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Facilitating Lewin's change model with collaborative evaluation in promoting evidence based practices of health professionals

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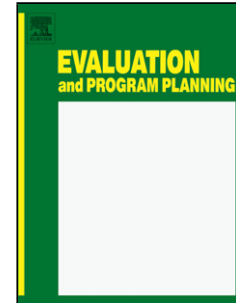
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Facilitating Lewin's Change Model with Collaborative Evaluation in Promoting
Evidence Based Practices of Health Professionals

Running Head: Facilitating Lewin's Change Model

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Introduction

Healthcare providers implement evidence-based practices (EBPs) with patients along a continuum of care in diverse clinical settings (hospitals, long term care). These practices interact with organizational characteristics (Curran et al., 2011; Luongo, 2007; MacIntosh-Murray et al., 2006). Contextual factors (supportive protocols, equipment availability) influence the form and frequency of practices, and can be viewed as facilitators or barriers to both adopting and sustaining those practices (Stange & Glasgow, 2013). Use of EBP repeatedly in one institution can result in institutionalization (Bellg et al., 2004; Thurston & King, 2004; Titler, 2008). Changes to organizational patterns (workflow, policies) will inevitably occur within the host clinical setting as it adapts to sustained practices.

This article explores the relationship between practices and their systems through the lens of Kurt Lewin's 3-step change model (1951) of *Unfreezing*, *Movement*, and *Refreezing*. Retrofitting this action research model *post hoc* onto observed educational processes and clinical outcomes from two geriatric education projects brings forth the potential for also using the model *a priori* as an implementation guide for programmers, evaluators, and other project stakeholders. Given that the projects' processes and outcomes appear influenced by multiple stakeholder perspectives at the planning, implementation and evaluation phases, the value of incorporating collaborative evaluation principles (O'Sullivan, 2012) with the Lewin framework is also discussed. The Lewin (1951) anchors of altering a traditional clinical path or approach (*Unfreezing*), refining the emergent provider behaviors (*Movement*), and reinforcing them through changes in organizational structure (*Refreezing*) have previously been applied to understanding how health professions' behaviors become accepted and sustained in clinical settings (Holter & Schwartz-Barcott, 1993; Lee, 2006; Walters & Eley, 2011). The Lewin model (1951) provides sequential anchors (*Unfreezing*, *Movement*, *Refreezing*) for discussing inevitable contextual changes with project stakeholders in advance of implementation, beyond the more linear effects typically captured in logic models.

This article illustrates the Lewin model retrofitted to two, 2010-2015 projects of Geriatric Education Centers, or GECs (funded through Department of Health and Human Services, DHHS-Bureau of Health Professions, BHP-Health Resources Services Administration, HRSA) (DHHS-BHP-HRSA/ Geriatric Education Centers, 2014) that were able to determine their own planning frameworks for a common EBP (a multifactor falls risk assessment and relevant follow-up procedure, such as a specialized referral and/or patient education, for providers to employ in clinical settings). The EBP projects are new and additional requirements of GECs (primarily located in schools of medicine) who have statutory purposes to develop faculty and professionals to improve the care of older adults. These two exemplars took place in diverse clinical practice settings (i.e., hospital emergency department and falls clinic enrollees) with varying populations, and applying an additional, standardized framework for evaluation *a priori* was deemed premature given the GECs need to strengthen implementation (using formative evaluation to improve educational sessions, monitoring program fidelity, ensuring data access and accuracy in clinical practice sites) during the first years of the project. The authors assert that in hindsight, there is likely value in applying Lewin's model to both evolving and mature EBP demonstrations or other workforce development efforts where newly learned employee behaviors prompt workflow and systems changes.

Despite an increase in the use of EBPs in the last two decades, there are barriers to proven programs translating reliably (in fact and producing similar outcomes) in other clinical settings (AHRQ, 2010; Tuchman & Sarasohn, 2011). This incomplete knowledge translation of research findings to practice is one focus of implementation research (Curran et al., 2011) and can occur from weak practice fidelity and a lack of organizational supports, among other reasons (Bellg et al., 2004; Grol et al., 2007).

We assert that this quality gap (Shojania, McDonald, Wachter, & Owens, 2004) is exacerbated by the lack of a unified and comprehensive framework for the planning and evaluation of EBP projects. For example, the Theory of Planned Behavior (TPB) (Ajzen, 2002) has been used in clinical projects that seek to improve the uptake of provider behaviors. However, the focus of TPB is limited to the linear progression of attitudinal improvement toward practices, intention to change behavior, and then

behavioral changes without the benefit of couching these effects directly in terms of contextual influences and systems changes. The Translating Research Into Practice (TRIP) Model (Titler et al., 2009) focuses on attitudes and intentions situated within social systems and communication processes (need for advocates and senior level buy-in for practice adoption and sustainability). In fact, various models discuss aspects of facilitators and barriers, both at the individual provider and systems levels that are germane to EBP projects (Shojania, McDonald, Wachter, & Owens, 2004). For example, the Donabedian model (1966; 1988) focuses on both structure (organizational context) and process (provider to patient interactions).

