Home Health Payment Refinement – The Home Health Groupings Model (HHGM)

January 18, 2017
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Agenda

1. Introductions
2. Background**
3. Overview of the Model
4. Resource Use
5. 30 Day Periods
6. Clinical Groups
7. Functional Levels
8. Other Variables Used to Group Periods
9. Comorbidity Group
10. Case-Mix Weights
11. Impact Analyses

** indicates section to follow
Home Health Prospective Payment System (HH PPS)

• Implemented in October 2000
  – Bundled payment for all covered HH services provided in a 60 day episode

• Level of payment determined by results of a patient assessment – case-mix adjustment
  – Allows different payment for patients with different needs.
HH PPS: Current Case-Mix System

• Home Health Agencies (HHAs) complete the Outcomes and Assessment Information Set (OASIS) for each patient

• Result of the assessment groups episode into one of 153 Home Health Resource Groups (HHRGs)
  – Timing (early/late episodes; exception 20+ therapy group)
  – 3 clinical levels
  – 3 functional levels
  – 9 service use categories (number of therapy visits)

• HHRG is the starting point for payment calculation
HH PPS: Current Case-Mix System

• **Clinical Domain** – whether the patient has one or more clinical conditions such as incontinence; intravenous infusion (IV), enteral, or parenteral therapies; the presence of wounds or pressure ulcers, etc.

• **Functional Domain** – whether the patient has problems with activities of daily living such as dressing, bathing, transferring, walking (locomotion), and toileting.

• **Service Use Domain** – based on the number of therapy visits during the episode.
HH PPS: Current Case-Mix System

Motivation – Section 3131(d) Report to Congress

• Examined costs associated with beneficiaries who were: low-income, lived in underserved areas, had high severity of illness

• Report found current payment system produced lower margins for those
  – needing parenteral nutrition
  – with traumatic wounds or ulcers
  – who required substantial assistance in bathing
  – admitted to HH following an acute or post-acute stay
  – who have a high Hierarchical Condition Category score
  – who had certain poorly controlled clinical conditions
  – who were dual eligible

• The Medicare HH Benefit is ill-defined

• HH payment should not be based on the number of therapy visits
  – Current system incentivizes more therapy visits and fewer non-therapy visits

• HH payment should be determined by patient characteristics
Motivation

• Payment Reform Principles
  – Improve payment accuracy for HH services
  – Promote fair compensation to HHAs
  – Increase the quality of care for beneficiaries

• Initial Work
  – Assessing utilization of current payment system
  – Considered alternative approaches to construct case-mix weights (CY 2016 Rule)
    ◦ Diagnosis on Top
    ◦ Predicted Therapy
    ◦ Home Health Groupings Model
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Overview of HHGM

• Each HH period is categorized into different sub-groups within each of the five categories below:
  – Timing (early or late; period is placed into 1 of 2 groups)
  – Referral source (community or institutional source; period is placed into 1 of 2 groups)
  – Clinical grouping (musculoskeletal (MS) rehab, neuro/stroke rehab, wounds, Medication Management Teaching and Assessment (MMTA), behavioral, or complex nursing care; period is placed into 1 of 6 groups)
  – Functional level (low or high; low, medium, or high; period is placed into 1 of 2 groups (MS Rehab and Behavioral Health) or 1 of 3 groups for the other clinical groups)
  – Comorbidity adjustment (no or yes; based on secondary diagnoses; period is placed into 1 of 2 groups)

• In total, HHGM produces $2^2 * (2^2 + 4^3) * 2 = 128$ different payment groups
Under the Home Health Groupings Model, an episode is grouped into one (and only one) subcategory under each larger colored category. An episode's combination of subcategories groups the episode into one of 128 different payment groups.

Episodes in the MS Rehab and Behavioral Health clinical groups can only be grouped in the low or high functional level.

