Natural History of Long-Term Care Clients

Madhuri Reddy, MD, Associate Editor, Geriatrics & Aging.

In order to effectively plan future long-term care (LTC) environments, it is important to ascertain the natural history of clients once placed in these environments. What, for instance, are the predictors of client mortality and the probability of a change in function, either to improve or deteriorate, once placed in a certain level of care? Environments need to be flexible and, most of all, promote independence and an enhanced quality of life.

Changes in Care Requirements Over Time

It is well established that the functional status of many nursing home (NH) clients improves after NH placement or after transitions between different levels of care. Some aspects of functional status (hygiene, dressing, grooming and transferring), as well as depressed mood, are likely to improve shortly after NH admission.[1] One study of over 9,500 elderly clients admitted to a NH for at least 100 days found that 51.5% experienced a change in function during the first 90 days. This change usually represented an improvement rather than a decline. In fact, thirty-seven percent of this long-stay client sample was able to return home.[2]

Predictors of Mortality

Several studies have indicated that predictors of mortality in the elderly are increased age, male sex, poor physical status, poor social supports and poor cognitive functioning.[3,4,5] Few studies, however, have investigated the predictors of mortality specific to the NH population. A prospective cohort study of 399 NH clients (followed up for eleven years) revealed that the mean duration from baseline to death was 2.75 years. For cognitively intact clients, significant predictors of mortality were male sex, comorbid conditions and non-aggressive behavioural disturbances. For cognitively impaired clients, significant predictors were increased age, reduced ADLs and behavioural disturbances. Cognitive impairment in itself was found to be a significant predictor of mortality in this study[6] and in other large trials.[7]

Several studies have found reduced functional ability to be a predictor of increased mortality in the elderly in the community,[4,8,9] in acute hospitals[10] and in NHs.[11] A longitudinal study of 9,264 clients with Alzheimer dementia in NHs in the US revealed that the strongest predictors of mortality in this population were age, male sex, functional limitation and malnutrition.[12]

The majority of deaths in NHs occur in the first year after placement.[13] It is reasonable to expect that, if objective criteria are implemented to select appropriate clients for NH admission, the NH population will eventually contain only the most disabled clients, which influences NH mortality rates. However, mortality in NHs seems to be fairly constant even when the case-mix is sicker overall. For example, a retrospective chart review of all 1,605 NH clients in Minnesota indicated that, although average severity of client illness increased between 1984 and 1988, it had only a modest effect on the mortality rate.[14]

Effect of LTC Environment on Morbidity and Mortality

There is a dearth of data available on how different levels of LTC and new alternatives to institutional LTC may affect the natural history of elderly clients.

One recent study has compared the effects of living in a NH (350 beds) versus an assisted living (AL) facility (60 beds). The clients in both facilities were similar at baseline with respect to age, gender, marital status and cognitive status. Clients differed at baseline in terms of education (AL clients were more educated), length of stay (the entire population of the AL facility was new; 34% of the NH population was new), pay status (AL clients were more likely to pay privately for their care), functional ability (AL clients had higher scores) and depression (NH clients reported more depressive symptoms). After 15 months, there was no significant difference in mortality rates or rates of relocation between the two facilities. Logistic regression analysis took into account the influence of the variables that differed between clients in each facility at baseline. Ultimately, the sole significant predictor of mortality was age.[15]

Generalizability and limited power are concerns with this relatively small study done on only two facilities. However, there appear to be very similar outcomes over time for NH clients compared with AL clients.[15] This is a compelling reason to devote more funding and research to facilities such as AL, which promote independence to the client, rather than devoting funds to expensive institutional LTC. Further evidence-based studies are required for confirmation. ◆

This article is part of a series of articles published in Geriatrics & Aging on inappropriate placement of clients in high levels of care. Previous articles include:

1. *Reddy M. The Structure of Long-Term Care in Canada. Geriatrics & Aging August 2001; 4 (6): 6,7,34,35.*
2. *Reddy M. Why are Clients Inappropriately Placed in High Levels of Care? Geriatrics & Aging November 2001; 4(9):39,41.*
3. *Reddy M. Controversies and Difficulties in Making Long-Term Predictions of Client Needs. Geriatrics & Aging March 2002; 5(2):73-4.*

No competing financial interests declared.

References

1. Engle VF, Graney MJ. Stability and improvement of health after nursing home admission. J Gerontol Soc Sci 1993; 48:S17-23.

2. Gillen P. Spore D, Mor V, et al. Functional and residential status transitions among nursing home residents. J Gerontol A Biol Sci Med Sci 1996; 51: M29-36.
3. Jagger C, Spiers A, Clarke M. Factors associated with decline in function institutionalization, and mortality of elderly people. Age and Aging 1993; 22: 190-7.
4. Reuben DB, Rubenstein W, Hisch SH, et al. Value of functional status as a predictor of mortality results of a prospective study. Am J Med 1992; 93: 663-9.
5. Ostybye T, Steenhuis R, Welfson C, et al. Predictors of five-year mortality in older Canadians: The Canadian Study of Health and Aging. JAGS 1999; 47: 1249-54.
6. Cohen-Mansfield J, Marx MS, Lipson S, et al. Predictors of Mortality in NH Residents. J Clin Epidemiol 1999; 52: 271-80.
7. Hill GB, Forbes WF, Lindsay J, McDowell, et al. Mortality and cognitive status among elderly Canadians living in the community and in institutions: The Canadian Study of Health and Aging. Can J Public Health 1997;88:303-4.
8. Scott WK, Macera CA, Commar CB, et al. Functional health status as a predictor of mortality in men and women over 65. J Clin Epidemiol 1997; 50: 291-6.
9. Ostbye T, Hill G, Steenhuis R. Mortality in elderly Canadians with and without dementia: a 5 year follow up. Neurology 1999; 53: 521-6.
10. Teno JM, Harrell, FE, Knaus W, et al. Prediction of survival for older hospitalized patients; The HELP survival model. Hospitalized elderly longitudinal Project. JAGS 2000; 48(S): 516-29.
11. Breuer B, Wallenstein S, Feinberg C, Camargo MJ, Libow LS. Assessing life expectancies of older nursing home residents. JAGS 1998;46: 954-61.
12. Gamkassi G, Landi F, Lapane KL, et al. Predictors of mortality in patients with Alzheimer disease living in nursing homes. J Neurol Neurosurg Psychiatry 1999; 67: 59-65.
13. Lewis MA, Cretin S, Kane RL. The natural history of nursing home patients. Gerontologist 1985; 25: 382-8.
14. Holtzman J, Lurie N. Causes of increasing mortality in a NH population. JAGS 1996; 44: 258-64.
15. Prunchno RA, Rose MS. The effect of long term care environments on health outcomes. Gerontologist 2000; 40: 422-8.