There are clear strengths in some of these models, in terms of recognizing that context matters. However, the notion of planners anticipating disruptions to the normal flow of provider actions (potentially halting the new practices) in a system is perhaps most articulated in Lewin's 1951 model. As will be shown, it may behoove planners of EBP projects to think *a priori* of resistance to change that can occur around new procedures. In doing so, they can engage stakeholders early and identify champions in advance to increase the likelihood of EBP uptake and sustainability.

The important role of stakeholders and working collaboratively with them in implementation research has been asserted (Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005). Knowledge translation has greater viability when institutional stakeholders associated with the targeted practice settings are involved in the evaluation planning (Legare et al., 2013; O'Sullivan, 2012; Stange & Glasgow, 2013; Tuchman & Sarasohn, 2011). The Lewin model (1951) provides sequential anchors (*Unfreezing, Movement, Refreezing*) for discussing inevitable contextual (systemic) changes in a somewhat linear fashion (*Unfreezing* is necessary for *Movement*, so forth) with project stakeholders prior to, during, and post implementation.

Hence, this article seeks to fill a conceptual void. There is simply a strong need for early planning of contextual change if EBPs are to be adopted and sustained in clinical settings. Further, we synthesize Lewin's 3-step change approach with collaborative evaluation principles such as stakeholder participation at multiple project phases, evaluator connections with programming staff, and adaptation of practice to

organizational context. Our assertion is this combined framework may lend support to the applied practice aspects of implementation science and be of interest to quality improvement (QI) personnel, continuing education evaluators, health services researchers, and other organizational planners embarking on collaborative EBP projects.

Improving Evidence Based Practice through Geriatric Education

In healthcare settings, evidence based practice (EBP) has been stated as the “judicious use of current best evidence in conjunction with clinical expertise and patient values to guide healthcare decisions” (Titler, 2008, p. 1-113). While there is no single definition of EBP in the health professions (Thurston & King, 2004; Jennings & Loan, 2001), it has been summarized that the best evidence comes from a combination of clinical expertise, patient preferences, and outcomes observations (McKibbin, 1998).

Eighteen of 45 Geriatric Education Centers (GECs) (2010-2015) proposed to train multiple disciplines (nurses, social workers) on the use of a falls risk assessment (of their choosing) with referrals (vision, nutrition) or other follow-up (patient education, falls clinic) that served as an intervention phase. GECs have multiple program tracks (continuing education, faculty development) to improve the health professions' workforce (DHHS-BHPr-HRSA/ Geriatric Education Centers, 2014). Falls risk identification (through assessment) and referral or patient education (intervention) was one area of five, HRSA-approved possibilities from which GECs could choose to train providers (nursing, social work, so forth) on how to implement assessment and intervention-related EBPs. Essentially a workforce development model, the focus in each of the five areas for the 2010-2015 funding is on provider changes (in their clinical settings) rather than patient outcomes. Other areas were delirium, depression, diabetes, and palliative care. In choosing an area, all funded GECs developed educational sessions to equip providers in implementing research-based practices in clinical settings (one of a few goals of translational science in health services research) (Curran et al., 2011; Zerhouni, 2005).

Several EBPs exist within the realm of falls prevention and include performing assessments to identify risk factors (dementia, medication interactions) and behavioral interventions (strength training)

with patients shown to be at risk for falling (Tinetti et al., 1994; Chang & Ganz, 2007). GECs targeting falls prevention collaborated for peer learning and information sharing to hone in on a common EBP within falls. In support, they received technical assistance on planning evaluation outcomes from the National Training and Coordination Collaborative (NTACC), a contract of DHHS-BHPr-HRSA to assist GECs in improving data reporting and influencing the range of their local evaluation practices (logic modeling, instrumentation development). Since 2010, the NTACC has provided e-learning sessions on evaluation topics, conference calls with external experts having credibility through publications and national recognition, and in-person evaluation consultations twice per year to support the execution of EBP projects in the five content areas.

Through GEC discussions across topic areas, occurrence of the newly adopted EBP by a trained health provider was operationalized as the number of patients exposed to the EBP compared with the number of patients eligible to receive the EBP (pre and post GEC-education). These became HRSA's basic reporting requirements for GECs to show the percentage of patients exposed to provider practices. Other required variables are the number of providers implementing the EBPs (in comparison to the number trained) in a primary discipline of GEC choosing. For each group (falls, depression, so forth), the total EBP is comprised of an assessment (instrument to identify a need for follow-up with patient) and intervention (a referral or follow-up procedure in response to the assessment's result).

Figure 1 illustrates the NTACC-developed logic model that resulted from GEC and HRSA agreement on the characteristics of the falls EBP projects moving forward. A logic model describes how GEC activities (Box #2) may produce results (such as an EBP behaviors referred to in Boxes #4 and #5) in a setting (clinical); as such, it undergirds the educational intervention's theory of change (Rogers, 2005).

