are deceased or receiving hospice
- Patients have not received ICH dialysis for at least 3 months
- Patients receive dialysis at a nursing home where they reside or at home
- Patients reside in jail or prison
- Patients are mentally or physically incapable
- Patients are no longer receiving care at sampled facility
- Patients have a language barrier
- Survey completed by a proxy

1.15c Denominator Exclusions Details

Denominator exclusions are based on final disposition codes from survey vendors, and approved during data cleaning activities. The cases with the following disposition codes assigned are excluded:

130 - Completed mail survey, survey eligibility unknown

140 - Ineligible: not currently receiving dialysis

150 - Deceased

160 - Ineligible: does not meet eligibility criteria (under 18, hospice, nursing home, less than 3 months, doesn't receive dialysis at a center)

170 - Language barrier

180 - Mentally or physically incapacitated

190 - Ineligible: No longer receiving care at sampled facility

199 - Ineligible: Completed by proxy

1.15d Age Group

Adults (18-64 years), Older Adults (65 years and older)

1.16 Type of Score

Rate/proportion

1.16.0 Same Type of Score? (derived)

Same as instrument

1.17 Measure Score Interpretation

Better performance = Higher score

1.17.0 Same Measure Score Interpretation? (derived)

Same as instrument

1.18 Calculation of Measure Score

The survey is administered semiannually to patients who have received in-center hemodialysis for at least 3 months from Medicare-certified dialysis centers. Data collection for each survey period is 12 weeks.

Survey results publicly reported include two ratings measures and two multi-item measures:

- Global rating of dialysis center staff
- Global rating of dialysis center
- Quality of Dialysis Center Care and Operations multi-item measure (QDCCO, calculated from 13 survey questions)
- Providing Information to Patients multi-item measure (PIP, calculated from 9 survey questions)

CMS calculates ICH CAHPS Survey measure scores using top-box scoring for completed surveys (a survey is defined as completed when at least 50% of the core questions applicable to all patients are answered). The top-box score refers to the percentage of respondents who give the

most positive response(s).

ICH CAHPS Survey respondents are eligible adult patients who have received care from an ICH dialysis center for at least 3 months. The numerator for the multi-item measures is the number of most positive responses (9/10 for ratings and “Yes” or “Always” for multi-item measures). The denominator for the ICH CAHPS multi-item measures is the total number of respondents with completed surveys who answered at least one item within the multi-item measure.

Cases are excluded from the measure denominator if:

- Patients are under 18 years of age
- Patients’ eligibility is unclear in mail survey
- Patients are not currently receiving dialysis
- Patients are deceased or receiving hospice
- Patients have not received ICH dialysis for at least 3 months
- Patients receive dialysis at a nursing home where they reside or at home
- Patients reside in jail or prison
- Patients are mentally or physically incapable
- Patients are no longer receiving care at sampled facility
- Patients have a language barrier
- Survey completed by a proxy

More information on the risk adjustment and related calculations can be found in the two attachments submitted for 1.18a. One of the attachments is in Section 7 (supplemental).

1.18.0 Same Calculation of Measure Score? (derived)

Same as instrument

1.18a Attach measure score calculation diagram

[1-18-att-Instrument-Form-Ratings-Forms.pdf](#)

1.19 Measure Stratification Details

The measure is not stratified.

1.20 Types of Data Sources

Patient-Reported Data and/or Survey Data, Other

1.20a Other Data Source

EQRS source data for demographic information for case-mix adjustors.

1.20c Format: Patient-Reported Data and/or Survey Data

Non-digital

1.20d Format: Other Data Source

Digital

1.21a Data Collection Tool URL(s)

<http://example.com>

1.21b Attach Data Collection Tool(s)

[1-21b-att-Instrument-Form.pdf](#)

1.22 Proxy Responses

No

1.23 Survey Respondent

Patient

1.24 Data Collection and Response Rate

The ICH CAHPS Survey is conducted semiannually each spring and fall. CMS-trained survey vendors can offer survey administration via mail-only, telephone-only, or mixed mode (mail with phone follow-up) to their client ICH facilities. The survey is available in English, Spanish, traditional and simplified Chinese, Samoan, and Vietnamese; the telephone interview is only available in English and Spanish. Vendors must administer the survey in English, but can choose whether to offer other languages.

We do not yet know response rates for the revised survey since it has not been implemented in the national implementation. Our overall response rate for the current ICH CAHPS Survey (not the revised survey) is around 30%; the mixed mode has the highest response rates of the 3 offered modes. Response rates are calculated for the instrument as a whole:

Response Rate = Total Number of completed surveys/(Total Number of Surveys Fielded - Total Number of Ineligible Surveys)

There is no minimum response rate requirement on ICH CAHPS. We are continuously working with survey vendors and ICH facilities to help improve response rates, by offering things such as flyers/posters and waiting room FAQs to place in facilities, training telephone interviewers on avoiding refusals, and using the CMS logo on mailing materials. We also have a dialysis patient page on our project website with survey FAQs and we reference this in the materials that are mailed to sample patients.

1.25 Data Source Details

In addition to survey responses from patients, we receive data from a CMS database. ICH facilities are required to enter dialysis information for all patients into the ESRD Quality Reporting System (EQRS). EQRS data are then used to create the samples for each ICH CAHPS Survey period. In addition, information such as sex and age are pulled from the EQRS data and merged with survey response data files for analysis purposes. We work with the EQRS team on a continuous basis to remain up to speed on the data, changes to the data or data format, and to mitigate any issues with the data.

1.26 Minimum Sample Size

Every facility's sample size differs, depending on the number of survey-eligible patients in the EQRS data, and the size of the facility. There is no minimum sample size per ICH facility. If a facility did not serve 30 survey-eligible patients in the preceding year, they are not required to participate in that year's surveys. In order for ICH CAHPS scores (for the 2 ratings and 2 multi-item measures) to be publicly reported, a facility must have 30+ completed surveys across the two survey periods that are being reported during that Care Compare refresh on medicare.gov. For example, for the 2024 October Care Compare refresh period, a facility needed at least 30 completed surveys between the 2023 Spring and 2023 Fall Surveys, in order for the scores for the global ratings and QDCCO and PIP multi-item measures to be reported.

