Studying Nursing Home Innovation: The Green House Model of Nursing Home Care

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In 1997, the Pioneer Network began efforts to transform nursing homes (NHs) to settings where residents can thrive and care is resident directed (Pioneer Network 2015). Envisioned were noninstitutional, homelike settings where residents' preferences drove care and where empowered direct care staff offered care that was compatible with residents' preferences (Koren 2010). This transformation, commonly called "nursing home culture change," gained recognition and momentum in response to support and advocacy from key stakeholders, including the Centers for Medicare and Medicaid Services, NH trade organizations, and state culture change coalitions (Miller et al. 2014). Early on, these and other key stakeholders reached consensus on practices integral to actualizing key components of NH culture change, including resident direction, homelike atmosphere, close relationships, staff empowerment, collaborative decision making, and implementation of quality improvement processes (Koren 2010).

The movement to transform NHs can be viewed as successful as the vast majority of U.S. NHs report adopting culture change practices, at least to some extent (Miller et al. 2014). However, this view of success is tempered by the fact that change has been incremental and only a minority of facilities have achieved full transformation (Miller et al. 2014). Still, full transformation is an expectation of the comprehensive prescribed culture change models such as *Planetree* (Planetree 2014), the *Eden Alternative* (Thomas 2003), or the *Green House* (GH) model (Rabig et al. 2006)—the evaluation of the latter is the focus of this *HSR Special Issue*. As Zimmerman et al. discusses (2016), the overriding intent of the GH evaluation—The Research Initiative Valuing Eldercare

(THRIVE) study—was to *better understand GH implementation and impacts using larger samples and more rigorous methods than has been possible in the past*. Additionally, and as the funder suggests (Fishman, Lowe, and Frazier 2016), the THRIVE evaluation and its findings also have relevance for organizations undergoing more incremental culture change processes. Careful evaluation is much needed as widespread adoption of NH culture change and the proliferation of innovative models such as GH have occurred in spite of the absence of consistent empirical evidence of their efficacy (Shier et al. 2014). Instead, and as suggested by diffusion of innovation theories, adoption has been driven by the high degree of face validity culture change has acquired and by its promotion by key stakeholders (Rogers 2003; Miller et al. 2010). Additionally, positive reports of culture change efforts by peers and positive experiences by NHs as they introduce change served to reinforce the positive message and influence increased adoption (Rogers 2003; Shield et al. 2014). Nonetheless, empirical evidence is necessary to validate policies that promote comprehensive culture change and particular aspects of it (e.g., small homes or households) (Shier et al. 2014; Zimmerman, Shier, and Saliba 2014). Still, these face validity approaches to justifying and promoting change are common in health care, as demonstrating effectiveness with robust evidence and strong research designs are so difficult to implement.

In part, the lack of consistent empirical evidence for the effectiveness of culture change is attributed to sample design challenges and the difficulty of defining and measuring it and how well it is implemented, not to mention the difficulty of measuring quality of care and life outcomes that culture change aspires to improve (Shier et al. 2014; Zimmerman, Shier, and Saliba 2014). In addition, as Zimmerman et al. discusses in this issue (2016), evaluation of the GH model is further challenged by its early stage of development and by the difficulty in identifying comparison facilities ostensibly not engaged in culture change, as the context of the environment is such that all NH's are aware of these culture issues. The THRIVE study undertook to evaluate perhaps the most prescriptive model of culture change as the GH model requires stand-

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alone or vertically integrated small residences (for 8–12 elders), self-managed work teams, and empowered, consistently assigned Shahbazim (direct caregivers) who function as universal workers. The methodological challenges in evaluating the GH model in the real-world NH environment were many, as discussed in conjunction with the contributions below.

UNDERSTANDING THE GREEN HOUSE MODEL'S IMPLEMENTATION

Three papers in this special issue enhance our understanding of the practices in place within GHs and the opportunities for quality improvement facilitated by the GH prescribed small home and staffing structures. Cohen et al.'s (2016) paper provides important information on the fidelity participating sites achieved to the GH model's small home structure, and it presents staff views on how this structure contributes to heightened resident oversight and improved staff-resident interactions. They found some variability across GH facilities to the prescribed staffing model but large variability in the practices designed to support resident choice and decision making. This context-specific variability challenges any evaluation of the impact of the model on the lives of residents and perhaps even staff.

