

# CARE CONTEXT

THE ALLIANCE FOR QUALITY NURSING HOME CARE SEPTEMBER 2011



## Nursing Facilities Cost-Effectively Treat an Increasingly Complex Patient Population, Benefiting Seniors and Taxpayers

AS DEFICIT REDUCTION WILL REMAIN a paramount objective for Congress this fall, policymakers should consider nursing facilities' (NFs) ability to treat patients with certain hospital diagnoses at a lower cost to Medicare than other facility-based post-acute care (PAC)

providers. As a lower-cost institutional setting, with the ability to provide high-quality care to a broad range of patients, NFs are poised to be a critical part of Congressional and CMS efforts to reduce overall Medicare expenditures and reform healthcare delivery.

Nursing facilities have adapted well to the needs and demands of the healthcare system, treating an increasingly complex post-acute care population while expanding the range of services that NFs are able to provide.

## Evolving Role of Nursing Facilities: Helping Increasingly Complex Patients Achieve Maximum Clinical and Functional Well-Being

NEARLY 1.6 MILLION Medicare beneficiaries receive post-hospital care in nursing facilities each year.<sup>1</sup> Most of these beneficiaries stay for a relatively short period of time—the median Medicare length of stay (LOS) in 2009 was 20 days—and are increasingly likely to be discharged to the community.<sup>2</sup> Patients receiving care in nursing facilities today are increasingly clinically complex. These patients have higher severity of illness (SOI) in the

hospital, may have multiple comorbidities, and require more intensive medical, therapeutic, and rehabilitation services. This increasing patient complexity and intensity of services is driven by several factors including shorter hospital lengths of stay as well as broader shifts in clinical perspectives on the value of therapy for older, seriously ill adults.

As patient medical complexity has increased, so has NF investment to care

for these patients. Nursing hours have increased substantially as have patient therapy services. These rehabilitation therapies help increasingly complex patients achieve maximum independence by improving patients' clinical and functional well-being, reducing the nursing facility length of stay, and increasing the likelihood of discharge back to the community.

IN CONTEXT In 2009, the median Medicare length of stay in nursing facilities was 20 days.

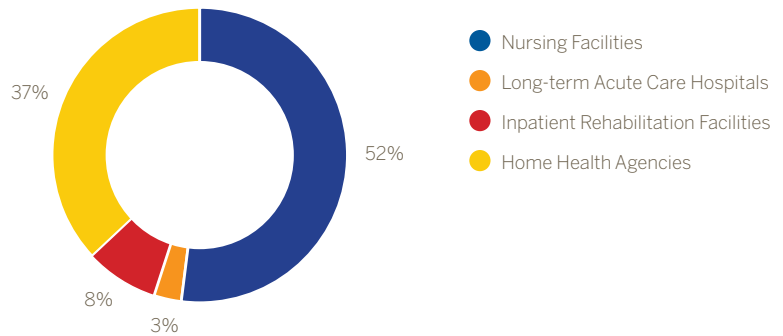
## Nursing Facilities Treat the Majority of Patients Requiring Post-Hospital Care

NURSING FACILITIES care for almost five percent of the Medicare fee-for-service population, or 1.6 million Medicare beneficiaries annually.<sup>3</sup> Medicare beneficiaries may receive post-hospital, so-called “post-acute” care in several settings, but over 50 percent of beneficiaries receive that care in a nursing facility.<sup>4</sup> This post-hospital care helps beneficiaries recuperate from an acute episode and regain function, such as walking and dressing, in order to maximize independence in daily living.

Nursing facilities care for patients with a broad range of clinical conditions. The ten most common hospital diagnoses preceding admission to a nursing facility range from orthopedic surgeries, such as major joint and limb reattachment of lower extremity, to heart failure/shock, and pneumonia.<sup>5</sup>

### Over 50 Percent of Medicare Beneficiaries Receive Post-Acute Care in a Nursing Facility

Figure 1: Share of Hospital Post-Acute Care Discharges by Provider, 2009



Source: Avalere analysis of 2009 Medicare 100 Percent Standard Analytic File (SAF) claims data base from the Centers for Medicare and Medicaid Services (CMS) for Skilled Nursing Facilities (SNFs), Long Term Acute Care Hospitals (LTACHs), Inpatient Rehabilitation Facilities (IRFs), Home Health Agencies (HHAs), and Inpatient Hospitals.

## Nursing Facilities Care for Patients with a Broad Range of Clinical Conditions

Figure 2: Top Ten Medicare Severity Diagnosis-Related Groups for Nursing Facility Patients, 2009

Medicare Severity Diagnosis-Related Group
1. Major joint replacement or reattachment of lower extremity without major complication
2. Septicemia or severe sepsis without mechanical ventilation for 96-plus hours with major complications
3. Kidney and urinary tract infections without major complications
4. Heart failure and shock with major complications
5. Hip and femur procedures except major joint with complications
6. Simple pneumonia and pleurisy with complications
7. Heart failure and shock with complications
8. Kidney and urinary tract infections with major complications
9. Nutritional and miscellaneous metabolic disorders without major complications
10. Simple pneumonia and pleurisy with major complications

Source: Avalere analysis of 2009 Medicare 100 Percent Standard Analytic File (SAF) claims data base from the Centers for Medicare and Medicaid Services (CMS) for SNFs and Inpatient Hospitals.

