

FINAL REPORT

Bathing Without a Battle: Creating a Better Bathing Experience for Persons with Alzheimer's Disease and Related Disorders

NYS DOH Dementia Grant

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Table of Contents

Background and Rationale.....	3-4
Scope of the Problem	3
The Origins and Tenants of Person-Centered Bathing	3-4
Project Goals	4
Methods.....	5-8
Project Team Personnel	5
Implementation Process	5
Study Design	5-6
Study Subjects Selection Criteria.....	6
Data Collection Protocol.....	6-7
Data Measures.....	7-8
Results/Findings	9-16
Participation and Loss to Follow-up	9
Table 1. Eligibility, Participation and known censoring reasons, by facility	
Characteristics of Participating Residents.....	9
Table 2. Baseline Characteristics of the Study Sample	10
Bath Modalities.....	10
Table 3. Number and Frequency of Bathing Methods used in each round	11
Table 4. Number of baths per facility observed in each round	
Physical and Verbal Aggression, Agitation, and Discomfort	11-12
Table 5: Observed Behaviors, by Intervention Status: Percent of bath time with any behaviors	12
Bath Completion and Duration	13
Table 6. Bath Duration, by Intervention Status	14
Antipsychotics Use	14
Table 7 Number and proportion of Residents Given Anti-Psychotic Drugs by Time and Facility	15
CNA Outcomes and Job Satisfaction Survey.....	15
Table 8 Nurse Aides Mean Observed Physical and Verbal Frustration Levels following Bathing	16
Implementation Survey Findings	17-19
BWOB Dissemination Workshops	19-22
Summary.....	23
Implications	24
References.....	25-26
Appendices.....	27

Background and Rationale

Scope of the Problem: Bathing of persons with Alzheimer's and related dementias has traditionally been a challenging, emotionally draining event for both residents and staff. Previous research has documented that 43% (Beck et al, 1991) up to a high of 86% (Ryden et al, 1991) of older persons with dementia who were engaged in bathing exhibited care-associated behavioral symptoms, such as kicking, biting, and screaming in response to confusion and fear brought on by the bathing process. Further, many residents remain upset hours after the incident (Barrick et. al., 2002). Eldercare providers, seeking to avoid harming staff and minimize unpleasant interactions, may employ excessive use of medication and restraints only to discover these strategies are unsuccessful as well as, potentially causing further harm to residents (Fletcher, 1996; Lanctot, et al., 1998; Schneider & Sobin, 1992); in fact, the evidence suggests that neuroleptics are only slightly more effective than a placebo in the nursing home population without serious mental illness (Harrington, Tomkins & Curtis, 1992).

In New York State, studies have demonstrated the need for an alternative, non-pharmaceutical approach to assisting nursing home residents with complex Activities of Daily Living (ADLs). Mor et al.(2004) examined a total of 50,101 residents from 119 non-profit facilities in New York State using Minimum Data Set repository data and found that 17% had a Cognitive Performance Score (CPS) >3 (indicating severe impairment) and a diagnosis of dementia or Alzheimer's disease. Of those with dementia and Alzheimer's disease, 23.45% resisted care (resisted assistance with ADLs and medication) and 31% took antipsychotic medications. Further, a review of Brown University's national web based data set [<http://ltcfocus.org/>] from 2008 finds the population of older adults with significant cognitive impairment living in New York State nursing homes to have increased to nearly half (47%).

The Origins and Tenants of Person-Centered Bathing: In response to the poor results of traditional bathing techniques, Bathing Without a Battle (BWOB) was developed over a decade ago by the Cecil G. Sheps Center of the University of North Carolina at Chapel Hill and the Oregon Health and Science University (Sloane et al, 1995; Radar, et al, 1996; Hoeffler et al., 1997). Sloane and his colleagues developed and tested BWOB for more than ten years to investigate whether an educational program for staff that focused on a non-pharmaceutical, person-centered bathing approach would result in decreased aggression and a better bathing experience. The results were overwhelmingly positive and established BWOB as an evidence-based program that offers those with dementia a more relaxed, even pleasant, bathing experience without increasing bacterial levels. Hoeffler et al., (1997) using a pre-test-post-test design with 10 residents, found significant reductions in aggressive behavior for those bathed with a person-centered approach. In a follow-up study that examined fifteen nursing homes across Oregon and North Carolina, Sloane, et al., (2004) compared two BWOB (2001) strategies: the towel bath and a person-centered shower, to a control group that received a shower with the help of an aide

who had not received person-centered training. They found that aggression decreased 53% in the person-centered shower group ($p<.001$) and 60% in the towel-bath group ($p<.001$). The control group displayed only a 7%, non-significant, decrease in aggression. In a corollary study, Hoeffler et al., (2006) examined the effectiveness of this staff training on the experience and attitudes of the nursing aides and found statistically significant changes in confidence, ease in bathing residents, gentleness and verbal support.

The fundamentals of the BWOB educational program include: (1) a team approach to bathing that keeps decision-making as close to the resident as possible while also allowing direct caregivers to make decisions with the support of supervisory staff; (2) an emphasis on continuity in bathing care to assure that aides consistently bathe the same residents rather than rotate their bathing assignments; (3) a commitment to individualized bathing so that the trained aides are encouraged to explore creative alternatives to bathing; (4) an exploration of the myths of bathing; and, (5) an exploration of how to make the program move forward and sustain cultural change.

Previous studies having demonstrated that oftentimes direct-care staff do not know why residents with dementia become aggressive or how to manage this behavior (Burgio, Butler & Engel, 1988). BWOB specifically provides clinical staff with education and tools that promote greater control of the manner in which they are required to assist cognitively impaired elders with bathing. The BWOB program focuses on increasing staff's understanding of dementia and includes demonstration of hands-on training in a variety of bathing techniques that minimize "man-handling" the resident and maximize the integration of the resident's preferences into the bathing process. Specific approaches include the in-bed towel bath and other person-centered techniques such as the non-rinse soap bath, distracting the resident during the bath and modifying or minimizing the use of the shower spray.

Project Goals: The purpose of this funded grant project was to disseminate the evidence-based BWOB staff education program to six New York State nursing homes with the goals of:

- improving care for residents with dementia by reducing physical agitation or aggression during the bathing process, thus lowering residents' discomfort
- disseminating this best practice to nursing homes not in the consortium that plan to implement BWOB by the end of project period.

