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Applying Agile Methodology to Reengineer the Delivery of Person-Centered Care in a Nursing Home: A Case Study

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A B S T R A C T

Nursing home (NH) providers would benefit from adopting evidence-based measures for gathering and utilizing resident preference information in their daily care activities. However, providers face barriers when implementing assessment tools used to promote person-centered care (PCC). Although Agile methodology is not commonly used in NH settings, this case study shows how it can be used to achieve the goal of delivering preference-based, PCC, within a large NH. We present a road map for breaking down care processes, prioritizing, and implementing iterative plan, do, study, act cycles using Agile methodology to enhance group collaboration on quality improvement cycles, to achieve our goal of providing preference-based PCC. We first determined if care plans reflected each resident's important preferences, developed a method for tracking whether residents attended activities that matched their preferences, and determined if residents were satisfied that their preferences were being met. These efforts had positive effects throughout the NH particularly when COVID-19 limited visitors and significantly modified staff workflow. Specifically, Agile processes helped staff to know how to honor preferences during quarantines which necessitated a shift to individualized (and not group) approaches for meeting preferences for social contact, comfort, and belonging. The ready availability of preference-based reporting was critical to quickly informing new staff on how to meet residents' most important preferences. Based on lessons learned, we describe a developmental approach that other providers can consider for adoption. Implications of this work are discussed in terms of the need for provider training in Agile methodologies to support iterative improvements, the need for policies that reimburse providers for their efforts, and additional research around workflow processes.

The National Imperative to Improve Nursing Home Quality report outlined a vision of high-quality nursing home (NH) care with a foundation in equity and person-centered care (PCC).[1] The Centers for Medicare & Medicaid Services (CMS) further requires NHs to provide preference-based PCC.[2] PCC includes the concept of knowing the resident and honoring resident values and preferences. One way to get to know a person is to learn about their likes and dislikes. NH

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providers benefit from adopting evidence-based measures for gathering comprehensive preference information from their residents.[3,4] Evidence-based preference assessment tools exist, such as the Pleasant Events Scale[5] or the Preference for Everyday Living Inventory (PELI-NH),[6] and provide a comprehensive inventory of detailed preferred daily routine and leisure pursuits. These preference assessment tools are designed to support relationship-centered care through the process of listening to what matters to the older adult and incorporating important preferences and values into their plan of care.[6] When care is tailored to an individual's preferences, it positively impacts their well-being, leading to higher quality of care and quality of life.[7]

However, providers lack adequate structures and processes to implement preference assessments beyond the limited selection of preferences in the Minimum Data Set 3.0, section F. Known barriers from the existing literature include the additional time needed for assessment, changes to workflow to accommodate asking additional preference questions, determinations about how to leverage preference information into the care process, and communication across departments and shifts to share preference details with all staff.[8,9]

Successful uptake in the use of evidence-based assessment preference tools requires that providers have processes in place to make meaningful use of the data they collect.[10] Further, without a system in place to evaluate processes, providers fail to see opportunity areas for quality improvement (QI) in their care delivery.[11] Providers need a road map that supports QI and builds a system that enhances their organizational capacity to provide preference-based PCC over time. This article provides a case example featuring one NH provider's 5-year pragmatic implementation journey to use Agile methodologies to integrate preference-based metrics into daily care workflow.

The Agile method is a collection of practices aimed at enhancing group collaboration, which came into the limelight in 2001 when software executives brainstormed alternatives to manage software projects, and the Agile Manifesto was created.[11,12] The Agile Manifesto outlines 4 values and 12 principles teams should embrace. The 4 main values are as follows: individuals and interactions over processes and tools, working software over comprehensive documentation, customer collaboration over contract negotiation, and responding to change over following a plan.[11] Agile is not only about a set of practices to better manage products and projects, but it is a way of thinking—a mindset.