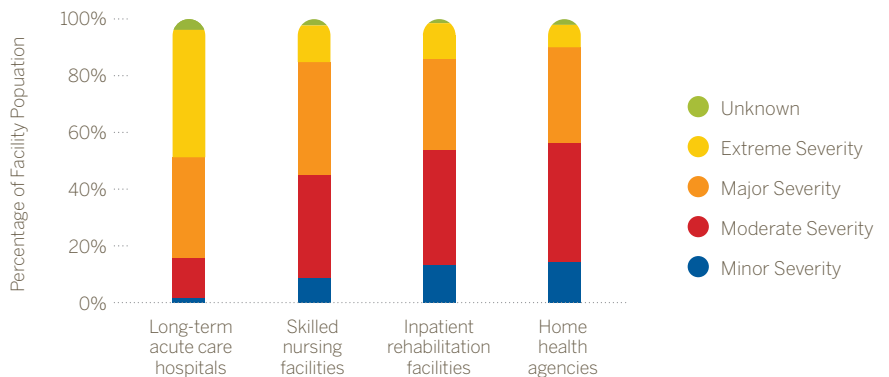
## Nursing Facilities Treat Increasingly Complex Patients

HOSPITAL PATIENTS discharged to nursing facilities today are among the most severely ill post-acute Medicare beneficiaries. Their complexity has also been increasing over time. Nursing facility patient acuity has changed substantially even over relatively short time periods, such as between 2005 and 2009. Broader policy and care delivery trends may be contributing to this shift, such as a decrease in hospital LOS and a shift to ambulatory settings. The hospital LOS for beneficiaries discharged to NFs declined from 7.76 days in 2005 to 7.15 days in 2009, a 7.9 percent decline in only five years.<sup>6</sup> Over the same time period, the patient severity of illness, number of comorbidities, and need for more intensive clinical interventions increased. These patient severity indicators support that patient acuity increased while hospital LOS decreased.

Nursing facilities treat some of the most severely ill Medicare beneficiaries requiring post-acute care. Severity of illness refers to the clinical complications beyond the patient's primary diagnosis. The severity of illness measure bases levels on the diagnosis, complications of the principal condition, dependency on hospital staff, life support procedures outside of the operating room, rate of recovery, resolution of symptoms, and other interacting conditions.<sup>7</sup> The severity categories are numbered sequentially from 1 to 4 and indicate a minor, moderate, major, or extreme severity of illness, respectively. Nursing facilities have the

### Nursing Facilities Have the Second Highest Severity of Illness Among Post-Hospital Providers

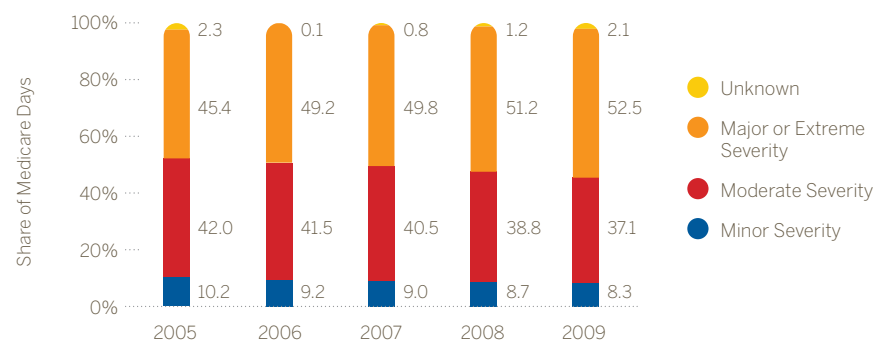
Figure 3: Severity of Illness of Patients Discharged to Post-Hospital Settings, 2009



Source: Avalere analysis of 2009 Medicare 100 Percent Standard Analytic File (SAF) claims data base from the Centers for Medicare and Medicaid Services (CMS) for SNFs, LTACHs, IRFs, HHAs, and Inpatient Hospitals.

### Severity of Illness of Nursing Facility Patients Rose Substantially from 2005-2009

Figure 4: Change in Medicare NF Patients' Severity of Illness, 2005-2009



Source: Avalere analysis of 2009 Medicare 100 Percent Standard Analytic File (SAF) claims data base from the Centers for Medicare and Medicaid Services (CMS) for SNFs and Inpatient Hospitals.

IN CONTEXT

The proportion of patients in nursing facilities with major or extreme severity of illness increased from 45 percent in 2005 to 53 percent in 2009.

second highest average severity of illness among post-hospital providers, less than long-term acute care hospitals, but higher than inpatient rehabilitation facilities and home health agencies.<sup>8</sup>

The severity of illness of Medicare beneficiaries cared for in nursing facilities has also risen substantially over time. The proportion of patients in nursing facilities categorized as having major or extreme severity of illness increased from about 45 percent in 2005 to 53 percent in 2009.<sup>9</sup>

Over this same 2005-2009 time period, the number of NF patient comorbidities increased. The percentage of Medicare NF patients with eight or more comorbidities increased from 74.8 percent to 86.9 percent, whereas the number with one to five comorbidities decreased from 11.0 percent to 5.3 percent.