The Complex Nursing Interventions clinical group uses a mix of principal diagnoses and OASIS items to group episodes.
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Measuring Period Costs

• Need to measure period costs to design a payment system

• Resource use is an estimate of period costs

• Multiple approaches considered; two main candidates:
  – Wage Weighted Minutes of Care (WWMC) [payment system currently uses this method]
  – Cost per Minute plus Non-Routine Supplies (CPM + NRS)
Comparison of Approaches

<table>
<thead>
<tr>
<th></th>
<th>Wage Weighted Minutes of Care (WWMC)</th>
<th>Cost per Minute plus Non-Routine Supplies (CPM + NRS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Sources</strong></td>
<td>Bureau of Labor Statistics (BLS) wage estimates, HH Medicare claims</td>
<td>Cost Reports, HH Medicare claims</td>
</tr>
<tr>
<td><strong>General Approach</strong></td>
<td>Wages multiplied by amount of care provided for each discipline</td>
<td>Total costs multiplied by amount of care provided for each discipline</td>
</tr>
<tr>
<td><strong>Costs Represented</strong></td>
<td>Wages and fringe benefits directly related to patient visit</td>
<td>Wages, fringe benefits, overhead costs, transportation costs, other non-visiting services labor costs</td>
</tr>
<tr>
<td><strong>Non-Routine Supply</strong></td>
<td>Determined through separate model</td>
<td>Use NRS cost-to-charge ratio to obtain NRS costs per period</td>
</tr>
</tbody>
</table>
Selecting a Resource Use Approach

• High correlation between methods (0.82 correlation coefficient)

<table>
<thead>
<tr>
<th>WWMC advantages</th>
<th>CPM+NRS advantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Incorporates labor categories (e.g., LPN versus RN)</td>
<td>▪ NRS is incorporated into one payment system, rather than a separate model</td>
</tr>
<tr>
<td>▪ BLS data are available more quickly</td>
<td>▪ Incorporation of more than just visit costs</td>
</tr>
<tr>
<td>▪ No imputation needed</td>
<td>▪ Lower ratio of Skilled Nursing to Therapy costs</td>
</tr>
</tbody>
</table>

• HHGM findings use the CPM+NRS method

• Exploration of differences and their implications continues
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30 Day Periods: Overview and Motivation

• In the HH PPS, HHAs are paid for each (up to) 60 day episode of care provided

• However, we found significant resource usage differences across 60 day episodes’ first and second halves
  – Separately paying each half in accordance with differential resource use better aligns payments with cost

• For the HHGM analysis, we simulate 30 day periods for which Medicare would pay for HH services
## Distribution of Resource Use Across Current Episode Configuration

Mean Visits & Resource Use in each 15 Day Segment of a (Full) and First 60-Day Episode among CY 2013 Episodes; n=836,815

<table>
<thead>
<tr>
<th></th>
<th>Days 1-15</th>
<th>Days 16-30</th>
<th>Days 31-45</th>
<th>Days 46-60</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Visits</strong></td>
<td>8.1</td>
<td>6.3</td>
<td>5.0</td>
<td>4.5</td>
</tr>
<tr>
<td>SN Visits</td>
<td>4.2</td>
<td>2.6</td>
<td>2.3</td>
<td>2.3</td>
</tr>
<tr>
<td>PT Visits</td>
<td>2.4</td>
<td>2.1</td>
<td>1.5</td>
<td>1.2</td>
</tr>
<tr>
<td>OT Visits</td>
<td>0.7</td>
<td>0.6</td>
<td>0.4</td>
<td>0.3</td>
</tr>
<tr>
<td>SLP Visits</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Aide Visits</td>
<td>0.7</td>
<td>0.7</td>
<td>0.6</td>
<td>0.5</td>
</tr>
<tr>
<td>MSS Visits</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Resource Use</strong></td>
<td><strong>$307.45</strong></td>
<td><strong>$210.89</strong></td>
<td><strong>$166.23</strong></td>
<td><strong>$153.81</strong></td>
</tr>
</tbody>
</table>
Benefits of Transition to 30 Day Periods

1. HHGM fit statistics (e.g., R2) improve from reduced variation arising from a more constrained time window; in turn this creates more accurate case-mix weights

2. 30 day periods would reduce/eliminate a need for preemptive partial payments (i.e., Request for Anticipated Payment); HHAs would bill monthly (as hospices and skilled nursing facilities do now) and receive final payment sooner
Methodology

