

Title of Study: Implementation of EIT-4-BPSD in Nursing Homes 1R01NR015982-01A1

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Research Strategy

A. Significance.

Slow Dissemination and Implementation of the CMS Mandate to Reduce Antipsychotics and Use Person-Centered Behavioral Approaches for BPSD. This pragmatic trial responds to PAR 13-055 Dissemination and Implementation Research in Health, which aims to ensure that scientific knowledge and effective interventions are put into everyday use. Our proposed work is significant because it focuses on implementation of evidence-based interventions into real world settings of care.³⁴ Specifically, we address the erroneous perception of nursing facility staff that antipsychotic use is the most effective management strategy for BPSD,²⁰ and the persistent failure to provide quality person-centered care to residents.^{35,36} This work is in line with the National Quality Strategy that aims to ensure that each person and family are engaged as partners in care that supports their well-being, needs and goals.³⁷ Our work to improve care to patients with dementia is also congruent with the 2015 Update to the National Plan to Address Alzheimer's Disease³⁸ and the recommendations of the NIH-convened Alzheimer's Disease Research Summit 2015: Path to Treatment and Prevention.³⁸

A number of pathophysiological, psychological and environmental mechanisms likely underlie BPSD.³⁹⁻⁴⁴ From a clinical perspective, BPSD have been conceptualized as expressions of un-met needs and frustrated goals⁴⁵⁻⁴⁸ and are exhibited by up to 90% of residents with dementia.^{2,49} BPSD contribute to poor quality of life, more rapid cognitive and physical decline⁵⁰ and put residents at risk for inappropriate use of antipsychotics as well as other psychotropic medications (antidepressants, anxiolytics, sedative/hypnotics)⁵¹ and physical or environmental restraints that reduce function.^{5,2,49} The use of psychotropic medications among individuals with dementia is associated with a more rapid physical and cognitive decline than would otherwise be anticipated and with little or no improvement in BPSD.⁵¹ Behavioral approaches have repeatedly been endorsed by geriatric organizations as the first line of treatment for BPSD.⁵² Unfortunately the up-take of behavioral approaches is low. Between 2004 and 2011 fewer than 2% of nursing homes implemented these approaches.¹⁵ In 2011 approximately 25% of residents residing in nursing homes were receiving antipsychotics and 88% of these individuals had dementia.⁵³ Since then there has been a 22% decrease in use of antipsychotics to a national prevalence of 19% of residents receiving psychotropic medications in 2015.³⁷ In September 2014, the National Partnership set new goals of an additional 25% reduction in antipsychotic use by the end of 2015, and 30% reduction by 2016.⁵⁴ Further, CMS has focused regulatory oversight on ensuring that care for residents with dementia is person-centered. Due to lack of knowledge, beliefs and motivation, staff in nursing homes are ill-prepared to replace psychotropic use with person-centered care approaches.^{17,18,45} We focus this application on helping staff address the CMS mandate to implement behavioral approaches for BPSD. We will test an implementation strategy for addressing BPSD in nursing homes, which has been identified as a research priority.⁵⁵⁻⁵⁸

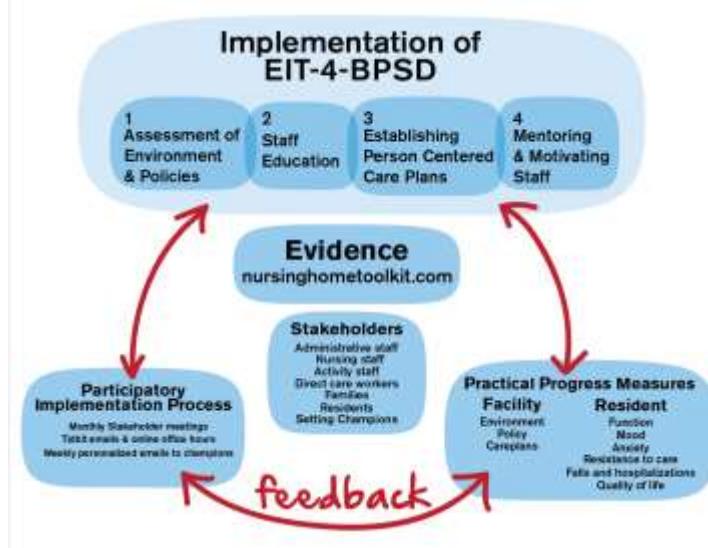
Implementation Challenges of Care Approaches. To date, the major emphasis in research has been on the development of new knowledge. There has been limited focus on dissemination or implementation of findings into real world settings.^{34,59} There is a gap between the percentage of individuals who could benefit from evidence based interventions and those who actually are exposed to these interventions.⁶⁰⁻⁶² In particular, little has been done to optimally implement evidence-based interventions in nursing homes.⁶² Identified challenges and barriers include: lack of belief in the utility and feasibility of the care approach; limited motivation and training of staff; insufficient support from administration; inadequate staffing levels; competing workload concerns; staff turnover; costs of the intervention; and lack of fit between the intervention and the philosophy of care.^{26,28,63-65} There is little evidence to support that education of staff is sufficient to change their behavior and improve clinical outcomes among residents.⁶⁵⁻⁶⁹ Yet, staff education is the primary strategy used to decrease inappropriate use of psychotropics and increase use of behavioral approaches for BPSD.⁵⁸ Our proposed strategy is designed to overcome barriers to the use of behavioral approaches for BPSD by offering a systematic, comprehensive approach to implementation.

EIT-4-BPSD Assures Successful Implementation. Studies have shown that the effectiveness of evidence-based practices can be improved when delivered under conditions of an implementation framework.^{60,62} Some implementation models can be complex and time consuming for practitioners.⁷⁰ This is especially true for resource-stressed nursing facility environments.^{71,72} This pragmatic trial will use the Evidence Integration Triangle (EIT)³⁰ which is a parsimonious, community-engaged participatory framework. EIT is a readily applied framework that brings evidence (available in the nursinghometoolkit.com) and facility stakeholders together.