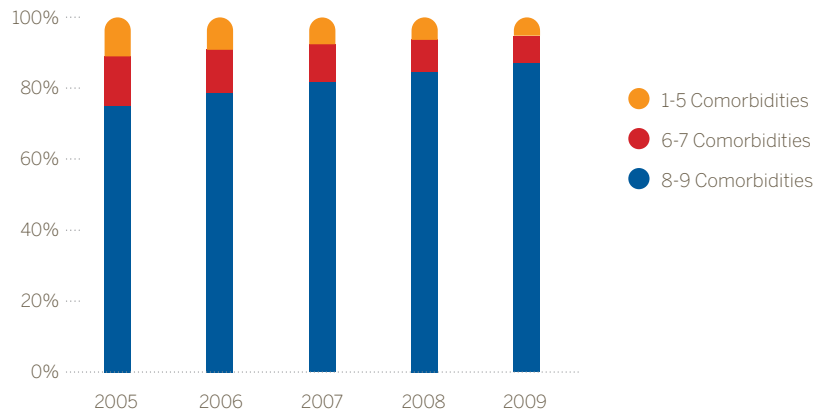
The most common comorbidities among patients discharged to nursing facilities include hypertension, arthritis, coronary heart disease, depression, diabetes, and Parkinson's. The number of NF patients taking 11 or more medications in the last seven days has also increased substantially from 42.8 percent in 2005 to 61.1 percent in 2009. This may reflect the increased comorbidities but complicates care and discharge as the patient or caregiver must be able to manage a more complex medication regimen.

## CONSIDER

The number of NF patients taking 11 or more medications in the last seven days has increased 43 percent from 2005 to 2009.

### The Number of Comorbidities per Nursing Facility Patient Increased Over Time

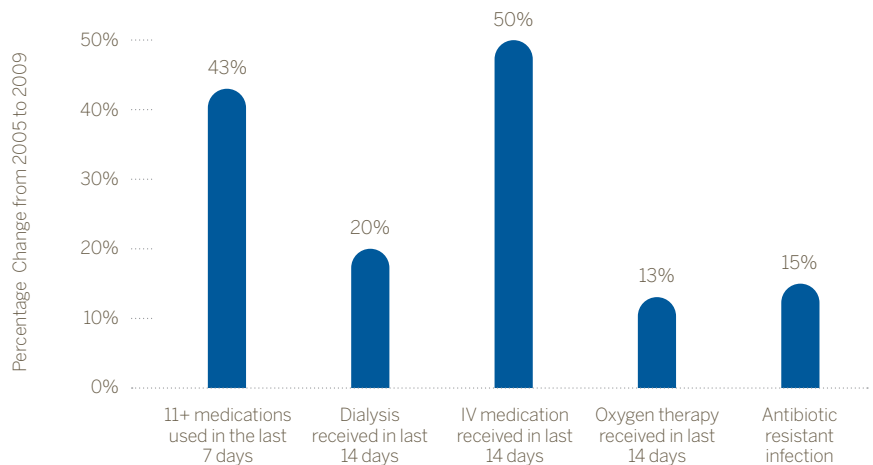
Figure 5: Percent of Medicare NF Patients with a Given Number of Comorbidities, 2005-2009



Source: Avalere analysis of 2009 Medicare 100 Percent Standard Analytic File (SAF) claims data base from the Centers for Medicare and Medicaid Services (CMS) for SNFs and Inpatient Hospitals.

### The Change in Nursing Facility Case-Mix Indicators Demonstrates an Increase in Clinical Complexity

Figure 6: Change in Medicare Nursing Facility Case Mix for Selected Indicators, 2005-2009



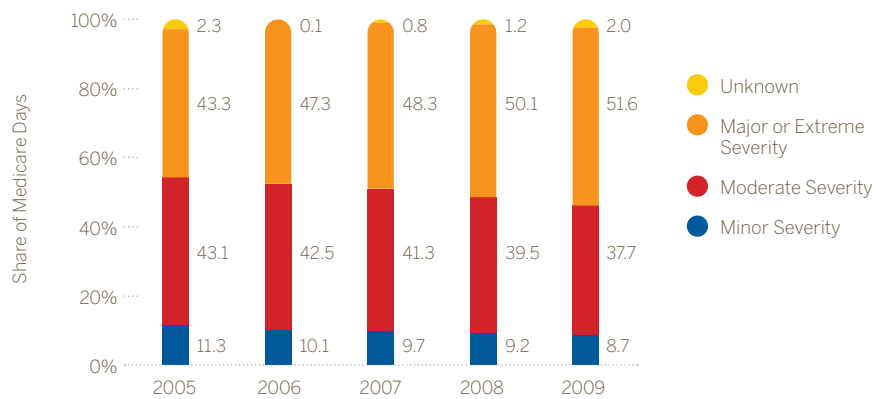
Source: Avalere Analysis of the 2005 to 2009 Medicare Skilled Nursing Facility Minimum Data Set from the Centers for Medicare and Medicaid Services.

