


Self-Organization of Interprofessional Staff to Improve Mobility of Hospitalized Patients with STRIDE: a Complexity Science-Informed Qualitative Study



Rebecca A. Bruening, MPH¹, Nina Sperber, PhD^{1,2} , Virginia Wang, PhD^{1,2,3}, Elizabeth Mahanna, MPH¹, Ashley Choate, MPH¹, Matthew Tucker, BA¹, Leah L. Zullig, PhD^{1,2}, Courtney Harold Van Houtven, PhD^{1,2}, Kelli D. Allen, PhD^{1,4}, and Susan N. Hastings, MD^{1,2,3,5,6}

¹ADAPT Center of Innovation, Durham VA Health Care System, 508 Fulton Street, Durham, NC, USA; ²Department of Population Health Sciences, Duke University School of Medicine, Durham, USA; ³Department of Medicine, Duke University School of Medicine, Durham, USA; ⁴Department of Medicine and Thurston Arthritis Research Center, University of North Carolina at Chapel Hill, Chapel Hill, USA; ⁵Center for the Study of Aging and Human Development, Duke University, Durham, USA; ⁶Geriatrics Research, Education, and Clinical Center, Durham VA Health Care System, Durham, USA.

BACKGROUND: Inpatient mobility programs can help older adults maintain function during hospitalization. Changing hospital practice can be complex and require engagement of various staff levels and disciplines; however, we know little about how interprofessional teams organize around implementing such interventions. Complexity science can inform approaches to understanding and improving multidisciplinary collaboration to implement clinical programs.

OBJECTIVE: To examine, through a complexity science lens, how clinical staff's understanding about roles in promoting inpatient mobility evolved during implementation of the STRIDE (assiSTed eARly mobility for hospitalized older vETERans) hospital mobility program.

DESIGN: Qualitative study using semi-structured interviews.

PARTICIPANTS: Ninety-two clinical staff at eight Veterans Affairs hospitals.

INTERVENTIONS: STRIDE is a supervised walking program for hospitalized older adults designed to maintain patients' mobility and function.

APPROACH: We interviewed key staff involved in inpatient mobility efforts at each STRIDE site in pre- and post-implementation periods. Interviews elicited staff's perception of complexity-science aspects of inpatient mobility teams (e.g., roles over time, team composition). We analyzed data using complexity science-informed qualitative content analysis.

KEY RESULTS: We identified three key themes related to patterns of self-organization: (1) individuals outside of the "core" STRIDE team voluntarily assumed roles as STRIDE advocates, (2) leader-champions adapted their engagement level to match local implementation team needs during implementation, and (3) continued leadership support and physical therapy involvement were key factors for sustainment.

CONCLUSIONS: Staff self-organized around implementation of a new clinical program in ways that were

responsive to changing program and contextual needs. These findings demonstrate the importance of effective self-organization for clinical program implementation. Researchers and practitioners implementing clinical programs should allow for, and encourage, flexibility in staff roles in planning for implementation of a new clinical program, encourage the development of advocates, and engage leaders in program planning and sustainment efforts.

KEY WORDS: complexity science; implementation science; inpatient mobility; qualitative research.

J Gen Intern Med 37(16):4216–22

DOI: 10.1007/s11606-022-07482-9

© This is a U.S. government work and not under copyright protection in the U.S.; foreign copyright protection may apply 2022

INTRODUCTION

Older adult inpatient hospital stays can lead to functional decline. Research suggests as many as 30 to 60% of older adults lose some functionality during their hospitalization.¹ Such functional decline can result in longer hospital stays, a greater likelihood of discharge to a skilled nursing facility instead of home, and disability.^{2,3} One way to preserve older adult function is ambulation during the hospital stay.^{4–7}

Although interventions exist to address functional decline in older adult inpatients, changing hospital practice to implement these interventions is complex. Complexity science offers a useful frame for understanding and promoting implementation of new clinical practices in healthcare settings.⁸ Complexity science focuses on interactions and dynamism of agents (clinical staff) and environmental context.⁹ A hallmark of complexity science is the complex adaptive system, which can self-organize and evolve in unpredictable and non-linear ways, often set off by slight variations in initial conditions.^{10,11} Self-organization refers to ways agents autonomously coordinate their activities and structures to