This article specifically outlines the steps our team followed to implement Agile methodologies to improve delivery of preference-based PCC. The individuals involved in this effort included clinical staff (eg, Nursing, Social Work, Quality Improvement, Therapeutic Recreation) as well as information technology staff and researchers who were part of an embedded research institute at the NH. We use the term "our team" throughout the article to reflect this interdisciplinary group that was formed organically by individuals with a strong interest in PCC. The leadership of the NH supported the team's efforts through allocation of time for staff to work on initiatives who met monthly (at a minimum).

The Case Example

Our team worked with one 320-bed NH located in the northeast region of the United States. The evidence-based preference assessment used in this case was the Preferences for Everyday Living Inventory—Nursing Home version (PELI-NH).[6] The NH was unique in that it had a research institute as one of the business lines. Although researchers were working on grant-funded initiatives, they were available for consultation. Also, the NH had 2 co-champions leading an effort to improve the delivery of preference-based PCC. One champion was the QI Coordinator and the second was the Director of Recreation. In addition, implementing the PELI-NH to facilitate PCC was a primary focus of the NH, and while initial buy-in from leadership and the QI team was crucial, many staff from other disciplines (eg, admissions, chaplaincy, nursing, social work, and information technology) were allocated time to provide input throughout various iterations of preference-based care adoption. The NH was also unique in that it supported a staffing ratio of 1 recreation therapist to 27 residents living in a household (eg, floor). Finally, the NH also had active resident and family councils, which allowed for ongoing conversations with residents and family members.

The primary goal of the team working with the NH on this project was to systematically implement a process for assessing preferences, integrating preferences in care, and tracking the delivery of preference-based care. Our team used the Agile prioritization method and the concept of a Minimal Viable Product (MVP) to reengineer how we completed these PCC tasks. In an Agile environment, the result of prioritizing tasks helps to develop the MVP. The MVP is one of the attractive features of Agile because the most important requirements or features are built first, which allows a product to be utilized in care delivery faster. The MVP is the smallest viable product and because it contains a small set of features, it can be launched more quickly and then features can be added incrementally. The process of working incrementally is also an Agile practice. Agile teams work in iterative cycles, so at the end of each iteration, they have accomplished a piece of work. This helps teams to be successful and see the impact of their hard work developing the MVP.[13]

We wanted to bring the concept of small victories at each stage to support the process of delivering PCC and help the NH feel more successful by having tangible products completed. Our team applied the concept of MVP to our PCC approach: "Interventions with 'bite-sized' steps helped make participation feasible."[4] Each initiative took approximately 2-3 months and built upon what had been completed in the prior phase.

We used the Agile Must, Should, Could, and Won't right now (MoSCoW) prioritization method to sequence the tasks involved in delivering preference-based PCC (MVP 1.0: reengineered preference assessment process).[14] For MVP 1.0, we recognized that an evidence-based assessment tool was needed to gather valuable information to enhance PCC delivery. For example, the MDS 3.0 Preference Assessment Tool (PAT) is the minimum preference information providers across the country are required to collect for each resident to develop their plan of care.[2] The PAT assessment contains 8 items regarding individuals' preferences for their daily routines and 8 items regarding their leisure preferences. Each preference question begins with "How important is it for you to…" and residents are asked to respond whether it is very important, somewhat important, not very important, not important at all, or important, but can't do/no choice.[2]

Although completing the PAT meets regulatory mandates, the assessment lacks vital details to create PCC plans truly tailored to the individual's preferences. For example, if a resident indicates that it is important to be around animals such as pets, it is critical to know the type of animal the resident prefers. Some residents may be terrified of dogs but love rabbits; therefore, a one-size-fits-all pet therapy program would not work for all residents. The first "must" task, therefore, was to enhance the NH preference assessment.