In addition to the number of medications, additional nursing facility data reinforces this rise in clinical complexity. For example, the percentage of patients receiving medications intravenously in the last 14 days increased from 8.0 percent of nursing facility patients in 2005 to 12.0 percent in 2009, and the percent of patients who received oxygen therapy in the last 14 days increased from 12.7 percent to 14.4 percent during the four year period.<sup>10</sup>

All Resource Utilization Group (RUG) categories had an increase in acuity based on SOI over the 2005-2009 time period. The portion of Medicare beneficiaries in the rehabilitation RUGs—such as rehabilitation plus extensive services and rehabilitation only—that are categorized with a major or extreme SOI has risen from 43.3 percent in 2005 to 51.6 percent in 2009.<sup>11</sup>

### Severity of Illness of Nursing Facility Patients Receiving Therapy Rose from 2005-2009

Figure 7: Change in Medicare NF Patients' Severity of Illness for Rehabilitation RUGs, 2005-2009



Source: Avalere analysis of 2009 Medicare 100 Percent Standard Analytic File (SAF) claims data base from the Centers for Medicare and Medicaid Services (CMS) for SNFs and Inpatient Hospitals.

## Nursing Facility Patients are Increasingly Returning to the Community but More Research is Needed to Fully Understand these Trends

NURSING FACILITIES provide therapeutic and rehabilitative services to help patients recover and regain function so that they may return home. There are limited studies on the rate at which people who enter nursing facilities are discharged home. The studies that are available differ substantially in methodology and, as a result, come up with very different estimates. A study of Minnesota nursing facilities found that 53 percent

of new patients are discharged to the community within 30 days.<sup>12</sup> The study tracked new nursing facility admissions over a one-year period from July 2005 to June 2006.<sup>13</sup> The study found that after 90 days, only 19 percent of the patients admitted to a nursing facility were still in that facility and at a year only 10 percent remained.<sup>14</sup> Of the patients discharged, 69 percent were discharged to the community. The remaining 31 percent of

patients went either to another nursing facility, another discharge setting, an acute-care hospital, or died.<sup>15</sup>

The Medicare Payment Advisory Commission (MedPAC) reports a substantially lower, but increasing, rate of discharge to the community. MedPAC found that rates of community discharge within 100 days increased 2.7 percentage points (or 8.1 percent) from 33.3 percent in 2000 to 36 percent in 2008.

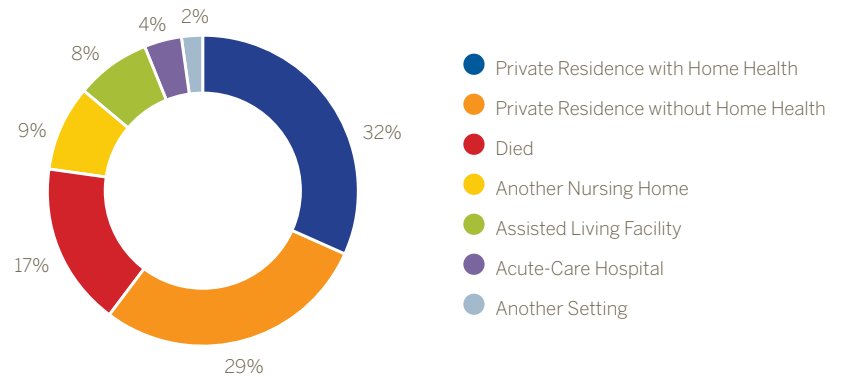
IN CONTEXT

A study of Minnesota nursing facilities found that after 90 days, only 19 percent of the patients newly admitted to a nursing facility were still in that facility.

MedPAC’s much lower estimate than the Minnesota study (“MN Study”) may be explained by the differing methodologies. The MN Study focuses on community-dwelling beneficiaries—that is, the rate of discharge back to the community for patients who were living in the community at the time of their hospital admission—whereas MedPAC’s analysis includes all beneficiaries. Since beneficiaries residing in a nursing home prior to their hospitalization are unlikely to be discharged to the community, MedPAC’s numbers would be expected to be lower. Unlike the MN Study, MedPAC does not show whether patients transferred to another facility, died, or returned to the NF he or she resided in prior to admission. The MN Study focuses on Medicare beneficiaries but does not include patients who had been in a facility in the prior two years or patients who are transferred from another nursing facility. The study excludes these patients because they are less likely to benefit from NF interventions to return them to the community

### Sixty-Nine Percent of Patients Discharged from the NF Returned to the Community

Figure 8: Discharge Disposition in Minnesota for New Admissions, July 2005-June 2006



Source: Arling, Greg, Robert L. Kane, Valerie Cooke and Teresa Lewis. Targeting Residents for Transitions from Nursing Home to Community. Health Services Research 45, no. 3. 2010.

if they reside in a nursing facility or have frequent stays in nursing facilities.<sup>16</sup>

Community discharge is an important outcome measure. The MN Study reported that 86 percent of patients admitted

to a NF reported that they want to return to the community.<sup>17</sup> Additional research needs to be done to better understand the rates and trends of community discharge for community-dwelling beneficiaries.