• Simulated 30 day periods were constructed using segments of current 60 day episodes
  1. A 30 day period comprised of days 1 up to 30
  2. Where applicable (depending on episode length), a second period comprised of days 31 and above

Example: a 58 day episode yields two new segments: a initial 30 day period (days 1-30) and a second 28 day period (days 31-28)

• Any 60 day episode 30 days or fewer will not yield a second period
Results

• Overall, there were 5,585,396 60-day episodes
  
  – Of these, 1,389,492 episodes are 30 days or less
    ◦ No additional 30 day periods were produced
  
  – The remaining 4,195,904 episodes exceed 30 days
    ◦ Each produces an additional period with remaining days after generating an initial period from the first 30 days
    ◦ However, after generating an additional 4,195,904 periods, we excluded 469,673 periods without visits or that would be considered a LUPA under the HHGM

• In sum, $1,389,492 + (2)(4,195,904) - 469,673 = 9,311,627$ 30 day periods
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5. 30 Day Periods
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** indicates section to follow
Periods are Grouped by Primary Reason for Home Health under the HHGM

- Clinical groups are intended to reflect the primary reason for HH services
- Defined by diagnosis on HH claim
- Six total groups used in the HHGM
## Description of the Six Clinical Groups

<table>
<thead>
<tr>
<th>Clinical Group</th>
<th>Main reason for HH encounter is to provide:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musculoskeletal Rehabilitation</td>
<td>Therapy (PT/OT/SLP) for a musculoskeletal condition</td>
</tr>
<tr>
<td>Neuro/Stroke Rehabilitation</td>
<td>Therapy (PT/OT/SLP) for a neurological condition or stroke</td>
</tr>
<tr>
<td>Wounds and Skin/Non-Surgical Wound Care</td>
<td>Assessment, treatment and evaluation of a surgical wound(s); assessment, treatment and evaluation of non-surgical wounds, ulcers burns and other lesions</td>
</tr>
<tr>
<td>Complex Nursing Interventions</td>
<td>Assessment, treatment, and evaluation of complex medical and surgical conditions including IV, total parenteral nutrition, enteral nutrition, ventilator, and ostomies, as well as the presence of certain V-codes as primary diagnosis</td>
</tr>
<tr>
<td>Behavioral Health Care</td>
<td>Assessment, treatment, and evaluation of psychiatric and substance abuse conditions</td>
</tr>
<tr>
<td>Medication Management, Teaching and Assessment (MMTA)</td>
<td>Assessment, evaluation, teaching, and medication management for a variety of medical and surgical conditions not classified in one of the above groups</td>
</tr>
</tbody>
</table>
Using ICD-9/10 Codes to Define Groups

• Extensive review of all ICD-9/10 codes

• Period assigned to clinical group based on principal diagnosis

• Secondary diagnosis codes were used if necessary (e.g., principal diagnosis was too vague, unlikely to require HH, etc.)
  – Affected approximately 20% of periods
  – After using secondary diagnoses, 0.4% of periods still could not be categorized and were dropped for analyses
  – In practice, may require agency to resubmit valid principal diagnosis

• Additional adjustments (discussed later) for other health conditions
Percentage of Periods by Clinical Group

- MMTA, 63.7%
- Wound, 10.6%
- Musculoskeletal Rehabilitation, 10.9%
- Neuro Rehabilitation, 8.2%
- Complex Nursing Interventions, 3.5%
- Behavioral Health, 3.0%

N = 9,311,627
Average Resource Use by Clinical Group

- Behavioral Health: $1,167.98, 3.0%
- MMTA: $1,455.50, 63.7%
- Complex Nursing Interventions: $1,709.16
- Musculoskeletal Rehabilitation: $1,540.85, 10.9%
- Neuro Rehabilitation: $1,793.19, 8.2%
- Wound: $2,030.83, 10.6%
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Periods are Grouped by Functional Level under the HHGM

- Under the HHGM, periods are categorized into levels based on the relationship between functional status and period cost.
- A selection of OASIS items are used to create these levels.
## Functional OASIS Items