Received November 9, 2021

Accepted March 3, 2022

Published online March 22, 2022

meet a need, such as clinicians forming new patterns of collaboration to reduce infection rates.¹¹ Researchers have applied complexity science principles to understanding healthcare organizations as complex adaptive systems and developing strategies to improve patient care in diverse contexts.^{11–13}

Interventions to improve older adult mobility during hospital stays are introduced within complex adaptive systems (i.e., healthcare facilities). Initial system conditions, including staff interaction patterns, roles, and resource constraints, influence implementation in non-linear ways. Mobility interventions require effective self-organization to create new workflows and coordination among diverse clinical staff, including nursing, physical therapy, and physicians.⁶ Interprofessional staff must coordinate to implement healthcare improvements,^{14,15} especially those for older adult inpatients.¹⁶ Barriers to effective cross-disciplinary collaboration can include discipline-specific norms for information sharing, gaps in understanding across disciplines about roles, hierarchical structures discouraging open communication, and physical separation across units or departments.¹⁷ Strategies are needed for fostering sustainable interprofessional collaboration and effective self-organization around inpatient mobility.

Using a complexity science lens, we evaluated how staff's views about their and others' roles in promoting inpatient mobility evolved during implementation of an evidence-based inpatient mobility program, STRIDE (assiSTed eaRly mobilIty for hospitalized older vEterans), in eight Veterans Affairs (VA) medical centers.⁶ We focus on self-organization based on lessons learned about the importance of flexible staffing models for STRIDE and literature highlighting self-organization as a major contributor to variations in uptake of new clinical programs.^{6,11} We compared patterns of self-organization between STRIDE sustainers and non-sustainers. Findings shed light on factors that may facilitate or hinder implementation of new inpatient mobility programs and areas to target for future implementation.

METHODS

STRIDE

STRIDE, a hospital-based walking program, consists of gait assessment followed by supervised daily walks for older adults to maintain mobility and function.¹⁸ In an initial evaluation, STRIDE patients were more likely to be discharged to home (instead of skilled nursing or rehabilitation) than a usual care control group.¹⁸ Subsequently, the Optimizing Function and Independence Quality Enhancement Research Initiative program (Function QUERI) facilitated and evaluated STRIDE implementation at eight VA medical centers¹⁹ that had high "complexity level" and average 3.5 stars in 5-star ratings.^{20,21} High facility complexity means that the VA facility has high

levels of volume, patient risk, and teaching/research, and a five-star rating indicates the highest quality of care rating, compared to other VA medical centers on data such as death rates, nursing turnover, patient satisfaction, and efficiency.²¹ The study team encouraged sites to include representatives from various service lines (e.g., rehabilitation, nursing, medicine) in implementation planning and used the Replicating Effective Programs (REP) implementation framework to guide them.²² STRIDE was implemented at participating sites as a clinical program; the evaluation was approved by the Durham VA Institutional Review Board.

Data Collection and Analysis

We collected and analyzed qualitative data using a case-based analysis, with the eight VA medical centers participating in STRIDE as cases, and a hybrid inductive-deductive, realist paradigm to enable focus on both a priori domains of interest and emergent themes.²³ Two researchers, RB and NS, did not participate in intervention facilitation, while one, EM, attended facilitation calls. We describe data collection and analysis methods below and have completed a Standards for Reporting Qualitative Research (SRQR) checklist²⁴; see Appendix 3.