Active engagement empowers key stakeholders to integrate evidence into practice.⁷³ Figure 1 illustrates the simple three-pronged framework and the interactions among the components of EIT: (1) Participatory Implementation Process which is done via monthly meetings, weekly emails and phone interactions between stakeholders and a clinical expert (Research Nurse Facilitator) as they develop facility goals and work towards achieving those goals; (2) Implementation of the 4 steps delineated in EIT-4-BPSD, with implementation led by a facility designated champion under the guidance of the Research Nurse Facilitator; and (3) Practical Progress Measures which are evaluated via ongoing assessments of progress made towards goal achievement and implementation based on monitoring of facility and resident data (e.g., environment assessment; resident care plans; falls data). EIT allows for differences between facilities and encourages tailoring of the implementation process. Participatory approaches such as EIT have been shown to increase the adoption of innovations by fostering a rapid learning environment and may speed translation of evidence into practice.^{74,75} EIT has been shown to facilitate implementation of interventions in community based primary care practices and in cancer outpatient facilities.^{31,60} Our team used this approach previously to successfully implement Function Focused Care (FFC) in long term care facilities.^{22,23,76}

EIT-4-BPSD involves the merging of EIT with evidence housed in our Nursing Home Toolkit (described below) and an established 4-step approach for implementing evidence into real world settings. EIT-4-BPSD is implemented by the facility champion under the guidance of a Research Nurse Facilitator^{8,29,63,77-79} who has expertise working with BPSD and implementing behavioral interventions in the nursing home environment.

Figure 1 The Implementation of EIT-4-BPSD



Additional theoretical support for the EIT-4-BPSD comes from a Social Ecological Model⁷⁹ and Social Cognitive Theory.^{80,81} The Social Ecological Model⁷⁹ explains the dynamic interactions between people and their environment and the factors that account for successful goal attainment. We help the Stakeholder team and Internal Facility Champion (referred to as Champion) understand and use the factors in the model. These include: intrapersonal factors (e.g., age, years of experience, gender); interpersonal factors (e.g., staff to staff and staff to resident interactions); environmental challenges (e.g., resources to help address BPSD); and policy issues (e.g., policies around inclusion of nursing assistants in resident care conferences). These factors are used to identify barriers and ways to overcome barriers and to help staff change from a task focused

care approach to a person-centered approach. In addition, use of social cognitive theory^{80,81} provides the Champion with techniques to motivate staff to use behavioral approaches for managing BPSD including: 1. enactive mastery experience such as engaging them in successful performance of person-centered behavioral approaches; 2. verbal encouragement to provide behavioral approaches to BPSD; 3. vicarious experience or sharing how others provide successful behavioral approaches; and 4. elimination of fear and frustration associated with implementing behavioral approaches. Progress in implementation is monitored at monthly stakeholder meetings using all available outcome data (pragmatic measures and intervention resources such as environment assessments, falls data, evaluation of care plans). As shown in Table 2, adjustments and corrections are made at these meetings by the stakeholder group based on these measures, evidence of use of behavioral approaches, or challenges as identified by the Champion or others.

As noted, implementation of EIT-4-BPSD (Figure 1 and Table 2 below) will be done under the guidance of a Research Nurse Facilitator.^{22,23,76} At the onset of the implementation process we request that the facility identify a Champion to work with the Research Nurse Facilitator and provide daily oversight to successfully facilitate the implementation process. The four steps include: 1. Assessment of the environment and policies, which are used to guide stakeholders in the elimination of barriers and to help optimize implementation. 2. Staff education, based on gaps in staff knowledge of BPSD and behavioral interventions; 3. Establishment of person-centered care plans, which are developed by staff with guidance from the Research Nurse Facilitator and Champion; and finally 4. Mentoring and motivating of staff to integrate behavioral approaches as they

provide care. Mentoring and motivating is done by the Champion, supported by the Research Nurse Facilitator and Stakeholder team, using techniques from social cognitive theory (e.g., verbal encouragement).²³ Resources for all four steps are contained in our Nursing Home Toolkit (nursinghometoolkit.com).^{22,23,76}

Nursing Home Toolkit. All members of our investigative team worked with CMS to produce the Nursing Home Toolkit.^{17,18,21} The Nursing Home Toolkit is an ONLINE repository of resources that includes five areas: Introduction to the philosophy of person-centered care; System integration processes; Education and leadership programs for responding to BPSD; Tools for assessment of BPSD; and Pragmatic behavioral approaches for BPSD. We engaged experts and end-users in the development of the Toolkit (59 staff).¹⁹ Usability testing of the website was completed with 61 staff from nursing homes in Maryland, Massachusetts and Pennsylvania: 3 administrators, 10 registered nurses (RNs), 3 therapists, 10 licensed practical nurses (LPNs), 19 certified nursing assistants (CNAs), 5 social workers and 11 others. On a Likert scale of 1 (very unsatisfied) to 7 (very satisfied) participants found the website to be logical in organization (5.6 ± 1.7), to have appropriate content (6.0 ± 1.8), and likely to be used (5.5 ± 1.7). In their written comments, the participants were less enthusiastic about how easy it was to use the website. Participants reported that they needed more guidance for implementation. These findings support our plan to provide facilities with a step approach for implementation, and to use the Nursing Home Toolkit as a resource library.

By merging EIT, our 4-step approach and the material in the Nursing Home Toolkit to develop the EIT-4-BPSD intervention, we address the major challenges to implementation. These include: insufficient support from administration; lack of fit between the intervention and the facility; beliefs about the utility and feasibility of behavioral approaches; motivation of staff; and lack of staff training. EIT-4-BPSD also addresses facility concerns about staffing levels, competing workloads and costs. Implementation of EIT-4-BPSD will be modeled after the work we did to implement function focused care in assisted living facilities.^{23,29,80} Facilities are not asked, and do not need to, increase their staff or staff workload by adding additional tasks. Rather, we change the way care is currently delivered in the facility. At the most basic level we teach staff to focus on resident needs and preferences as opposed to bed-and-body tasks, and to use person-centered care and communication strategies during resident interactions. These feasible, time-efficient methods prevent BPSD.⁴

Effectiveness of Behavioral Approaches for BPSD. Behavioral approaches include sensory, psychological and behavioral interventions that prevent and reduce BPSD. Evidence for their effectiveness is supported in systematic reviews.^{7,14,81-84} The most rigorous and inclusive review to date¹⁴ found strong evidence for reduction of BPSD by training and supervising staff to consider resident preferences and use person-centered communication skills during resident interactions. Further, a recent meta-analysis of 23 randomized clinical trials (RCTs) found small to moderate effect sizes for behavioral approaches that address BPSD.⁸⁵

Functional dependency and cognitive impairment place residents at risk for BPSD and poor quality of life.⁸⁶ Staff relate to residents who are impaired as “others”, different, and outside of accepted social norms.⁸⁷ Our behavioral approach to BPSD focuses on the individual as a person and uses strategies to optimize function and address unmet needs. Our team has extensive experience individualizing care and using information about residents to prevent and manage BPSD and optimize their function and physical activity.^{8,9,29,63,77,88-90} In this work we demonstrated that engaging cognitively impaired residents in activities of daily living increased function, reduced falls and hospital transfers, and decreased resistance (e.g., turning away, pushing, or hitting) during care. Further, our team demonstrated that individually tailored activities that incorporated residents’ preferences and functional ability improved positive affect and behavioral engagement to a greater extent than non-tailored activities.^{10,12} We delivered these activities using existing nursing facility staff.