<table>
<thead>
<tr>
<th>Functional OASIS Items</th>
<th>Current Payment System</th>
<th>HHGM</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1800: Grooming</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>M1810: Current ability to dress upper body safely</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>M1820: Current ability to dress lower body safely</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>M1830: Bathing</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>M1840: Toilet Transferring</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>M1845: Toileting Hygiene</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>M1850: Transferring</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>M1860: Ambulation/Locomotion</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>M1870: Feeding or Eating</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>M1880: Current ability to plan and prepare light meals</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>M1890: Ability to use telephone</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Functional OASIS Items

(M1800) **Grooming:** Current ability to tend safely to personal hygiene needs (i.e., washing face and hands, hair care, shaving or make up, teeth or denture care, fingernail care).

- **0** - Able to groom self unaided, with or without the use of assistive devices or adapted methods.
- **1** - Grooming utensils must be placed within reach before able to complete grooming activities.
- **2** - Someone must assist the patient to groom self.
- **3** - Patient depends entirely upon someone else for grooming needs.

(M1810) **Current Ability to Dress Upper Body** safely (with or without dressing aids) including undergarments, pullovers, front-opening shirts and blouses, managing zippers, buttons, and snaps:

- **0** - Able to get clothes out of closets and drawers, put them on and remove them from the upper body without assistance.
- **1** - Able to dress upper body without assistance if clothing is laid out or handed to the patient.
- **2** - Someone must help the patient put on upper body clothing.
- **3** - Patient depends entirely upon another person to dress the upper body.
### Average Resource Use for Periods by Response to OASIS Functional Items (M1800 – M1820) After Combining Categories

<table>
<thead>
<tr>
<th>Item</th>
<th>Response</th>
<th>Mean</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1800: Grooming</td>
<td>0</td>
<td>$1,448.21</td>
<td>5,513,380</td>
<td>58.5%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>$1,646.20</td>
<td>3,905,106</td>
<td>41.5%</td>
</tr>
<tr>
<td>M1810: Current Ability to Dress Upper Body</td>
<td>0</td>
<td>$1,390.64</td>
<td>5,026,560</td>
<td>53.4%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>$1,690.15</td>
<td>4,391,926</td>
<td>46.6%</td>
</tr>
<tr>
<td>M1820: Current Ability to Dress Lower Body</td>
<td>0</td>
<td>$1,288.13</td>
<td>2,972,718</td>
<td>31.6%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>$1,576.01</td>
<td>4,905,575</td>
<td>52.1%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>$1,852.11</td>
<td>1,540,193</td>
<td>16.4%</td>
</tr>
</tbody>
</table>
Creating the Functional Level

• The level is based on seven functional items
  – Additionally, we use M1032 (Risk of Hospitalization)

• Regressed resource use on selected items (with HHGM diagnosis groups as additional covariates)

• Regression coefficients used to create Functional scores
  – Each period receives a total score using those point values for each item

• Periods within each HHGM diagnosis grouping split into thirds (low/medium/high) based on total score
## Functional Variable Points

<table>
<thead>
<tr>
<th>Variable</th>
<th>Response Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1800: Grooming</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>M1810: Current Ability to Dress Upper Body</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>M1820: Current Ability to Dress Lower Body</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>M1830: Bathing</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>M1840: Toilet Transferring</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>M1850: Transferring</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>M1860: Ambulation/Locomotion</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>27</td>
</tr>
<tr>
<td>M1032: Risk of Hospitalization</td>
<td>4 or more items checked</td>
<td>12</td>
</tr>
</tbody>
</table>
### Summary Statistics for Functional Levels

