Partner-Engaged Pragmatic Research in Aging Care: Case Studies from the Long-Term Care Quality & Innovation Lab

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ABSTRACT

Since 2015, the Long-Term Care Quality & Innovation (Q&I) Lab at the Brown University School of Public Health has advanced pragmatic, partner-engaged research to improve care for older adults and chronically ill individuals receiving post-acute and long-term care. Rather than evaluating interventions under controlled conditions, Q&I researchers conduct embedded studies in real-world care settings, working with clinicians and frontline staff to implement interventions and assess their effectiveness and feasibility in routine practice. In parallel, researchers also collaborate with health systems and public agencies to generate practice-relevant evidence on operational priorities, positioning the lab as a translational research platform. This article presents two nursing home case studies: a pragmatic trial of a personalized music intervention for residents living with dementia and a portfolio of COVID-19-related partnered research. Together, these examples demonstrate how embedded, partner-engaged approaches generate actionable evidence, inform practice and policy, and position Rhode Island health system partners as contributors to evidence generation at scale in aging care.

KEYWORDS: Pragmatic research; embedded research; partner engagement; long-term care; nursing homes; translational research

EMBEDDED PRAGMATIC RESEARCH AS A PARTNERSHIP MODEL

The Long-Term Care Quality & Innovation (Q&I) Lab was founded in 2015 at the Brown University School of Public Health to generate evidence for strategies that improve care for older adults and chronically ill persons, with particular emphasis on those receiving post-acute and long-term care. Rather than testing interventions under tightly-controlled conditions, Q&I advances pragmatic, partner-engaged research in real-world care environments, working alongside health system leaders, clinicians, and frontline staff to identify research needs and design studies.

In some of Q&I's studies, such as pragmatic trials, this involves testing interventions embedded within routine clinical workflows and delivered by provider staff rather than researchers. In other work, the research itself is embedded: investigators collaborate closely with health systems to examine organizational priorities, generate evidence to inform decision-making, and guide practice improvement. Over time, these approaches have enabled Q&I to serve as a translational platform that combines partnership infrastructure, data resources, and applied research methods to support rapid-cycle feasibility and pilot studies, as well as multi-site effectiveness research.

Partnership is central to the success of this model; health system collaborators may be responsible for day-to-day implementation of research protocols and also play critical roles in identifying priorities, co-designing studies, facilitating access to care settings and data, and interpreting findings in light of operational realities. This helps ensure that research agendas align with frontline clinical needs, resulting in research that is useful and used, and that study procedures are feasible within real-world constraints.

Embedded pragmatic clinical trials (ePCTs) are one of Q&I's core strengths within this broader model of partner-engaged pragmatic research. ePCTs are effectiveness studies that differ from traditional randomized controlled trials (RCTs) in both design and purpose; interventions are delivered by clinical staff rather than research personnel, and outcomes are ascertained, when possible, using existing clinical and administrative data.[1] Implementing interventions through the same operational processes health systems routinely use to introduce change generates evidence that is immediately relevant and may increase the likelihood that effective approaches can be scaled.

This article examines two case studies that illustrate Q&I's model in practice: an ePCT trial evaluating a personalized music intervention for nursing home residents living with dementia, and a portfolio of COVID-19-related research. Together, these examples demonstrate how embedded, partner-engaged approaches shape study design, support implementation, and accelerate translation of evidence into practice. They further illustrate how early collaboration with regional providers can inform national research and infrastructure, positioning Rhode Island health system partners as contributors to evidence generation at scale in aging care.

CASE STUDY 1
A Trial of Personalized Music in Nursing Homes

An early illustration of Q&I's embedded pragmatic model emerged from national efforts to reduce antipsychotic medication use among nursing home residents living with dementia.[2] Although black box warnings caution against the use of antipsychotics to manage behavioral and psychological symptoms of dementia, these medications are sometimes used off-label to address agitation and aggression that affect residents' quality of life and can complicate caregiving.[3] A lack of feasible, evidence-based, non-pharmacologic alternatives complicates efforts to reduce antipsychotic use.