Methods

Project Team Personnel: Contractors included the Foundation for Long Term Care (for overall management and training of facility administrative/supervisory staff), Joanne Rader, one of the original developers of Bathing Without a Battle (for training of trainers and facilitation of dissemination trainings) and Brown University's Center for Gerontology and Healthcare Research, specifically Dr. Vincent Mor and Dr. Pedro Gozalo (for evaluation). Co-Director of the Program on Aging, Disability and Long Term Care at the University of North Carolina Chapel Hill, Dr. Phillip Sloane and his research assistant Madeline Mitchell served as consultants to the evaluation team and modified their existing training program used in prior BWOB studies to provide effective training for data collectors conducting observations for this project.

The six implementation facilities were Coler-Goldwater Specialty Hospital and Nursing Facility (Roosevelt Island/NYC), lead agency awarded the grant, and four of its subcontracted sites: Menorah Home and Hospital (Brooklyn/NYC), Beechwood Homes (Getzville/Buffalo), Odd Fellow and Rebekah Rehabilitation & Health Care Center, Inc. (Lockport/Buffalo) and Monroe Community Hospital (Rochester/Rochester).

Implementation Process: At the onset of this project, Joanne Rader, developer of the BWOB approach, indicated that teaching CNAs bathing techniques would not be enough to fully implement personalized bathing; administrators and managers would need to be in support of the culture change necessary to enable direct care staff to carry out the goals of this project. Thus, the FLTC began by facilitating a detailed orientation for Administrators and Supervisors to promote buy-in, explain the implementation process, encourage self-assessment of policies and procedures surrounding bathing of residents with dementia and assure the nursing home culture would become supportive of the person-center bathing practices.

The designated lead trainers for each facility then attended a "Train-the-Trainer" session with BWOB developer Joanne Rader to prepare them to educate their direct care workers on the BWOB approach and customize the training to make sense for their staff and facility needs. Trainers also received follow-up or booster sessions. Thereafter, trainers returned to their sites and trained their direct care workers on the BWOB program. Finally, direct care staff implemented BWOB on the designated units with participating residents.

Study Design: This project was tested by using a random assignment trial of pair-matched facilities. To help increase comparability between the experimental and control groups, the six nursing homes were initially paired based on their geography, size, pre-existing dementia programming and (to the degree possible) ethnicities of residents. The facilities were then randomly assigned to two groups of three facilities each. The first group (Group 1) received the

intervention first while the second group (Group 2) served as control during that period. Several months later the second group received the intervention while the first group did not receive further training. Group 1 included Beechwood, Coler and Goldwater, while Group 2 included Menorah, Monroe Community, and Odd Fellow & Rebekah. Although the unit of random assignment was the facility, the unit of observation and analysis was the resident.

Study Subjects Selection Criteria: Since the data collection protocol required that evaluation data collectors actually observe residents with dementia during the course of their being bathed, it was determined that this constituted human subjects research requiring informed consent. Since, by design, all potential study subjects had dementia, it was determined that consent would have to be obtained from a responsible party, generally a family member.¹

The six nursing facilities agreed to provide a list of residents with a diagnosis of dementia or Alzheimer's and signed consent forms to the study data collectors. In the few instances in which residents signed their own consent form, the data collectors reviewed their charts to validate the presence of a diagnosis of dementia or Alzheimer's. Additional inclusion criteria was established and then, several months into recruitment, was relaxed to increase the pool of eligible subjects. Specifically, the 120 day minimum residency was lowered to 90 days; the CPS (the preferred tool for staging cognitive impairment among nursing home residents) score of 3 was lowered to 2, and the medically unstable exclusion was eliminated. In addition, participating facilities were offered an honorarium to pay existing staff to focus on contacting non-responding families in order to obtain additional consents with considerable success. In contrast to the original efficacy trial done by Sloane and his colleagues, this study did *not* include only those residents with a history of demonstrating physically abusive behaviors during bath or other care-giving times.

The consent process was difficult and time consuming for all of the facilities and ended up delaying the introduction of the study data collectors into the facility to begin conducting observations of consented residents' baths. Facility staff often had to make multiple follow up calls and send repeat letters to families to attempt to obtain consent. Some facilities had better success with the consenting process. In spite of the efforts made to maximize the number of consents, after almost a year of attempting to achieve the originally intended sample size of 800, the project proceeded with a much smaller number of study patients than was anticipated.

Data Collection Protocol: The implementation of the study took place over a four year period, including a year of preparation of the protocol, programming of the protocol into Personal Digital Assistant (PDA) devices to collect the data, and training of our data collectors (while study subject consents were being obtained at participating facilities), followed by three years of data collection. Four data collectors were trained by Dr. Phillip Sloane and his team in August 2008 relying upon an extensive Data Collector Manual which covered the purpose of the study,

¹ There were instances in which eligible individuals did not have a responsible family member but there was someone with power of attorney. In these instances, informed consent requests were sent to these individuals.

the approach validating patient eligibility, when and how patient baths were to be observed and how the data collected was to be transferred to Brown). The original observational data collection protocol used in the randomized clinical trial of the Bathing without a Battle intervention was modified from a paper form to one using a Personal Data Assistant (PDA) programmed by Brown University to collect all the required data for the study. Based on the results of the training (see **Inter-Rater Agreement Results memorandum, Appendix II**), modifications to the data collection protocol were implemented and tested during the last part of 2008 (see **Manual for Data Collection, Appendix I**).

Subsequent to establishing the necessary pool of eligible residents, data collectors followed a strict observational and chart abstraction protocol to gather baseline (pre-intervention) observations on all eligible and consented study subjects. Each study patient was observed for 2 to 3 baths per collection period by data collectors utilizing a PDA that enables continuous as well as time-sampled observations.

In the first set of observations, data collectors obtained baseline or pre-intervention (considered round 1), and the first follow-up observation (considered round 2) of participating residents in both intervention and wait-control facilities. During this period, data collectors observed bathing of residents after BWOB was implemented between rounds 1 and 2 (the experimental group) and bathing as it has always been done (the wait-control group). The experimental groups also received a third follow-up observation (considered this group's round 3) approximately 3 months later to test for long term effects.

The second set of observations was conducted after the wait-control group received notification to train direct care staff and implement BWOB on their designated units. Data collectors returned to sites to observe bathing one final time now that BWOB had been implemented at wait-control sites between rounds 2 and 3.

Data Measures: For nursing home residents that consented and were eligible for the study data collectors obtained baseline data and physical and verbal aggressive behavior at the time of being bathed. Baseline data included the following resident characteristics: Age, Gender, Race/Ethnicity, Weight and Height, Language (English Yes/No), In Special Care Unit?, Payment Source (Medicaid Y/N), Advance Directives: Do Not Resuscitate, Do Not Hospitalized, Medication Restrictions, Note of hitting/physically abusing staff, Bathing preferences recorded?, Bathing frequency (times per week), ADLs, Bathing, Bladder/Bowel Incontinence, Hearing impaired, and Pain. Medications were obtained for the months when the resident was observed being bathed.

