

High-Quality Nursing Home Care Is More Cost Effective Than Low-Quality Care

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Two studies of Missouri nursing homes—a random sample of facilities and a larger, statewide analysis—suggest that high-quality LTC actually costs less than poor-quality LTC. The researchers found that larger nursing homes, in particular, can realize cost savings from quality-improvement endeavors.

Nearly every LTC journal presents discussions about the quality of nursing home care, and cost is often a central issue. Does high-quality care cost more or less than poor-quality care? Is it

actually possible to save money and still provide high-quality care? A study of 92 randomly selected Missouri nursing homes of varying quality led to the conclusion that high-quality care might, in fact, cost less than poor-quality care.¹ The cost was

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more than \$13 higher per resident per day (PRPD) in nursing homes that provided lower-quality care.

Based on these findings, one could project that among 120-bed facilities, the annual savings could be nearly \$600,000 when the quality of care was high.¹ To confirm this observation, the research team examined statewide data, using the same analytic methods over a longer period of time.

METHODS

Direct patient care costs and total costs were analyzed from audited Medicaid cost reports from the 496 Missouri facilities that submitted these data in 2000; these included the 92 facilities in the earlier sample. Quality of care was evaluated by means of the Nursing Home Minimum Data Set (MDS) outcome measurements, which rely on MDS-derived quality indicators (QIs) and standard QI calculation methods.² The MDS data from six months before and six months after the midpoint of the cost-reporting period were analyzed for each facility. Resident outcomes were interpreted as "good" if the MDS QI scores were within the good threshold range and "poor" if the MDS QI scores were within the poor threshold range. The thresholds had been established in earlier research.^{3,4} Facilities were classified into either group by plotting of the number of MDS QIs in each of the threshold ranges for the two consecutive six-month periods.

RESULTS AND DISCUSSION

Twenty-one Missouri facilities were classified as having consistently good outcomes of care, and 93 as having poor

TABLE I OUTCOMES COMPARISON: CASE MIX AND COST

Outcome Group	Case Mix		Costs (PRPD)	
	Median Admission	Median Facility*	Median Total Costs†	Median Direct Care Costs‡
Good	0.92	0.77	\$85.35	\$43.52
Poor	0.96	0.83	\$92.31	\$52.95
Difference			\$6.96	\$9.43

* P = .005.
 † P = .10.
 ‡ P = .03.
 PRPD = Per resident per day.

outcomes of care, during the period examined. The remainder of the 496 were classified in the average range and were excluded from the comparison. Comparison of the costs of care for the two resident outcome groups revealed substantial differences (Table I). Facilities with consistently high quality of care (good resident outcomes) had lower total median costs (\$85.35 PRPD) than did facilities with poor quality of care (\$92.31 PRPD), a difference of \$6.96 PRPD (P = .10). The differences in direct-care costs were even larger: \$43.52 PRPD in facilities with consistently good quality of care and \$52.95 PRPD in facilities with poor quality of

care, a difference of \$9.43 PRPD (P = .03). Extending these costs PRPD for a 120-bed facility, the potential direct care cost savings are more than \$400,000 annually.

Nursing homes in both groups had the same admission case mix (acuity), but the cross-sectional median case mix index was actually lower (less acuity) in the facilities with good resident outcomes than in those with poorer outcomes. This finding suggests that residents of facilities that demonstrate consistently good outcomes of care experience greater improvement or deteriorate less rapidly than residents of facilities found to have consistent poor outcomes of care.

The type of facility ownership (governmental, nonprofit, or proprietary) did not significantly differ between the two groups, nor did the type of location (rural, metropolitan, or urban) (Table II).

As in the original study of 92 facilities, a significant correlation existed between nursing home size and the outcomes of care. Facilities in the group demonstrating good outcomes had a median of 80 beds, whereas facilities demonstrating poorer outcomes had a median of 120 beds (P = .006). Possibly, the size of a facility plays some role in good outcomes of care.