Finally, the use of relationship-oriented behavioral strategies (such as consistent assignment) and teamwork among staff have been identified as critical drivers of quality care.^{91,92} Good communication skills are foundational to the implementation of these strategies and all behavioral approaches.¹⁹ Also important is our work on the development of person-centered quality indicators that supports the critical need to sustain the gains made via these behavioral interventions over time.⁹³

In the implementation of EIT-4-BPSD we will build on our prior work and that of others. We will train staff to reduce BPSD, address unmet resident needs, optimize function and physical activity, promote quality of life and reduce adverse events. Specifically, we will work with facilities to establish appropriate environments and

policies, use individualized approaches based on resident preferences, use person-centered communication skills and optimize function during care interactions. Further we will emphasize teamwork, ongoing quality improvement, and use of motivational techniques to engage residents in appropriate activities.

B. Innovation

The proposed study offers the following innovations:

1. To our knowledge, there have been no systematic attempts to facilitate implementation of best practices for BPSD in nursing homes using EIT. Our approach addresses several gaps identified in a recent systematic review of 54 implementation studies on behavioral approaches for dementia care.⁹⁴ Specifically, we use: (a) all 5 RE-AIM criteria for evaluation; (b) a flexible approach for implementation; (c) theoretically based behavior change techniques; (d) direct observation of staff behavior change; (e) monitoring of outcomes to 12 months post initial implementation of EIT-4-BPSD; and (f) we examine maintenance in EIT-4-BPSD facilities at 24 months post implementation (which is 12 month post intervention activities).
2. One size does not fit all with regard to successful implementation of interventions.³⁰ Use of the EIT allows for ongoing interaction through the use of a participatory implementation process in treatment facilities. Allowing facilities to identify their own facilitators and barriers to non-pharmacologic management of BPSD and take ownership of the solution will help assure successful implementation of EIT-4-BPSD.
3. Repeatedly it has been noted that staff tend to resume old behaviors 6 months following implementation of innovative interventions.^{95,96} We will address sustainability of EIT-4-BPSD by evaluating facility and resident outcomes at 12 months post initial implementation and maintenance at 12 months post completion of the intervention (24 months post implementation). We will use qualitative methods to understand challenges and facilitators associated with implementation of EIT-4-BPSD and evaluate the cost of implementation to guide future work.

C. Approach

Preliminary Research: Our interdisciplinary team is uniquely poised to conduct this implementation study. We have longstanding scientific expertise in BPSD, function, behavior change, and implementation of evidence based approaches in nursing homes. We also have real-world experience in long-term care practice, staff education and nursing facility regulation. This study is the next logical step in our programs of research.

Behavioral Approaches for BPSD. Kolanowski has tested the efficacy of individualized activities for BPSD in nursing homes⁹⁷⁻¹⁰⁴ and is currently testing the efficacy of individualized cognitive activities for delirium in these facilities.¹⁰³ Individualized activities are designed to address interests and preferences of residents and decrease agitation and apathy and improve mood.^{10,11,102} Activities that addressed the resident's interests and functional ability improved positive affect to a greater extent than either function or interests alone.¹⁰ As repeatedly noted by our team, optimizing physical function is central to individualized care approaches that decrease BPSD and improve mood and wellbeing.^{8,12,63} To help facilitate this individualized approach, Van Haitsma has expertise in the development of pragmatic measures for assessing resident daily care preferences and quality improvement metrics designed to assess preference congruence care over time. Assessments of resident preferences and congruence will be implemented in this trial.^{105,106} Van Haitsma and team also conducted a randomized controlled trial using nursing facility staff as interventionists and found that staff-led tailored activities to treat BPSD improved quality of life of residents.^{12,107-110} Van Haitsma has also developed educational programs for behavioral health concerns of nursing facility residents.¹¹¹⁻¹¹⁴.

Use of Function Focused Care (FFC) to Optimize Function and Physical Activity and Address BPSD. Resnick and Galik have extensive experience optimizing function and physical activity and decreasing resistance to care using FFC approaches in residents with cognitive impairment.^{8,9,29,63,77,88-90} They have consistently demonstrated that FFC approaches improve residents' physical activity and function and decrease falls and transfers to the hospital for acute medical events.^{8,23} In addition, engaging cognitively impaired residents in functional activities (i.e., activities of daily living) increased their cooperation and decreased their resistance (e.g., turning away, pushing, or hitting) during care interactions.

Expertise in Changing Care Behaviors among Nurses. Resnick, Galik and Van Haitsma have consistently been

able to change how nurses approach care to residents.^{8,29,63,78,79,113-115} Their innovative and successful approaches are theoretically based using a Social Ecological Model and Social Cognitive Theory.^{8,29,63,78,79}

Expertise in Dissemination and Implementation Research. The team has expertise in disseminating and implementing health promotion and Function Focused Care interventions into senior housing and long term care facilities.^{22,23,29, 63,77-79,116-119} (see biosketches). For example, the team tested a dissemination and implementation approach to implement Function Focused Care into 20 assisted living facilities in one project and then 100 facilities in a subsequent project.^{22,23,63} These projects included a recruitment plan using outreach to all facilities in Maryland. The investigators engaged 80% of the Champions, changed environments, policies and philosophies of care to encourage physical activity and decreased the percentage of residents transferred to acute care facilities for non-fall related events. At the completion of these projects the team developed a website (*functionfocusedcare.org*) which is included in the Nursing Home Toolkit.

Real World Experience and Pilot Testing EIT-4-BPSD: Our team has expertise with regard to clinical work (Resnick, Galik, Van Haitsma), administration (Boltz) and regulations (Bonner), and implementation of relevant innovative approaches to care (all investigators) in nursing homes. In addition, we have expertise in the education of minorities and nursing assistants(Harden, Resnick, Van Haitsma, Galik, Boltz) and using qualitative methods (Penrod, Resnick, Van Haitsma) (see biosketches). We have pilot tested the EIT-4-BPSD in two facilities (one in Maryland and one in Pennsylvania) for feasibility and demonstrated that sites are willing to identify a Champion and Stakeholder team, engage in monthly face-to-face meetings (100% participation of stakeholders) and weekly email interactions (100% participation). We implemented all components of the intervention, recruited residents (recruitment rate of 50%) and completed measures without being burdensome to residents or staff. Building on our extensive preliminary work we will test EIT-4-BPSD in 50 nursing homes in Maryland and Pennsylvania.

