

Aging and Disability Services Administration Chronic Care Management Project Savings/Cost Analysis

This report presents findings from a comparison of Health and Recovery Services Administration and Aging and Disability Services Administration costs, outcomes and utilization of two randomly assigned groups:

1. The first was randomized to be **offered** chronic care management (referred to as the "offered treatment" group), though not all chose to participate or could participate due to care management capacity limits. The bulk of participating clients began by March 2007.
2. The second was not offered chronic care management until the conclusion of the study (called the abeyance group).

Key Findings

- Of those in the offered treatment group, **43% received** at least one month of chronic care management in the 10-month study period (March 2007 - December 2007).
- The impact of **offering** chronic care management services is estimated to result in an average \$110 per member per month **REDUCTION** in Health and Recovery Services Administration (Medicaid) medical expenditures. Although this result is not statistically significant at standard confidence levels, it is a meaningful finding given the extreme variability of costs in this high-risk population. These savings were partially offset by an estimated increase of \$54 per member per month in Aging and Disability Services Administration long term care expenditures, primarily in-home support services.
- After accounting for care management costs (for those who received them) and increased long term care costs, the policy of **offering** chronic care management was found to be **approximately cost-neutral** in the 10-month follow-up period (**savings/cost ratio of 0.93**).
- In the 10-month study period, there was a **statistically significant lower risk of death** among the clients randomly assigned to being offered chronic care management ($p=.04$).
- Those clients who actually received chronic care management (regardless of randomized group) were different from those who either didn't chose to participate, couldn't participate due to capacity limits or were randomized to the abeyance group. In general,

the participating clients had higher costs at baseline and subsequently experienced a greater cost decrease in the treatment period (an average decrease of \$329 in Health and Recovery Services medical costs). Costs for unplanned hospital admissions declined the most, offset by an increase in in-home long-term care services. This suggests two things: 1) the limited chronic care management resources which were available in this pilot were directed to those more in need and 2) there is a subset of the target population that is both willing to engage and whose health care utilization may be impactable. Because there isn't a comparable randomly-assigned comparison group for these high-cost individuals, it can't be determined how much of the change was due to the treatment itself, a decrease normally expected for initially high-cost individuals, or other characteristics of this unique group.

Target Population

Clients targeted for the Aging and Disability Services Administration Chronic Care Management Project were those who were a) eligible for aged/blind/disabled, categorically-needy, Medicaid-only medical benefits, and b) currently receiving home and community-based long-term care services case managed by one of five participating Area Agencies on Aging. They fell in the top 20% of clients at risk of having future high medical expenses (as defined by the ImpactPro risk score) and they had to meet one of five assessed risk factors, based on a prior assessment of their health status and need for long term care (the CARE assessment): either living alone in their own home, experiencing isolating moods and behaviors (agitated and irritable), self rating of health as fair or poor, deteriorated self-sufficiency, or having more than 8 medications. Those with certain cancer diagnoses and treatments were excluded (a primary risk diagnosis of antineoplastics, ion exchange resins, leukemia, malignant neoplasms, and neoplastic and non-neoplastic blood diseases).

The cost savings analysis is limited to those targeted clients who had at least 1 month of medical coverage in both the baseline, or "pre" period, and the "post" period, when clients would receive chronic care management. In the baseline period, costs and utilization for 790 clients were identified - 182 clients in the offered treatment group and 608 in the abeyance group:

- average age was 56
- average ImpactPro risk score was 7.46

- average monthly expenditures were \$1,978 in Medicaid medical expenses and \$1,095 in long term services.

