OFFICE OF THE ACTUARY

ESRD CLAIMS CREDIBILITY GUIDELINE

The Office of the Actuary (OACT) at the Centers for Medicare & Medicaid Services (CMS) has developed guidelines for full credibility, as used in the Medicare Advantage (MA) and Part D bid pricing tools (BPTs). This guidance is provided as a resource to certifying actuaries, not as a requirement.

The guideline below applies to the pricing of allowed costs for end-stage renal disease (ESRD) claims, as described in the MA bid instructions. CMS has not developed a credibility guideline that is specific to only Part D ESRD experience. This guidance is effective April 10, 2015, as summarized in the following table:

<table>
<thead>
<tr>
<th>Subject Experience</th>
<th>Exposure Required for Full Credibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA ESRD Allowed Costs</td>
<td>4,000 member months</td>
</tr>
</tbody>
</table>

Background

Although OACT has provided claims credibility guidance since Contract Year 2006 for MA and Part D BPTs, this is the first time we have developed guidance specifically for ESRD allowed costs. We have received previous requests for such guidance and believe that it is warranted because of the unique characteristics of ESRD experience. This report adds a new guideline for MA ESRD experience, but does not make a distinction for Part D ESRD experience.

We expect to repeat this process every five years.

Synopsis of the Methodology

Based on an application of classical credibility theory, the determination of full credibility depends on the assumed variation in claim experience. Our goal is to determine the number of
individuals in a group that are needed to have a probability, \( P \), of being within a percentage, \( k \), relative to the expected claim amount. OACT has chosen values of \( P = 95\% \) and \( k = 10\% \), consistent with the assumptions used to set the existing MA and Part D claims credibility guidelines.

We model the distribution of allowed costs using the following statistical formula from the Central Limit Theorem:

\[
\text{Aggregate claims for a group of } n \text{ individuals} = \sum_{i=1}^{n} X_i \xrightarrow{d} N(n \times \mu, n \times \sigma^2),
\]

where \( X_i \) is the annual allowed cost amount with mean (\( \mu \)) and variance (\( \sigma^2 \)) for an individual. \( X_i \) is calculated on a per capita basis. \( X_i \) is assumed to be independently and identically distributed for each individual.

We calculated the mean and variance from historical experience from Parts A and B, combined as a proxy for MA, and separately for Part D experience. The experience included only individuals classified with ESRD under Medicare, including dialysis status, transplant status, and functioning graft status. We reviewed five calendar years of experience from 2009 through 2013 for consistency and trends over time;

\[ n \quad \text{is the number of individuals in the group; and} \]

\[ N(n \times \mu, n \times \sigma^2) \text{ denotes the Normal distribution with mean, } n \times \mu, \text{ and variance, } n \times \sigma^2. \]

Given our definitions and assumptions above, we solve for the following probability:

\[
\text{Probability } [(1-k) \times n \times \mu \leq \sum_{i=1}^{n} X_i \leq (1+k) \times n \times \mu] = 95\%
\]

By symmetry of both the Normal distribution and our probability statement, we can write the following relationship:

\[
n \times \mu \times k = \sqrt{n} \times \sigma \times z_{0.975}, \text{ where}
\]

\( z_{0.975} \) is the \( z \)-score for the 97.5\(^{th} \) percentile of the standard Normal distribution (\( z_{0.975} \approx 1.960 \)).

Substituting for the known variables and solving for \( n \) produces the following equation:

\[
n = \left( \frac{1.96 \times \sigma}{0.1 \times \mu} \right)^2.
\]
Since \( n \) is defined on a per capita basis, we convert the final result to an applicable exposure by multiplying \( n \) by the average exposure per member, as shown in the following formula:

\[
\text{Full Credibility} = \text{Average Exposure} \times \left( \frac{1.96 \times \sigma}{0.1 \times \mu} \right)^2.
\]

**Results of the Analysis**

The results based on actual calendar year experience are summarized in the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>( \frac{\sigma}{\mu} )</th>
<th>Average Exposure*</th>
<th>Full Credibility*</th>
<th>( \frac{\sigma}{\mu} )</th>
<th>Average Exposure*</th>
<th>Full Credibility*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>0.958</td>
<td>10.4</td>
<td>3,667</td>
<td>1.62</td>
<td>10.0</td>
<td>10,107</td>
</tr>
<tr>
<td>2012</td>
<td>0.955</td>
<td>10.4</td>
<td>3,644</td>
<td>1.57</td>
<td>10.0</td>
<td>9,436</td>
</tr>
<tr>
<td>2011</td>
<td>0.963</td>
<td>10.4</td>
<td>3,705</td>
<td>1.47</td>
<td>9.9</td>
<td>8,216</td>
</tr>
<tr>
<td>2010</td>
<td>0.973</td>
<td>10.3</td>
<td>3,746</td>
<td>1.45</td>
<td>9.8</td>
<td>7,905</td>
</tr>
<tr>
<td>2009</td>
<td>0.963</td>
<td>10.2</td>
<td>3,634</td>
<td>1.41</td>
<td>9.8</td>
<td>7,512</td>
</tr>
</tbody>
</table>

* The average exposure and full credibility in Table 2 are expressed as ‘member months’ because the data includes a full calendar year of exposure.

The results for Parts A and B, combined as a proxy for MA, are consistent and stable during the experience period. The results for full credibility are sufficiently different from the existing guidance. For MA ESRD allowed costs in the MA BPTs, OACT is setting a full credibility guideline of 4,000 member months.

OACT is not implementing a separate guideline that is specific to only Part D ESRD experience. Given the limited need for a separate guideline, we are concerned with the lack of consistency and stability in the results for Part D.