

C H A P T E R

8

Skilled nursing facilities: The need for reform

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Chapter summary

This chapter discusses issues related to Medicare's payment system for skilled nursing facilities (SNFs) and the measures used to assess the quality of care provided in them. The first section outlines the research CMS funded to examine ways to improve the accuracy of SNF payments. The current design of the SNF prospective payment system (PPS) results in impaired access for certain beneficiaries who require expensive nontherapy ancillary (NTA) services and encourages providers to furnish therapy even when it is of little or no value. CMS's researchers explored ways to establish and calculate a separate payment for NTA services, to base therapy payments on a patient's predicted need for the service, and to defray some of the costs of treating unusually expensive cases through outlier payments. We conclude that options can be designed that better target payments for NTA services and for stays with unusually high costs. The options vary in their ability to predict cost differences across patients, the resources required for CMS to implement them, the changes required of providers, whether the option makes clinical sense, and the incentives to furnish

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inappropriate care. Better data on the use of NTA services during the SNF stay, patient diagnoses, nursing costs, and patient assessment information at admission and discharge would facilitate redesign efforts.

The second section considers why some hospitals continue to operate SNFs, despite their apparent poor financial performance, while other hospitals have closed their units. Many hospitals opened hospital-based SNFs during the 1990s to take advantage of the cost-based payments but began closing them after the PPS was implemented in 1998. We examine the considerable differences between hospital-based and freestanding facilities in their facility and patient characteristics, patterns of care, daily costs, and financial performance. In site visits and interviews, hospital administrators told us their reasons, including nonfinancial factors, for keeping their SNFs open or for closing them. The administrators indicated that they consider how the SNF contributed to the combined financial performance of both the hospital and the SNF. Our analyses found that hospital and SNF revenues together covered the combined direct costs of these patients. In addition, we learned about three distinct models of hospital-based SNFs, with various patient and facility characteristics and financial performances. These models reflect the different roles SNFs play in the overall provision of inpatient and post-acute care.

Refinements to the inpatient hospital PPS and the SNF PPS may help to narrow the differences in financial performance between hospital-based and freestanding SNFs. Adjusting the inpatient PPS for the patient's severity of illness will improve the accuracy of payments for the inpatient portion of the stay. Reforming the SNF PPS to better capture differences in use of NTA services and adopting an outlier policy would also improve the financial situation for hospital-based SNFs.

In our March 2007 report, we noted that two measures of SNF quality—risk-adjusted rates of discharge to the community and avoidable hospital readmissions—indicated that quality had worsened between 2000 and 2004. After adjusting for case-mix differences, factors most strongly associated with the two quality measures included whether the facility was present only

in 2000 (indicating facilities that later closed), geographic region, staffing levels, ownership, and whether the facility was hospital based. Hospital-based facilities, which made up a larger share of facilities in 2000 than in 2004, had higher quality measures and higher staffing levels, while for-profit facilities had worse quality measures. There were also large regional differences, with facilities in the West having better quality measures than facilities in other parts of the country. However, we may not have controlled for all of the factors that contribute to differences in the quality measures among facilities.

SNFs that appeared to provide good quality of care using these two measures appeared to be poor-quality facilities using the publicly reported post-acute measures. This inverse relationship, combined with our previous concerns about the publicly reported measures, leads us to urge CMS to report community discharge rates and rehospitalization rates for Medicare patients and to reconsider our recommendation to change the timing of required assessments so that changes in health status are gathered for all patients. ■

Options for reforming the skilled nursing facility prospective payment system

In July 1998, CMS implemented a per day prospective payment system (PPS) for skilled nursing facilities (SNFs), as required by the Balanced Budget Act of 1997. Shortly thereafter, two concerns were raised about its design. First, the system does not properly distribute payments for nontherapy ancillary (NTA) services such as drugs, intravenous (IV) medications, and respiratory therapy. As a result, some beneficiaries who require those services have difficulty accessing SNF care. Second, the PPS encourages SNFs to furnish therapy services, even those of little or no value. As a result, beneficiaries may receive some therapy that provides no benefit, and the program is purchasing unnecessary care.

In 2000, the Congress directed the Secretary to study different systems for categorizing patients that account for variation in resource use across patients. Some of this research was already under way. Beginning in 1998 and spanning five years, CMS contracted first with Abt Associates and, more recently, with a team of researchers directed by the Urban Institute to evaluate alternative designs. This team included researchers from the University of Colorado at Denver and Health Sciences Center, the University of Michigan, and Harvard University. In the rest of this chapter, we refer to the work this team conducted as “CMS’s research.” Although CMS refined the SNF PPS in fiscal year 2006, the Commission believes the changes do not correct key problems in the payment system.

This section outlines CMS’s research that could form the basis of further SNF reforms, organized by issue: the inaccurate payments for NTA services, the incentive to furnish therapy services, and the lack of an outlier policy to defray the costs of exceptionally high-cost stays. Some options build on the current system’s design; others explore alternative patient classification systems to explain cost differences across patients. We summarize the research findings and evaluate the options in terms of their incentives, the ease of implementation for CMS, and the amount of change required of providers. Several options are better able to predict cost differences across patients than the current PPS design but would require additional resources to implement. This tension between improved accuracy and ease of implementation makes it difficult to choose among the options. In addition, some options may create new provider incentives. The reforms should minimize undesirable behavioral responses.

How Medicare pays for SNF care

Medicare covers up to 100 days of SNF care when a beneficiary requires skilled nursing and therapy after a hospitalization of at least 3 days in the preceding month. In 2003, Medicare paid \$14.3 billion to SNFs. The average SNF stay is 25 days; stays in hospital-based facilities are typically shorter than those in freestanding facilities (Liu and Black 2003).

SNFs receive a daily rate to cover nursing, ancillary, and capital costs. A base payment rate is adjusted for case mix with the resource utilization group (RUG) classification system.¹ Patients are classified into a RUG based on the number and type of minutes of therapy they use or are expected to use, the need for certain services (e.g., respiratory therapy and specialized feeding), the presence of certain clinical conditions (e.g., pneumonia and dehydration), the ability to perform activities of daily living (e.g., eating and toileting), and, in some cases, the presence of signs of depression. The original PPS had 44 RUGs; currently, the system has 53 groups.

Information used to classify patients is gathered from patient assessments conducted on a set schedule throughout the patient’s stay (the first one is conducted on day 5 of the stay). The assessments must be conducted with the Minimum Data Set (MDS). MedPAC previously raised concerns about the timing of the MDS assessments (MedPAC 2006b, 2005b). Many patients are not assessed shortly after admission (only 4 percent of patients are assessed within three days of being admitted to the SNF) and assessments are not conducted at discharge, making it impossible to gauge changes in patient function (MedPAC 2006b). In addition, some of the assessment questions ask about care furnished before the SNF stay.

Each payment has three components: a nursing component to reflect the intensity of nursing care and NTA services that patients are expected to require, a therapy component to reflect the physical and occupational therapy and speech–language pathology services provided or expected to be provided, and an “other” component to cover room and board and other capital-related costs. The nursing and therapy components are case-mix adjusted to reflect the patient’s relative resource requirements; the other component is a fixed amount for all patient groups. In 2007, the daily nursing base rate for urban SNFs is \$142.04, the therapy base rate is \$106.99, and the other component is \$72.49. For each day’s payment, the three components are summed.

Problems with the SNF PPS

CMS, researchers, and the SNF industry have identified and discussed two key problems with the SNF PPS: (1) patients who need expensive NTA services may have difficulty accessing care, and (2) providers are encouraged to furnish therapy even when the services are of little or no value (MedPAC 2005a).

First, the RUG classification system does not adequately address the variation in providers' costs for NTA services. NTA services make up a sizable share (16 percent on average) of total costs but payments are not higher for patients who use these services (White et al. 2002, GAO 1999). Instead, NTA costs are included in the nursing component and payments are adjusted according to differences in nursing time. Thus, for example, payments are the same for patients with and without respiratory therapy (which includes tracheotomy and ventilator care), as long as nursing costs are the same.

Research indicates that NTA costs are highly variable across stays (White et al. 2002). In addition, CMS found that they vary considerably more than nursing costs—18-fold compared with 2-fold (CMS 2006). CMS has acknowledged that nursing costs are only a modest predictor of the variation in NTA use, explaining less than 10 percent of the variation (CMS 2006). As a result, payments are too low for beneficiaries who need above-average amounts of these services, and patients can experience access problems. The Office of Inspector General (OIG) found that, while access was good (and had improved since 2001) for most beneficiaries, especially those requiring rehabilitation therapies, hospital discharge planners had problems placing patients who needed IV antibiotics, expensive drugs, ventilator care, or dialysis (OIG 2006). These placement problems were consistent with previous findings of OIG studies (OIG 2001, 2000, 1999). Last year during our site visits, hospital and SNF administrators echoed these concerns (MedPAC 2007).

The second key problem with the SNF PPS is that it encourages SNFs to furnish therapy, even when it is of little or no benefit. This is because payment is based on the amount of therapy services a patient receives or is expected to receive, rather than on patient characteristics and care needs. As a result, over time the number of beneficiaries receiving therapy has increased, as has the amount of therapy each beneficiary has received (MedPAC 2007). Evaluating the benefit of this additional therapy is difficult because patients are not routinely assessed at

discharge. Further, patients often receive the minimum number of minutes to qualify them for a payment group or do not receive even the minimum, because to qualify for some groups the number of minutes can be estimated (GAO 2002b). These patterns raise questions about the medical appropriateness of some of the therapy furnished. For example, some patients may have received medically unnecessary services that qualified them for a higher payment group, while other patients could have benefited from services they were assessed as needing but did not receive. Although fewer patients receive the minimum qualifying number of minutes now than when the PPS was first implemented, the pattern persists (CMS 2006).

Recent SNF PPS refinements

CMS implemented refinements to the SNF PPS in fiscal year 2006, adding nine groups at the top of the classification hierarchy for patients who qualify for both rehabilitation and extensive services.² Early work had found that Medicare beneficiaries who qualified for high therapy and extensive services categories had higher NTA costs (Abt 2000). With the additional groups, the classification better explained NTA cost variations without requiring additional data from the SNF or the prior hospitalization. CMS noted that the refinement represented an incremental improvement and did not add undue complexity (CMS 2005b).

CMS also added an across-the-board increase to the nursing component for all RUGs. CMS stated that the large variability in NTA costs across stays made the adjustments for all RUGs appropriate (CMS 2005a). The Commission disagreed with this conclusion. In a comment letter to CMS when the refinements were proposed, the Commission noted that both changes were inadequate (MedPAC 2005b). Although RUGs were added for patients who typically have above-average NTA costs, NTA payments continue to be tied to a component that is poorly related to the variation in NTA costs. As a result, the expanded set of RUGs only marginally improves the accuracy of payments for patients with high use of NTA services. We also stated that the across-the-board increase was not a good proxy for better targeted payments for NTA costs.

CMS did not adopt any refinements that would dampen the incentives to furnish therapy services of little or no value. In its comment letter to CMS, the Commission stated that the proposed refinements did not correct the incentives of the PPS to provide therapy to maximize

payments (MedPAC 2005b). CMS continues to base a substantial portion of the SNF per diem on the amount of therapy provided rather than on patient characteristics or care needs.

Further SNF reforms

CMS stated that the RUG refinements it adopted represented the “first of an ongoing series of analyses” and that the agency would continue to investigate an outlier program and alternatives to the RUG system (CMS 2005b). The Commission agrees that additional changes are needed. In 2006, MedPAC repeated its recommendation to modify the PPS, noting that CMS’s refinements did not address the Commission’s longstanding concerns about the payment system (MedPAC 2006b).

In this section, we consider the research CMS conducted that could form the basis of further reforms, taking the current design (the RUG–53) as the starting point. The reform options address:

- the poor targeting of payments for NTA services,
- the incentive to furnish therapy services of little or no benefit, and
- the lack of an outlier policy for exceptionally costly stays.

Several criteria can be used to evaluate each option, including: the ability to explain cost differences across patients, the incentives to furnish inappropriate care, whether the option makes clinical sense, the burden placed on the industry, and the ease of implementation. The redistributive impacts of each option have not been reported and therefore are not included.

