Session 153 PD - Understanding End-of-Life Issues for Actuaries

Moderator:
Ian G. Duncan, FSA, FCA, FCIA, FIA, MAAA

Presenters:
Ian G. Duncan, FSA, FCA, FCIA, FIA, MAAA
Matthew Harker, MBA, MPH
Terri Maxwell, Ph.D.
IAN DUNCAN FSA FIA FCIA FCA MAAA
Session 153: Understanding End-of-Life Issues for Actuaries
Date October 18, 2017
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- **Do not** discuss what you or other entities plan to do in a particular geographic or product markets or with particular customers.
- **Do not** speak on behalf of the SOA or any of its committees unless specifically authorized to do so.
- **Do** leave a meeting where any anticompetitive pricing or market allocation discussion occurs.
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Ian Duncan FSA FIA FCIA FCA MAAA

• Founded Solucia Inc. (healthcare data analytics) and Santa Barbara Actuaries Inc. Now professor of actuarial statistics, University of California, Santa Barbara.

• Current (multi-year) research into drug-based prediction of length-of-stay of patients in hospice.
Financial Issues at End of Life
We are interested in hospice length of stay in order to build predictive models for patients admitted to hospice:

• What is expected duration of stay?

• How does a change in patient medication affect expected LOS?
2012-3 5% File Analysis
### Table 5.3  Cost of Care PMPM by Type in the last 3 and 6 Months of Life

<table>
<thead>
<tr>
<th></th>
<th>Inpatient Cost</th>
<th>Outpatient Cost</th>
<th>Hospice Cost</th>
<th>SNF Cost</th>
<th>Professional</th>
<th>Total</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>$4,397.33</td>
<td>$625.36</td>
<td>$1,163.10</td>
<td>$1,151.28</td>
<td>$779.19</td>
<td>$8,116.27</td>
<td>127,239</td>
</tr>
<tr>
<td>180</td>
<td>$2,884.48</td>
<td>$566.06</td>
<td>$751.82</td>
<td>$838.49</td>
<td>$570.24</td>
<td>$5,611.10</td>
<td>111,113</td>
</tr>
</tbody>
</table>
## 5% File Analysis: Costs at End of Life

### PMPM Costs 90-Days Before Death

<table>
<thead>
<tr>
<th>Where People Died</th>
<th>Inpatient Cost</th>
<th>Outpatient Cost</th>
<th>Hospice Cost</th>
<th>SNF Cost</th>
<th>Carrier Cost</th>
<th>Total</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient</td>
<td>$11,946.43</td>
<td>$722.81</td>
<td>$63.30</td>
<td>$962.62</td>
<td>$1,118.82</td>
<td>$14,813.98</td>
<td>35,400</td>
</tr>
<tr>
<td>Outpatient</td>
<td>$618.94</td>
<td>$992.15</td>
<td>$13.45</td>
<td>$346.07</td>
<td>$348.48</td>
<td>$2,319.10</td>
<td>16,114</td>
</tr>
<tr>
<td>Hospice</td>
<td>$1,614.86</td>
<td>$526.62</td>
<td>$2,459.15</td>
<td>$930.73</td>
<td>$669.75</td>
<td>$6,201.11</td>
<td>58,873</td>
</tr>
<tr>
<td>SNF</td>
<td>$3,061.52</td>
<td>$562.11</td>
<td>$55.45</td>
<td>$5,308.21</td>
<td>$991.52</td>
<td>$9,978.81</td>
<td>9,101</td>
</tr>
<tr>
<td>Carrier</td>
<td>$477.40</td>
<td>$241.99</td>
<td>$32.51</td>
<td>$481.25</td>
<td>$705.47</td>
<td>$1,938.63</td>
<td>7,751</td>
</tr>
<tr>
<td>All</td>
<td>$4,397.33</td>
<td>$625.36</td>
<td>$1,163.10</td>
<td>$1,151.28</td>
<td>$779.19</td>
<td>$8,116.27</td>
<td>127,239</td>
</tr>
</tbody>
</table>