Bowers, Nolet, and Jacobson (2016a) also documented variability in how the GH philosophy and shared decision-making model was sustained over time, even if a site began "true" to the philosophy. They report that GH model sustainability appeared linked to whether a facility's pattern of solving both large *and small* problems reinforced the model's core philosophies. Problem solving that reverts to hierarchical or management-led decision making—that diverges from the GH model—as opposed to collaborative problem solving (with its inherent training needs) appears to erode fidelity to the model. This interesting finding appears relevant to culture change fidelity issues that go well beyond the GH model alone and is consistent with literature on the challenges of adoption of innovation (Rogers 2003). Bowers et al.'s (2016b) examination of GHs exhibiting low versus high hospital transfer rates sheds further light on the issue of how well a program was able to sustain the model. They note that GHs with low compared to high rates of hospital transfer more often had practices in place to capitalize on the model's prescribed small size and staffing model. Such practices included the aligning of schedules so primary care physicians (PCPs) and other providers can interact with residents more routinely. They also strengthen the relationships between Shahbazim

and other providers (including PCPs), so Shahbazim' knowledge of residents is routinely shared and made part of the clinical input concerning how to address residents' conditions.

While the variability in GH fidelity and of the practices described above complicate the THRIVE study, as discussed by Zimmerman et al. in this Special Issue (2016), this variability offers important insights regarding why the existing literature on NH culture change has been inconsistent in its conclusions and findings (Shier et al. 2014). Additionally, the practices highlighted in the above studies inform other NH culture change implementation efforts and raise research questions about the added value of the GH model compared to other culture change efforts or models. For example, whether the GH prescribed structure is superior to the culture change "household" model is of interest. Similar to GH small homes, households are comprised of private rooms and shared kitchens, dining, and living rooms, and have a comparable staffing model; however, unlike small homes these households have 14–20 elders and their private rooms do not necessarily exit into common areas. A comparison of the two models could provide important insights into which particular structural features are critical for heightened elder oversight and improved interactions to occur. Similarly, as many U.S. NHs have adopted some form of consistent staffing assignment and have implemented practices empowering staff by now (Miller et al. 2014), whether this approach, absent the physical structure of the small home, leads to enhanced elder oversight and interaction is of crucial interest. Furthermore, we still need a better understanding of which culture change practices are necessary for quality improvement to occur and the extent to which improvements can occur without capital investment in small homes or households.

EVALUATING THE IMPACT OF THE GREEN HOUSE MODEL

NH change is frequent and responds to numerous stimuli, including regulatory and payment system changes (Anderson, Issel, and McDaniel 2003). Thus, to understand the value of innovation such as the GH model it is critical for evaluations to isolate the effects of adoption from the effect of broader changes in the industry. In addition, given the high prevalence of NH culture change adoption nationwide and the variability of GH adoption discussed above, GH evaluations are likely to introduce measurement bias

without controlling for the extent of culture change adoption in GH organizations and controls. The THRIVE study approached the first challenge by choosing comparison NHs with attributes similar to GH organizations, and thus those most likely to adopt culture change (Grabowski et al. 2014). For the evaluation of quality outcomes (Afendulis et al. 2016) and costs (Grabowski et al. 2016), GH NHs were matched to control NHs, and within these NHs, elders were matched to conduct resident-level analyses. Beyond the knowledge of whether an organization was a legacy NH (i.e., the parent NH of one or more GH homes), a GH home or a control NH, analyses did not consider the extent of culture change practice implementation, something that would have complicated the analytic challenges already facing the evaluators greatly.

Comparing GH homes and legacy and control NHs, Brown et al. (2016) in this Special Issue examined workforce characteristics and somewhat surprisingly found no evident differences. Even when comparing staff turnover, and contrary to anecdotal reports, no significant difference was detected. Of interest to other culture change efforts, staff reports indicated satisfaction, stress, and perceptions of safety appeared not to be affected adversely by working in the innovative GH home environments. As the authors discuss, this primarily NH-level study was underpowered and larger studies are recommended. However, as the control NHs are similar to GH organizations (presumably meaning that they are more likely to adopt culture change practices) (Grabowski et al. 2014) *and* as low levels of turnover may be attributable to the staffing levels and empowerment practices not unique to the GH model, the finding of no difference is not necessarily surprising. As the THRIVE study compares the added effect of the complete GH model relative to similar organizations that simply had not adopted the complete model, future research measuring the varying degree of culture change practice adoption in control NHs (and GHs) is needed to gain a better understanding of how the GH small home structure versus selected components of the GH staffing model may differentially influence staff turnover.

