**Article Title:**

The Role of Social Risk Factors in Dialysis Quality and Patient Outcomes Under a Medicare Quality Incentive Program

**Supplemental Material**

Exhibit A1. Mean of Dialysis Quality Measures for Select Patient Groups During Years When Each Outcome Is and Is Not Included in the ESRD QIP, Calendar Years 2010–2018

| **ESRD QIP Measures** | **All ESRD Patients** | | **Black** | | **Hispanic** | | **Dual Eligible** | | **Rural** | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** |
| **AV fistula use** |  |  |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 58.2 | (46.5) | 52.5 | (47.5) | 64.0 | (45.1) | 55.9 | (46.9) | 60.2 | (46.0) |
| In ESRD QIP  (PY 2014–2020) | 63.7 | (45.6) | 57.9 | (47.2) | 69.6 | (43.4) | 61.9 | (46.1) | 66.1 | (44.6) |
| **Comprehensive Kt/v** |  |  |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 92.2 | (17.9) | 91.8 | (17.8) | 92.2 | (18.3) | 94.4 | (13.9) | 93.9 | (15.2) |
| In ESRD QIP   (PY 2019–2020) | 95.8 | (12.7) | 95.4 | (13.0) | 96.2 | (12.0) | 96.3 | (11.3) | 96.6 | (11.2) |
| **URR > 65** |  |  |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 97.3 | (9.6) | 96.6 | (10.5) | 98.0 | (8.1) | 96.9 | (10.2) | 97.5 | (9.2) |
| In ESRD QIP   (PY 2012–2014) | 95.7 | (12.8) | 95.3 | (13.3) | 96.7 | (11) | 95.3 | (13.4) | 95.9 | (12.7) |
| **Catheter use** |  |  |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 13.9 | (31.2) | 13.2 | (30.5) | 11.0 | (28.1) | 14.7 | (32.0) | 13.5 | (30.7) |
| In ESRD QIP   (PY 2014–2020) | 11.1 | (28.4) | 10.6 | (27.8) | 9.2 | (26.0) | 11.8 | (29.2) | 10.6 | (27.6) |
| **Hgb > 12 g/dL** |  |  |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 3.9 | (8.6) | 3.9 | (8.3) | 4.3 | (9.0) | 4.1 | (8.7) | 3.7 | (8.3) |
| In ESRD QIP   (PY 2012–2016) | 10.7 | (15.4) | 10.6 | (15.1) | 11.5 | (15.9) | 10.8 | (15.3) | 11.1 | (15.8) |
| **Hypercalcemia > 10.2** |  |  |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 2.2 | (9.7) | 2.6 | (10.7) | 1.8 | (8.9) | 2.1 | (9.5) | 2.6 | (11.0) |
| In ESRD QIP   (PY 2016–2020) | 1.1 | (6.5) | 1.2 | (6.8) | 1.0 | (6.2) | 1.1 | (6.5) | 1.1 | (6.5) |
| **Unplanned 30-day** **readmissions** |  |  |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 28.6 | (30.0) | 29.6 | (30.1) | 27.3 | (29.4) | 30.8 | (30.2) | 25.9 | (29.4) |
| In ESRD QIP   (PY 2017–2020) | 28.0 | (29.9) | 29.0 | (30.1) | 26.2 | (29.2) | 30.0 | (30.2) | 25.4 | (29.4) |
| **Transfusions** |  |  |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 4.8 | (13.8) | 4.7 | (13.3) | 4.1 | (12.0) | 4.9 | (13.5) | 4.9 | (14.3) |
| In ESRD QIP   (PY 2018–2020) | 4.3 | (13.9) | 4.5 | (13.7) | 3.5 | (11.7) | 4.4 | (13.5) | 4.3 | (14.3) |

Note: PY corresponds to the ESRD QIP performance period in the calendar year 2 years earlier. For example, PY 2012 corresponds to the performance and calendar year 2010.

AV = arteriovenous; ESRD = end-stage renal disease; Hgb = hemoglobin; QIP = Quality Improvement Program; PY = ESRD payment year

Sources: CROWNWeb data, CMS Dialysis Facility Compare, and Medicare claims.