### PMPM Costs 180-Days Before Death

<table>
<thead>
<tr>
<th>Where People Died</th>
<th>Inpatient Cost</th>
<th>Outpatient Cost</th>
<th>Hospice Cost</th>
<th>SNF Cost</th>
<th>Carrier Cost</th>
<th>Total</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient</td>
<td>$7,063.08</td>
<td>$641.82</td>
<td>$46.52</td>
<td>$707.18</td>
<td>$737.33</td>
<td>$9,195.92</td>
<td>30,653</td>
</tr>
<tr>
<td>Outpatient</td>
<td>$675.44</td>
<td>$735.41</td>
<td>$19.04</td>
<td>$399.04</td>
<td>$263.84</td>
<td>$2,092.77</td>
<td>14,883</td>
</tr>
<tr>
<td>Hospice</td>
<td>$1,401.50</td>
<td>$526.66</td>
<td>$1,598.75</td>
<td>$747.48</td>
<td>$540.34</td>
<td>$4,814.72</td>
<td>50,752</td>
</tr>
<tr>
<td>SNF</td>
<td>$2,422.22</td>
<td>$483.56</td>
<td>$47.81</td>
<td>$3,058.91</td>
<td>$681.39</td>
<td>$6,693.90</td>
<td>7,889</td>
</tr>
<tr>
<td>Carrier</td>
<td>$534.68</td>
<td>$249.99</td>
<td>$44.76</td>
<td>$502.31</td>
<td>$581.69</td>
<td>$1,913.43</td>
<td>6,936</td>
</tr>
<tr>
<td>All</td>
<td>$2,884.48</td>
<td>$566.06</td>
<td>$751.82</td>
<td>$838.49</td>
<td>$570.24</td>
<td>$5,611.10</td>
<td>111,113</td>
</tr>
</tbody>
</table>
Cost by place of death: last 3 months

Figure 5.1.a  Cost by Place of Death and Type for Patients in Last 3 months of life
Cost by place of death: last 6 months

Figure 5.1.b  Cost by Place of Death and Type for Patients in Last 6 months of life
Cost per day: hospital patients

Figure 5.2.a  Cost per Day – last 3 months of life

Figure 5.2.b  Cost per Day – last 6 months of life
Cost per day: hospice patients

Table 5.5  Medicare Hospice Payment Rates by Type of Service

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Base payment rate, 2015</th>
<th>Percent of hospice days, 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine home care</td>
<td>Home care provided on a typical day</td>
<td>$159.34 per day</td>
<td>97.6%</td>
</tr>
<tr>
<td>Continuous home care</td>
<td>Home care provided during periods of patient crisis</td>
<td>$38.75 per hour</td>
<td>0.4</td>
</tr>
<tr>
<td>Inpatient respite care</td>
<td>Inpatient care for a short period to provide respite for primary caregiver</td>
<td>$164.81 per day</td>
<td>0.3</td>
</tr>
<tr>
<td>General inpatient care</td>
<td>Inpatient care to treat symptoms that cannot be managed in another setting</td>
<td>$708.77 per day</td>
<td>1.7</td>
</tr>
</tbody>
</table>

2018 Rates: $190.55 (Routine Home Care)

By comparison, the 2013 Average Hospital Facility per diem was $1,617.62
Hospice File Analysis
## Hospice Data

<table>
<thead>
<tr>
<th>Admitting Diagnosis</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorectal, Bladder, and Other Cancers</td>
<td>11,637</td>
<td>13,969</td>
<td>25,606</td>
</tr>
<tr>
<td>Dementia Without Complication</td>
<td>12,024</td>
<td>5,553</td>
<td>17,577</td>
</tr>
<tr>
<td>Congestive Heart Failure</td>
<td>8,718</td>
<td>7,270</td>
<td>15,988</td>
</tr>
<tr>
<td>Lung and Other Severe Cancers</td>
<td>5,949</td>
<td>4,407</td>
<td>10,356</td>
</tr>
<tr>
<td>Metastatic Cancer and Acute Leukemia</td>
<td>4,682</td>
<td>3,596</td>
<td>8,278</td>
</tr>
<tr>
<td>Chronic Obstructive Pulmonary Disease</td>
<td>4,436</td>
<td>2,414</td>
<td>6,850</td>
</tr>
<tr>
<td>Diabetes without Complication</td>
<td>3,387</td>
<td>2,340</td>
<td>5,727</td>
</tr>
<tr>
<td>Specified Heart Arrhythmias</td>
<td>2,921</td>
<td>1,625</td>
<td>4,546</td>
</tr>
<tr>
<td>Ischemic or Unspecified Stroke</td>
<td>1,864</td>
<td>1,447</td>
<td>3,311</td>
</tr>
<tr>
<td>Breast, Prostate, and Other Cancers</td>
<td>1,192</td>
<td>1,705</td>
<td>2,897</td>
</tr>
<tr>
<td><strong>Subtotal by Condition</strong></td>
<td>56,810</td>
<td>44,326</td>
<td>101,136</td>
</tr>
<tr>
<td><strong>Total (all conditions)</strong></td>
<td>75,251</td>
<td>61,651</td>
<td>136,902</td>
</tr>
<tr>
<td><strong>Top 10 Dx as % of all patients</strong></td>
<td>75.5%</td>
<td>71.9%</td>
<td>73.9%</td>
</tr>
</tbody>
</table>
Hospice Data

