Published in final edited form as:

Healthc (Amst). 2018 September ; 6(3): 175–179. doi:10.1016/j.hjdsi.2018.05.001.

Trends in hospital-SNF relationships in the care of Medicare beneficiaries

Joshua M. Liao^{a,b,*}, R. Tamara Konetzka^c, and Rachel M. Werner^{b,d}

^aDepartment of Medicine, University of Washington, Seattle, WA, United States

^bLeonard Davis Institute of Health Economics, University of Pennsylvania, Philadelphia, PA, United States

^cDepartment of Public Health Services, University of Chicago, Chicago, IL, United States

^dDepartment of Medicine, University of Pennsylvania, Philadelphia, PA, United States

Abstract

Improving the value of post-acute care at skilled nursing facilities (SNFs) has become a Medicare policy priority. Anecdotally, hospitals have responded by formally acquiring or pursuing tighter informal connections with SNFs. We evaluated the trend in connections between US acute care hospitals and Medicare-certified SNFs between 2000 and 2013 using vertical integration and two novel network-based measures (number of SNF partners, and discharge concentration). Among 4441 hospitals and 17,215 SNFs, hospitals with weaker connections with SNFs were more often non-profit, major teaching hospitals with a larger number of discharges and beds. We found an apparent weakening of hospital-SNF connections over time for all three measures. Over one-third (39%) of hospitals were vertically integrated in 2000 compared to 8.2% in 2013. The number of SNF partners increased between 2000 and 2013, while hospitals' discharge concentration declined steadily. Additional work is needed to understand the implications of these trends.

Keywords

Medicare; Hospitals; Post-acute care; Skilled nursing facilities

1. Introduction

Improving the value of post-acute care at skilled nursing facilities (SNFs) has become a policy priority given the frequency, expense, and variability of SNF use.^{1–5} SNFs represent one of the fastest growing spending categories for Medicare and SNF care is associated with high rates of hospital readmissions.^{1,6}

*Corresponding author at: Department of Medicine, University of Washington, UWMC Health Sciences, BB 1240, 1959 NE Pacific Street, Seattle, WA 98195, United States. joshliao@uw.edu (J.M. Liao).

Conflict of interest

The authors have no conflicts of interest to disclose.

Because care fragmentation likely contributes to these utilization and cost burdens, health care payment policies are increasingly holding hospitals accountable for quality and costs in the post-acute period. For example, Medicare's Accountable Care Organization program⁷ incentivizes providers to address post-acute utilization as part of minimizing global costs. New bundled payment initiatives encourage or mandate hospital accountability for the costs and quality in the postacute period.^{8–10} Together with imperatives to avoid penalties under the Hospital Readmission Reduction Program,¹¹ these pressures are compelling hospitals to focus attention across the care continuum, shift task and resource allocation downstream to SNFs,¹² and work to exert greater control over the care provided to Medicare beneficiaries there.

Anecdote and emerging evidence suggests that some hospitals have responded by pursuing strategies to increase their connections with SNFs, which may increase care coordination, improve quality and reduce costs. Hospitals may do this and influence discharge decisions¹³ through formal channels, such as acquisition and ownership of SNFs. Hospitals may also pursue tighter connections with SNFs by developing informal relationships or “preferred networks”, in which SNFs receive greater discharge referral volume in exchange for working with hospitals to increase quality and reduce costs.^{14–16} Despite the importance of these connections to current Medicare policies, surprisingly little is known about how widely these strategies are deployed across US hospitals—that is, to what extent hospitals and SNFs have established formal and informal connections leading into the era of value-based payment policies, and how these connections have evolved over time.

Our objective was to measure national trends over time in hospital-SNF connections in the care of Medicare beneficiaries, using both established and novel measures to reflect different aspects of these relationships. First, we describe trends in formal ownership-based vertical integration between hospitals and SNFs. Second, we utilize two novel measures derived from network analysis methodology to evaluate the nature and extent of informal, preferred relationships between hospital and SNFs.