1.26.0 Same Minimum Sample Size? (derived)

Same as instrument

2.1 Attach Logic Model

[2-1-attachment-Instrument-Form.pdf](#)

2.2 Evidence of Measure Importance

The Consumer Assessment of Healthcare Providers and Systems (CAHPS) set of patient experience surveys are well-established measures of healthcare quality. Each semiannual survey period, between 350,000 and 415,000 ICH patients are selected to receive the ICH CAHPS Survey. Public reporting of these survey results creates incentives for dialysis centers to improve their quality of care, directly impacting the patients who receive it. Because of this, it is important to ensure that the survey aligns with what patients believe constitutes high-quality care. Specifically, the survey measures patients' experiences on topics that are important from the perspective of patients and where the patient is the best source of information. The results help dialysis patients make more informed choices when selecting a dialysis center as well as helping dialysis centers improve the quality of dialysis care for their patients.

In addition to a number of psychometric analyses, RTI conducted literature reviews, several rounds of focus groups and cognitive interviews with dialysis patients, conversations with ESRD stakeholders and Technical Expert Panels (TEP), and discussions with the CAHPS Consortium

prior to finalizing a revised survey to test in a 2022 field test/mode experiment. Following the field test, results were discussed with the same groups of experts and all supported the revised survey.

During the focus groups, dialysis patients were asked about characteristics that were important to them in regards to high quality dialysis care. They were then asked about specific survey items identified for removal in the psychometric analysis. For each survey item, participants were asked how important questions were in rating and evaluating the care that they receive at their dialysis center. For the QDCCO measure, there was a mix of opinions on each question identified to be removed, but the consensus of the focus group participants was that if questions had to be removed from the measure, then these were the best to remove.

The 2020 and 2023 TEPs regarding survey revisions included 10 members each, consisting of dialysis patients, ESRD network representatives, a survey expert, dialysis patient advocates, and large dialysis organization representatives.

Data from the 2022 ICH CAHPS Survey field test/mode experiment do not allow for direct assessment of the relationship between survey measures and structures or processes. However, given that the modified instrument-derived multi-item measures (QDCCO and PIP) are the same or similar to current ICH CAHPS measures, CMS anticipates that these revised measures will exhibit similar relationships to those of the existing ICH CAHPS Survey measures. For example, an exercise comparing the current QDCCO multi-item measure (prior to item removal) to the revised QDCCO multi-item measure results in a near-perfect correlation ($r=0.991$) and illustrating the strong relationship between the current and revised state of the QDCCO multi-item measure.

2.2 Evidence of Measure Importance (derived)

The survey measures patients' experiences on topics that patients have identified as important to measure the quality of care for facilities and for which the patient is the best source of this information. These survey measures help dialysis patients make more informed choices when selecting a dialysis center as well as helping dialysis centers improve the quality of dialysis care for their patients. The QDCCO multi-item measure asks questions regarding the dialysis center's quality of care and operations. Focus groups/cognitive interviews with dialysis patients, conversations with ESRD stakeholders and Technical Expert Panels, and discussions with the CAHPS Consortium were conducted prior to the 2022 field test/mode experiment that tested the revised survey and after the field test/mode experiment results were finalized. All supported the revised survey, including modifying the existing QDCCO multi-item measure by dropping 4 questions that were deemed not critical to ask, leaving the QDCCO measure with 13 instead of 17 questions.

Summary of literature findings associated with this measure:

1. Al Nuairi A, Bermamet H, Abdulla H, Simsekler MCE, Anwar S, Lentine KL. Identifying Patient Satisfaction Determinants in Hemodialysis Settings: A Systematic Review. *Risk Manag Healthc Policy*. 2022 Sep 30;15:1843-1857. doi: 10.2147/RMHP.S372094. PMID: 36203651; PMCID: PMC9531609.

- **Quality Improvement:** Understanding these determinants can help healthcare providers and administrators develop targeted interventions to enhance patient satisfaction (training programs to improve staff communication skills or facility upgrades to enhance comfort can be implemented).
- **Personalized Care:** Recognizing the impact of patient demographics and health status on satisfaction can lead to more personalized care approaches, addressing specific needs and preferences.
- **Policy Development:** The findings can inform policy decisions aimed at improving service delivery in HD centers, ensuring that patient satisfaction is a central component of quality care metrics.
- By enhancing relational skills, nurses can foster trust and emotional support, leading to improved patient satisfaction, adherence to treatment plans, and overall health outcomes.
- Empathy is not just a moral attribute but a crucial skill that fosters trust and effective nurse-patient relationships.
- Recognizing individual patient needs and adjusting communication strategies accordingly can enhance patient satisfaction and treatment adherence.
- Especially for long-term patients, ongoing efforts to strengthen the therapeutic bond can lead to better health outcomes and patient well-being.
- The study underscores that establishing a therapeutic relationship is fundamental in hemodialysis. Such relationships are pivotal in achieving goals, enhancing patient well-being, and improving the overall quality of care.

2. Mancin, S.; Palomares, S.M.; Sguanci, M.; Palmisano, A.; Gazineo, D.; Parozzi, M.; Ricco, M.; Savini, S.; Ferrara, G.; Anastasi, G.; et al. Relational skills of nephrology and dialysis nurses in clinical care settings: A scoping review and stakeholder consultation. *Nurse Educ. Pract.* 2024, 82, 104229.

3. Hreńczuk M. Therapeutic relationship nurse-patient in hemodialysis therapy. *Nurs Forum*. 2021;56:579-586. 10.1111/nuf.12590

2.4 Performance Gap

We have provided the distribution of scores in Table 1 as requested. The information in the table is based on top-box calculated scores. The data used to calculate the deciles comes from the 2023 Fall and 2023 Spring National Implementation data. Due to the sampling design for the mode experiment, to have the least impact on public reporting, facility-level scores could not be calculated so national implementation was used as proxy. The facility-level performance scores for each survey period are created using top-box, and then combined to create 2023 performance scores. In total, 6700 facilities and 178,480 survey responses are represented in this data.

Table 1. Performance Scores by Decile

Performance Gap

	Overall	Minimum	Decile_1	Decile_2	Decile_3	Decile_4	Decile_5	Decile_6	Decile_7	Decile_8	Decile_9	Decile_10	Maximum
Mean Performance Score	65.64	5.48	51.813	56.785	60.198	63.049	65.704	68.154	71.075	74.702	79.959	100	100
N of Entities	6,700	1	670	670	670	670	670	670	670	670	670	670	3
N of Persons / Encounters / Episodes	178,480	1	16,168	18,923	20,241	20,726	20,491	19,472	18,590	16,703	15,811	11,355	3

2.6 Meaningfulness to Target Population

A successful survey should be relevant to the target audience and produce meaningful results that can be used to inform decisions. For the ICH CAHPS Survey, this includes a survey that accurately measures characteristics of quality dialysis care from the patient’s perspective and produces results that ICH centers can use to improve their care.

