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Prioritization and multilevel mapping of implementation strategies for a cancer rehabilitation navigation program

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Abstract

Background: Although determinants and strategies for implementing a cancer rehabilitation navigation (CRNav) program have been described, defining specific implementation interventions could improve uptake in oncology care delivery. This manuscript shares prioritized implementation interventions using a multilevel framework.

Methods: We convened interdisciplinary stakeholders from two CRNav programs to participate in an implementation mapping focus group. Using a multilevel framework that considered provider-, clinic-, and system-level interventions, the focus group discussion guide sought participant input on specific interventions that needed to occur at each level to facilitate implementation. The focus group transcript was analyzed using deductive thematic coding to identify program implementation interventions at each level. The interventions were then shared with all stakeholders to seek agreement and prioritization using a modified Delphi process. A priori a 70% threshold was established to define agreement. Two rounds of Delphi were conducted.

Results: Fifteen stakeholders were recruited and nine participated in the focus group. The implementation mapping exercise identified 19 different interventions within the following Expert Recommendations for Implementing Change domains by level: provider level—use evaluative and iterative strategies, provide interactive assistance, train and educate stakeholders, support clinicians; clinic level—change infrastructure, support clinicians, adapt and tailor to context, use evaluative and iterative strategies; and system level—develop stakeholder interrelationship, use financial strategies, change infrastructure. Seven of 15 individuals completed both rounds of the Delphi. Fourteen interventions achieved agreement for high importance. Highest prioritized implementation interventions were develop a core champion team, develop a rationale for program justification, agree upon outcomes measures for the program, and examine and contextualize barriers that will influence the program.

Conclusion: Clinical implementation of an innovative care delivery model requires attention to specific interventions that affect various levels within a health care system. These findings will inform future research and clinical efforts in the implementation of CRNav programs.

INTRODUCTION

Cancer care delivery is complex and implementing novel, evidence-based programs into an oncology service line requires methodic approaches guided by implementation science.[1] A key principle to guiding successful implementation in complex systems is using multilevel interventions to influence the wide array of factors impacting the care delivery model.[2,3] A multilevel approach seeks to study the organizational, contextual, and environmental factors that are important to understanding health care systems and, based on these findings, design an implementation plan that will influence the organization, clinical

teams, and individual providers toward successful implementation of novel care delivery models.[4]

Cancer rehabilitation care delivery models have been elucidated through a decade of research[5–7] and evidence suggests that integrating rehabilitation services into cancer care delivery may improve clinical efficiencies and patient outcomes.[8–12] Calls for better integration of rehabilitation into cancer care are prominent.[13–16] Among the various models for integrated cancer rehabilitation care, the cancer rehabilitation navigation (CRNav) program introduces a care delivery workflow whereby the rehabilitation navigator, who is colocated in the cancer care setting, coordinates supportive cancer care using the lens of functional assessment.[10] Navigation is a common workflow in cancer care delivery and effectively improves care coordination and patient outcomes while reducing cost and patient and caregiver burden.[17]

Although CRNav program description[10] and implementation determinants and strategies have been reported,[18] implementation in a health care system requires that the organizational contextual levels, most relevant to the program being implemented, are identified and that specific constructs that influence implementation at each level are defined.[19] Implementation mapping is an evidence-based approach to outline the specific interventions that will influence implementation across the levels of a health care system[20] and the resulting implementation science-informed multilevel interventions can then guide future implementation efforts.[21] The purpose of this manuscript is to share findings from an implementation mapping exercise and the resulting multilevel interventions that could inform implementation of CRNav programs.

METHODS

This work is part of a larger post-implementation analysis of a CRNav program and, in accordance with ethical research practice, was approved by the University of South Carolina Institutional Review Board (#00115153). The overall project used a retrospective, post-implementation analysis to understand implementation determinants and strategies, characterize health care service usage measures, and prioritize implementation interventions to inform the development of future programs. Post-implementation analysis is an appropriate retrospective methodology to assess determinants and strategies of a program that has successfully been implemented.[22] Implementation determinants and strategies, and usage findings from this project are published elsewhere[18,23]; this manuscript describes the qualitative findings from CRNav providers regarding the specific implementation interventions that are suggested at multiple levels across the health care system to achieve implementation of a CRNav program.