Age at Death (2015 Admissions)

Histogram of Age at Death in 2015 Enrollments
## Pharmacy Data

**Table 7.3 Prevalence of Drug Type: 2015 Admissions**

<table>
<thead>
<tr>
<th>Analgesic</th>
<th>Anti-cholinergic</th>
<th>Anti-nausea</th>
<th>Anxiolytic</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>116,361</td>
<td>23,777</td>
<td>30,797</td>
<td>59,084</td>
<td>230,019</td>
</tr>
</tbody>
</table>

Number of patients with at least one of 4 drug types (90.3%) 123,616

Number of patients without any of 4 drug types (9.7%) 13,290

TOTAL 136,906

85.0% 17.4% 22.5% 43.2% 168.0%
Transition
Understanding End of Life Issues for Actuaries

TERRI MAXWELL PHD, APRN

Date October 18, 2017
The Context

Everyone is looking to solve the issue of care in the final months/years of life

• What adds value, without adding significant cost?
• How do we honor patient/family choice when we don’t have consistent systems to identify those choices?
• How can we improve transitions?
The Problem with End-of-Life Care in the US

• Marked by multiple hospital admissions and ED visits
  • Nearly 80% are due to exacerbations of pre-existing and chronic symptoms
• Two thirds of medical practices lack systems to assess patients’ wishes or symptom burden
• Caregivers are overwhelmed and lack needed support
• People prefer to die at home, yet the majority die in hospitals or nursing homes
Highly Medicalized Deaths
Serious Illness

• People with serious illness make up 14% of the population but 56% of health care expenditures
  • Utilize hospital services at twice the rates of persons with multiple chronic conditions only

• Goes beyond medical model to include social supports, symptom relief, care coordination, communication and decision support
  • Lack of a care management and payment structure to meet these needs

Miller & Wang, 2017
End of Life Care Model

- Life Prolonging Therapy
- Hospice Benefit
- Diagnosis of Serious Illness
- Palliative/Complex Care Coordination
- Bereavement
- Death
What is Hospice?

• A reimbursement benefit for patients who have terminal diagnosis
• Primarily community-based
• Care for severely ill patients and their families
• Team of professionals and trained volunteers
• Focus is on care, not cure
What is Hospice?

- Pain and symptom management
- Maintenance of QOL
- Emotional, psychosocial, spiritual support
- Provides drugs, medical supplies, equipment
- Speech or physical therapy if needed
- Short-term inpatient care if needed
- Instructs family on how to care for the patient
- Bereavement care & counseling
Interdisciplinary Care Team
Hospice Medicare Benefit

• Covered under Part A (Hospital Insurance)
• As a general rule, hospice providers are expected to cover virtually all drugs for hospice beneficiaries during the hospice election.
• The hospice provider will be responsible for coordinating with Part D plan sponsors for those drugs they believe are completely unrelated to the terminal illness and/or related conditions to determine payment responsibility.
CMS Conditions for Hospice Eligibility

- Limited life expectancy (<6 months) certified by a physician
- Patient chooses hospice benefits, rather than standard Medicare
- Patient chooses palliation as a goal, rather than cure
- Care provided by Medicare-certified hospice program
- A physician directs care
- Available/able/willing caregiver at home
Number of Hospices by Year
Total Hospice Patients Served by Year
# Hospice Patient Characteristics

<table>
<thead>
<tr>
<th>Patient Gender</th>
<th>2014</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>53.7%</td>
<td>54.7%</td>
</tr>
<tr>
<td>Male</td>
<td>46.3%</td>
<td>45.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patient Age Category</th>
<th>2014</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 24 years</td>
<td>0.5%</td>
<td>0.4%</td>
</tr>
<tr>
<td>25 - 34 years</td>
<td>0.3%</td>
<td>0.4%</td>
</tr>
<tr>
<td>35 - 64 years</td>
<td>15.3%</td>
<td>15.3%</td>
</tr>
<tr>
<td>65 - 74 years</td>
<td>16.8%</td>
<td>16.6%</td>
</tr>
<tr>
<td>75 - 84 years</td>
<td>26.0%</td>
<td>26.1%</td>
</tr>
<tr>
<td>85+ years</td>
<td>41.1%</td>
<td>41.2%</td>
</tr>
</tbody>
</table>
## Primary Diagnosis