Methods

Design: To achieve our Aims we will use a Hybrid III pragmatic cluster randomized clinical trial³² for two reasons: (a) implementation of EIT-4-BPSD requires a facility-wide approach; and (b) we need to prevent treatment contamination that might occur if we randomized within sites. Fifty nursing homes will be randomized to treatment (EIT-4-BPSD) or Education-Only Control (EO) using permuted-block randomization. Assignment will be concealed until after the facility consents to participate. Outcomes at the resident and facility level will be evaluated. Resident outcomes will be obtained at baseline, 4 and 12 months post implementation of the intervention. Facility outcomes will be obtained at baseline and 12 months post initial implementation. We will also examine Maintenance in EIT-4-BPSD facilities at 24 months post implementation.

Sample Size: Sample size calculation was based on the hypotheses associated with the Effectiveness component of RE-AIM and our prior research.^{8,10,12,22,23,29,77} With regard to facility level outcomes, our prior work resulted in effect sizes of 0.9 for environmental and policy changes.^{22,76,120} With the proposed sample size of 50 facilities, the statistical power for these two measures will be adequate (>.90 for both outcomes based on our analysis plan). For resident level outcomes, person-centered approaches resulted in a small intervention effect (Cohen's $d=0.19$) to maintain or improve BPSD, function, wellbeing or experiencing adverse events.^{8,10,12,22,23,29,77} Given a two-tailed alpha of 0.05, an estimated intra-class correlation coefficient (ICC) between clusters (facilities) of 0.02, a correlation coefficient between repeated measures (baseline, 4 and 12 months) of 0.6, and assuming even dispersion of means, a total sample of 500 residents will provide sufficient power ($\geq .80$) to detect the small effect size for group differences.¹²¹ Our prior research showed a 20% rate of attrition over 12 months.^{8,77} Therefore, we anticipate that a total of 625 residents from 50 nursing homes will be sufficient to demonstrate outcomes. To achieve this sample we will recruit 12-13 residents in each facility.

Setting: Nursing homes will be invited and eligible to participate if they: (a) agree to actively partner with the research team to change practice; (b) have at least 100 beds; (c) identify a RN, LPN or CNA to be the Champion; and (d) are able to access email and websites via a phone, tablet or computer. Recruitment of facilities will be done by mailing invitations to eligible facilities within the two states followed by telephone calls. We will also post invitations on relevant websites (see letters of support). This approach has been used successfully in our prior work.²² Fifty percent of the facilities we invited participated.²² Currently there are 152 nursing homes of appropriate size in Maryland and 439 in Pennsylvania. Given the regulatory climate with respect to dementia care in nursing homes, we are confident we will be able to engage 25 facilities per state.

Once the nursing facility expresses an interest in participating in the study, the facility will be randomized to one of three cohort groups and then randomized to EIT-4-BPSD or EO. We will implement EIT-4-BPSD in 8-10 facilities and the EO intervention in 8-10 facilities during each cohort period. We recognize there will be a period of time between recruitment and implementation of study related activities and will keep facilities updated. In addition, we will maintain a waiting list of interested facilities in the event that some volunteer facilities decide not to participate (their data will be included in terms of Reach).

Resident Participants: We will keep our resident enrollment criteria to a minimum to increase external validity. Residents will be eligible to participate if they: (a) are living in a participating nursing home; (b) are 55 years of age or older; (c) have a history within the past month of exhibiting at least one BPSD; (d) have cognitive impairment as determined by a score of 0-12 on the Brief Interview of Mental Status (BIMS);¹²² (e) are not enrolled in Hospice; and (f) are not in the nursing facility for short-stay rehabilitation care. We will obtain a list of all eligible residents from a designated staff member and randomly approach each resident until 12-13 residents per facility are recruited by research assistants (RAs) (N= 625 residents). This sampling approach is used to assure variability and equal participation from each nursing facility in the study. Based on our prior research and recent data from the most recent Nursing Home Compendium¹²³ we conservatively anticipate that 25% to 30% of residents will be eligible.^{123,124} We are confident we will be able to recruit 12-13 residents per facility.^{8,77,125} See the Human Subjects section for details of the consenting and recruitment process.

The Implementation of EIT-4-BPSD: Dr. Harden will train the Research Nurse Facilitators on how to best work within each intervention facility so that implementation is culturally sensitive to the diversity within each site. To guide assessment of residents and the development of staff training materials she will use seven key elements from the literature¹²⁶⁻¹²⁸: communication, space, social orientation, time, environmental control, biological variations and trust. This training helps to ensure a participatory implementation approach as delineated in the EIT³⁰. Facilities voluntarily participate and identify a Champion and Stakeholder Team members. We will recommend the following stakeholders as part of the implementation process: a nurse in a leadership position (e.g., director of nursing); a unit nurse; a nursing assistant; a family member; an activity staff; a social worker; and a resident. As per facility preference, other team members can also be included. All EIT-4-BPSD related activities will be done during scheduled working hours for the facility employed stakeholders. EIT-4-BPSD is implemented by the Research Nurse Facilitator working with the Champion and Stakeholders using our 4-step approach. EIT-4-BPSD involves a combined face-to-face and an internet enhanced approach that includes ongoing, iterative, and active participation of all Stakeholders. The Research Nurse Facilitator will arrange the first face-to-face meeting with the Champion and Stakeholders in each facility. This meeting introduces the Stakeholder Team to the participatory process and their responsibilities, and will provide training on the knowledge and skills they will need for implementation. It will be scheduled for 4 hours (Table 1); Appendices A, B, C and the Nursing Home Toolkit contain the training materials.