CMS’s research was generally promising. It found options that could better target payments for NTA services than the current PPS design. Options to predict therapy costs by using patient characteristics had more mixed success, most likely because the current incentives have distorted the use of physical therapy and occupational therapy. While decoupling therapy payments from service provision is attractive, policymakers would need to be careful not to encourage providers to stint on services. Therefore, CMS would have to monitor outcomes for all patients or require that the therapy furnished be within a specified range of the predicted amount. Research also found that an outlier policy is likely to benefit hospital-based SNFs more than

freestanding facilities. Each option varies in the changes it would impose on CMS and providers, the ability to predict costs, and the time frames needed to implement them.

Reforms to accurately pay for NTA services

In this set of reforms, CMS would remove the costs of NTA services from the nursing component and use a new component to calculate a separate NTA payment, in addition to the payments established by the other three components (nursing, therapy, and other). CMS’s researchers found that two predictive models considerably increased the ability to explain differences in NTA costs across patients: the RUG–58 + service index model (SIM) and the new profiles (NP)–NTA model.³ Although the researchers considered using hospital diagnosis related groups (DRGs) for explaining differences in NTA costs, preliminary work did not show promise and the idea was set aside. They also explored an outlier policy that would make additional payments for stays with unusually high NTA costs (see outlier discussion on p. 200).

The RUG–58 + Service Index Model

The RUG–58 + SIM starts with the current RUG classification system and improves its explanatory power by adding MDS variables associated with NTA costs. These variables include patient age, use of IV medication or respiratory therapy, the presence of respiratory disease, and absence of infection during the SNF stay. The model also checks to see if IV medications and respiratory therapy were used during the patient’s SNF stay, as opposed to during the preceding hospitalization.⁴ This check is necessary because the MDS questions about NTA services refer to services patients received in the past 14 days. Depending on when the assessment is conducted, this “look-back period” could include services provided at the hospital (see NTA data discussion on p. 201).

Results: CMS reports that the combined RUG–58 + SIM more accurately predicts NTA costs than the RUG–58 without the SIM (Table 8-1, p. 194). A collapsed version of the RUGs, called the grouped RUG–58 + SIM (in which just the eight broad categories such as rehabilitation, rehabilitation plus extensive services, and special care were used), did almost as well as the RUG–58 + SIM using all the individual RUGs.⁵

CMS’s researchers also examined how well the alternatives correctly predicted high-cost cases (those in the top 10 percent of NTA costs). The grouped RUG–58 + SIM

**TABLE
8-1**

**RUG + SIMs are better
predictors of 2001 NTA costs
than RUG-only models**

Model	Percent of NTA cost variation explained	Percent of high-cost cases accurately predicted
RUG-44	6.4%	31%
RUG-58	9.5	38
RUG-58 + SIM	21.9	46
Grouped RUG-58 + SIM	21.2	45

Note: RUG (resource utilization group), SIM (service index model), NTA (nontherapy ancillary [service]). RUG-58 includes some groups that CMS later collapsed into 53 groups because there were few or no patients in them. The grouped RUG-58 + SIM categorizes patients into the eight broad groups used in the RUG system: rehabilitation plus extensive services, rehabilitation, extensive services, special care, clinically complex, impaired cognition, behavior only, and reduced physical function. Percent of high-cost cases accurately predicted is the share of cases in the top 10 percent of NTA costs accurately predicted to be high cost.

Source: Urban Institute 2006a.

outperformed the RUG-only model in accurately predicting cases with high NTA costs (RUG-58 + SIM correctly identified 46 percent, compared with 38 percent for RUG-only).

MedPAC contracted with the Urban Institute to run these models on more recent data. The models had similar results with 2003 data (Urban Institute 2006b). The RUG-58 model did a modestly better job than the RUG-44 model in predicting NTA costs but was no better at accurately predicting high-cost cases. The RUG + SIM had more than double the explanatory power of the RUG-58 without SIM model and was considerably better at accurately predicting high-cost cases.

Evaluation: Although the SIM models add complexity to the RUG model, they double the variation in NTA costs explained. The SIM does not require CMS to collect any new data but it does require CMS to make systems changes to add the NTA component to the payment calculations and the billing and cost reporting systems. CMS would also need to make systems changes to check that use of NTA services occurred during the SNF stay and not during the preceding hospitalization. CMS could modify the MDS to inquire about IV medication and respiratory therapy services furnished during the SNF stay. If the SIM were adopted, CMS would need resources to

educate providers about the NTA component and changes to the MDS (if implemented).

Providers would need to learn about the new NTA component and, if the MDS was changed, would need to train assessors about the modifications to the questions. We do not know how long it would take assessors to incorporate the new definitions into practice.

With regard to the service incentives, clinicians might disagree about whether the model creates incentives for providers to furnish IV medications and respiratory therapy (the high-cost NTA services) because service use would raise payments. The model may need to specify which IV medication use and respiratory therapies are considered to ensure that clinically unnecessary services are not furnished to increase payments. For example, paying only for oxygen use related to specific medical conditions could discourage indiscriminate provision of respiratory therapy services.

NP-NTA model

CMS also reported on the ability of an alternative classification system, the NP groupings, to explain differences in NTA costs. This classification system groups patients into clinically meaningful categories—rehabilitation, acute, and chronic—using patient clinical and functional characteristics and hospitalization history from available administrative data (see text box). The NP-NTA model starts with the NP classification system and adds variables that help explain differences in NTA resource use across patients. These factors include:

- demographic information (e.g., age and gender) from the MDS,
- clinical diagnoses gathered from the SNF and qualifying hospital stay,
- service indicators from the SNF (e.g., indications of use of NTA services from MDS and SNF claims) and the qualifying hospital stay (e.g., radiology and drug charges),
- functional status (calculated from the MDS), and
- facility characteristics (e.g., whether the SNF was hospital based).

CMS's researchers explored models to predict drug, respiratory therapy, and other NTA costs—as well as a combined model.

New profiles classification system

Using administrative data, researchers at the University of Colorado at Denver and Health Sciences Center developed the “new profiles” (NP) classification system, which groups skilled nursing facility (SNF) patients into three categories—rehabilitation, acute, and chronic:

- **Rehabilitation patients** are admitted primarily for rehabilitation services, such as physical therapy and occupational therapy, and are defined according to their functional status on day 5 of their stay in a SNF (calculated from the Minimum Data Set using the Barthel index).⁶ The provision of therapy services is not used to group patients.
- **Acute patients** are admitted for skilled nursing care (e.g., wound care or intravenous medications) after an acute medical or surgical event. Diagnosis

information from the hospital stay identifies these patients.

- **Chronic patients** are admitted for skilled nursing after a hospitalization for a chronic condition or an acute flare-up of an underlying or a chronic disease, such as chronic obstructive pulmonary disease. To distinguish between acute patients and patients with an acute manifestation of a chronic condition, claims data are used to examine the medical history of the patients. Patients with a hospital or SNF stay within the past six months are categorized as chronic.

Starting with this basic classification scheme, CMS’s researchers developed separate models to explain variations in nontherapy ancillary and therapy resource use. ■

Results: Researchers found that use of NTA services varied considerably across the three patient groups. Some factors had a large effect on ancillary use for one or two patient groups but not for all three. For example, patients in the acute group who had undergone a solid organ transplant had costs that were \$70 a day higher than those for patients without a transplant (Urban Institute 2006a). Other factors were associated with higher NTA costs for all three patient groups but by very different amounts. For example, the use of IV medications increased daily costs by \$68 for acute cases but only by \$39 for patients in the chronic group (CMS 2006). Tracheotomy care increased daily costs by \$36 for chronic patients but only by \$15 for rehabilitation patients (Urban Institute 2006a). Given this variation, the researchers developed separate models for each patient group.

The NP–NTA classifications were better at explaining the variation in NTA costs than the RUG–58 groupings. The individual NP–NTA models were best able to explain the variation in the NTA costs of acute patients and least able to explain the variation in NTA costs of chronic patients (Table 8-2, p. 196). A combined model predicting all NTA costs for all patient groups explained 25 percent of the NTA cost variation and accurately predicted 46 percent of the high-cost cases (Urban Institute 2006a). Researchers

recommended using these analyses to develop an NTA payment component.

Evaluation: The NP–NTA model starts with a clinically meaningful classification system that considers in broad terms the reason for the SNF stay. It does a better job than the current system of explaining the variation in NTA costs but implementing it would require additional resources. CMS would need to make several changes such as adding the NTA component to the payment calculations, billing, and cost-reporting systems. It would also need to install the NP classification system, calculate Barthel functional status measures for each patient from the five-day MDS assessment, and, like the RUG–58 + SIM, confirm that the use of NTA services occurred during the SNF stay (or modify the MDS to ask about use of NTA services during the SNF stay).

Information about a patient’s preceding hospitalization would need to be transferred to the SNF before a provider could know the payment group to which a patient would be assigned. While this information is currently communicated between many hospitals and SNFs as a way to facilitate care coordination, such communication does not always occur. One benefit of this alternative is that all SNFs would receive this information about every

**TABLE
8-2**

**Ability of the NP-NTA model to accurately predict
2001 NTA costs varies by patient group and type of NTA**

Percent of NTA cost variation explained, by patient type

Type of NTA	Acute	Chronic	Rehabilitation	All
Drugs	17%	10%	13%	12%
Respiratory therapy	47	48	45	48
Other NTA	31	15	26	25
All NTAs	25	23	24	25

Note: NP (new profiles), NTA (nontherapy ancillary [service]). Other NTA includes lab tests, basic radiology procedures, and parenteral feeding.

Source: Urban Institute 2006a.

patient, thus facilitating their care planning. CMS could explore the possibility of modifying the common working file (CWF)—a database CMS contractors maintain that includes merged information about beneficiary entitlement, utilization, and payment history—to make hospital utilization information available to SNFs through their fiscal intermediaries. Although the development of a common assessment tool and an electronic health record would facilitate the flow of information between the hospital and the SNF, neither is near implementation.

As with the RUG-58 + SIM, the NP-NTA model could create incentives for providers to furnish IV medications and respiratory therapy because using these services would raise payments. Refinements to the service use categories could reduce these incentives.

Comparing the NTA alternatives

The RUG-58 + SIM and the NP-NTA alternatives are better predictors of NTA costs than the current PPS design. The NP-NTA is the best predictor but more resources would be required to implement it than a RUG-58 + SIM because it uses a different classification system and requires data about the prior hospitalization (Table 8-3). The RUG + SIM option would be easier to implement than the NP-NTA option but its explanatory power is somewhat more limited.

Removing incentives to furnish therapy of little or no value

CMS's researchers explored models to accurately predict therapy costs without including incentives to furnish

services. They examined two classification systems to group patients with similar therapy needs—NPs and DRGs—and compared them with the RUG-44 system previously used in the SNF PPS. The alternative classification systems predict therapy care needs using patient characteristics likely to be associated with needing more or less therapy, rather than therapy minutes. CMS could base the therapy portion of the payment on either classification system, replacing the current therapy component. However, because either model would base payments on predicted need, providers would have an incentive to furnish fewer services yet receive the same payment. The potential for underprovision is a particular concern because we do not have good information about how much therapy patients can benefit from or what outcomes they achieve from the therapy they receive. The incentive to stint could be dampened if CMS gathered patient assessment information at discharge and used it to monitor the amount of therapy furnished, compared outcome measures, and implemented pay for performance. Alternatively, CMS could require providers to furnish therapy services within a specified range of the amount predicted.

NP therapy model

The NP therapy model starts with the NP classification system and adds variables that help explain differences in therapy costs across patients. Factors include the functional and cognitive status of the patient gathered from the MDS and information from the prior hospitalization indicating a patient's probable need for therapy services (e.g., diagnosis and previous therapy use). Because the patterns of use for physical therapy (PT) and occupational therapy (OT) are

**TABLE
8-3**

Comparison of classification systems to predict NTA costs

Characteristic	RUG-58 + SIM	NP-NTA
Basic design	<ul style="list-style-type: none"> • RUGs • SNF service use variables 	<ul style="list-style-type: none"> • New classification system • Patient and service use variables from prior hospital stay and SNF stay
Amount of variation in NTA costs explained	22%	25%
Clinical meaning of the classification system	Slightly more clinically meaningful than RUG-only system because SIM variables point to clinical conditions that lead to higher NTA costs.	Moderate. Three broad groups make clinical sense.
CMS burden	<ul style="list-style-type: none"> • Requires no new data. • Systems changes to add new component, revise the billing and cost reporting, and verify NTA use during SNF stay (or modify MDS questions). • Educate providers about new NTA component and MDS changes (if made). 	<ul style="list-style-type: none"> • Requires no new data. • Systems changes to add new component, revise the billing and cost reporting, verify NTA use during SNF stay (or modify MDS questions), add new classification system, calculate new functional status scores from MDS data, and merge hospital and SNF stay information. • Educate providers about new NTA component, new classification system, MDS changes (if made), and method of transferring information from hospital.
Provider burden	Educate staff about new NTA component. If MDS is revised, train assessors on revisions.	Educate staff about new NTA component, method of getting information from hospital, and classification system. If MDS is revised, train assessors on revisions.
Incentive to furnish inappropriate NTAs	Possible. Same incentive as NP-NTA.	Possible. Same incentive as RUG-58 + SIM.