All three qualitative researchers conducted interviews with key staff involved in inpatient mobility efforts at each STRIDE site pre- (approximately 1–3 months prior to program launch) and post- (approximately 1–3 months after program launch) implementation. Interviews took place over the phone ($n=114$) or in-person during site visits ($n=7$) between August 2017 and 2019. Interviews lasted between 10 and 55 min. All interviewers (RB, EM, NS) were trained in qualitative interviewing techniques and had conducted interviews previously. Semi-structured interviews elicited staff's perception of context characteristics (e.g., facility-level leadership support) and team characteristics (e.g., communication structure) in pre- and post-implementation periods, in accordance with Function QUERI's overall model of team function and performance in implementation.¹⁹ For example, participants were asked about their role ("What is your role in implementing STRIDE?"), champions ("Who, if anyone, is considered a "champion," or key influential person for addressing patient mobility at your VAMC?"), and team composition (see Appendices 1 and 2). Approximately seven staff were selected initially for interviews at each facility, with a plan to conduct additional interviews to reach a priori thematic saturation, the point at which more interviews would yield no new information for the pre-determined theoretical categories (context and team characteristics). We based this number on published guidance for qualitative research.²⁵ We determined saturation through team discussion after the initial set of interviews for each site. We identified staff using snowball sampling, starting with the point(s) of contact for STRIDE (STRIDE leaders), who were asked to nominate individuals who could speak to inpatient mobility

efforts and/or STRIDE planning in the pre-implementation period, and individuals directly involved in STRIDE implementation or delivery in the post-implementation period.²⁶ Interviews were audio-recorded, then deidentified and transcribed by the VA Health Services Research & Development Service Centralized Transcription Program; four interviewees refused recording, and as such we used detailed, deidentified notes to capture data.

We conducted content analysis of deidentified transcripts and interview notes where transcripts were unavailable,²⁷ focusing on key domains from the implementation model (including role clarity, champion, team composition, team leader, leadership support, and communication structures and channels). Two researchers with expertise in content analysis (RB, NS) developed a codebook with codes for professional discipline (e.g., nurse, “physician”) and emergent themes related to role (e.g., “encouraging mobility” and “waiting for others to assess”). RB used memos to further develop themes and interconnections among them and a framework matrix (site by professional discipline) to aggregate data and observe differences between sites, including differences between site that sustained STRIDE (i.e., had any STRIDE evaluations or walks) 6 months after program launch and those that did not.²⁸ Three researchers (NS, EM, RB) reviewed the framework matrix and discussed patterns, benefiting from the perspective of (EM) who had participated in REP facilitation meetings.²⁹ NVivo 12 software was used for coding and data management.³⁰ The U.S. Department of Veterans Affairs (VA) places legal restrictions on access to VA data, which includes both identifying data and sensitive information. The analytic datasets used for this study are not permitted to leave the VA firewall without a Data Use Agreement, consistent with other studies based on VA data.

RESULTS

Participants

We interviewed eight to thirteen individuals from each of the eight STRIDE sites, with a total of 92 individuals participating across sites. Six of eight sites sustained STRIDE at least 6 months after program launch. In total, we conducted 121 individual interviews, with 75 occurring pre-implementation and 46 occurring post-implementation. Twenty-nine individuals completed both pre- and post-implementation interviews, 46 completed only a pre-implementation interview, and 17 completed only a post-implementation interview. Detailed characteristics of participating sites have been published previously.³¹; respondents in this analysis represented various professional disciplines at each site (Table 1).

Table 1 Professional Disciplines of Interview Participants (n=92)

Professional discipline	Number of participants
Clinical manager (e.g., chief of PT, inpatient PT supervisor)	10
Kinesiotherapist	1
Leader (service line or executive)	16
Nurse	9
Nurse aide	3
Nurse leader (manager, assistant manager, clinical nurse leader, etc.)	16
Occupational therapist	1
Other (e.g., researcher, volunteer)	5
Provider (e.g., physician, nurse practitioner)	13
Physical therapist	11
Physical therapy assistant	4
Safe Patient Handling Coordinator	3
Total	92

Key Findings

We identified three key findings related to self-organization across sites that implemented STRIDE: (1) individuals outside of the “core” STRIDE team voluntarily assumed roles as STRIDE advocates, (2) leader-champions adapted their engagement level to match local implementation team needs during implementation, and (3) continued leadership support and physical therapy involvement were key factors for sustainment.