Theories and frameworks

A multilevel framework suggests the use of interventions across multiple levels of a health care organization to influence the implementation of a process of care.[3,19] For the purposes of this project, and considering our focus on clinical implementation of the CRNav program, we defined the following levels:

> Provider level: individual health care professionals including physicians, navigators, nurses, or other individuals providing care to patients who would interact with the navigation program.
> Clinic level: the location in which oncology services are offered, including staff, resources, and processes within cancer care delivery clinics.
> Health system level: broader organizational constructs that exist beyond the cancer clinic including executive and administrative leaders, service lines and departments across the hospital or health system.

Implementation intervention mapping is an approach outlined by Fernandez et al. that enables analysis of the multiple levels that affect an implementation effort within a health care setting and maps preferred implementation interventions across each level.[20] This rigorous approach guides implementation teams across five tasks, outlined as a stepwise process to methodically develop and test prospective implementation interventions across multiple levels in a health care setting. We used the rubric from Fernandez et al.'s implementation mapping Task 1 to structure our focus group guide and ask the questions: (1) Who will decide to adopt the program? (2) Which decision makers will stakeholders need to consult? (3) How will resources be made available to implement the program? (4) Who will implement the program? and (5) Who will ensure that the program continues as long as it is needed? Interventions identified through this exercise were mapped across health system levels to inform an implementation plan and future research.

The Expert Recommendations for Implementing Change (ERIC) is a consensus-based list of 73 strategies[24] grouped into nine conceptually distinct categories.[25] The ERIC strategies identified from our prior work[18] formed the basis for our focus group discussion.

Participants and settings

We purposefully sought participation from individuals of various clinical and administrative backgrounds who were part of the development, implementation, and sustainment of CRNav programs at two Florida community

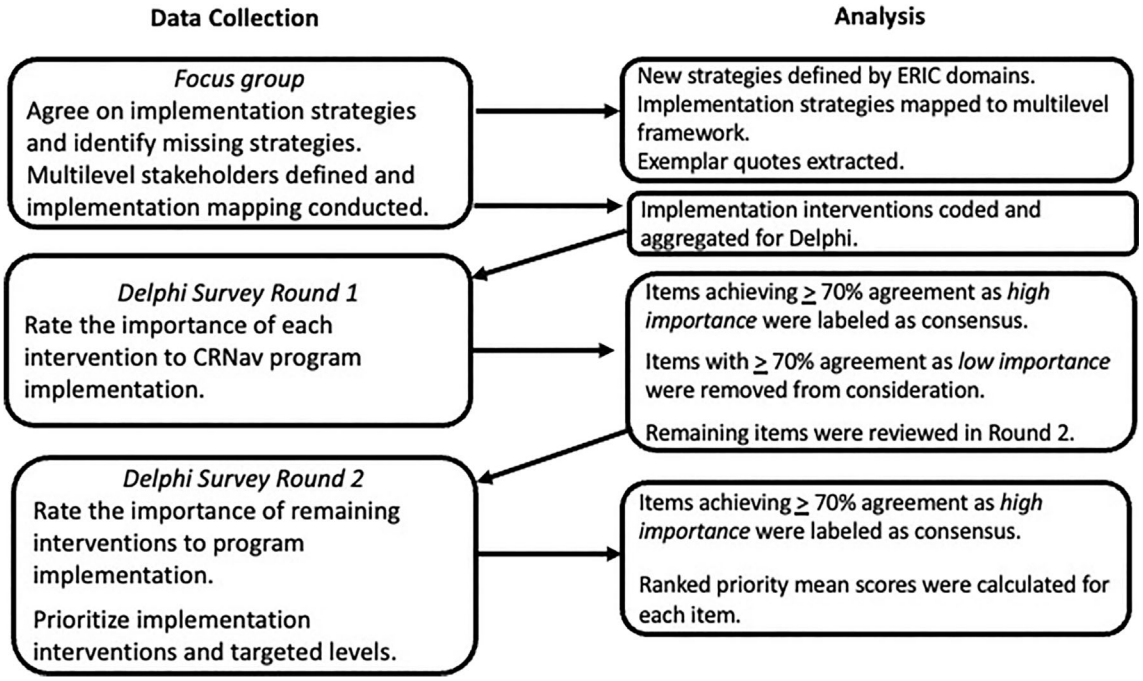

FIGURE 1 Data collection and analysis methods. CRNav, cancer rehabilitation navigation; ERIC, Expert Recommendations for Implementing Change.

hospital cancer centers that have been in existence for over 5 years. All individuals were contacted by email and invited to participate in a 1-day focus group and a two-round modified Delphi survey. Participants were offered a $100 stipend for participating in the focus group along with expense reimbursement for any travel and per diem costs associated with meeting attendance. One focus group session was conducted and thematically analyzed. Findings then informed a modified Delphi survey[26] to prioritize program implementation interventions. Delphi methodology is a systematic approach to establish priorities and determine a level of consensus among a diverse group of experts.[27] The methodology is outlined in Figure 1.