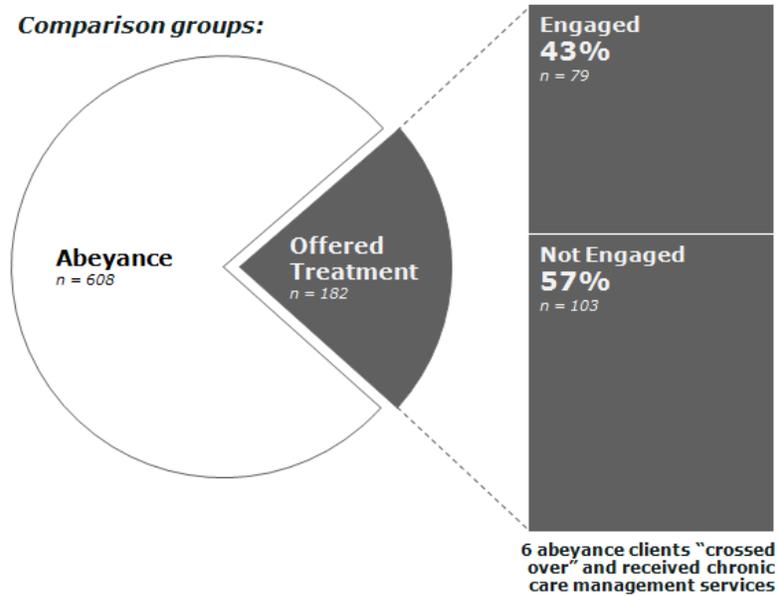
Study Design and Methodology

The study design used a pretest/posttest randomized control trial. The cost analysis used a proportional difference-in-differences with intent-to-treat design. This means cost savings were calculated as the proportional difference in changes in per member per month (pmpm) costs between the group randomly assigned to being offered treatment and the group randomly assigned to abeyance. The savings to cost ratio was calculated as total savings for the offered treatment group divided by the cost of providing chronic care management for those who received it.

- The study was based on 10 months of experience, with a pre (baseline) period of March 1, 2006 to December 31, 2006 and post (intervention delivery) period of March 1, 2007 to December 31, 2007.
- The data source was Medicaid claims for services incurred through December 31, 2007 and paid through June 30, 2008. Certain claims-based inpatient hospital reimbursement amounts were adjusted, per usual policy, to better reflect the full cost of the inpatient stay.
- The post period per member per month figure was a weighted average, reflecting the actual number of post-period member months incurred by each client.

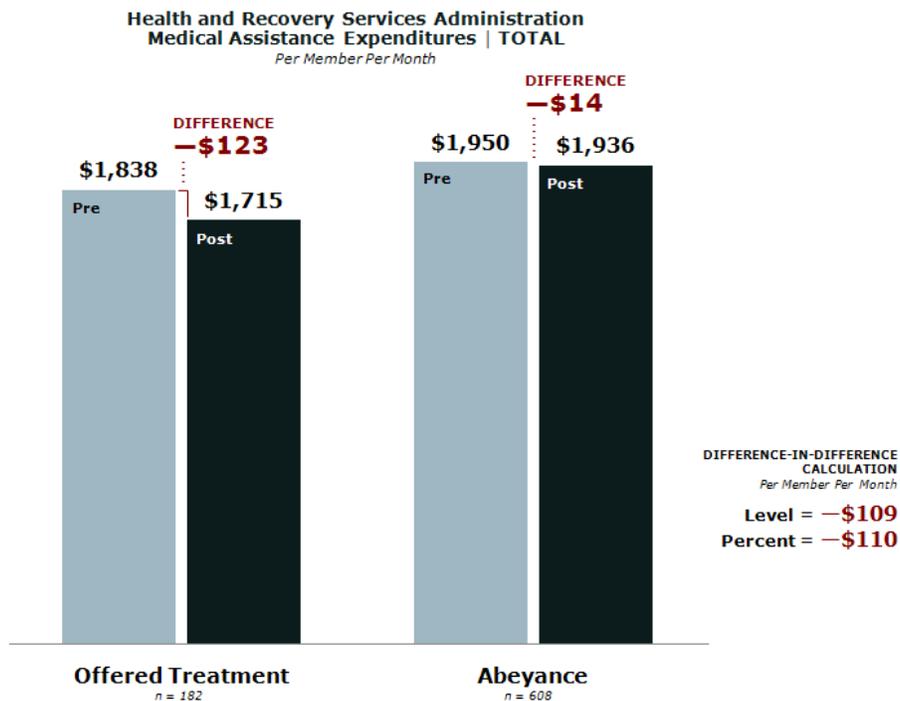
Results

FIGURE 1
Aging and Disability Services Administration Chronic Care Management Project Study Population
 10-month comparison



