Dementia Care Pilot Project in Boarding Homes

Client Outcomes Final Report

Submitted by:

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Introduction and Purpose of the Study

The question of what types of special programming are most beneficial to individuals with dementia who reside in boarding homes (or assisted living facilities) is an important and unanswered one. Prior small-scale demonstration projects have indicated that special dementia programming may improve resident function and/or delay the need for skilled nursing supervision, yet such projects have not been conducted on a larger scale. The purpose of this collaborative investigation between the University of Washington and Washington State's Aging and Disability Services Administration (ADSA) was to investigate the effectiveness of a specialized dementia care program for state Medicaid clients with dementia who are at risk of nursing home placement.

Overview of Research Design

The Dementia Care Pilot Project in Boarding Homes implemented a Specialized Dementia Care (SDC) intervention at 14 participating boarding homes across the State of Washington. The SDC program was developed by ADSA in conjunction with its stakeholders, including experts in dementia care, advocates, providers, and the public. Medicaid recipients with a diagnosis of dementia who met eligibility criteria and agreed to participate in the research project were evaluated at baseline and after 6, 12 and 18 months to assess benefits of the SDC program. A comparison group of Medicaid clients who also met eligibility criteria and agreed to participate in the research, who resided in 16 different traditional care (TC) boarding homes, were evaluated at the same intervals. Resident interviews were conducted at the site where the resident lives. Family and staff questionnaires were completed at the time of the interview, either in person or by mail.

Participating SDC boarding homes were selected, trained and monitored by ADSA. Participating clients in both the SDC and TC boarding homes were referred by their ADSA case managers (with consent of the client and a family member or representative) and were evaluated by the University of Washington research evaluation team to assess the impact of the special programming on resident outcomes.

Research Questions & Rationale

- *Do residents of Specialized Dementia Care boarding homes experience different outcomes than residents of Traditional Care boarding homes?*

  Specialized dementia care was designed to provide enhanced environmental and social supports and additional staff training, creating a residential care option that is appropriate for individuals with moderate to severe dementia who do not require the level of medical and skilled nursing care that is typically found in nursing homes. This investigation examined whether clients with moderate to severe dementia can be adequately served in boarding homes, and whether

clients who reside in specialized dementia care boarding homes fare better than those in traditional boarding homes.

- *Does residing in an SDC or TC boarding home delay placement in a nursing home or other more restrictive facility, or death?*

  Increased cognitive impairment, physical frailty, functional limitation, and behavioral disturbance are all likely to be associated with a move to a nursing home or more restrictive facility. Since clients with dementia typically experience a progressive decline in cognitive and functional abilities, increased behavioral disturbance, and increasing physical frailty, they require an increasing level of care over the course of the disease. Family satisfaction with the boarding home may also influence the resident's options for residential care. Finally, boarding home characteristics help determine whether a resident can be safely and appropriately cared for in its setting. This investigation evaluated the impact of each of these variables on resident placement in a more restrictive facility. It also examined the rate of extended hospitalization and death in each of the settings, to identify whether there were differences in services that impacted resident morbidity or mortality.

Resident Participants

Subjects for this pilot project were Medicaid clients who were identified by their case managers as "at-risk" for institutional placement within the next year. They were required to meet the following requirements:

Inclusion Criteria:

1. Diagnosis of Alzheimer's disease or related dementia (for example, microvascular dementia, multi-infarct dementia, dementia of mixed etiology) documented in client's medical records.
2. Family member or other responsible individual who can participate in the investigation by answering questions about the individual and the care they are receiving.
3. Currently in an institution or at risk of institutional placement within the next year.
4. Able to provide informed consent or assent to participate in the investigation.

Exclusion Criteria:

1. History or current diagnosis of major psychiatric disorder (including schizophrenia, bipolar disorder, recurrent major depression).
2. Unstable medical problems or other conditions that would interfere with participation in the program (e.g. terminal cancer, severe heart disease, blindness, deafness).
3. Alcohol or drug abuse within the past year.

Strengths of Study

- Reflects actual case management practices and residential care resources in the State of Washington.
- Good representation of a variety of residents with varying levels of cognitive, behavioral, and physical strengths and limitations.

- Range of boarding homes, small, medium, large, non-profit and for-profit, urban and rural.
- Interviewers conducting assessments were blinded to treatment condition (increases objectivity, reduces bias).
- Excellent retention and cooperation of residents, family members, and boarding homes.
- Completeness and accuracy of data.