Each survey period, between 80 and 100k sample patients respond to the current ICH CAHPS Survey, indicating that the survey is meaningful and that they feel that providing their information is valuable. The survey focuses on topics that ESRD patients have reported as being important in defining high-quality dialysis care; these patients are the only source of this information. During survey revisions, we met with 2 focus groups of 9 people who all noted that they felt the ICH CAHPS Survey is important and were happy to know that it was being reduced in length. CMS also receives a number of letters from dialysis patients noting that they believe the survey is valuable and that they appreciate being able to convey their thoughts and have their voices heard.

During the 2024 Pre-Rulemaking Measure Review (PRMR) process, the Patients for Patient Safety US organization commented the following: *We certainly support this, because the experiences of patients is a valuable data source, and we're happy to see it included in instruments like CAHPS as well as other ways in which we use PROMs and PREMs. I will say that our organization Patients for Patient Safety US does see the CAHPS surveys as an incredibly important tool, not only for feeding back patient experience, but improving health equity, by bringing in people who are less likely to use these surveys by asking the right kinds of questions and including meaningful questions in them and I think this falls into that category.*

Activities conducted by RTI during the survey revision process, such as focus groups, interviews, and TEP meetings, helped to ensure that the survey is relevant to the target audience, and that survey results are meaningful to both patients and the ICH facilities that provide care.

2.6 Meaningfulness to Target Population (derived)

During initial TEP discussions, TEP members were presented with questions that could possibly

be removed from the QDCCO measure, based on psychometric analyses. Based on those discussions, focus groups and cognitive interviews were conducted with patients, asking about the removal of each question narrowed down by the TEP. It was determined that 3 questions could safely be removed from the QDCCO measure. When presented to the CAHPS Consortium, they agreed with the removal of the 3 identified questions, and also asked for a 4th question to be removed. Following additional analyses, all 4 identified questions - by TEP, patients, and the CAHPS Consortium - were removed from the measure.

3.1 Contributions Towards Closing Care Gaps

This domain is optional for Spring 2025.

4.1a Data Structure and Availability

As these patient-experience data are collected from patients based on their ICH dialysis care experiences, the structured data are not available in electronic sources outside of this data collection. Web-based data collection was tested in the 2022 ICH CAHPS Survey field test/mode experiment, but due to a lack of email addresses available in the sampling data, we had very few responses. We are working now to determine whether we can obtain additional email addresses to retest web data collection in a future mode experiment.

Proposed revisions to the current ICH CAHPS Survey instrument include shortening it and was developed through focus groups, cognitive interviews, and other instrument-development activities conducted for this revised instrument. The changes to the current ICH CAHPS survey were implemented to mitigate the challenges and barriers to responding to the current full survey. The shortened survey reduces patient burden and is expected to increase response rates.

The ICH CAHPS Survey is administered by independent survey vendors that are approved by CMS, and CMS's implementation contractor provides oversight on a regular basis to ensure that the vendors are following established protocols. Additionally, the survey vendors are required to conduct regular review and monitoring of their own operational systems, whether the survey is administered by mail or telephone. Data is assessed semiannually for accuracy and missing data.

ICH CAHPS Survey results for the updated survey instrument will be fully publicly reported in October 2027 (2026 Spring + 2026 Fall data). However, because the April 2027 refresh would include a survey period that used the current survey (2025 Fall) and a survey period that used the revised survey (2026 Spring), we would plan to reanalyze the 2025 Fall data based on the revised survey measures and case-mix, then combine the reanalyzed data with the 2026 Spring data for public reporting in April 2027; therefore, we are not missing a refresh for ICH CAHPS data.

The following revisions were made to shorten the ICH CAHPS Survey:

The Nephrologist Communication and Caring (NCC) Measure was removed, which included the following questions:

- In the last 3 months, how often did your kidney doctors listen carefully to you?
 - In the last 3 months, how often did your kidney doctors explain things in a way that was easy for you to understand?
 - In the last 3 months, how often did your kidney doctors show respect for what you had to say?
 - In the last 3 months, how often did your kidney doctors spend enough time with you?
 - In the last 3 months, how often did you feel your kidney doctors really cared about you as a person?
 - Using any number from 0 to 10, where 0 is the worst kidney doctors possible and 10 is the best kidney doctors possible, what number would you use to rate the kidney doctors you have now?
 - Do your kidney doctors seem informed and up-to-date about the health care you receive from other doctors?

The following questions were removed from the QDCCO Measure:

- In the last 3 months, did dialysis center staff keep information about you and your health as private as possible from other patients?
 - In the last 3 months, how often did dialysis center staff insert your needles with as little pain as possible?
 - In the last 3 months, did dialysis center staff talk to you about what you should eat and drink?
 - In the last 3 months, how often did you feel your kidney doctors really cared about you as a person?

The following questions were also removed from the survey; these items were not included in a measure:

- In the last 3 months, has anyone on the dialysis center staff asked you about how your kidney disease affects other parts of your life?
 - Medicare and your State have special agencies that check the quality of care at this dialysis center. In the last 12 months, did you make a complaint to any of these agencies?
 - Are you being treated for high blood pressure?
 - Are you being treated for diabetes or high blood sugar?
 - Are you being treated for heart disease or heart problems?
 - Are you deaf or do you have serious difficulty hearing?
 - Are you blind or do you have serious difficulty seeing, even when wearing glasses?
 - Because of a physical, mental, or emotional condition, do you have serious difficulty concentrating, remembering, or making decisions?
 - Do you have serious difficulty walking or climbing stairs?

- Do you have difficulty dressing or bathing?
- Because of a physical, mental, or emotional condition, do you have difficulty doing errands alone, such as visiting a doctor's office or shopping?
- Who helped you complete this survey?

4.1b Implementation Costs and Burden

ICH facilities that served 30 or more survey-eligible patients in the preceding year are required by the ESRD PPS Rule to participate in the current calendar year's two surveys. They are required to contract with one of the CMS-approved ICH CAHPS Survey vendors, who administers the survey on their behalf. Neither CMS nor RTI are involved in payment discussions between the vendors and facilities, and we have no cost information in terms of the facilities. The proposed revisions will not cause a significant burden to vendors or CMS's implementation contractor, other than the modification of existing computer programs. Regarding burden to sample dialysis patients, the revised survey will take approximately 12 minutes of their time up to two times each year.