Findings on the impact of the GH model on quality and costs also are likely affected by these same measurement issues. Additionally, even though THRIVE is larger than previous GH studies, statistical power of the quality and cost analyses is compromised by the small number of residents residing in GH homes as well as by the need to introduce NH fixed effects in the statistical models to control for the nesting of elders within facilities (Afendulis et al. 2016; Grabowski et al. 2016). Despite these limitations, the GH quality and cost evaluations in this Special Issue contribute some interesting findings and

hone the directions for future fruitful research. Considering quality and using a difference in differences approach, Afendulis et al. (2016) report elders residing in GH homes, compared to those in control NHs, over time had significantly lower rates of hospital readmissions and improved quality reflected in three of the eight NH quality indicators measured. These findings did not extend to residents in GH organizations (i.e., residents in GH homes and their legacy NHs). Similarly, Grabowski et al. (2016) report significantly reduced Medicare expenditures for residents in GH homes, compared to control NHs, but they observe *no* significant differences between those in GH legacy homes compared to controls. Considering the challenges of matching of control NHs to GH organizations, the findings of difference when only considering residents in GH homes (compared to those in control NHs) may mean the “extras” introduced by the GH model make a difference; however, the evidence is in no way definitive. While the small size and unique architectural design, as suggested by the qualitative research in this Special Issue (Bowers et al. (2016b); Cohen et al. 2016), may aid in reducing hospital readmissions and improving quality, additional research is needed to further explicate these associations. Nonetheless, the rates of rehospitalization were remarkably low for both comparison groups, suggesting, as one would expect, that rehospitalizations were not the biggest clinical issue facing the residents or the staff. Similarly, during an era when Medicare expenditures for all NH residents was increasing, residents of the facilities participating in this evaluation were engendering lower expenditures, which raises other issues of interpretation.

CONCLUSION

Similar to incremental culture change implementation in many NHs, culture change evaluation efforts such as THRIVE incrementally inform our understanding of the benefits of culture change practice implementation and of innovative culture change models in important ways. However, like all evaluations of complex interventions relying upon organizational change and realignments of existing human interaction patterns that are undertaken in the real world, the GH model was implemented with variable fidelity. Thus, identifying what was uniquely different about it, relative to comparable comparison facilities, is fraught with methodological problems. These range from having the right measurement tools to capture the staff qualities and resident outcomes that GH advocates are convinced are positively impacted to the dif-

difficult problem of selecting comparison facilities that hadn't but might have adopted GH. The consequences of really facilitating resident empowerment and staff integration into the life of the unit are probably not best seen in pressure ulcer rates or standard staff satisfaction, just as palliative and hospice care are not just about pain control (Higginson 1999). Nonetheless, policy makers want to make sure that the investment in new models like GH are "worth it" in terms of existing performance measures and hard outcomes like staff turnover and hospitalization, even though these may not be the primary targets of the GH intervention. As for comparison site selection, and given most would acknowledge that only quality leaders would elect to embrace the GH model, to appropriately test the impact of the GH model *per se*, identifying facilities that are VERY similar to GH participants is essential. However, in doing so, it is likely that these non-GH quality leaders will have already adopted and operate effectively, with a number of components of the GH model internalized into standard procedures. The net result is that the closer the comparison facilities are to those that elected GH, the less likely the evaluators will observe differences in practices and outcomes. In essence, therefore, the more rigorous the research design, the more difficult it is to observe a difference between the GH and comparison facilities and the residents they serve. Furthermore, the experience of the implementation science literature suggests that imposing more fidelity and allowing less context-specific adaptation is the wrong way to go. Consequently, these implementation and evaluation challenges will continue to confront our field.

In spite of these shortcomings, the papers in this issue contribute to our knowledge of culture change in the NH setting and to the broader field of implementation science. Perhaps future papers relying upon these data could more selectively focus on the GH facilities to estimate the differences associated with more complete implementation of the model.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix SA1: Author Matrix.