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Feature Article

The impact of complex chronic diseases on care utilization among assisted living residents

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ABSTRACT

Purpose: Many residents of assisted living (AL) have chronic diseases that are difficult to manage, including congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD) and diabetes mellitus (DM). We estimated the amount and intensity of care delivered by the staff for residents with these conditions. **Methods:** We performed a secondary data analysis from the Maryland Assisted Living (MDAL) Study (399 residents, 29 facilities). In-person assessments included measures of cognition, function, depression, and general medical health. Diagnosis of CHF, COPD, and DM, as well as current medications was abstracted from AL medical charts. Measures of care utilization were operationalized at the resident level as: 1) minutes per day of direct care (caregiver activity scale [CAS]), 2) subjective staff ratings of care burden, and 3) assigned AL "level of care" (based on state regulatory criteria).

Results: In best fit regression models, CHF and DM were not significant predictors of the evaluated care utilization measures; however, COPD was independently associated with increased minutes per day of direct care – 34% of the variance in the caregiver activity scale was explained by degree of functional dependency, cognitive impairment, age, and presence of COPD. Functional dependency, depressive symptoms, and age explained almost a quarter (23%) of the variance of staff care burden rating. For the AL level of care intensity rating, degree of functional dependency, level of cognition, and age were significant correlates, together explaining about 28% of the variance.

Conclusion: The presence of COPD was a significant predictor of time per day of direct care. However, CHF and DM were not correlates of care utilization measures. Functional and cognitive impairment was associated with measures of care utilization, reiterating the importance of these characteristics in the utilization and intensity of care consumed by AL residents. Further study of this population could reveal other forms and amounts of care utilization.

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Introduction

Assisted living (AL) facilities provide care to a large number of older adults including many with complex health problems.^{1,2} Although the most common reasons for entering AL are dementia³ and functional impairment,⁴ most residents (94%) have at least one chronic medical condition, with over three quarters (76%) having two or more chronic conditions.^{5,6} Alzheimer's disease and other dementias (42%), heart disease (34%), depression (28%), diabetes (17%), and COPD (15%) are in the top 10 most common chronic conditions.⁶ These conditions complicate resident care, which is a significant consideration given the large variability

of AL staffing practices and training requirements across states, and the emphasis on a social model of care delivery in AL (as opposed to a medical model).

The burden on the health-care system associated with chronic disease is well documented. For example, congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD) and diabetes mellitus (DM), the conditions considered in this study, are associated with high rates of hospitalization and 30-day readmission.^{7–12} Moreover, the simultaneous presence of more than one chronic condition is recognized as a particularly complex and challenging aspect of patient care.^{13,14}

Evolving changes in the US health care system will impact care in assisted living facilities. New models of care delivery, such as accountable care organizations (ACO), place significant emphasis on the cost of patient care, particularly for those patients who heavily

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utilize services.^{15,16} These approaches will likely affect the decision-making of clinicians, or administrators, who care for AL residents, including whether or not to hospitalize a resident of the facility. Readmission to the hospital is now closely monitored since hospitals are reimbursed at a lower rate for a readmission within 30 days of discharge. The desire to avoid readmissions will affect the management of recently hospitalized AL residents with chronic disease.¹⁰ The ability of ALs to provide care to older adults with complex medical needs will be scrutinized at the caregiver level, and facilities will need data to prepare for this scrutiny.

Because of the expanding role of AL in the care of older adults, estimates of the amount of additional care required by those with complex medical conditions are needed to assist facilities to plan for staffing needs and the accessibility of health care providers. There are also non-clinical factors to be considered in managing these facilities. Since AL residents with chronic illness may be less likely to use the common space,¹⁷ and thus be less visible on a day-to-day basis to staff, it is not known how that might affect perceived care requirements. Estimating the additional care requirements imposed by chronic medical conditions would allow for better planning of staff needs by AL managers and would inform clinicians about the care needs of AL residents with these conditions; therefore, we designed this study to quantify care requirements within AL for residents with CHF, COPD and DM. We hypothesized that the presence of any of these 3 conditions would independently increase care utilization and we specifically evaluated the contribution of these conditions to the amount and intensity of care given by AL staff.