### MEDICARE PAYMENTS FOR NURSING FACILITIES

Nursing facilities provide post-acute care to Medicare beneficiaries recovering from an acute-care surgical or medical episode. In order to qualify for a Medicare stay in a NF, the beneficiary must have been in the hospital for three days prior to the NF stay. Nursing facilities are paid under a Medicare prospective payment system for services provided on a per diem basis. The per diem payment is case-mix adjusted using a resident classification system known as Resource Utilization Groups (RUGs). The data for determining which RUG a patient belongs in is determined through resident assessments, which are reported to CMS through the Minimum Data Set (MDS). Data from past resident

assessments, as well as staff time data, are used to calculate the relative weight of each RUG to accurately reflect the cost of caring for patients based on anticipated care needs. The patient is classified into a RUG based on the amount and type of therapy provided, the patient’s activities of daily living (ADL) score, the presence of a ventilator/respirator tracheostomy, or isolation for active infectious diseases. RUGs are categorized into the following major categories: Rehabilitation Plus Extensive Services, Rehabilitation Only, Extensive Services, Special Care High and Low, Clinically Complex, Behavioral Symptoms, Cognitive Performance, and Reduced Physical Functioning.

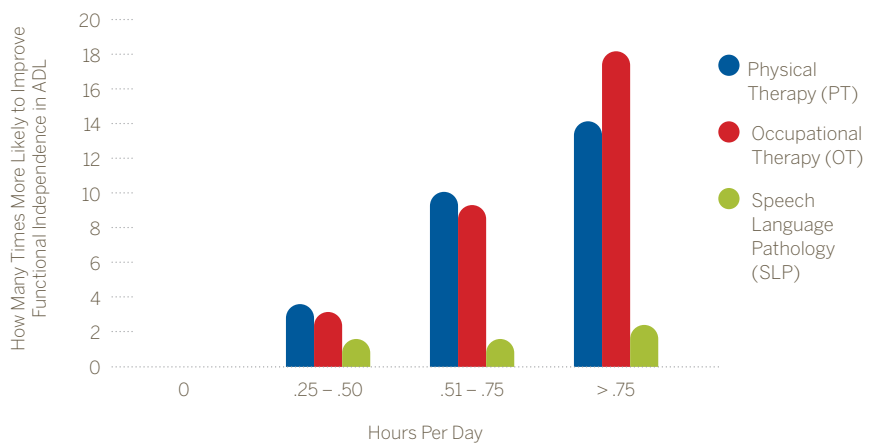
## The Use and Intensity of Rehabilitation Services Leads to Greater Functional Improvement

AN INCREASING body of evidence illustrates that for a broad range of conditions that are treated in NFs, therapy services lead to greater functional improvement when comparing patients who did and did not receive rehabilitation therapy. A study of Medicare patients following hip and knee replacement surgery (JOINTs study) showed substantial improvement in motor functioning after treatment in a NF following surgery. The Functional Improvement Measure (FIM) scores for hip replacement patients increased from 47.4 at admission to 69.4 at discharge. Similarly, knee replacement patients' FIM scores increased from 50.3 to 71.4.<sup>18</sup>

A wide range of articles on stroke rehabilitation show a link between intensity of rehabilitation services and minimizing loss of function. Increased therapy time correlates to greater improvement in function.<sup>19</sup> Intensive therapy over a short period of time for stroke patients helped to bolster outcomes in speech and language therapy,<sup>20</sup> while the hours of therapy received per day also proved to be a strong predictor of a patient's ability to walk and perform activities of daily living (ADLs) at the time of NF discharge.<sup>21</sup> Another study of stroke patients receiving therapy in nursing facilities demonstrated that a patient's likelihood to improve functional independence in ADLs improved with additional therapy minutes per day.<sup>22</sup> A study in the hospital setting showed that an increase of one rehabilitation session per day corresponded to a 27-fold increase in likelihood of achieving independent walking and a 2.77-fold increase in the Barthel Index functional ability score at discharge. Patients who regained walking

### Additional Therapy Hours per Day Increased Stroke Patients' Odds of Improved Function

Figure 9: Stroke Patient Odds of Improving ADL Functional Independence Over No Therapy Intervention, by Therapy Hours Per Day, 2002



Source: DU Jette, et al. "The Relation Between Therapy Intensity and Outcomes of Rehabilitation in Skilled Nursing Facilities." Archives of Physical Medicine and Rehabilitation, Vol. 86, March 2005

function in the high-intensity rehabilitation group were also eight times more likely to be able to walk than those receiving low-intensity rehabilitation.<sup>23</sup>

Patients with respiratory conditions also benefit from rehabilitation and achieve substantial functional improvements. Active-assisted rehabilitation treatments, which include in-bed therapies and initial efforts at ambulation with assistance, enable patients to start therapies that they would be otherwise unable to perform independently, which is especially important in this extremely sick population.<sup>24</sup> Rehabilitation is then able to strengthen muscles, improve range of movement in joints, and restore

balance and coordinative skills.<sup>25</sup> Studies show additional training and muscle strengthening exercises improve the distance ventilated patients with chronic critical illnesses are able to walk.<sup>26</sup>

## CONSIDER

Patients receiving a higher level of therapy were three times more likely to be discharged to the community than patients receiving a lower level of therapy.

