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THE CARE SPAN:

Fewer Hospitalizations Result When Primary Care Is Highly Integrated Into A Continuing Care Retirement Community

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Abstract

Meeting the medical and social needs of elderly people is likely to be costly, disruptive, and at odds with personal preferences if efforts to do so are not well coordinated. We compared two different models of primary care in four different continuing care retirement communities. In the first model, used in one community, the physicians and two part-time nurse practitioners delivered clinical care only at that site, covered all settings within it, and provided all after-hours coverage. In the second model, used in three communities, on-site primary care physician hours were limited; the same physicians also had independent practices outside the retirement community; and after-hours calls were covered by all members of the practices, including physicians who did not practice on site. We found that residents in the first model had two to three times fewer hospitalizations and emergency department visits. Only 5 percent of those who died did so in a hospital, compared to 15 percent at the other sites and 27 percent nationally. These findings provide insight into what is possible when medical care is highly integrated into a residential retirement setting.

Ninety percent of people age sixty-five or older in the United States have at least one chronic illness.¹ As age progresses, chronic conditions accumulate, so that more than 30 percent of people older than age seventy-five have four or more of them.² As if managing the complexity of multiple, concurrent conditions were not challenging enough, the risk of loss of independence increases with each new condition.³

This trajectory of declining health and ability to carry out the activities of daily living can result in repeated care transitions for patients across medical and residential settings. It also can pose major challenges in care coordination for both patients and providers. Ultimately, many patients on this course experience end-of-life care that does not meet their expectations or wishes—including spending their final hours in a hospital.⁴

The medical and social service worlds approach the complex needs of such people from different perspectives. Clinicians hope that increased emphasis on care delivery models that provide continuous and coordinated care, such as patient-centered medical homes, will be the answer. Social service providers widely endorse programs for “aging in place” that reduce the need for changes of residence by providing supportive living environments.⁵ Both approaches are based on the premise that fewer transitions between clinicians and residential settings will lead to better quality of life for elderly adults.

The continuing care retirement community is a model that merges the medical and social services approaches in addressing older people’s health and functional changes, to minimize disruptions and maximize outcomes. Such communities traditionally are corporate entities that provide their members with residential care over the remainder of their lives, allowing them to move from independent living to assisted living and to nursing home care within a single community.⁶

Typically members of continuing care retirement communities pay large entry fees followed by monthly fees, although financing models vary. Available supportive services also vary; in general, they include such amenities as congregate meals, housekeeping, and nurse-assisted medication management.⁷ The residential options and additional supports cover the social and long-term care services typically needed by aging populations. Yet how best to integrate the medical and social services that chronically ill, elderly populations need is unclear, and many approaches exist even among continuing care communities.

In this article we take advantage of a natural experiment to compare ambulatory and hospital care use at four continuing care retirement communities. Although all were part of a single nonprofit corporation, the manner in which their residents were linked to primary care services varied from site to site. At three of the sites, sites A–C, residents used clinic-based primary care physicians who also had independent practices outside the retirement community. At the fourth site, site D, residents were served by an on-site primary care team whose sole responsibility was to provide medical visits across all residential settings within that community.

Examining patterns of care, we found that the use of Medicare-covered services and deaths in hospitals were much lower when the primary care practice serving residents was entirely embedded in the continuing care retirement community. We discuss why this model of health care delivery may have led to the observed patterns, and which features might be applied to achieve similar gains in other long-term care settings.

Study Data And Methods

Study Design

We conducted an observational cohort study of health care use among residents of four continuing care retirement communities. All four, located in the Midwest, Mid-Atlantic, and New England regions of the United States, provide a full spectrum of residential services and belong to the same parent corporation.

We conducted telephone interviews with staff at each site and the national corporate office to obtain information about the sites, focusing on how primary care is delivered. We also obtained information from US census data about the town where each continuing care retirement community was located. We then used Medicare claims data for residents at all four sites to assess use of ambulatory, inpatient, and emergency care and to determine place of death. We also compared these patterns among residents to those of people living in the same towns but not in the continuing care communities.

Continuing Care Community Sites

As part of the same corporation, the four continuing care retirement community sites studied shared a financial model and philosophy toward care. Residents paid an up-front fee and monthly fees that did not change as level of care increased. Each community had a medical clinic on site, whose organization was determined by a local governing board.