Awareness of personalized music as a potential intervention was heightened by the 2014 documentary *Alive Inside*, which illustrated music's capacity to calm and engage individuals living with dementia.[4] The film highlighted Music & Memory, a popular program involving the use of individualized playlists based on music preferences from young adulthood, typically between the ages of 16 and 26.[5] Recognizing both the promise of the intervention and the absence of rigorous effectiveness data, Q&I researchers first conducted exploratory analyses of outcomes among residents in participating nursing homes[6] and subsequently secured foundation funding to partner with a small group of nursing homes to prepare for real-world testing.

Participating facilities, including several in Rhode Island, collaborated with researchers to document how to identify residents, ascertain their music preferences, and manage the logistics of loading music devices with personalized music, and incorporating music into daily care (unpublished). These early partners played a central role in the research's early phase, helping to protocolize the program before the research scaled nationally for evaluation.

The resulting protocol became the foundation for the MET-RIcAL study, a five-year National Institute on Aging-funded ePCT evaluating the effectiveness of personalized music for nursing home residents living with dementia.[7,8] Because of pandemic-related disruption, the study ultimately consisted of two consecutive cluster RCTs conducted in 2019–2020[9,10] and 2021–2022,[11] respectively, in 81 nursing homes operated by four multi-state corporations. Consistent with pragmatic trial design, frontline staff, rather than researchers, delivered the intervention within usual care processes. Facilities received structured training and implementation guidance while retaining flexibility to adapt delivery to local workflows.

The research team simultaneously evaluated clinical outcomes and real-world feasibility, and implementation insights from the first RCT-informed adaptations in the second RCT, particularly as competing operational pressures intensified during the pandemic.[11] To reduce staff burden and improve fidelity, responsibility for identifying music preferences and creating playlists shifted from facility staff to the research team, illustrating how ePCTs evolve in response to contextual realities.

Findings from the first RCT demonstrated measurable effects among residents exposed to the intervention. In analyses using the Agitated Behavior Mapping Instrument, residents in intervention facilities were more likely to have no verbally agitated behaviors observed relative to residents receiving usual care.[10] They were also more likely to be observed experiencing pleasure during observation periods, suggesting an effect on affective state even when broader agitation measures did not change. By contrast, analyses relying on staff-reported or administrative measures of agitation did not demonstrate statistically significant differences.[9]

Equally important were insights generated through mixed-methods implementation evaluation.[11,12] Participating facilities identified key facilitators, including leadership engagement, family involvement in playlist development, and integration of music into care planning. They also surfaced barriers ranging from staff-time constraints and competing clinical demands, to challenges maintaining and managing music devices. These findings not only informed protocol refinements between METRIcAL's two RCTs but also subsequent Q&I studies focused on using technology-enabled approaches to help staff tailor and time non-pharmacologic dementia interventions.

This case illustrates defining features of Q&I's approach: interventions originating from frontline clinical priorities; development conducted in partnership with health system partners; and pragmatic methods designed to test effectiveness under real-world conditions while simultaneously assessing implementation barriers and facilitators.

CASE STUDY 2
Partnered Research During the COVID-19 Pandemic

While METRIcAL demonstrates how partner-engaged pragmatic methods can support evaluation of a discrete intervention in real-world care settings, this second case study highlights how sustained partnership enables research to pivot when contextual conditions shift. When the COVID-19 pandemic emerged, nursing homes were among the earliest and most severely affected healthcare settings,[13] yet little empirical evidence existed to guide operational, workforce, or policy responses. Long-standing collaborative relationships with nursing homes across the U.S. positioned Q&I researchers to rapidly align projects with urgent frontline priorities while generating practice-relevant evidence during a period of unprecedented system strain.