To accomplish this, we pulled the probing or follow-up questions from the PELI-NH,[15] related to the 16 MDS items, to ask when a resident reports a preference as important to gather insight into how to best honor that preference. Recreation therapists were trained on how to complete the PELI-NH (approximately 2 hours of training), and each newly hired staff person received training and then shadowed an experienced person before doing the assessment on their own. We revised recreation therapy job descriptions to include experience with preference assessments. We engaged information technology (IT) staff to add PELI-NH questions to the electronic medical record (EMR). This

work took approximately 30-40 hours as the IT staff added all 72 PELI-NH questions (not just the 16 PAT questions from the MDS). In addition, IT staff added functionality so the preference information would populate into the Kardex so the care team would have easy access to the information. Once MVP 1.0 was achieved, we celebrated meeting the goal and worked to sustain the new initiative until another evolution (MVP 2.0) was needed.

For MVP 2.0 (development of care process measures), we identified that our next "must have" task was to have process measures in place to make sure we had collected detailed information about a person's important preferences in a timely manner to support staff in having robust preference information in compliance with initial care planning mandates. Preference information is not only crucial to the development of an individually tailored care plan but also necessary for staff to support the resident in transitioning into life in the NH. Tracking when preference assessments were administered allowed us to identify opportunities to improve the process. Once we began tracking timing of preference assessment completion, we identified 2 recurring barriers. The first barrier was engaging family and friends in gathering preference information. As part of the NH admissions process, family members or close friends were asked to complete the PELI-NH to learn more about the resident when a resident was unable to self-complete the assessment. We believed this would give family members and friends a meaningful way to support their loved one as they moved into their new home. When we reached out to family members and friends, we were struck by the number of people who did not respond to the request. When we followed up with individual family members, many explained that they did not know what their loved one's preferences were or they only knew 1 or 2 preferences and someone else knew a few more. We realized that observations from the direct care staff were needed to fill in the gaps, especially for individuals who were unable to communicate verbally. This finding supports the need for continuous QI efforts to refine a care process, as this highlighted a second barrier: engaging staff in a systematic way to understand important resident preferences.

These 2 barriers (lack of family/friend response and need for staff engagement) prompted us to develop an audit trail that could support MVP 2.0, as well as QI efforts. Audit trail indicators were developed by the Director of Recreation and helped us plan for "bite-sized" implementation of preference assessments. We decided that the first indicator should be, Do family/friends (when available) provide preference information about their loved one? For this indicator, we tracked staff outreach to families to complete the preference questions as a proxy responder. We used an Excel spreadsheet to gauge effectiveness of outreach attempts. The second indicator was necessary to develop workflow processes for increasing the skill level of the workforce to deliver PCC: Do care team members observe residents to discover preferences? We wanted staff to discover through observational methods preferences/activities that bring residents comfort and alleviate distress.

We actively sought input from residents and the interdisciplinary team (eg, resident council, recreation, nursing) about approaches to honor resident preferences through the care planning and QI workflow processes. Staff wanted resources and tools for program development. Based on these requests, we developed an "interest tracker" that provided a simple way of identifying residents with similar preferences for activities and leisure pursuits (see Figure 1). Recreation staff made meaningful use of these data by generating invitations to residents for activities they preferred or crafting the weekly schedule around the types of activities that their residents preferred. Staff felt empowered by having real-time tools that enhanced their recreational care delivery approaches. However, it was not yet known if care delivered was aligned with the resident preferences, which led to MVP 3.0.

MVP 3.0 (integration of preferences into care plans) was based on trying to understand if care plans reflected each person's important preferences. Although we knew that residents were routinely having their preference assessments completed in time for their initial care conference, we did not know if care plans reflected each individual's important preferences. Therefore, the Recreation Director completed an audit on a monthly basis using a sampling of resident care plans and preference assessments to explore how important preferences were translated into the plan of care. We found that having detailed preference information supported the team in personalizing care plans using a strengths-based approach. A strengths-based approach involves an adaptive process of engaging an individual in a preferred activity at a level that matches their capabilities.[16–18] Anecdotally, the information was helpful in reducing resident communication of distress, improving resident mood, and making adaptations for customizing care. Also, direct care workers shared that care plans were lengthy and they needed support in knowing successful individualized approaches to aid in settling a resident upon move-in, to provide comfort in times of distress, and engaging the residents in completing daily care, routines, and leisure activities. In addition, the Medical Director requested a snapshot of the care plan to learn about the person prior to entering a room.