The two primary dependent variables were the rate of physical aggression and the rate of verbal signs of agitation and discomfort during bathing. Two sets of secondary outcomes were also examined. One was the degree to which antipsychotic medications were stopped, reduced in

dose, and/or the use and administration of “PRN” medications was decreased. The other secondary outcome was change in CNA job satisfaction examined in a survey (**see Appendix III for survey sample**).

The primary outcome of interest was the rate of aggressive and agitated behavior as measured by a modified version of the Care Recipient Behavior Assessment (CAREBA) (Sloane, et al, 2004). The CAREBA, which was originally developed to score digitized videotaped interactions, was modified and simplified with Dr. Sloane’s input so that it could be scored in real time, during observation of a personal care episode with the help of a PDA device. The following CAREBA items was scored, each every 30 seconds, as dichotomous yes/no variables: 1) Verbal agitation, including calling for help/protesting, hostile language, and yelling; and 2) physical aggression including hitting, kicking, biting, grabbing, throwing objects and/or spitting (each coded separately). In the case of hitting, kicking, and biting Brown used a 3-level category scale with values actual, attempted, or none.

In addition to the behavioral outcomes observed during 30-second intervals during bathing episodes, at the end of each bath information on the type of bath (shower, tub, in-bed towel bath, commode/toilet bath, other) was also collected. The final set of bathing information collected was on the behavior of the CNA(s) performing the bath. Using a 1-5 scale (1=never, 5=always) Brown measured the degree of physical and verbal frustration displayed by the CNA(s), and how often the CNA(s) informed the resident of the tasks they were about to perform during the bath.

Antipsychotic medication utilization was collected from de-identified copies of the Medication Administration Record (MAR) sent to Brown University by the facilities for the months when a given person had any baths observed. A resident with both baths in a given round observed during a single month contributed the MAR for that month, while a resident with the two baths overlapping two months contributed two MARs, one for each month of the bath observations.

The staffing survey was distributed before and after the intervention was implemented in a given facility. Failures in implementation of the survey at the three Group 1 facilities prevented the inclusion of these surveys. The CNA job satisfaction results reported are therefore based only on surveys from the three Group 2 wait/control facilities (Menorah, Monroe and Odd Fellow). The survey used a 10 item standardized job satisfaction survey. Each item was scored from 1 to 5 with 5 signifying a high degree of agreement with statements about being satisfied and 1 a high degree of disagreement. Brown summarized 7 of the items into a single summary score which was an average of these 7 items having determined that these together have a moderate level of internal consistency (alpha ~ .50).

Results/Findings

Participation and Loss to Follow-up: There were a total of 326 patients that signed consent to participate. Of those, 270 (83%) residents were eligible for the study. Among eligible residents, a total of 40 died, were transferred to another facility, or refused to allow themselves to be observed before bath data could be collected for them, leaving 240 residents observed in Round 1 (Table 1). The attrition between Rounds 1 and 2 was 41 residents, and between Rounds 2 and 3 the number lost to follow up climbed to 76. The frail nature of these individuals and the long duration of the study contributed to many residents dying before all three rounds of observations were completed.

Table 1. Eligibility, Participation and known censoring reasons, by facility

Facility	Eligible	Died/Refused Before Study Started	Round 1	Round 2	Round 3	Died During Study	Transfere d During Study	Refused* During Study
Beechwood	79	14	65	46	26	19	1	5
Coler	44	0	44	33	19	2	14	0
Goldwater	26	1	25	22	19	2	0	0
Menorah	26	6	20	19	17	5	0	6
Monroe	49	4	45	42	24	15	0	3
Odd Fellow	46	5	41	37	18	10	0	0
Total	270	30	240	199	123	53	15	14

* The majority of the 35 individuals not observed in round 3 and not censored due to death, transfer or stated refusal were due to the inability of the data collectors to be present at the time they were bathed.

Characteristics of Participating Residents: The baseline characteristics of the study resident subjects in each facility are presented in Table 2. Residents differed in some characteristics; notably residents at Coler and Goldwater tended to be younger, male (the proportion of females was below 50% versus above 80% in Beechwood, Menorah and Odd Fellow & Rebekah), non-white, and had fewer ADL impairments, and problems with incontinence. Goldwater and Menorah showed lower rates of cognitive impairment as measured by the CPS score.

Table 2. Baseline Characteristics of the Study Sample

Facility	Group 1			Group 2			Total
	Beech wood	Coler	Gold- water	Menorah	Monroe	Odd Fellow	
N (at baseline)	65	44	25	20	45	41	240
Age , mean \pm SD	90.1 \pm 6.4	72.6 \pm 13.2	82.4 \pm 11.1	88.0 \pm 10.1	84.1 \pm 9.9	88.2 \pm 7.1	84.7 \pm 11.2
Female, %	84.6	31.8	44.0	80.0	55.6	90.2	65.8
Race/Ethnicity							
White, %	95.4	38.6	32.0	90.0	91.1	97.6	77.5
Black , %	1.5	25.0	40.0	5.0	8.9	2.4	11.7
Hispanic, %	3.1	27.3	24.0	5.0	0.0	0.0	8.8
Other, %	0.0	9.1	4.0	0.0	0.0	0.0	2.1
Medicaid, %	52.3	59.0	76.0	95.0	75.7	65.9	66.1
ADLs*, mean \pm SD							
ADL-Bed Mobility	2.1 \pm 1.4	0.7 \pm 0.7	1.0 \pm 1.3	3.6 \pm 0.7	2.0 \pm 1.7	3.1 \pm 0.8	2.0 \pm 1.5
ADL-Transfer	2.2 \pm 1.4	1.1 \pm 0.8	1.1 \pm 1.4	3.5 \pm 0.7	2.2 \pm 1.6	3.1 \pm 0.9	2.2 \pm 1.5
ADL – Locomotion	2.5 \pm 1.7	1.1 \pm 0.8	1.2 \pm 1.6	2.9 \pm 1.7	2.1 \pm 1.8	3.2 \pm 1.1	2.2 \pm 1.6
ADL– Dressing	2.9 \pm 1.1	3.2 \pm 0.8	2.6 \pm 0.9	3.7 \pm 0.5	3.2 \pm 0.9	3.3 \pm 0.6	3.1 \pm 0.9
ADL– Eating	1.6 \pm 1.4	2.2 \pm 1.1	1.5 \pm 1.5	1.8 \pm 1.8	1.7 \pm 1.5	2.3 \pm 1.5	1.8 \pm 1.5
ADL– Toileting	2.8 \pm 1.2	2.8 \pm 1.4	1.7 \pm 1.9	3.7 \pm 0.5	3.1 \pm 1.2	3.3 \pm 1.3	2.9 \pm 1.3
ADL– Hygiene	2.8 \pm 1.2	3.5 \pm 0.8	2.7 \pm 1.1	3.6 \pm 0.7	3.2 \pm 1.0	3.3 \pm 1.0	3.1 \pm 1.0
ADL– Bathing	3.2 \pm 0.8	3.7 \pm 0.5	2.8 \pm 1.2	3.9 \pm 0.4	3.5 \pm 0.8	3.7 \pm 0.5	3.4 \pm 0.8
Bladder Incontinent, %	70.8	45.5	40.0	90.0	62.2	73.2	63.3
Bowel Incontinent, %	44.6	47.7	40.0	95.0	57.8	80.5	57.5
Any Incontinence, %	72.3	47.7	40.0	100.0	68.9	82.9	67.9
CPS, mean \pm SD	4.4 \pm 1.2	4.1 \pm 1.2	3.7 \pm 0.9	3.7 \pm 1.5	4.1 \pm 1.5	4.1 \pm 1.2	4.1 \pm 1.2