Communities And Surrounding Towns

Membership in each site was determined using postal codes, because members live on site and each site has a unique ZIP+4 code. Residents of the surrounding towns were also identified by ZIP code. To be included in the analysis, residents of the retirement communities and surrounding towns had to be enrolled in fee-for-service Medicare and be at least seventy-five years old. Residents at the sites do not participate in managed care, and the average age at move-in ranged from seventy-four to eighty years. As a result, our sample included 90–96 percent of all residents at the sites. We excluded younger residents, to keep the comparison groups across the four sites as similar as possible.

Measuring Health Care Use

Health care use was measured using Medicare administrative data. For a detailed description of methods, see the Technical Appendix.⁸ In brief, we included data from the period 1997–2006 for each person, and we calculated use over the number of years the person lived in the continuing care retirement community, reported as annual rates per person-years of observation. This method allowed data from people who moved or died to contribute to the analysis.

We chose utilization measures that characterized ambulatory care and examined differences in the use of hospital-based services. Measures included the number of visits to clinicians (primary care providers, medical specialists, and mid-level providers such as nurse practitioners and physician assistants); rates of emergency department visits; and rates of medical and surgical hospitalizations. Measures of continuity included the average number

of unique (different) physicians visited and the percentage of residents seeing more than ten different physicians in a year.

Finally, the percentage of deaths that occurred in a hospital was determined. All measures were calculated separately for residents of the retirement communities and for residents of the surrounding towns. Because of data availability, the measures came from different size samples of the Medicare data and years within the study period; see the Technical Appendix for details.⁸

Analysis

Standard statistical methods were applied (see the Technical Appendix⁸). Several points warrant special comment. The results were all adjusted for demographic characteristics (age, sex, and race), but not for severity or type of illness. Claims-based illness adjustment may create biased estimates because having a diagnosis is dependent on having a visit or procedure, not on the actual presence of disease.⁹

The likelihood of bias is high when one group has many fewer visits or hospitalizations, which was the case in this study. One solution might have been to use objective measures of functional status, but these are not reported in billing data. By limiting the analysis to residents age seventy-five or older, we tried to keep the comparison groups as similar as possible in terms of functional status and illness across the four sites.

Data were not available to adjust for socioeconomic status. However, residents of the communities pay high out-of-pocket fees, which suggests that subjects at all four sites are relatively affluent. The relative homogeneity of our study site populations—generally white, affluent, and receiving care in a setting subsidized by high out-of-pocket expenses—has the advantage of improving the validity of the comparisons in spite of our inability to adjust for socioeconomic status.

At the same time, that relative homogeneity may limit the application of our results to more diverse populations. However, the same demographics tend to characterize assisted living residents in general. Moreover, with nearly one million elders in assisted living communities nationwide, understanding the design of care delivery and its impacts in these settings has inherent value.^{7,10}

Results

Characteristics Of Sites And Their Residents

The four continuing care retirement community sites shared many characteristics but also had several key differences (Exhibit 1). Each site offered similar residential services, including independent living, assisted living, and nursing home beds that were also certified for skilled nursing use.

Residents' out-of-pocket expenses were similar, but they varied based on the local cost of living. A single person in a one-bedroom apartment would pay \$185,000–\$230,000 to join

the community and \$2,700–\$3,300 per month in fees to cover housing, services, and health care for the rest of his or her life.

The residents included in this study were similarly elderly (average age 84–85 years), predominantly female (63–71 percent), and white (97–100 percent) across the four sites. Selected residents of surrounding towns had similar demographics (mean age 83, 64 percent female, 94 percent white).

On-Site Medical Services

All four sites had at least one on-site nurse practitioner in their clinics, plus an on-site registered nurse for after-hours coverage. At site D only, the nurse practitioners took after-hours calls alternating with the physicians.

At all sites, physicians offered on-site office hours. Yet there were distinct differences in how physician coverage was provided. At sites A–C, on-site physician hours were limited, and the same physicians saw nonresidents at practices outside of the continuing care retirement community. After-hours calls were covered by members of the physician's practice, including physicians who did not practice on site.

In contrast, the physicians and two part-time nurse practitioners at site D delivered clinical care only at that site, covered all settings within it, and provided all after-hours coverage. Because of the dedicated team structure at site D, we characterized that site as having the most integrated primary care.