Limitations of Study

- Residents could not be randomly assigned to boarding homes--placement decisions were made by residents, their families and their case managers.
- Boarding homes applying for SDC condition had to meet the dementia care standards; TC boarding homes were matched by location and quality but did not volunteer or request participation in study-we approached them.

Recruitment and Assessment of Subjects

We enrolled subjects from November, 1999 through August, 2001. In total, we enrolled 183 subjects; 134 in the SDC condition and 49 in the TC condition. Table 1 summarizes the total number of subjects who were evaluated at each assessment point. Subjects who reached an end point for the investigation (placement in a nursing home or more restrictive facility, hospitalization, death) were not re-evaluated, but were retained as part of the analysis, since one of the questions of interest was the number of subjects in the two different types of boarding homes who reached an "end point" during the investigation period. For subjects who reached endpoints, we obtained a "termination" assessment from the family and staff informants.

Table 1. Number of subjects remaining in the boarding home at each assessment point.

	Baseline	6 Month	12 month	18 month
SDC	134	106	88	68
TC	49	36	24	17

Data collection and quality were excellent; project staff followed up with boarding homes or families if data were missing or incomplete. Data were entered by UW project staff, and were checked by the Research Coordinator (RC) and/or Principal Investigator (PI). Project staff met weekly to discuss scheduling and review immediate concerns. In addition, the RC, PI and interviewers met monthly to review the interview procedure and forms to ensure adherence to the prescribed protocol. This report includes data for all subjects at each assessment point.

Baseline Descriptive Data

Demographic data for SDC and TC groups are provided in Tables 2 and 3. The TC group was significantly older and had lived in the boarding home significantly longer than the SDC group at the baseline assessment. This was due, in part, to the fact that the SDC program was a new program. While some SDC residents had already been living in the boarding home prior to the inception of the program, others were newly placed in these boarding homes as the SDC program was made available to them.

Significant baseline differences were entered as covariates in all subsequent analyses to statistically control for their potential impact on outcomes. (Significant differences are printed in bold print in the tables.)

Table 2. Demographic information about groups. Number and (percent) of subjects in each condition.

		SDC n=134	TC n=49
Gender	Male	34 (25%)	10 (20%)
	Female	100 (75%)	39 (80%)
Marital Status	Married	50 (37%)	8 (16%)
	Widowed	70 (52%)	31 (63%)
	Divorced or Never Married	14 (11%)	10 (21%)
Language	English	127 (95%)	45 (92%)
	Non-English	7 (5%)	4 (8%)
Ethnicity	White	130 (97%)	47 (96%)
	Asian/Pacific Islander	1 (1%)	0
	African American	1 (1%)	2 (4%)
	Hispanic	2 (2%)	0
Family/ Informant Relationship	Spouse	29 (22%)	4 (8%)
	Adult Child	86 (64%)	36 (74%)
	Grandchild	18 (13%)	9 (18%)
	Other	1 (1%)	0
Family/Informant Gender	Male	40 (31%)	17 (39%)
	Female	89 (69%)	27 (61%)

Table 3. Demographic information. Mean, standard deviation, minimum and maximum scores.

	SDC n=134	TC n=49
Education	10.99 (2.4) 3-18	11.26 (2.3) 3-16
Resident Age	**82.19 (6.7)** **62-97**	**85.44 (8.6)[a]** **59-101**
Duration of Dementia (years) Reported by family informant	6.1 (4.1) 1-24	6.7 (5.3) 1-25
Family/Informant Age	59.91 (12.7) 30-89	57.77 (11.8) 32-83
Number of medical diagnoses	4.16 (2.2) 1-13	4.04 (1.6) 1-7
Number of days at boarding home prior to baseline	**304 (384)** **17-2041**	**747 (624)[b]** **27-2939**

a. Residents in TC were significantly older than residents in SDC ($p<.01$).
b. Residents in TC had lived in the boarding home significantly longer prior to baseline ($p<.001$).

Changes in Cognitive and Functional Status

Table 4 provides a breakdown of cognitive and functional scores by treatment condition at each assessment point. As expected, residents' cognitive and functional status declined over time. MMSE scores were significantly lower for SDC than TC residents at each assessment ($p<.001$). Since the SDC residents were more cognitively impaired at baseline, MMSE was entered as a covariate into the longitudinal analysis to control for its potential impact on outcomes. Although SDC residents were more functionally impaired than TC residents at each assessment, the differences were not statistically significant. Numbers in the table represent the mean score, standard deviation (in parentheses), and observed range of scores. Significant differences between SDC and TC are indicated by bold print.

Table 4. Resident cognitive and functional status at each assessment.