Theme 1: Individuals Outside of the “Core” STRIDE Team Voluntarily Assumed Roles as STRIDE Advocates. While one or more STRIDE leaders and, often, an interprofessional STRIDE implementation team (e.g., program delivery staff, diverse service line representatives) developed at each site, STRIDE advocates (individuals who took on key STRIDE tasks outside the purview of the main STRIDE team) additionally emerged at four sites that sustained STRIDE and one that did not. Site staff did not typically consider these individuals part of the core STRIDE implementation team, though they became key players in implementation. STRIDE advocates assumed roles that built upon their pre-implementation roles. For example, at one site where nurse assistants and nurses walked STRIDE patients, an experienced nurse became a STRIDE advocate for unit staff. When asked how this role emerged, the nurse described that it aligned with his role on the unit:

It’s what I do naturally... I’ve been here forever so everybody comes to me with questions anyway so it’s just easier for me to pay attention to everything going on the floor at one time and just help out wherever I’m needed. And answer any questions anybody has about any patients. [Nurse]

This nurse reported he never had a STRIDE patient himself but reviewed the patient board each morning and, if a STRIDE patient was listed, approached the assigned staff to ensure they understood how to deliver and document STRIDE.

At the same site, a physical therapy assistant with no direct role in STRIDE planning became an advocate. Before STRIDE, the physical therapy assistant answered nursing staff questions about moving and transferring patients and described this activity as “something I’ve always done since I’ve been here.” After STRIDE launch, she worked to identify appropriate patients for the program. A STRIDE leader noted the physical therapy assistant had “been really great about making sure that people know about STRIDE” and was “such an advocate” for the program. Although the physical therapy assistant communicated with the STRIDE team, she described herself as having an indirect role:

How I’m helping in STRIDE is pretty limited... But if the nursing staff has any questions or if... they’re not adjusting equipment properly, then I can help and answer questions on that. [Physical therapy assistant]

Finally, Safe Patient Handling Coordinators at some sites became key STRIDE advocates. Although often formally involved in STRIDE planning initially, some said they crafted their role later to meet a need they identified. For example, one coordinator educated and reminded nursing staff about the program and even audited STRIDE patient charts. The coordinator described this role as unofficial, saying that “nobody designated me per se,” adding there was an unmet need for educating about and monitoring STRIDE:

I almost feel like there really wasn’t anybody assigned just to do it in the first place. And I feel like it’s a good program and, I don’t know, I feel like it needed to be done, so I just ran with it.

As this and other examples illustrate, staff across sites assumed key STRIDE roles without formal direction.

Theme 2: Leader-Champions Adapted Their Engagement Level to Match Local Implementation Team Needs During Implementation. Before STRIDE, few respondents could identify how leaders in their facility had supported inpatient mobility; however, once site staff decided to implement STRIDE, myriad service line leaders across all sites emerged as champions. For example, a service line chief obtained buy-in for the program from other services:

I think my role is just putting people in contact with other people to... ensure that any slow adapters would adapt quickly... So for instance to ensure that social work, nursing, therapy department and then the leadership team would... also buy-in... But... really the importance of my role is just making sure that the key people are at the table when they first were learning about this. And then allow the others to roll with it and get it done and not micromanage, most importantly. [Service line chief]

This example represents how many service line leaders took it upon themselves to champion STRIDE, adjusting their approach during implementation. Initially, many were actively involved in planning for STRIDE, attending STRIDE team meetings, and networking with other services. Once STRIDE launched, as illustrated above, many leaders across sites adapted their role to more hands-off oversight. For example, at another site, a service line chief was heavily involved in STRIDE planning meetings early on, but after program launch, she characterized her role as “stay[ing] out of the way,” “troubleshooting,” and communicating with other leaders about STRIDE. Service line leaders’ roles post-implementation were still important for maintaining staff buy-in, according to some who noted, “without having someone like [name] from nursing leadership and [name] from physical therapy saying hey... we want our staff to participate in this and we... are encouraging them to do this project, it doesn’t move forward” [STRIDE leader].