* ADL (except ADL— Bathing) values: 0 – Independent, 1 – Supervision, 2 - Limited Assistance, 3 - Extensive Assistance, 4 - Total Dependence.

ADL— Bathing: values: 0 – Independent, 1 - Supervision, 2 - Phy help limited to transfer, 3 - Phy help in part of bathing, 4 - Totally Dependent.

Bath Modalities: The first step in determining whether the educational and training intervention influenced the behavior of the nursing aides in undertaking their responsibilities to bathe demented residents was to determine if the approach used in bathing residents changed before and after the training. We compared the baseline observations of patient baths with those obtained at the 2nd follow-up period after all 6 facilities had been exposed to the training intervention. Bathing Without a Battle training focuses initially on changing the approach to bathing, advocating a switch from task-centered bathing methods, such as traditional showering, to more person-centered bathing techniques, including a bed or towel bath, to reduce the risk of

aggravating the resident and redirect the focus on comfort and personal preference. As a result of the intervention, there were significant changes in the modality of bathing methods most commonly used with residents. As can be seen in Table 3, showers declined over 10% in overall use after the intervention. As importantly, the use of in-bed baths increased by 17%, precisely as expected if the nursing aides internalized the educational exposure to the training program.

Table 3. Number and Frequency of Bathing Methods used in each round

Bath Method		Intervention		Difference, %
		Round 1	Round 3	
Shower	N	328	140	
	%	68.8	56.9	-11.7
In Bed	N	54	70	
	%	11.3	28.5	+17.2
Tub	N	57	14	
	%	11.9	5.7	-6.2
Commode	N	33	12	
	%	6.9	4.9	-2.0
Other	N	5	10	
	%	1.1	4.1	+3.0
Total		477	246	

Table 4. Number of baths per facility observed in each round

Facility	Round 1	Round 2	Round 3	Total
Beechwood	130	90	53	273
Coler	80	62	41	183
Goldwater	53	44	39	136
Menorah	42	23	32	97
Monroe	95	92	47	234
Odd Fellow	78	73	36	187
Total	478	384	248	1,110

Physical and Verbal Aggression, Agitation, and Discomfort: The outcome measures were collected on an average of two baths for each resident during each wave of data collection. The number of bath observations in each round and Facility is detailed in Table 4. Reasons for missing bath observations included refusal of the patient on the scheduled observation time,

miscommunication between facility staff and data collectors, such as the data collector arriving at the facility after some of the scheduled patients had been bathed, or being told that they were bathing residents not in the eligibility list at the time the data collector was present. In most cases repeated attempts were made but this did not always solve the missing bath data for individuals, resulting in our having only one rather than two baths observed for each resident.

Most study outcomes showed improvement, with fewer residents post-intervention being observed to have experienced agitation, aggressive, or distressful behavior relative to their baseline pre-intervention period(s) across both groups of facilities (Table 5). The results display the percent of time during the bath that were observed when the resident was showing signs of physical or verbal behavior.

Table 5: Observed Behaviors, by Intervention Status: Percent of bath time with any behavior

Outcome (% bath time with any)	Pre-Intervention		Post-Intervention		Post versus Pre Intervention P-value for Difference
	Group 1*	Group 2	Group 1	Group 2	
	Mean \pm Standard Deviation				
Any Physical or Verbal Aggression	22.6 \pm 30.3	25.4 \pm 32.9	19.6 \pm 28.7	20.3 \pm 32.1	0.0037
Any Physical Aggression	6.2 \pm 17.1	4.8 \pm 15.6	4.9 \pm 13.9	3.8 \pm 15.2	0.3875
Hitting	3.2 \pm 11.7	1.8 \pm 10.4	2.2 \pm 7.6	1.0 \pm 6.6	0.9487
Kicking	0.3 \pm 2.5	0.9 \pm 8.1	0.3 \pm 2.8	0.1 \pm 1.2	0.2793
Biting	0.1 \pm 1.5	0.7 \pm 7.6	0.1 \pm 1.0	0.5 \pm 5.4	0.3855
Throwing Objects	0.0 \pm 0.0	0.6 \pm 6.7	0.01 \pm 1.3	0.0 \pm 0.0	0.9961
Scratching	4.7 \pm 15.2	3.6 \pm 12.8	3.3 \pm 11.7	3.5 \pm 14.9	0.1476
Spitting	0.7 \pm 2.2	0.3 \pm 6.2	0.4 \pm 4.8	0.8 \pm 5.0	0.6010
Any Verbal Aggression	20.9 \pm 29.8	24.6 \pm 32.8	18.8 \pm 28.2	19.8 \pm 31.6	0.0084
Call for Help	19.5 \pm 28.2	17.9 \pm 28.1	17.4 \pm 26.5	10.9 \pm 22.1	0.0427
Aggressive Language	2.2 \pm 11.1	1.8 \pm 9.3	1.7 \pm 9.1	2.2 \pm 16.0	0.9245
Yelling	6.7 \pm 21.5	10.3 \pm 24.8	7.4 \pm 21.4	10.8 \pm 25.7	0.8616

* Group 1 includes the three nursing facilities (Beechwood, Coler and Goldwater) that received the intervention first—between baseline and 1st follow-up period. Group 2 includes the other three nursing facilities (Menorah, Monroe Community and Odd Fellow & Rebekah) that received the intervention second—between 1st and 2nd follow-up periods.