Visits And Continuity

All of the continuing care community residents had many clinician visits per year (fourteen to twenty visits, on average, per person-year across the sites). However, the distribution by type of provider and continuity at the various sites was quite different, in spite of all residents' having full choice of providers (Exhibit 2).

Although sites B and C had the greatest visit rates, site B relied more on nurse practitioners and physician assistants, while site C relied more on specialists. Site D had the lowest rates of total visits and of physician visits, and strikingly lower use of specialists (two to three times lower than at the other sites).

The tendency toward fewer specialty visits at site D was also reflected in lower fragmentation of physician care: Only 6 percent of residents saw more than ten unique physicians in a year, compared to 14–17 percent of residents at the other three sites.

Hospital Use

Hospital admissions are categorized by reason: surgical or medical. Surgical admissions are typically for elective procedures and therefore tend to be planned events. In contrast, medical admissions usually are unplanned events resulting from acute illness or exacerbation of chronic conditions that require urgent care.

We found little difference across the sites in rates of surgical admissions, but large differences in rates of medical admissions and emergency department visits. Residents at sites A and B had similar rates of medical admissions (nineteen per hundred person-years) and emergency department visits (0.60 per person-year). Site C had significantly fewer medical admissions (fifteen per hundred person-years) and half as many emergency visits (0.31 per person-year).

Site D had many fewer of both types of admissions: only seven medical admissions per hundred person-years and 0.16 emergency room visits per person-year. Compared to site D, the other sites had 2.0–3.8 times higher rates of medical admissions and emergency room visits; see Appendix Figure A.^{8,11}

Place Of Death

Nationally, 27 percent of people age seventy-five or older who died in 2006 did so in hospitals. Compared to this benchmark, the towns in which the continuing care retirement communities are located had equal or slightly lower rates of hospital death (range 21–27 percent).

Each continuing care retirement community had an even lower rate of hospital death than its respective town (Exhibit 3). At sites A–C, hospital deaths were almost half the national average, and 31–46 percent less common than in the surrounding towns. At site D, only 5 percent of residents who died did so in the hospital, which is less than one-quarter the rate in the surrounding town and less than one-fifth the national average.

Discussion

Elderly residents of a continuing care retirement community served by an embedded primary care team—that is, a team with all-hours responsibility for medical coverage across all settings within the community—experienced lower intensity of medical care compared to residents in communities without an embedded primary care team. They had fewer hospitalizations, emergency visits, and specialty physician visits, and they saw fewer different physicians than did their peers at retirement communities with similar social and residential supports but less integrated primary care.

Most important, only 5 percent of residents at the site with the most integrated primary care who died did so in a hospital, compared to 14–15 percent at the other continuing care communities, 21–27 percent in the surrounding towns, and 27 percent nationally (Exhibit 3).

The differences in care use and place of death across the four sites may be due to factors other than the presence of more closely integrated primary care that were not captured in the present study. But, for the reasons noted, it is both appropriate and useful to consider how this feature of site D might have contributed to these findings, as we design new models of long-term care delivery that are intended to achieve such outcomes.

Urgent Care

The findings overall imply that facilities allowing for aging in place may reduce the use of off-site urgent care—both medical admissions to hospitals and emergency department visits. However, the extent to which they may succeed in doing this depends on the precise organization and delivery of primary care in a particular retirement community.

Staffing that includes registered nurses and nurse practitioners is one mechanism by which nursing homes have reduced the use of urgent care; each continuing care retirement community we studied used this approach.¹¹ At site D, the presence of a highly integrated primary care team appears to allow better access for unscheduled care, thereby lowering emergency department use. At that site, the same physician was present several days a week. Moreover, only clinicians from the site, who were familiar with its resources and capabilities, provided on-call coverage.

We suggest that a knowledgeable primary care team that monitors patients as illness develops over several days may be able to respond in a range of ways to an acute, unscheduled situation. In other words, the existence of an “embedded” team may allow for responses beyond simply an emergency department visit for an affected patient.