The number of staffing hours PRPD and the staff mix were very similar in both groups of facilities (Table III). Hourly wages and use of contract staff also did not significantly differ. Since the number of beds, but not the number or mix of staff, was related to outcomes, larger facilities may benefit from organizing staff and residents into small, independent nursing areas.

CONCLUSION

The economic findings from the smaller study were verified in

TABLE II OUTCOMES COMPARISON: DEMOGRAPHICS

Outcome Group	Facility Size			Median*	Location			Ownership		
	1-60	61-120	> 120		Metro	Urban	Rural	Governmental	Nonprofit	For Profit
Good (N = 21)	6 (28%)	12 (57%)	3 (14%)	80 beds	8 (38%)	8 (38%)	5 (24%)	4 (19%)	3 (14%)	14 (67%)
Poor (N = 93)	15 (16%)	46 (49%)	32 (34%)	120 beds	51 (55%)	28 (30%)	14 (15%)	8 (9%)	16 (17%)	69 (74%)
Total (N = 114)	21 (18%)	58 (51%)	35 (31%)		59 (52%)	36 (32%)	19 (17%)	12 (11%)	19 (17%)	83 (73%)

*P = .006.
 N = Number.

TABLE III OUTCOMES COMPARISON: HUMAN RESOURCES

Outcome Group	Staffing (hr/PRPD)					Wages and Benefits (/hr)		
	Median RN	Median LPN	Median Nurse Assistant	Median Total Direct-Care Staff	Mean Contract Staff (Median)	Median RN	Median LPN	Median Nurse Assistant
Good	0.31	0.58	2.19	3.15	0.01 (0.00)	\$20.53	\$14.74	\$8.72
Poor	0.36	0.62	2.18	3.22	0.07 (0.00)	\$20.15	\$14.40	\$9.10

PRPD = Per resident per day; RN = registered nurse; LPN = licensed practical nurse.

this statewide analysis, and strongly suggest that care in nursing facilities in which outcomes are good can actually cost less than care in facilities in which residents have poor outcomes. In the statewide study, the differences in total costs exceeded \$300,000 per year, and in direct-care costs, the difference was greater than \$400,000 per year in a 120-bed facility. These are similar findings to the earlier study of 92 randomly selected nursing facilities.¹

The implication seems clear: A focus on providing high-quality services is a cost-effective strategy for nursing facilities. If administrators and owners of LTC facilities are concerned about the price of providing the best care, they should be reassured by these

findings. Encouraging care staff to initiate quality-improvement activities that enhance care processes is the most cost-effective means of both providing high-quality care and demonstrating fiscal responsibility.

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REFERENCES

1. Rantz MJ, Hicks L, Grando V, et al: Nursing home quality, cost, staffing, and staff-mix. *Gerontologist* 2003 (in press).
2. Zimmerman DR, Karon SL, Arling G, et al: Development and testing of nursing home quality indicators. *Health Care Financ Rev* 1995;16(4):107-127.
3. Rantz MJ, Petroski GF, Madsen RW, et al: Setting thresholds for quality indicators derived from MDS data for nursing home quality improvement reports: An update. *Jt Comm J Qual Improv* 2000;26:101-110.
4. Rantz MJ, Petroski GF, Madsen RW, et al: Setting thresholds for MDS quality indicators for nursing home quality improvement reports. *Jt Comm J Qual Improv* 1997;23:602-611.

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living). They want to live independently and often have family who care for them.

Furthermore, as the U.S. population of older persons grows, the strict home-or-nursing home dichotomy is beginning to blur. The movement of the elderly among independent living facilities, acute-care centers, subacute-care centers, nursing homes, retirement living communities, and ALFs is much more fluid than in the past. "I think more LTC facilities should be aware of these systems as a way of maintaining

contact with and communicating with the elderly in their communities in a variety of settings," concluded Ms. Moscowitz.

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