Clinical managers (e.g., department managers, supervisors) also assumed key STRIDE roles that evolved with STRIDE implementation team needs. These managers often became STRIDE leaders and coordinators during the planning phase, for example, developing procedures and educating staff about STRIDE:

I worked with the physical therapists, and physical therapy assistants to come up with a process for how we’re gonna do [STRIDE], not only on our team but also meeting with [units] to educate them and go over the competencies and do some education and training regarding the programs and how it’d work between physical therapy and the nursing unit. And I met with them a few times, like... at the start of the program like the week before and the week of like [launch].

At program launch, some of these physical therapy managers not only coordinated with nursing staff to address needs but also completed STRIDE evaluations on patients while working through staffing constraints. After implementation, the manager role typically evolved into overseeing staff delivering STRIDE services and communicating with mid- and upper-level leadership.

Theme 3: Continued Leadership Support and Physical Therapy Involvement in STRIDE Were Key to Sustainment. At the two sites that did not sustain STRIDE, physical therapists were important mobility advocates pre-STRIDE but, due to service-line and executive leaders’ decisions, were less engaged in organizing around STRIDE implementation. At one site, staff were unable to sustain STRIDE beyond an initial pilot. This was the only site without support for STRIDE from a therapy clinical manager, who restricted therapy staff participating in STRIDE implementation due to “grave understaffing” and difficulties meeting existing therapy needs. According to STRIDE leaders, the

absence of therapy involvement in STRIDE impeded the implementation effort:

Well, we started with physical therapy and nursing and a variety of other people and it really sort of became clear that [physical therapists] were going to take a role in the background... so they sort of disappeared from our planning group, which I think ultimately probably hurt us to some degree... [STRIDE leader]

Additionally, in both pre- and post-implementation interviews, respondents at this site alluded to upper-level leadership's focus on competing priorities. For example, a STRIDE leader said,

...if we said... let's hire somebody to walk people they would roll their eyes and laugh at us. And I wouldn't ask for that because we have other needs that are frankly more a higher priority.

Although respondents at other sites sometimes said leadership would not provide resources for STRIDE, the salience of competing priorities—and the unlikelihood of any STRIDE support—stood out in this example.

At the other non-sustained STRIDE site, initial leadership support matched, or exceeded, support exhibited at sustained STRIDE sites: executive leadership provided funding to hire temporary STRIDE physical therapy staff. These staff delivered STRIDE for several months until executive leadership enforced a limit on full-time equivalent positions and the temporary positions ceased. STRIDE services stopped once temporary staff left, as remaining therapy staff could not continue the program due to competing priorities (e.g., new scheduling procedure), though many were trained to deliver STRIDE.

Conversely, at a sustained STRIDE site, a service line chief noted her support was key because she oversaw and encouraged participation from many staff who would be involved in STRIDE:

I think the staffing part is going to be the easiest part just because of the way everything is set up. Because everybody who is not a CNA basically reports to me that's going to be involved in it. And I'm very much behind this program.

At another sustained STRIDE site, a key leader who facilitated interdisciplinary meetings ensured that staff discussed STRIDE participation for hospitalized patients. In these ways and others, leaders at sustained STRIDE sites appeared to facilitate STRIDE implementation by providing opportunities for interprofessional collaboration, in contrast to non-sustained STRIDE sites where leaders and system preconditions limited engagement of key staff in STRIDE.

DISCUSSION

This study provides a unique perspective on self-organization of clinical staff roles and how roles evolved throughout implementation of a new clinical program for inpatient mobility, STRIDE. We found that advocates for STRIDE emerged across several sites. Additionally, staff roles adapted over time to the changing needs and context of STRIDE implementation. This role adaptation was particularly evident among leaders and managers as they shifted from active engagement in STRIDE preparation to hands-off supervision of STRIDE delivery and troubleshooting issues. Finally, we observed that continued physical therapy engagement and leadership prioritization of STRIDE were key to program sustainment. Using the lens of complexity science, our findings on role evolution reflect examples of effective self-organization, a key element of complex adaptive systems (10).