2. Methods

2.1. Data and study sample

We identified all US acute care hospitals and Medicare-certified SNFs over 14 years (2000–2013) using the Medicare Provider of Service (POS) File, a hospital-level file containing hospital characteristics.

Within these hospitals, we used the 100% MedPAR files (with claims for all acute inpatient hospitalizations and SNF stays) to identify all Medicare fee-for-service beneficiaries who were discharged from acute care hospital to SNF during our study period, defined as those hospital discharges having a SNF claim within 3 days of hospital discharge. These data were supplemented with the Medicare Beneficiary Summary File, which contains information on beneficiary enrollment in Medicare Part A and Medicare Advantage. We exclude all beneficiaries enrolled in Medicare Advantage, as these beneficiaries have incomplete data in the Medicare claims. Finally, we determined if a hospital was vertically integrated with any

SNFs using the Medicare Cost Reports to identify hospitals that report that they own one or more SNFs.

2.2. Market definition

We defined markets using Hospital Referral Region (HRR),¹⁷ each of which represents a regional health care market for tertiary medical care. Patients discharged to a SNF outside of the hospital's HRR were not included in our analyses as they do not reflect typical patterns of care and only represent a small fraction of all hospital-SNF discharges. Within each market, we report hospital-SNF connections for hospitals and SNFs with at least 5 discharge connections per year between them as those sharing only a few patients are less likely to have meaningful connections.

2.3. Three measures of hospital-SNF connections

We used three measures of hospital-SNF connections. The first was a hospital-level measure of whether the hospital was vertically integrated with any SNFs.

We also used network methods to develop two additional measures of non-ownership-based connections between hospitals and SNFs from patient-level data. In particular, we applied the conceptual framework of networks - which are comprised of entities (termed “nodes”) and connections (termed “edges”) - by defining hospitals and SNFs in our sample as nodes and discharges between them as edges. This process allowed us to evaluate hospital-SNF connections that occur when hospitals discharge patients to SNFs within their markets for post-acute care.

The first measure is a hospital's *number of SNF partners*, which describes the connectedness of a hospital as a node and is equivalent to *hospital outdegree* in network terminology. A hospital's number of SNF partners is the total number of SNFs to which a hospital discharges its patients in a given year (Fig. 1, Panel A). For example, if hospital A discharges all of its patients in a given year to a total of 5 different SNFs, it has 5 partners; if hospital B discharges all of its patients to a total of 9 different SNFs in a given year, it has 9 partners. In markets where hospitals are entering into more informal connections with certain SNFs over time, the mean *number of SNF partners* would decrease as discharge connections between hospitals and non-preferred SNFs disappear.

The second measure, a hospital's *discharge concentration*, reflects how concentrated a hospital's discharges to SNFs are (Fig. 1, Panel B). It is based on the Herfindahl-Hirschman Index, a common measure of market concentration, and is calculated by squaring the share of discharges to each SNF and summing across all SNFs to which that hospital discharges patients. Values range from 0 to 1, with those closer to 0 representing a more diffuse pattern of SNF use by the hospital and those closer to 1 representing a discharge pattern that is more concentrated among specific SNFs.

Building on the example above, assume hospital A discharges a total of 100 patients across 5 SNFs in a given year. If 96 of those discharges are to a single SNF, and 1 to each of the other 4 SNFs, then its discharges are highly concentrated in 1 of 5 SNFs. In turn, its *discharge concentration* = $(96/100)^2 + (1/100)^2 + (1/100)^2 + (1/100)^2 + (1/100)^2 = 0.92$. In contrast, if

hospital A discharges 20 patients to each of the 5 SNFs, then its 100 discharges are spread evenly across SNFs and therefore less concentrated. In this situation, its *discharge concentration* = $(20/100)^2 + (20/100)^2 + (20/100)^2 + (20/100)^2 + (20/100)^2 = 0.20$. If a market shifts towards sending patients to a smaller number of preferred SNFs, the mean *discharge concentration* would be expected to increase.