The most prevalent aggressive behaviors were verbal, particularly calling for help (which also includes protesting and objecting) and yelling. The intervention was found to be associated with a statistically significant reduction of 15.2% (p-value<.05) in the percentage of time residents were observed to be calling for help. When combined, all verbal and all verbal plus physical

behaviors showed statistically significant declines of 17.8% (p-value<.01) and 18.6% (p-value<.01), respectively.

Because of loss to follow-up due primarily to death which may be correlated with the behavioral outcomes of interest, we conducted a multivariate analysis with resident level fixed effects, including only those residents (N=116) that were observed in all three rounds.² The results showed a (not statistically significant) drop in any physical behavior of 1.7% points (5.1% pre vs. 3.4% post) (p-value 0.101) representing a 33% reduction, but a statistically significant drop in any verbal behavior of 3.3% points (20% pre vs. 16.4% post) (p-value 0.037) a 16.4% reduction, and of any physical or verbal behavior of 3.9% points (21.2% pre vs. 17.3% post) (p-value 0.015) representing an 18.6% reduction.

Bath Completion and Duration: Bath duration experienced a statistically significant decrease of 1.5 minutes (15%) (p-value<0.0001) from baseline to intervention overall or by facilities (Table 6). We also verified whether attrition influenced this by examining bath duration among those present in all rounds of the study and observed a similar decrease (1.3 minutes) in duration. The decreased was particularly large for In-Bed baths (14.5 minutes at baseline vs. 10.3 after intervention), followed by Tub baths (13.4 vs. 10.5, p-value 0.0002), and Commode (11.4 vs. 8.6 minutes, p-value 0.561), while the most widely used Shower method experienced a more modest decrease (7.2 vs. 6.7 minutes, p-value 0.019).

² Since demented patients approaching death may experience more hallucinations, pain and other distressing symptoms they can't comprehend, the risk of increased symptoms at this time is likely to be greater.

Table 6. Bath Duration, by Intervention Status

Facility		Intervention		Total
		Pre	Post	
Beechwood	Mean	11.29647	9.047053	10.1182
	SD	3.541276	2.627042	3.288955
Coler	Mean	4.999591	6.29562	5.72905
	SD	2.722243	2.948931	2.916495
Goldwater	Mean	4.388548	5.980511	5.360114
	SD	1.566041	4.501447	3.722874
Menorah	Mean	8.724438	6.212366	7.895713
	SD	3.518156	2.58583	3.438076
Monroe	Mean	13.36207	12.96319	13.28195
	SD	6.271709	5.531843	6.121033
Odd Fellow	Mean	7.099709	7.16776	7.11281
	SD	1.76351	1.845904	1.774805
Total	Mean	9.367797	7.89339	8.778034
	SD	5.205081	4.069699	4.835718

Antipsychotics Use: One of the consequences of demented residents manifesting aggressive behaviors as a result of traditional shower bathing approaches is that they are prescribed and administered anti-psychotic medications to reduce the agitation brought on by the bathing experience. The prevalence of anti-psychotic medications use among all nursing home residents in the US on any given day is over 25% and higher for the long stay and demented populations.

To determine whether the rate of use of anti-psychotics declined following the introduction of the Bathing without a Battle training program, participating residents' medication records were copied and abstracted to record whether in the days following the date of the bath that was observed, an anti-psychotic was administered. Research staff had to rely upon facility staff to copy the relevant records and redact identifying information without obscuring drug regimen information or date and facility information. Not all facilities provided the necessary drug information, particularly for the post-intervention periods. This reduced our ability to detect a difference in the rates of anti-psychotic use at baseline vs. in the post-intervention period.

Table 7 summarizes residents' medical record data that were abstracted along with the average proportion of residents administered anti-psychotics by wave and participating facility. Two facilities did not contribute post-training drug utilization data so we dropped them from the comparison analysis. The resulting comparison of the "before and after" is suggestive of a reduction in the rate of anti-psychotic drug use. However, the wide variation in both the baseline and post-training averages between facilities (not to mention the fact that we have missing data on two facilities), makes any interpretation of these results be highly speculative.

Table 7 Number and proportion of Residents Given Anti-Psychotic Drugs by Time and Facility

Facility	Intervention		Total
	Baseline	Post-Training	
Beechwood	.20	.17	.19
Coler	.60	.44	.49
Gooldwater	.38	.28	.32
Monroe	.43	.50	.44
Total	.38	.31	.30

CNA Outcomes and Job Satisfaction Survey: An analysis of the frustration displayed by the Certified Nursing Assistants (CNAs) during baths, as recorded by our research data collectors, showed a slight decrease in overall physical and verbal frustration across the six facilities between rounds 1 and 3. This difference was largely attributable to a decrease in the mean frustration in the "control" group that was intervened between rounds 2 and 3. Table 8, Panels A, B and C reveal the mean recorded level of verbal and physical frustration CNAs revealed following bathing the resident who was observed across all facilities, those in the first intervention group and those in the waiting group control facilities. As can be seen, across all facilities, the mean frustration levels fluctuate up and down between observation rounds. This fluctuation is repeated in the first intervention groups three waves of observations but in the waiting group control facilities we observe a drop in frustration levels, however this drop occurs *before* the training program is introduced, suggesting that whatever we are observing may be a spurious finding.

Table 8 Nurse Aides Mean Observed Physical and Verbal Frustration Levels following Bathing Sessions

Panel A: All Facilities

Round	Mean CNA Physical Frustration	Mean CNA Verbal Frustration
1	1.08	1.15
2	1.03	1.07
3	1.06	1.13

Panel B: First Intervention Group

Round	Mean CNA Physical Frustration	Mean CNA Verbal Frustration
1	1.06	1.20
2	1.04	1.10
3	1.09	1.20

Panel C: Second Intervention Group

Round	Mean CNA Physical Frustration	Mean CNA Verbal Frustration
1	1.10	1.08
2	1.01	1.04
3	1.03	1.03

An anonymous job satisfaction survey was also administered at two points in time. This was distributed to certified nursing assistants during the day shifts at two points in time. Unfortunately, the timing of the survey administration at some of the facilities was such that the baseline measure may have occurred after the first round of training but before the “refresher” training. Therefore, we were only able to use the second and third waves of the survey for the 3 waiting list control facilities, since the baseline for the others could not really serve as a baseline. A total of 177 CNA surveys were recorded at the first wave while only 61 were submitted in the follow-up survey. While we did not expect to have the same respondents in both waves across the 3 facilities, only 13 of the 177 respondents who completed the survey in the first wave were matched as having completed the follow-up. That is too low a retention rate to be reasonable, so it is likely that the mode of administration varied from one administration to the next or the CNAs failed to provide ID numbers to link their records at one or both surveys.