Insert Figure 1 about here

Figure 1 shows the GECs' plans to educate (see "Activities", Box #2) health providers on falls risk assessments and follow-ups (referrals to falls clinics, patient education) in response to a community-based need (previously documented through GEC-conducted needs assessments). These educational activities lead to knowledge acquisition (Box #3) among health care professionals (physicians, nurses, physician assistants, social workers, physical therapists, so forth). This new knowledge may lead to provider behaviors (Box #4) occurring in respective clinical settings (ambulatory care, hospitals). As stated, GECs chose one primary profession to track for adoption of EBP behaviors in a primary clinical setting and feasible to GEC stakeholders. The contextual effects, such as provider attitudes toward the practice and time to complete the practices, are not depicted here but represent facilitators and barriers to the completion of the cycle in Figure 1.

HRSA required that assessment outcomes be reported in 2012 and assessment and intervention outcomes be reported with new trainee groups in 2013. The cycle implies a directional loop between points of change, where Activities precede Knowledge acquisition and new Provider behaviors. In reality, it is fair to say that bidirectional feedback exists between points of change. For example, a lack of uptake in the clinical setting (Box #4) of newly learned behavior could lead to changes in the educational programming (Box #2), addition of booster sessions, and the identification of champions to foster the behaviors at points of care.

Lewin's Change Theory and Educating Providers on Evidence Based Practices

The conceptual logic shown in Figure 1 indicates that newly acquired knowledge and skills may be demonstrated in clinical settings and that documentations of new practices (frequency, quality) can lead GEC programmers to adjust continuing education efforts. These process evaluation efforts can improve the training quality that shapes practices; in turn, the practice behaviors of trained providers interact with the characteristics (available resources, financial incentives aligned with evidence-based practices) (Van Hoof & Meehan, 2011) of host organizations.

Lewin's 3-step planned approach to change (1951) is relevant to understanding how organizations both shape and grow in response to new behaviors (such as EBPs) of individuals who inhabit those

organizations (Burnes, 2004; Schein, 1996). After the first round of data reporting to HRSA in the Fall of 2012 on the EBP project, GECs began discussing the barriers and facilitators to their EBP projects to date during group facilitations with their GEC peers and content experts (coordinated through the NTACC). From these discussions, the NTACC identified relevant evaluation perspectives (utilization focused, collaborative evaluation) for GECs to learn from and perhaps adopt on a volunteer basis in their projects moving forward through to 2014-2015. In its evaluation capacity building role with GECs, the NTACC continued to provide e-learning sessions on collaborative forms of evaluation and in 2013 co-presented a pre-conference institute at the Gerontological Society of America (GSA) on the application of Lewin's framework to EBP projects (Weiss et al., 2013). As will be shown, the GECs' work of increasing EBP demonstrations can be understood through the steps of *Unfreezing*, *Movement*, and *Refreezing*. This action research model provides a guide for GECs to plan formative evaluation and acknowledge *a priori* that unintended effects will likely emerge from their educational activities with health providers. When observed and documented, these secondary effects can be used to promote the project in the future and may even lead to permanent alterations in organizational processes that surround the EBPs.

Unfreezing. New procedures and behaviors prompt disturbances to the status quo of an organization. This disequilibrium occurs as driving forces for change overcome resisting ones (Lewin, 1951; Robson, 2011). In the context of GEC demonstration projects, disequilibrium in a system (educational, clinical) could result from educational programming changes (form, content), the adoption of new protocols to allow for new practices in the clinical settings, job task expansion among providers, or changes to data prompts in electronic medical records by which to record the new practices. In a nurse-based initiative, GEC planners can strategize to strengthen driving forces through the identification and buy-in of nurse champions to reinforce the practices. These changes (driving forces) represent momentum, which can be met with resistance from providers themselves, facilities directors, or project stakeholders that question their value.

Movement. Once movement has begun, the organization allows for trial and error to occur around the practices and new social norms guide people toward the practices as more and more individuals are observed performing them. Attitudes may become more favorable toward the behaviors and resistance declines. In a GEC context, the falls assessment process may be revised to accommodate the contextual factors (time spent with patients, availability of assessments) as it becomes routine. Initial evaluations around the uptake of evidence-based practice (following geriatric educational exposure) may reveal the need to improve upon educational content or provide clinical reminders to ensure practice fidelity.

Refreezing. The existence of new practice has altered the organizational setting, forcing it to accommodate procedurally and socially. This is the point at which reinforcements for the new procedures will increase the likelihood of sustaining them. The organization will revert back to the status quo found at the beginning of the project if it fails to acknowledge the normality of the new behaviors (Lewin, 1951; Robson, 2011). Previously identified clinical champions (helpful to moving the practices forward) may employ train the trainer models of care. Booster sessions should be encouraged organizationally and resources (funding, faculty) allocated accordingly. The clinical setting in which the new practices are occurring could identify additional sites for their nurses, occupation therapists, or other chosen disciplines to adopt the practices, representing a system-wide, yet sanctioned expansion.

Two Cases-Applying Lewin's Change Approach to EBP Demonstrations in Geriatric Education

The cases presented here are from the Maine and Virginia Geriatric Education Centers. Both GECs had conducted needs assessments as justification for choosing falls prevention. As part of their overall funding, the GECs share the common components of developing a falls-based curriculum for their primary disciplines and seeking to improve the rate at which a multi-factor falls risk assessment is used consistently to refer and follow-up with older adults identified with one or more risk factors for future falls.