SOURCE: DSHS Planning, Performance and Accountability Administration, Research and Data Analysis Division, September 2008.

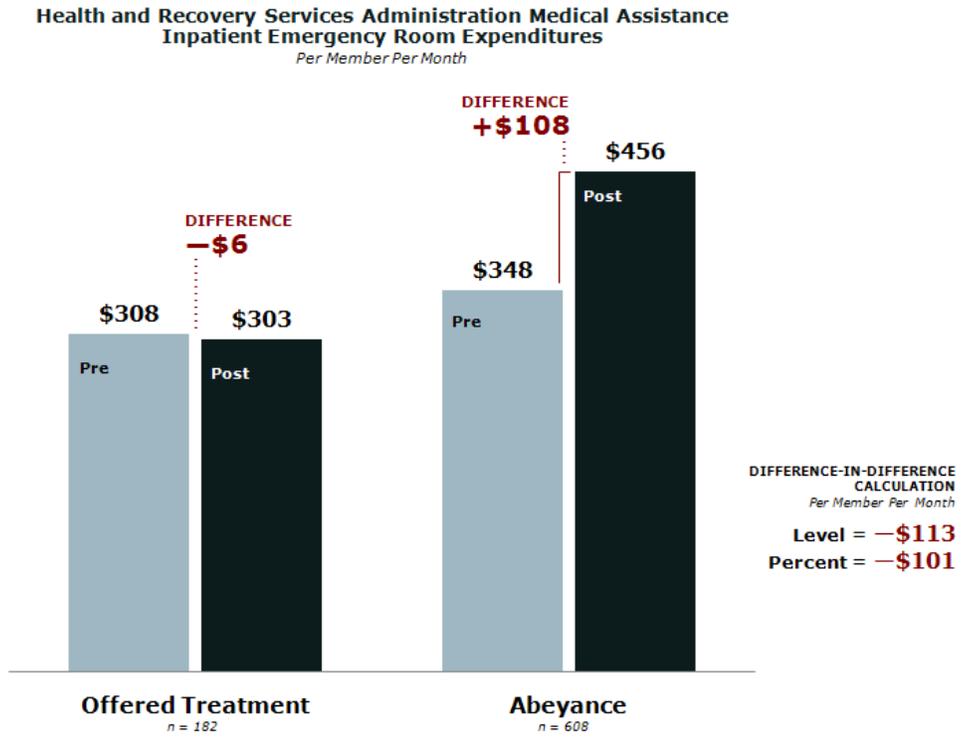
FIGURE 2
Health and Recovery Services Administration medical costs are lower for clients randomized to treatment



SOURCE: DSHS Planning, Performance and Accountability Administration, Research and Data Analysis Division, September 2008.