<table>
<thead>
<tr>
<th>Primary Diagnosis</th>
<th>2014</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>36.6%</td>
<td>36.5%</td>
</tr>
<tr>
<td>Non-Cancer Diagnoses</td>
<td>63.4%</td>
<td>63.5%</td>
</tr>
<tr>
<td>Dementia</td>
<td>14.8%</td>
<td>15.2%</td>
</tr>
<tr>
<td>Heart Disease</td>
<td>14.7%</td>
<td>13.4%</td>
</tr>
<tr>
<td>Lung Disease</td>
<td>9.3%</td>
<td>9.9%</td>
</tr>
<tr>
<td>Other</td>
<td>8.3%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Stroke or Coma</td>
<td>6.4%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Kidney Disease (ESRD)</td>
<td>3.0%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Liver Disease</td>
<td>2.3%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Non-ALS Motor Neuron</td>
<td>2.1%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Debility Unspecified</td>
<td>1.9%</td>
<td>5.4%</td>
</tr>
<tr>
<td>Amyotrophic Lateral Sclerosis (ALS)</td>
<td>0.4%</td>
<td>0.4%</td>
</tr>
<tr>
<td>HIV / AIDS</td>
<td>0.2%</td>
<td>0.2%</td>
</tr>
</tbody>
</table>
Length of Service in Hospice

![Graph showing length of service in hospice with data for different years and metrics.]
Hospice Length of Stay

- 180+ days: 10.3%
- 90 - 179 days: 8.7%
- < 7 days: 35.5%
- 30 - 89 days: 17.8%
- 15 to 29 days: 12.9%
- 8 - 14 days: 14.8%
Hospice Disposition

• Majority of patients die while on hospice
• Minority of patients discharged
  • Stabilization of disease
  • Move to another area
  • Patient or family preference
Hospice Payment

The Medicare Hospice Benefit is the predominate source of payment for hospice care

<table>
<thead>
<tr>
<th>Payer</th>
<th>2014</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicare Hospice Benefit</td>
<td>85.5%</td>
<td>87.2%</td>
</tr>
<tr>
<td>Managed Care or Private Insurance</td>
<td>6.9%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Medicaid Hospice Benefit</td>
<td>5.0%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Uncompensated or Charity Care</td>
<td>0.7%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Self Pay</td>
<td>0.8%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Other Payment Source</td>
<td>1.2%</td>
<td>1.2%</td>
</tr>
</tbody>
</table>
Hospice Savings

• Findings of a major study demonstrated that hospice services save money for Medicare and bring quality care to patients

• Duke researchers found that hospice reduced Medicare costs by an average of $2,309 per patient
Hospice “Baggage”

• Brink of death care
• Giving up on a cure/accepting palliative approach
• Regulatory scrutiny-especially on eligibility requirements
• Shrinking reimbursement
• The only comprehensive payment for palliative care
“Upstream” Palliative Care

• Addresses the needs of those who are not yet hospice eligible or don’t want hospice
• Hospital-based programs continue to grow
• Community-based models are evolving
• Lots of interest from providers
• General public doesn’t know what it is
## Distinction between Home Health, Hospice & Palliative Care Models

<table>
<thead>
<tr>
<th></th>
<th>Home Health</th>
<th>Hospice</th>
<th>PC/AIM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient Population</strong></td>
<td>Require ADL aid, are homebound and have skilled medical need</td>
<td>Limited to patients with life-limiting illness, w/ &lt;6 month prognosis</td>
<td>Seriously ill with approximate 18-24 month prognosis</td>
</tr>
<tr>
<td><strong>Reimbursement</strong></td>
<td>Medicare, Medicaid, Insurance</td>
<td>Medicare, Medicaid, Insurance, Private Pay</td>
<td>FFS or contracts, no comprehensive benefit</td>
</tr>
<tr>
<td><strong>Service Model</strong></td>
<td>Primarily by a nurse, focused on addressing skilled need, helping with ADLs</td>
<td>Interdisciplinary patient/family driven care, focused on comfort &amp; quality of life</td>
<td>Staffing varies, goal is person-centered care, advance care planning and disease management</td>
</tr>
<tr>
<td><strong>Setting of Care</strong></td>
<td>Home</td>
<td>Home, LTC, ALFs, and inpatient settings</td>
<td>Home and telephone support</td>
</tr>
</tbody>
</table>
Understanding End of Life Issues for Actuaries