Note: NTA (nontherapy ancillary [service]), RUG (resource utilization group), SIM (service index model), NP (new profiles), SNF (skilled nursing facility), MDS (Minimum Data Set).

Source: MedPAC analysis of options outlined in CMS 2006 report to the Congress.

so different from those for speech-language pathology (SLP) services, CMS's researchers examined them separately.

Results: CMS reported mixed success of the NP models in predicting therapy costs compared with the RUG system (Table 8-4, p. 198). Researchers found that the NP model for PT and OT did not predict these therapy costs as well as the RUG-44 model did. This result is not surprising given that the RUG design encourages providing therapy that may be unrelated to the patient's characteristics and care needs. Given the distortions in the amount of therapy currently furnished, it may be difficult to accurately

estimate the costs of needed care. The NP model performed better than the RUG-44 model in predicting SLP costs and the NP model was equally proficient at predicting PT and OT costs and SLP costs. In comparison, the RUG-44 model is considerably better at predicting PT and OT costs than at predicting SLP service costs.

Evaluation: The NP therapy models have one clear advantage over the current RUG system. They establish payments on the basis of patient characteristics, not service use. Like the NP-NTA model, the NP therapy model would require CMS to make several systems changes

**TABLE
8-4**

Ability of NP therapy to accurately predict 2001 therapy costs is mixed

Type of therapy	Percent of therapy cost variation explained		Percent of high-cost cases accurately predicted
	RUG-44	NP therapy model	
Physical and occupational therapy	39%	19%	28%
Speech-language pathology services	11	19	42

Note: NP (new profiles), RUG (resource utilization group). Percent of high-cost cases accurately predicted is the share of cases in the top 10 percent of nontherapy ancillary costs accurately predicted to be high cost.

Source: Urban Institute 2006a.

such as adding a new classification system, replacing the current therapy component, calculating functional status measures from the five-day MDS assessment to classify each patient into an NP patient group, and revising the cost reports and billing. CMS would also need to use information from the prior hospitalization (for which the CWF may be useful) and verify use of NTA services during the SNF stay.

The NP therapy models would also impose changes on providers. Providers would need to learn about the NP classification system and they may be confused by having different classification systems for the therapy and nursing components. Information about a patient's preceding hospitalization would need to be transferred to the SNF before a provider could know the payment group to which a day would be assigned. The CWF and inquiries to the fiscal intermediaries might be a feasible approach for providers to gather this information.

Because payments would be based on predicted need for therapy, providers may underfurnish services. CMS would need to monitor patients' outcomes to ensure that beneficiaries continue to receive the therapy they need. Monitoring service use underscores the need for CMS to require patient assessments at discharge (see discussion on p. 202).

DRG + functional status model

An alternative therapy model starts with the DRG to which the patient was assigned during the prior hospitalization. Because DRGs do not distinguish among patients with different functional dependencies, the researchers also added MDS-based measures of functional and cognitive status to the model.

Results: The DRG + functional status model explained 12.5 percent of the variation in per day therapy costs, suggesting that the model is worse than the current RUG system at predicting PT and OT service costs but slightly better at predicting SLP service costs. The DRG model accurately predicted 24 percent of the high-cost cases (Urban Institute 2006a). It is possible that expanding the factors included in the model, such as specific indicators for clinically complex patients, would increase its explanatory power.

Evaluation: Although this model does not consistently improve on the RUG classification system, it does have two advantages over the RUG system: It does not include incentives to furnish therapy services and, because DRGs have a clinical logic to them, it has considerable clinical appeal. By using hospital diagnoses and functional status measures during the SNF stay, the model uses a fair amount of available clinical information.

This option does not require any new information beyond what SNFs and hospitals currently gather. It does require systems changes to replace the therapy component and revise the billing and cost reporting. It would also need to add a new classification system and merge hospital and SNF stay information. SNF providers, particularly freestanding facilities, are unlikely to have detailed knowledge of the DRG system, so CMS would need to train them. SNFs will also need a way to obtain information about the preceding hospitalization.

Some interest in a DRG-based classification system stems from the lack of reliable diagnosis information for SNF stays. While using hospital diagnosis information is a reasonable way to obtain such information, a better long-term strategy would be to require International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes on SNF claims (see SNF diagnoses data discussion on p. 201). The claims currently have space for these codes but facilities, particularly freestanding facilities, often do not use them. More accurate SNF coding is likely to increase the explanatory power of any model and would greatly improve our ability to compare the costs, resource use, and outcomes of patients.

**TABLE
8-5****Comparison of classification systems to predict therapy costs**

Characteristic	NP therapy	DRG + functional status
Basic design	<ul style="list-style-type: none">• New classification system• Patient and service use variables from prior hospital stay and SNF	<ul style="list-style-type: none">• DRG• Functional status measures from SNF
Amount of variation in NTA costs explained	<ul style="list-style-type: none">• PT and OT: 19%• SLP: 19%	12.5% for all therapies
Clinical meaning of the classification system	Moderate. Three broad groups make clinical sense.	Considerable.
CMS burden	<ul style="list-style-type: none">• Requires no new data.• Systems changes to replace therapy component, add new classification system, calculate new functional status scores from MDS data, merge hospital and SNF stay information, and revise billing and cost reporting.• Educate providers about new component, classification system, and mechanism to get information from hospital.	<ul style="list-style-type: none">• Requires no new data.• Systems changes to replace therapy component, add new classification system, merge hospital and SNF stay information, and revise billing and cost reporting.• Educate providers about new component, classification system, and mechanism to get information from hospital.
Provider burden	Training on a new classification system and mechanism for getting information from hospital.	Training on a new classification system and mechanism for getting information from hospital.
Incentive to furnish inappropriate NTAs	None	None

Note: NP (new profiles), DRG (diagnosis related group), NTA (nontherapy ancillary), PT (physical therapy), OT (occupational therapy), SLP (speech-language pathology services), MDS (Minimum Data Set), SNF (skilled nursing facility).

Source: MedPAC analysis of options outlined in CMS 2006 report to the Congress.

Comparing the therapy alternatives

Moving away from basing payments on providing therapy is likely to involve sacrificing explanatory power (for PT and OT services) and will require CMS resources to implement a different therapy component design (Table 8-5). Indeed, it is difficult to predict current therapy costs given the distortions in the payment system. Both alternatives (NP therapy and DRG + functional status) were better than the RUG-44 model at predicting SLP costs. NP therapy models did a better job of predicting the costs of PT and OT combined and SLP services than the DRG + functional status alternative.

Because both models use patient characteristics to predict resource use, they do not include incentives to furnish unneeded therapy services. The DRG + functional status model may have more clinical meaning than the NP therapy model because it uses more information from the preceding hospital stay, but both models have more clinical meaning than the current RUG-based component. A predictive model may encourage facilities to stint on services; therefore, CMS would need ways to ensure that beneficiaries receive the services they need, such as evaluating patient outcomes or requiring that the amount of therapy provided is within a specified range of the predicted amount. Gathering patient assessment

information at admission and discharge is essential to monitoring patient outcomes.

Paying for exceptionally costly care

CMS's researchers also considered outlier payment policies for stays with unusually high total costs or NTA costs. By defraying some of the costs of treating unusually expensive cases, outlier policies protect providers from extreme financial losses. Medicare has outlier policies for most of its PPSs except SNFs. Most other PPSs pay for services on a per stay or per episode basis. By comparison, Medicare pays SNFs on a per diem basis, so payments increase as a patient's stay increases. The SNF payment system thus provides some built-in protection against extreme financial losses for patients with long stays. In addition, the SNF PPS excludes the costs of several high-cost, infrequently provided services (e.g., ambulatory surgery performed in an operating room, chemotherapy agents, and customized prosthetic devices) and pays for them separately under Part B.⁷ This policy may help reduce the number of outlier cases that otherwise might occur if the costs of such services were included in the daily rate.

To retain incentives for providers to be efficient, Medicare's outlier payments to providers cover only a portion of costs above a fixed loss amount. Before outlier payments are made, providers incur the costs covered by the PPS payment and the fixed loss amount. Then, outlier payments compensate providers for a portion of the losses beyond the fixed loss. Outlier payments are typically financed by lowering the base rate for all cases. Base rates are reduced by 2 percent to 8 percent in the other PPSs with outlier payments.

Although the SNF PPS is a per diem payment system, outlier policies typically consider a patient's costs during the entire stay. Given the large differences in per day costs between freestanding and hospital-based providers (hospital-based providers have much higher daily costs but comparable per stay costs), an outlier policy that focuses on per stay costs would be more neutral toward facility type than a per day outlier policy. Outlier policies also generally consider the total costs of care and not specific categories of costs. But because NTA costs are a specific concern in the SNF PPS, CMS's researchers investigated separate outlier policies for stays with extremely high total costs as well as outlier policies for stays with extremely high NTA costs.

Results: CMS's researchers found that total and NTA cost outlier policies are likely to have different effects by facility type because the cost distributions differ by facility type. While the median total and NTA costs are relatively similar, the costs at the 99th percentile vary considerably (Table 8-6).

CMS's research found that total cost and NTA cost outlier policies would improve the financial condition for SNFs that are hospital based, government owned, or small facilities as well as those that have a large share of Medicare patients. The estimated impact on freestanding facilities was more variable. The aggregate financial condition of freestanding SNFs remained the same under an NTA cost outlier policy, but it declined under a total cost outlier policy. That is, under a total cost outlier policy, the freestanding facilities would pay more into the outlier pool (in the form of lower base payments) than they would receive in outlier payments (Urban Institute 2006a).

Evaluation: In separate work, the Government Accountability Office found that hospital-based facilities had higher routine costs than freestanding facilities because of differences in case-mix severity, cost inefficiencies, and cost accounting practices (GAO 2002a). Some of these reasons clearly do not warrant higher Medicare payments. However, an outlier policy is a promising avenue to explore as a way to cushion the financial impact of extremely costly care that is beyond the control of the provider. Outlier policies do not require additional data but they would require CMS to make systems changes to calculate payments. An outlier policy could target stays with unusually high total or NTA costs, although outlier policies typically are not used to correct known systematic problems with a classification system. The Commission has previously discussed outlier policies for SNFs and noted that changes to the classification system—rather than an outlier policy—may better address a consistent bias in the PPS, such as the poor targeting of payments for NTA services (MedPAC 2005a). However, an NTA outlier policy would be relatively easy to implement and could be an interim solution until more fundamental reforms are made to the classification system. Such reforms would not eliminate the rationale for an outlier policy—to compensate providers for some of the costs of exceptionally high-cost cases.

CMS plans to continue its investigation of an outlier policy. It will evaluate total cost and NTA cost outlier models in addition to the basic components of an outlier policy—the share of SNF payments set aside for outlier

payments, the fixed loss amount, and the portion of the costs the outlier payment will cover above the fixed loss (CMS 2006).

Better data are needed to develop reform options

The research efforts to develop alternatives to the current SNF PPS underscore several problems with the information collected about SNF patients. Better information—about use of NTA services in SNFs, SNF patients’ diagnoses, SNF nursing costs, and patients’ functional status at admission and discharge—would help explain differences in resource needs across patients and the relationship between costs and outcomes.

Accurate information about use of NTA services in SNFs

To accurately predict the costs of SNF care, the payment system should closely track the costs of the NTA services that SNF patients need. However, under current assessment requirements, it is difficult to know which NTA services the SNF furnished as opposed to those furnished during the preceding hospital stay. The MDS asks about NTA services received in the past 14 days. At the day 5 assessment, this “look-back period” covers days spent in the hospital; thus, the recorded use of NTA services will include services the hospital provided. CMS’s researchers found that the MDS alone is an unreliable indicator of use of NTA services in a SNF. In comparing information from the day 5 assessment and SNF claims, CMS’s researchers found that about half the stays indicated IV medication use in the MDS; yet, few had SNF charges for the NTA services. The researchers concluded that the NTA services were most likely furnished during the prior hospital stay.