4.1c Confidentiality

The sample is drawn from EQRS data, meaning that facilities are not involved and do not know who was selected to participate in the survey (unless a sample patient specifically tells them). Sample patients are asked to not ask for help from facility staff, and facilities are told not to assist their patients in completing the survey if asked and not to ask any patient whether they were sampled for the survey.

ICH CAHPS Survey data submitted to the ICH CAHPS Data Center (CMS's implementation contractor) are de-identified. Case-level data are assigned a unique case ID, randomly generated so that there is no identifying information embedded in it. ICH CAHPS Survey results are aggregated at the facility level and publicly reported at the facility-, state- and national-level.

Vendors are allowed to provide unofficial aggregated results to their facility clients; however, there are rules on sharing such information when the number of responses is too low.

4.3 Feasibility Informed Final Measure

After the 2022 field test/mode experiment, and after the results were discussed with stakeholders (Technical Expert Panel members representing different ESRD organizations and large dialysis organizations, as well as the CAHPS Consortium), CMS approved the deletion of multiple items from the current nationally fielded ICH CAHPS Survey. The revised instrument is being submitted via this Instrument submission. For the 4 instrument-derived measures (2 ratings and 2 multi-item measures), 3 are the same as the current ICH CAHPS Survey and one is slightly modified.

4.4 Proprietary Information

Not a proprietary measure and no proprietary components

5.1.1 Data Used for Testing

The revised ICH CAHPS Survey was tested in fall 2022 during a field test/mode experiment. The total sample for the field test/mode experiment, based on EQRS data, was 24,354. Data were collected in English and Spanish, by mail, telephone, mail with telephone follow-up, and web with mail follow-up. Analyses are based on the field test/mode experiment data collected between October 2022 and January 2023, including 4605 respondents representing 3211 facilities. Field test/mode experiment data were used for the internal consistency analyses (Reliability - Section 5.2), factor analysis (Validity - Section 5.3), correlations among ratings and multi-item measures (Validity - Section 5.3), and risk analysis (IDM - Risk Adjustment - Section 5.4) analyses. For the signal-to-noise (IDM - Reliability - Section 5.2) and performance gap (IDM - Performance Gap - Section 2.4) analyses, national implementation data was used, which was collected during the 2023 Spring and 2023 Fall Surveys.

The national ICH CAHPS Survey is offered in six languages: English, Spanish, Chinese (simplified and traditional), Samoan, and Vietnamese. Additional translations will be made as needed.

There are no fees or licensing for use of the ICH CAHPS® Survey, training or oversight activities, or for accessing publicly reported ICH CAHPS® Survey measure scores or star ratings on the CMS Medicare.gov website.

5.1.1a Dates of Testing Data

Field not required Spring 2025

5.1.2 Differences in Data

None

5.1.3 Characteristics of Measured Entities

For the field test/mode experiment that was conducted from October 2022 through January 2023, we took a sample of 24,354 ICH patients, using a stratified sampling method so as to have the least impact on public reporting. There were 6,736 facilities represented in the field test/mode experiment sample, located throughout the country. Facilities ranged in size from very small to very large. To have the least impact in public reporting, facilities that always meet the public reporting threshold (always have 30+ completed surveys for the two reporting periods) and facilities never meet the public reporting threshold (do not come close to the 30+ completes) were oversampled, and facilities that are normally right on the threshold line were undersampled. We randomly assigned sampled patients to one of the four data collection modes using the inverse of

the estimated response rates to achieve the desired sample size in each mode. The final sample closely mirrored the national population of dialysis centers. Analyses were conducted using data from the 4605 respondents, who represented 3211 facilities.

For the 2023 Spring/Fall national implementation data used for facility-level analyses, all facilities registered on the ICH CAHPS website, by each dialysis facility that has determined they are required to participate in the surveys, were included in the sample if they had sample in the EQRS data. For the 2023 Spring/Fall Survey national implementation data, the following sample strategy was used:

Facilities with up to 240 patients: A census of all survey-eligible patients will be conducted for facilities with fewer than 240 survey-eligible patients at each semiannual sampling wave. Thus, patients at these ICH facilities may be sampled twice in a 12-month period. Facilities with 240 or more patients.

For dialysis centers with 240 or more survey-eligible ICH patients: A simple random sample will be selected for each sampling period, with the goal of obtaining 200 completed surveys per year while attempting to minimize the overlap of patients between subsequent semiannual waves of sampling.

The 2023 Spring Survey included 6675 facilities across the US and its territories, and the 2023 Fall Survey included 6674 facilities. Facility size differed from small to large; facilities were required to participate if they served 30+ survey-eligible patients in the prior calendar year.

5.1.4 Characteristics of Units of the Eligible Population

For the field test/mode experiment, our sampling design randomly assigned sample patients to one of the four data collection modes, with a target of completing approximately 1,570 interviews for each mode. This design allowed us to measure mode effects related to nonresponse and measurement differences (e.g., because of social desirability) and also allowed for case-mix analyses. 24,354 ICH patients were sampled for the field test/mode experiment, using a stratified sampling method so as to have the least impact on public reporting. To have the least impact in public reporting, facilities that always meet the public reporting threshold (always have 30+ completed surveys for the two reporting periods) and facilities never meet the public reporting threshold (do not come close to the 30+ completes) were oversampled, and facilities that are normally right on the threshold line were undersampled. We randomly assigned sampled patients to one of the four data collection modes using the inverse of the estimated response rates to achieve the desired sample size in each mode. The final sample closely mirrored the national population of dialysis centers. Analyses were conducted using data from the 4605 respondents, who represented 3211 facilities.

For the 2023 Spring/Fall Survey national implementation data, the following sample strategy was used:

Facilities with up to 240 patients: A census of all survey-eligible patients will be conducted for facilities with fewer than 240 survey-eligible patients at each semiannual sampling wave. Thus, patients at these ICH facilities may be sampled twice in a 12-month period. Facilities with 240 or more patients.

For dialysis centers with 240 or more survey-eligible ICH patients: A simple random sample will be selected for each sampling period, with the goal of obtaining 200 completed surveys per year while attempting to minimize the overlap of patients between subsequent semiannual waves of sampling.

For the 2023 Spring, 378,513 patients were sampled. 91,914 respondents, representing 6609 facilities across the nation and its territories, were included in the analyses. For the 2023 Fall, 383,116 patients were sampled, 86,566 respondents representing 6595 facilities, were included in the analyses.