FIGURE 3

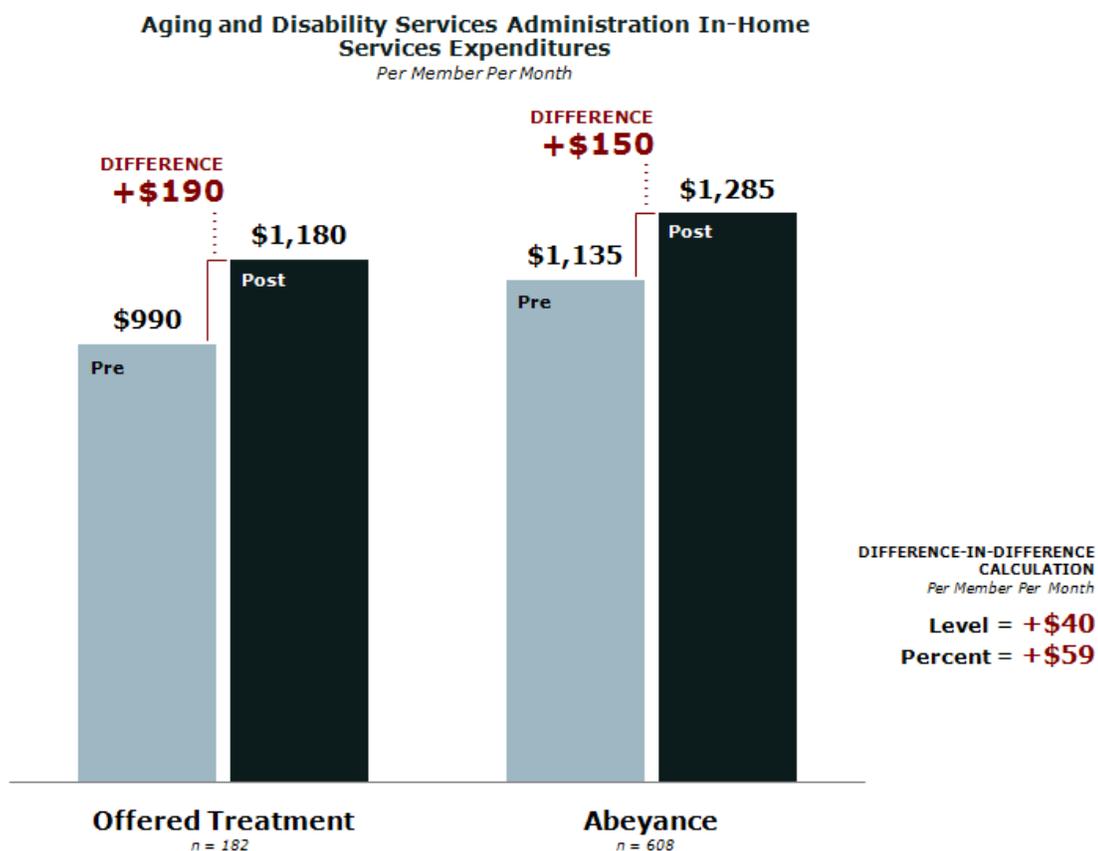
Savings are driven by reducing growth in costs for unplanned hospital admissions



SOURCE: DSHS Planning, Performance and Accountability Administration, Research and Data Analysis Division, September 2008.

FIGURE 4

Health and Recovery Services Administration medical cost savings are partially offset by increased long-term care in-home service costs



SOURCE: DSHS Planning, Performance and Accountability Administration, Research and Data Analysis Division, September 2008.

TABLE 1

Health and Recovery Services Administration (HRSA) and Aging and Disability Services Administration (ADSA) average per member per month (pmpm) cost comparison

Measure	Randomized to Offered Treatment						Level Dif-in-Dif PMPM	p-value	Percent Dif-in-Dif PMPM*
	Treatment (n=182)			Randomized to Abeyance (n=608)					
	Pre PMPM	Post PMPM	Dif PMPM	Pre PMPM	Post PMPM	Dif PMPM			
HRSA expenditures (Total)	\$1,838	\$1,715	-\$123	\$1,950	\$1,936	-\$14	-\$109	0.563	-\$110
Selected subset of HRSA expenditures:									
Outpatient Emergency Department (ED)	\$56	\$50	-\$7	\$67	\$68	\$1	-\$8	0.486	-\$8
Inpatient (admitted through ED)	\$308	\$303	-\$6	\$348	\$456	\$108	-\$113	0.362	-\$101
Inpatient (not admitted through ED)	\$240	\$104	-\$136	\$294	\$155	-\$139	\$3	0.978	-\$23
ADSA nursing home expenditures	\$53	\$54	\$1	\$26	\$28	\$2	-\$2	0.943	-\$4.3
ADSA in-home services expenditures	\$990	\$1,180	\$190	\$1,135	\$1,285	\$150	\$40	0.314	\$58.7

* Calculated as the percent change in "offered treatment" minus the percent change in "abeyance", times the "offered treatment" pre period per member per month (pmpm).

