Predictors of Low-Care Prevalence in Florida Nursing Homes: The Role of Medicaid Waiver Programs

Elizabeth A. Hahn, BS,*1 Kali S. Thomas, MA,1 Kathryn Hyer, PhD, MPP,1 Ross Andel, PhD,1,2 and Hongdao Meng, PhD1

1School of Aging Studies and the Florida Policy Exchange Center on Aging, University of South Florida, Tampa.
2International Clinical Research Center, St. Anne’s University Hospital, Brno, Czech Republic.

Purpose of the study: To examine the relationship between county-level Medicaid home- and community-based service (HCBS) waiver expenditures and the prevalence of low-care residents in Florida nursing homes (NHs). Design and Methods: The present study used a cross-sectional design. We combined two data sources: NH facility-level data (including characteristics of the facility and its residents) and county-level market characteristics (including HCBS waiver expenditures) for 653 Florida NHs in 2007. Low-care was defined as residents who require no physical assistance in any of the 4 late-loss activities of daily living (bed mobility, toileting, transferring, and eating). We estimated a 2-level hierarchical linear model (HLM) to examine the relationship between Medicaid HCBS waiver expenditures and the prevalence of low-care residents while accounting for resident assessment, facility-, and county-level covariates. Results: All Florida counties offered 2 statewide waivers, and 33 counties offered one or more of the 4 regional Medicaid HCBS waivers in 2007. Per-month beneficiary expenditures ranged from $755 to $1,778. The average Florida NH had 120 beds, and 8.0% of its residents were classified as low-care. Results from the HLM model showed that a $10,000 increase in per-enrollee HCBS waiver expenditures was associated with a 3.5 percentage point reduction in low-care resident prevalence ($p = .03$). Implications: The findings suggest that Medicaid HCBS waiver programs may reduce the prevalence of low-care residents in NHs. Future studies should evaluate whether Medicaid HCBS waiver programs are effective in promoting community-living among low-care residents and mitigating the growth in long-term care expenditures.

Key Words: Medicaid, HCBS, Low care, Nursing home residents

Although most adults with disabilities receive unpaid care from families and friends (LaPlante, Harrington, & Kang, 2002), publicly financed home- and community-based care play an important role when informal care is not available or is insufficient. During the Federal Fiscal Year 2009, long-term care expenditures accounted for 32% ($114 billion) of total Medicaid expenditures (Eiken, Sredl, Burwell, & Gold, 2010). Additionally, Medicaid home- and community-based service (HCBS) waivers, a key component of long-term care financing (Kitchener, Ng, & Harrington, 2004), have seen tremendous growth over the past decade. HCBS waiver program expenditures as a percent of the total Medicaid long-term care expenditures have risen from 24% to 45% between 1997 and 2009 (Eiken et al., 2010).

With the recent enactment of the Patient Protection and Affordable Care Act, states will be allowed to further extend the provision of HCBS for individuals with health needs that would otherwise
require institutional care (Kaiser Family Foundation, 2010). The growth in HCBS coincides with a decline in the number of nursing home (NH) residents (Jones, Dwyer, Bercovitz, & Strahan, 2009). In addition to a preference for community-living by individuals residents (Arling, Kane, Cooke, & Lewis, 2010), the increase in the availability of care in less restrictive settings (e.g., assisted living facilities) is an important factor in the rebalancing of long-term care from institutional to home and community based. Current evidence suggests that HCBS waiver programs are associated with better client satisfaction, caregiver satisfaction, and lower use of NHs (Grabowski, 2006). The Money Follows the Person initiative, enacted in section 6071 of the Deficit Reduction Act, typifies programs, which allow flexible spending of Medicaid dollars for HCBS. States engaged in the program are demonstrating efforts to “rebalance” their long-term care system by using Medicaid dollars for community care rather than for institutional care (Centers for Medicare and Medicaid Services, 2007).