To correctly identify NTA services furnished while the patient was in the SNF, CMS needs to revise the MDS to ask about services furnished only during the SNF stay. This revision could take the form of additional questions or changes to the definition used in the existing questions. Some providers prefer that questions be added to the MDS because they use the current information for care planning. CMS plans to evaluate potential modifications to the MDS so that only services furnished after admission to the SNF are reported (CMS 2006).

SNF diagnosis information

To correctly classify patients with similar resource needs, CMS needs accurate information about diagnoses and

**TABLE
8–6**

Hospital-based SNFs had higher costs per stay than freestanding SNFs

Type of per stay cost, by SNF type	Percentile		
	Median	95th	99th
Total			
Freestanding	\$5,609	\$20,913	\$29,567
Hospital based	6,272	20,977	36,800
NTA			
Freestanding	735	3,968	8,177
Hospital based	738	4,997	10,800

Note: SNF (skilled nursing facility), NTA (nontherapy ancillary). Costs are adjusted for geographic differences in labor costs.

Source: MedPAC analysis of 2003 SNF stay costs prepared by the Urban Institute.

comorbidities. CMS noted that its researchers found incomplete or missing diagnosis information on SNF claims. As proxies, the researchers used diagnoses from the prior hospital stay. Because the SNF stay is a continuation of the hospital stay, for many patients this information will accurately project the care needs during the SNF stay. However, information about some patients’ hospital stays (e.g., those whose conditions have changed or those with chronic conditions unrelated to the hospital stay) may not accurately represent their clinical condition in the SNF.

The Commission urges CMS to require that SNFs include accurate and complete diagnosis codes on their claims. Claims have fields for this information but the fields are not required for payment. Even when codes are recorded, it is common for SNFs to use generic codes that do not provide much information. SNFs should be required to use full five-digit ICD–9–CM codes to describe the principal diagnosis and comorbidities of each patient stay. If CMS instructed the fiscal intermediaries to reject claims without this information, providers would quickly supply it. For example, when CMS needed revenue codes from outpatient therapy providers to operationalize the therapy caps, its contractors rejected claims without the revenue codes. Within a year, the vast majority of claims included this information.

Alternatively, the MDS could gather improved diagnosis information. CMS indicated that it will consider including

variables that increase the accuracy of the diagnosis information in developing the next version of the MDS (CMS 2006).

SNF nursing costs

Accurate nursing cost information at the patient level is fundamental to measuring differences in care needs across patients, especially in SNFs where nursing care represents a large portion of total resource use. CMS uses staff time measurement (STM) studies to gather staff time data on individual patients. These STM studies are costly to administer and therefore are undertaken only periodically in a sample of facilities. In 2006, CMS undertook the first STM survey since the PPS was implemented in 1998. CMS will use results from this survey to update the relative weights of the nursing component.

CMS needs a timely and less expensive way to gather patient-level nursing cost data. In 2004, MedPAC recommended that the Secretary direct SNFs to report nursing costs separately from routine costs when completing the SNF Medicare cost reports (MedPAC 2004). It would be useful for these costs to be categorized by type of nurse (RN, licensed practical nurse (LPN), and nurse aide). While not a substitute for patient-level information, this facility-level information would allow us to examine the relationship between staffing, case mix, quality, and costs, especially for facilities that treat a large share of Medicare patients. In these facilities, the nursing costs are likely to be reasonably accurate for beneficiaries. However, for SNFs that treat few Medicare patients, facility-level cost information may not accurately reflect the costs of treating beneficiaries.

SNF patient assessment information at admission and discharge

The lack of information about patients' conditions at admission and discharge hinders CMS's ability to measure patient changes during the SNF stay and to compare patient outcomes across post-acute settings. While CMS requires SNFs to assess patients on day 5 of the SNF stay, there is variation in when these assessments are completed. Only a small share of patients (4 percent) are assessed within three days of being admitted (MedPAC 2006b). As a result, differences in patients' conditions can be the result of actual patient differences or of the timing of the assessment. In addition, CMS does not require SNFs to assess patients at discharge, so we cannot know how patients' conditions changed during their stays. Assessments are required on day 14, but many

beneficiaries (45 percent) do not stay that long. In 2005 and 2006, the Commission recommended that CMS collect information about activities of daily living at admission and discharge (MedPAC 2006b, 2005c). CMS is conducting a demonstration on a patient assessment instrument to be administered at hospital discharge and at discharge from post-acute care (PAC) settings, but the findings will not be available until 2011.

Next steps

The payment system requires reforms to accurately pay for SNF services without creating incentives to furnish unnecessary care. Building on CMS's research, options can better target payments for NTA and therapy services and for stays with unusually high costs. Many of the options will require trade-offs between their predictive abilities and the burdens they impose on CMS and providers. The options differ in the time frames needed for implementation. Some options, such as an outlier policy and the NTA option using RUG + SIM, could be implemented in a relatively short time. Other options would require additional resources and time because they would involve modifying the MDS and transferring data between the SNF and the hospital. In the long term, CMS may want to consider developing a payment for an entire PAC episode of care or bundling hospital and SNF payments.

The options also differ in whether they facilitate future comparisons of costs, payments, and outcomes across PAC settings. Some options have an advantage in requiring fewer changes but do not create a foundation for future refinements. For example, options for improving payments for NTA services that build on the RUG classification system will be limited in their ability to improve the accuracy of payments because NTA costs are not closely linked to these patient groups. As we learn how to more accurately predict SNF costs, we can consider how this information can be used in other PAC payment systems. The Commission and CMS have stated their interest in putting PAC on a common metric at some future time. While the development of a payment system to use across all PAC sites is a longer term goal, it is years from implementation. Meanwhile, SNF payments need to be more accurate than they are now, thus warranting interim reforms.

Over the next year, MedPAC plans to further explore alternative ways to reform the PPS. The Commission has contracted with the Urban Institute to improve the NTA and predictive therapy models it developed for CMS and

to consider new ones, such as models that explain per stay costs. A per stay unit of payment would create more incentives for providers to be efficient than a per day unit, but it could encourage providers to stint on services. Given the considerable variation in the SNF population, per day models may be able to explain more of the variation in costs across patients than per stay models. Researchers will refine previously developed per stay models that might represent viable alternatives to a per diem PPS.

In addition to evaluating individual alternatives, we will assess combinations of options. For example, a reform might replace the current therapy component with a predictive one, add a separate payment component for NTA services, and establish an outlier policy. Our intent is to contribute to the development of a PPS that accurately pays for SNF services, including NTA services, while discouraging providers from furnishing therapy services that may be of no value to beneficiaries. In this way, the program will be more likely to purchase services of value while helping to ensure access for all beneficiaries.

Hospital-based SNFs: Analysis from the hospital perspective

Hospital-based SNFs have had much poorer financial performance under Medicare than their freestanding counterparts; in 2005, Medicare margins for hospital-based SNFs were –85 percent compared with a 13 percent margin for freestanding SNFs. Since 1998, one-third of hospital-based SNFs have closed, many as a result of their poor financial condition. These closings raise questions about why some hospitals keep their SNFs open in the face of what appears to be their poor financial performance under Medicare and what factors other than financial performance might play a role in the decisions to retain or close them.

To better understand these issues, the Commission undertook qualitative and quantitative analyses of hospital-based SNFs. We interviewed hospitals that have or recently had hospital-based SNFs to gain insight about why the facilities remained opened or closed. We also conducted detailed analysis of the similarities and differences between hospital-based and freestanding SNFs, including their facility characteristics, the mix of patients they treat, and their patterns of care. In addition, we looked at the profitability of hospital-based SNFs setting aside overhead and capital costs for both the hospital and the SNF stay.

We identified three models of hospital-based SNFs that we further examined to help us understand the variation among them and the roles they play in their hospitals.

From the early 1990s to 1998, the number of hospital-based SNFs increased 62 percent (Figure 8-1, p. 204). After the SNF PPS was implemented in 1998, however, more than one-third of hospital-based SNFs closed. Currently, hospital-based SNFs account for about 8 percent of the facilities offering skilled nursing services and 16 percent of Medicare cases using SNF services after discharge from the hospital.

How do hospital-based and freestanding SNFs differ?

In this section, we look at how select facility and patient characteristics and patterns of care differ between hospital-based and freestanding SNFs. We also examine the large differences in financial performance between the two types of facilities. We find that hospital-based SNFs tend to be smaller and have a higher concentration of Medicare patients. The patients appear similar in many respects, but hospital-based SNFs see a higher proportion of patients with certain conditions, such as hip and knee replacements. We also see differences in patterns of care—the use of other PAC services and the SNF lengths of stay. Hospital-based SNF patients have shorter stays but they use another PAC service more frequently than patients discharged from freestanding facilities.

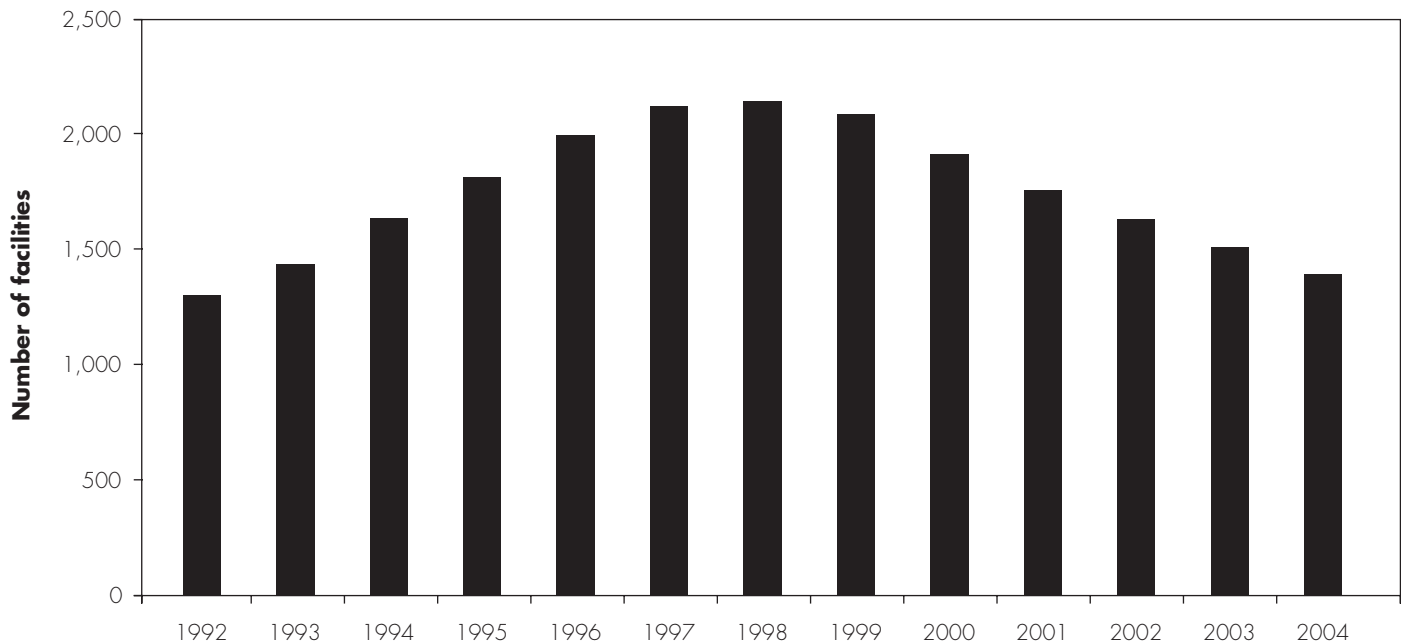
Differences in facility characteristics

Hospital-based and freestanding facilities differ in size and payer mix. Hospital-based SNFs are generally much smaller than their freestanding counterparts. The median hospital-based facility has 26 beds, whereas the median freestanding facility is almost four times as large with 98 beds (Table 8-7, p. 204). Medicare accounts for 73 percent of patients in hospital-based facilities, compared with 12 percent in freestanding facilities. In addition, the average stay in a hospital-based SNF is about half the length of stay in a freestanding SNF.