2.4. Statistical analysis

We describe hospital characteristics using simple statistics including percentages, means and standard errors. The proportions of vertically integrated hospitals were described annually using percentages.

In our primary analyses, we used medians and interquartile ranges (IQR) to report values for *number of SNF partners* and *discharge concentration* at the market level rather than the hospital level. The number of SNF partners is correlated among hospitals within a HRR, so that hospitals in large markets on average have more SNF partners. If we were to report this measure at the hospital level, it would overweight large markets. Similarly, we described the *mean discharge concentration* within each market. To describe the choice set of SNFs for hospitals in a given market, we also calculated the market level median number of SNF partners and total number of SNFs.

We conducted several sensitivity analyses. First, we replicated our analyses for all three measures on a stable panel of hospitals and SNFs that were present in all 14 years of our study period. Second, we evaluated trends in measures using increasingly stringent thresholds in the number of patients shared annually between hospitals and SNFs (10, 15, and 20 discharge connections, rather than 5).

Third, we evaluated trends in *number of SNF partners* and *discharge concentration* at the hospital level rather than at the market-level. Fourth, we used unthresholded data to evaluate the trend in *mean number of SNF partners*, but weighted each hospital by the number of patients it sends to each SNF in order to down-weight connections based on a small number of discharges. Finally, given the overall decline in hospital-owned SNFs over time, we conducted analyses with these SNFs excluded. All analyses were conducted in R (version 3.2.2) and STATA 14.1 (Stata Corp, College Station, TX).

3. Results

Our sample included 4441 hospitals and 17,215 SNFs. When comparing hospital characteristics by the strength of the connection between hospitals and SNFs, we found that hospitals with weaker SNF connections were more often major teaching hospitals, had a larger number of discharges and beds, and were non profit (Table 1). This pattern held true for hospitals that were not vertically integrated with a SNF compared to those that were vertically integrated, hospitals with fewer SNF connections compared to those with more SNF connections, and hospitals with low discharge concentration compare to those with high discharge concentration, though in the case of vertical integration the differences were smaller.

In examining trends in hospital-SNF connections over time, we found an apparent weakening of these connections across all three measures of hospital-SNF connections. Vertical integration declined over time. In 2000, 39% of hospitals in our sample were vertically integrated with a SNF. By 2013, only 8.2% of hospitals were vertically integrated in a SNF provider (Fig. 2, Panel A).

The number of SNF partners increased between 2000 and 2013, with median values rising from 5.8 in 2000 to 9 in 2013 (Fig. 2, Panel B). Hospitals' discharge concentration declined steadily from a median of 0.49 to 0.31 during the study period (Fig. 2, Panel C). Over our study period, the median number of SNF partners in a market was 7.7 (IQR 5.9–10.1) and the median total number of SNFs per market was 39 (IQR 21–69).

In sensitivity analyses, trends for measures of hospital-SNF connections were qualitatively similar for the stable panel, panels based on different discharge connection thresholds, and hospital-level (rather than market-level) measures. There was also no qualitative difference in the trend of a *weighted mean number of SNF partners* measure or in analyses that excluded hospital-owned SNFs.

4. Discussion

To the best of our knowledge, this analysis is the first to empirically evaluate trends in informal, non-ownership connections between hospitals and SNFs. We measured hospital-SNF connections in three ways that identify different facets of the relationships between hospitals and SNFs in their local markets. Across all three of these measures, we demonstrate a consistent overall trend—hospital-SNF connections appear to be weakening over time between 2000 and 2013, rather than strengthening as is often reported. As formal vertical integration between hospitals and SNFs declined, hospitals gradually discharged patients to a greater number of SNFs in their local markets and with less concentration over time, with hospitals spreading discharges out more evenly across the SNFs to which they discharged patients.