Notwithstanding these methodological flaws, when we averaged the scores separately across the respondents in the two waves, we found a mean score of 3.9 out of 5 in wave 1 as compared to 3.0 in the post intervention survey. This suggests a fairly large reduction in nurse aide satisfaction, something that was otherwise unexpected. Since the standard deviations of the two

averages differed substantially, there was a much smaller number of respondents in the post-intervention survey and there were only 3 facilities across which we averaged survey scores—one of which suffered a change in administration between surveys, we chose not to undertake a statistical test of the differences between the means, preferring to leave it to the reader to determine if the decline in satisfaction was attributable to the introduction of the training rather than a response to any number of other historical trends that may have accounted for the observed reduction in satisfaction among nurse aides in these three facilities.

Implementation Survey Findings

The Foundation for Long Term Care (FLTC) also conducted on-site implementation interviews with staff at four sites: Coler and Beechwood (experimental sites); Monroe and Odd Fellow (control sites). The purpose of these surveys, conducted through small group interviews, was to gather more detailed information about the process of implementing BWOB in the real world nursing home environment. Specific topics covered included how BWOB was introduced to direct care staff; what aspects of the training were best received or most difficult to convey to staff; and based on their experience, recommendations and suggestions for future sites to make BWOB implementation successful. All four sites shared that the delays experienced throughout the project and the rigors of participating in a research project proved challenging in terms of keeping material fresh and maintaining enthusiasm for continuing with evaluation. While this finding was pertinent to the implementation experience for these consortium sites, FLTC purposefully directed staff to comment on aspects of training and implementation that would be informative to nursing facilities not engaged in a grant-funded research project.

All sites interviewed shared that BWOB was introduced to staff as an opportunity for job enhancement and skill building, a new tool to use that would make their job easier and more pleasant – for themselves and the residents. In addition, they specifically highlighted the Department of Health’s support of this personalized bathing approach and the evidence behind its effectiveness (reduction in aggressive behaviors) and safety (no increase in harmful bacteria). The most difficult aspect of the training for nursing homes to convey to staff (particularly those who had been using traditional bathing techniques for years) was persuading them that these techniques would in fact get people clean. The explanation of supporting studies, in particular the finding that BWOB did not increase harmful bacteria and no-rinse products actually resulted in improved skin condition, was successfully used by trainers to help surmount these concerns. Further, one site that distributed personalized invitations to CNAs, Nurses and Aides, suggested incorporating an informational packet to help address this issue from the onset. The packet could include BWOB background and research as well as an overview of person-centered bathing techniques, emphasizing there is “no one right way.”

Many of the strategies employed by sites, or recommended for use in future implementations, to recruit, train and sustain BWOB, align with Rogers' (1995) diffusion of innovation model that describes this process as "a kind of social change... by which alteration occurs in the structure and function of a social system." Rogers' model identifies several key elements to an individual's or organizations decision to adopt or embrace an innovation and the table below aligns the characteristic of each key with several strategies identified by sites for successful implementation.

Rogers' (1995) diffusion of innovation model: Keys to Adoption	BWOB consortium sites implementation surveys: Identified strategies for successful implementation
Compatible (i.e., consistent with current needs / values and aligns with social structure and norms)	<ul style="list-style-type: none"> • Let the nurse in charge of the resident know that a new acceptable way (DOH acceptable) to bathe will be done to clean the resident. • Have sister/brother RNs/CNA Coordinators or other current nursing staff become BWOB Trainers. • Maximize consistent assignment of CNAs. • Incorporate BWOB into training orientation to increase facility/community awareness. • Management must trust the staff to do the right thing when they have been properly trained and convey confidence in moving decision making to the bedside with the BWOB approach.
Advantageous (i.e., a better system / idea)	<ul style="list-style-type: none"> • Share the origins and evidence behind BWOB. • Show before/after demonstration video – very powerful! • Explain that BWOB techniques can reduce the number of transfers required using a bed bath – thus saving time.

<p>Easy to understand and use (i.e., <u>not complex</u>)</p>	<ul style="list-style-type: none"> • Ask the nurse if she would like to watch or participate (inclusion of nurses is important). • Ask the aide that received hands-on training to train another aide on their shift/unit. • Emphasize there is no one right way; let the person be your guide.
<p>Can be incrementally introduced (i.e., experimented with on a limited basis)</p>	<ul style="list-style-type: none"> • Every aspect of BWOB can be personalized to best fit the needs of the resident and benefit the organization. • Begin by having staff pay particular attention to keeping residents warm and covered. • Have staff test out some techniques on the unit in cooperation with the trainer. • Have no-rise products immediately on-hand after the training, enabling staff to immediately test out the product with residents.

A central theme that emerged in persuading staff to adopt BWOB and fully embrace the innovation was the use of hands-on demonstration – both during the staff training and follow-up lessons on the unit led by the trainer(s). All sites interviewed strongly recommended that CNAs and Aides being trained actually participate and help model person-centered bathing techniques both as a way to show BWOB can be easily applied and to demonstrate confidence in staff's ability to successfully use this approach on the floor with residents. It is also worth noting that at the time of these visits, two sites (Beechwood and Monroe) had made the significant step of integrating BWOB into the mandatory orientation training provided to all new CNAs.

BWOB Dissemination Workshops

Another goal of this project was to disseminate BWOB to facilities *not* involved in the original six member consortium. The FLTC coordinated the dissemination workshops held across New

York State with BWOB developer Joanne Rader facilitating each one-day training. The training consisted of two morning sessions aimed at Administrators and supervisory staff to enable them to understand why current bathing practices need to change, evaluate the relationship of current bathing practices with respect to person-centered care and apply the organizational changes necessary to create more pleasant and person-directed bathing. An afternoon Train-the-Trainer session was also held to teach intended BWOB trainers how to train direct care staff to implement BWOB with residents/clients. FLTC Education offered 2.5 NAB (National Association of Boards of Examiners of Long Term Care Administrators) credits and Certificates of Attendance documenting training hours for attendees.

Five workshops were held over a two week period from April 4 through April 15, 2011 in the regions of Albany, Buffalo, Syracuse/Rochester, and New York City. Workshops were promoted through distribution of a brochure (see **Appendix IV**), on-line information and registration through the FLTC's Education division and email blasts to both members and partners of long term care trade associations including LeadingAge New York (formerly NYAHS) and New York State Health Facilities Association (NYSHFA). A total of 177 eldercare professionals, from Administrators, to Directors of Nursing Services, to CNAs attended, representing 81 eldercare organizations. Upon completion of the workshop, attendees were asked to fill out an evaluation and the results are shared in the following table.