Eligibility criteria for the field test/mode experiment sample mirrored the criteria used for national implementation. Sample patients must:

- Be at least 18 years of age or older,
- Have received hemodialysis at an in-center facility for 3 months or longer,
- Be alive as of the last day of the sampling window, and
- Not be institutionalized or receiving hospice.

Attachment 5.1.4 with patient characteristics can be found in Supplemental 7.1 zip file.

5.2.1 Reliability Testing Conducted (instrument)

Person or encounter level (i.e., data element) (e.g., inter-abstractor reliability)

5.2.2 Method(s) of Reliability Testing

Psychometric testing at the instrument level includes a reliability assessment using the

Cronbach's alpha estimate, from the internal consistency analysis of measurement error. The reliability analysis was conducted at the item and patient level, using SAS's PROC CORR procedure with ALPHA notation specified, which employs listwise deletion of missing data. Available response data from the revised survey field test/mode experiment was included as input for the internal consistency analysis.

Output from the PROC CORR was evaluated against psychometric thresholds of acceptable internal consistency. In general, Cronbach's alpha estimates of above 0.9 were evaluated as good internal consistency and 0.7 was considered a minimum threshold for acceptability in this analysis (Nunnally & Bernstein, 1994).

Citation:

Nunnally J, Bernstein L. Psychometric theory. New York: McGraw-Hill Higher, INC; 1994.

5.2.3 Reliability Testing Results

The attachment provides the internal consistency results for the Quality of Dialysis Center Care and Operations (QDCCO) and Providing Information to Patients (PIP) item sets. The item-total correlations are provided in the second column from the right, and the alpha estimate for the set (if a particular item is removed) is in the far right. In summary, the 13 QDCCO items have a standardized Cronbach's alpha estimate of 0.930 which exceeds the threshold for good internal consistency. In addition, the standardized item-total correlations range from 0.54 to 0.78 and none of the alpha estimates improve substantially with any item removed.

The 9 PIP items have a standardized Cronbach's alpha estimate of 0.743 which is just above the minimal acceptability threshold. The standardized item-total correlation range for the PIP item set has a minimum of 0.29 and a maximum of 0.55, and again, none of the alpha estimates improve substantially with any item removed.

5.2.3a Attach Additional Reliability Testing Results

[5-2-3a-att-Instrument-Form.pdf](#)

5.2.4 Interpretation of Reliability Results

The internal consistency estimates for the QDCCO item set ($\alpha = 0.930$), and PIP item set ($\alpha = 0.743$) are above the minimal acceptability threshold (Nunnally & Bernstein, 1994). In addition,

most of the item-total correlations across multi-item measures are above 0.5, the remaining primarily above 0.3, with one value at 0.29. Therefore, the items assigned to each multi-items measure (QDCCO and PIP) function well together and we conclude that the items perform

consistent measurement of the representative constructs.

5.2.1 Accountable Entity Level Reliability Testing Conducted (derived)

Accountable entity level (i.e., measure score) (e.g., signal-to-noise analysis)

5.2.2 Method(s) of Accountable Entity Level Reliability Testing (derived)

The signal-to-noise analysis, termed inter-unit in this documentation, was conducted at the facility and derived measure level using the CAHPS 5.0 macro. For the overall estimate, 2023 Spring and Fall survey data was subset to facilities that had at least 30 completed cases between the two survey periods, to match the Public Reporting standards. 2023 Spring and Fall National Implementation survey data was used as a proxy due to the design of the 2022 field test/mode experiment, which was sampled in a way to ensure that the impact on Public Reporting data would be minimal and therefore not suitable for this analysis.

The CAHPS 5.0 macro calculates the global F-test to determine differences among entities on measures or items. F-statistics are transformed into reliability such that if the F-statistic is around 1, the reliability will be close to zero and indicate differences are due to random variation. The larger the real differences among facilities, the larger the F-statistic, and the higher the reliability estimate (approaching 1.0) and reliabilities above 0.7 are considered acceptable.

CITATION: Keller S, O’Malley AJ, Hays RD, Matthew RA, Zaslavsky AM, Hepner KA, Cleary PD. Methods Used to Streamline the CAHPS® Hospital Survey. Health Services Research, 2005, 40, 2057-2077. PMIDp: 16316438.

5.2.3 Accountable Entity Level Reliability Testing Results (derived)

The QDCCO multi-item measure’s overall inter-unit reliability, using the 2023 Spring and Fall National Implementation survey data, is 0.76 (F=4.17, p<0.001). The information in Table 2 provides overall information as well as reliability by decile. Deciles for this table are based on psychometrics done within the CAHPS Macro; and the “mean performance score” row in this table is showing variation in the mean value by sample size. Deciles were specified on facilities that have 30 or more completes to match the Public Reporting standards. The extreme specifications included facilities with the smallest possible (1 or 2 completes) and close to the maximum number (100 completes or more) were specified as such to provide enough facilities to conduct the analysis.

Table 2. Accountable Entity Level Reliability Testing Results by Denominator, Target Population Size

Accountable Entity-Level Reliability Testing Results													
 	Overall	Minimum	Decile_1	Decile_2	Decile_3	Decile_4	Decile_5	Decile_6	Decile_7	Decile_8	Decile_9	Decile_10	Maximum
Reliability	0.76	0.98	0.73	0.76	0.73	0.75	0.74	0.75	0.76	0.80	0.82	0.72	0.91

 	Overall	Minimum	Decile_1	Decile_2	Decile_3	Decile_4	Decile_5	Decile_6	Decile_7	Decile_8	Decile_9	Decile_10	Maximum
Mean Performance Score	3.19	3.07	3.19	3.20	3.66	3.18	3.18	3.17	3.18	3.21	3.16	3.17	3.18
N of Entities	2319	74	441	243	328	239	215	225	206	153	162	107	22
N of Persons / Encounters / Episodes	100828	115	13652	8118	11766	9312	9009	10236	10301	8468	10385	9581	2564

5.2.4 Interpretation of Accountable Entity Level Reliability Results (derived)

The inter-unit reliability assessment for the ICH CAHPS QDCCO multi-item measure indicates that overall, and at each decile of interest, the measure maintains acceptable performance (e.g., greater than 0.7) in finding real variation among facilities relative to random variation.

5.3.1 Validity Testing Conducted (instrument)

Person or encounter level (i.e., data element) (e.g., sensitivity and specificity)

5.3.3 Method(s) of Validity Testing

Changes to the items within the QDCCO multi-item measure were assessed with face validity. Next, structural and convergent validity were used to determine whether the QDCCO and PIP item sets measure their respective construct as intended.