These results are notable for several reasons. First, amid policy attention about accelerating vertical integration between health systems and physician practices,^{18,19} there has been comparatively less data regarding integration at other points in the care continuum—specifically between hospitals and post-acute providers such as SNFs. Early evidence suggests that hospitals-SNF linkages defined by common investment ownership (i.e., shared among a group of corporate investors) appear to be increasing over time.²⁰ Our analysis provides important additional context by using national data to describe the substantial decrease in vertical integration between hospitals and SNFs from 2000 to 2013.

That certain hospital characteristics vary by strength of connections with SNFs also suggests that various types of hospitals may be pursuing SNF connections differently. In particular, given existing incentives and increases in hospital-SNF linkages defined by ownership shared among corporate investors, it is perhaps unsurprising that for profit hospitals appear to have stronger connections with SNFs than non-profit hospitals. Our observation of weaker hospital-SNF relationships at larger, major teaching hospitals may relate to the nature and

challenge of engaging different segments of the clinical workforce (e.g., residents and fellows as well as staff physicians) and implementing hospital-wide post-acute strategies across larger or more numerous service lines.

Second, we know of only one other study demonstrating decreases in informal integration over time, which used a different definition of informal integration and measured these connections for each hospital-SNF pair in a market.³⁰ We take a different approach, measuring informal connections from the hospital's perspective and using two network-based measures to describe trends in the informal connections that hospitals make with SNFs (i.e., those outside of sole or common ownership arrangements). Despite emerging evidence describing the creation and impact of informal relationships between hospitals and SNFs,^{14–16} we find no evidence of increasing hospital-SNF connections in our data but rather a decline in these connections.

To describe this, we developed two novel measures of informal hospital-SNF connections—hospitals' number of SNF partners and discharge concentration to SNFs. For hospitals and SNFs forming “preferred networks” or other non-ownership agreements, a hospital's number of SNF partners would be expected to decrease (i.e., hospitals shifting discharges away from SNFs with which they do not possess preferred relationships towards those with which they do). Analogously, the hospital's discharge concentration to SNFs would be expected to increase. To the best of our knowledge, this analysis is the first to build on prior work applying network methods to patient sharing among physicians^{21,22} by extending the approach to hospitals and SNFs.

Third, it is notable that there was no observed increased consolidation in the post-acute care market. Over this same time period, considerable consolidation has been observed for hospitals and physician practices.^{23,24} While it has been assumed that this would extend to the post-acute care market,²⁵ our results suggest that the trend toward consolidation does not extend to all health care sectors. Thus, it is possible that concerns about how consolidation may decrease quality and increase costs could be less of a concern in the post-acute care market.

There are several potential reasons we did not observe increasing hospital-SNF connections in our data. Changes in Medicare payment policy and the shift towards a prospective payment system for SNFs since the Balanced Budget Act of 1997 have made formal integration between hospitals and SNFs increasingly less attractive from a reimbursement perspective, potentially countering policies aimed at improving coordination.²⁶ However, we also observed decreasing hospital-SNF connections in analyses that excluded hospital-owned SNFs. Observed trends may also be driven in part by new of post-acute care providers entering the market. However, the total number of SNFs did not substantially change during our study period.²⁷

Additionally, our study period ends in 2013, which is early in the period of rapid growth in the value-based policies that place hospitals accountable for the quality and costs in the post-acute period. We may thus miss some tightening of connections currently underway. The effect of new value-based policies may also not affect all patients being discharged from a

hospital, but rather in discharge decisions for certain patients with specific clinical conditions. For example, hospitals may focus their informal connections with SNFs for patients with hip fracture, but not all patients being discharged to SNF. It is also possible that the measures used in our analysis did not capture connections between hospitals and SNFs that occur through mechanisms such as shared staffing or electronic health records. These activities could improve the connections, and in turn patient transitions, between hospitals and SNFs without changing patient flows, particularly if such changes are concentrated in pre-existing hospital-SNF partnerships.