Within three months of the first reported U.S. nursing home COVID-19 outbreak, a Q&I research team launched a national survey to characterize frontline staff experiences. Findings, initially disseminated through issue briefs[14-16] and subsequently in the peer-reviewed literature,[17] provided

some of the earliest insight into the pandemic's impact on nursing home operations and workforce, including staffing shortages, psychological distress, and rapidly evolving infection-control demands. These findings informed national understanding of conditions on the ground in nursing homes, while also shaping Q&I researchers' subsequent research agenda and partnership strategy.

Early translational work emerging from these findings included collaboration with a state public health agency to design and pilot an infection-control coaching intervention tailored to nursing home operational realities.[18] The program was later disseminated nationally by a provider association and incorporated into the Centers for Disease Control and Prevention's Project FirstLine training,[19] illustrating how rapid, partner-engaged research could inform workforce development and infection-prevention practice.

Q&I researchers simultaneously leveraged existing partnerships to establish data-sharing collaborations capable of rapidly generating insight. Working with clinical leaders from a large, multi-state nursing home corporation—including facilities in Rhode Island—the team obtained electronic health record data in near real-time and examined COVID-19 infections,[20,21] transmission patterns,[22] testing,[23] vaccination,[24,25] and more. Early analyses demonstrated, for example, that outbreak risk was associated with facility size and surrounding community prevalence, not quality ratings.[20] Findings informed clinical decision-making, operational adaptations, and federal and state policy discussions during a period when facility-level data were limited.

This collaboration expanded to include 12 large, multi-state nursing home corporations participating in a data-sharing partnership. That partnership, in turn, laid the foundation for the Long-Term Care Data Cooperative, a national initiative launched in 2023 that aggregates electronic health record data from enrolled facilities, and links them with administrative and claims data to support benchmarking, effectiveness research, and public health surveillance.[26] This progression demonstrates how sustained partner engagement can extend beyond individual projects to establish shared research infrastructure capable of supporting ongoing learning.

Collectively, this pandemic-era portfolio illustrates the adaptability of a partner-engaged embedded research platform under crisis conditions. Rather than focusing on single interventions, this work addressed workforce experience, infection prevention, organizational response, and data infrastructure simultaneously. Existing partnerships evolved and expanded to include co-production of research and analytic capacity, demonstrating how embedded research collaborations can generate rapid, policy-relevant evidence while strengthening the systems required to sustain inquiry beyond the immediate crisis.

FROM STUDIES TO SUSTAINED RESEARCH INFRASTRUCTURE

These nursing home case studies illustrate the evolution of Q&I's partner-engaged embedded research model. The MET-RIcAL trial demonstrated how co-designed pragmatic studies can evaluate targeted interventions under real-world conditions while generating implementation insight to support scalability. The COVID-19 portfolio, by contrast, illustrates how sustained partnership enables research to mobilize rapidly in response to emergent system needs, expanding from individual projects to coordinated bodies of work and shared data infrastructure.

Across both examples, partnership functions to ensure research relevance, feasibility, and translational impact. Health system partners help surface priorities, shape protocols, interpret findings, and identify pathways for dissemination. In turn, embedded research generates evidence that is immediately actionable within real-world contexts and constraints, while informing broader policy and practice discussions.

Rhode Island has played a distinctive role within this model. The state's interconnected health care, academic, and policy communities facilitate collaboration and early testing, allowing interventions and research approaches to be piloted and refined before scaling nationally. In this way, the state functions as a local laboratory for innovation and contributes to national evidence and impact.

As the population continues to age and the health care system faces increasing clinical, workforce, and financial complexity, demand is growing for research models capable of producing timely, practice-relevant evidence. Embedded pragmatic partnerships offer one such mechanism. By aligning scientific rigor with sustained collaboration and understanding of real-world considerations and constraints, these platforms can accelerate translation of evidence into practice while establishing the partnership, data, and analytic infrastructure necessary to support ongoing translational research.

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