	SDC				TC			
	Baseline n=134	6 Month n=106	12 Month n=87	18 month n=68	Baseline n=49	6 Month n=36	12 Month n=23	18 month n=17
MMSE (possible range: 0-30, higher scores better)	**7.2 (6) 0-25**	**6.1 (6) 0-22**	**4.8 (5) 0-22**	**4.3 (5) 0-17**	**12.6 (6) 1-25**	**12.2(6) 2-25**	**11.1(7) 0-22**	**10.9(7) 0-26**
Basic Activities of Daily Living (ADL) (possible range: 0-30, higher scores worse)	15.2 (5) 6-25	16.2(5) 6-26	17.5(5) 6-27	18.1(5) 6-29	13.7 (5) 6-24	14.5(6) 6-27	15.2(7) 6-26	15.3(6) 8-25
Complex Activities of Daily Living (IADL) (possible range: 0-31, higher scores worse)	28.1(2) 15-31	28.2(3) 16-31	28.3(2) 22-31	28.4(2) 21-31	27.6(3) 21-31	27.4(3) 21-31	27.8(3) 21-31	27.0(4) 20-31

Changes in Resident Health & Physical Status

Resident health was assessed in three ways. First, the number of diagnoses noted by the resident's DSHS case manager on the Comprehensive Assessment form (completed no more than 6 months prior to baseline) was recorded. Second, residents, family members, and staff were asked to rate the resident's health during the prior month on a 4-point scale. Third, the number of prescribed medications was obtained

from the resident's medical record in the boarding home. The average number of medical diagnoses, health ratings, and number of prescription medications are listed in Table 5. The number of diagnoses is not significantly different. Health ratings by the resident, family member, and staff are also not significantly different at any assessment. Total number of prescription medications is significantly higher for TC at baseline and 6 months ($p<.001$ and .05, respectively).

Table 5. Resident health status indicators at each assessment.

	SDC				TC			
	Baseline n=134	6 month n=106	12 month n=87	18 month n=68	Baseline n=49	6 month n=36	12 month n=23	18 month n=17
Number of Diagnoses	4.16 (2) 1-13	---	---	---	4.04 (2) 1-7	---	---	---
Resident Self Rating of Health (range 1-4, higher is better)	2.7(.8) 1-4	2.9(.6) 1-4	2.9(.6) 1-4	2.9(.7) 1-4	2.9(.7) 1-4	2.8(.7) 1-4	2.7(1.0) 1-4	2.7(.6) 1-4
Family Rating Resident Health (range 1-4, higher is better)	2.4(.9) 1-4	2.4(.7) 1-4	2.3(.8) 1-4	2.4(.8) 1-4	2.4(.9) 1-4	2.7(.8) 1-4	2.3(1.0) 1-4	2.5(.6) 1-4
Staff Rating Resident Health (range 1-4, higher is better)	2.8(.7) 1-4	2.6(.6) 1-4	2.6(.6) 1-4	2.7(.7) 1-4	2.6(.6) 1-4	2.8(.7) 1-4	2.7(.8) 1-4	2.5(.7) 1-4
Number of Prescription Medications	**4.1 (3) 0-11**	**4.8(3) 0-12**	4.6(3) 0-12	4.5(3) 0-13	**5.6 (3) 0-11**	**5.9(3) 0-11**	5.2(3) 0-12	4.9(3) 0-8

Resident Mood and Behavioral Status

Mean scores on the depression measures are shown in Table 6. There was no significant difference between SDC and TC subjects on depression measures, and agreement between residents' ratings of their own depression and staff ratings of the residents' depression was good.

Table 6. Resident mood at each assessment.

	SDC				TC			
	Baseline n=134	6 Month n=106	12 Month n=87	18 month n=68	Baseline n=49	6 Month n=36	12 Month n=23	18 month n=17
Cornell Depression Scale-Resident Self Report[a]	4.8 (5.0) 0-25	4.4(4.6) 0-21	4.6(4.8) 0-18	3.8(4.8) 0-26	5.4 (4.5) 0-18	4.4(3.9) 0-13	5.1(4.4) 0-13	4.6(5.5) 0-17
Cornell Depression Scale-Staff Report[a]	4.1 (2.7) 0-11	4.8(2.9) 0-12	4.6(2.9) 0-12	4.5(2.7) 0-13	5.6 (2.9) 0-11	5.9(3.2) 0-11	5.2(3.2) 0-12	4.9(2.5) 0-8
Depressive Behaviors[b]	.78(.66) 0-3.2	.88(.64) 0-2.9	.88(.62) 0-2.7	.76(.52) 0-2.1	.37(.55) 0-2.4	.77(.68) 0-2.4	.64(.74) 0-3.1	.67(.69) 0-2.0

a. Possible range 0-38; higher scores are worse.
b. Possible range 0-4; higher scores are worse.