MATTHEW HARKER, MPH, MBA

Date October 18, 2017
New Models of Care – Alternative Payment Models and Innovation

- Long Term Care Insurance – 7% of population have policies
- Hospice benefit = the original bundle per diem
- Advanced Care Planning – Paying for hard conversations in FFS
- Palliative Care models are predominantly hospital based with very few in community based settings
- MA plans have been innovating in this space, but there is minimal push to publish results
- MCCM → CMMI demonstrations→ mixed results on impact and delivery through hospices
Trends of Death location

**Exhibit 4**

Numbers of US decedents, by site of death, 1999–2015

- Hospital
- Home
- Nursing home or long-term care facility
- Inpatient hospice facility
- Other or unknown

**Source** Authors’ analysis of data from Centers for Disease Control and Prevention, CDC WONDER (Note 1 in text). **Note** Percentages were computed from CDC data that the authors grouped by year and site of death.
Spend Trajectory

- Predictive Analytics
- Utilization
  - Offered
  - Geographic variation
- Time

**EXHIBIT 1**

Health care spending trajectories of Medicare decedents in the last year of life

- High persistent
- Moderate persistent
- Progressive
- Late rise

**SOURCE** Authors’ analyses of Medicare data, 2011–12. **NOTES** Spending is in dollars under a natural logarithm transformation. Spending trajectories are defined in the text.
Spend by Condition

• # of conditions coded
• Type of conditions that indicate levels of care offered

[Chart showing distribution of health care spending trajectories by number of conditions and specific conditions for categories such as High persistent, Moderate persistent, Progressive, Late rise.]

*Source* Authors’ analyses of Medicare data, 2011-12. *Note* Spending trajectories are defined in the text.
Trajectory of Death & Decline

Function by Time
Palliative Care Model Shifting – When do we know we are in decline? And Who coordinates?

PALLIATIVE CARE MODELS

Old

Life-prolonging care

Medicare hospice benefit

Diagnosis

New

Life-prolonging care

Palliative care

Hospice care

Death

Source: Center to Advance Palliative Care

Bereavement
Community Based Palliative Care Model Shift
What is it? & How is it paid for in what settings?

Definition:
Community Based Palliative Care
Supportive services delivered across all settings with appropriate staff to provide relief from symptoms and stress of serious illness.

How care is paid for within the Medicare Population?

- **70% FFS**
  - Hospitals use primary mix of Part A to cover palliative consultations
  - Clinics use primary mix of Part B to cover palliative consultation

- **30% MA**
  - Contracted Provider rates across settings and according to a risk adjustment methodology that pays more for disease severity

- **100% FFS**
  - Hospice Benefit Per Day Allocation 100% Per Diem FFS

All care in Hospice is palliative and is a clear carve out based on <6mo life expectancy.

Settings:
- Hospital, Clinic, SNF, Home Health, Long Term Care
- Home/Facility

Bereavement
Awareness of terminal illness, discussions with MDs and treatment plans and outcomes.

- Being aware of terminal illness: 1.6 X as likely to get preferred tx.
- Discussing EOL wishes with MD: 2 X as likely to get preferred tx.
- Being aware & discuss with MD: 3.5 X as likely to get preferred tx.
- (44% of pts who knew they were terminally ill had not talked with MD!)

**J Clin Onc 2010;28:1203-8. 7 hospitals. 325 pts with advanced cancer. Preferences assessed a median of 125 days before death. Multivariate analysis (function, survival time, demographics, discussions, awareness of term condition)**

<table>
<thead>
<tr>
<th>Aware of Terminal Condition</th>
<th>Prefers life extending</th>
<th>Prefer tx for comfort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aware</td>
<td>100%</td>
<td>90%</td>
</tr>
<tr>
<td>Not Aware</td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>

\[.003\]
Investing in Prevention and Social Interventions Requires Long-Term Strategy and Evidence that Actuaries can help contribute to and model.
Clinical Care costs are visible and measurable through claims
- CMS (Medicare & Medicaid)
- ACO & Facility Accounting
- Market Concentration

Clinical Care costs NOT visible but measurable through cost match
- Care coordination
- Home visits

Market & Social Costs Not visible measurable through Insurance premiums
- OOP average annual expense
- Business outlay of Non-Profit svcs
- Time conversion for work effort loss
- Time conversion for caregiver burden
- Caregiver and family impact

Explicit and Implicit Care provided
- Private Insurance
- Long Term Care (Private)
- Out of Pocket Expense (caregiver & family)
- Employment (Absenteeism – Presenteeism)
- Housing (substandard)
- Social Services (nutrition, elder neglect enforcement)
- Independent living accommodations