We also see differences in staffing between the two types of facilities. Hospital-based SNFs have more staff per bed and per patient day than freestanding SNFs. Hospital-based SNFs also have a more skilled staff, with more licensed nursing personnel (RNs and LPNs) per bed than freestanding facilities (Liu and Black 2003). This higher level of staffing contributes to much higher routine costs per day in hospital-based units (see cost discussion,

**FIGURE
8-1**

The supply of hospital-based skilled nursing facilities increased before and declined after the prospective payment system for skilled nursing facilities was implemented in 1998



Source: MedPAC analysis of CMS Online Survey, Certification, and Reporting system data.

p. 207). Even though we observe rather substantial differences in the characteristics of freestanding and hospital-based SNFs, some hospital-based facilities look much more like freestanding SNFs—with more beds, low Medicare shares, and longer SNF stays (see discussion on how hospital-based SNFs differ, p. 209).

**TABLE
8-7**

Differences between hospital-based and freestanding SNFs

SNF characteristic	Hospital based	Freestanding
Beds	26	98
Medicare patient share	73%	12%
Average length of stay (in days)	13	27
Staffing per bed (in FTEs)	1.00	0.82

Note: SNF (skilled nursing facility), FTE (full-time equivalent). Median values are shown.

Source: MedPAC analysis of 2004 hospital cost reports and claims files from CMS.

Characteristics of hospital inpatients bound for SNFs

Inpatients who go on to use hospital-based SNFs differ slightly from those who go on to use freestanding SNFs. The average beneficiaries using hospital-based SNFs tend to be slightly younger and have lower severity-of-illness (SOI) scores as measured by all patient refined DRGs for the inpatient care preceding their SNF stay (Table 8-8). Although relative SOI scores are lower, the share of inpatient hospital days spent in an intensive care unit before the SNF stay is higher for patients discharged to hospital-based SNFs.

Hospital-based SNFs also see a higher concentration of certain types of patients. For example, 27 percent of hospital-based SNF patients had been treated in the hospital for musculoskeletal conditions, such as hip and knee replacements, compared with 18 percent of patients in freestanding SNFs. A disproportionate share of inpatients also go to hospital-based SNFs after major

small and large bowel procedures and cellulitis, a serious bacterial infection of the skin.

Inpatients who come from a nursing home tend to be discharged from the hospital back to a freestanding SNF rather than to a hospital-based facility; 2.4 percent of hospital-based SNF patients were nursing home residents, compared with 5.2 percent of patients in freestanding SNFs.⁸

Patterns of care in hospitals with and without SNFs

Although hospitals with and without SNFs discharge patients with similar frequency to PAC, they use different PAC services. Hospitals with a SNF send their patients to SNF care more often than do hospitals without a SNF. In hospitals with SNF units, about 17 percent of patients are discharged to a SNF, compared with about 14 percent of patients in hospitals without a SNF (Table 8-9). However, hospitals with a SNF use their own SNF for only about a third of the patients utilizing SNF services, raising the question of how hospitals decide which patients will use their SNF or another SNF.

Patients in hospitals with SNF services are less likely to use other types of PAC services immediately after discharge than patients discharged from a hospital without a SNF. For example, 9.7 percent of them use home health care compared with 11.2 percent of patients discharged from hospitals without a SNF.

TABLE 8-8

Characteristics of hospital patients who go to SNFs

Patient characteristic	Hospital based	Freestanding
Average age	78.8	80.4
Percent SOI 3 or 4	42.1%	46.6%
Share of inpatient days in ICU	27.0	23.4
Percent in MDC8 (musculoskeletal)	27.0	18.3
Percent nursing home residents	2.4	5.2

Note: SNF (skilled nursing facility), SOI (severity of illness), ICU (intensive care unit), MDC (major diagnostic category). SOI is measured using all patient refined diagnosis related groups from 3M Health Information Systems. Values range from 1 to 4, with 4 being the most severely ill. Values shown are patient-level averages.

Source: MedPAC analysis of 2004 Medicare Provider Analysis and Review file from CMS.

TABLE 8-9

Hospitals with SNFs are more likely to send their patients to SNFs

Type of PAC setting	Percent of hospital discharges using PAC	
	Hospital with SNF	Hospital without SNF
Hospital's own SNF	5.5%	0.0%
Other SNF	11.4	13.9
Home health agency	9.7	11.2
Inpatient rehabilitation facility	3.2	4.0
Long-term care hospital	0.7	0.9
Total	30.6	30.0

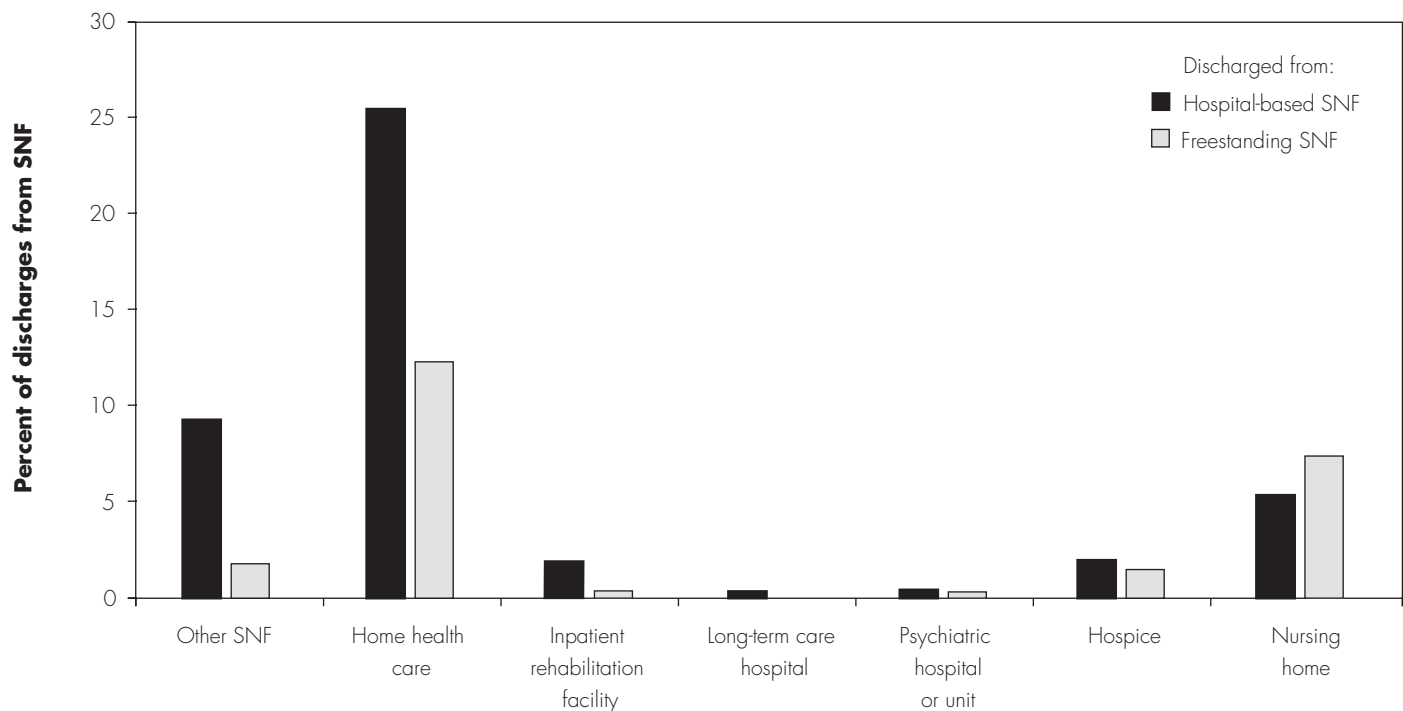
Note: SNF (skilled nursing facility), PAC (post-acute care). Values shown are aggregate averages.

Source: MedPAC analysis of 2004 claims files from CMS.

Patterns of care in hospital-based and freestanding SNFs

Among the patients using SNF care, those who use hospital-based SNFs had slightly shorter preceding hospital stays than patients discharged to freestanding SNFs. In some DRGs (major joint procedures, stroke, major small and large bowel procedures), the stays are shorter by a day or more. However, in a few DRGs (miscellaneous digestive disorders, gastrointestinal hemorrhage, and circulatory disorders with acute myocardial infarction and major complications), the average acute inpatient hospital stay is longer for patients discharged to hospital-based SNFs than to freestanding SNFs. For those DRGs, the average SOI score for the patient is also higher, indicating that hospital-based SNFs may be taking the more complicated patients with these conditions.⁹

The average stay in a hospital-based SNF is about half as long as in a freestanding SNF. This difference holds across all inpatient diagnoses with high use of SNFs. The shorter stays in hospital-based SNFs may be related to the types of patients treated but they also may be due to hospital-based SNFs' tendency to discharge patients to another PAC setting. Overall, 9 percent of patients discharged from a hospital-based SNF are discharged to another SNF, compared with fewer than 2 percent of patients using freestanding SNFs (Figure 8-2, p. 206). Hospital-based SNFs are also twice as likely to discharge patients to home

**FIGURE
8-2****Percent of SNF cases discharged to different PAC settings**

Note: SNF (skilled nursing facility), PAC (post-acute care). Subsequent use of a second PAC provider is determined using matched claims files for the different PAC services. Discharge to a nursing home is based on a different source. It is determined based on the discharge destination field on the claim and not on a matched claim. Total percent of cases discharged from hospital-based SNFs to other PAC settings was 43.8 percent; total percent of cases discharged from freestanding SNFs to other PAC settings was 23.1 percent. Patient-level averages are shown.

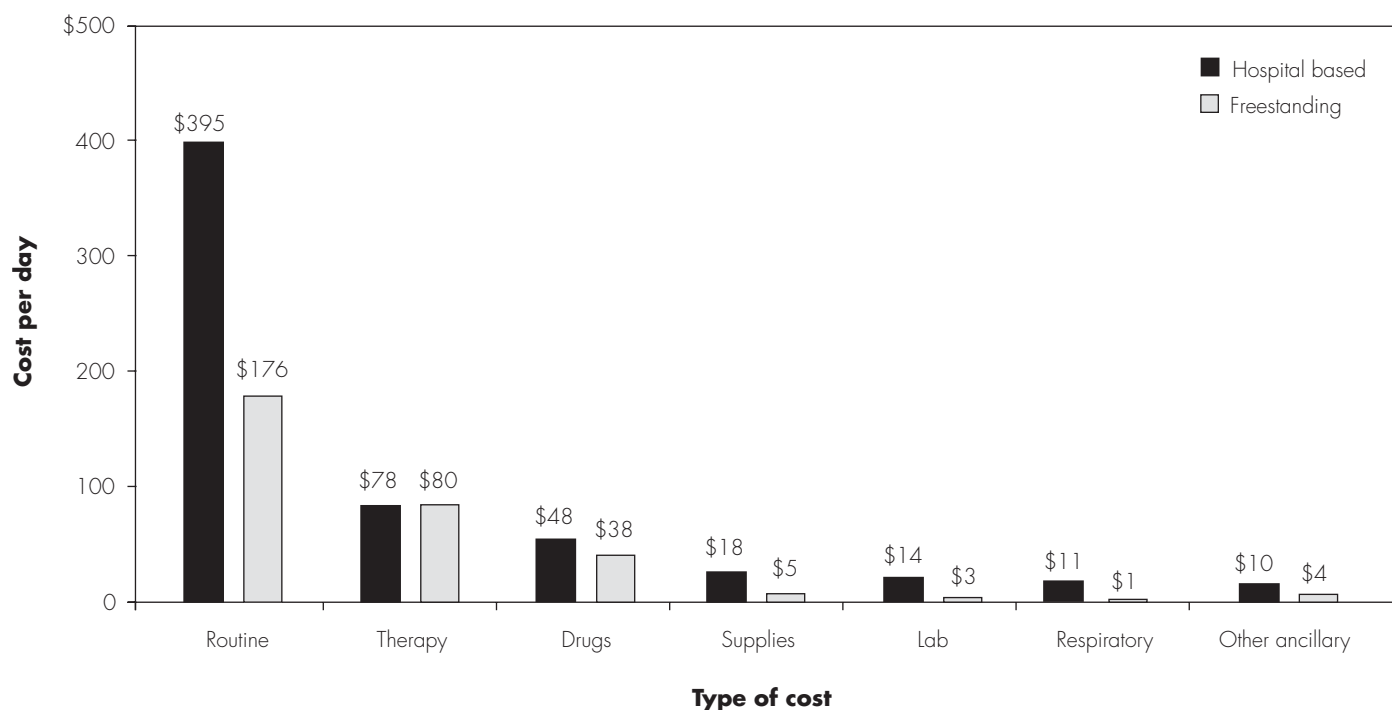
Source: MedPAC analysis of 2004 claims files from CMS.

health care, with 25 percent of patients discharged to home health care compared with 12 percent of freestanding discharges. (A large share of these patients (44 percent) use the hospitals' home health agency.) Use of inpatient rehabilitation hospitals and long-term care hospitals is also higher for patients discharged from hospital-based SNFs. Thus, some hospital-based SNFs may focus on providing care at the less intensive end of the hospital stay and the most intensive part of the SNF stay. This is consistent with a smaller proportion of hospital-based SNF patients (41 percent) being discharged directly home without any additional PAC services compared with freestanding SNF patients (48 percent).