As shown in Table 7, agitated behaviors increased in both conditions over time, as residents became more cognitively impaired, and subjects in the SDC condition exhibited significantly more agitation than those in TC at every assessment. Significant differences between SDC and TC are indicated by bold print.

Table 7. Agitated and disruptive behaviors at each assessment.

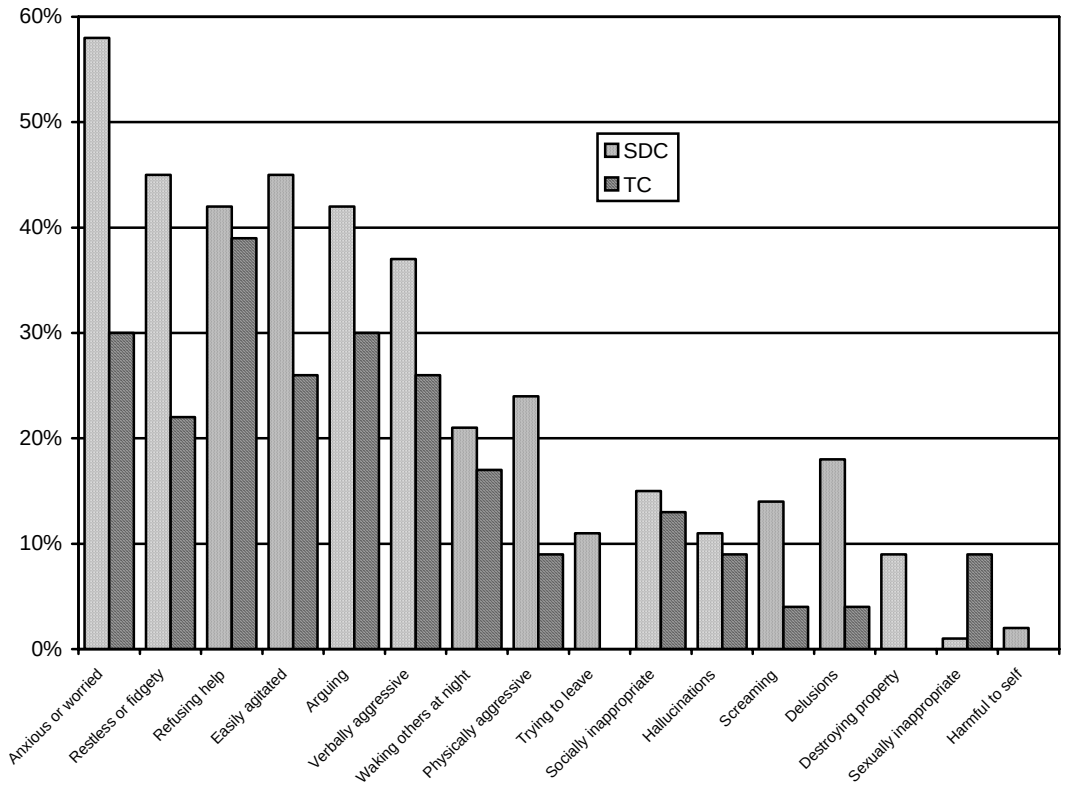
	SDC				TC			
	Baseline n=134	6 Month n=106	12 Month n=87	18 month n=68	Baseline n=49	6 Month n=36	12 Month n=23	18 month n=17
Agitated Behavior in Dementia *	**.79(.64) 0-3.1**	**.90(.61) 0-3.0**	**.95(.59) 0-2.7**	**.99(.56) 0-2.3**	**.49(.55) 0-2.4**	**.52(.39) 0-1.5**	**.53(.48) 0-1.6**	**.68(.56) 0-1.9**
RMBPC Disruptive Behavior *	**.66(.69) 0-2.9**	**.83(.68) 0-3.0**	**.90(.66) 0-2.6**	**.91(.67) 0-2.9**	**.37(.55) 0-2.8**	**.38(.47) 0-1.8**	**.57(.64) 0-1.9**	**.58(.64) 0-1.9**

* For both measures, the range of scores is 0-4, and higher scores are worse.

Figure 1 illustrates the percent of residents exhibiting specific disruptive, agitated behaviors during the week prior to their 12 month assessment. Anxiety and worrying, restlessness, refusing needed assistance, agitation, and arguing had occurred at least once during the prior week in 40% to 60% of SDC residents, in 20% to 40% of TC residents. One quarter of SDC residents had been physically aggressive during the prior week.