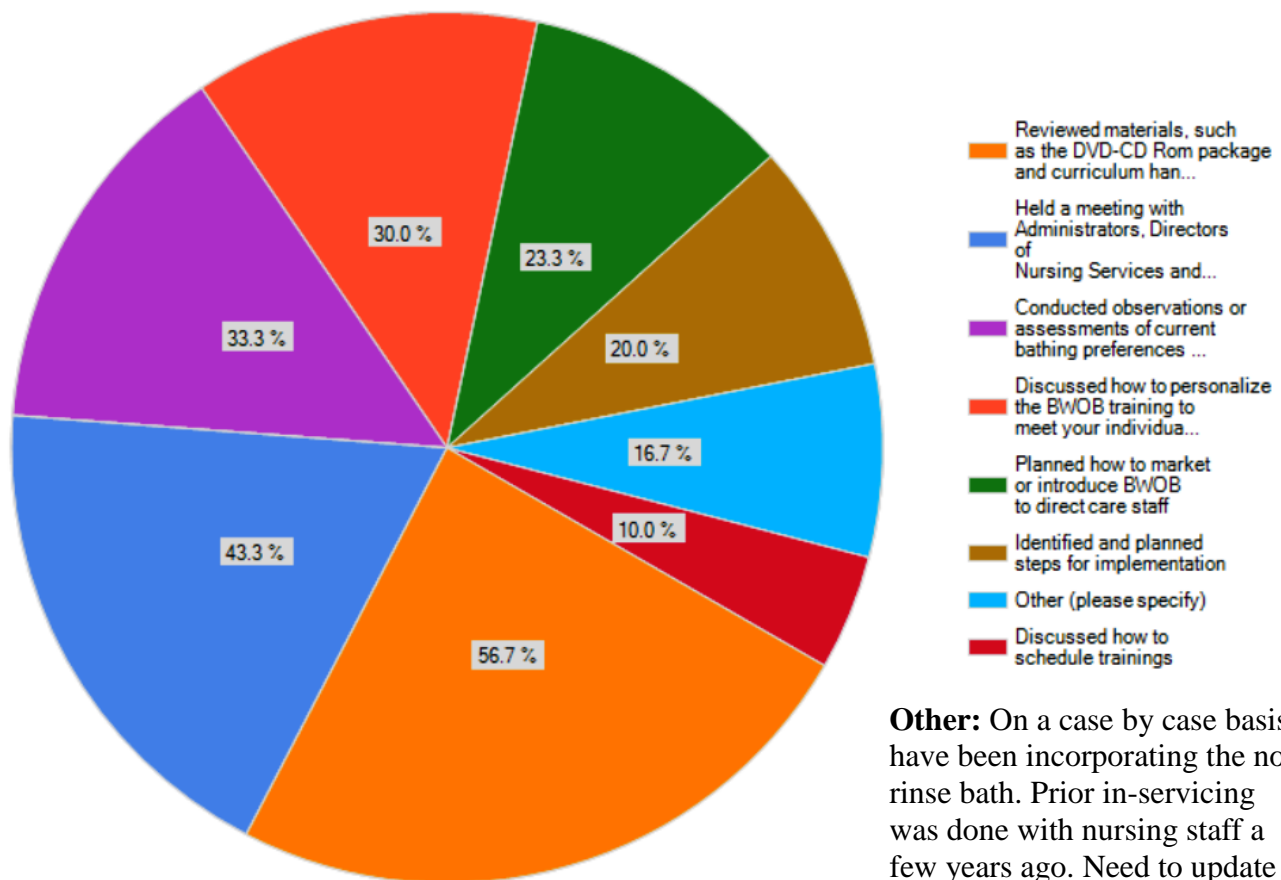
Post-workshop evaluation ratings:

Survey Rating Categories	Percentage rated as "Excellent"	Percentage rated as "Good"	Percentage rated as "Fair"
Overall Session Rating	73%	27%	0
Joanne Rader's Knowledge of material/topic	90%	10%	0
Usefulness of knowledge/skill acquired	76%	23%	1%
Was participating in this seminar a wise business decision?	Yes		No
	100%		0

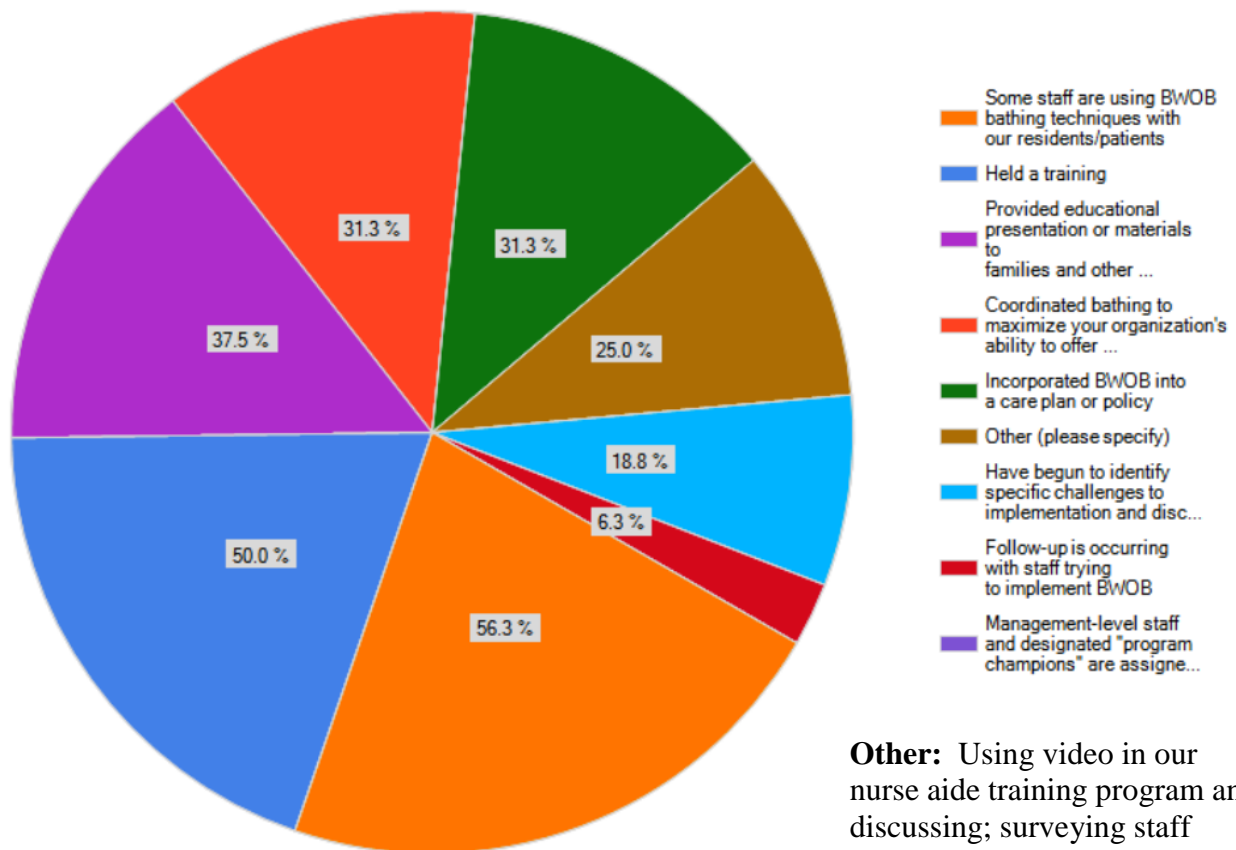
Plans to Implement Survey: Six months after the dissemination workshops, FLTC distributed a link to a secure online survey through Survey Monkey to all attendees to assess their implementation plans and activities. The survey utilized a response sequence to evaluate

