Intervention

Anemia is common among patients with chronic kidney disease (CKD). Treatment usually consists of an erythropoiesis-stimulating agent (ESA), iron, and/or red blood cell (RBC) transfusion.

In contrast to dialysis patients, whose anemia prevalence and treatment have been well studied, little is known about the burden of anemia in stage 3-5 non-dialysis-dependent CKD (NDD-CKD) patients.

Methods

The MarketScan commercial database, consisting of inpatient and outpatient health care claims and medication claims, was used to identify stage 3-5 NDD-CKD patients aged 66+ years for anemia prevalence; other analyses were conducted specifically in patients aged 18-63 years (younger).

Anemia was defined by diagnosis codes, due to lack of hemoglobin values for NDD-CKD patients in the database.

ESA, Intravenous (IV) iron, and RBC transfusion (at least one transfusion) use and time to use were evaluated from the date of anemia diagnosis during the baseline year.

Table 1. Prevalence of Anemia (%) in Younger Commercially Insured Patients (MarketScan)

<table>
<thead>
<tr>
<th>Age category (%)</th>
<th>Stage 3</th>
<th>Stage 4</th>
<th>Stage 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-63 years</td>
<td>22.4</td>
<td>41.3</td>
<td>53.9</td>
</tr>
<tr>
<td>60-63 years</td>
<td>19.6</td>
<td>34.9</td>
<td>50.4</td>
</tr>
<tr>
<td>45-54 years</td>
<td>21.4</td>
<td>45.1</td>
<td>50.6</td>
</tr>
<tr>
<td>35-44 years</td>
<td>23.0</td>
<td>41.5</td>
<td>56.4</td>
</tr>
<tr>
<td>60-63 years</td>
<td>23.3</td>
<td>46.2</td>
<td>56.6</td>
</tr>
<tr>
<td>Sex (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>18.5</td>
<td>35.1</td>
<td>50.5</td>
</tr>
<tr>
<td>Female</td>
<td>27.5</td>
<td>46.3</td>
<td>56.3</td>
</tr>
</tbody>
</table>

Table 2. Prevalence of Anemia (%) in Older Medicare-covered Patients

<table>
<thead>
<tr>
<th>Age category (%)</th>
<th>Stage 3</th>
<th>Stage 4</th>
<th>Stage 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>66-85 years</td>
<td>46.2</td>
<td>65.8</td>
<td>73.8</td>
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<tr>
<td>60-63 years</td>
<td>47.9</td>
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<tr>
<td>50-59 years</td>
<td>44.7</td>
<td>63.6</td>
<td>72.8</td>
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<tr>
<td>50-59 years</td>
<td>47.8</td>
<td>67.6</td>
<td>76.4</td>
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<tr>
<td>85+ years</td>
<td>54.2</td>
<td>65.9</td>
<td>77.2</td>
</tr>
</tbody>
</table>

Figure 3: Unadjusted Cardiovascular Event Rates (per 100 patient-years) in Younger Commercially Insured and Older Medicare-covered Patients with Anemia Across CKD Stages

Figure 3: Unadjusted Cardiovascular Event Rates (per 100 patient-years) in Younger Commercially Insured and Older Medicare-covered NDD-CKD stage 3-5 patients by anemia status.

Results

- There were 15,716 (28%) ‘younger’ and 148,550 (52%) ‘older’ patients with anemia among stage 3-5 NDD-CKD patients in the MarketScan and Medicare databases, respectively.
- Prevalence of anemia increased as CKD stage and age increased and was generally higher among women (Tables 1 and 2).
- The most common form of treatment (at least 1 administration) for anemia was RBC transfusions (22.2% older, 11.7% younger), followed by ESA (12.7% older, 10.8% younger) and IV iron (6.7% older, 9.4% younger).
- Anemia treatment increased by CKD stage (Figure 2) and age.
- MAC and thromboembolic events (unadjusted) increased by CKD stage and were higher in patients with anemia than in those without (Figure 3).

Conclusions

- Approximately half of Medicare and a quarter of commercially insured NDD-CKD patients have anemia.
- Anemia treatment patterns differed by age: older patients received twice as many RBC transfusions as younger patients and were more likely to be treated with ESAs.
- RBC transfusion was commonly used to treat anemia in NDD-CKD patients.
- MAC and thromboembolic events were more likely among patients with anemia compared to patients without anemia.