Table 1: Content for First EIT-4-BPSD Meeting With the Stakeholder Team

Introduction and Overview of EIT-4-BPSD (8am-10am/ or preferred time)	a. Welcome and overview of project; b. Roles and responsibilities of research and stakeholder teams; c. Background support for EIT-4-BPSD: 1. Review of current care practices/philosophies of care and evaluation of readiness to implement change in philosophy; 2. Task versus resident focused care; 3. BPSD and interventions to prevent or decrease BPSD; d. Participatory Implementation/Brainstorming Activity(Appendix A & B) and identification of barriers/solutions to implementation; e. Development of facility-specific goals relevant to BPSD.
Implementation of Steps 1 and 2 in the 4-step process (break; 10:15am-11am) (Appendices B and C)	a. Training to complete Step 1: Completing Environment and Policy Assessments: Use of assessments and examples of environment interventions and policies to facilitate use of behavioral approaches for BPSD; b. Training to complete Step 2: Education of staff. Review educational materials developed by the research team (Appendix C) and establish the facility plan for staff training; c. Prior to staff training, Taylor Harden, will review educational material and make sure it is culturally relevant for staff within the facility using 7 factors from multiple sources (see description above) ^{126,127} ; d. the research team will help assure that the education meets state and federal based requirements for education of nursing facility staff (e.g., content and length of session).
Implementation of Steps 3 and 4 in the 4-step process (11am-11:45noon) (Appendix B)	a. Training to complete Step 3: Establishing person-centered care plans for BPSD: 1. Teach use of the Describe, Investigate, Create and Evaluate (DICE) approach, the Physical Capability Assessment, and the Resident Assessment of Preferences. b. Training to complete Step 4: Mentoring and motivating staff: 1. Review self-efficacy based techniques (e.g., verbal encouragement); 2. Training of Champion to complete Use of Behavioral Interventions for BPSD measure with nursing assistants and provide motivational feedback to them (done at 0-2, 4-6 and 10-12 months); use of contests to motivate staff to adhere to person-centered care plans for BPSD.
Summary of Training Day (11:45am-12:00	a. Summary of training and findings from Brainstorming session, review of challenges/drivers and established facility goals; b. Discussion of ways the stakeholder team will achieve goals; c. Opportunity for questions; d. Review of next steps and timeline of project; e. Homework given to Champions to complete the Environment and

Following this initial face-to-face training, each EIT-4-BPSD facility will be visited monthly for a total of 12 months by a Research Nurse Facilitator who works with the Champion and Stakeholder Team to implement EIT-4-BPSD (Table 2). This will be accomplished using the 4-step process delineated above. During monthly meetings (approximately 1-2 hours each) the Research Nurse Facilitator will explore challenges, celebrate successes and give feedback to the Stakeholder Team based on available pragmatic measures (changes made in the environment, policies, care planning) and will work with the Champion and staff to facilitate the implementation of components of EIT-4-BPSD (e.g., help with education, care plan development). Monthly interactions will intentionally allow the Stakeholder team to make revisions to the implementation process so that EIT-4-BPSD is standardized yet individualized for each facility. We will keep minutes of these meetings to describe the implementation process in each facility. This cyclic feedback pattern of review of progress and challenges will help guide staff intervention activities to best respond to contextual changes in the facility over time. In addition to the monthly visits, weekly emails will be sent to all Stakeholder Team members within the cohort to provide BPSD Tidbits. The Tidbits (examples provided in Appendix D) will include updates about person-centered behavioral approaches for BPSD and will share individual facility successes. To motivate stakeholder teams across the cohort, contests will be held (e.g., winning example for overcoming a challenging bathing interaction with a resident with BPSD) and winners announced in the weekly emails. In addition, we will use a pragmatic coaching model which has successfully improved up-take of innovation in long term care facilities.¹²⁹ This model involves having Champions sign up for weekly office hours with the Research Nurse Facilitator for individualized phone coaching sessions. Sessions will be up to 30 minutes and will be made at times convenient for the Champion during their workday. To motivate and retain the Champions we will provide them with a 50 dollar gift certificate to buy activity supplies/resources to engage residents with BPSD (e.g., games or music), and provide conference registration for each champion to attend the annual American Medical Directors Association or the International Counsel of Active Aging conference (see support letters).

Table 2: Research Nurse Facilitator Monthly Stakeholder Team Meetings to Implement EIT-4-BPSD*

Activities for Monthly Meetings With Stakeholder Team	EIT-4-BPSD Intervention Month											
	1	2	3	4	5	6	7	8	9	10	11	12
Initial 4 hour Training of Internal Champion/Stakeholder Team (see Table 1)	X											
Review of environment and policy assessments ^{8,22,23}		X										
Plan and implement education of nurses and families as relevant to the facility goals; plan for new staff education		X										
Review Care Plans of consented residents to assure that person-centered approaches to BPSD are established			X	X	X	X	X	X	X	X	X	X
Review of practical measures and data collected as part of the intervention (e.g., evaluation of care plans; observations of staff during care interactions); Ongoing review of challenges/solutions identified by champion/stakeholders; review of motivational techniques to assure implementation of person-centered approaches		X	X	X	X	X	X	X	X	X	X	X

*During the monthly meeting the Research Nurse Facilitator will meet with the full Stakeholder Team and will work on the units with the Champion to implement the 4 steps in EIT-4-BPSD (e.g., evaluation and care planning for residents; motivating the staff).

Education Only (EO) Control Intervention:

All nursing homes are mandated to provide a minimum of 12 hours of education per year for staff.^{130,131} These hours must include dementia management training. Total hours devoted to this topic are not specified.

Facilities randomized to EO will be provided with staff education using our developed PowerPoint presentations in 30 minute sessions as is currently done in usual practice (Appendix C slides 1-35). We will provide the education in the preferred format (e.g., face-to-face; webinar) and will work with the facility to record the necessary documentation to assure that the education meets state and federal regulations.

Procedure for Assessing Outcomes: Facility-level and resident-level outcomes will be obtained by trained research assistants (RAs) who are blind to facility condition (treatment versus control). To maintain blinding, these RAs will not be provided with information about randomization or details of the different interventions and we will keep all meetings of evaluation and intervention teams separate. Inter-rater reliability will be done on 10% of our outcome measures. Blinded RAs will obtain all resident descriptive and outcome data and descriptive facility data at baseline, 4 and 12 months from the following sources: designated administrative staff for facility relevant date (e.g., staffing); resident medical chart; and observations by the RAs and input

from the facility staff working with the resident at the time of evaluation (approximately 10 minutes of staff time). The Research Nurse Facilitator will obtain setting RE-AIM outcomes at baseline, 12 and 24 months in intervention sites only as delineated in Appendix E.

Measures are in Appendix F. Overview of each measure, measurement level, source of data, and timing of data collection are in Appendix E

Facility Descriptive Data

The following data will be obtained at baseline to describe facilities and consider confounders: state; size; profit or non-profit ownership status; urban or rural; Nursing Home Compare reported descriptives (11 outcomes such as percentage of residents with pain); staffing ratio and mix [at baseline, 4, 12 months: number of nursing assistants; nurses (registered; licensed practical nurses), and activity staff /number of residents].

Resident Descriptives

Resident descriptive information: age, race, gender, education, and marital status at baseline; psychotropics (antipsychotics, antidepressants, sedative/hypnotics, anxiolytics) obtained at baseline, 4 and 12 months.