Finally, value-based payment policies such as Accountable Care Organizations may prompt providers to invest and enact change in SNFs that beneficiaries select rather than those organizationally selected for preferred networks.²⁸ If so, connections between hospitals and SNFs may evolve in unexpected ways based on beneficiary choice. Nonetheless, these two network-based measures provide broad-based summary measures which can quantify changes in hospital-SNF relationships going forward.

Our analysis has several limitations. First, our study is limited to Medicare fee-for-service beneficiaries and thus does not include Medicare beneficiaries under Medicare Advantage, or patients from non-Medicare payers. This might limit generalizability of our findings. However, Medicare fee-for-service represents the primary payment mechanism for SNF care. Second, because our study describes broad trends in hospital-SNF connections at a national level but does not account for differences in organizational and market factors that affect hospital decisions about SNF discharges (e.g., individual SNF capacity, market level SNF supply), future work should explore the relationship between such factors and trends in hospital-SNF relationships. However, our data about the total number of SNFs per market does not seem to suggest that hospital-SNF connections are limited by SNF choice sets. Regardless, our work uses novel measures in a national dataset, and it is the first to our knowledge to describe national trends in contemporary hospital-SNF connections. Finally, we do not examine the welfare effects of these changing trends in hospital-SNF connections, i.e., whether these connections improve patient outcomes and reduce costs is not addressed. While some prior work has examined the impact of hospital-SNF connections on patient outcomes,^{16,29,30} further work is needed to understand the implications of the changes in these connections that we describe, particularly amid continued proliferation and evolution of value-based payment models.

A decrease in the strength of hospital-SNF connections has several implications. First, the decreasing connections we observe between hospitals and SNFs may prompt policymakers to consider more direct incentives for hospitals and SNFs to improve the transitions of care coordinate care in the post-hospitalization period. Second, these findings might elevate the importance and use of quality metrics related to a successful transition of care, such as rehospitalization rates from SNF, which have recently been adopted by CMS. Finally, as we move forward with increasing use of payment-based incentives to improve transitions and decrease fragmentation, trends in and impact of hospital-SNF connections should be monitored, including the effects on patient outcomes.

5. Conclusion

In conclusion, formal vertical integration between hospitals and SNFs declined steadily over a 14-year period. Using two novel measures based on network analysis methods, our analysis suggests that informal connections between hospitals and SNFs also declined over the same period. Additional work is needed to understand the implications of these trends, particularly under emerging policy pressure for hospitals to exert greater control over the care provided to Medicare beneficiaries at SNFs.

Acknowledgements

This research was supported by a Health Care Financing and Organization award from the Robert Wood Johnson Foundation. Rachel Werner was supported in part by a grant from the National Institute on Aging (K24-AG047908).