Note: Statistical significance for this study is indicated by a p-value equal to or less than .05. Other values indicate the probability the difference could be caused by chance alone, given the variability in the data.

TABLE 2
Savings to Cost Ratio for Randomly Assigned to Offered Treatment group

Total Post Member Months	HRSA Cost PMPM	Total HRSA Cost Savings	ADSA Cost PMPM	Total ADA Cost	Total Net Savings HRSA+ADSA	Months Receiving Care Management	Care Management PMPM	Total Cost	Savings/Cost Ratio
1,741	\$110	\$190,730	\$54	\$94,724	\$96,005	571	\$180	\$102,780	0.93

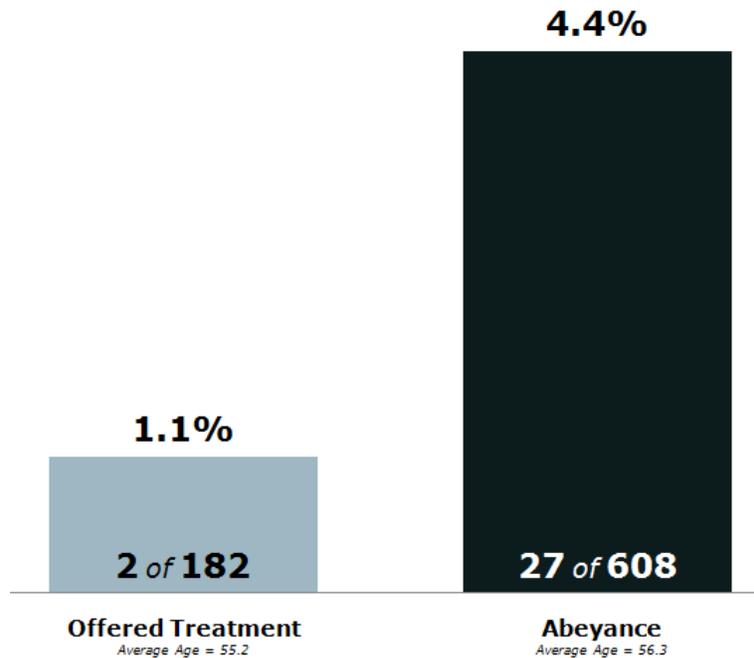
HRSA: Health and Recovery Services Administration ADA: Aging and Disability Services Administration

TABLE 3
Comparison of CARE outcome measures

	Randomized to Offered Treatment and Assessed n=161	Randomized to Abeyance and Assessed n = 586	Dif-in-Dif	p-value
Pre-to-Post Change in aggregate pain score across all pain sites	1.267	0.331	0.936	0.363
Pre-to-Post Change in depression score	-0.062	-0.451	0.389	0.219
Pre-to-Post Change in nurse referral indicator counts	-1.075	-0.973	-0.102	0.535
% with nurse referral indicator for PAIN, POST PERIOD	58.4%	56.3%		0.654
% with nurse referral indicator for DEPRESSION, POST PERIOD	72.1%	64.9%		0.091
% with nurse referral indicator for SUICIDE, POST PERIOD	6.8%	4.8%		0.317
% with nurse referral indicator for SUBSTANCE ABUSE, POST PERIOD	2.5%	0.5%		0.042

Note: Most, not all, clients were assessed using the CARE assessment tool in the pre and post period.