Case 1. Maine Geriatric Education Center

The University of New England Maine Geriatric Education Center (UNE-MGEC) is situated in the School of Community and Population Health of UNE's Westbrook College of Health Professions in Portland, Maine. The UNE-MGEC EBP project addresses falls & quality of falls care training for emergency department (ED) staff located in a critical access hospital in Maine. The quality indicators from Assessing Care of Vulnerable Elders (ACOVE) (Chang & Ganz, 2007) provided conceptual direction for this project. These indicators were incorporated into the Multifactorial Fall Risk Assessment (MFRA) used to assess older adults 65 years of age and older with a fall or a fall-related chief complaint seen in the Emergency Department. The primary discipline targeted for training was nursing, although all ED staff (physician, physician assistants, nurses, emergency medical technician) received training.

Unfreezing. Promoting adoption of the MFRAs in the ED involved a range of activities beginning with the formulation of a core, interprofessional ED team to improve stakeholder buy-in. The ED Core Team included members of the emergency department such as the medical director (physician), nurse director, registered nurses, chief nurse officer for the hospital, a clerk (also trained as an emergency medical technician), the hospital nurse consultant (later designated as the chart reviewer), and administrative assistant. Once stakeholders were on board and committed, plans for a robust training program centering on use of the MFRAs blossomed along with evaluation plans.

The range of activities in the area of *Unfreezing* included a kick-off Grand Rounds focused on falls prevention with invited participation from community leaders. Meetings occurred with the Core Team and administrative officials from the local Area Agency on Aging to clarify project objectives and identify complementary resources (A Matter of Balance-AMOB community training) (NCOA, 2014). Additional support came from hospital ED staff, physician assistants and therapists. Their input improved the MFRA tool and the selection of content contained on the written materials provided to older adults seen in the ED for a fall or fall related injury. The group made essential changes on the use of "user-friendly" language in messaging with older adults, identification of a list of high-risk medications implicated in falls, and detailed instructions regarding orthostatic hypotension. Training of the ED staff

was critical prior to full implementation of the project. Specifically, ED staff attended interactive sessions using a patient case scenario with simulated activities related to use of the MRFA tool.

Movement. This phase included a refinement of the process approach for using the MFRA along with staff identified, time-saving strategies. Nurses working in pairs to complete the MRFA reinforced their interactions positively, possibly creating greater diffusion of the innovation (Rogers, 2003).

In order to evaluate the providers' adoption of the intervention (in the Maine GEC, nurses providing patient education materials on preventing future falls), the GEC chose a non-electronic, chart review process to gather information on the numbers of older adults meeting the inclusion criteria for participation. Chart reviews spanning four months in time (February to May, 2012 and again in 2013) were conducted to ascertain assessment and/or intervention aspects of the falls EBP. In 2012, reviews found forty-two patients met the criteria to receive the MFRA and eight patients (19%) actually received it. In 2013, 26 patients meet the criteria for inclusion, and eight (31%) received the MFRA. In 2013, an additional five out of the eight patients who received the MFRA also received the intervention (patient education materials).

An unexpected effect of *Movement* occurred where an ED clerk secured funding to become an AMOB Master Trainer. AMOB is now a community resource available as a referral for patients seen in the ED.

Refreezing. Ultimately the MFRA was adopted as a standard of practice in the ED because of buy-in and training. The *Refreezing* phase became an opportunity to revisit results of the project with stakeholders, challenges, opportunities for change and strategic planning for the next steps. Components include presenting annual chart review findings to ED staff and using these findings as discussion points to identify both weaknesses and opportunities for improvement. For example, consistency in the use of the MFRA is still an ongoing challenge. Unlike other protocols in the ED, it does not systematically trigger provider behavior yet (as evidenced in the practice rates cited above, see "Movement").

The medical director has turned this challenge into an educational opportunity to provide ED staff with constructive comments when appropriate. Using e-mails with staff, the Director provides

educational case studies of actual patients seen in the ED for falls or fall-related injuries. The cases are used to illustrate comprehensive MRFAs, highlight pertinent points in the exams and rationale for the importance of the assessments in specific patient examples.

Chart reviews will continue in 2014 and 2015. The analysis of MFRA usage and interventions over time will determine the extent to which this EBP protocol is sustainable. The GEC will continue to coordinate with hospital stakeholders to ascertain AMOB effects in the community. Overall many successes have been realized from this project, especially the value added dimensions to the ED community and patients served.

Case 2. Virginia Geriatric Education Center.

The Virginia Geriatric Education Center Consortium (VGEC) is composed of the Virginia Commonwealth University, the University of Virginia, and the Eastern Virginia Medical School. The mission of the VGEC is to improve the interprofessional training of health professionals in geriatrics in Virginia and the quality of health care available to older adults. The VGEC developed interprofessional team training to align the new clinical practices (use of multifactor risk assessments, or MFRAs) with the falls prevention evidence base to improve provider practices and potentially patient-centered outcomes in Programs of All-Inclusive Care for the Elderly (PACE) sites (NPA, 2014). The Virginia GEC modeled the training on the seminal research findings of Tinetti et al. (1994) and on the Panel on Prevention of Falls in Older Persons (2011). Additionally, the Virginia GEC programs are designed in consideration of various educational and healthcare contextual factors (Donabedian, 1988; Manchester, 2010).