Cognitive status will be measured at baseline using the Brief Interview of Mental Status (BIMS).¹²² The BIMS includes 3-item recall and orientation questions with scores ranging from 0 to 15. Prior use has provided evidence of reliability and validity.¹³²⁻¹³⁴

Health Status: The *Cumulative Illness Rating Scale (CIRS)*^{135,136} was designed for use with frail nursing facility residents. CIRS will be obtained at baseline. It contains ratings of both illness severity and comorbidity. Residents are evaluated based on 13 organs or systems and a psychiatric/behavioral rating. CIRSSs ratings correlated with medication use and predicted mortality, hospitalization and disability.^{135,136}

Facility and Staff RE-AIM Measures

The Environment Assessment (Effectiveness; Adoption; Maintenance): includes 24 items that impact care of residents with BPSD (e.g., outdoor spaces are available). Items are scored as present or not present and summed. There was prior evidence of inter-rater reliability and validity based on hypothesis testing.^{8 22,23,137}

Policy Assessment (Effectiveness; Adoption; Maintenance): includes 24 items that reflect policies that support behavioral approaches for BPSD (e.g., policies on use of restraints). Items are scored as present or not present and summed. There was prior evidence of inter-rater reliability and validity.^{8 22,23,137}

The Care Plan Checklist for Evidence of Person Centered Approaches for BPSD (Effectiveness; Adoption; Maintenance) is used to evaluate care plans for approaches that address common BPSD (apathy, agitation, inappropriate/disruptive vocalizations, aggression, wandering, repetitive behaviors, resistance to care, and sexually inappropriate behaviors).

Knowledge of Behavioral Interventions For BPSD Test (Implementation; Receipt) is a 10-item multiple choice test that evaluates staff knowledge. Evidence of test-retest reliability was supported with correlations of .92 and validity with significant associations between knowledge and use of behavioral interventions for BPSD.¹³⁸

Use of Behavioral Interventions for BPSD (Implementation; Enactment) is a reliable and valid 8-item observation measure that assesses if nursing assistants implement appropriate interventions to prevent or manage BPSD when interacting with a resident during routine care.¹³⁸

Resident RE-AIM Measures

Behavioral Symptoms (Effectiveness): Depressive symptoms will be measured using the *Cornell Scale for Depression in Dementia (CSDD)*^{139,140}. CSDD is a 19 item survey that assesses depressive symptoms in individuals with dementia. There is evidence of reliability and validity of the CSDD.¹³⁹⁻¹⁴¹ Aggressive and/or resistive behaviors during care activities will be measured using the *Resistiveness to Care Scale*,¹⁴² a reliable and valid 13 item Likert scale that assesses residents' behaviors during activities of daily living. Agitated

behaviors will be measured using the *Cohen-Mansfield Agitation Inventory (CMAI)*,^{143,144} a survey of disturbing behaviors commonly found in residents with dementia. The 14 item version CMAI uses a 5-point Likert scale to rate the frequency of behavioral symptoms.^{144,145} Prior use supported evidence of reliability and validity.^{144,145}

Function (Effectiveness): *The Barthel Index (BI)*¹⁴⁶ is a 10 item measure of performance of activities of daily living with evidence of internal consistency, inter-rater reliability and validity.^{146 147} Items are weighted to account for the amount of assistance required. A total score of 100 indicates complete independence.

Quality of Life: will be measured using the *Quality of Life-AD (QoL-AD)*¹⁴⁸ scale. The QoL-AD is a 13 item reliable and valid instrument designed to rate the resident's quality of life from the staff perspective. Examples of items include physical condition, mood, relationships and participation in meaningful activities. Ratings are obtained on a 4 point scale (1= poor to 4=excellent) and total scores range from 13-52.¹⁴⁸

Adverse Events (Effectiveness): will be based on data obtained from medical records and designated individuals within the facilities (e.g., quality assurance nurse). Adverse events will include falls and transfers to hospitals or emergency rooms and physical restraint use. Baseline will include the four months prior to treatment implementation; 4 month will include those between baseline and 4 months; and 12 month those that occur between 4 months and 12 months post implementation of the intervention. Restraint use will be based on the reliable Minimum Data Base 3.0 definition of assessment for use of restraints.¹⁴⁹⁻¹⁵¹

Data Analysis:

Aim 1: To implement and test the implementation of EIT-4-BPSD.

Research question: Do facilities exposed to EIT-4-BPSD demonstrate evidence of implementation at 12 months evaluated by Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) Criteria?³³

Reach: *To facilities:* Descriptive statistics will describe total number of eligible facilities across both states at the time of recruitment and the percentage of eligible facilities volunteering to participate by state and overall. In addition, we will compare facilities (by state and overall) willing to participate versus those that were not with regard to facility characteristics (e.g., size, profit status). We will also compare facilities expressing a willingness to participate versus those that do not using publically available Nursing Home Compare data.¹⁵² *To staff:* We will evaluate reach to staff in terms of percentage of staff exposed to education (# exposed/total number of staff) in EIT-4-BPSD and EO facilities. *To residents:* Using the Care Plan Checklist for Evidence of Person-Centered Approaches for BPSD we will evaluate the percentage of all residents (using de-identified care plans) living in EIT-4-BPSD facilities that have at least 1 person-centered approach for BPSD.

Effectiveness:

Effectiveness will be based on testing the following *hypotheses*.

H1: Resident level: Residents in EIT-4-BPSD facilities will experience less BPSD, maintain or improve function, have reduced use of psychotropic medications, experience fewer adverse events and have improved quality of life compared to residents in EO facilities.

H2: Facility-level: EIT-4-BPSD facilities will demonstrate improvements in Environment and Policy assessments that support behavioral approaches for BPSD, and will have a greater percentage of residents with behavioral approaches addressed in care plans at 12 months when compared to EO facilities.

Descriptive statistics including measures of central tendency, dispersion and appropriate visualization approaches (e.g., box plots and spaghetti plots) will be performed on each outcome variable for residents and facilities. This will be done to ascertain distributional characteristics and ensure that the assumptions (e.g., normality) associated with the planned statistical procedures are met. When necessary, transformations will be performed. All analyses will be done using an intent-to-treat philosophy. Baseline characteristics (both resident level and facility level) will be compared between intervention and control groups and the relevant variables (e.g., age) that differ by group will be included as covariates in hypotheses testing. In particular we will utilize constructs known to correlate with BPSD including gender, pain, health status and cognitive and functional impairment. Linear mixed models (LMMs)¹⁵³ for longitudinal data (baseline, 4 and 12 months) will be used to assess the intervention effect on continuous outcomes (i.e., function, behavioral symptoms, and quality of life) accounting for clustering of residents that may occur within the same facility and correlations between repeated measurements of each resident. Mixed-effect Poisson regression [i.e., Generalized Linear Mixed Model

(GLMM)] will be conducted to assess the effect of the intervention on count outcomes (i.e., number of adverse events including number of falls, hospitalizations and emergency room visits, restraint use). The fixed effects included in the models will be treatment group (EIT-4-BPSD versus EO), time (baseline, 4 and 12 months), group-by-time interaction term and the aforementioned relevant covariates (e.g., age). Random effects will include facilities and residents.