A data transformation step was added within the first month of admission to convert the most important preference information into a 1-page preference report called "All About Me" (see Figure 2). An Access software program was built to automate this reporting process. Reports were readily available in a binder on the household for the clinical teams to reference as a resource in care plan meetings and clinical performance improvement initiatives.

A next step was then to determine if residents were actually attending activities that matched their stated important preferences. In MVP 4.0 (alignment of care delivery with resident preferences), we developed the "match-tracker" to identify how many times per week

Preference Interest Tracker

NAME	Books	Music	Animals	Games	Hobbies	Movies	Cooking	Sports	Outside	Volunteering	Computer	Services/ Spiritual	Comments
Mr. Jones	X	X				X			X			X	
Mrs. Brown	X	X		X						X	X		
Mr. Smith		X	X		X				X		X	X	
Mrs. Field		X				X	X		X	X			

Fig. 1. Sample preference interest tracker.

All About Me

- My name is Leonard, but I prefer to be called, “Len”.
- My room number is B11.

Stressors and Ideas for Relaxation

- What makes me feel good: food, playing Suduko (on my hand-held device), and watching basketball and golf.
- How to make me feel comfortable: reassure me that my wishes will be respected by family and staff. Remind me that my wife is being cared for (she lives in next building).
- How to show me respect: please use manners, listen to me, thank me and keep my surrounding quiet while I am napping.
- When I get upset: I may feel anxious, isolate, yell or refuse to go to activities.
- Things that make me stressed are: fear of falling and background noise:
- I like my surroundings to be: prefer small groups of people and quiet environment.

Daily Routines or Patterns

- When to get up: I like to wake up after 8am.
- Morning routine: Drinking tea/coffee, reading newspaper.
- When to bathe: I prefer bathing in the morning. I prefer shower.
- Take a nap: I take a nap whenever I want. I like to nap all the time.
- Bed-time: I like to go to bed after 9pm.

Food Choices

- What to eat: Breakfast: Cereal; Lunch: Soup; Dinner: Soup/Salad; Snacks: Salty
- Daily Eating Pattern: 3 meals a day with a light breakfast.
- Notes: I am not a picky eater.

Hobbies and Interests

- My Favorite Activities: Ordering Chinese take-out, watching sports, playing games (Suduko), going to Synagogue for services, volunteering, visiting with family.

Fig. 2. Sample All About Me report.

residents attended activities that aligned with their important preferences.[19] Using an Access database, the QI Coordinator spent approximately 4 hours/month matching activities offered to preference assessments. This identified areas where staff were offering many activities aligned with preferences and where staff needed to develop additional programming. We created color-coded reports to inform the Director of Recreation about the extent to which residents were attending activities they endorsed as important on a monthly basis (see Figure 3). This provided the Director of Recreation with “at a glance” reporting to celebrate successes and target opportunities for improvement. By tracking refusals to attend activities, we saw that some residents were declining to participate in preferred activities. Staff used this finding as an opportunity to check in with the individual to see why or if their preference had changed, because they are usually stable over time.[20,21] We learned there were many reasons an individual did not attend a preferred activity—from not feeling well to not being interested in the activity or having another appointment that day.[22] This allowed us to intervene in a way that enhanced the quality of care delivered. Staff were able to adjust types of activities offered, offer more variety, or find a better time to schedule programs.