Focus group

A 1-day focus group session was scheduled to maximize in-person participation. A video conference option was offered for those unable to travel. The focus group outline and facilitation guide are provided in Appendix S1. The focus group session was facilitated by the project principal investigator (N.S.), recorded using the Zoom* platform and the audio file was transcribed using Temi.† The purpose of the focus group was to (1) verify the completeness of the previously published list of CRNav program implementation strategies[18] and (2) define multilevel stakeholders and interventions that would enable implementation of a CRNav program using an implementation mapping exercise.

Review of CRNav implementation strategies

Prior to the focus group meeting, participants were provided with a synopsis of the implementation strategies identified in previously published work (Appendix S2). A brief overview of the implementation strategies was provided during the meeting and input was obtained from participants to identify missing strategies or concepts that, in their experience, influenced implementation. The transcript for this portion of the meeting was deductively code to identify new implementation strategies, based on the ERIC taxonomy.

Implementation mapping exercise

The aforementioned five questions from Fernandez et al.'s Task 1 were posed to the participants using our defined multilevel framework[3] to answer each question based on three levels: the provider level, the clinic level, and the health system level. The answers to each question were achieved through group discussion. Suggested interventions at each level (provider, clinic, health system) were extracted from the focus group transcript, (Appendix S3) and used to comprise the list

*https://zoom.us/.
†https://www.temi.com/try-rev.

TABLE 1 Participant characteristics.

Characteristic	Focus group ($n = 9$)	Survey 1 ($n = 13$)	Survey 2 ($n = 7$)
Years as a health care professional	13.0 ± 6.2	15.4 ± 7.2	15.4 ± 7.1
Years ± SD (range)	(3–22)	(3–26)	(6–26)
Years involved with the navigation program	3.6 ± 1.4	3.9 ± 1.3	4.2 ± 1.2
Years ± SD (range)	(2–5)	(2–5)	(2–5)
Role regarding the navigation program			
Medicine	0	2 (15.4%)	1 (14.2%)
Rehabilitation provider	2 (22.2%)	2 (15.4%)	1 (14.2%)
Administrative	3 (33.3%)	4 (30.8%)	3 (42.8%)
Navigation professional	2 (22.2%)	3 (23.1%)	1 (14.2%)
External program advisor	2 (22.2%)	2 (15.4%)	1 (14.2%)

Note: Values are mean ± SD (range) and n (%).

of interventions to be prioritized through a Delphi process.

Modified Delphi process

A modified Delphi process uses a specific set of carefully defined items for expert review rather than starting the process with open-ended questions to formulate items.[28] Modified Delphi helps to improve response rates and provides a solid grounding, based on previously conducted work, from which to base items.[28]

The list of implementation interventions was loaded into Welphi,[‡] a cloud-based Delphi facilitation software program that supports best practices for Delphi methods by enabling controlled feedback from participants, tracking iterative round responses at the individual level anonymously, and indicating consensus and closing based on a priori consensus criteria.[29] Each participant received a unique link to the Delphi survey and two rounds of the Delphi were conducted. A priori, an agreement level of >70% was established to determine consensus regarding the *importance* of the intervention. Participants were asked to identify if the intervention was of high, moderate, or low importance to program implementation success. Rank ordering of consensus priority was conducted in the second round of the Delphi. Participants were asked to rank interventions in the order of priority with which they should be addressed to optimize implementation. Mean rank score was used to establish a prioritized list of consensus implementation interventions.

RESULTS

Fifteen key implementation stakeholders across two CRNav programs were invited to participate in the focus group. One individual had resigned from the health system and did not respond, three others were unable to accommodate the day and time of the meeting, two did not respond to any requests to participate, and nine individuals participated in the focus group. The same 15 individuals were also contacted to participate in the modified Delphi process, 13 responded and participated in round one, and seven of 13 completed both rounds. Participant characteristics are outlined in Table 1. Participants represented multiple disciplines across various levels in the health care system including physicians, health care administrators, patient navigators, office support staff, and patients.

Agreement with implementation strategies

Focus group participants reviewed and agreed with all previously identified ERIC strategies for CRNav program implementation. Additionally, participants identified that financial metrics such as patient volume, reimbursement and funding measures, and quantifiable growth metrics were an important and missing element and therefore an additional ERIC category; utilize financial strategies, was suggested for inclusion and met with full agreement by participants. This was described as important to demonstrate the return on investment for the program.