Overall, 71% of SDC residents experienced 2 or more problems in the past week, and 28% experienced 5 or more problems, while 48% of TC subjects experienced 2 or more problems and 17% experienced 5 or more. Sixteen percent of SDC residents experienced 7 or more problems at least once during the past week, while none of the TC residents reached this level of behavioral disturbance.

Figure 1. Percent of residents exhibiting agitated behaviors at least once a week at the 12 month assessment.



Frequency of Participation in Pleasant Activities

Participation in pleasant activities has been associated with lower levels of depression and higher quality of life for individuals with dementia. As dementia progresses, however, it becomes more difficulty to identify and engage individuals in these pleasant activities. One goal of dementia care is to help staff identify activities that are pleasant to their residents, and to make all interactions more pleasant and satisfying for residents. In this investigation, we asked staff to rate the frequency of pleasant activities (from a list of 20 possible activities) for each resident during the prior month.

Frequency of pleasant activities was significantly greater for SDC residents than for TC residents at 6, 12, and 18 month assessments. This is particularly significant because SDC residents were also significantly more cognitively impaired, which usually is associated with a decline in pleasant activities. Quality of life ratings by residents were not significantly different between SDC and TC, but quality of life was rated higher by SDC residents at each assessment. Scores for these measures are shown in Table 8. Significant differences between SDC and TC are indicated by bold print.

Table 8. Pleasant event and quality of life ratings at each assessment.

	SDC				TC			
	Baseline n=134	6 Month n=106	12 Month n=87	18 month n=68	Baseline n=49	6 Month n=36	12 Month n=23	18 month n=17
Pleasant Events Frequency[a]	20 (7) 2-33	**21 (6) 5-37**	**21 (6) 7-33**	**21 (6) 5-35**	17 (8) 4-38	**17 (7) 1-34**	**18 (8) 4-40**	**17 (7) 4-28**
Quality of Life-Patient Report[b]	37.3(5) 23-47	38.4(5) 26-52	37.4(6) 16-50	39.3(4.7) 32-52	36.8(7) 19-47	37.5(6) 26-45	36.1(6.6) 26-49	36.4(6.2) 25-45

a. Total possible 0-40; higher is better.
b. Total possible 13-52; higher is better.

Family Satisfaction with Resident's Care

Family members completed a rating of their satisfaction with a variety of aspects of the resident's care during the month prior to each assessment, including the physical environment, individual and group activities, wandering prevention and safety, staffing levels, family involvement, the individualization of care, staff knowledge of dementia and related disorders, and staff knowledge of medical aspects of care. Scores for overall satisfaction and for each subscale are provided in Table 9.

Overall satisfaction was greater for SDC than TC at all assessments, and was significantly greater at baseline ($p<.001$), 6 month ($p<.001$), and 12 month assessments ($p<.01$). All subscales were significantly higher for SDC than TC at baseline. At 6 month and 12 month assessments, there was no difference in satisfaction with the physical environment and staffing levels; all other subscales remained significantly different. Significant differences between SDC and TC are indicated by bold print.

Table 9. Family satisfaction with resident care at each assessment.