Using Resources To Maximize Choices For Site Of Care

In our discussions with the primary care team at site D, we learned that a close collaboration between clinicians and continuing care retirement community residents led to a consensus favoring the conservative management of acute and chronic illnesses, with an expressed preference among most members to avoid hospitalization if at all possible.¹² Because the primary care team served all settings within the continuing care retirement community, it was able to deploy residential resources in pursuit of this preference—including direct admission to the community’s Medicare-qualified skilled nursing facility as a way of avoiding hospital admission.

Under ordinary fee-for-service Medicare payment policy, a skilled nursing facility stay must be preceded by a three-day hospital admission to qualify for reimbursement. The philosophy of care and ability to cross-subsidize within the continuing care community made the use of its skilled nursing beds a viable option, even though not reimbursed by Medicare.

With clinicians on site and providing after-hours coverage, it was also possible for the primary care team at site D to accept an early hospital discharge without a qualifying stay to a skilled nursing bed, or to manage borderline cases in the community’s skilled nursing beds rather than in the hospital. The skilled nursing beds were also used to support members who were at the end of life, either preventing or substituting for hospitalization.

The ability to use nursing home beds certified for skilled nursing use as flexibly as possible depends not only on the way the beds are financed, but also on the presence of a medical team that can make an immediate assessment and do a skilled bed admission on the spot, then follow up with daily monitoring of more acutely ill patients. All sites were certified to use their nursing home beds flexibly, but informants’ comments revealed that access to

clinicians was not consistent enough at sites A–C to make the practice as routine as it was at site D.

Other programs for high-risk elderly people that have been shown to reduce hospital use, such as the Program for All-Inclusive Care, also capitalize on the ability to deploy services in a different manner and in a timely fashion by using a dedicated medical team, albeit through capitated financing.^{13,14}

Close collaboration between clinicians and residents led to a consensus favoring the conservative management of illnesses.

Patient-Provider Continuity Over Time And Setting

Another reason why more highly integrated primary care in the continuing care community is associated with less-intense medical care may be that it results in greater provider-patient continuity, both over time and across settings within the community. Greater physician continuity has been associated with less emergency department and hospital care.^{15–17} Continuity and visits with the primary care provider, in particular, have been associated with less aggressive end-of-life care.^{16,18}

The solo practitioner of yore who managed patients in the clinic, hospital, home, and nursing home embodied the provision of high continuity in all its dimensions: informational (sharing health data), management (developing and executing treatment plans), and relationship (maintaining an ongoing therapeutic connection).¹⁹ To some degree, the integrated model at site D emulates this traditional role of clinicians that crosses multiple settings. The relational continuity that having a very small group of clinicians fosters may improve the likelihood of patients' trust in decisions and providers' knowledge of patients' preferences.^{15,19}

Role Of Preferences

Several alternative explanations, other than the design of primary care, may account for the observed differences in utilization rates across the four sites. One is that patients' preferences for amount and type of hospital service use could vary systematically across the sites. We do not have any information about individual residents' preferences at the sites we studied. Yet there is some information about the preferences of residents of continuing care communities from other studies.

Previous work has documented that 40 percent of continuing care retirement community residents reported considering place of death in their decision to enter such a community, and most preferred to die on the community campus.²⁰ Other studies of preferences among continuing care residents have shown that the majority preferred not to die in the hospital.^{21,22}

New policies included in the Affordable Care Act of 2010 may lower barriers to patient-centered, coordinated care.

Additionally, it has been shown that preferences for the intensity of end-of-life care do not vary by region.²³ These findings tend to reduce the likelihood that differences in residents'

preferences at the four sites were large enough to account for the observed differences in place of death.

Community Influence

In addition to participating in the design of its primary care delivery system, each retirement community probably develops social and cultural norms that also influence decisions regarding hospitalization and the intensity of end-of-life care. There may be opportunities for learning, development of self-management skills, support groups, and shared community resources that lead to differential use of the hospital.

Clinicians at site D described participating in community discussions that led to the development of an approach that placed a high priority on individual patients' preferences. But this development of a community norm might emerge independent of the integrated primary care team.

Exceptions To The Regional Practice Pattern

Many studies have shown that one's region of residence can be related to as much as a two-fold difference in physician and hospital use and spending.^{24,25} In fact, some studies have shown region to be the strongest predictor of end-of-life care intensity and place of death.^{4,20,26} Therefore, location of the continuing care communities in regions with higher or lower hospital utilization rates might be expected to influence those rates.