In the rebalancing process, an important question remains regarding the identification of individuals who can be cared for properly in community settings. The study of “low-care” residents in NHs reflects such a growing interest in the field. Mor and colleagues (2007) have broadly defined low-care residents as older adults (a) who can independently (or with minimal supervision) perform certain activity of daily living (ADL) tasks (eating, transferring, bed mobility, and hygiene activities) and (b) who were not classified in one of the two lowest functioning categories of the Resource Utilization Group (RUG-III, version 5.12) resident classification system (Mor et al., 2007). Using this definition, Mor and colleagues showed that states with HCBS as a greater proportion of their Medicaid long-term care budget have a lower percent of low-care residents. Because low-care residents require less assistance in their daily lives but may have fewer resources or support to allow them to be discharged from an NH, they may be an appropriate target population for diversion from NHs to the community. Although the study by Mor and colleagues represents one of the first national studies to link HCBS spending to the presence of low-care residents, their use of state-level data may have limited the ability to test the relationship between HCBS waiver programs and NHs. For example, potential substitution of long-term care services, if present, is likely to happen at the local rather than at the state level. Therefore, there remains a gap in the literature as to whether there is any substitution effect at the local market level (Castle, 2002).

Since the 1980s, Florida has provided a number of HCBS waiver programs to promote independent living throughout the state, some of which are offered to individuals who would otherwise be NH eligible. By 2008, Florida offered six HCBS waiver programs for older adults: (a) Aged and Disabled Adult Services, (b) Adult Day Health Care, (c) Assisted Living for the Elderly, (d) Channeling for the Frail Elder, (e) Nursing Home Diversion, and (f) Alzheimer’s Disease. These programs vary in their eligibility requirements, funding, availability within the state, number of beneficiaries, and range of services offered (Table 1 and Figure 1; see Golden, Roos, Silverman, & Beers, 2010 for discussion). Florida is just one example of an HCBS system providing waivers to a large number of older adults; the structure of waiver programs may vary from one state to the next. For example, Oregon offers one statewide waiver for older adults, but the average expenditure per enrollee can be as high as $9,414 (Oregon Department of Human Services, 2009). The number of waivers offered in a county or state is not necessarily related to the number of waiver beneficiaries (LeBlanc, Tonner, & Harrington, 2000). The variation within state and between states might therefore require in-depth county-level analysis of HCBS programs.

The current study aims to test the hypotheses regarding the relationship between spending for Medicaid-funded HCBS waiver programs and the prevalence of low-care residents in Florida, a state with more than 600 NHs and 79,330 beds in 2007 (Harrington, Carrillo, & Blank, 2008). The present study is motivated by resource dependency theory (Pfeffer & Salancik, 1978), which has previously been used in NH research and specifically research examining low-care residents in long-term care settings (Banaszak-Holl, Zinn, & Mor, 1996; Castle, 2002). It posits that environmental resources influence institutional decision making. Organizational activities of NHs respond to environmental factors as a way for NHs to position themselves competitively in the market. Previous research of this relationship used statewide averages (Mor et al., 2007) and therefore may not have captured the variation at the county level, where HCBS waiver expenditures differ. Thus, the present study builds on previous literature by providing a more precise measure of environmental factors that may decrease the prevalence of low-care residents in NHs. To our knowledge, this is one of the first studies to examine...
this relationship at the NH and county levels within a state. Because Medicaid reimburses NHPs using a cost-based prospective payment system in Florida (as opposed to a case-mix payment system), we hypothesize that NHPs in environments (counties) with fewer resources (less spending on Medicaid-funded HCBS waivers) will have higher levels of low-care residents to maximize profits in the financial market, controlling for relevant NH- and county-level characteristics. Conversely, NHPs in counties with more resources (higher spending on Medicaid-funded HCBS waivers) are more likely to have lower proportions of low-care residents as their care needs are assumed to be able to be met in the community through HCBS.