Confirmatory factor analysis (CFA) was used to determine structural validity of the QDCCO and PIP item sets through model fit statistics compared to acceptability thresholds. The thresholds for model acceptability are as follows:

RMSEA of 0.05 or less (Browne & Cudeck, 1993)

CFI of 0.90 at a minimum (Hu & Bentler, 1999)

TLI of 0.90 at a minimum historically, 0.95 indicates good fit

Convergent validity was also assessed through CFA by evaluating factor loadings for each item. CFA analyses were conducted using the Mplus analytic software (Version 8.11; 2023) using the Weighted Least Squares Mean and Variance adjusted (WLSMV) estimator to account for categorical data with pairwise deletion for missing data. In addition, correlations, conducted using SAS PROC CORR, evaluating the two multi-item measures from the item sets (QDCCO and PIP) with ratings of the Dialysis Center and Dialysis Staff, were provided for convergent validity.

Citations:

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Thousand Oaks, CA: Sage.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1-55. <http://dx.doi.org/10.1080/10705519909540118>

Muthén, L. K., & Muthén, B. O. (1998-2023). *Mplus (Version 8.11)* [Computer software]. Los Angeles, CA: Muthén & Muthén

Glossary:

RMSEA - root mean square error of approximation

CFI - comparative fit index

TLI - Tucker-Lewis Index

5.3.4 Validity Testing Results

All experts confirmed face validity and agreed that the remaining items still provided construct representation of the quality of a facility's care and operations. In addition, psychometric results showed that the removal of 4 questions from the QDCCO did not negatively impact the measure's validity.

Confirmatory factor analysis (CFA) model fit to assess structural validity produced acceptable values, consistent with a well-fitting model. These estimates are:

RMSEA=0.038 (95% CI = 0.036 0.040)

CFI=0.987

TLI=0.985

The attachment provides the estimates for each standardized factor loading on the representative items to assess convergent validity. Correlative information on the factors is also provided, and moderate. All factor loadings for the QDCCO and PIP item sets are above 0.4, with the majority above 0.5, and all are statistically significant ($p < 0.001$).

The final assessment of convergent validity through correlation information results in the

relationship between each averaged measure, and the Dialysis Staff Rating ($r_{\text{QDCCO}} = 0.0757$, $r_{\text{PIP}} = 0.434$) and the Dialysis Center Rating ($r_{\text{QDCCO}} = 0.737$, $r_{\text{PIP}} = 0.403$), all of which are statistically significant ($p < 0.001$).

5.3.4a Attach Additional Validity Testing Results

[5-3-4a-att-Instrument-Form.pdf](#)

5.3.5 Interpretation of Validity Results

The QDCCO and PIP item sets continue to effectively measure consistent constructs. Confirmatory factor analysis (CFA) produced appropriate model fit indices and statistically significant factor loadings. Correlational analyses showed moderate relationships to patient ratings of the overall facility and the staff. The findings confirm the valid measurement of the QDCCO and PIP constructs.

5.3.2 Type of Accountable Entity Level Validity Testing Conducted (derived)

Empirical validity testing at the accountable entity-level (e.g., criterion validity, construct validity, known groups analysis)

5.3.3 Method(s) of Accountable Entity Level Validity Testing (derived)

Validity was assessed at the measure and facility level using correlational methods and SAS's PROC CORR procedure, which employs pairwise deletion of missing data. Available measure scores from each facility were derived from the National Implementation survey data, specified down to reflect the revised QDCCO item set (13 questions). The 2023 Spring and Fall National Implementation data was used as a proxy due to the design of the 2022 field test/mode experiment, which was sampled in a way to ensure minimal Public Reporting data impact. Output from the PROC CORR analysis was evaluated against standard correlational thresholds. In general, a correlation of 0.50 shows a moderate relationship and estimates higher are indicative of stronger relationships.

Discriminant validity was assessed at the facility level by examining correlations among the QDCCO items and the derived measure for both the QDCCO and PIP item sets. The expectation is that an item's correlation with the QDCCO measure (without the item of interest) will be higher than the correlation with PIP measure.

Convergent validity was also assessed through correlations at the multi-item measure and facility level and examined the relationship between the QDCCO measure and rating of the Dialysis Center, and then again with the rating of Dialysis Center Staff.

CITATION

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillside, NJ: Lawrence Erlbaum Associates

5.3.4 Accountable Entity Level Validity Testing Results (derived)

Discriminant validity results, using the 2023 Spring and Fall National Implementation survey data, are presented in the attached table. As expected, the QDCCO items show stronger relationships with the QDCCO multi-item measure than the PIP multi-item measure. In addition, convergent validity results show that the relationship between the QDCCO measure, and the Dialysis Center Staff Rating ($r_{\text{QDCCO}} = 0.824$) and the Dialysis Center Rating ($r_{\text{QDCCO}} = 0.789$) are stronger than the established moderate threshold (0.50) and statistically significant ($p < 0.001$).

5.3.4a Attach Additional Accountable Entity Level Validity Testing Results (derived)

[5-3-4a-att-QDCCO-Measure-Form.pdf](#)

5.3.5 Interpretation of Accountable Entity Level Validity Results (derived)

The QDCCO multi-item measure consistently represents a patient's perspective on the care they receive at their dialysis facility. Correlational analyses showed smaller relationships to alternative measures not intended to measure the quality of the facility and strong relationships to patient ratings of the overall center and the center staff. The findings confirm that the ICH CAHPS items result in the valid measurement, specifically of the revised QDCCO multi-item measure, without replicating other information within the survey.

5.4.1 Methods Used to Address Risk Factors

Statistical case-mix adjustment model

5.4.2 Conceptual Model Rationale

All case-mix/risk adjustment analyses were conducted using the data from the 2022 field test/mode experiment. The independent variables that were included in the mode and case-mix models are those hypothesized to affect response tendencies, and the results of the variables included in the two multi-item measures and two ratings. These independent variables are used as case-mix adjusters for ICH CAHPS scores for ICH facilities. These independent variables are not under the control of the facility, meaning a facility can't change these descriptors of their patients (e.g., a facility can't control the demographic make-up of their population with regards to age, sex, overall health, overall mental health, etc.). Adjusting for this helps to ensure that variations in case-mix do not affect the CAHPS scores calculated and publicly reported for ICH facilities because these factors impact response tendencies and are outside the control of the ICH facilities.