A larger proportion of freestanding SNF patients are discharged to a nursing home after their SNF stay (7 percent) compared with 5 percent of hospital-based SNF patients. This could reflect differences in patient selection consistent with other research showing that hospitals tend

to not use their hospital-based SNF for patients who are unlikely to be discharged home (Stearns et al. 2006).

Hospital-based and freestanding SNFs also differ in their readmission rates to hospitals. Of the patients discharged to a freestanding SNF, 23 percent are readmitted to the hospital within 30 days of discharge from the hospital, compared with 19 percent of inpatients discharged to a hospital-based SNF.¹⁰ Differences in readmission rates could be due to differences in the complexity and mix of the patients. In addition, hospital-based SNFs have a larger proportion of patients recovering from hip and joint replacements, who have a much lower readmission rate than patients with other conditions frequently treated with SNF care, such as pneumonia and heart failure. Hospital-based SNFs may also have fewer readmissions because of their close proximity to the hospital (which makes physician visits more common) and their higher staffing and greater use of RNs. With its more immediately

**FIGURE
8-3****Costs per day are higher in hospital-based SNFs**

Note: SNF (skilled nursing facility). Costs include associated overhead and capital expenses. Costs were not standardized for wages or case-mix differences.

Source: Analysis of 2004 Medicare Provider Analysis and Review file and cost report data from CMS.

available resources, the hospital-based SNF may be able to handle more resource-intensive patients, who otherwise might need to be readmitted.

Differences in financial performance

The financial performance of hospital-based and freestanding SNFs measured using Medicare margins is very different. The aggregate Medicare margin for hospital-based facilities was -85 percent in 2005 compared with an aggregate of 13 percent for freestanding facilities. A large difference in margins has persisted since the SNF PPS began. This is somewhat expected because the Congress directed that the payment system not reflect all the higher costs of hospital-based facilities and provided no payment adjustments that would specifically pay hospital-based facilities more than freestanding facilities.¹¹

Differences in cost of the SNF day

The differences in margins for SNFs are largely due to differences in per diem costs which, on average, are

more than twice as high in hospital-based SNFs as in freestanding SNFs (Figure 8-3). Routine costs (including room and board and nursing costs) are also more than twice as high in hospital-based SNFs as in freestanding facilities.¹² The higher routine costs may be due in part to higher staffing levels and a higher mix of licensed professional nursing staff. Hospital-based SNFs also generally pay their staff the same as equivalent hospital employees. These rates tend to be higher than what freestanding facilities pay in the same market. Moreover, because hospital-based SNFs tend to be smaller, certain administrative costs are spread over fewer patients, which may also raise hospital-based units' costs relative to those of freestanding facilities.

Differences between hospital-based and freestanding SNFs in the cost of ancillaries vary by type of service. The costs of therapy services are similar but the costs for NTA services (drugs, supplies, lab, and respiratory therapy) are considerably higher in hospital-based SNFs than in freestanding facilities. For example, the average drug cost per day in hospital-based SNFs is \$48 compared with \$38

in freestanding facilities. According to our interviews, hospitals often had difficulty placing patients who required very expensive drugs in freestanding SNFs, especially if they required certain IV medications. This may explain the difference we observe in drug costs between the two types of facilities. We see even larger differences for other NTA services, averaging \$53 in hospital-based facilities compared with \$13 in freestanding facilities. The higher nontherapy costs may be due to differences in the complexity of some patients. In addition, our interviews with hospital-based SNFs indicated that some physicians tend to treat hospital-based SNF patients as if they are still hospital inpatients, ordering ancillary tests—which are more readily available in this setting.

Why did hospital-based SNFs close?

The high closure rate of hospital-based SNFs raises questions about the reasons for, and the consequences of, hospitals' decisions to close or keep open their SNF units. In 2006, we interviewed officials at 15 acute care hospitals that operated Medicare SNF units in 1998, some of which have since closed (Liu and Jones 2007). We selected a sample of hospitals in several urban and rural geographic areas for this qualitative study. We also interviewed administrators of three freestanding SNFs that are geographically near some of those hospitals.

Hospitals that kept SNF units open noted that the units fostered savings on the acute care side by providing an easily accessible source of PAC, which helped them shorten their inpatient stays and free up acute care beds for other patients. In some areas, hospitals continued to operate their units in part because few PAC alternatives were available locally, particularly for medically complex patients. Other hospitals reported that keeping the SNF open was important to maintain continuity of care or good relationships with physicians in the community or to provide resources for teaching health care professionals.

Hospitals that closed their SNF units mentioned various reasons. Financial losses associated with operating the SNF were cited as a major reason for closing the unit. The need for additional acute beds, or other more profitable uses for the space the SNF unit occupied, was cited frequently as another important reason. Hospitals noted other contributing factors that added to their operating costs, such as burdensome state SNF regulations, particularly the survey and certification process, and difficulties staffing the unit with RNs.

The consequences of SNF closures varied among the hospitals we interviewed. In some cases, especially for metropolitan hospitals, there were so many other local PAC options that closure of hospital-based SNF units did not affect the ability to place patients in PAC after discharge from hospitals. In other areas, however, discharge from hospitals was more problematic because of the limited capacity of alternative PAC providers or the ability or willingness of freestanding SNFs to take certain complex patients. In such situations, some patients had longer acute hospital lengths of stay after the hospital's SNF unit closed.

Regardless of the presence of other PAC options, hospitals told us that some categories of patients were hard to place. Medically complex patients, such as those requiring vacuum-assisted closure care of wounds, ventilator care, or intensive IV antibiotic care, can be hard to place because many freestanding SNFs are not staffed with the requisite RNs or respiratory specialists. Some hospitals reported that placement of such patients could be improved if the SNF PPS were refined to more accurately pay for the care these patients need. Long-term care hospitals accepted some of these difficult cases. Extended stays in acute care inpatient units were another option.

Consequences of SNF operations on hospitals' margins

A hospital's decision to retain or close a SNF was often multifaceted. The large negative SNF margin has to be considered along with the impact of the SNF on the Medicare inpatient margin, the inpatient length of stay, and the potential for freeing up inpatient capacity for additional acute care patients. Medicare inpatient margins were slightly higher in facilities with a hospital-based SNF, -0.4 percent compared with -1.1 percent for hospitals without a SNF in 2005. On average, hospital stays for patients discharged to a hospital-based SNF were a little shorter than for patients discharged to a freestanding facility. The slightly shorter inpatient hospital stays could contribute to the somewhat higher Medicare inpatient margin for hospitals that have SNF units.

The poor financial performance of hospital-based SNFs, however, affects the overall Medicare margin, which reflects the six largest services' lines of business provided to Medicare patients by hospitals plus graduate medical education. In 2005, overall Medicare margins were lower in hospitals with a SNF than in hospitals without one (-3.9 percent compared with -3.0 percent), an indication that the losses from SNF services were bringing down

the overall Medicare margin. However, the approximate 1 percentage point difference in overall margins in 2005 is the smallest difference that has been observed since the SNF PPS was implemented in fiscal year 1998. This may be an indication that hospital-based SNFs have closed in facilities where they had the greatest negative impact on overall Medicare margins.

Costs and profitability of inpatient stays discharged to SNFs

Inpatient hospital costs for beneficiaries who use SNFs are generally much higher than costs for beneficiaries with the same condition who are discharged home with no PAC provider use, reflecting differences in severity not captured under the current inpatient hospital payment system. In 2004, the average payment-to-cost ratio for patients who did not use PAC was 1.13 compared with payment-to-cost ratios less than 0.90 for patients discharged to a SNF. This relationship was fairly consistent across DRGs. Thus, on a fully allocated cost basis (including capital and overhead), the hospital portion of care for inpatients discharged to a SNF was unprofitable. However, on a direct cost basis, with overhead and capital costs removed, the cases were profitable for inpatient care, although the relative profitability varies by DRG. Refinement of the hospital inpatient PPS to more accurately capture differences in inpatient severity should help to narrow or eliminate this difference.

Direct costs and profitability of a hospital and SNF stay combined

Hospital administrators told us that they looked at the direct costs of the SNF unit operations when viewing a unit's profitability. Hospitals also considered the potential savings they achieved from reducing inpatient length of stay. Because hospitals with SNFs provide both the acute and post-acute care, costs and payments for both sets of services should be considered in evaluating the financial viability of the SNF operations. If Medicare payments cover the combined direct costs of inpatient and SNF care for a patient, then hospitals will have an incentive to provide care to such patients as hospitals are covering the individual expenses those patients incur. On a fully allocated cost basis, the combined Medicare payments for the hospital stay and the SNF stay in 2004 did not cover the cost of care if overhead and capital costs (the fixed costs) were included. However, if we look only at direct costs (excluding overhead and capital) for both the hospital and the SNF stays, we find that Medicare hospital

and SNF payments covered slightly more than the direct costs of care. The payment-to-direct-cost ratio for these cases was 1.05. At a minimum, the payment system needs to cover the direct costs of hospital and SNF services combined: The system did so in 2004.¹³

How do hospital-based SNFs differ?

Our interviews with hospital-based SNFs revealed three different models of hospital-based SNF operations:

- *The long-term care model* looks very much like freestanding SNFs: The facilities have a large number of beds and treat a predominantly long-stay nursing home population. These facilities are often located in a separate building from the acute care hospital.
- *The rehabilitation model* concentrates on patients, mostly Medicare beneficiaries, who require large amounts of therapy services, such as patients recovering from joint replacement.
- *The complex medical model* focuses on providing care to medically complex patients who might stay in the hospital a little longer if a SNF unit were not available. These units, sometimes referred to as transitional care units, often act as step-down units, providing just a slightly lower level of nursing intensity than general medical-surgical units in the hospital. In this model, hospitals attempt to shorten the inpatient stay, essentially substituting SNF days for inpatient hospital days. Hospitals benefit because they receive the same inpatient payment (since the hospital is paid on a per discharge basis with the exception of cases that are paid as PAC transfers, which are paid a per diem) and they receive a separate SNF payment that they would not have received had the patient remained in the hospital. In addition, the hospital has freed up the inpatient bed for a new patient.

Using Medicare claims files and Medicare cost reports, we classified hospital-based SNFs into one of these three models.¹⁴ We found that about 16 percent of hospital-based SNFs fit into the long-term care model, 47 percent fit into the rehabilitation model, and 17 percent fit into the complex medical model. The other 20 percent of hospital-based SNFs did not fit neatly into one of these three models.¹⁵ These distinct models have different facility characteristics that may shed light on differences in Medicare financial performance of freestanding and hospital-based facilities.

**TABLE
8-10****Characteristics of freestanding SNFs and different hospital-based SNF models**

Characteristic	Hospital-based SNF model			
	Freestanding	Long-term care*	Rehabilitation	Complex medical
Number of facilities	13,129	183	537	197
Share of hospital-based SNFs**	N/A	16%	47%	17%
Beds	98	80	24	20
SNF LOS (in days)	26.9	26.5	12.8	10.7
Staff per bed (in FTEs)	0.82	0.83	1.03	1.22
Medicare share	12%	9%	79%	83%
MDC8 (musculoskeletal) case share	15	17	32	22
Percent ICU days	13	13	15	32
Percent SOI 3 or 4	45	47	39	45
Percent of cases:				
Discharged to another SNF	1	0	7	14
Discharged to home health care	6	7	23	27

Note: SNF (skilled nursing facility), N/A (not applicable), LOS (length of stay), FTE (full-time equivalent), MDC (major diagnostic category), ICU (intensive care unit), SOI (severity of illness). Long-term care SNFs treat predominantly long-stay nursing home patients. Rehabilitation SNFs treat predominantly Medicare patients requiring rehabilitation services. Complex medical SNFs treat predominantly patients who are medically complex. SOI is measured using all patient refined diagnosis related groups from 3M Health Information Systems, with values ranging from 1 to 4 (4 being the most severely ill). Table shows median values.