<table>
<thead>
<tr>
<th>Clinical Group</th>
<th>Level</th>
<th>Points</th>
<th>Average Resource Use</th>
<th>N</th>
<th>% Within Clinical Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMTA</td>
<td>Low</td>
<td>0-36</td>
<td>$1,177.34</td>
<td>1,987,235</td>
<td>33.2%</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>37-55</td>
<td>$1,467.31</td>
<td>2,138,844</td>
<td>35.7%</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>56+</td>
<td>$1,668.97</td>
<td>1,867,502</td>
<td>31.2%</td>
</tr>
<tr>
<td>Behavioral Health</td>
<td>Low</td>
<td>0-44</td>
<td>$961.73</td>
<td>140,456</td>
<td>50.6%</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>45+</td>
<td>$1,378.51</td>
<td>137,114</td>
<td>49.4%</td>
</tr>
<tr>
<td>Complex</td>
<td>Low</td>
<td>0-33</td>
<td>$1,430.58</td>
<td>106,673</td>
<td>33.8%</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>34-60</td>
<td>$1,795.29</td>
<td>102,305</td>
<td>32.4%</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>61+</td>
<td>$1,960.16</td>
<td>106,570</td>
<td>33.8%</td>
</tr>
<tr>
<td>Musculoskeletal Rehabilitation</td>
<td>Low</td>
<td>0-48</td>
<td>$1,396.39</td>
<td>573,591</td>
<td>55.1%</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>49+</td>
<td>$1,639.45</td>
<td>468,173</td>
<td>44.9%</td>
</tr>
<tr>
<td>Neuro Rehabilitation</td>
<td>Low</td>
<td>0-48</td>
<td>$1,512.02</td>
<td>262,566</td>
<td>33.8%</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>49-67</td>
<td>$1,793.74</td>
<td>252,592</td>
<td>32.5%</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>68+</td>
<td>$1,986.97</td>
<td>261,104</td>
<td>33.6%</td>
</tr>
<tr>
<td>Wound</td>
<td>Low</td>
<td>0-41</td>
<td>$1,759.76</td>
<td>346,257</td>
<td>34.2%</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>42-65</td>
<td>$1,993.35</td>
<td>332,204</td>
<td>32.8%</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>66+</td>
<td>$2,207.39</td>
<td>335,300</td>
<td>33.1%</td>
</tr>
</tbody>
</table>
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** indicates section to follow
Periods are Grouped by Admission Source and Timing

- Explored options for incorporating meaningful patient groups
  
  - Two currently used:
    - Admission source
    - Period timing
**Period Admission Source**

- **Institutional:** Acute or post-acute (skilled nursing facility, inpatient rehabilitation facility, long term care hospital) care in the 14 days prior to the HH admission

- **Community:** No acute or post-acute care in the 14 days prior to the HH admission
  - 30 day periods: second 30 days of a 60 day episode is assigned community

<table>
<thead>
<tr>
<th>Admission Source</th>
<th>Average Resource Use</th>
<th>Number of Periods</th>
<th>Percent</th>
<th>SD</th>
<th>25th Percentile</th>
<th>Median</th>
<th>75th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional</td>
<td>$2,114.39</td>
<td>2,339,944</td>
<td>25.1%</td>
<td>$1,340.60</td>
<td>$1,161.28</td>
<td>$1,850.11</td>
<td>$2,729.50</td>
</tr>
<tr>
<td>Community</td>
<td>$1,365.55</td>
<td>6,971,683</td>
<td>74.9%</td>
<td>$1,194.51</td>
<td>$557.96</td>
<td>$1,004.14</td>
<td>$1,811.20</td>
</tr>
<tr>
<td>Total</td>
<td>$1,553.73</td>
<td>9,311,627</td>
<td>100.0%</td>
<td>$1,274.92</td>
<td>$647.67</td>
<td>$1,207.50</td>
<td>$2,096.43</td>
</tr>
</tbody>
</table>
Period Timing

- **Early periods**: the first 30 day period in a sequence of HH periods

- **Late periods**: second and later 30 day periods in a sequence of HH periods
  - Sequence of HH periods are those with no more than 60 days between the end of one period and the start of the next period (no change from current definition)