These independent variables came from four sources: (1) the ICH CAHPS Survey mode experiment implementation; (2) the ICH CAHPS Survey mode experiment as patients' self-

reported characteristics; (3) the Common Medicare Environment (CME) database; and (4) the EQRS database.

Using the case-mix model, the facility's case-mix adjusted scores are adjusted for differences between a facility's patient composition according to the ICH CAHPS case-mix characteristics and the overall national composition of ICH patients on these same characteristics. This adjustment allows consumers to compare different ICH facilities based on the same overall patient composition, thus allowing for a comparison that isn't affected by the given facility's patient composition.

5.4.2a Attach Conceptual Model

[5-4-2a-att-All-Measure-Forms.pdf](#)

5.4.3 Variable Distribution Across Measured Entities

We have attached a file showing the descriptive statistics, submitted under 7.1 other attachments.

5.4.4 Risk/Case-Mix Adjustment Modeling and/or Stratification Results

We conducted the multivariate regression analysis assessing the candidate case-mix variables. We estimated 50 multivariate regression models for the mode and case-mix analysis, including one regression model for each question comprising the two multi-item measures and two ratings for the top-box outcomes. When estimating the multivariate regression models, we used the individual patient as the unit of analysis. For the top-box outcomes the dependent variables for all the multivariate regression models were converted to a binary score with the most positive response set to 1 and all other nonmissing responses set to 0.

We used ordinary least squares models to investigate the candidate case-mix variables which included:

- Mode of survey administration.
- Language survey was completed. Binary yes/no response categories for whether the respondent completed the survey in English or Spanish.

Patients' Self-Reported Characteristics Independent Variables

- Overall health. Including five categories for self-reported overall physical health status.

- Overall mental health. Including five categories for self-reported mental or emotional health status.
- Education. Including six response categories for self-reported education.
- Did someone help you complete this survey. Including binary yes/no response categories for whether the respondent had someone else help them to complete the ICH CAHPS Survey.
- Low-income subsidy or dually enrolled. This variable is calculated from variables indicating if the respondent had a low-income subsidy or was dually enrolled in both Medicare and Medicaid at any time during the survey period.
- Age. This variable was calculated from the respondent's date of birth. We created five categories for a categorical age variable.
- Sex. Binary male/female categories.
- Total years on dialysis. This variable includes six response categories for different time periods for the respondent since they originally started dialysis treatment. This variable is calculated from the EQRS variable for the date dialysis started for this patient.
- Was diabetes the primary cause of ESRD. This variable includes binary yes/no response categories for whether diabetes was the cause of ESRD for this patient. This variable is calculated from the EQRS variable for the cause of ESRD.

The facility indicator variable was not included in the models for this analysis. The number of respondents from each of the facilities ranged from only one to eight with the majority having only one respondent, thus the cluster effects were not important. Generally, the linear form of the multivariate regression models was:

Dependent variable = sum of (coefficients*mode indicators) + sum of (coefficients*patient characteristic indicators)

When there were categorical patient characteristics for an independent variable, such as age groups, one group was used as the reference category from the set of categories included in the regression model. That group is the reference to which the effects of the other categories for that variable are compared, which simplifies the interpretation of the regression coefficients.

RTI randomly assigned patients to mode.

Sequential Modeling

We estimated each of the regression models using the independent case-mix variables previously noted. All of the independent variables were statistically significant for at least one of the regression models.

The first set of multivariate regression models run on the 25 dependent variables included as independent variables all of the case-mix factors in their original form. We refer to this first set of models as the full model or **Model 1**. In the second set of multivariate regression models (**Model 2**), we recategorized the mental health question by rolling together the fair and poor categories to reduce the VIFs for this variable (a finding from the multicollinearity analysis). In the third and final set of regression models (**Model 3**), we dropped the low-income subsidy or dually enrolled variable due to the difficulty of obtaining this variable and the high level of missing values (13.18%) for this variable. **Model 3** was our final model.

5.4.4a Attach Risk/Case-mix Adjustment Modeling and/or Stratification Specifications

[5-4-4a-att-All-Measure-Forms.pdf](#)

5.4.5 Calibration and Discrimination

To determine the recommended regression model, we calculated the patient-level case-mix adjusted scores from the three models investigated. Then we calculated the two scores by averaging the patient-level case-mix adjusted scores for each survey item comprising a given multi-item measure. We used the results of the patient-level case-mix adjusted and global rating scores from the three models and the unadjusted scores to conduct an impact analysis. The goal of the impact analysis was to understand how the results from the three case-mix regression models changed compared to the unadjusted scores and to each other.

Using the three sets of adjusted patient-level scores and the unadjusted scores, we calculated the absolute value of the difference between each score considering all possible combinations (e.g., unadjusted vs. Model 1, unadjusted vs. Model 2, unadjusted vs. Model 3). The mean of these percentage point differences is found in **Table 1 of the attachment in 5.4.5a**.

For the top-box scores, the absolute values of the percentage point differences range from 0.95 for QDCCO case-mix adjusted top-box score using Model 2 compared to the case-mix adjusted top-box score using Model 1 to 10.43 for the global rating of the dialysis center unadjusted top-box score compared to patient-mix adjusted top-box score using Model 2. In general, the percentage point differences between the case-mix adjusted scores for the three models is small with the differences between Model 2 and Model 3 being the smallest.

Using the three sets of adjusted patient-level scores and the unadjusted scores, we calculated the Spearman's rank correlation coefficient. Spearman's rank correlation quantifies the strength and direction of association between two ranked variables (i.e., how similar they are). A high correlation (close to 1) indicates that the two variables are strongly related and a low correlation (close to 0) indicates that the two variables have a weak or no relationship. Negative values (close to -1) indicate that the two variables are strongly inversely related.

In this analysis, correlations close to 1 indicate that the different sets of patient-mix models are adjusting the scores similarly. The Spearman's Rank Correlations are found in **Table 2 of the attachment in 5.4.5a** for the two global ratings and two multi-item measure outcome scores. These correlations demonstrate the strength of the relationship of the global ratings and multi-item measures between the adjusted patient-level scores using the three patient-mix models and the unadjusted scores. For each measure the lowest correlations existed when comparing to the unadjusted scores. For example, for the top-box global rating of the dialysis center, the correlation for the unadjusted scores and Model 1 was 0.81. The same correlation was found for the unadjusted and Model 2, and for unadjusted and Model 3.