Yet the continuing care retirement communities we studied appear to deliver care that deviates from the local norm. At site D, in particular, the difference is very large. Although the percentage dying in the hospital was lower at all sites compared to the Medicare national average, hospital deaths were even lower at continuing care community sites than in their surrounding towns. And at the site with integrated primary care, the percentage dying in the hospital was less than one-quarter that of the surrounding town and one-fifth the national average (see Appendix Figure B for additional utilization comparisons).⁸

We cannot know definitively, from these data, whether philosophy of care, role of patients' preferences, insulation from Medicare fee-for-service forces, design of primary care delivery, or other as yet unidentified features led to these treatment patterns that are strikingly different from local norms. With further investigation, we could learn more from these collaborative models about the drivers of variation in health care delivery.

Policy Implications

The example of dramatically lower hospital use at the end of life and the use of fewer physician, emergency, and hospital visits in a care delivery system that serves the elderly is an important demonstration of "what is possible." We could not find any other published reports with such low proportions of deaths occurring in the hospital. But what features of a continuing care retirement community with embedded primary care can be adopted more broadly?

The features that are not reproducible are the affluence of the residents and subsidization by high out-of-pocket expenses. Yet other key features are transferrable.

The spectrum of on-site clinic services can be expanded to cover urgent care if the physicians can provide more in-person access or consultation and support for the nurse practitioner during regular working hours. Physicians and nurse practitioners can provide continuous care across all relevant settings: clinic, nursing home, and skilled nursing care.

On-call coverage can be provided by physicians and nurse practitioners who are knowledgeable about, and comfortable with, the urgent care services that can be delivered on site. Nursing home beds can be used more flexibly, for urgent or end-of-life care, if there are alternative funding streams and accessible clinicians.

The adoption of these features on a broader scale might not seem feasible under the fee-for-service payment model, and when financing falls on public payers or on people with less affluence. But new policies included in the Affordable Care Act of 2010 may lower barriers to this type of patient-centered, coordinated care. Several policy changes affect long-term care (such as the Community Living Assistance Services and Supports Act and Medicaid incentives to increase home and community-based services).

Most relevant to this discussion are policies that address chronic care coordination. The strategic lead will come from two new offices: one charged with improving coordination of Medicare and Medicaid programs; and a second, the Center for Medicare and Medicare Innovation, for which development of “patient centered medical homes models for high need individuals” is a high priority.^{27(p7)}

Some features of the collaboration between continuing care retirement communities and primary care providers observed at site D could inform the design of Medicare pilot projects and demonstrations that are under development. For example, pilot programs of bundled payments for hospitalization and care transition demonstration projects could consider ways to make flexible skilled nursing home beds more accessible, in collaboration with the physicians who work in those settings.

In addition, accountable care organization payment models offer incentives for a group of providers to deploy resources and personnel collaboratively for high-risk patients. Under the shared savings model or under partial capitation, provider groups could design a compensation model that allows providers more management choices for high-risk elderly people in need of urgent care, beyond sending them to an emergency department.

The opportunities for alternative models will be even greater for Medicare beneficiaries who are also eligible for Medicaid (known as dually eligible), who also have access to Medicaid waiver-based home and community-based care services or are nursing home residents. For these vulnerable groups, social and medical care are managed exclusively or primarily through public payers, which creates opportunities for the Centers for Medicare and Medicaid Services to align payment policies across the social and medical care delivery systems.

Providers could make a commitment to redesign their medical practices around the need for care across the life span.

Conclusion

The collaboration between continuing care retirement communities and primary care providers shows what is possible when the two groups who provide social and medical care work together to meet the needs of people in their last decades of life. A continuing care retirement community offers its members a contract to provide housing and nursing support across a person's remaining life span, regardless of the level of need.

Medical providers could make a similar commitment to redesign their medical practices around the need for care across the life span that goes beyond the office-based medical home to one that is truly patient centered and encompasses all residential settings. Learning how successful models incorporate residential settings into the design of medical homes can provide valuable insights on how to improve care for patients at high risk for functional decline, hospitalization, and death.

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Biographies

Julie P.W. Bynum is an associate professor at the Dartmouth Institute for Health Policy and Clinical Practice.