	SDC				TC			
	Base line n=122	6 Month n=95	12 Month n=75	18 month n=56	Base line n=42	6 Month n=25	12 Month n=18	18 month n=14
Overall Satisfaction[a]	**76 (9)** **37-85**	**76 (8)** **55-85**	**75 (10)** **45-85**	76 (12) 35-85	**68 (14)** **36-85**	**68 (13)** **45-85**	**66 (17)** **35-85**	71(14) 39-85
Environment[b]	**2.9 (.3)** **1-3**	2.9(.3) 1-3	2.8(.4) 1-3	2.9(.3) 2-3	**2.7 (.4)** **1-3**	2.9(.3) 2-3	2.6(.5) 1-3	2.7(.4) 2-3
Activities[b]	**2.7 (.4)** **1-3**	**2.7(.4)** **1-3**	**2.7(.4)** **2-3**	2.7(.5) 1-3	**2.5 (.6)** **1-3**	**2.5(.6)** **1-3**	**2.4(.7)** **1-3**	2.6(.6) 1-3
Wandering Safety[b]	**2.9 (.2)** **2-3**	**2.9(.3)** **2-3**	**2.8(.4)** **2-3**	2.9(.3) 2-3	**2.5 (.6)** **1-3**	**2.6(.7)** **1-3**	**2.5(.8)** **1-3**	2.8(.4) 2-3
Staffing[b]	**2.8 (.4)** **1-3**	2.7(.5) 1-3	2.6(.6) 1-3	2.7(.5) 1-3	**2.5 (.6)** **1-3**	2.4(.5) 1-3	2.4(.6) 1-3	2.5(.6) 1-3
Family Involvement[b]	**2.8 (.5)** **1-3**	**2.8(.4)** **1-3**	**2.7(.5)** **1-3**	2.8(.5) 1-3	**2.5 (6)** **1-3**	**2.4(.5)** **2-3**	**2.4(.7)** **1-3**	2.5(.6) 1-3
Individualized Care[b]	**2.8 (.4)** **1-3**	**2.8(.3)** **1-3**	**2.8(.4)** **1-3**	2.8(.4) 1-3	**2.5(.6)** **1-3**	**2.6(.5)** **1-3**	**2.4(.7)** **1-3**	2.5(.6) 1-3
Staff Ability to Manage Dementia, Depression, and Difficult Behaviors[b]	**2.8 (.4)** **1-3**	**2.8(.4)** **2-3**	**2.7(.4)** **2-3**	2.8(.4) 1-3	**2.3 (.7)** **1-3**	**2.5(.6)** **1-3**	**2.3(.8)** **1-3**	2.6(.6) 1-3
Medical Care[b]	**2.9(.3)** **2-3**	**2.8(.4)** **2-3**	**2.7(.5)** **1-3**	2.8(.4) 2-3	**2.6 (.6)** **1-3**	**2.6(.4)** **2-3**	**2.4(.8)** **1-3**	2.6(.7) 1-3

a. Possible range 0-85, higher scores better.
b. Possible range of scores for all subscales was 1-3, with higher scores indicating greater satisfaction.

Boarding home Observations

To assess overall quality of SDC, project interviewers and DSHS staff completed an observation rating scale based on their observations during each visit to each of the boarding homes. The observation form was developed specifically for this project, and included 18 items, rated on a scale of 0 to 5, for a possible range of scores of 0 to 90, with higher scores indicating better environments. Total scores on the boarding home observations were averaged over all visits, since not all boarding homes had the same number of visits, and not all items were observed at every visit. Overall, SDC boarding homes (mean score=66, sd=4) were rated significantly higher than TC boarding homes (mean score=54, sd=8) ($p<.001$).

Endpoints Analysis

Table 10 provides a summary of possible outcomes (where subjects were when the study ended after 18 months), and the number and percent of subjects from each condition who had reached that outcome.

Table 10. Summary of resident outcomes for duration of 18 month study.

	SDC N=134	TC N=49
Continuing at the same level of care	88 (66%)	24 (49%)
Nursing home placement	22 (16%)	16 (33%)
Deaths	21 (16%)	9 (18%)
Hospitalizations/rehab more than 30 days	3 (2%)	0

Risk for Hospitalization

There was no statistically significant difference in hospitalization, and not enough subjects were hospitalized to conduct any additional analysis of this outcome.

Risk for Death

We conducted a survival analysis, controlling statistically for baseline differences in cognitive status (MMSE), age, and duration at the boarding home, to evaluate the likelihood of death. There was no difference in rate of death between the two conditions.

Risk for Nursing Home Placement

We conducted a survival analysis, controlling statistically for baseline differences in cognitive status (MMSE), age, and duration at the boarding home to evaluate the likelihood of nursing home placement. Residents in TC boarding homes were 3 times more likely than SDC residents to be placed in a nursing home during their participation in the study (Conditional risk ratio = 2.9, 95% Confidence Interval: 1.2 to 6.9, p=.0163).

Figure 2 illustrates the average MMSE scores in SDC and TC at each assessment, with a solid line drawn to represent the average MMSE score at the assessment immediately prior to NH placement for SDC and TC. Nursing home placement was strongly associated with decline in cognitive function in both groups, but SDC boarding homes admitted and retained residents with lower cognitive function for a longer time. Throughout the 18-month duration of the study, mean MMSE score preceding nursing home placement was 3.7 (range 0-11) for SDC residents, while mean MMSE score preceding nursing home placement was 10.6 (range 3-17) for TC residents, an average difference of 7 points.