The hypothesis will be tested by evaluating the interaction term for each outcome variable. Similar LMMs will be used to compare changes in facility level measures (i.e., environments, policies) from baseline to 12 months with only facility included as random effects. For each hypothesis, exploratory analyses will be performed to assess model assumptions. Post-analysis diagnostic measures (e.g., residuals) will be explored to assess model fit. All tests will use a 5% significance level. The use of LMM will provide flexibility with regard to assumptions related to the covariance structure of the residuals and the presence of missing data for the repeated measures.¹⁵⁴ Missing data. In prior research we had 20% rate of attrition at the resident level and 10% of facilities.^{22,23} If there is significant dropout, we will identify baseline characteristics that differ between persons or facilities that drop out. Maximum likelihood methods will be used for primary analyses, which address non-informative dropout (missing at random [MAR]). If "informative" dropout appears possible, we will consider sensitivity analyses that involve adding these relevant baseline covariates to make the MAR assumption more plausible.¹⁵⁵ Qualitative data will be collected to inform effectiveness outcomes.

Adoption: Staff Adoption: Descriptive statistics will be done to evaluate the number of Internal Champions and Stakeholder team members participating in initial face-to-face training and monthly meetings among the 25 facilities randomized to EIT-4-BPSD. We will also consider improvement in scores on the Use of Behavioral Interventions for BPSD measure at each testing time point as evidence of adoption among staff. Facility Adoption: Facility adoption will be based on changes in environments, policies, and care plans of residents at 4 and 12 months post implementation of EIT-4-BPSD such that there is at least 1 item changed in each assessment area. Further we will describe differences among EIT-4-BPSD facilities that demonstrate adoption (based on changes in environments, policies and care plans) early (the first 4 months) versus late adopters (between 5-12 months) versus those that are non-adopters (no change by 12 months). Predictors such as facility characteristics will be compared across the three potential times of adoption (early, late, nonadopters).

Implementation: Delivery/Dosage: We will describe the number of treatment facilities that are exposed to the first EIT-4-BPSD training session and the number of EO facilities and staff exposed to education session. In addition, we will measure evidence of delivery for each step of the EIT-4-BPSD intervention. Step 1: Percent of environmental and policy assessments completed. Step 2: Percentage of staff exposed to education. Step 3: Percentage of residents with evidence of person-centered approaches to BPSD in care plans. Step 4: Description of mentoring and motivating activities (e.g., participation in contests); number of observations of staff-resident interactions (Use of Behavioral Approaches for BPSD measure) at 0-2, 4-6, and 10-12 months; number of telephone conferences requested. Receipt: Descriptive statistics of staff Knowledge of Behavioral Interventions for BPSD Test with mean scores of 80% or greater providing evidence of receipt. We will also compare differences in mean scores of percentage correct on the Knowledge of Behavioral Interventions for BPSD Test between EIT-4-BPSD facilities and EO facilities. Enactment: Descriptive statistics reflecting the percentage of care interactions in which person-centered approaches for BPSD in EIT-4-BPSD facilities are provided based on the Use of Behavioral Approaches for BPSD measure. This is done as part of Step 4 within EIT-4-BPSD at baseline (0-2 months), 4-6 and 10-12 months post implementation of EIT-4-BPSD. This will provide evidence that the staff enacted person centered behavioral approaches to address BPSD.

Maintenance: Long term Attrition: We will track facilities that withdraw from the study within 12 months (as well as reasons for attrition). We will compare EIT-4-BPSD facilities with EO facilities to determine if there is a differential rate of attrition. Maintenance of environment and policy changes and inclusion of person-centered approaches for BPSD in care plans will be examined at 24 months post implementation of EIT-4-BPSD. Evidence of maintenance will be based on maintaining or improving Environment and Policy assessments and percentage of residents with evidence of person-centered approaches for management or prevention of BPSD in their care plans. LMMs will be used to compare changes in facility level measures from baseline to 24 months with facility included as random effects. Time will be included and recorded accordingly. Comparison of outcomes at 12 and 24 months will be examined to determine maintenance over that time period.

Primary Aim 2: Evaluation of the Feasibility, Utility and Cost in EIT-4-BPSD Facilities

Using descriptive and qualitative data from focus groups (held following the intervention) we will evaluate use of the EIT strategy and our participatory implementation process with the stakeholder team and additional facility staff. We will determine the cost of the implementation process using an activity-based costing method.

Aim 2: To evaluate the use of EIT and our participatory implementation process.

Findings will be descriptive and considered at the individual facility level and across all treatment facilities. Data will include a summary of information obtained during the intervention including: (1) ideas generated from the Brainstorming sessions¹⁵⁶; (2) themes identified in the Affinity Diagrams; and (3) "drivers" identified to overcome challenges to implementing person-centered behavioral approaches to BPSD via implementation of the EIT-4-BPSD (Interrelationship Diagraphs). We will quantify similarities across facilities to note the most common themes and drivers identified and establish best practices. We will also have facilities evaluate their goal achievement at 12 months (Appendix B).

Focus groups will be conducted at the end of the intervention activities in order to better understand the implementation process¹⁵⁷. The stakeholder team and additional facility staff (e.g., nursing, administrative, activities, therapy, and social work) will be invited to participate in a 60 minute focus group discussion at 12 months post implementation of EIT-4-BPSD. Groups will consist of a maximum of eight staff and stakeholder team members per facility¹⁵⁸. Eligibility criteria include membership on the stakeholder team or working in the facility over the past year. Stakeholders/staff will be excluded from the study if they are less than 21 years of age. Demographic information will be obtained from participants to describe the group composition. (See Human Subjects section for recruitment /consent processes.)

Drs. Resnick, Galik, Kolanowski, and Van Haitsma will moderate the focus groups through a carefully designed series of questions that engage the group and then progress toward the most substantive areas of inquiry^{159,160}. All moderators are experienced in leading focus groups with staff in long term care facilities. Key elements of the inquiry address the RE-AIM framework(see Appendix G, Focus Group Interview Guide). Data collection will end when saturation of findings has been achieved (i.e., when no new barriers, facilitators or other insights are gleaned from incoming data) or all 25 treatment facilities completed. A minimum of 6 focus groups will be conducted. Sessions will be audio-recorded and transcribed verbatim.