References

1. Medicare Payment Advisory Commission. Medicare's post-acute care: Trends and ways to rationalize payments; 2015 Available at: <http://medpac.gov/docs/default-source/reports/chapter-7-online-only-appendixes-medicare-s-post-acute-care-trendsand-ways-to-rationalize-payments-.pdf>.
2. Mor V, Intrator O, Feng Z, Grabowski DC. The revolving door of rehospitalization from skilled nursing facilities. *Health Aff.* 2010;29(1):57–64.
3. Medicare Payment Advisory Commission. Report to Congress: Medicare Payment Policy; 2013 Available at: http://www.medpac.gov/docs/default-source/reports/mar13_entirereport.pdf.
4. Medicare Payment Advisory Commission. Report to Congress: Medicare Payment Policy; 2014 Available at: http://www.medpac.gov/docs/default-source/reports/Mar14_EntireReport.pdf.
5. Newhouse JP, Garber AM, eds. Variation in Health Care Spending: target Decision Making, Not Geography. Washington, DC: National Academies Press; 2013 [Institute of Medicine].
6. Neuman MD, Wirtalla C, Werner RM. Association between skilled nursing facility quality indicators and hospital readmissions. *J Am Med Assoc.* 2014;312:1542–1551.
7. Centers for Medicare & Medicaid Services. Accountable Care Organizations. Available at: <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ACO/index.html?Redirect=/aco/>.
8. Centers for Medicare & Medicaid Services. Bundled Payments for Care Improvement Initiative. Available at: <https://innovation.cms.gov/initiatives/bundledpayments/>.
9. Centers for Medicare & Medicaid Services. Comprehensive Care for Joint Replacement Model. Available at: <https://innovation.cms.gov/initiatives/CJR>.
10. Centers for Medicare & Medicaid Services. Episode Payment Models. Available at: <https://innovation.cms.gov/initiatives/epm/>.
11. Centers for Medicare & Medicaid Services. Readmissions Reduction Program. Available at: <https://www.cms.gov/medicare/medicare-fee-for-service-payment/acuteinpatientpps/readmissions-reduction-program.html>.
12. David G, Rawley E, Polsky D. Integration and task allocation: evidence from patient care. *J Econ Manag Strategy.* 2013;22(3):617–639.
13. Abdelsattar ZM, Gonzalez AA, Hendren S, Regenbogen SE, Wong SL. Hospital ownership of a postacute care facility influences discharge destinations after emergent surgery. *Ann Surg.* 2016;264(2):291–296. [PubMed: 26565133]
14. Evans M Hospitals select preferred SNFs to improve post-acute outcomes. *Mod Healthc.* 2015 Available at: <http://www.modernhealthcare.com/article/20150509/magazine/305099987>.
15. Brown C Building a preferred network: strategies for better patient access. *Becker'S Hosp Rev.* 2016 Available at <http://www.beckershospitalreview.com/healthcareinformation-technology/building-a-preferred-network-strategies-for-better-patientaccess.html>.

16. McHugh JP, Foster A, Mor V, et al. Reducing hospital readmissions through preferred networks of skilled nursing facilities. *Health Aff.* 2017;36(9):1591–1598.
17. The Dartmouth Atlas of Health Care. Available at: (<http://www.dartmouthatlas.org/data/region/>).
18. Baker LC, Bundorf MK, Kessler DP. Vertical integration: hospital ownership of physician practices is associated with higher prices and spending. *Health Aff.* 2014;33(5):756–763.
19. Cutler DM, Scott Morton F. Hospitals, market share, and consolidation. *J Am Med Assoc.* 2013;310(18):1964–1970.
20. Fowler AC, Grabowski DC, Gambrel RJ, Huskamp HA, Stevenson DG. Corporate investors increased common ownership in hospitals and the postacute care and hospice sectors. *Health Aff.* 2017;36(9):1547–1555.
21. Barnett ML, Landon BE, O'Malley AJ, Keating NL, Christakis NA. Mapping physician networks with self-reported and administrative data. *Health Serv Res.* 2011;46(5):1592–1609. [PubMed: 21521213]
22. Landon BE, Keating NL, Barnett ML, et al. Variation in patient-sharing networks of physicians across the United States. *J Am Med Assoc.* 2012;308(3):265–273.
23. Kocher R, Sahni NR. Hospitals race to employ physicians—the logic behind a moneylosing proposition. *N Engl J Med.* 2011;364(19):1790–1793. [PubMed: 21449774]
24. Baker LC, Bundorf MK, Kessler DP. Vertical integration: hospital ownership of physician practices is associated with higher prices and spending. *Health Aff.* 2014;33(5):756–763.
25. Cutler DM, Morton FS. Hospitals, market share, and consolidation. *J Am Med Assoc.* 2013;310(18):1964–1970.
26. Rahman M, Zinn JS, Mor V. The impact of hospital-based skilled nursing facility closures and rehospitalizations. *Health Serv Res.* 2013;48(2 Pt 1):499–518. [PubMed: 23033808]
27. Medicare Payment Advisory Commission. Chapter 8: Skilled nursing facility services. Report to Congress: Medicare Payment Policy; 2015 Available at: (<http://www.medpac.gov/docs/default-source/reports/chapter-8-skilled-nursing-facility-services-march-2015-report-.pdf>).
28. McWilliams JM, Gilstrap LG, Stevenson DG, Chernew ME, Huskamp HA, Grabowski DC. Changes in postacute care in the medicare shared savings program. *JAMA Intern Med* 2017;177(4):518–526. [PubMed: 28192556]
29. Rahman M, Norton EC, Grabowski DC. Do hospital-own skilled nursing facilities provide better post-acute care quality? *J Health Econ.* 2016;50:36–46. [PubMed: 27661738]
30. Konetzka RT, Stuart EA, Werner RM. The effect of integration of hospitals and postacute care providers on Medicare payment and patient outcomes. *J Health Econ.* 2018 <http://dx.doi.org/10.1016/j.jhealeco.2018.01.005>.