From baseline, the average length of stay (survival time) in SDC was 442.5 days (sd=11.5), versus 287.1 days (sd=16.2) for those in TC, a difference of 155 days. We should note that this analysis was truncated by the 18-month duration of the investigation, and the lengths of stay would be longer if all subjects had been followed to the actual date when they reached an endpoint. An average rate of decline on the MMSE of 3 points per year has been widely cited in scientific literature on the progression of dementia, and in the current investigation we computed an average rate

of decline of 3.13 (SD=3.5) over 12 months in subjects with baseline MMSE scores greater than or equal 3 (n=75). (For subjects with baseline MMSE scores of 2 or lower, rates of decline could not be accurately computed, since the expected change would exceed the lower limit of the MMSE.) Based on these averages, a difference of 7 points on the MMSE at the time of NH placement would translate into a postponement in NH placement of approximately 2 years in SDC over TC, if the trends we found in this investigation continued after the conclusion of the current 18-month study.

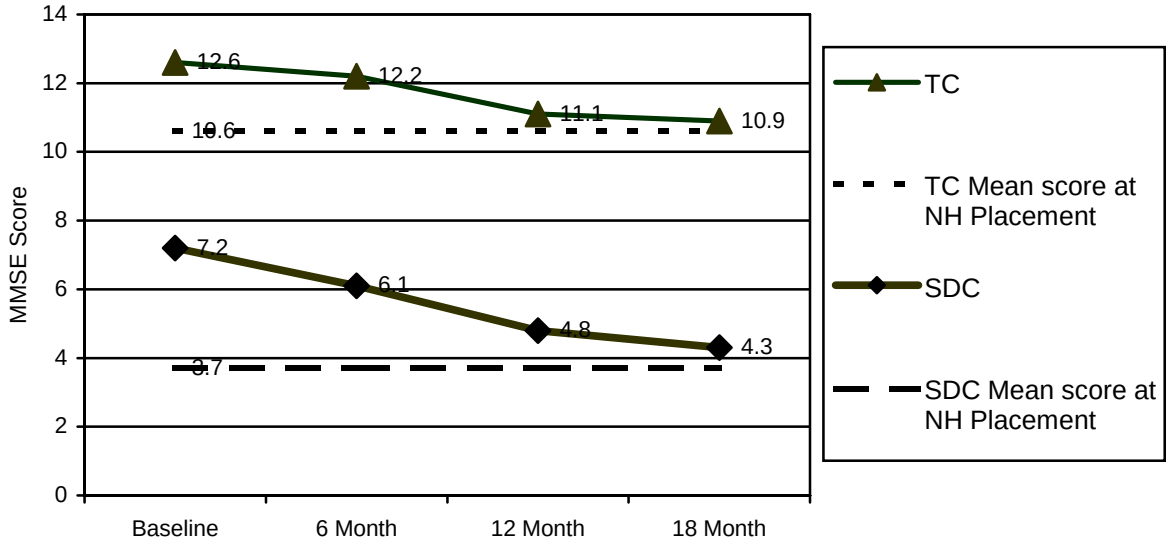


Figure 2. MMSE score at each assessment and at NH placement.

In addition, at baseline, SDC participants' mean MMSE scores (MMSE=7.2) were lower than the mean MMSE nursing home placement cutoff score identified for TC participants (MMSE=10.6). Thus, SDC appears to have provided access to boarding home services for clients with levels of cognitive impairment that would likely not have been accepted in traditional boarding homes.

As shown in Figure 3, SDC boarding homes also retained residents with a significantly higher level of behavioral disturbance than TC boarding homes. At the time of nursing home placement, the mean number of disruptive agitated behaviors occurring at least once a week for SDC residents was 5.2 (range 0-12), while the mean number of disruptive agitated behaviors prior to nursing home placement for TC residents was 2.7 (range 0-11) ($p<.01$).

At baseline, SDC participants' mean number of disruptive behaviors was higher than the mean disruptive behavior placement cutoff score identified for TC participants. Again, SDC appears to have provided access to boarding home services for clients with levels of behavioral disturbance that would likely not have been accepted in traditional boarding homes.

