



Analysis of changes in mortality risk among persons receiving Aging and Adult Services in-home personal care services

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Overview

In a budget reduction measure approved by the state Legislature to address ongoing state revenue shortfalls, the DSHS Aging and Disability Services Administration implemented a broad-based reduction in authorized in-home personal care service hours in January 2011. The January 2011 cut followed a similar reduction in authorized hours implemented in July 2009 that was partially restored in July 2010. This memo provides an initial assessment of changes in mortality risk for the population of clients receiving Aging and Adult Services in-home personal care services who were subject to the reductions implemented in July 2009 and January 2011.

Because of the length of time required for service and mortality data to be compiled and linked, outcomes for the January 2011 cohort are currently measurable over the six-month follow-up period ending in June 2011. We also measured outcomes over a comparable six-month follow-up period for cohorts of clients receiving in-home personal care services in January 2009 and January 2010. This design allows us to assess whether the outcomes observed for the January 2010 and 2011 cohorts (which experienced a reduction in authorized hours) were different from outcomes experienced by the January 2009 cohort (which did not experience a reduction in hours in the outcome measurement period). By choosing comparison cohorts based on a common month of service (January), we help control for variation in mortality risk that might be driven by seasonal risk factors (for example, increased flu risk during winter months). Because of potential differences in the degree of data completeness between the 2011 cohort and the earlier cohorts, we recommend updating these analyses after the source data have been allowed to mature for an additional 3 months.

We found that about 4 percent of each cohort died in the 6-month follow-up period. We used a logistic regression model with case mix adjustment to control for potential variation in demographic characteristics across the three cohorts, and to test the statistical significance of differences in mortality for the 2010 and 2011 cohorts, relative to the 2009 cohort. The only finding meeting the standard threshold of statistical significant difference was the finding of 10 percent *lower risk* (odds) of death for the 2010 cohort relative to the 2009 cohort. Although the risk of death was also lower in the 2011 cohort relative to the 2009 cohort (6.6 percent lower odds of death), this difference was quantitatively smaller and not statistically significant at the standard 5 percent level.

Analytical Approach

Three cohorts of clients receiving in-home personal care services were analyzed to determine whether there were statistically significant changes in mortality:

1. Clients receiving in-home personal care services in January 2009 (29,180 clients)
2. Clients receiving in-home personal care services in January 2010 (30,810 clients)
3. Clients receiving in-home personal care services in January 2011 (31,993 clients)

Cohorts were defined based on receipt of Aging and Adult Services in-home personal care services, and did not include clients receiving services through the Developmental Disabilities Division. The analyses were based on data from the DSHS Integrated Client Database.

For each cohort, mortality outcomes were analyzed as of June of the corresponding calendar year. Specifically, a binary (yes/no) outcome measure was created to indicate whether the client had died by the end of June. In addition, a set of demographic measures was constructed to be used for case mix adjustment:

1. Categorical age indicators using the following age groups:
 - a. under 25
 - b. 25-34
 - c. 35-44
 - d. Groups in five-year increments from 45-49 to 90-94
 - e. Age 95+
2. Race ethnicity indicators for the following categories:
 - a. African-American
 - b. American Indian or Alaska Native
 - c. Asian
 - d. Hispanic
 - e. White
3. Gender (male/female)

Findings

Initial descriptive analyses were conducted to measure unadjusted mortality rates for each of the three cohorts. The unadjusted rates are presented in Table 1 below. The table shows that about 4 percent of each cohort died in the 6-month follow-up period.

TABLE 1

Mortality (6-month follow-up)	Cohort Size	Unadjusted Percent
2009 cohort	29,180	4.2%
2010 cohort	30,810	3.8%
2011 cohort	31,993	4.0%

Data Source: DSHS Integrated Client Database

We then used logistic regression analysis to determine whether there were statistically significant differences in mortality risk among the 2009, 2010, and 2011 cohorts of clients receiving and Aging and Adult Services in-home personal care services. A total of 91,504 observations were used in these analyses, after 479 observations (about 0.5 percent) were dropped due to missing client demographic data required for case mix adjustment. The results related to the cohort effects are presented in Table 2 below.

A statistically significant difference (at the standard 5 percent level) is indicated in Table 2 by a p-value less than or equal to 0.05. The only finding meeting this threshold of statistical significant difference was the finding of 10 percent lower risk (odds) of death for the 2010 cohort relative to the 2009 cohort. Although the risk of death was also lower in the 2011 cohort relative to the 2009 cohort (6.6 percent lower odds of death), this difference was quantitatively smaller and not statistically significant at the standard 5 percent level.

TABLE 2

Mortality (6-month follow-up)	Coefficient	Odds Ratio	p-value
2010 cohort vs. 2009 cohort	-0.1070	0.899	0.0128
2011 cohort vs. 2009 cohort	-0.0683	0.934	0.1066

Data Source: DSHS Integrated Client Database

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