Unfreezing. The contextual, driving forces that produced *Unfreezing* included the PACE stakeholders' convictions that training providers on more comprehensive MFRAs (assessment) and making referrals to a falls clinic (intervention) could reduce serious fall-related injuries. This commitment led them to investing in the requisite human and fiscal resources, such as with allocating staff training time and improving upon data collection methods (in EMRs). PACE stakeholders were collaboratively engaged in program planning to ensure that the Virginia GEC training goals were in line with the QI aspirations of the health practice itself.

In 2011, two cohorts of clinical staff from two PACE sites were trained on the use of MFRA. Although trainees ranged from physicians, nurse practitioners and nurses to pharmacists and social workers, physical therapy was the primary discipline targeted for the EBP project. Training consisted of two-hour, in-class training sessions over six weeks using case studies and clinical skills discussions. Twelve hours of continuing medical education credits were offered for reading assignments.

Health information technology personnel became collaborators committed to facilitating the documentation of EBP outcomes. Their initial willingness to train the Virginia GEC in the remote access of electronic medical records (EMRs) ultimately allowed for more reliable data extraction during *Movement* (implementation of MFRA) and *Refreezing* (sustaining the use of MFRA over time). This collaborative approach contributed to the project's ability to overcome disequilibrium (Lewin, 1951), as their inputs fueled momentum toward *Movement*.

Existing PACE policies originally constrained the immediate adoption of the Tinetti Performance-Oriented Mobility Assessment (Tinetti, 2010) and more limited assessments were used instead for the two sites. Eventual policy changes that became effective in 2013, as a result of the EBP training initiative, allowed for the use of Tinetti's multifactorial risk assessment tool. Throughout the *Unfreezing* process, the message about the need to implement comprehensive MFRA was consistently communicated to staff during interprofessional team meetings. Here, the logic behind the need for associated practice changes was reiterated. Interprofessional, coordinated care plans were modified to reflect the use of MFRA with patients.

Movement. To assess the level of EBP uptake over time among trained physical therapists, the evaluation team comprised of two doctoral level faculty and two research assistants performed chart reviews at baseline (T1), three (T2), and six months after (T3) training. The evaluation team employed a consensus review process (CRP) (Marshall & Rossman, 1989) for abstracting information contained in medical case-notes during these chart reviews. The CRP for the first cohort indicated that physical therapists significantly increased documentation of post fall assessment at the three time points (T1, T2, and T3).

The proportion of post-fall patients receiving assessments increased by 34.6% ($z=3.0, p <.005$) from T1 (n=33) to T2 (n=43). The increase from T1 to T3 (n=35) was 33.1% ($z=2.8.0, p <.005$), indicating that the improvement had been maintained. The proportion of post-fall patients with causes of falls documented increased by 54.6%, $z=4.7, p <.0001$ from T1 to T2, while the increase was 50.6% from T1 to T3 ($z=4.7, p <.001$). Similarly, the proportion of post-fall patients with the circumstances surrounding falls documented increased by 46.23% from T1 to T2 ($z=4.0, p <.001$), and the increase from T1 to T3 was 38.8% ($z=3.2, p <.001$).

On the education side, formative evaluation with session attendees led to curricular enhancements. They were based on the actual cases identified as challenging and focusing on inter-professional teaming in the context of falls prevention and management.

Refreezing. This has occurred through the establishment of system-wide policy changes on the use of MFRAs that the trainings engendered. In 2013, these changes were reinforced when the Virginia GEC was invited to present the 24-hour program to all five PACE programs in the health system. The practice changes have occurred for all five of the PACE sites in the health system, besides the two original sites. The sites modified their mandated falls reporting process to provide earlier notification (within 24 hours of a falls incident) to rehabilitation specialists, who now initiate the falls assessment protocol. These unintended changes are attributable to the training and can be regarded as secondary outcomes to the EBP project depicted in Figure 1.

Modifications to the retrospective analysis of events when PACE patients fall now include a formalized review of the circumstances. Procedural changes include the adoption of forms to assess falls risk, falls-focused medication reviews, fall documentation, and related interventions. These forms are completed and added to the patients' EMRs at initial program enrollment, semi annually, annually and post fall. Other changes include EMR pop-up screens that announce patient fall risk scores and the addition of summary information in the clinical flow sheet about fall history, dates of fall assessments, balance scores, gait screening results, falls medication review, and fall circumstances.

As with the Maine GEC, the Medical Director within the health system became a reinforcing champion. The Director recruited site-specific champions (primarily health administrators) and others emerged as the trainings expanded across the PACE sites.

A recent review of patient clinical records is showing that the new norms that emerged first in *Movement* are becoming cemented into the organizational culture. How long these changes endure likely will depend on how much they contribute to reduction in serious fall-related injuries and their associated human and fiscal costs. Follow-up survey data of training participants showed an increased awareness of the need to fully integrate falls assessment and prevention into each patient's comprehensive care plan.