Hospital + SNF + Hospice + some Home Health
Who Cares For The Caregivers? We All Do

• October 13, 2017
• Nearly 44 million people in the United States, three-quarters of whom are women in their late 40s, spend at least 22 hours a week providing unpaid care to loved ones with a disability, illness, or terminal diagnosis, and one in four spend at least twice that amount.
• Typically, they assist with the activities of daily living such as bathing, dressing, toileting, and feeding their loved one, as well as taking care of shopping, finances, and transportation to and from medical appointments.
<table>
<thead>
<tr>
<th>Subject</th>
<th>Figure</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply of family caregivers</td>
<td>4:1</td>
<td>Projected ratio of potential caregivers (aged 45-64) to people potentially in need (over 80) in 2030 (Redfoot et al., 2013)</td>
</tr>
<tr>
<td>Medication management</td>
<td>78%</td>
<td>Of caregivers that perform medical/nursing tasks, the proportion regularly administering drugs (average 5-9 medications per day) (Reinhard et al., 2012)</td>
</tr>
<tr>
<td>No home visits</td>
<td>69%</td>
<td>Proportion of caregivers not assisted with home visits by a health professional (Reinhard et al., 2012)</td>
</tr>
<tr>
<td>Caregivers who are employed</td>
<td>73%</td>
<td>Proportion of caregivers employed at some time while caregiving (National Alliance for Caregiving, 2009)</td>
</tr>
<tr>
<td>Caregiving for parents</td>
<td>72%</td>
<td>Proportion of employed workers serving as caregivers who care for a parent or parent-in-law (Mendes, 2011)</td>
</tr>
<tr>
<td>Caregiving for elderly people</td>
<td>67%</td>
<td>Proportion of employed workers serving as caregivers who care for someone over age 75 (Mendes, 2011)</td>
</tr>
<tr>
<td>Duration of caregiving</td>
<td>55%</td>
<td>Proportion of employed workers serving as caregivers who have been doing so for 3 years or longer (Mendes, 2011)</td>
</tr>
<tr>
<td>Worker absenteeism</td>
<td>6.6 days</td>
<td>Employed family caregivers’ average annual number of days of employed work lost as a result of caregiving (Witters, 2011)</td>
</tr>
<tr>
<td>Lost productivity</td>
<td>$25.2 billion</td>
<td>Annual cost of lost productivity due to absenteeism caused by family caregiving (Witters, 2011)</td>
</tr>
<tr>
<td>Economic impact</td>
<td>$450 billion</td>
<td>Value of family caregiving services in 2009 (Feinberg et al., 2011)</td>
</tr>
</tbody>
</table>
LAN Payment Reform Typology

- Payer & Provider book of business can span several categories
  - Most are hybrid
- The Typology of payment terms and conditions have various methods of Attribution used in evaluation & academic work
LAN updated framework

- New Cat 4 – Integrated Finance & Delivery Systems
- Expand definition of Cat 3
- “Appropriate Care” measures
Classification Changes

Additional Requirement for Categories 3 and 4

- Categories 3 and 4 entail the greatest incentives to reduce costs, but this can be accomplished by reducing necessary as well as unnecessary care.
- Therefore, Category 3 and 4 APMs must strongly encourage reductions in wasteful care by evaluating providers on the basis of “appropriate care” measures, and we have added those to go beyond quality alone.

Appropriate care measures can include:

- Preventable hospital admissions
- Unnecessary imaging
- Documentation of shared-decision-making
- Appropriate use of medications
- Rates of “never events”
- Adherence to clinical guidelines for pre-term labor and delivery and end of life care
Quality of Evidence Still a Problem

Which Treatment is Best for Whom?
High-Quality Evidence is Scarce
< 15% of Guideline Recommendations Supported by High Quality Evidence

Scientific Evidence Underlying the ACC/AHA Clinical Practice Guidelines

Cardiology jokes that they are one of the high quality evidence groups with 15% of their guidelines supported by evidence.
Risk Journey

The journey to risk

Population Health Management Market: Evolving Payment Programs

Degree of management complexity

- Fee for service
- Pay for coordination
- Pay for performance
- Bundled payment for episode of care
- Upside shared savings program
- Downside shared savings programs
- Partial or full capitation
- Global budget