"while ROI [return on investment] can be described many ways, concrete numbers … utilization of the service … dollars spent … billing revenue generated will always be needed to provide a bottom line … these [financial] things are non-negotiable and must be collected to justify continuation of any program in the healthcare system." ∼ *Health system administrator*.

Implementation mapping

Table 2 provides results of the focus group implementation mapping activity with participant's recommended

[‡]https://www.welphi.com/en/Home.html.

TABLE 2 Implementation intervention themes identified from mapping exercise, aligned to ERIC strategies and clusters with specific multilevel stakeholders identified to influence implementation.

Targeted level	Targeted stakeholder	ERIC cluster and strategies	Implementation interventions
Who will decide to adopt the CRNav program			
Health System level	Hospital or health system executives	*Develop stakeholder interrelationships* • Involve executive boards • Inform local opinion leaders	*Develop a core champion team* *Develop a rationale for program justification* *Establish communication strategies across care delivery settings* *Collect data and information to justify the program*
	Administrative leaders in finance, human resources, legal, information technology Administrative leaders from the rehabilitation medicine and cancer care service lines.	*Develop stakeholder interrelationships* • Obtain formal commitments • Build a coalition	
"A clinician can bring a suggestion, but the senior leaders really make it happen." *"The team has to demonstrate alignment to health system strategic initiatives and show how it will get done, but…executive leadership has the ultimate decision to move it forward."*			
Clinic level	Clinic managers across all service lines involved. Clinical staff and clinic teams	*Adapt and tailor to context* • Tailor strategies • Promote program adaptability *Develop stakeholder interrelationships* • Identify and prepare champions *Support clinicians* • Create new clinical teams *Change infrastructure* • Change physical structure *Train and educate stakeholders* • Create a learning collaborative	*Develop a core champion team* *Develop a rationale for program justification* *Agree upon outcomes measures for the program* *Develop a workplan and timeline for implementation* *Collect data and information to justify the program* *Establish workflows for patient referrals to external sites* *Establish communication strategies across care delivery settings*
"[C]onvincing the rehab admin team … to make an investment in this was a little bit challenging, once we demonstrated the value of the program and how to make it productive … they were on board." *"We needed the entire staff to be aware and supportive, so there was a lot of informal and formal education … it was a change in how we did business … and we needed new and different training for everyone to understand how this would work."*			
Individual provider level	The rehabilitation navigator Physician providers in oncology	*Support clinicians* • Revise professional roles *Develop stakeholder interrelationships* • Identify and prepare champions	*Create and define clear roles for each member of the implementation team* *Enhance clinical provider awareness of the program to promote acceptance of the program* *Establish communication strategies between providers* *Establish communication strategies across care delivery settings* *Outline the unique skills and characteristics the navigator should possess* *Establish workflows for patient referrals to external sites*
"We needed a physician champion … that doctor-to-doctor communication is pivotal for buy-in." *"Having someone interested in taking the chance on being the first navigator was important … we had no idea if it would succeed, so we needed her [navigator] to go all in."*			
Which decision makers will stakeholders need to involve			
Health System level	A key champion at the executive level Key champions on the administrative financial team Administrative leaders in human resources and IT	*Develop stakeholder interrelationships* *Identify and prepare champions* *Utilize financial strategies* • Alter incentive structures and productivity allowances	*Develop staffing models for the program* *Collect data and information to justify the program* *Define program growth opportunities* *Establish communication strategies across care delivery settings*

(Continues)

TABLE 2 (Continued)