Exhibit A2. Mean of Dialysis Quality Measures by ESRD Patient Characteristic for Years When Each Outcome Is and Is Not Included in the ESRD QIP, Calendar Years 2010–2018

| **ESRD QIP Measures** | **Race** | | **Ethnicity** | | **Dual Eligible** | | **Rural** | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Black** | **White** | **Hispanic** | **Non-Hispanic** | **Dual** | **Non-Dual** | **Rural** | **Urban** |
| **AV fistula use** |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 52.5 | 61.6 | 64.0 | 57.2 | 55.9 | 60.5 | 60.2 | 58.0 |
| In ESRD QIP  (PY 2014–2020) | 57.9 | 66.8 | 69.6 | 62.6 | 61.9 | 65.5 | 66.1 | 63.4 |
| **Comprehensive Kt/v** |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 91.8 | 92.3 | 92.2 | 92.2 | 94.4 | 90.9 | 93.9 | 92.0 |
| In ESRD QIP   (PY 2019–2020) | 95.4 | 96.0 | 96.2 | 95.7 | 96.3 | 95.6 | 96.6 | 95.7 |
| **URR > 65** |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 96.6 | 97.6 | 98.0 | 97.1 | 96.9 | 97.6 | 97.5 | 97.3 |
| In ESRD QIP   (PY 2012–2014) | 95.3 | 95.9 | 96.7 | 95.5 | 95.3 | 96.1 | 95.9 | 95.7 |
| **Catheter use** |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 13.2 | 14.7 | 11.0 | 14.4 | 14.7 | 13.0 | 13.5 | 13.9 |
| In ESRD QIP   (PY 2014–2020) | 10.6 | 11.7 | 9.2 | 11.4 | 11.8 | 10.4 | 10.6 | 11.1 |
| **Hgb > 12 g/dL** |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 3.9 | 4.0 | 4.3 | 3.9 | 4.1 | 3.8 | 3.7 | 4.0 |
| In ESRD QIP   (PY 2012–2016) | 10.6 | 10.9 | 11.5 | 10.6 | 10.8 | 10.7 | 11.1 | 10.7 |
| **Hypercalcemia > 10.2** |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 2.6 | 1.9 | 1.8 | 2.2 | 2.1 | 2.2 | 2.6 | 2.1 |
| In ESRD QIP   (PY 2016–2020) | 1.2 | 1.0 | 1.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| **Unplanned 30-day** **readmissions** |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 29.6 | 28.3 | 27.3 | 28.9 | 30.8 | 26.2 | 25.9 | 29.0 |
| In ESRD QIP   (PY 2017–2020) | 29.0 | 27.7 | 26.2 | 28.3 | 30.0 | 25.6 | 25.4 | 28.3 |
| **Transfusions** |  |  |  |  |  |  |  |  |
| Not in ESRD QIP | 4.7 | 4.9 | 4.1 | 4.9 | 4.9 | 4.7 | 4.9 | 4.8 |
| In ESRD QIP   (PY 2018–2020) | 4.5 | 4.3 | 3.5 | 4.4 | 4.4 | 4.2 | 4.3 | 4.3 |

Note: PY corresponds to the ESRD QIP performance period in the calendar year 2 years earlier. For example, PY 2012 corresponds to the performance and calendar year 2010.

AV = arteriovenous; ESRD = end-stage renal disease; Hgb = hemoglobin; QIP = Quality Improvement Program; PY = ESRD payment year

Sources: CROWNWeb data, CMS Dialysis Facility Compare, and Medicare claims

Exhibit A3. Percentage of facilities in top or bottom quintile of the patient-casemix distribution for any combination of Black race, Hispanic ethnicity, and Dual eligibility, Calendar Years 2010–2019

|  |  | **Black Race** | | **Hispanic Ethnicity** | | **Dual Eligibility** | |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Percentile | 80-100 | 1-20 | 80-100 | 1-20 | 80-100 | 1-20 |
| Black Race | 80-100 | 20% | 0% | 0% | 5.0% | 4.6% | 1.7% |
| 1-20 | - | 20% | 4.0% | 2.0% | 3.4% | 3.5% |
| Hispanic Ethnicity | 80-100 | - | - | 20% | 0% | 6.6% | 2.2% |
| 1-20 | - | - | - | 20% | 1.4% | 2.8% |
| Dual Eligibility | 80-100 | - | - | - | - | 20% | 0% |
| 1-20 | - | - | - | - | - | 20% |

Exhibit A4. Patient-casemix at the different points in the distribution across dialysis facilities, Calendar Years 2010–2019

|  | **20th Percentile** | **50th Percentile** | **80th Percentile** |
| --- | --- | --- | --- |
| Black Race | 8% | 28% | 62% |
| Hispanic Ethnicity | 2% | 7% | 23% |
| Dual Eligibility | 21% | 31% | 45% |