### Design and Methods

#### Data Sources

We used three different data sources for this study. NH facility characteristics were derived from the Online, Survey, Certification, and Reporting (OSCAR) data set, the inspection data required by the federal certification process collected during each annual recertification survey. Facility data were not available for 8 (1.2%) of 661 Florida NHPs, and these facilities were therefore excluded from analyses. As a result, 653 NHPs were included in the analyses. Characteristics of NH residents were obtained from the Minimum Data Set, a congressionally mandated resident assessment conducted at admission, discharge, quarterly, and when there is a significant change in resident status. We used the Area Resource File (ARF) to obtain county-level information for health care utilization, health professions and facilities, environmental, and sociodemographic topics. OSCAR and ARF information for 2007 were downloaded from the LTCFocUS.org Web site (Shaping Long Term Care in America Project). Expenditure data for HCBS waiver programs per county for the 2007 calendar year were obtained from the Florida Department of Elder Affairs.
Outcome Variable

Low-Care Residents.—Consistent with previous research (Buttar, Blaum, & Fries, 2001; Ikegami, Morris, & Fries, 1997; Mor et al., 2007), estimates of the percent of low-care residents were identified using ADL and RUG-III classifications. Specifically, individuals were identified as low-care if they required no physical assistance in any of the four late-loss ADLs (bed mobility, toileting, transferring, and eating) and if they were not classified in the two lowest functioning RUG-III (version 5.12) classifications (“special rehab” or “clinically complex”). The late-loss ADLs are determined to be more predictive of resource utilization than early-loss ADLs (Fries et al., 1994). “Special rehab” and “clinically complex” residents were not considered to be low-care because they are typically frail and require more NH care (Mor et al., 2007). The RUG-III categories are based on ADL abilities, and they also incorporate health conditions into the classifications. Additionally, the “special rehab” classification refers to residents who require more speech, occupation, physical, and/or nursing rehabilitation (45 min or more per week) and the “clinically complex” classification includes residents who have medical conditions, such as a coma, pneumonia, internal bleeding, or requiring tube feeding (for further information on RUG-III classification, see Myers & Stauffer, 2000). The ADL qualification (no assistance required in four late-loss ADLs), by definition, excludes residents in the “special care” and “extensive care” RUG-III classification groups as well. Data were then aggregated at the NH level to derive prevalence estimates of low-care residents in each facility.

Main Variable of Interest

Medicaid HCBS Waiver Program Expenditures.—The main independent variable was the average per enrollee HCBS waiver expenditures for each county in 2007. We used expenditure data from five of the six Medicaid-funded HCBS waiver programs (data for Adult Day Health Care were not available for 2007) to calculate the average waiver expenditures per enrollee in a given county. For each county, one continuous spending variable was created by adding total expenditures paid by Medicaid for the five Medicaid waiver programs per county and dividing by the number of enrollees served in that county. We used enrollees as the denominator for our expenditure variable in an attempt to remain consistent with our objective of understanding spending on HCBS as it relates to NH-eligible (low-care) older adults.

NH- and County-Level Factors

NH-Level Factors.—The average resident age at the facility level was included to account for the correlation between age and physical health (i.e., low-care status). Percentage of male residents was included because previous studies have suggested that there are higher proportions of men among low-care residents than is normally seen in the predominately female NH population (Buttar et al., 2001). There may also be gender differences in the utilization of family, friends, or personal care services to provide support and delay NH admission for older adults living in the community with long-term care needs. Because NHs benefit financially from the higher reimbursement rates of postacute short-stay residents (Weech-Maldonado, Neff, & Mor, 2003), we also included the percent of Medicare residents in the model. Conversely, Medicaid residents are typically long-stay NH residents who can be targeted for HCBS, and a higher proportion of low-care residents are likely to be related to a higher proportion of Medicaid residents. Occupancy rate was included as an NH characteristic that may influence the presence of low-care residents because there is financial incentive to cover fixed costs with a greater number of residents. Facilities were hypothesized to have a higher
number of low-care residents when occupancy rates were lower. We also included the total number of beds, profit status, and chain membership for each facility because larger for-profit facilities and those that are members of multistate corporations may have different resources than smaller, not-for-profit freestanding facilities. Profit status was measured dichotomously (for-profit = 0, non-profit = 1), and chain membership was also entered as a dichotomous variable (no = 0, yes = 1). Finally, we also included the Hirschman–Herfindahl Index (HHI), a measure of industry concentration (the amount of competition) among NHs in the same county (Hirschman, 1964). The HHI is defined as each facility’s share of NH beds in the county divided by the squared market shares of all county facilities.