Using Collaborative Evaluation in Initiatives to Produce Provider and Systems Changes

Table 1 distills the Maine and Virginia GECs' EBP projects in terms of collaborative evaluation principles (O'Sullivan, 2012). *Unfreezing* for both cases involved gaining stakeholder commitments to allow for training and evaluation of targeted health professionals and selecting core personnel by which to move forward with implementation (*Movement*). In both cases, it seemed important to recruit staff respected in the ED and PACE settings to serve as facilitators and advocates to the EBP projects.

Insert Table 1 about here

The data collection around the EBP-related indicators (number of patients receiving MFRAs and number of patients eligible to receive them) relative to the trained nurses (Maine) and physical therapists (Virginia) was contingent upon relationships with organizational stakeholders. Typically a GEC is not a permanent part of the organizational infrastructure in the clinical setting; instead, they partner with that clinical organization (hospital, ambulatory care). Their primary focus is education (nursing students, health professions faculty, continuing education with licensed individuals) and their staff tend to be housed in university schools (medicine, public health) rather than actual clinical settings. Therefore, the *Unfreezing* process of planning educational sessions and evaluating outcomes in host clinical settings was dependent upon early collaboration.

In both cases, *Movement* involved revisions to the MFRA based upon local stakeholder preferences (depicted in Table 1). These actions are in the vein of collaborative evaluation, including decisions based upon contextual concerns and employing formative evaluation for program improvement with stakeholder input. Unexpected effects occurred for both during *Movement*. The project prompted an AMOB initiative in the Maine community and changes to care coordination policies among rehabilitation specialists in the Virginia GEC project.

Refreezing was dependent upon upper-level leadership for both cases. The medical directors in the Maine and Virginia projects served as advocates for the improvement (Maine) and replication (Virginia) of the projects across sites within the respective systems. In Virginia, information technology partners for EMR access have proven to be important in sustaining the EBPs.

Systems change is closely linked to the term knowledge translation (Curran et al., 2011). Ward, House & Hamer (2009) identified 28 KT models with common components that include knowledge creation, analysis of context, knowledge transfer activities or interventions, and knowledge/ research utilization. Figure 2 illustrates the knowledge creation (potentially leading to intact translation) occurring in three areas of the EBP projects. First, the education of providers (1) in either educational or clinical settings influences new provider behaviors (2) in the clinical settings. These behaviors represent knowledge (translated from being educated on EBPs) now being imparted (use of newly adopted assessments, procedures) with patients in settings (1 x 2). These settings accommodate to new and to-be refined behaviors through systems changes (curriculum changes, protocol revisions, equipment availability, electronic reminders) (3). The changed settings can then sustain the behaviors along with educational reinforcements such as booster sessions (educational) and on-site champions (clinical) (1 x 2 x 3). Hence, educational and clinical settings are consistently interconnected. Lewin's steps of *Unfreezing*, *Movement*, and *Refreezing* are present at the intersection of the three areas (educational, behavioral, and systemic) and all three take place to some degree in both educational and clinical settings that influence a larger social system (healthcare, community).

Insert Figure 2 about here

Hence, *Unfreezing*, *Movement*, and *Refreezing* can be seen at the educational, clinical, and systemic levels. The anticipation of a clinical practice occurring in a hospital, long-term care, or ambulatory care system brings about a learning event (new curriculum) to generate knowledge among providers working in those systems (the nexus of GECs educating providers, knowledge translation in clinical practice, and systems changes) (Figure 2). This new educational event may bring about disequilibrium (drivers attempt to overcome resistance) in both the educational and clinical settings. Both resisters and drivers could include faculty, planners, and QI partners. Resisters may be the providers themselves, unsure of the value in the new practices or needing to see it demonstrated over time to feel comfortable with the practice. Despite the knowledge generated in the educational setting (*Movement* at the educational level), some elements fail to emerge in the clinical setting due to provider resistance (incomplete *Movement*). This lack of momentum could be offset through the identification of champions (nurse advocates) to ensure proper *Movement* (EBP demonstrations with patients). Weak practice may become a catalyst to revise the content of the educational program (reinforcing the need and value in the practice for patients and discussing organizational expectations with provider attendees). Only through this formative evaluation can targeted EBPs sustain themselves and the educational program become efficacious and solidified to continue producing the EBPs in the system (*Refreezing*).

GEC leaders can use the principles of collaborative evaluation to prevail upon stakeholders to become advocates (facilitators) rather than resisters of change. O'Sullivan (2012) asserts that collaborative evaluation is about stakeholder participation leading to program improvement (similar to the processes described with Maine and Virginia GECs). During *Unfreezing*, collaborating with stakeholders who controlled data access appeared essential to accessing patient charts for evidence of practice, pre and post-education. Figure 2 makes explicit the appropriate integration of collaborative evaluation principles when planning for contextual change. As stated, these notions are aligned with tenets of implementation

research that promote collaboration among stakeholders (Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005) to encourage uptake of new practices situated within local contexts.