whether each organization could be labeled as likely to implement or having begun implementation. Responders who provided information on planning activities they had engaged in for BWOB implementation and went on to select either “likely” or “very likely” to implement BWOB based on 5-point Likert Scale (1= no intent to 5=very likely), were labeled as likely implementers. Organizations that responded “Yes” to “taking definite steps to implement BWOB” and provided information about what their organization had accomplished thus far were described as having begun implementation. In sum, 22 organizations were ascribed to the likely implementers or having begun implementation category, thus exceeding the 20 organization goal originally proposed in this project. The two pie charts to follow provide a summary of planning activities and implementation steps broken down by the descriptive responses available in the survey.

Please select the planning activities your organization has engaged in thus far. Please select all that apply.



Please select the implementation steps your organization has engaged in thus far. Please select all that apply.



Other: Using video in our nurse aide training program and discussing; surveying staff about attitudes toward bathing, identifying barriers to project , introducing concepts to CNAs and nurses and have identified materials for implementation on- hand and chosen target units for piloting the project.

Summary

The Foundation for Long Term Care in conjunction with 6 non-profit long term care facilities in New York implemented an evidence based educational program designed to train nursing assistants in techniques to bathe their residents with dementia in a manner has been shown to reduce their negative behavioral reactions. While there have been efforts to diffuse this approach to nursing homes around the country, to our knowledge, this is the first example of a true controlled diffusion study. As with all efforts to implement system wide change, this project experienced considerable challenges, some of which were attributable to the requirements of the research study, but others were attributable to changes in facility leadership, shifting attention of the staff from the project to other daily operational necessities. These kinds of difficulties are to be expected in any such effort to introduce system wide changes in the clinical practices of an institution. Nonetheless, in spite of the implementation challenges and the much smaller sample size than that which we had initially proposed, our research confirmed the effectiveness of the Bathing Without a Battle intervention.

First, we did indeed observe a substantial change in the way in which residents with dementia were bathed following the introduction of the training. During the baseline period nearly seventy percent (69.0%) of all baths which we observed were done as showers, either while the resident was sitting or standing or in some combination. After the training, this dropped to 57.0%, a significant reduction. In contrast, the preferred approach to bathing that is taught during the training program, the bed bath with a sponge or towel, increased from 11.3% of baths to 28.5% of baths. This confirms that the training changed the behavior and the way in which nurses aides approached the task of bathing the residents.

Second, we observed a significant drop of 4 percentage points in the prevalence of residents with verbal or physical aggression during baths, representing an 18.6% reduction relative to the pre intervention level. Since the prevalence of physical aggression is relatively low even at base line, we would need a larger sample size to detect a statistically significant difference between the groups at conventional levels of significance ($p < .05$). Nonetheless, we do observe a difference that is significant at the $p = .10$ level. These results clearly suggest that changes in the way in which this sample of residents with moderate to severe dementia were bathed translate into meaningful reductions in the prevalence of verbal aggression and more modest reductions in physical aggression.

Implications

The fact that we were able to detect a significant improvement in residents' reactions to being bathed after nurses aides had been trained in the Bathing without a Battle educational program has substantial implications for the future shape of American nursing homes. Increasingly nursing homes are being divided into those that concentrate on doing post-acute rehabilitation and recuperation and those focused on caring for the long stay population that is increasingly dominated by residents with Alzheimer's Disease and related dementias. Nearly half of the prevalent population of individuals in nursing homes (combining post-acute patients and long stay residents) on any given day have significant cognitive impairment and almost all of these individuals require assistance in bathing. Our results suggest that after aides are trained there is a 3% to 5% lower verbal or physical aggression rates during any given bath. Since most residents are bathed several times a week, among the nearly 1 million long stay residents bathed 120 times or more times a year (approximately half of whom have dementia), this means that there could be over ¼ of a million fewer baths with aggressive behaviors. As importantly, only a few of the participating facilities incorporated the Bathing without a Battle training program into their regular nurse aide training schedule and orientation meaning that, given high rates of turnover among nurses aides, the intervention might have had a much stronger effect.

The fact that we observed a more than doubling in the use of the bed bath using the towel approach promoted by the Bathing without a Battle program strongly suggests that the training was taken to heart. Nonetheless, even in the last observation period, we still observed that a majority of baths were undertaken with a shower. Since there is evidence that these are more likely to stimulate aggressive behavior on the part of the resident, further reductions in the use of showers, particularly showers that don't incorporate any aspects of personalized bathing, among residents with dementia is likely to translate into even larger effects on aggressive behavior.

On the basis of our findings, we would strongly argue for a broad scale adoption of the Bathing without a Battle training program in New York State nursing homes. At the same time, we believe that better understanding what approaches to implementation are more effective and whether these programs have a "spill over" effect that can be seen in other kinds of interactions between nurse aides and residents would be highly desirable. As those who are studying "culture change" and other quality improvement initiatives in the nursing home setting increasingly realize, it is not merely introducing the novel program that makes a difference but having that program incorporated into the standard operating procedure of a facility. This is something that, if properly observed and understood, could make a significant difference in the lives of long stay nursing home resident population.

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Appendices I – III
Brown University's Center for Gerontology and Healthcare Research

Appendix I: MANUAL_FOR_Bathing_DATA_COLLECTION.PDF

Appendix II: Inter-rater agreement results-1.PDF

Appendix III: CNApretestsFinal.PDF

Appendix IV
Foundation for Long Term Care

BWOB Dissemination Workshops Brochure.PDF