Targeted level	Targeted stakeholder	ERIC cluster and strategies	Implementation interventions
		Change infrastructure • Change record systems	
"I think it's using those champions to help you find sponsors and they may not even be people that, you know … those outside of the department or even the system that may become huge advocates for your program." *"[B]eing able to build an ROI model and have more than crude calculations was so important, that was something that made it real and immediately had others buy in."* *"There was so much we had to change in the EHR, templates, order sets, we had to have a lot built … and those efforts have to be approved and prioritized by the IT team."*			
Clinic level	Front desk and scheduling staff Clinic managers in cancer center and rehabilitation clinics Clinic managers or administrative leaders who can make staffing decisions	*Change infrastructure* • Change service sites • Change record system • Change physical structure and environment *Utilize financial strategies* • Alter incentive structures and productivity allowances	*Establish patient engagement strategies* *Establish workflows for patient referrals to external sites* *Establish communication strategies across care delivery settings* *Create and define clear roles for each member of the implementation team* *Develop staffing models for the program*
"You can have everyone on board and all of the right steps in place, but if you cannot execute scheduling … it's a mess with patients ending up in the wrong place or on the wrong schedules." *"[E]veryone had to be up to date on what our plan was for the office space … for the computer access … for the EHR changes … informing the clinic managers and getting their OK to go forward with all of these processes was all part of our team's plan."* *"The most important decision maker … to really make this go for the providers … was the one who could say, yes, we're going to try this … yes, we're going to use some different metrics of productivity … or yes, you can be here in our cancer center and see our patients."*			
Individual provider level	Physicians	*Develop stakeholder interrelationships* • Identify and prepare champions • Conduct local consensus discussions *Train and educate stakeholders* • Conduct educational meetings and outreach visits	*Establish communication strategies between providers* *Collect data and information to justify the program* *Enhance clinical provider awareness of the program to promote buy-in and acceptability*
"You have to have physician alignment … it is very difficult to force this if the physicians are not bought in and agree to support it."			
How will resources be made available to support the program implementation			
Health System level	Hospital or health system executives Foundation or fund-raising groups Administrative leaders in cancer and rehabilitation medicine service lines	*Train and educate stakeholders* • Develop resource sharing agreements Utilize financial strategies • Access new funding	*Collect data and information to justify the program* *Outline workflow processes for the program* *Develop staffing models for the program*
"[S]omeone with a 'C' in their title … CEO, CMO, COO, CFO … has to agree that this is a good use of resources … time, space, funds." *"[W]e have a scholarship fund set up by the institution to support people who cannot afford the rehabilitation services we recommend … why have a navigator if we're suggesting they get services they cannot afford."*			
Clinic level	Clinic managers in cancer and rehabilitation Office staff	*Support clinicians* • Create new clinical teams • Revise professional roles *Change infrastructure* • Change service sites	*Enhance clinical provider awareness of the program to promote buy-in* *Outline the specific tasks and work responsibilities the navigator will have* *Develop staffing models for the program* *Create and define clear roles for each member of the implementation team* *Develop a rationale for program justification*
"*There are various levels of administration that contribute to the budgeting process … developing, approving, and making funds available for the position … this is literally where the resources will come from*"			
Individual provider level	Physician providers Navigator	*Develop stakeholder relationships* • Build a coalition	*Outline the specific tasks and work responsibilities that the navigator will have*

TABLE 2 (Continued)

Targeted level	Targeted stakeholder	ERIC cluster and strategies	Implementation interventions
		• Identify early adopters	*Outline workflow process for the program* *Establish communication strategies between providers*
"Really the docs have to give a green light for patients to be a part of this navigation workflow, if they are not engaging with the navigator, if they are not getting patients connected … I mean, that is the most important resource that needs to be made available to the navigator." *"[T]he navigator becomes your expert in cancer rehabilitation, they need to make the educational resources available to the rehab teams … and to the providers they are working with … knowledge is a huge resource that needs to be made available."*			
Who is responsible for implementing the program			
Health system level	None identified	N/A	*None identified*
"Tactical implementation is definitely not happening at this level … these folks need to be informed and onboard to support and sign off when approvals are needed … actually implementing this falls to the clinic and the providers."			
Clinic level	Clinical managers in rehabilitation and cancer Office staff	*Use evaluative and iterative strategies* • Develop a formal implementation plan or blueprint • Develop and organize quality monitoring systems *Train and educate stakeholders* • Conduct ongoing training • Conduct educational meetings • Develop educational materials *Support clinicians* • Remind clinicians • Facilitate relay of clinical data to other providers	*Develop a core champion team* *Examine and contextualize barriers that will influence implementation of the program* *Create and define clear roles for each member of the implementation team* *Develop a work plan and timeline for implementation* *Develop the infrastructure for the program (*eg, *EHR, billing processes*, etc.) *Outline the specific tasks and work responsibilities that the navigator will have* *Outline workflow processes for the program* *Lay out a process for how the patient will access and move through the program* *Establish workflows for patient referrals to external sites* *Establish patient engagement strategies*
"[W]e cannot forget that front office staff are also responsible for implementing processes to support the program." *"Clinical policies and procedures need to be implemented and tracked by the clinic managers … they aren't actually implementing the work of seeing patients, but this policy piece has to be in place for the clinic to implementation … at least to guide implementation."*			
Individual provider level	Physicians Nurses Navigator	*Use evaluative and iterative strategies* • Conduct small tests of change *Provide interactive assistance* • Provide clinic supervision • Facilitate implementation processes	*Agree upon outcomes measures for the program* *Create and define clear roles for each member of the implementation team* *Enhance clinical provider awareness of the program to promote buy in* *Outline the specific tasks and work responsibilities that the navigator will have* *Establish communication strategies between providers* *Establish workflows for patient referrals to external sites* *Establish patient engagement strategies*
"The rubber hits the road at the provider level. Period. Carrying out the processes to implement, reviewing and monitoring and improving over time … it's all on the providers and the clinic team."			
Who is responsible for sustainment of the program			
Health system level	Executive teams Administrative leaders in rehabilitation and oncology service lines	*Utilize financial strategies* • Change financial incentives • Find funding	*Develop a rationale for program justification* *Collect data and information to justify the program* *Define program growth opportunities*