Methods

This is secondary analysis of data from the Maryland Assisted Living studies (Phase I and II). The primary aims of the original studies were to estimate the prevalence, incidence, detection, treatment, and consequences of dementia and other mental health conditions in a random sample of AL residents living in Maryland. Details of the design and implementation of both phases are described in prior work^{18,19} and the evaluation procedures used in both study phases were virtually identical. Phase I (2001–2003) was a cross-sectional evaluation of 198 randomly-selected residents living in one of 22 randomly-selected AL facilities in Central Maryland. Phase II (2004–2006) was a longitudinal evaluation of 203 recently-admitted AL residents living in one of 29 randomly-selected AL facilities in Central Maryland and included 6 month follow-up evaluations for up to 3 years.

Sampling of facilities and recruitment of residents

In Phase I, AL facilities were randomly sampled from a list provided by the state of Maryland that included all AL facilities in the central Maryland region (Baltimore, Anne Arundel, Harford, Howard, Carroll, Prince George's and Montgomery counties, and the City of Baltimore) that were licensed or had applied for a license in 2001. This consisted of 1282 facilities, with a total of 12,253 beds (mean 9.5 [SD 21.4] beds per facility). The sample was stratified by the size of the facilities (larger vs. smaller) defined as ≥ 15 beds, consistent with prior studies (e.g., Collaborative Studies of Long-Term Care).²⁰ All residents from small facilities were invited to participate, and 15 permanent stay residents from each large facility were randomly-selected by room number to participate. In Phase II, all 22 facilities from Phase I were invited to join the longitudinal study, and 6 new large facilities (≥ 15 beds) in the region were randomly-selected to take part using the sample method described. Resident sampling in Phase II involved inviting all recently-admitted residents to

enroll in the study. Recent-admission was defined as a permanent stay resident who had moved into the facility within the past 12 months. The analyses presented here combine the initial baseline evaluation data from 399 participants enrolled in either MDAL Phase I or MDAL Phase II from one of the 29 AL facilities (3 participants from the total sample of 402 were excluded due to missing data; all participants represented independent observations with no sampling overlap). All participants and/or their legally authorized representatives provided informed consent and the study protocol was reviewed and approved by the Johns Hopkins School of Medicine Institutional Review Board.

Procedures and measures

Data collection involved a comprehensive in-person evaluation by a geriatric psychiatrist, research nurse, and research associate. Data collected included: demographics, a detailed physician-directed examination, a psychometric battery, a narrative family history and review of present illness, current medical diagnoses and medications as recorded in the AL medical chart, and measures of functioning and mood as assessed by a member of the study team. Information was collected from the resident, a family member, and one of the professional caregivers (i.e., an AL staff member who worked with the participant on a daily basis).

The presence of any one of 3 specified medical conditions (CHF, COPD, DM) and total number of routine medications were ascertained from a review of the AL medical chart. Although it was very unlikely that a diagnosis was included erroneously, it was more plausible that an actual diagnosis was not included. The global "medical complexity" of the resident was operationalized by the clinician-rated General Medical Health Rating (GMHR), a validated tool that ranges from 1 (poor health) to 4 (excellent health).²¹

Other standardized quantitative measures included:

- 1) the Psychogeriatric Dependency Rating Scale (PGDRS),²² administered by the research nurse to the AL staff caregiver, to assess functional dependence in basic activities of daily living, with scores ranging from 0 (not at all impaired) to 39 (severely impaired);
- 2) the Cornell Scale for Depression in Dementia (CSDD),²³ administered by the research nurse using semi-structured interviews with the resident and AL staff caregiver to assess depressive symptoms, with scores ranging from 0 to 38 (higher score indicating more depressive symptoms);
- 3) and the Mini-Mental State Exam (MMSE),²⁴ a global measure of cognitive function administered by the research associate to the resident, with scores ranging from 0 to 30 (higher scores indicating higher cognitive function).

We operationalized "care utilization", our study outcome, using three measures:

- 1) the caregiver activity scale (CAS),²⁵ administered by the study nurse to the AL staff caregiver to who worked most closely with the resident on a daily basis to estimate the time per day (i.e., objective burden) he/she and other formal caregivers spent assisting the resident with six day-to-day care activities (i.e., communication, transportation, dressing, eating, grooming, and supervision);
- 2) a single-item caregiver Likert burden rating (1–5) administered by the study nurse that assessed the AL staff caregiver's perception of the burden of the resident ("How difficult is it for you to care for this resident on a day-to-day basis? 1 = least difficult and 5 = most difficult");

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