In implementation, self-organization can help explain differences across settings and reflect adaptations to needs that may not be formally recognized.¹¹ We observed agents at each STRIDE site self-organize through interaction and sensitivity to local needs by assuming advocate roles and adapting their role over time. For example, those who assumed educator roles sometimes noted there was no one ensuring staff were aware of STRIDE in their unit, so they stepped up. Although it is possible that some advocates appeared later in implementation because STRIDE leaders failed to anticipate needs, it is likely that needs for certain advocate roles could not be foreseen until STRIDE had launched and gaps in staff communication and education had emerged, emphasizing the need for continued flexibility in roles. Similarly, clinical managers and leaders were most heavily engaged prior to STRIDE launch, a phase that required engaging other services and garnering support from leadership. Once STRIDE was established, they stepped back to supervise frontline staff delivering the program. These shifts reflected broader patterns of self-organization in response to STRIDE: in pre-implementation, staff were oriented toward networking, educating, championing, and putting logistics in place (e.g., medical chart templates) for launch; after implementation, staff settled into program delivery tasks (e.g., evaluating and walking patients) and continuous improvement. Although a research team member providing implementation facilitation support encouraged these shifts in objectives, as guided by the implementation framework (Replicating Effective Programs),²² the ways that staff organized at each site to accomplish these objectives emerged from local interactions within the system. To our knowledge, no other study has examined self-organization in response to a hospital mobility intervention, although previous work has highlighted the importance of staff roles in efforts to promote mobility in the hospital more generally,³² indicating that a flexible

approach to staff roles can contribute to effective implementation of such interventions.³³

Effective self-organization and the influence of initial conditions were key to STRIDE sustainment. We found that leaders at sites that sustained STRIDE at least 6 months post-launch assumed champion roles, encouraged interprofessional staff participation, and networked with other leaders to gather support for the program. Conversely, leaders at a non-sustained STRIDE site were unable to garner physical therapy staff support due to historical conditions in the system (i.e., physical therapy understaffing and concerns about delivering basic care). At another non-sustained STRIDE site, facility-level leadership initially provided physical therapy staffing for STRIDE but later withdrew support due to a limit on staffing numbers, a historical system factor. In both cases, existing physical therapy staff were limited in their ability to collaborate on STRIDE implementation due to concerns about meeting basic clinical care needs. These findings indicate the central importance of physical therapy staff involvement in STRIDE implementation and the impact of initial conditions (limited physical therapy staff time) on self-organization around STRIDE.

Overall, role evolution at sites implementing STRIDE sheds light on the adaptation and self-organization of the system to incorporate a new intervention. This focus on roles highlights the importance of interactions among agents in the system; staff roles operate within a complex web of interactions and are defined by how they influence others (e.g., educating, referring, overseeing) and how others influence them. Future work should focus on interactions among agents, how those interactions correspond with effective patterns of self-organization, and how to best support effective self-organization to facilitate implementation of a new clinical program.

Strengths and Limitations

Our findings are centered in the VA context and relate to the implementation of a clinical program for inpatient mobility. Although specific findings about role evolution may not transfer to other settings and programs, high-level findings about the salience of self-organization (emergence of advocates, role fluidity) may be transferable. These findings are also congruent with published theoretical literature and case studies as noted above.

This study was based on interviews with key informants at each site. Not all professional disciplines, nor all members of each discipline, were represented in interviews at each site, so findings reflect a combination of first-hand and second-hand reports about roles. Finally, although we shed light on patterns of role evolution at sites that sustained STRIDE and those that did not, we cannot make definitive claims about causality. Instead, we offer rich description of patterns of role evolution that appeared salient for STRIDE sustainment.

CONCLUSION

We found, with the introduction of a new inpatient mobility program, clinical staff at eight VA medical centers self-organized to adopt roles that were responsive to the intervention's changing needs and local contexts. These findings provide insight into broader shifts in each complex adaptive system (healthcare facility) to accommodate the intervention. Researchers and practitioners working in clinical settings toward implementing a clinical program should look for opportunities and frameworks, such as REP,²² to encourage flexibility and adaptability in staff roles as implementation evolves. They should also examine approaches to actively cultivate advocates, such as by recruiting individuals who educate other staff, early in implementation planning. Leadership may be crucial for providing needed resources and facilitating interprofessional interactions leading to effective self-organization, so researchers and practitioners should identify ways to engage leaders in planning for program launch and long-term sustainment. Overall, our findings suggest that self-organization is a pivotal part of clinical program implementation and deserves focus.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s11606-022-07482-9>.