*23 percent of these facilities are in New York.

**20 percent of hospital-based SNFs did not fit neatly into one of these three models.

Source: Analysis of 2004 Medicare Provider Analysis and Review file and cost report data from CMS.

Patient and facility characteristics

Across most characteristics, the long-term care model of hospital-based SNFs is similar to freestanding SNFs (Table 8-10). They are larger, have longer SNF stays, and have lower staffing ratios than other hospital-based SNFs. Medicare also accounts for a small share of these facilities' patient days. In looking at patient characteristics, we see other similarities to freestanding SNFs, including the small share of SNF admissions that are for musculoskeletal conditions (MDC8), which includes hip and knee replacements. The portion of SNF patients' preceding inpatient hospital days that were spent in the intensive care unit is also similar, as is the small percentage of patients discharged to a second SNF. This model is the predominant model of hospital-based SNFs in New York state, where 23 percent of these facilities are found. They also make up a large share of the hospital-based SNFs in Minnesota. Despite the concentration in some states, the long-term care model can be found across the country in 34 states.

By comparison, hospital-based SNFs following the rehabilitation model are much smaller than hospital-based SNFs following the long-term care model, with shorter SNF stays and a higher level of staffing. These facilities concentrate more on patients who will require therapy services, as 32 percent of their patients have musculoskeletal conditions. Compared with freestanding SNFs and the long-term care model of hospital-based SNFs, a larger share of patients are discharged to another SNF or to home health care.

Compared with other hospital-based SNFs, the complex medical model SNFs have the shortest SNF stays, the highest SNF staffing, and a very high share of preceding hospital inpatient days spent in the intensive care unit. They also have the largest proportion of patients continuing SNF care in another facility and the largest share using home health care after discharge. This use of SNF and home health care is very similar to that found among patients discharged from hospitals without a SNF.

**TABLE
8-11****Hospital-based SNFs have differing financial performance**

Characteristic	SNF model		
	Long-term care	Rehabilitation	Complex medical
SNF payment per day	\$322	\$314	\$319
Cost per day	367	594	686
Routine cost	276	413	472
Ancillary cost	91	181	214
Direct cost per day	250	397	461
Ratio of hospital and SNF payments to direct costs of hospital and SNF	1.25	1.04	1.03

Note: SNF (skilled nursing facility). Direct costs include all patient care costs less overhead and capital expenses. Costs were not standardized for differences in wages or case mix. Values shown are aggregate averages.

Source: Preliminary analysis of 2004 Medicare Provider Analysis and Review file and cost report data from CMS.

Differences in profitability of different types of hospital-based SNFs

There are considerable differences in costs among these three models of hospital-based SNFs (Table 8-11). The long-term care model has the lowest per diem costs, while the complex medical model has the highest. These differences can also be observed for routine and ancillary costs. The daily costs for the complex medical model patients are 86 percent higher than for the patients in the long-term care model. Given the greater use of intensive care units by the complex model patients during their preceding hospital stays, we might expect a lower payment-to-cost ratio for their hospital stays, but we actually see a slightly higher ratio (0.89 on average) than that for inpatients who go on to use other types of hospital-based SNFs (0.87) (data not shown). This indicates that hospitals may use these units to substitute for the later days of an inpatient stay.

To evaluate the combined financial performance of hospitals with their hospital-based SNFs, we considered the costs and payments of both the hospital and SNF stays. Our analysis shows that in 2004 the ratio of payments to direct costs for hospital and SNF services combined for the long-term care model SNF patients was 1.25. Thus, patients in these facilities contributed to the bottom line operations of the hospital by more than covering their direct costs. For hospitals with rehabilitation and complex models of hospital-based SNFs, the combined payment-to-direct-cost ratios for the hospital and SNF stays were both

a little above 1.0, indicating that—on average—hospitals received payments that covered the direct costs of their patients.

Conclusion

To evaluate the performance of hospital-based SNFs, we need to consider both the hospital and the SNF portions of care. We found that hospitals with hospital-based SNFs covered the direct costs (costs less overhead and capital) of inpatient acute care and SNF care. We also need to consider the cost of an efficient provider: Despite the higher costs in hospital-based SNFs compared with freestanding facilities, it is not clear that the Medicare program should recognize their higher costs. Yet, we report in the next section that hospital-based SNFs appear to provide higher quality of care than freestanding facilities, though factors unaccounted for in the analysis may explain some of these differences. The provision of better care, not facility type, using these or other measures would warrant higher payments if Medicare paid on the basis of performance.

The Commission believes the best way to address the financial circumstances of hospital-based SNFs is to reform the applicable payment systems so that they more accurately account for cost differences attributable to patient characteristics rather than differences attributable to facility characteristics. Adjusting the inpatient hospital PPS for severity, as the Commission has recommended,

Methodology used to examine factors associated with changes in outcome measures

Researchers from the University of Colorado at Denver and Health Sciences Center linked data on Medicare-covered stays in skilled nursing facilities (SNFs), the preceding qualifying hospitalization, patient assessment information from the Minimum Data Set (MDS), facility characteristics, and staffing from the Online Survey Certification and Reporting System and community factors from the Area Resource File for 2000–2004. Data on the MDS-based post-acute care measures were added from the CMS database. Resident characteristics were aggregated to the facility level and the community discharge and rehospitalization outcome measures were risk-adjusted using measures of functional and cognitive performance, presence of advance directives, comorbidities, length of stay of the qualifying hospitalization, and other patient assessment information. To ensure that the quality measures were stable, only facilities with more than 25 discharges (excluding deaths) were included in the analysis (Donelan-McCall et al. 2006). About 13,000 facilities were included from each year (more than 80 percent

of the industry and 99 percent of the SNF stays). For the subset of facilities present each year, differences in outcomes over time were calculated.

Community discharge was defined as a discharge to the community or to assisted living facility within 30 days and excluded patients who were rehospitalized (they were included in the rehospitalization measure). Rehospitalizations included direct hospital transfers within 100 days to an acute care hospital that were considered potentially avoidable—that is, due to heart failure, electrolyte imbalance, respiratory infection, sepsis, or urinary tract infection.

Researchers conducted descriptive and multivariate analyses to examine the case mix, facility, and community characteristics associated with the outcomes and the extent to which these factors explained temporal changes in the outcomes. For each outcome measure, regression models were estimated that included year indicators and measures of case mix, facility, and community characteristics. ■

would likely result in an increase in Medicare inpatient payments for patients who subsequently use hospital-based SNFs. Moreover, refinements to the SNF PPS discussed in the first section of this chapter that better recognize differences in use of NTA services should also result in more accurate payments for SNF care, regardless of the type of facility.

Understanding the declines in SNF quality

In addition to focusing on payment issues, the Commission has examined the quality of care SNFs furnish and the measures used to gauge it. In the March 2007 report, we noted that two risk-adjusted quality measures for Medicare SNFs—facility rates of discharge to the community and potentially avoidable hospital readmissions—indicated that quality worsened between 2000 and 2004 (MedPAC 2007). To better understand

these trends, we contracted with researchers from the University of Colorado at Denver and Health Sciences Center to identify the factors associated with the changes over time, such as differences in case mix, facility mix, staffing, and regional practice patterns. We also examined the relationship between these two measures and the CMS publicly reported Nursing Home Compare short-stay quality measures.

Measures of SNF quality of care

To assess the quality of care furnished in SNFs, the Commission has examined facility rates of community discharge and potentially avoidable rehospitalizations for any of five conditions (congestive heart failure, respiratory infection, urinary tract infection, sepsis, and electrolyte imbalance). We use these measures for two reasons. First, they relate to major goals of SNF care. Regaining physical function and being discharged to the community are the goals for many SNF patients recovering from acute events, surgery, or debilitating medical problems. About 80 percent of SNF patients received rehabilitation services.

Stabilizing patients after acute care and avoiding costly and harmful hospital readmissions are goals for many SNFs. Second, the measures overcome the data limitations of the publicly reported Nursing Home Compare PAC measures (facility rates of delirium, pain, and pressure ulcers for short-stay patients), including the timing of patient assessments, sample bias, and questionable validity (Donelan-McCall et al. 2006; MedPAC 2006b, 2005b; Abt 2005). In this work, we report the results for community discharge within 30 days of admission to the SNF and rehospitalizations within 100 days—the two measures that changed the most over time. The text box describes the methodology used to examine the factors associated with changes in the outcome measures.

Factors associated with community discharge and potentially avoidable rehospitalization rates

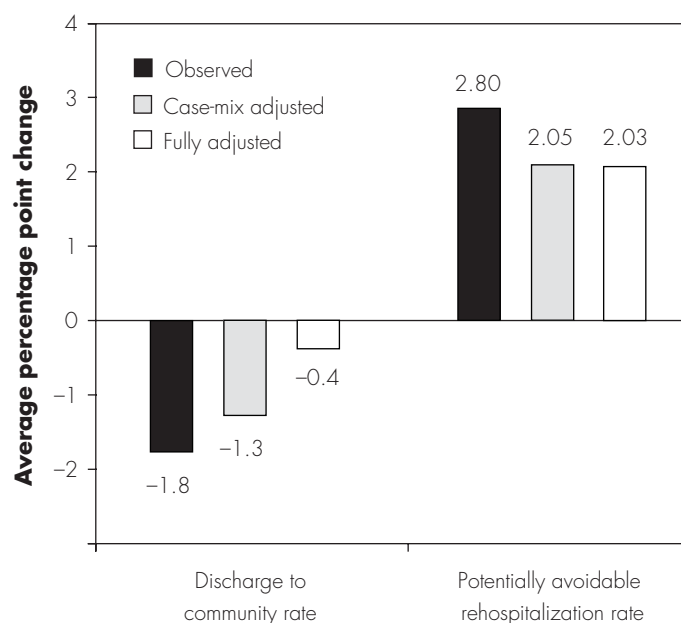
Two outcome measures—observed rates (unadjusted for differences in case mix) of discharges to the community within 30 days and hospital readmissions within 100 days of the SNF admission—got worse between 2000 and 2004. At the facility level, the average decline in the community discharge rates was 1.8 percentage points (from 23.7 percent in 2000 to 21.0 percent in 2004) and the rate of potentially avoidable rehospitalizations increased 2.8 percentage points (from 14.7 percent in 2000 to 17.5 percent in 2004).¹⁶ The observed rates varied considerably by facility characteristic, especially for community discharge rates. Most rehospitalizations (85 percent) occurred at least 3 days after SNF admission, suggesting that they were not attributable to admitting SNF patients who were too unstable to be discharged from the hospital.

Controlling for differences in case mix, facility characteristics, and other factors reduced—but did not eliminate—the differences in the quality measures between 2000 and 2004 (Figure 8-4).¹⁷ Adjusting for case mix eliminated about one-third of the change in rates over the period. After accounting for many additional differences—including staffing levels, length of stay for the qualifying hospital stay, SNF location, facility type, and market characteristics—the quality measures, particularly the average rehospitalization rate, still declined. Unmeasured case-mix changes could possibly explain some of the differences. For example, the availability of patients' social support could influence a facility's ability to discharge them to the community.

Key factors associated with community discharge and rehospitalization rates included the mix of facilities

FIGURE 8-4

After adjusting for case mix and other factors, SNF quality measures declined between 2000 and 2004



Note: SNF (skilled nursing facility). Table shows mean facility rates. Community discharges occurred within 30 days of the SNF admission. Potentially avoidable rehospitalizations include hospitalizations within 100 days to an acute care hospital for heart failure, electrolyte imbalance, respiratory infection, sepsis, and urinary tract infection. Fully adjusted includes adjustments for differences in case mix, staffing levels, length of the qualifying hospital stay, SNF location, facility type, and market characteristics.