(Continues)

TABLE 2 (Continued)

Targeted level	Targeted stakeholder	ERIC cluster and strategies	Implementation interventions
"If the health care system, and leaders as a whole group don't get behind it and help drive it. I think you are going to struggle to see it embraced throughout the system … if only one executive champion is on your side … and they leave … that's not a recipe for sustainability." *"[W]e relied heavily on our admin higher ups in rehabilitation medicine to provide the data and insights on program success to the executive level … they really worked hard on our behalf to justify the program success to those upper levels."*			
Clinic level	The implementation team Clinic teams Rehabilitation and oncology clinic managers	*Develop stakeholder interrelationships* • Promote network weaving • Use advisory boards and workgroups Use evaluative and iterative strategies • Purposefully reexamine the implementation	*Agree upon outcomes measures for the program* *Create and define clear roles for each member of the implementation team* *Develop staffing models for the program* *Develop a workplan and timeline for implementation* *Enhance clinical provider awareness of the program to promote buy in* *Collect data and information to justify the program* *Outline the unique characteristics that the navigator should possess* *Define program growth opportunities*
"[T]he team is constantly reviewing … what's working, what's not, how do we make it better … that is the group that keeps it going." *"[I]f the rehab service pulls back its support, you just don't have a program anymore … they have to enable the ongoing collaboration across sites and the specialty service."*			
Individual provider level	The navigator	*Support clinicians* • Revise professional roles	*Examine and contextualize barriers that will influence the program* *Enhance clinical provider awareness of the program to promote buy in* *Outline the specific tasks and work responsibilities that the navigator will have* *Outline workflow process for the program*
"…the key is really the navigator, how they are received by patients will determine if the program grows or fails…if they are not well received, docs won't want patients involved, patients won't engage…there won't be evidence of value…ROI…it's really a unique individual you have to have in this role to make it work long term."			

Abbreviations: CEO, chief executive officer; CFO, chief financial officer; CMO, chief medical officer; COO, chief operations officer; CRNav, cancer rehabilitation navigation; EHR, electronic health record; ERIC, Expert Recommendations for Implementing Change; IT, information technology; ROI, return on investment.

implementation interventions outlined at each level and aligned with ERIC strategies. Contextual quotes from the transcript are provided as rationale. Nineteen implementation interventions (Table 3**)** were coded from the transcripts and shared with participants through the modified Delphi exercise.

Modified Delphi

In round one of the modified Delphi survey, 12 of 19 implementation interventions achieved >70% agreement as high importance to implementation. After round two, two additional interventions (14 total) were agreed upon as high importance and ranked in order of perceived priority to achieve implementation. Table 3 outlines consensus on the importance of the implementation interventions and provides a priority ranking for each intervention along with the suggested target level for the intervention. All interventions targeted at least two levels, most commonly the provider and clinic levels.

DISCUSSION

These findings providing detailed, actionable insights to specific interventions that may guide CRNav program implementation. Describing these discrete interventions across multiple levels in an organization provides an approach for future implementors that may improve efficiency and may mitigate variation in implementation.[30] A challenge to enabling successful implementation efforts in complex health care systems is the lack of attention to implementation science-informed multilevel interventions.[21] This work overcomes that challenge by building upon past work, which elucidated Consolidated Framework for Implementation Research-based implementation determinants and ERIC strategies for CRNav program implementation, to create a prioritized list of interventions that are implementation science-informed.

CRNav has high potential to be scaled into cancer centers across the United States and beyond since navigation workflows demonstrate efficiency and

TABLE 3 Priority and importance of implementation interventions (*>70% a priori level of agreement) mapped to their levels of influence.