Level of accountability or risk

Source: Frost & Sullivan, 2016
Case study 2: palliative care

<table>
<thead>
<tr>
<th>CHALLENGE</th>
<th>ACTION</th>
<th>OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospice care programs often offer a <strong>suboptimal patient experience</strong> with fragmented care</td>
<td><strong>Apply new, proactive care delivery models</strong>&lt;br&gt;Teams meet with patients earlier in the end-of-life process to reduce anxiety, better address depression, and affect overall utilization, while <strong>increasing quality and even quantity of life</strong>.</td>
<td>Over 4,000 new patients have been enrolled in palliative care programs. Early results show significantly reduced utilization and high levels of program satisfaction by patients.</td>
</tr>
<tr>
<td>Traditional models that delay palliative care result in:&lt;br&gt;- High patient anxiety&lt;br&gt;- Increased readmissions&lt;br&gt;- Decreased quality of life.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Palliative care case study: end-of-life costs

<table>
<thead>
<tr>
<th>Measure (Last 3 Months of Life)</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Admits/K</td>
<td>38%</td>
</tr>
<tr>
<td>Acute Days/K</td>
<td>39%</td>
</tr>
<tr>
<td>ED Visits</td>
<td>21%</td>
</tr>
<tr>
<td>% Decedents IP Admit Last Month</td>
<td>28%</td>
</tr>
<tr>
<td>Percent Enrolled in Hospice</td>
<td>28%</td>
</tr>
<tr>
<td>Median Hospice LOS</td>
<td>215%</td>
</tr>
</tbody>
</table>
Palliative care: risk prediction model

6-month model performed at 85% accuracy

For 12 month mortality risk model, 2013 experience used to predict deaths in 2014 with 83% accuracy
Four Mechanisms for Separating Insurance and Performance Risk

- Many Avoidable Complications
- Failure to Follow Guidelines
- Overutilization of Services
- Large Random Variation
- New, High-Cost Treatment
- Unusually Costly Patient
- Higher-Severity Patients

Bundled or Condition-Based Payment Level

<table>
<thead>
<tr>
<th>COST</th>
<th>FFS $</th>
<th>FFS $</th>
<th>APM $</th>
<th>Costs of Svcs</th>
<th>Excess Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>Actual</td>
<td>Proposed</td>
<td>Actual</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance Risk (Provider’s Responsibility)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Corridors</td>
</tr>
<tr>
<td>Risk Exclusions</td>
</tr>
<tr>
<td>Outlier Pmt/Stop-Loss</td>
</tr>
<tr>
<td>Risk Adjustment</td>
</tr>
</tbody>
</table>
Physician-Focused Payment Model Technical Advisory Committee (PTAC)

• The Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) creates new ways for the Medicare program at the Centers for Medicare & Medicaid Services (CMS) to pay physicians for the care they provide to Medicare beneficiaries.

• MACRA also creates incentives for physicians to participate in Alternative Payment Models (APMs), including the development of physician-focused payment models (PFPMs).

• Several ongoing CMMI demonstrations with mixed results
Diagram 1. Integration and Coordination with Advanced Illness Beneficiaries in Other APMs

Given that the **ACM population represents 4% of the Medicare population**, ACM entities must include a diverse group of physicians to generate sufficient volume for team-based resources. Natural conveners of physicians and other providers who may operate the ACM include health systems, hospitals, hospices, home health, ACOs, CINs, and medical groups.
### PRT Review → PTAC Review process

#### B. Summary of the PRT Review

<table>
<thead>
<tr>
<th>Criteria Specified by the Secretary (at 42 CFR§414.1465)</th>
<th>PRT Conclusion</th>
<th>Unanimous or Majority Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Scope of Proposed PFPM (High Priority)</td>
<td>Meets with priority consideration</td>
<td>M</td>
</tr>
<tr>
<td>2. Quality and Cost (High Priority)</td>
<td>Does not meet</td>
<td>M</td>
</tr>
<tr>
<td>3. Payment Methodology (High Priority)</td>
<td>Does not meet</td>
<td>M</td>
</tr>
<tr>
<td>4. Value over Volume</td>
<td>Meets</td>
<td>U</td>
</tr>
<tr>
<td>5. Flexibility</td>
<td>Meets</td>
<td>U</td>
</tr>
<tr>
<td>6. Ability to be Evaluated</td>
<td>Meets</td>
<td>U</td>
</tr>
<tr>
<td>7. Integration and Care Coordination</td>
<td>Meets with priority consideration</td>
<td>U</td>
</tr>
<tr>
<td>8. Patient Choice</td>
<td>Meets</td>
<td>U</td>
</tr>
<tr>
<td>9. Patient Safety</td>
<td>Meets</td>
<td>U</td>
</tr>
<tr>
<td>10. Health Information Technology</td>
<td>Meets</td>
<td>U</td>
</tr>
</tbody>
</table>
b) Additional Information reviewed. The PRT also talked with the following parties to better understand key aspects of (and potential effects of) the proposed model:

- A physician expert in palliative care;
- The Centers for Medicare & Medicaid Services (CMS), Office of the Actuary (OACT);
- The CMS Center on Medicare to better understand the potential interactions of the proposed model with the Medicare hospice benefit;
- The CMS Center for Medicare and Medicaid Innovation (CMMI) to better understand the difference between the proposed model and CMMI’s Medicare Care Choices Model.