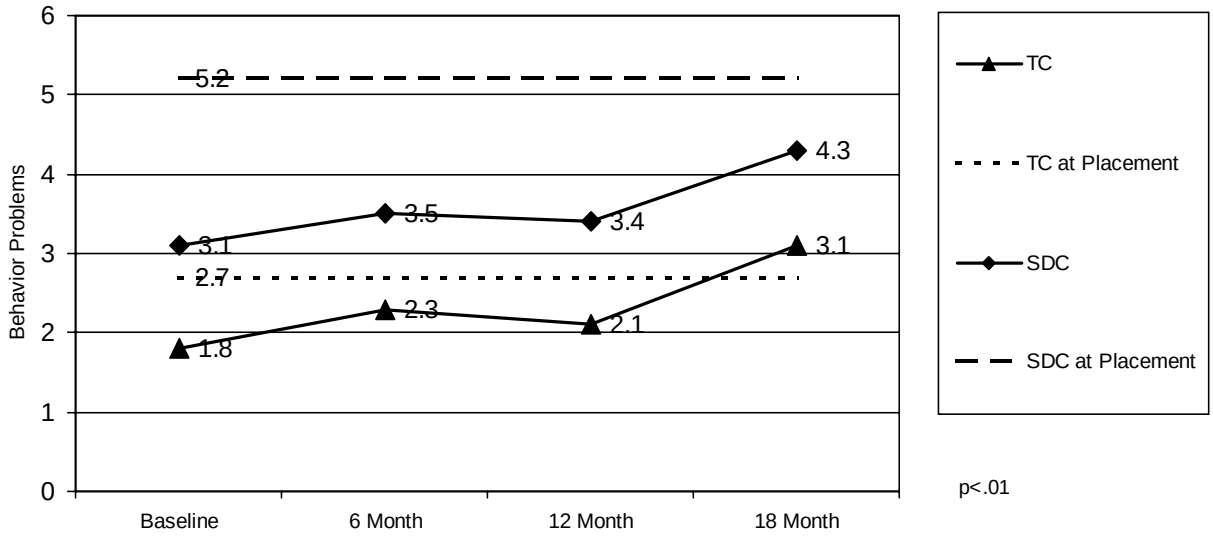


Figure 3. Overview of behavior problems.

Reasons for Discharge

For residents who were discharged to a hospital or nursing home, we identified reasons for the transfer by making follow up telephone calls to boarding homes and/or to the participant's family informant. For SDC residents, the most common reasons for discharge to a higher level of care were related to medical conditions, including pneumonia, fractures, and need for increased nursing supervision. For TC residents, the most common reasons for discharge were associated with increased behavioral disturbance and/or ADL care needs.

(In later discussions with the SDC providers, they reported that participants who were hospitalized for an illness or fracture were frequently moved from the hospital to a nursing home, rather than being returned to SDC, due to hospital discharge planner and physician lack of knowledge about the types of care available in the SDC boarding homes. Although this was not systematically evaluated in the current project, it warrants further investigation in the future, since educating hospital discharge planners, physicians, and ADSA case managers might allow residents to return to SDC, rather than being moved permanently to skilled nursing.)

Summary and Conclusions

Specialized Dementia Care boarding homes served a more severely cognitively impaired and behaviorally disturbed group of DSHS clients than Traditional Care boarding homes. At baseline, 6, 12 and 18 month assessments, SDC residents had lower MMSE scores and higher scores on measures of agitation and disruptive behaviors. Despite this greater level of impairment, residents in SDC boarding homes had 1/3 the risk of nursing home placement within 18 months.

It is important to note that the frequency of depressive and disruptive behaviors did not decrease as a result of the special dementia intervention, although the required training included information about how to more effectively deal with these problems, and family members reported greater satisfaction with the staff's ability to deal with them. Several explanations for this finding are possible. One is that the dementia training was not applied consistently in a way that resulted in actual resident behavior change. However, the family satisfaction might argue against this explanation. Another possibility is that although the frequency of behavior (measured on current assessment tools) did not change, the severity or intensity of that behavior did change. It is difficult to evaluate severity of behavioral disturbance, but we are exploring this issue in greater detail. The fact that the SDC boarding homes were able to care for residents with more behavior problems for a longer period of time argues that they were able to more effectively manage these behaviors. This is an area that warrants further investigation in the future.

Despite the more challenging resident population served in SDC boarding homes, frequency of pleasant activities was significantly higher in SDC than in TC. This indicates that SDC boarding homes were more successful than TC boarding homes at identifying appropriate activities and encouraging residents to participate in them.

Families of residents in SDC boarding homes reported higher levels of satisfaction with their family member's care than those in TC boarding homes at each assessment point, and there was no change in the overall high level of family satisfaction with SDC over time. Objective observations by project staff during assessment visits also indicated significant differences in overall dementia care quality.

During the course of this investigation (18 months), the average length of stay in SDC prior to NH placement was 155 days longer than the average length of stay in TC, despite greater cognitive and behavioral disturbance in SDC. Based on prior studies of the average rate of cognitive decline in individuals with dementia, combined with our current findings regarding average scores on the MMSE prior to NH placement, length of stay would be projected at approximately 2 years longer in SDC compared to TC, if the study had been continued until all subjects reached endpoints.

In summary, it appears that SDC boarding homes are providing an alternative to nursing home placement for individuals with moderate to severe dementia. They admit and retain residents with dementia despite increasing cognitive and behavioral disturbance, and provide services that most family members rate as either good or excellent.