A team approach to data collection and analysis will be used. Drs. Resnick and Galik will lead the Maryland effort and Drs. Kolanowski and Van Haitsma will lead in Pennsylvania. Site leaders will be responsible for ongoing review of transcripts in order to ensure the quality of moderation. Data entry and analysis will be done using standard Word documents. Verified "clean" transcripts (confirmed for accuracy of transcription and purged of identifiers) will be shared on a secure, password protected data management site. Within- and across-group analyses will be completed using techniques of conventional content analysis¹⁶¹. This analytic approach produces a taxonomy of responses to targeted questions in the discussion guide (e.g., facilitators, barriers) as well as rich description of the process of implementation and resultant outcomes.

Analytic sessions will begin after two focus groups have been transcribed/verified. The full team will meet to share preliminary coding insights and develop a standardized codebook. Drs. Resnick, Galik, Kolanowski and Van Haitsma will code the full transcript individually and inter-rater reliability will be evaluated. The codebook will be refined and iterative double-coding/team meetings will proceed until a satisfactory level of agreement is achieved (Kappa Coefficient ≥ 0.8). As data collection/coding proceeds, the four investigators will meet via conference call at least bi-weekly. In the event that consensus cannot be reached at any time during the analysis process, the four investigators will be led in adjudication by Dr. Penrod. Findings will be shared with stakeholder teams and consultants to confirm/refine insights and integrate their knowledge of the environment and intervention related activities. The qualitative findings will not be transformed for integration in quantitative analyses, but we will use descriptive statistics to summarize patterns in the categorical findings in the taxonomy. The final stage of analysis involves examining the qualitative findings for "fit" with the quantitative findings. Variations in qualitative findings may be related to contextual features or implementation processes at a given facility. This approach permits integration of qualitative findings with other sources of formative evaluation data to understand EIT-4-BPSD implementation and outcomes.

Four quality criteria for establishing the trustworthiness of the qualitative data will be addressed¹⁶²: (1) Credibility (i.e., confidence in the 'truth' of the findings) is enhanced by the team's methodological expertise and familiarity with the facilities; rigorous analytic approaches; the use of a detailed audit trail; triangulation through use of multiple facilities; and iterative questioning; (2) Transferability (i.e., applicability of findings to other contexts) will be established through rich description of the facilities and consideration of the similarity

with other facilities in these states and nationally; (3) Dependability (i.e., application of methods that can be replicated) will be based on our detailed methodological approach, coding dictionaries and audit trail; (4) Confirmability (i.e., the extent to which the findings represent the voice of participants) will be enhanced through the use of our consultants both of whom have extensive knowledge of the long term care environment and by reviewing and confirming the findings with each stakeholder team (in written or verbal format).

In addition to obtaining qualitative findings, we will determine the costs of the implementation process (Appendix H) with regard to the services of the Research Nurse Facilitator, the amount of time the internal champion/stakeholder team spends in training and working with the Research Nurse Facilitator, the amount of time for staff education and time spent by the internal champion to implement the 4 steps of EIT-4-BPSD. An activity-based costing method will be used which includes: (1) gathering resources used in the implementation process such as personnel, supplies and other expenses; (2) establishing the amounts used of these resources; (3) multiplying the amounts of resources used by the unit cost to determine the cost associated with the resource; (4) tracking the time spent by each individual on activities related to implementation of EIT-4-BPSD and multiplying this by the hourly compensation associated with the individual; and (5) summing costs across all components of the implementation process to determine the total cost of implementation. Study timeline is described in Table 3.

Table 3: Study Timeline

Table 3: Time Line (Treatment and Control facilities will be run simultaneously). Cohorts will be run in groups of 16-20 facilities with a total of three cohorts run over the 5 year study period. The two Research Nurse Facilitators will be working with a total of 8-10 EIT-4-BPSD facilities per cohort group such that each will be responsible for 4-5 EIT-4-BPSD facilities during the cohort period.	
Study Months	Activities
STUDY ACTIVITIES: Recruitment of Facilities/Randomization (16-20 facilities/cohort with a total of 50 facilities- 25 from each state)	
Month 1-4 Initial Planning/Set Up	IRB/Staff training; facility recruitment; Cohort 1 Coordination with facilities; EIT-4-BPSD planning for training and identification of Internal Champions; listserv of Internal Champions and Stakeholders for weekly emails. EO planning for in-service.
Month 5-17 Cohort 1 Intervention	EIT-4-BPSD Intervention: 4-5 from Maryland; 4-5 from Pennsylvania; Implementation of Steps of EIT-4-BPSD; Recruitment of 12-13 residents per facility, complete assessments of residents and facilities including cost data.
	EO Intervention: 4-5 from Maryland; 4-5 from Pennsylvania; Coordinate and provide the educational intervention; Recruitment of 12-13 residents per facility and complete assessments of resident and facilities.
Month 18-20 Cohort 2 Set Up	Cohort 2-Coordination with facilities; planning for face-to-face training; and identification of Internal Champion.
Month 21-33 Intervention	EIT-4-BPSD Intervention: Same process as for Cohort 1; 18 and 24-month maintenance data collection for Cohort 1 (months 23 and 29)
	EO Intervention: Same process as for Cohort 1
Month 34-36 Cohort 3 Set Up	Cohort 3-Coordination with the Facilities; planning for face-to-face training and identification of Internal Champion.
Month 37-49 Intervention	EIT-4-BPSD Intervention: Same process as for Cohorts 1 and 2; 18 and 24 month maintenance data collection for Cohort 2 (months 39 and 45)
	EO Intervention: Same process as for Cohorts 1 and 2
Month 50-60	18 month maintenance data collection for Cohort 3 (month 55); Completion of data entry, analysis and manuscript development;

Strengths and Limitations: We included facilities from two states and residents who have evidence of BPSD. Thus findings cannot be generalized to all residents and all nursing homes. Due to the limitation on recruitment numbers this study does not provide a true reflection of reach, but provides data to inform future dissemination research. We recognize that all facilities are different with unique challenges. We use the EIT to allow flexibility in implementation and have included known factors that may influence study outcomes such as size and staffing. There may be other factors we have not considered. To overcome this limitation we will adjust for clustering and resident characteristics. Potential challenges include participation of facilities, engagement of Internal Champions and stakeholders, staff turnover, and loss to follow up of residents. We anticipate these challenges and are prepared to retrain staff if there is turnover and will over sample to address loss to follow up. We have a highly qualified and experienced team with members who have successfully engaged administration and staff in the planning, development, training and implementation of similar care related interventions. Despite limitations, EIT-4-BPSD has the potential to make a significant impact on practice in our nation's 15,633 nursing homes by providing guidance on how to implement person-centered behavioral approaches for BPSD, the ultimate goal of the National Partnership.