Program implementation interventions	Levels for targeted intervention	Consensus on level of importance			Rank score	Rank priority
		High	Mod	Low		
Develop a core champion team	System level Clinic level Provider level	100%*	0%	0%	2.11	1
Develop a rationale for program justification	System level Clinic level	100%*	0%	0%	2.33	2
Agree upon outcomes measures for the program	Clinic level Provider level	90%*	10%	0%	4.66	3
Examine and contextualize barriers that will influence the program	Clinic level Provider level	90%*	10%	0%	5.16	5
Create and define clear roles for each member of the implementation team	Clinic level Provider level	90%*	10%	0%	6.00	6
Develop staffing models for the program	System level Clinic level Provider level	83%*	17%	0%	7.00	7
Develop a work plan and timeline for implementation	Clinic level Provider level	83%*	17%	0%	5.00	4
Enhance clinical provider awareness of the program to promote buy in	Clinic level Provider level	80%*	20%	0%	9.16	8
Develop the infrastructure for the program (eg, electronic health record templates, billing processes, etc.)	System level Clinic level	80%*	20%	0%	9.83	10
Collect data and information to justify the program (eg, volume data, patient reported needs, etc.)	System level Clinic level	80%*	20%	0%	9.5	9
Outline the specific tasks and work responsibilities that the navigator will have	Clinic level Provider level	80%*	10%	10%	12	14
Outline workflow process for the program	Clinic level Provider level	70%*	30%	0%	10.83	11
Establish communication strategies between providers.	Clinic level Provider level	70%*	20%	10%	11.5	13
Establish communication strategies across care delivery settings	System level Clinic level Provider level	70%*	10%	20%	11.33	12
Outline the unique skills and characteristics that the navigator should possess	Clinic level Provider level	67%	10%	30%	-	-
Lay out a process for how the patient will access and move through the program	Clinic level Provider level	67%	0%	33%	-	-
Establish workflows for patient referrals to external sites	Clinic level Provider level	40%	60%	0%	-	-
Establishing patient engagement strategies	Clinic level Provider level	30%	60%	10%	-	-
Define program growth opportunities	System level Clinic level Provider level	0%	67%	33%	-	-

effectiveness in improving care delivery.[17,31] One major challenge to scale this innovative model is that there is no clear pathway to guide implementation for those interested in developing new programs across siloed health care systems. Health care systems are often siloed by department but also siloed across the

levels of the organization.[32] This organizational context often poses a barrier to optimal implementation because organizational contextual factors do not influence implementation independently but rather do so in an interrelated manner[33] likely across levels of an organization.[19] An important principle underlying implementation success is that using a multilevel approach can vastly improve the likelihood of success and reduce barriers across levels within the health care system.[19] Our focus group participants elucidate perspectives on the need to understand organizational contextual features that influenced implementation and they provide insight on the appropriate strategies and interventions to address stakeholders at each level. Of importance, this is aligned with contemporary implementation theory suggesting that strategies engage stakeholders far beyond the implementation setting[34] by addressing factors that influence the multiple levels of a health care delivery model.[33] Although the CRNav program takes place in the clinical setting, influencing factors arise from various levels of the health care system. Not only did our participants identify the need for administrative and leadership support in their direct chain of command but noted the importance of targeting administrative leaders across departments such as human resources, information technology, and legal.

Interventions that were noted as high priority to promote implementation, such as creating and approving new job descriptions, obtaining access to electronic health records within a specific clinic, and interdepartmental agreements required the implementation team to collaborate with stakeholders across departments and at varying administrative levels. Networking and communication strategies were identified as important to facilitate the interventions across these groups to enable implementation.

Our findings provide consensus on a prioritized approach to implementation which may optimize efficiency and help structure the implementation team workplan[35] to reduce barriers more effectively. Our participants reported the highest priorities for implementation were to create a core champion team and to develop the rationale for program justification along with developing appropriate outcome measures. These foundational efforts then drive the assessment of determinants and inform the workplan and timeline for implementation.

Although most of the identified implementation interventions focused on the provider and clinic levels, a repeated and important theme across all implementation mapping questions was having executive level support for the implementation. As the ultimate decision makers in the health care system, gaining C-suite support is an important priority,[36] but our participants noted that assuring an ongoing line of communication that made executives aware of the program's progress along the implementation timeline was important. This is supported by evidence suggesting that key attributes of implementation champions include having formal authority to execute implementation efforts[37] Although system executives are far removed from the actual tasks of clinic-level decision making, resource allocation, or tactical execution of implementing the program, their awareness of the program and support for it were critical roles identified by our participants.