Acknowledgements: This work is dedicated to the memory of Elizabeth P. Mahanna, MPH. The authors thank Josh Dadolf, Kasey Decosimo, Teri Malo, Cassie Meyer, Katina Robinson, Caitlin Sullivan, and Caitlin Kappler for their contributions to the STRIDE project.

Corresponding Author: Nina Sperber, PhD; ADAPT Center of Innovation, Durham VA Health Care System, 508 Fulton Street, Durham, NC 27705, USA (e-mail: nina.sperber@va.gov).

Funding The authors received financial support for this work from the VA Quality Enhancement Research Initiative [QUE 20-023]. This work was also supported by the Durham Center of Innovation to Accelerate Discovery and Practice Transformation (ADAPT) [CIN 13-410] at the Durham VA Health Care System. Dr. Van Houtven also reports financial support from the U.S. Department of Veterans Affairs, Veterans Health Administration, Office of Research and Development, Research Career Scientist Program [RCS-21-137].

Declarations:

Disclaimer: The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the United States government.

Conflict of Interest: Dr. Zullig reports research funding awarded to her institution from Proteus Digital Health and the PhRMA Foundation, as well as consulting from Novartis and Pfizer. The authors report no other potential conflicts of interest.

REFERENCES

1. El Solh AA, Brewer T, Okada M, Bashir O, Gough M. Indicators of Recurrent Hospitalization for Pneumonia in the Elderly. *Journal of the American Geriatrics Society*. 2004;52(12):2010-5.