County-Level Factors.—County-level factors included the number of home health agencies (HHA), assisted living facility (ALF) beds, and hospital beds per 1,000 adults older than age 65 years. The number of HHA and ALF beds per 1,000 adults older than age 65 years was included to account for other alternatives to NHs besides Medicaid HCBS waivers. Data for hospital beds represent the number of short-term general hospital beds in the county divided by 1,000 persons aged 65 years and older. The county-level factors were included because we expected that more competition within the county would influence the options for low-care residents, that is, less competition would be related to a lower percent of low-care residents (Zinn, Mor, Feng, & Intrator, 2009).

Analytical Approach

Descriptive analyses were used to report characteristics of NHs and counties in Florida. A series of hierarchical linear models (HLM) were estimated to examine NH- and county-level factors influencing low-care status of NH residents and to also examine the relationship between Medicaid-funded HCBS waiver expenditures per enrollee in a county throughout Florida and the proportion of low-care NH residents. Controlling for NH- and county-level variables, Medicaid HCBS waiver expenditures per enrollee for 2007 were the main county-level independent variable. Because our models have facility-level data nested within counties, HLM is the appropriate analytic approach (Bryk & Raudenbush, 1992). The main benefits of the HLM specific to this study include the ability to model county-level characteristics in addition to NH-level factors and flexibility in model specification by allowing for fixed effects and random effects at both levels. All predictor variables were grand-mean centered, and analyses were performed in SAS version 9.2 (The SAS System, Cary, NC, 2010).

Results

Our final sample included 653 freestanding certified NHs in Florida. Figure 1 shows the geographic distribution of NHs and county-level distribution of Medicaid HCBS waiver programs. As described in Table 1, four of the six Medicaid HCBS waivers specifically for older adults are offered in a limited number of counties and two waivers (Aged and Disabled Adult Services and Assisted Living for the Elderly) are offered statewide. Eligibility age varied by waiver (60+, 65+, or 75+ older adults) as did other eligibility requirements (e.g., reside in ALF or with caregiver at home). All waivers, however, required participants to annually meet NH level of care as determined by the Department of Elder Affairs (based on health and functioning; Office of Program Policy Analysis and Government Accountability, Florida Legislature, 2009). Descriptive characteristics of these facilities are presented in Table 2. Florida NHs had, on average, more than 100 beds (median = 120 beds), were mostly for profit, and had an average occupancy rate of 88.1% (range: 20.6%–100.0%). On average, 8% (SD = 6.13%) of NH residents were identified as low-care (county-level range: 0%–23.1%). In 2007, average Medicaid HCBS waiver expenditures were $1,163 per month (approximately $13,956 per year) per enrollee (range: $755–$1,778) for Federal Fiscal Year 2007–2008 (Office of Program Policy Analysis and Government Accountability, Florida Legislature, 2009). The average daily Medicaid reimbursement rate to Florida NHs in 2007 was $178 per person per day or approximately $63,642 per year (Florida Agency for Health Care Administration, 2007).

Medicaid HCBS Expenditures and the Proportion of Low-Care Residents

Results from the HLM analyses are listed in Table 3. Results indicated that after controlling for NH- and county-level characteristics, counties that spent an additional $10,000 on HCBS waiver...
programs per enrollee had an average 3.5 percentage points lower proportion of low-care residents per NH in that county (est. = −0.35, p = .03). The average proportion of low-care residents in a facility was 8%, so our results suggest that each additional $10,000 increase in annual enrollee spending on HCBS reduces low-care from approximately 8%–4.5% or a reduction in three to four residents in an average facility with 100 beds. As expected, several NH characteristics were significant predictors of the prevalence of low-care residents. NHs with a greater proportion of male or younger residents were significantly more likely to have a higher percent of low-care residents (est. = 0.10, p < .001 and est. = −0.29, p < .001, respectively). A higher proportion of Medicare residents or a lower proportion of Medicaid residents was associated with a lower proportion of low-care residents (est. = −0.11, p < .001 and est. = 0.03, p = .01, respectively). For-profit NHs were more likely to have a lower percent of low-care residents (est. = 1.44, p < .001). County-level characteristics were not significantly related to low-care prevalence.