Source: Kramer et al. 2007.

present only in 2000 (specifically, hospital-based facilities that closed after 2000), SNF location, staffing levels, whether the SNF was hospital based, and ownership (Table 8-12, p. 214). On average, facilities present only in 2000 had community discharge rates 17.5 percent higher and rehospitalization rates 4.0 percent lower than facilities present in both 2000 and 2004 or facilities present only in 2004. The impact of higher staffing ratios, particularly for RNs and total licensed nurses, was also large. There were significant differences in community discharge and potentially avoidable rehospitalization rates across the regions. Facilities in the Northeast, Midwest, and South had lower community discharge rates and higher potentially avoidable rehospitalization rates than facilities in the West. Hospital-based SNFs had much better quality measures (higher community discharge rates and lower potentially avoidable rehospitalization rates) than freestanding facilities, while for-profit SNFs had worse

**TABLE
8-12****Facilities with certain characteristics had higher or lower SNF quality measures**

Characteristic (facility average)	Change in:	
	Discharge to community rate	Potentially avoidable rehospitalization rate
SNF present only in 2000 (compared with present only in 2004 and present in 2000 and 2004)	17.5%	-4.0%
Each additional hour per patient day		
Registered nurse	8.0	-1.9
Licensed nurse	5.0	-1.2
Certified nurse aide	1.6	-0.4
SNF location (compared with West)		
Northeast	-5.3	2.8
Midwest	-7.5	2.3
South	-4.3	1.9
Hospital based (compared with freestanding)	19.0	-5.7
For profit (compared with nonprofit and government)	-3.6	2.3
Average acute hospital length of stay of preceding hospitalization	0.0	0.0

Note: SNF (skilled nursing facility). Rates are adjusted for case mix, time, and presence in 2000 only and 2004 only. Community discharges occurred within 30 days of the SNF admission. Potentially avoidable rehospitalizations include hospitalizations within 100 days to an acute care hospital for heart failure, electrolyte imbalance, respiratory infection, sepsis, and urinary tract infection.

Source: Kramer et al. 2007.

quality measures (lower community discharge rates and higher potentially avoidable rehospitalization rates) than nonprofit facilities. The length of the preceding hospital stay was not a factor in predicting either rate. However, as we discuss later, we may not have controlled for all of the factors that contributed to differences between facilities.

Facilities with the largest observed changes in the two quality measures had the greatest changes in the severity of the cases they admitted. SNFs with the largest declines in community discharge rates treated patients with worse functional status; fewer rehabilitation patients; and more patients with dementia, genitourinary disease, and do-not-resuscitate orders than other facilities. SNFs with the largest increases in potentially avoidable rehospitalizations treated patients with worse functional status and more patients with catheters, pressure ulcers, genitourinary disease, respiratory disease, or musculoskeletal disease than other facilities. For example, an increase of 10

points in the average functional status score increased the community discharge rate by 2.5 percent and decreased the rehospitalization rate by 1 percent. Researchers adjusted for these case-mix changes in their multivariate analyses.

Mix of facilities contributed to declines in the two quality measures

Hospital-based facilities made up slightly more than 13 percent of SNFs in 2000 but only 9 percent in 2004. This is because 50 percent of the facilities that were in business in 2000 and no longer in business by 2004 were hospital based, whereas only 5 percent of the new facilities in 2004 were hospital based. Because freestanding facilities treated more complex patients (reporting greater complexity for 16 of the 22 case-mix measures), some of the decline in the two observed quality measures reflects a shift in the mix of facilities. However, after adjusting for case-mix

differences, hospital-based facilities still had higher risk-adjusted community discharge rates (19 percent higher) and lower risk-adjusted rehospitalization rates (5.7 percent lower) than freestanding facilities. With the closing of many hospital-based SNFs during the study period, the mix of facilities that reported only in 2000 had higher average community discharge rates and lower average rehospitalization rates than the SNFs that reported in both periods or only in 2004.

Although the researchers controlled for many case-mix factors, there still could be unmeasured selection differences between hospital-based and freestanding facilities, such as the availability of community support. In addition, as discussed earlier (p. 205), we found that patients treated in hospital-based SNFs were more likely to use other PAC services, including inpatient rehabilitation facilities, long-term care hospitals, and home health care.

Staffing levels explained some of the declines in the two quality measures

After controlling for differences in case mix, one additional hour of RN time per resident day was associated with an 8 percent increase in the community discharge rate and a 1.9 percent decrease in the rehospitalization rate. Different staffing levels also partly explained some of the differences in the rates between hospital-based and freestanding facilities. Hospital-based facilities had much higher staffing levels than freestanding facilities—five times the RN hours per resident day and more than twice the licensed nurse hours per resident day—even though they treat a less complex mix of patients.¹⁸ Facilities that were present only in 2000 had four times more RN hours per resident day and two times more licensed nurse hours per resident day relative to facilities that were new in 2004, and their closing contributed to the declines in the two quality measures in 2004.

Other factors may help explain differences in quality

Other factors may help explain the differences across facilities and over the study period. These unaccounted factors may include unmeasured differences in staffing (e.g., staff turnover and experience) and case mix, the availability of community support, market characteristics (e.g., the availability of inpatient rehabilitation facilities and long-term care hospitals), and facility practice patterns, such as the frequency of physician visits.

Relationships between different quality measures

In general, facilities that had good community discharge scores (where higher rates reflect better quality) also had good rehospitalization scores (where lower rates reflect better quality). In 2004, 50 percent of facilities with the highest community discharge rates (the top 25 percent) also had the lowest potentially avoidable rehospitalization rates (the bottom 25 percent). Facilities that performed poorly on one quality measure generally also performed poorly on the other—43 percent of facilities with the highest rehospitalization rates also had the lowest community discharge rates.

Quality based on the risk-adjusted rates of community discharge and rehospitalization was inversely related to quality for the same facilities based on CMS's publicly reported post-acute quality measures (rates of delirium, pain, and pressure sores for short-stay patients measured on day 14 of their stay). That is, SNFs that appeared to provide good quality of care using community discharge and rehospitalization rates appeared to provide poor quality using CMS's measures. One possible explanation of the inverse relationship is that the indicators measure patients at different points in time and, as a result, can include different mixes of patients. Almost half the SNF admissions were not present on day 14 of their stays (because they were discharged, they were readmitted to a hospital, or they died) and are not included in the publicly reported measures but are counted in the community discharge and rehospitalization rates. As a result, for example, facilities with high community discharge rates (indicating good quality) may discharge their healthiest patients, leaving the sickest patients to be included in the publicly reported quality measures.

The inverse relationship between quality based on the publicly reported measures and quality based on community discharge and avoidable rehospitalization rates is of concern. We previously reported on the shortcomings of the publicly reported measures, including that they do not reflect the goals of most SNF patients and data accuracy problems (MedPAC 2006b, 2005b). In addition, the timing of the patient assessments may not accurately capture changes in patients' conditions. Although assessments are required at admission, there is some flexibility in when the assessments are conducted; as a result, they are completed within three days of admission for only 4 percent of patients, which may understate the improvements patients achieve during their stay (MedPAC

2006b). Because assessments are not required at discharge, the publicly reported measures capture information about only those patients with stays of at least 14 days, which may penalize SNFs that treat patients with short stays, discharge their healthiest patients, or elect to treat their sickest patients rather than send them to the hospital. We previously recommended that CMS gather assessment information at patient discharge.

Other problems with the publicly reported information center on the measures. While pain is an important dimension to capture, SNF quality experts told us that the current measure is too narrow and confusing (MedPAC 2006b). For example, assessors may differ in how to code a patient with considerable pain that was successfully managed. Because pressure ulcers take time to develop, experts thought that process measures (e.g., whether a facility follows well-established guidelines to prevent,

identify, and treat the sores) would be valuable measures. The delirium measure is neither specific to delirium nor sensitive relative to reported literature on rates of delirium.

Conclusions

The declines in the two quality measures—the community discharge rates and potentially avoidable rehospitalization rates—are of concern to the Commission and we will continue to monitor them. In light of the extensive problems of the publicly reported measures and the fact that they do not reflect the goals for most SNF patients, the Commission urges CMS to consider adding the community discharge and rehospitalization measures to the publicly reported measures. We also ask that it reconsider our previous recommendation to gather patient assessment information at admission and discharge so that changes in health status are known for all patients. ■

Endnotes

- 1 Urban and rural SNFs have separate base rates. The base rates are adjusted for differences in labor costs. For a complete description of the SNF PPS, see MedPAC's Payment Basics series (MedPAC 2006a).
- 2 In work for CMS, the researchers evaluated a 58-group version of the RUG classification system. In the refinements it adopted in fiscal year 2006, CMS collapsed some of the new groups because there were no patients in them, resulting in nine new groups.
- 3 The researchers did not evaluate a 53-group version of the RUGs. Conversations with researchers at the Urban Institute indicate they do not think the results would vary significantly from the RUG-58 results included in the CMS report.
- 4 The check includes matching use of NTA services reported in the MDS with use of NTA services reported in the SNF claims.
- 5 The eight groups are rehabilitation plus extensive services, rehabilitation, extensive services, special care, clinically complex, impaired cognition, behavior only, and reduced physical function.
- 6 The Barthel index is a measure of a patient's independence. It scores a patient's time and assistance needed to perform activities of daily living (Mahoney and Barthel 1965).
- 7 The costs of certain services provided during a stay are paid for separately under Part B. Excluded services include certain chemotherapy and dialysis-related items, cardiac catheterizations, computed tomography scans, MRIs, ambulatory surgery that requires an operating room, radiation therapy, angiography, lymphatic and venous procedures, emergency services, radioisotope services, customized prosthetic devices, and ambulance transportation for dialysis.
- 8 These results are based on an indicator on the hospital claim file, which shows where the patient came from before the hospital stay.
- 9 In looking at the top 20 DRGs discharged to hospital-based SNFs, this occurs for esophagitis, gastroenteritis, and miscellaneous digestive disorders (DRG 182); gastrointestinal hemorrhage (DRG 174); and circulatory disorders with acute myocardial infarction and major complications (DRG 121).
- 10 Although we report differences in 30-day readmission rates, the actual difference in discharge from the SNF back to the hospital is bigger, in large part because of differences in the length of the SNF stay; 24 percent of freestanding SNF patients are discharged from the SNF directly to the hospital compared with 12 percent of patients discharged from hospital-based SNFs.
- 11 Because of policymakers' concerns, the calculation of the PPS base rates explicitly did not recognize the full amount of the higher costs of hospital-based SNFs. The base rates for the SNF PPS were set at a weighted average of the freestanding SNF average cost plus 50 percent of the difference between the freestanding average and a weighted average of all facilities' (freestanding and hospital-based) costs. In addition, the base rate did not include the costs of SNFs that were exempt from Medicare cost limits.
- 12 These costs include associated overhead and capital costs.
- 13 This is likely a lower bound estimate for the relationship, as our measure of direct costs is based on the average cost of providing variable cost services such as nursing, food, tests, drugs, and supplies. However, the additional cost the hospital must incur is likely less than the average cost of providing many of the services the patient requires.
- 14 We did this by developing three composite scores for each facility as to how well they fit into each of the three hospital-based SNF models. The composites were based on a number of factors that help to differentiate the different types of hospital-based SNFs, such as SNF length of stay and inpatient use of the intensive care unit. Facilities were identified as fitting into a particular model based on which one produced the highest composite score.
- 15 We found that 8 percent appear to be a mixture between the rehabilitation model and the complex medical model and 11 percent appear to be similar to the long-term care model, except the Medicare patients tend to have shorter SNF stays.
- 16 In aggregate, unadjusted rates of discharges to the community declined 5.1 percentage points, from 34.4 per 100 residents in 2000 to 29.2 per 100 residents in 2004, indicating that facilities treating the most SNF patients had the largest declines. In aggregate, rehospitalizations increased from 13.5 to 17.4 per 100 residents during the study period.

- 17 Factors associated with community discharge rates explained 70 percent of the variation across facilities; factors associated with potentially avoidable rehospitalization rates explained 54 percent of the differences in rates across facilities. The model controlled for market characteristics including the Medicare managed care penetration rate; the number of hospitals and hospital admissions per 100,000 residents; the number of SNFs and beds per 100,000 residents; the number of nursing facility beds per 100,000 residents; and the number of home health agencies. Researchers controlled for the availability of home health care but not inpatient rehabilitation facilities or long-term care hospitals.
- 18 On average, there were 1.72 RN hours and 3.72 licensed nurse hours per patient day in hospital-based SNFs compared with 0.35 RN hour and 1.44 licensed nurse hours per patient day in freestanding SNFs.

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