Next, as we talked with residents about why they were not attending preferred activities, they often mentioned dissatisfaction with the way their preference was being met. MVP 5.0 (measuring satisfaction with preference aligned care), therefore, sought to identify if residents were satisfied that their important preferences were being met. Our team became involved with the National Nursing Home Quality Improvement Campaign Person-Centered Care Goal,[23] which resulted in the development of a tool that tracked both importance and satisfaction with preferences being met. Recreation staff used this tool to ask residents who could communicate verbally how satisfied they were with each specific preference they rated as important being met. Staff started with residents who had upcoming care planning meetings. Staff stopped in their room with a list of important preferences and asked, “How satisfied are you that this preference has been met?” and they could respond not at all, somewhat, or very satisfied. We created a bar graph report based on resident responses where green indicated very satisfied, yellow indicated somewhat satisfied, and red indicated not at all satisfied and brought these data to the care planning meeting for problem solving (see Figure 4). This helped the interdisciplinary care team identify what mattered most to the resident and ways care could be modified to accommodate an individual’s preferences and abilities.

Three Month Report – Frequency of Attendance at Activities (attending 1 or more activities endorsed as important).

			Month 1		Month 2		Month 3		
Important Preference	Important Preference Count	Type of Activities	Attended	Match %	Attended	Match %	Attended	Match %	Matching Total
Do things with groups	154	Groups	145	94%	149	96%	152	99%	96%
Listen to music	197	Sing-alongs, Musical performances	132	67%	158	80%	165	83%	77%
Keep up with the news	195	Current events, newspaper	75	38%	158	81%	162	83%	70%*
Be around animals such as Pets	133	Pets and Paws	51	38%	90	67%	99	74%	60%*
Participate in religious services or practices	112	Religious activities or programs	59	52%	65	58%	71	63%	58%
Have books, magazines or newspapers to read	154	Reading	25	16%	59	38%	101	65%	52%*

Color Scheme: Red/Yellow – Opportunities for Improvement; Green – Celebrate Successes
*Denotes positive improvement in congruence scores.

Fig. 3. Sample Match Tracker report.

Implications for Practice, Policy, and Research

Overall, our efforts had positive effects throughout the NH—staff were empowered with readily available preference information for each resident, and residents were being provided care that aligned with their stated preferences. When the COVID-19 pandemic began, limiting visitors and significantly modifying staff workflow (starting in March 2020), the teams' efforts were particularly beneficial, as clinical and direct care staff were able to adapt programming quickly from group-based to individually delivered activities because they had the tools needed to know which individual activities each resident would prefer to engage in. When the need arose to decrease the footprint of staff going into each resident room to prevent the spread of COVID-19, there were instances when staff providing care did not know the resident. In these situations, having preference information in a binder for staff to access was crucial to providing continuity of care. Having the MVPs developed was critical to our ability to pivot in the chaotic early months of the pandemic when there was a need