<table>
<thead>
<tr>
<th>Timing</th>
<th>Average Resource Use</th>
<th>Number of Periods</th>
<th>Percent of Periods</th>
<th>SD</th>
<th>25th Percentile</th>
<th>Median</th>
<th>75th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Periods</td>
<td>$2,054.92</td>
<td>2,881,389</td>
<td>30.9%</td>
<td>$1,255.20</td>
<td>$1,152.50</td>
<td>$1,808.09</td>
<td>$2,646.46</td>
</tr>
<tr>
<td>Late Periods</td>
<td>$1,329.14</td>
<td>6,430,238</td>
<td>69.1%</td>
<td>$1,218.51</td>
<td>$531.52</td>
<td>$943.75</td>
<td>$1,738.65</td>
</tr>
<tr>
<td>Total</td>
<td>$1,553.73</td>
<td>9,311,627</td>
<td>100.0%</td>
<td>$1,274.92</td>
<td>$647.67</td>
<td>$1,207.50</td>
<td>$2,096.43</td>
</tr>
</tbody>
</table>
Resource Use by Timing and Admission Source

- Early Institutional: $2,150.95, 18.2%
- Late Institutional: $2,017.93, 6.9%
- Early Community: $1,917.37, 12.7%
- Late Community: $1,252.60, 62.1%

MLN Connects
Agenda

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2. Background
3. Overview of the Model
4. Resource Use
5. 30 Day Periods
6. Clinical Groups
7. Functional Levels
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9. Comorbidity Group**
10. Case-Mix Weights
11. Impact Analyses

** indicates section to follow
Under the Home Health Groupings Model, an episode is grouped into one (and only one) subcategory under each larger colored category. An episode's combination of subcategories groups the episode into one of 128 different payment groups.

Episodes in the MS Rehab and Behavioral Health clinical groups can only be grouped in the low or high functional level.

The Complex Nursing Interventions clinical group uses a mix of principal diagnoses and OASIS items to group episodes.
Comorbidity Adjustment: Motivation

• The primary HH diagnosis determines the HHGM clinical group

• However, secondary diagnoses also contain relevant information indicating patient need for case-mix adjustment, even after accounting for other aspects of the HHGM

• A comorbidity is defined as a medical condition coexisting in addition to a primary diagnosis
  – Comorbidity is tied to worse health outcomes, more complex medical need and management, and higher care costs
Comorbidities Specific to Home Health

- A HH specific comorbidity list was developed with broad clinical categories used to group comorbidities within the HHGM:
  - heart disease
  - respiratory disease
  - circulatory disease
  - cerebrovascular disease
  - gastrointestinal disease
  - neurological conditions
  - endocrine disease
  - neoplasms
  - genitourinary/renal disease
  - skin disease
  - musculoskeletal disease
  - behavioral health
  - infectious diseases
Comorbidities Specific to Home Health

• When evaluating comorbidities for HHGM inclusion, we assigned those with at least 0.1% of periods to subcategories.

• For remaining comorbidities, we determined each subcategory’s associated average resource use and flagged those with increased costs for a comorbidity adjustment group.

• Periods having at least one comorbidity included with the adjustment group will receive an adjustment.
# Frequency of Periods and Resource Use Estimates by Comorbidity Presence

<table>
<thead>
<tr>
<th>Comorbidity Group</th>
<th># Periods (30 Day Periods)</th>
<th>% Periods (30 Day Periods)</th>
<th>Mean Resource Use</th>
<th>Median Resource Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Comorbidity Adjustment</td>
<td>7,231,600</td>
<td>77.7%</td>
<td>$1,507.19</td>
<td>$1,180.26</td>
</tr>
<tr>
<td>Comorbidity Adjustment</td>
<td>2,080,027</td>
<td>22.3%</td>
<td>$1,715.54</td>
<td>$1,307.01</td>
</tr>
<tr>
<td>Total</td>
<td>9,311,627</td>
<td>100.0%</td>
<td>$1,553.73</td>
<td>$1,207.50</td>
</tr>
</tbody>
</table>
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2. Background
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4. Resource Use
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Home Health Groupings Model: Case-Mix Weights

- The HHGM assigns separate payment weights to periods for patients with similar characteristics and needs
  - Separate periods into one of 128 case-mix groups
  - Calculate each group’s **case-mix weight** as the group’s predicted mean cost relative to the overall average
  - Use the new case-mix weights to adjust the HH base payment amount; higher resource need periods are assigned higher case-mix weights and thereby receive more payment
Calculating Case-Mix Weights for the 128 Payment Groups