FIGURE 5
Mortality rate significantly lower in the offered treatment group (p = .04)
Percent of clients dying in 10-month follow-up period



SOURCE: DSHS Planning, Performance and Accountability Administration, Research and Data Analysis Division, September 2008.

Discussion

The structure of the evaluation was not a test of the intervention itself, but of the policy of making chronic care management available to a high-risk population. To realize cost savings at the level of offering a service, the client participation rate needs to be fairly high and the changes in health care utilization - thus costs - of those who do participate fairly robust.

In this study:

- 43% of targeted clients were served, a modest percent of those targeted. Reasons for not receiving chronic care management included: enrollment lids at the five participating Area Agencies on Aging (45 slots at each site, for both pre-existing workload and clients associated with this study); loss of eligibility and unwillingness to participate. In this pilot there was not a problem of locating clients because all were actively case managed previously while receiving in-home long term care.
- About 1% of abeyance group members (6 clients) “crossed over” and received the intervention. These were very high utilizers in the base period (\$4,200 pmpm) and experienced a significant decrease in expenditures in the post period (\$1,087 pmpm). In keeping with the intent-to-treat design, the subsequent reduction of costs experienced by these 6 clients is included in the average per member per month estimates for the abeyance group. The net effect was to narrow the difference between the two comparison groups, had they not been served.
- Those clients who actually received chronic care management (85 in total, regardless of randomized group) **were different** from those who either didn't chose to participate, couldn't participate due to capacity limits or were randomized to the abeyance group. They had a higher baseline cost profile than those not served (705 clients). At baseline in the pre period, they had higher average per member per month costs (\$2,239 pmpm versus \$1,883, respectively), marked by somewhat higher costs associated with unplanned admissions to the hospital through the emergency room (\$496 pmpm versus \$320) and planned hospital admissions (\$342 pmpm versus \$274).
- These unique 85 clients receiving chronic care management had a proportional average reduction of \$329 pmpm over the 705 clients who did not receive the intervention. Roughly 80% of the cost reduction was observed in unplanned admissions to the hospital

through the emergency room, offset by an increase in long-term care in-home services. These results are consistent with the expectation of what can be achieved when high risk clients receive intensive case management. Because there isn't a comparable randomly-assigned comparison group for these high-cost individuals, it can't be determined how much of the change was due to the treatment itself, a decrease normally expected for initially high-cost individuals, or other characteristics of this unique group. These results cannot be assumed to hold for anyone who gets chronic care management, but does suggest that there is a subgroup of high-need clients who are both willing to engage in care management and amenable to possible treatment effects.

Showing statistically significant cost reductions for this pilot would be difficult. Given that these are the sickest of the sick, average per member per month costs vary widely. The sample size was small given the cost variability observed - there would need to be over 750 clients in each group to find the observed changes statistically significant. However, the data suggests that this pilot project moves costs to a better mix of services and significantly reduced mortality rate.

When comparing the change in CARE outcomes measures (Table 3), the group offered treatment appeared to have an increase in average aggregate pain score, decreased average depression score and decreased average total nurse referrals, though none of the differences were statistically significant. In the post period, the percent of clients referred for substance abuse was small, but significantly higher for those offered treatment. Nurse referrals for depression and pain management were common in each group.

A profound finding, and a **statistically significant** one, is that those in the offered treatment group experienced lower mortality in the post (intervention) period than those in the abeyance group (1.1% versus 4.4%, respectively). No clients who actually received care management died, though they were higher cost patients initially. Regardless of randomized group, those who died in the 10-month intervention period (29 clients) had very high baseline costs at the start compared to surviving counterparts (\$4,208 versus \$1,893, respectively) and incurred higher average costs in the post period when they died (\$6,665 versus \$1,809, respectively).

Summary

The early findings of the Aging and Disability Services Administration Chronic Care Management Project points to the pilot of offering chronic care management being essentially cost neutral to the state and linked to lower mortality for a high-risk vulnerable population.

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