Finally, CMS actuaries raised a concern that the shared savings amount will be difficult to calculate. Although the issue is not unique to this model, figuring out the baseline against which to compare actual costs and installing an accurate risk-adjustment system will present challenges that will be difficult to overcome. The proposal highlights the challenges in calculating the benchmark and acknowledged the need for assistance from CMS. The proposers ruled out using Hierarchical Condition Categories (HCCs) alone for risk adjustment, but the proposed alternative of using episode-based actuarial modeling is not fully specified and relies on CMS to fill in the gaps. While seeking assistance from CMS is not inappropriate, the PRT is not confident that this issue can be satisfactorily addressed.
Post Acute Care → End of Life Care → Hospice

• ACOs in post acute care (open invitation)
• Ownership of post acute & hospice changing to further corporate governance (shift to investment in non-capital investment and stable contracting)
• MA plans → Hospice transitions higher than FFS comparison
• Overall lack of quality measures for the optimum End of life care experience but continued work on spend tracking and new hospice quality measures will continue
Serious Illness Strategies

1. Proactive Identification
2. Engagement & Assessment
3. Services & Benefit Design
4. Network Provider
5. Payment & Incentives
6. Measurement & Evaluation

CAPC, 2017
Palliative Illness Management (PIM) Care Model

Turn-Key Predictive Analytics
Population Identification and Periodic Refresh

Patient Engagement
Initial Engagement by Turn-Key Outreach Team in Partnership with Plan Sponsor

Turn-Key Health Platform
Turn-Key Guided Risk-Based Care Pathways and Assessments

Care Paths

Turn-Key Quality Monitoring & Reporting
Monitor and Guide Network Performance Outcomes Dashboards & Reporting Synchronized results continual learning

Local Provider Network
Ongoing Member Engagement by Contracted Community-Based Teams

Local Provider Network
Ongoing Member Engagement by Contracted Community-Based Teams
PIM Pilot Project

Program timeframe- 9 mos.
• 60% enrolled during first call
  • 36% declined follow-up
  • 4% not appropriate for AIM
• 211 members enrolled
  • 53% male
  • 86% over age 80, 21% over age 90
  • 33% lived alone

• Home visit risk levels
  • RN: 51% low, 39% medium, 10% high
  • SW: 28% low, 59% medium, 13% high
Pilot Results

1008 MA Patients

Enrolled Cohort: 208 Patients compared to 800 identified but not enrolled

- Hospital admissions
- Re-hospitalizations
- ICU days
- Emergency department utilization

- Symptom management
- Goals of Care discussions
- Med- reconciliation
- Hospice benefit adoption
Pilot Results: **Cost and Utilization Outcomes**

- **34% reduction in healthcare expenditures**
- **30-Day Re-hospitalization**
  - Ident but not Enrolled: 61%
  - Enrolled: [chart]
- **ICU Days**
  - Ident but not Enrolled: 37%
  - Enrolled: [chart]
Pilot Results: Quality

Hospice Length of Stay

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean LOS</td>
<td>49.7</td>
<td>84</td>
</tr>
<tr>
<td>Median LOS</td>
<td>12</td>
<td>57</td>
</tr>
</tbody>
</table>

(4.9 Out of 5 stars)

- Comfort with AIM team
- Helpfulness managing the symptom & stresses of illness
- Helpfulness to family and caregivers
- Satisfied with AIM services
- Importance to patient that Plan offers AIM
- Likely to recommend
- Experience with AIM influence recommending Health Plan

Increase in quality & member satisfaction measures

- Satisfaction with Symptom Management: 97%
- Goals in Care Addressed: 98%
- Medication Reconciliation: 97%
References

• Arnella, C. The importance of risk stratification for referrals to palliative care programs. NHPCO Palliative Care Resource Series 2016.
• Cassel, JB, Kerr, KM, Kalman NS, Smith TJ. The business case for palliative care: Translating research into program development in the U.S. JPSM 2015; (epub ahead of print).
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