• Regression estimates the relationship between period cost and the broad categories on the HHGM process diagram

• Estimate fixed effects regression at the level of each HH agency
  – Dependent variable is resource use
  – Independent variables
    ◦ Timing
    ◦ Referral source
    ◦ Clinical group
    ◦ Functional level
    ◦ Comorbidity adjustment

• Case-mix weights equal predicted period cost divided by average period cost
# Table of Select Case-Mix Weights

<table>
<thead>
<tr>
<th>Number of Episodes</th>
<th>Comorbidity Adjustment?</th>
<th>Clinical Group and Level</th>
<th>Admission Source and Timing</th>
<th>% of Episodes</th>
<th>Average Resource Use</th>
<th>Standard Deviation of Resource Use</th>
<th>Coefficient of Variation of Resource Use</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>672</td>
<td>Yes</td>
<td>Behavioral Health - Low</td>
<td>Institutional - Late</td>
<td>0.01%</td>
<td>$1,366.15</td>
<td>$1,126.92</td>
<td>0.825</td>
<td>1.0804</td>
</tr>
<tr>
<td>890</td>
<td>Yes</td>
<td>Behavioral Health - Low</td>
<td>Institutional - Early</td>
<td>0.01%</td>
<td>$1,682.08</td>
<td>$1,048.21</td>
<td>0.623</td>
<td>1.2057</td>
</tr>
<tr>
<td>1,299</td>
<td>Yes</td>
<td>Behavioral Health - High</td>
<td>Institutional - Late</td>
<td>0.01%</td>
<td>$1,999.15</td>
<td>$1,311.69</td>
<td>0.656</td>
<td>1.3206</td>
</tr>
<tr>
<td>1,504</td>
<td>Yes</td>
<td>Behavioral Health - Low</td>
<td>Community - Early</td>
<td>0.02%</td>
<td>$1,549.13</td>
<td>$1,014.89</td>
<td>0.655</td>
<td>1.0289</td>
</tr>
<tr>
<td>1,685</td>
<td>Yes</td>
<td>Neuro - Low</td>
<td>Institutional - Late</td>
<td>0.02%</td>
<td>$2,047.48</td>
<td>$1,331.05</td>
<td>0.650</td>
<td>1.3515</td>
</tr>
<tr>
<td>1,755</td>
<td>Yes</td>
<td>Behavioral Health - High</td>
<td>Institutional - Early</td>
<td>0.02%</td>
<td>$2,335.92</td>
<td>$1,356.50</td>
<td>0.581</td>
<td>1.4459</td>
</tr>
<tr>
<td>1,947</td>
<td>Yes</td>
<td>Complex - Medium</td>
<td>Community - Early</td>
<td>0.02%</td>
<td>$1,932.54</td>
<td>$1,460.84</td>
<td>0.756</td>
<td>1.4119</td>
</tr>
<tr>
<td>2,337</td>
<td>Yes</td>
<td>Complex - High</td>
<td>Community - Early</td>
<td>0.03%</td>
<td>$2,230.44</td>
<td>$1,909.36</td>
<td>0.856</td>
<td>1.5246</td>
</tr>
<tr>
<td>2,449</td>
<td>Yes</td>
<td>Neuro - Medium</td>
<td>Institutional - Late</td>
<td>0.03%</td>
<td>$2,534.44</td>
<td>$1,461.58</td>
<td>0.577</td>
<td>1.5605</td>
</tr>
<tr>
<td>2,527</td>
<td>Yes</td>
<td>Complex - Low</td>
<td>Community - Early</td>
<td>0.03%</td>
<td>$1,591.80</td>
<td>$1,351.28</td>
<td>0.849</td>
<td>1.157</td>
</tr>
<tr>
<td>2,568</td>
<td>Yes</td>
<td>Behavioral Health - High</td>
<td>Community - Early</td>
<td>0.03%</td>
<td>$2,067.90</td>
<td>$1,147.75</td>
<td>0.555</td>
<td>1.2691</td>
</tr>
<tr>
<td>2,678</td>
<td>Yes</td>
<td>Complex - Low</td>
<td>Institutional - Late</td>
<td>0.03%</td>
<td>$1,839.10</td>
<td>$1,618.53</td>
<td>0.880</td>
<td>1.2085</td>
</tr>
<tr>
<td>2,882</td>
<td>Yes</td>
<td>MS Rehab - Low</td>
<td>Institutional - Late</td>
<td>0.03%</td>
<td>$1,977.88</td>
<td>$1,328.48</td>
<td>0.672</td>
<td>1.2588</td>
</tr>
<tr>
<td>3,986</td>
<td>Yes</td>
<td>Neuro - Low</td>
<td>Community - Early</td>
<td>0.04%</td>
<td>$2,059.28</td>
<td>$1,140.43</td>
<td>0.554</td>
<td>1.3</td>
</tr>
<tr>
<td>4,067</td>
<td>No</td>
<td>Complex - High</td>
<td>Community - Early</td>
<td>0.04%</td>
<td>$2,026.06</td>
<td>$1,529.43</td>
<td>0.755</td>
<td>1.3904</td>
</tr>
</tbody>
</table>
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** indicates section to follow
Impacts Overview: Actual vs. Simulated HHGM Payments