Discussion and Lessons Learned

The two cases suggest an emergent model for operationalizing Lewin's three steps for systematic inquiry in healthcare contexts. The anecdotal examples highlight disequilibrium in workflow and provider uncertainty that could have stopped the projects without the early advocacy of the full range of project partners (Medical Director, trainers, trained providers, floor champions, data extractors, analysts). The form of disequilibrium can be expected to vary by context (e.g., emergency department without EMRs vs. PACE setting with EMRs). As an example, the Virginia GEC relied upon health information technology to extract and store data electronically for later analysis, requiring the data entry prompts for clinicians to use to be aligned with the project parameters. The Maine GEC project utilized a healthcare consultant to physically review and code data, requiring additional time and resources to ensure accuracy and completeness.

Table 1 demonstrates that applying the Lewin areas for planning and/or evaluation is congruent with using collaborative evaluation as a guiding perspective, so combining the two frameworks seems opportune given the evidence in retrospect. Clearly, applying the same protocol (Falls EBP project with a multi-factor risk assessment included) to different clinical settings that agree to participate requires that adaptations to common programming elements occur, due to the inevitable and varied contextual influences (workflow, time to perform practices) in those settings. The ability of the two GECs to demonstrate systems changes in response to the common programming, facilitated by the use of collaborative evaluation planning with stakeholders from the beginning, shows the utility of combining the two approaches in similar efforts. A combined framework could be of interest to health services researchers and evaluators working on educational efforts that have the viability to influence sustainable EBPs, a focus of knowledge translation from research to practice in clinical settings.

Knowledge translation (KT) models describe the "process of moving from what has been learned through research to application in different decision-making contexts." (Curran et al., 2011, p. 1)

Including and outside GEC work, those interested in moving knowledge forward around the practice-oriented stage of translational science, T3 (TCTSI, 2014), may be interested in starting with a framework such as Lewin's (1951) which could be further operationalized and tested in healthcare settings. T3 research questions typically focus on how an evidence-based intervention is being used in the field and if not, why? The stage focuses on emergent questions, barriers, and challenges regarding already tested EBPs existing in a range of clinical settings. As such, teaching Lewin's 1951 model along with collaborative evaluation principles to new translational science researchers or quality improvement personnel may head off some barriers to implementation research efforts.

As mentioned, the integrated model shown in Figure 2 was not a framework employed at the beginning of projects. Conversely, the logic model (Figure 1) was constructed from GEC input and indeed used as an *a priori* planning tool for the GECs here. We assert that Figure 2 has also been constructed from the ground up from the GEC input here. It could also be used as a tool, more specifically to help define (and anticipate) the contextual aspects to consider around the more linear aspects of the logic model (the falls education program's theory of action). There is ease in retrofitting Lewin's 3 steps onto the observed processes (the need for buy-in, presence of resistance, need for key stakeholders for sustaining practices). The model essentially organizes the anecdotes with its labels of *Unfreezing*, etc. and provides a sequence of events by which to document the project. Given this compatibility, the model should be used (and tested) in similar projects to further understand its use as a planning tool for QI evaluations in and outside geriatric education.

We anticipate this exploration is a precursor to creating operational definitions of the three steps in similar educational projects from which to develop a testable instrument (audit or checklist). There is a need to further define *Unfreezing*, *Movement*, and *Refreezing* in continuing education scenarios, likely through a mixed method approach using focus groups, interviews, observations, and documents review.

A big lesson for these two GECs is that early involvement of stakeholders (a strong facet of collaborative evaluation principles) was essential to executing the standard project illustrated in Figure 1 (logic model). The choosing of data partners as planning stakeholders at the outset to facilitate

evaluation, such as with health information technology (HIT)- Virginia GEC or a nurse advisor (an insider to the hospital setting to collect chart data)- Maine GEC, allowed for the necessary organizational access to show EBPs being conducted.

Another lesson is to plan for the intended effects (embedded in logic models) and unintended ones that can arise from the unique contexts in which projects are residing. The Lewin model provides the three labels by which to expect unintended effects to occur. The need for upper level buy-in (the medical directors) for *Unfreezing* to occur led to their involvement as stakeholders. In both GEC cases, their involvement unexpectedly led to their lead roles in *Refreezing* the practice through site expansion (Virginia) and educational reinforcement (Maine).

Finally, EBPs require adaption to their host setting. Federal projects based on promoting their dissemination need to allow for some departure from agreed to or standard protocols, perhaps through allowing families of related practices to be targeted (in falls, diabetes, etc.) for interprofessional education. These cases show the need to consider local stakeholder interests and plan for contextual change around any core elements required.

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- Highlights

Focusing on practice effects alone does not bridge the science to practice gap.

Integrating change theory with collaborative evaluation may provide a needed framework for translational scientists and continuing education evaluators both.

The early involvement of program stakeholders, and through all phases of the project, is key to implementing evidence-based practice (EBP) projects in clinical settings.

EBP planners would be well served to plan formative evaluation along with summative practice effects, building in time for necessary adjustments from stakeholder input during implementation.