Fig. 1.

Two measures of hospital-SNF connections based on network methods: *Number of SNF Partners* and *Discharge Concentration*. Notes: This figure illustrates the concepts of a hospital's *number of SNF partners* and *discharge concentration* as network measures. The two fundamental components of networks are entities (termed “nodes”) and connections (termed “edges”). (A) *Number of SNF partners* describes the connectedness of a given node, and in this study quantifies the number of connections between hospitals and SNFs. For example, hospital A (the green node) is connected to 5 SNFs (blue nodes). (B) *Discharge concentration* is based on the Herfindahl-Hirschman Index, a common measure of market concentration. For a given hospital, its discharge concentration captures how concentrated a hospital's discharges are among the SNFs to which it sends any patients. For example, hospital A and hospital B both discharge 100 patients to 5 different SNFs. For hospital A, however, 96 of those discharges are to a single SNF, and 1 to each of the other 4 SNFs, while hospital B discharges 20 patients to each of the 5 SNFs. As described above, hospital A has a higher discharge concentration (discharge connection = 0.92) than hospital B (discharge concentration = 0.20).

Fig. 2. Trends in Hospital-SNF Connections. Notes (for panels B & C): error bars represent IQR (25th–75th percentiles).

Table 1

Characteristics of hospitals in the study sample, overall and stratified by measures of hospital-SNF connections.

Hospital Characteristics (n =4441 hospitals)							
	Overall	Vertical Integration		Number of SNF Partners ^a		Discharge Concentration ^a	
		Yes	No	High	Low	High	Low
Urban (%)	96.3	96.5	96.2	99.0	93.3	92.9	99.7
Medical School Affiliation (%)							
Major	12.3	11.3	12.6	19.2	4.4	4.7	19.8
Limited	13.1	14.4	12.7	15.9	10.0	10.0	16.2
Graduate	4.7	4.8	4.6	6.6	2.5	2.7	6.6
None	70.0	69.5	70.1	58.3	83.1	82.6	57.3
Total discharges Mean (SE)	1997 (1913)	2160 (17.7)	1945 (10.1)	2869 (12.9)	1010 (7.3)	1037 (6.4)	2957 (13.7)
Total Beds Mean (SE)	237 (219)	260 (2.1)	229 (1.1)	326 (1.5)	135 (1.0)	140 (1.0)	333 (1.5)
Profit Status (%)							
For Profit	17.2	18.9	11.8	15.1	19.5	18.6	15.7
Non Profit	63.3	61.3	69.7	71.6	53.9	55.5	71.2
Government	19.4	19.7	18.5	13.3	26.4	25.8	13.1
Other ^b	0.1	1.2	0.0	0.04	0.2	0.2	0.0

^aHospitals were designated *high* if values were median and *low* if not.

^bIncludes church, physician, tribal owned hospitals.