• Per design, overall HHGM mean payments are equal to those under the current payment system
  – $1,519 (HHGM) vs. $1,519 (Actual)
  – Calculated as ratio of period payments in the HHGM vs. current payment systems; a value above (below) “1.0” indicates greater (fewer) payment under the HHGM
  – “Impact Ratio” = 1.00 (= $1,519/$1,519)

• However, individual periods’ payments vary at different points in the distribution...
Distributions of Payments under Actual Paid Weights and HHGM Simulated Weights

![Graph showing distributions of HH PPS Payments ($) with Current Model in red and HHGM Simulated in white.](image-url)
Payment Difference (in %) Distribution between the HHGM and Current Payment System Amounts
HHGM Impacts, by Clinical Grouping

Ratios of HHGM Simulated to Actual Payments

<table>
<thead>
<tr>
<th>Clinical Group</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wound</td>
<td>1.28</td>
</tr>
<tr>
<td>Complex</td>
<td>1.16</td>
</tr>
<tr>
<td>MMTA</td>
<td>0.98</td>
</tr>
<tr>
<td>Neuro Rehab</td>
<td>0.64</td>
</tr>
<tr>
<td>MS Rehab</td>
<td>0.87</td>
</tr>
<tr>
<td>Behav Health</td>
<td>0.86</td>
</tr>
</tbody>
</table>
HHGM Impacts, by Period Timing

Ratios of HHGM Simulated to Actual Payments

- Early Episodes: 1.23
- Late Episodes: 0.89

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HHGM Impacts, by Referral Source

Ratios of HHGM Simulated to Actual Payments

- Community Referral: 0.90
- Institutional Referral: 1.27
Strengths of the HHGM

• Similar to the current payment system in design and setup
  – But uses different variables to case-mix adjust payments

• Addresses criticisms of the current payment system

• Easier to identify the reason for the HH period
Question & Answer Session
Questions?

• Please contact Abt Associates (HomeHealth@abtassoc.com) for questions or comments on today’s presentation
  – Please be as specific as possible with your questions.
  – Thank you!
Acronyms in this Presentation

- BLS: Bureau of Labor Statistics
- CPM + NRS: Cost per Minute + Non-Routine Supplies
- CY: Calendar Year
- HH PPS: Home Health Prospective Payment System
- HH: Home Health
- HHAs: Home Health Agencies
- HHGM: Home Health Groupings Model
- HHRGs: Home Health Resource Groups
- ICD: International Classification of Diseases
- IV: Intravenous
- LUPA: Low Utilization Payment Adjustment
- MMTA: Medication Management, Teaching, and Assessment
- MS: Musculoskeletal
- MSS: Medical Social Services
- OASIS: Outcomes and Assessment Information Set
- OT: Occupational Therapy
- PT: Physical Therapy
- SLP: Speech Language Pathology
- SN: Skilled Nursing
- WWMC: Wage Weighted Minutes of Care
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