2. Covinsky KE, Pierluissi E, Johnston CB. Hospitalization-Associated Disability: "She Was Probably Able to Ambulate, but I'm Not Sure". *JAMA*. 2011;306(16):1782-93.
3. Floegel TA, Dickinson JM, DerAnanian C, McCarthy M, Hooker SP, Buman MP. Association of Posture and Ambulation With Function 30 Days After Hospital Discharge in Older Adults with Heart Failure. *J Card Fail*. 2018 Feb;24(2):126-30.
4. Kalisch BJ, Lee S, Dabney BW. Outcomes of inpatient mobilization: a literature review. *Journal of Clinical Nursing*. 2014;23(11-12):1486-501.
5. Fisher SR, Kuo Y-f, Graham JE, Ottenbacher KJ, Ostir GV. Early Ambulation and Length of Stay in Older Adults Hospitalized for Acute Illness. *Archives of Internal Medicine*. 2010;170(21):1942-3.
6. Hastings SN, Choate AL, Mahanna EP, Floegel TA, Allen KD, Van Houtven CH, et al. Early Mobility in the Hospital: Lessons Learned from the STRIDE Program. *Geriatrics (Basel)*. 2018 Dec;3(4).
7. Pashikanti L, Von Ah D. Impact of early mobilization protocol on the medical-surgical inpatient population: an integrated review of literature. *Clin Nurse Spec*. 2012 Mar-Apr;26(2):87-94.
8. Greenhalgh T, Papoutsi C. Spreading and scaling up innovation and improvement. *BMJ*. 2019 May 10;365:l2068.
9. Turner JR, Baker, Rose M. Complexity Theory: An Overview with Potential Applications for the Social Sciences. *Systems*. 2019;7(1).
10. Braithwaite J, Churrua K, Long JC, Ellis LA, Herkes J. When complexity science meets implementation science: a theoretical and empirical analysis of systems change. *BMC Med*. 2018 ;16(1):63.
11. Lanham HJ, Leykum LK, Taylor BS, McCannon CJ, Lindberg C, Lester KI. How complexity science can inform scale-up and spread in health care: understanding the role of self-organization in variation across local contexts. *Soc Sci Med*. 2013 ;93:194-202.
12. Van Houtven CH, Hastings SN, Colon-Emeric C. A Path To High-Quality Team-Based Care For People With Serious Illness. *Health Aff (Millwood)*. 2019 ;38(6):934-40.
13. Pype P, Mertens F, Helewaet F, Krystallidou D. Healthcare teams as complex adaptive systems: understanding team behaviour through team members' perception of interpersonal interaction. *BMC Health Serv Res*. 2018 ;18(1):570.
14. O'Leary KJ, Buck R, Fligel HM, Haviley C, Slade ME, Landler MP, et al. Structured interdisciplinary rounds in a medical teaching unit: improving patient safety. *Arch Intern Med*. 2011 ;171(7):678-84.
15. Helfrich CD, Dolan ED, Fihn SD, Rodriguez HP, Meredith LS, Rosland AM, et al. Association of medical home team-based care functions and perceived improvements in patient-centered care at VHA primary care clinics. *Healthc (Amst)*. 2014 ;2(4):238-44.
16. Walke LM, Tinetti ME. ACE, MACE, and GRACE: time to put the pieces together: comment on "effects of an acute care for elders unit on costs and 30-day readmissions". *JAMA Intern Med*. 2013 ;173(11):987-9.
17. Weller J, Boyd M, Cumin D. Teams, tribes and patient safety: overcoming barriers to effective teamwork in healthcare. *Postgrad Med J*. 2014 ;90(1061):149-54.
18. Hastings SN, Sloane R, Morey MC, Pavon JM, Hoenig H. Assisted early mobility for hospitalized older veterans: preliminary data from the STRIDE program. *J Am Geriatr Soc*. 2014 ;62(11):2180-4.
19. Wang V, Allen K, Van Houtven CH, Coffman C, Sperber N, Mahanna EP, et al. Supporting teams to optimize function and independence in Veterans: a multi-study program and mixed methods protocol. *Implement Sci*. 2018 ;13(1):58.
20. VHA Office of Productivity EaSO. Facility complexity model. US Department of Veterans Affairs; Available from: <http://opes.vssc.med.va.gov/Pages/Facility-Complexity-Model.aspx>.
21. Affairs UDoV. End of year hospital star rating (FY2017) - quality of care. 2018; Available from: https://www.va.gov/QUALITYOFCARE/measure-up/End_of_Year_Hospital_Star_Rating_FY2017.asp.
22. Kilbourne AM, Neumann MS, Pincus HA, Bauer MS, Stall R. Implementing evidence-based interventions in health care: application of the replicating effective programs framework. *Implement Sci*. 2007 9;2:42.
23. Grbich C. *Qualitative Data Analysis: An Introduction*. Thousand Oaks: Sage; 2007.
24. O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. *Acad Med*. 2014 ;89(9):1245-51.
25. Saunders B, Sim J, Kingstone T, Baker S, Waterfield J, Bartlam B, et al. Saturation in qualitative research: exploring its conceptualization and operationalization. *Qual Quant*. 2018;52(4):1893-907.
26. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. *Adm Policy Ment Health*. 2015 ;42(5):533-44.
27. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005 ;15(9):1277-88.
28. Gale NK, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Med Res Methodol*. 2013 18;13:117.
29. Glasgow RE, Vogt TM, Boles SM. Evaluating the public health impact of health promotion interventions: the RE-AIM framework. *Am J Public Health*. 1999 ep;89(9):1322-7.
30. Ltd. QIP. NVivo (released in March 2020). 2020.
31. Hastings SN, Stechuchak KM, Choate A, Mahanna EP, Van Houtven C, Allen KD, et al. Implementation of a stepped wedge cluster randomized trial to evaluate a hospital mobility program. *Trials*. 2020 ;21(1):863.
32. Pavon JM, Fish LJ, Colon-Emeric CS, Hall KS, Morey MC, Pastva AM, et al. Towards "mobility is medicine": Socioecological factors and hospital mobility in older adults. *J Am Geriatr Soc*. 2021 ;69(7):1846-55.
33. Lorgunpai SJ, Finke B, Burrows I, Brown CJ, Rubin FH, Wierman HR, et al. Mobility Action Group: Using Quality Improvement Methods to Create a Culture of Hospital Mobility. *J Am Geriatr Soc*. 2020 ;68(10):2373-81.

Publisher's Note: Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.