Broad clinic-level support for the program needs to be obtained. Our findings suggest that this includes providers and staff who may not be directly involved in the navigation program or workflow but nonetheless have an important role in providing resources to support the program and contributing to the culture of support for the program. This ranged from schedulers and front desk staff to referral coordinators and billing staff. Our participants prioritized clinic-level processes for implementation such as creating a dedicated team, developing a rationale for the program, and creating and adhering to a workplan.

The provider level is obviously the most tactical as these are the individuals implementing the program. This was also the level where our participants stressed the importance of having everyone on the same page and working from the same implementation plan. The implementation team and the clinic champions are enablers for the program,[37] but our participants noted the importance of having a wide variety of providers—physicians, nurses, and navigators, with thorough support for the program implementation to succeed and to be sustained.

Although not formally queried through our focus group interview guide, our participants spoke of the importance of sustainment strategies, including maintaining administrative support, providing ongoing education to all levels of providers, and continuing to identify and assess barriers over time to maintain a high level of continuity. This is aligned with suggested best practices in maintaining fidelity to the original implementation plan over time.[38] Our participants also suggested that there are unique sustainment strategies that will necessarily differ from those deemed important to the initial implementation. An example was *defining program growth strategies*. Although this may not be top priority for initial program implementation, as reflected in our findings, this becomes critical to justify sustainment of the program. These differences suggest several considerations for those looking to build and sustain successful CRNav programs. First, the strategies that enable successful implementation likely differ from those that promote program sustainability. This implies that the implementation team must be mindful of continuous program evaluation and seek to adapt and improve the program processes as time goes by.[38] Additionally, the priority strategies and interventions related to the initial program implementation, as identified by our participants, are focused on building the program and its network, whereas sustainment strategies

focus more on extending reach and growing the program. This requires the implementation team to shift focus and continually evaluate the changing organizational environment over time.

As stated by one participant, *"Lower ranked implementation interventions should not be considered unimportant … they will matter more as the program grows and the environment changes … they, in fact, may become the most important strategies in maintaining the program … so we should not be shortsighted about how we prioritize findings."*

LIMITATIONS

Focus groups introduce the risk of conformity bias among participants. Although the initial list of implementation strategies was derived from previous work, socializing and discussing these strategies among participants who were all part of CRNav programs could lead to confirmation of existing perspectives rather than promoting the introduction of new perspectives. Also, considering that participants from both programs had been involved in an implementation effort that took place at least 5 years ago there may be a bias toward recalling more recent events rather than long past events. This recall bias is inherent in any qualitative research approach but should be relatively overcome through the iterative and anonymous Delphi process.

Attrition of Delphi participants may reduce the strength of the ranking of importance of our findings. Although the first round of Delphi elucidated strong agreement of the majority of important strategies, priority ranking was conducted in round two, when nearly half of round one participants did not respond. However, this may be countered by the fact that the round two participants had greater longevity across programs and the representativeness of professional disciplines closely aligned to round one participants.

The number of participants in our study was small and may limit generalizability of findings; however, representation across multiple disciplines and our intentional purposive sampling of participants who were directly involved in the implementation and sustainability of these programs enhance the credibility of findings. Further, implementation science best practices advise that an individualized approach is warranted before taking on any program or process implementation in a clinical setting.[1] Therefore, although these findings may serve as an implementation blueprint to guide cancer care professionals, a methodical context analysis of the health care setting where the implementation is intended to take place is warranted.[33]

These findings are a part of a larger project studying CRNav program implementation and usage. Our previous findings should be considered alongside this report to help the reader fully understand the program components and implementation determinants and context. It is intended for these findings to form the basis of a multilevel implementation plan that will be studied in a future trial. One suggested approach[39] would be to use the Practical, Robust, Implementation and Sustainability Model (PRISM) to guide future implementation and sustainability using multilevel contextual factors to plan, implement, evaluate, and disseminate health services programs. As PRISM is considered both a framework and process model[40] we suggest it could be used to guide future implementation efforts in CRNav program implementation.

CONCLUSION

By characterizing priority implementation strategies for a CRNav program and suggesting multilevel intervention strategies, we anticipate these findings will inform future CRNav program implementation efforts. Prioritizing implementation strategies can improve efficiencies and effectiveness when translating an evidence-based intervention into practice. In complex health care systems, understanding the organizational context at multiple levels and designing implementation interventions to address each level is a recognized best practice. Using a multilevel framework alongside implementation mapping methods enabled our participants to address which stakeholders should be addressed in an implementation effort. Future implementation research should study specific multilevel interventions and understand their impact on the implementation effort.

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DISCLOSURES

None

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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