Discussion

The current study identified NH- and county-level factors influencing NH care for higher functioning older adults, and the results suggest that market characteristics (HCBS waiver expenditures) and provider characteristics (e.g., higher Medicaid resident population and gender mix) may influence NH placement for low-care older adults. Our finding of an 8% prevalence rate of low-care residents among Florida NHs is consistent with results reported in national study of Mor and colleagues (2007). The present study contributes to the literature in two main ways. First, we were able to control for NH characteristics and county-level market characteristics to more precisely assess the independent association between Medicaid HCBS spending and prevalence of low-care residents at the county level. Our finding of a negative relationship between Medicaid HCBS spending and the prevalence of low-care residents at the county level supports previously reported state findings (Mor et al., 2007). Second, by estimating the multilevel model (i.e., both institution and county level) within the state of Florida, our findings offer a more direct test of a potential substitution effect between the availability of Medicaid HCBS waiver expenditures and the prevalence of low-care residents at the county level.
Our findings provide support for resource dependency theory (Pfeffer & Salancik, 1978) in the context of low-care residents in NHs because institutions in our sample maintained higher proportions of low-care residents when there were fewer environmental alternatives (or spending) for community-dwelling older adults. Also consistent with our hypotheses, NHs with a higher proportion of Medicaid residents and a smaller proportion of Medicare residents were more likely to have a greater proportion of higher functioning residents. The findings from this study underscore the importance of Medicaid HCBS waiver programs for meeting older adults’ long-term care needs in their preferred settings. The results suggest that Medicaid HCBS waiver programs may have enabled some NH-eligible individuals (with low-care needs) to remain at home and advance Florida’s policy goal of encouraging frail and disabled Medicaid elders to live in the community.

In interpreting the findings of the present study, a few limitations and suggestions for future research should be considered. It is important to note that NH residents may be classified as low-care while receiving the intensive care provided in an institutional setting, but their health status may diminish in the community. Though the current cross-sectional study did not allow for these analyses, future research should prospectively examine discharged low-care residents’ stability in the community over time while following changing needs and ongoing HCBS support. Past research examining residents diverted from NHs found that less than half (42.7%) of older adults eventually entered an NH when tracked for five years (Chapin, Baca, Macmillan, Rachlin, & Zimmerman, 2009). Another potential limitation is the use of HCBS waiver enrollees as the denominator for the HCBS spending variable rather than all older adults who may be eligible for HCBS waivers. However, we were not able to obtain a count of older adults in the county eligible for HCBS waivers. Another possible denominator could be all older adults in the county; however, we believe that using a measure of spending for all older adults regardless of health status would not be synonymous with our objective of understanding HCBS expenditures for individuals potentially eligible for HCBS.

Also, the lack of a specific level of cognitive decline as an exclusion criterion for low-care in this and previous research warrants further examination and may require terminology to move from “low-care” to “low disability.” Older adults using HCBS who are diagnosed with dementia may have low disability but may be more likely to need NH placement than older adults without dementia using HCBS because of impaired judgment or disruptive behavior (Temple, Andel, & Dobbs, 2009). Although some individuals identified as low-care residents under the present criteria may also have cognitive impairment, individuals in our study with cognitive decline severe enough to substantiate dementia diagnosis were not expected to meet necessary ADL criteria. Finally, our data do not capture the county of prior residence for our low-care population. It is possible that residents enter NHs that are not in the same county they reside in, which would alter our assumptions that county-level factors (HCBS, NHs, etc.) operate and influence each other within the local market (or county). However, researchers suggest that the majority of older adults enter NHs (75% in New York and 80% in Wisconsin) in the same county in which they previously resided (Gertler, 1989; Nyman, 1985) and that the county is a commonly defined “market” (Grabowski, 2008). Nevertheless, the present county-based estimates may be biased toward the null hypothesis because of the presence of a small proportion of residents admitted across counties. Therefore, our effect estimates on the Medicaid HCBS waiver expenditures may be underestimating the true impact on low-care prevalence.