Julie Bynum and her colleagues at Dartmouth Medical School report on a study of four continuing care retirement communities with common ownership. They found that the one

with its own on-site primary care team that served only the retirement community's residents experienced the lowest use of Medicare services, including the lowest rate of hospital use and deaths in hospitals. This is exactly what one would hope to see, Bynum observes, when a primary care practice appears primarily focused on residents' care and goals.

Bynum is an associate professor of medicine and associate director of the Center for Health Policy Research at the Dartmouth Institute for Health Policy and Clinical Practice, Dartmouth Medical School. A practicing geriatrician, Bynum received her medical degree from the Johns Hopkins Medical School and holds a master of public health degree from the Johns Hopkins Bloomberg School of Public Health.

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Exhibit 3.

Percentage Of Deaths That Occurred In The Hospital For Continuing Care Retirement Community Residents Compared To Residents Of The Surrounding Town And Nationally

SOURCE Authors' analysis of Medicare administrative data. **NOTES** CCRC is continuing care retirement community. Dotted line represents the national average for people age seventy-five or older (27 percent). Results are for Medicare beneficiaries age seventy-five and older who died between 1997 and 2006. A version of this exhibit showing standard error bars is available in the online Technical Appendix; see Note 8 in text.

Exhibit 1**Comparison Of Residents, Clinical Services, And Surrounding Communities Across Four Continuing Care Retirement Community Sites**

	Site A	Site B	Site C	Site D
RESIDENT CHARACTERISTICS				
Number of residents	358	441	1,110	559
Mean age in 2006 (years)	85.4	84.6	85.6	84.4
Percent white	100.0%	100.0%	97.4%	99.2%
Percent female	71.1%	62.9%	68.2%	65.9%
HEALTH CARE AND RESIDENTIAL CARE SERVICES				
No. of assisted living beds	24	36	104	50
No. of nursing home beds	42	35	109	42
No. of independent living units	211	213	504	250
On-site nurse practitioner coverage	1 full time	1 full time	1 full time	2 half time
On-site physician coverage	3 on site, each for a half-day per week	Any credentialed community physician may be on site	2 on site, each for 2 half-days per week	2 half time practicing solely at the continuing care retirement community
Residents receiving primary care on site	90%	80%	95%	98%
After-hours (on-call) coverage source	Community-based practices	Community-based practices	Community-based practices	Only clinicians who work on site
Hospital proximity	2 miles	4 miles	2 miles	2 miles
SURROUNDING COMMUNITY CHARACTERISTICS				
College or university	Yes	Yes	Yes	Yes
Percent white	71.9%	84.1%	92.7%	88.8%
Percent families in poverty	6.7%	7.3%	2.7%	1.0%
Population size	8,195	18,198	6,451	10,850

SOURCES Authors' analysis and survey of continuing care retirement community sites, 2000 US census data.

Exhibit 2

Medicare Utilization Across Four Continuing Care Retirement Community Sites

	Site A	Site B	Site C	Site D	p value
PROVIDER VISITS^a					
Person-years	403	416	952	623	
Rate per person-year					
Total visits	15.8	20.5	20.4	14.4	<0.001
Primary care visits	6.4	7.5	8.8	4.6	<0.001
Specialty care visits	6.2	6.3	8.5	3.0	<0.001
Mid-level visits	1.6	4.7	1.2	4.1	<0.001
Emergency department visits	0.58	0.60	0.31	0.16	<0.001
CARE CONTINUITY^b					
Average no. doctors seen	5.5	6.1	5.7	3.2	0.002
Percent who see 10+ doctors	16.2%	17.1%	14.2%	5.9%	0.089
HOSPITAL USE^c					
Person-years	1,926	2,303	5,563	2,904	
Rate per 100 person-years					
Total admissions	30.0	28.9	25.4	15.0	<0.001
Medical admissions	18.8	19.4	14.6	6.8	0.002
Surgical admissions	11.3	9.5	10.7	8.1	0.173
Percent of deaths occurring in hospital	14.4%	15.3%	14.2%	5.1%	0.004

SOURCE Authors' analysis of Medicare data. **NOTES** Only site D had embedded, round-the-clock medical coverage. All residents were at least seventy-five years old. Results were adjusted for age, sex, and race.

^aBased on 20 percent sample data, 1998–2006.

^bBased on 20 percent sample data, 2002–06.

^cBased on 100 percent data, 1997–2006.