## Rehabilitation Therapy Promotes Shorter Lengths of Stay and Increases Likelihood of Community Discharge

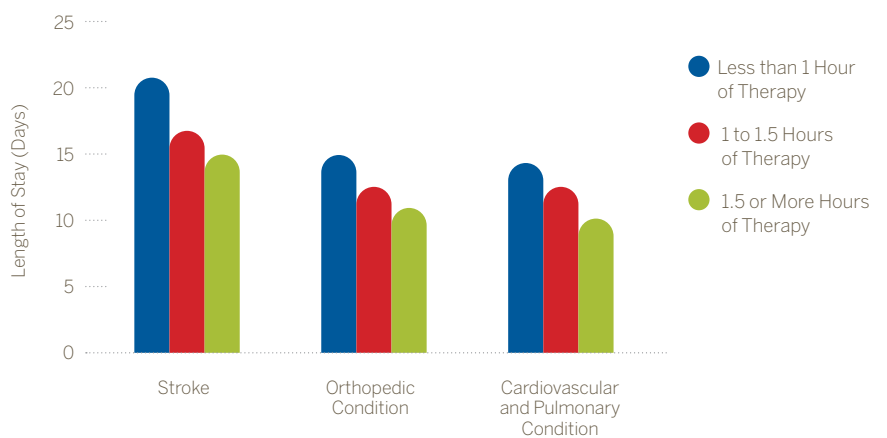
IN ADDITION to improved functional outcomes, patients receiving rehabilitation spend less time in NFs than similar patients who do not receive rehabilitation therapy. A study of stroke, orthopedic, cardiovascular, and pulmonary patients in nursing facilities demonstrated that as the number of therapy minutes per day increased the length of stay decreased.<sup>27</sup> Several hospital-based studies have also demonstrated a significant reduction in LOS with use of rehabilitation services.<sup>28,29</sup>

Research also shows that patients receiving higher combined levels of rehabilitation therapy in NFs have a higher probability of returning to a community setting. A study of stroke patients in nursing facilities showed that an increase in number of rehabilitation minutes per week increased the likelihood of community discharge, up to a limit.<sup>30</sup> The probability of community discharge for patients receiving a low level of therapy (<175 minutes of therapy per week) was 20 percent versus 64 percent for patients receiving a higher level of therapy (330-499 minutes per week).

The timing of the therapy appears to be critically important; patients who receive therapy early in the episode of care achieve better outcomes than those who start therapy later. After only one week of bed rest, there is a ten percent loss of strength in the postural muscles that sup-

### Increased Minutes of Therapy per Day Leads to Decreased Length of Stay in Nursing Facilities

Figure 10: Length of Stay by Number of Hours of Therapy Received per Day, 2002



Source: DU Jette, et al. "The Relation Between Therapy Intensity and Outcomes of Rehabilitation in Skilled Nursing Facilities." Archives of Physical Medicine and Rehabilitation, Vol. 86, March 2005.

port the spinal column, illustrating both the importance of therapy interventions and the value of starting rehabilitation early in the NF episode.<sup>31</sup> Stroke patients who start therapy regimens within seven days of the stroke experience better long-term recovery of autonomy than those who did not start rehabilitation until a month after the start of the care episode.<sup>32</sup> Studies have demonstrated that rehabilitation interventions in the recovery process are both safe

and beneficial for even the extremely sick, ventilated patients. A majority of ventilated patients are able to ambulate for more than 100 feet before discharge if rehabilitation is initiated early.<sup>33</sup>

As NFs continue to receive patients earlier in the episode of care, their ability to initiate more intense rehabilitation programs early in the recovery process can enable patients to recover a greater level of their functional capacity sooner.

#### IN CONTEXT

**Nursing facilities** have substantially increased the number of therapists and nursing hours to care for this higher acuity patient population.



## Nursing Facility Staffing Has Evolved to Treat a More Complex Patient Population that Requires More Rehabilitation Therapy

THE INCREASE in acuity of patients admitted to NFs has necessitated an investment in the personnel to care effectively for this changing patient population. Nursing facilities have increased the number of nurse practitioners and nursing assistants, resulting in an increase in nursing hours per resident per day between 1997 and 2007.<sup>34</sup> Among facilities with 50-150 beds, nursing hours increased 9.0 percent in the ten year period, while all other NFs experienced increases of over 5 percent.<sup>35</sup> Nursing staff expansion efforts have been extended to registered nurses (RNs); just within the last 12 months, the percentage of nursing facilities with 0.7 registered

nurse hours per patient per day or more increased by 7.4 percentage points.<sup>36</sup>

Staffing investments in therapy providers are also observed in NFs. A higher level of physical therapy staff members is associated with decreases in NF patients' mortality rates, and increases in ADLs, outcome measures, cognitive ability, and social skills.<sup>37</sup> Nursing facilities substantially increased the therapy resources available to patients between 2003 and 2010. Over this time period, the number of full-time equivalent (FTE) therapists increased by 31,000. Therapy resources increased across all therapy modalities. Physical therapist FTEs increased by 14,100 (44 percent),

occupational therapists by 12,000 (56 percent), and speech language pathologists by 4,900 (92 percent).<sup>38</sup> These additional resources have been essential in allowing nursing facilities to provide quality care for an increasingly acute patient population.