For the two ratings and two multi-item measures the pairwise Spearman's Rank Correlations for the adjusted scores using Model 2 compared to Model 3 were either 0.98 or 0.99 and the correlations using Model 1 to Model 2 ranged from 0.97 to 0.99. Given that all the correlations between the adjusted scores were so close to 1, we concluded that there are very few differences in the patient-level adjusted scores when using the different sets of patient-mix variables in the multiple regression models.

5.4.5a Attach Calibration and Discrimination Testing Results

[5-4-5a-att-All-Measure-Forms.pdf](#)

5.4.6 Interpretation of Risk/Case-mix Factor Findings

Final Case-Mix Regression Model

The three sets of multiple regression models tested performed very similarly for top-box. The Spearman's Rank Correlations were all close to 1 demonstrating that the ranks of the adjusted scores were very similar. This suggests very small differences in the results of the adjusted scores for the different sets of case-mix models. Furthermore, the percentage point differences between the three models were less than 2 for all measures, hence we recommend the simplest model without the low-income subsidy or dually enrolled variable. This is Model 3 with the following case-mix variables:

overall health,

overall mental health (with fair and poor categories rolled together),

patient age,
patient sex,
patient education,
language survey was conducted (English or Spanish),
help completing the survey,
total years on dialysis, and
was diabetes primary cause of ESRD

5.4.7 Final Approach to Address Risk Factors

Statistical case-mix adjustment model

6.1.1 Current Status

In use

6.1.3.0 Same Current Use(s)? (derived)

Same as instrument

6.1.3 Current Use(s)

Public Reporting, Payment Program, Quality Improvement with Benchmarking (external benchmarking to multiple organizations), Quality Improvement (Internal to the specific organization)

6.1.3 Program Details

Name of the program and sponsor

ESRD Quality Incentive Program (QIP) sponsored by CMS

URL of the program

<https://www.cms.gov/medicare/quality/end-stage-renal-disease-esrd-quality-incen...>

Purpose of the program

The first of its kind in Medicare, the QIP program changes the way CMS pays for the treatment of patients who receive dialysis by linking a portion of payment directly to facilities' performance on quality of care measures.

Geographic area and percentage of accountable entities and patients included

We provide annual information to QIP for ~2,320 dialysis facilities, representing ~100,828 dialysis patients nationwide; this accounts for ~26% of facility CCNs provided by QIP, as we do not provide information to QIP if a facility had 30 completes/year.

Applicable level of analysis and care setting

Dialysis facility

6.2.1 Actions of Measured Entities to Improve Performance

Dialysis center scores will increase as they target these measures, therefore improving patients' perspective of their dialysis care. Each dialysis center may have different training mechanisms or internal procedures which can help improve the overall quality of the services they deliver.

In an attempt to increase survey response rates (performance on the survey overall) to have enough data to be publicly reported, ICH facilities are encouraged to hang posters/flyers and waiting room FAQs in their facilities, so that patients understand that the ICH CAHPS survey is legitimate.

6.2.1 Actions of Measured Entities to Improve Performance (derived)

ICH facility scores will increase as facilities target this QDCCO measure, which asks for patients' perception of whether their dialysis center staff communicated well, kept patients as comfortable and pain-free as possible, behaved in a professional manner, and kept the center clean. Each ICH center may have different training mechanisms or internal procedures which can help improve the overall quality of the services they deliver.

6.2.2 Feedback on Measure Performance

The revised instrument has not been implemented beyond the field test stage; however, we did receive positive feedback during the Pre-Rulemaking Measure Review (PRMR) process. The PRMR hospital committee recommended the revised survey. The PRMR committee recognized the importance of patient experience of care data and supported efforts to reduce the length of the survey while maintaining scientific acceptability. The CAHPS Consortium noted that we should remove one additional question (which was done after more analyses) and then move forward with the revised survey; they felt that it would help survey burden and was a great start at reducing a very long survey. In addition, feedback was obtained from several large dialysis organizations (LDOs) during TEP meetings and email correspondence. They noted that this was a good start at reducing the survey but would like to see it reduced even more in the future. The consensus from the LDOs was that the revised survey didn't remove any major questions that would raise alarm.

6.2.2 Feedback on Measure Performance (derived)

The proposed QDCCO multi-item measure (modified from the current QDCCO measure used in national implementation) will be one of four ICH CAHPS publicly reported.

Feedback from ESRD stakeholders and the CAHPS Consortium, as well as patients during focus groups and cognitive interviews, was positive for the changes made to the QDCCO measure (the removal of 4 questions). Refer to 2.6 (derived) for more information about the feedback from the TEP and CAHPS Consortium.

6.2.3 Consideration of Measure Feedback

Although this revised survey has not been implemented yet, final decisions were based on feedback from many stakeholders, including representatives from our LDOs. During Technical Expert Panel (TEP) meetings and via email discussions, feedback was provided on which questions could safely be dropped from the current survey, to create a revised survey to reduce patient burden. The TEP supported efforts to shorten the survey to reduce burden on respondents. They noted that there were no major concerns with the questions removed and appreciated the effort to make this a little easier on the patients responding to the survey.

6.2.3 Consideration of Measure Feedback (derived)

Although this revised survey has not been implemented yet, final decisions were based on feedback from many stakeholders, including representatives from our LDOs. During TEP meetings and via email discussions, feedback was provided on which questions could safely be dropped from the QDCCO measure, to create a revised survey to reduce patient burden.

6.2.4 Progress on Improvement

The revised survey has not been implemented yet so we have no improvement data based on this revised measure as of yet.

The scores for the current QDCCO multi-item measure (not the revised QDCCO), for facilities with at least 20 responses from 2015 thru 2023, have increased over time. In 2015 the median score for the QDCCO measure was 61.3 and in 2023 the median score was 64.4. Similarly, the 20th decile in 2015 was 54.7 and in 2023 was 57.4. The 80th percentile in 2015 was 68.6 and in 2023 it was 71.4.

6.2.5 Unexpected Findings

The revised survey has not been implemented beyond the field test/mode experiment phase. No unexpected findings were observed during the field test/mode experiment. Respondents appreciated the shorter survey.

6.2.5 Unexpected Findings (derived)

There have been no unexpected findings of the QDCCO multi-item measure based on current data, which is based on the current ICH CAHPS Survey (not the revised survey). We have not implemented the revised survey yet but do not anticipate any unexpected findings after removing 4 questions from this measure.

7.1 Supplemental Attachment

[Supplemental 7.zip](#)

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