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Table 1
Unfreezing, Movement, Refreezing Exemplars from Implementing Multifactor Risk Assessments (MFRAs) with Collaborative Evaluation Approach

Lewin's Change Areas	Maine GEC Exemplars	Virginia GEC Exemplars	Collaborative Evaluation Principles (O'Sullivan, 2012)
Unfreezing	<ul style="list-style-type: none"> Organizational/Emergency Department (ED) staff commitment to participate in EBP MFRA training, development and evaluation. Identification of (ED) Core Team to meet and reinforce project. GEC access granted to paper/pencil for primary data collection on EBPs. 	<ul style="list-style-type: none"> Institutional commitments to training interprofessional health providers and evaluating practice outcomes. GEC access granted to EMRs for primary data collection on EBPs. Staff reinforcement (through meetings) of value in using MFRAs to reduce future injuries. 	<ul style="list-style-type: none"> Multiple stakeholder participation for program approval, decision-making and evaluation. Evaluation plan devised for showing impact in a social systems.
Movement	<ul style="list-style-type: none"> MFRA developed through formative evaluation. Integration of MFRA into workflow. A Matter of Balance (AMOB) trainer emerged from ED Core Team to expand referral opportunities. 	<ul style="list-style-type: none"> Protocol change from assessments/referrals on falls with injury to falls (general). Development of MFRA (evidence-based factors) conducive to local provider preference Interprofessional teams practice falls-based care coordination at earlier time points with rehabilitation specialists. 	<ul style="list-style-type: none"> Chosen evaluation variables responsive to contexts. Stakeholders involved in evaluation (results interpretation-formative).
Refreezing	<ul style="list-style-type: none"> MFRA becomes a Standard of Practice for the (ED). Annual chart review findings presented to ED stakeholders for challenges, opportunities, strategic planning. Continuation of education of providers in clinical setting (group feedback with Medical Director). 	<ul style="list-style-type: none"> Permanent, clinical messages integrated into EMRs, including falls risk scores, falls history. Medical director approval for system-wide training to increase the number of providers and sites implementing EBPs. Increase in champions to facilitate and reinforce EBPs at sites over time. 	<ul style="list-style-type: none"> Stakeholders involved in evaluation (results interpretation-formative and summative). Stakeholders involved in expansion of educational programming.

Figures

Figure 1
Falls Prevention Logic Model of Geriatric Education EBP Projects

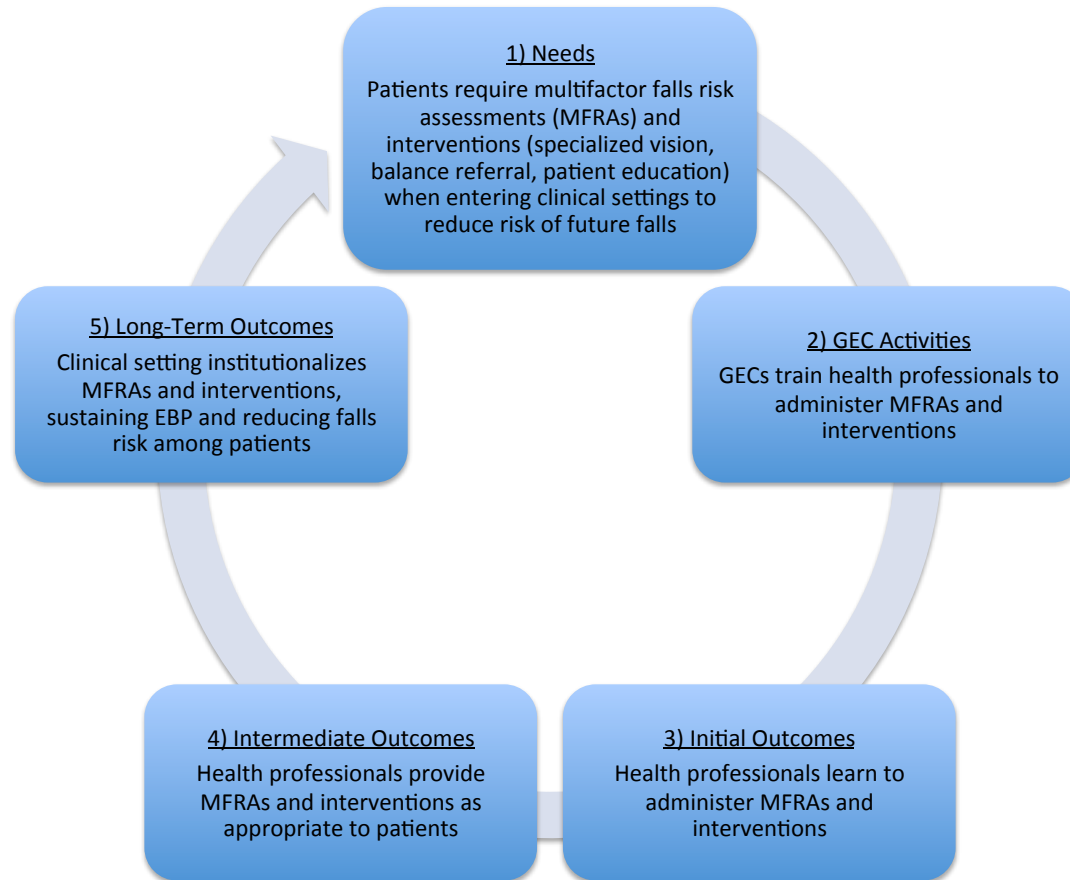


Figure 2

Integrating Lewin's Three-Step Approach with Knowledge Translation in Collaborative Evaluation Project