### CONSIDER

Nursing hours per resident per day increased 9 percent between 1997-2007 for facilities with 50-150 beds.

## Policy Changes and Market Forces Contributed to Increases in Patient Complexity and Use of Rehabilitation Services

CMS' IMPLEMENTATION of the hospital prospective payment system (PPS) for hospitals in 1983 has led to a decrease in average hospital length of stay. As a result, the hospital patients discharged to NFs are discharged earlier and tend to be more medically complex.

At the same time, Federal NF policy has evolved to better differentiate between the resource needs of NF patients. In 2006, CMS added nine new RUG categories for high intensity rehabilitation to compensate nursing facilities for patients requiring high

levels of therapy.<sup>39</sup> The RUG-IV system shifts incentives to be more responsive to differences in patient complexity and resources that nursing facilities need to provide care. For example, the RUG-IV system expands the number of RUG categories to allow for more appropriate payment for medically complex conditions such as respiratory illness or infection.<sup>40</sup> These modifications enable NFs to invest in staff to care for these more highly complex patients.

In addition to hospital and NF policy, CMS' enforcement of the 60 percent

rule in inpatient rehabilitation facilities (IRFs) has resulted in a shift of patients away from IRFs to NFs. The 60 percent rule requires that 60 percent of IRF cases fall into one of 13 conditions. Specifically, there are limitations on the kinds of joint replacement cases that IRFs can take that fit within the 60 percent rule, which has resulted in nursing facilities treating more of these beneficiaries. In 2009, an estimated 55,000 beneficiaries that would have been treated by IRFs were instead discharged to a nursing facility for care.<sup>41</sup>

## Nursing Facilities Represent a Cost-Effective Site of Care

NURSING FACILITIES have adapted to the needs and demands of the health-care system, treating an increasingly complex post-acute care population while expanding the range of services that NFs are able to provide. Despite the increased role NFs fulfill, total Medicare NF spending has increased proportionally with overall Medicare

spending and Medicare spending for hospital services.

Nursing facilities continue to serve an important role in the post-acute care continuum, by treating a broad range of patients with moderate to high severity of illness. Studies have shown that nursing facilities treating post acute rehabilitation patients produce

competitive outcomes—and superior cost-effectiveness—compared to other PAC settings.

As a lower-cost institutional setting, with the ability to treat a broad range of patients, NFs are poised to be an important part of Congressional and CMS efforts to reduce overall Medicare expenditures and reform healthcare delivery.

### Nursing Facilities are the Lowest Cost Institutional PAC Setting

Figure 11: Comparison of Mean Medicare PAC Payment for Top High-Severity\* Institutional PAC Conditions, 2009

MS-DRG, SOI Level 3	LTCH	IRF	SNF
291: Heart Failure and Shock w/MCC	\$26,372	\$15,564	\$8,114
871: Septicemia or Severe Sepsis w/o MV 96+ hours w/MCC	\$21,559	\$12,683	\$8,840
633: Renal Failure w/CC	\$28,095	\$15,486	\$9,214
689: Kidney & Urinary Tract Infection w/MCC	\$29,280	\$16,896	\$9,760
193: Simple Pneumonia & Pleurisy w/MCC	\$25,744	\$15,570	\$8,588

Source: Avalere analysis of 2009 Medicare 100 Percent Standard Analytic File (SAF) claims data base from the Centers for Medicare and Medicaid Services (CMS) for SNFs, LTACHs, IRFs, HHAs, and Inpatient Hospitals.

\*Five top conditions with hospital major severity of illness (SOI 3) discharging to institutional PAC settings

## Key Policy Considerations

NURSING FACILITIES are treating increasingly complex patients with intensive rehabilitation needs. As clinical research on the benefits of rehabilitation for seriously ill adults has increased, so has the amount and duration of therapy provided in nursing facilities. More research is needed, however, to better understand how investments in nursing facility care affect aggregate Medicare expenditures and beneficiary outcomes. A silo-ed approach that focuses solely on the nursing facility will fail to recognize broader implications on patient episode costs and outcomes.

Policymakers may want to consider the following questions in developing post-acute care nursing facility payment and coverage policy. These include:

- What is the rate of community discharge and average length of stay for community-dwelling Medicare beneficiaries treated in a NF? How do rehabilitation services affect this rate of discharge and length of stay?
- How does nursing facility care affect patients' episode of care costs and quality outcomes? Does nursing facility care prevent future adverse outcomes (for example, rehospitalizations) and

utilization for specific patient populations? How do therapy services affect these outcomes?

- Currently, post-acute care settings collect and report different clinical and quality measures to CMS. How can CMS move toward a system that includes standard measures across PAC settings so that CMS can compare quality across PAC providers for similar patients?
- As CMS implements the delivery and payment system reforms in the Affordable Care Act, how can it begin to apply some of these principles to the silo-based fee-for-service payment systems?