Implications for Research and Practice

Due to the high costs of NH care, overall long-term care spending may be reduced when there is a greater selection of noninstitutional services (Kaye, LaPlante, & Harrington, 2009). Therefore, to the extent that our findings can be confirmed by future research, a preliminary calculation suggests that an additional $10,000 spent on HCBS waiver programs for the 33,814 HCBS beneficiaries in Florida in 2007 would result in the cost of approximately $338,140,000 dollars spent on HCBS waivers over the course of a year. According to our estimates, the savings in NH costs equate to approximately 1,380 fewer Medicaid NH residents in Florida, each costing the state approximately $65,251 per year per person, resulting in a total annual savings of potentially $90,046,380 (Florida Agency for Health Care Administration, 2007). This rough estimate suggests that widespread increases in HCBS may not result in overall savings for long-term care. However, this approximation does not
account for individuals who may be receiving multiple services, and these estimates assume that all individuals would require increased spending on HCBS to “avoid” NH placement. These potential confounders, which would lead to a reduction in the costs associated with HCBS (and potentially increased overall savings), cannot be estimated based on these cross-sectional data. Therefore, longitudinal data are needed to better understand the costs associated with increased HCBS spending compared with the savings associated with fewer low-care NH residents. The results of the current study do suggest that there is the potential for a modest reduction in the percentage low-care residents as a result of increased HCBS spending; however, more analysis is needed to understand which types of waivers are most cost-effective at an individual level and also more broadly for statewide long-term care spending.

The current study can inform national policy as well as future research. Florida is the fourth largest state in the United States and also has the highest proportion of older adults with 16.7% of residents 65 years or older (Kaiser Family Foundation, 2008). Florida is a harbinger for long-term care demands that the rest of the country will face over the next decade. Florida’s highly competitive market for long-term care residential services in 2008 included 2,400 licensed ALFs with 75,480 beds and 671 NHs with 81,808 Medicaid and Medicare beds. Hence, Florida’s ratio of ALF beds per 1,000 residents 65 years and older is 24.4, close to the national average of 25.7 beds per 1,000 older residents, but the ratio of 26.4 NH beds per 1,000 elders older than 65 years is only 60% of the national norm of 44.1 beds per 1,000 (Mollica, 2009). Even though Florida has fewer NH beds than other states (suggesting less of an oversupply of beds), we found that when more money is spent per enrollee on Medicaid HCBS waivers, the prevalence of low-care residents in that county’s NHs declines.

Given the demographics in Florida and the rest of the country, efforts to rebalance long-term care by promoting HCBS are clearly at the forefront of long-term care policy. However, there is much variation in these efforts between states. Though this study was conducted in one state, the high percentage of older adults in Florida and the variability of the waivers within the state provide national relevance to policymakers. The financing of noninstitutional care resources (Medicaid HCBS waivers) may reduce the need for low-income older adults to enter an NH. Conversely, the lack of community resources may force some older adults to enter an NH. This study suggests that greater funding for HCBS waivers may provide more competition in the market and that low-care residents may be maintained in the community when resources, specifically Medicaid-funded HCBS waivers, are adequately funded. HCBS may provide a better fit between care needs and the assistance provided to older adults, and care provided outside of an NH may also provide a potentially less care-intensive option for individuals who are low-care residents. Based on our findings, it is uncertain whether HCBS is related to lower overall long-term care costs; however, increased spending on HCBS appears to provide a more targeted type of care for some older adults and thereby helps to improve the efficiency of care delivery and choices available to elders.

Funding
This research was supported in part by contract MED103 with Florida’s Agency for Health Care Administration and Department of Elder Affairs.

Acknowledgments
The authors also thank Mary Oakley, Tiffany Bryant, Mindy Sollisch, Dr. Debra Dobbs, Dr. Zhanlian Feng, Dr. Vincent Mor, and Melissa Castora-Binkley for their assistance in manuscript preparation and gathering data. We also would like to thank two reviewers for their comments on earlier versions of this manuscript.

References