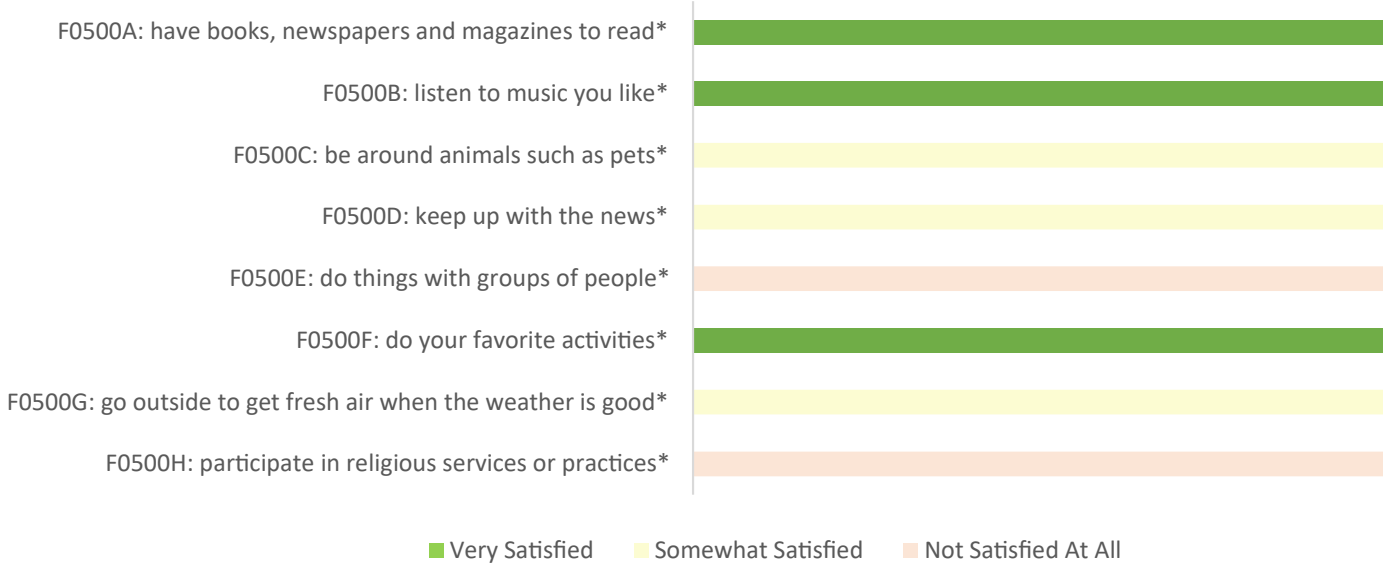

Fig. 4. Individual Preference Satisfaction report.

to frequently adapt care processes to CDC protocols for infection control. Finally, it had become ingrained for staff to track activity attendance and preference information, and, therefore, we were able to show that we were still meeting resident preferences during COVID-19 outbreaks.

Regulations calling for implementation of PCC planning are the gold standard for optimal holistic care, but without sufficient guidance, resources, or tools, providers struggle to achieve the desired outcomes. It is possible to use Agile methodology and QI cycles to drive CMS's goal of promoting high quality of life through resident engagement. However, this process requires interdisciplinary teams to implement. PCC performance improvement needs to be thought of in increments to gain staff buy-in and achieve small "wins" that help build support from staff who see the benefits. Utilizing data-driven approaches that support teams with tangible products to assess, care plan, and evaluate PCC care are needed. For example, the National Nursing Home Quality Improvement Campaign (formerly Advancing Excellence) had developed pragmatic tools for providers to use to address 9 different areas including PCC. However, the support from CMS that funded this effort was discontinued and the tools are no longer available.

Successful implementation of PCC requires both an organizational readiness to endorse a philosophy that values holistically knowing the person, and enhancing processes in staffing, workflow, decision making, and communication to support PCC.[24] Agile practices and methods support the call for providers to value implementation flexibility when adopting PCC approaches.[25] Processes and funding such as P4P[26] are needed to build organizational capacity to engage in PCC QI. Strategic planning is essential for setting PCC goals and developing plans of action that include resources, such as training, materials or technology, technical assistance, coaching, etc. Collaboration with industry partners, such as EMR vendors, will help foster a technology infrastructure to support incorporating preference assessments into workflow processes.

Finally, application of Agile methodologies in research may be critical to translating evidence-based pragmatic interventions into sustainable care processes. The use of Agile methodologies in participatory research models may be particularly meaningful.[27] However, further research is needed to understand the impact of using such methodologies to implement care changes, not only on the residents receiving care but also the family and staff impacted by care delivery changes.

Overall, we recognize that the community we collaborated with was in a unique position to target improvement of preference-based PCC owing to its access to researchers who worked in-house and buy-in from leadership on the importance of the initiative. However, we argue that the lessons learned are widely applicable to all care communities seeking to provide PCC. Any initiative that an organization wishes to implement can benefit from Agile methodologies. Agile organizations report seeing improvements in many areas, including the ability to manage changing priorities, an increase in project visibility, an increase in business and IT alignment, an increase in getting a product to market, and an increase in team productivity.[28] Overall, this article provides an example for practitioners to reference in how to build out a sustainable, effective approach for assessing preferences and implementing consistent PCC.

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