## ENDNOTES

- 1 Medicare Payment Advisory Commission, March 2011 Report to Congress, p. 147.
- 2 Avalere analysis of the 2009 SNF Medicare Provider Analysis and Review (MedPAR) files from the Centers for Medicare and Medicaid Services.
- 3 Medicare Payment Advisory Commission, March 2011 Report to Congress, p. 147.
- 4 Avalere analysis of 2009 Medicare 100 Percent Standard Analytic File (SAF) claims data base from the Centers for Medicare & Medicaid Services (CMS).
- 5 Avalere analysis of 2009 Medicare 100 Percent SAF claims data base from the CMS for the Skilled Nursing Facilities (SNFs).
- 6 Avalere analysis of 2009 Medicare 100 Percent Standard Analytic File (SAF) claims data base from the Centers for Medicare and Medicaid Services (CMS) for SNFs and Inpatient Hospitals.
- 7 Horn, et al. "Severity of Illness within DRGs: Impact on Prospective Payment." *American Journal of Public Health*. October 1985.
- 8 Avalere analysis of 2009 Medicare 100 Percent Standard Analytic File (SAF) claims data base from the Centers for Medicare and Medicaid Services (CMS) for SNFs and Inpatient Hospitals.
- 9 Ibid.
- 10 Avalere analysis of Minimum Data Set (MDS) Active Resident Information Report from the Centers for Medicare and Medicaid Services (CMS). [https://www.cms.gov/MDSPubQlandResRep/O4\\_activeresreport.asp](https://www.cms.gov/MDSPubQlandResRep/O4_activeresreport.asp)
- 11 Avalere analysis of 2009 Medicare 100 Percent Standard Analytic File (SAF) claims data base from the Centers for Medicare and Medicaid Services (CMS) for SNFs and Inpatient Hospitals.
- 12 Calculated based on study reporting that 85 percent of community discharges occurred within 30 days of admission.
- 13 The new nursing facility admissions included all first-time nursing home admissions to Minnesota nursing facilities from July 1, 2005 to June 30, 2006, excluding nursing home transfers (10 percent of all admissions) and persons with nursing home use in the prior 2 years (27 percent of all admissions).
- 14 Arling, Greg, Robert L. Kane, Valerie Cooke and Teresa Lewis. "Targeting Residents for Transitions from Nursing Home to Community." *Health Services Research* 45, no. 3. (2010).
- 15 Ibid.
- 16 Arling, Greg, Robert L. Kane, Valerie Cooke and Teresa Lewis. "Targeting Residents for Transitions from Nursing Home to Community." *Health Services Research* 45, no. 3. (2010).
- 17 Ibid.
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- 19 O'Conner, Enda D. and James Walsham. "Should We Mobilise Critically Ill Patients? A Review." *Critical Care and Resuscitation* 11, no. 4 (2009).
- 20 Bhogal, Sanjit K, Robert W. Teasell, Norine C. Foley, and Mark R. Speechley. "Rehabilitation of Aphasia: More Is Better." *Topics in Stroke Rehabilitation* 10, no. 2 (2003).
- 21 Hu, Ming-hsia, Shu-shyuan Hsu, Ping-keung Yip, Jiann-shing Jeng, and Yen-ho Wang. "Early and Intensive Rehabilitation Predicts Good Functional Outcomes in Patients Admitted to the Stroke Intensive Care Unit." *Disability and Rehabilitation* 32, no. 15 (2010).
- 22 DU Jette, et al. "The Relation Between Therapy Intensity and Outcomes of Rehabilitation in Skilled Nursing Facilities." *Archives of Physical Medicine and Rehabilitation* Vol. 86, (March 2005).
- 23 Hu, Ming-hsia, Shu-shyuan Hsu, Ping-keung Yip, Jiann-shing Jeng, and Yen-ho Wang. "Early and Intensive Rehabilitation Predicts Good Functional Outcomes in Patients Admitted to the Stroke Intensive Care Unit." *Disability and Rehabilitation* 32, no. 15 (2010).
- 24 O'Conner, Enda D. and James Walsham. "Should We Mobilise Critically Ill Patients? A Review." *Critical Care and Resuscitation* 11, no. 4 (2009).
- 25 Gosselink, R., J. Bolt, M. Johnson, E. Dean, S. Nava, M. Norrenberg, B. Schonhofer, K. Stiller, H. van de Leur, J.L. Vincent. "Physiotherapy for adult patients with critical illness: recommendations of the European Respiratory Society and European Society of Intensive Care Medicine Task Force on Physiotherapy for Critically Ill Patients." *Intensive Care Medicine* 34, no. 7 (2008).
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- 27 DU Jette, et al. "The Relation Between Therapy Intensity and Outcomes of Rehabilitation in Skilled Nursing Facilities." *Archives of Physical Medicine and Rehabilitation* Vol. 86, (March 2005).
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Alliance for Quality Nursing Home Care  
1101 Pennsylvania Ave. NW, Sixth Floor  
Washington, DC 20004  
202.742.6740  
[www.aqnhc.org](http://www.aqnhc.org)



Avalere Health LLC  
1350 Connecticut Avenue, NW  
Washington, DC 20036  
202.207.1300  
[www.avalerehealth.net](http://www.avalerehealth.net)