ORIGINAL RESEARCH

Implementation Strategies Used by Facilitators to Improve Control of Cardiovascular Risk Factors in Primary Care

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Background: **Practice facilitation supports practice change in clinical settings. Despite its widespread use little is known about how facilitators enable change.**

Objective: **This study identifies which implementation strategies practice facilitators used and the frequency of their use in a study to improve the quality of cardiovascular care in primary care.**

Design: **Cross-sectional analysis of data collected by practice facilitators in the Healthy Hearts Northwest (H2N) study.**

Participants: **Notes collected by facilitators in the H2N study.**

Approach: **We coded these field notes for a purposeful sample of 44 practices to identify Expert Recommendations for Implementation Change (ERIC) strategies used with each practice and calculated the proportion of practices where each implementation strategy was coded at least once. Strategies were categorized as foundational (used in 80% to 100% of practices), moderately used (20%−<80% of practices), rarely used (1−< 20% of practices), or absent (0%).**

Key Results: **We identified 26 strategies used by facilitators. Five strategies were foundational: Develop and/or implement tools for quality monitoring, Assess barriers that may impede implementation, Assess for readiness or progress, Develop and support teams, and Conduct educational meetings.**

Conclusions: **Commonly used strategies can help guide development of the core components of practice facilitation strategies. (J Am Board Fam Med 2024;37:444–454.)**

Keywords: **Cardiovascular Risk Factors, Cross-Sectional Studies, Implementation Science, Primary Health Care, Quality Improvement**

Introduction

Implementation strategies are "methods or techniques used to enhance the adoption, implementation, and sustainability of a clinical program or practice".[1] The Expert Recommendations for Implementation Change (ERIC) team sought to improve the conceptual clarity, relevance and comprehensiveness of implementation strategies; these 73 implementation strategies are designed to be used alone or in combination in implementation research and practice.[2] Because each implementation strategy represents a potentially complex and variable set of activities,[2] there is need for further understanding of the underlying components when operationalizing a specific implementation strategy.[1,2]

Within the ERIC compendium of strategies, facilitation is an implementation strategy defined as "a process of interactive problem solving and support that occurs in a context of a recognized need for improvement and a supportive interpersonal

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relationship."[3,4] It is a strategy undertaken by a trained facilitator who provides support to both individuals and teams as they navigate the complex process of change and overcome contextual barriers.[4] Facilitation has also been described as the active ingredient that aligns the proposed innovation or improvement to the individuals and teams involved and the context in which they work, thereby enabling successful implementation.[4] Facilitation has also been recognized as a "meta-strategy," one that might use some or many of the other ERIC defined strategies when implementing changes in health care settings.[5]

Practice facilitation (PF) is an established approach to facilitation specifically designed to support practice change in ambulatory clinical settings.[5–10] Practice facilitation involves trained facilitators who work with ambulatory primary care clinical practices and health care teams to identify and address challenges in implementing evidence-based interventions. Nguyen et al[11,12] described 4 key components of practice facilitation: remaining flexible to align with practice and organizational priorities, building relationships, providing value through information technology expertise, and building capacity and create efficiencies.

Despite widespread use of practice facilitation as an implementation strategy in primary care and its evidence of effectiveness for improving implementation of clinical interventions and guidelines, operationalizing facilitation requires an understanding of how a facilitator enables successful implementation.[13–15] Reported explanations of the activities and principles underlying facilitation to date are largely based on organizational theory[5] or on summarizing retrospective assessments of practice facilitation efforts.[16] Hemler et al[17] used diverse data sources, including direct observation of facilitation efforts, and found that across on-the-ground quality improvement cooperatives, facilitators employed a variety of strategies to help practices conduct quality improvement when they encountered challenges in accessing performance monitoring data. Clearly, a greater understanding is needed about how a facilitator engages ambulatory primary care teams, and which implementation strategies might be commonly used during practice facilitation.[17]

The objective of this study is to identify the implementation strategies employed by practice facilitators and the frequency with which each strategy was used over the course of a large-scale implementation effort designed to improve the quality of cardiovascular disease preventive care in primary care settings, the AHRQ-funded EvidenceNOW Healthy Hearts Northwest (H2N) study.[18] These findings will advance our knowledge of practice facilitation and provide guidance for the design and evaluation of future efforts that use practice facilitation as an implementation strategy.

Methods
Setting
A detailed description and the primary research results of the H2N study have been previously published.[18,19] Briefly, H2N was a large, pragmatic clinical trial of interventions designed to increase quality improvement capacity with a focus on improving practice performance on measures of cardiovascular disease risk across 209 smaller primary care practices in Washington, Oregon, and Idaho. All practices received practice facilitation (ie, coaching) from 1 of 17 practice facilitators, over 15 months of active support. The objectives of the facilitation were to 1) build quality improvement (QI) capacity, and 2) develop and implement an improvement plan for improving practice performance on measures of cardiovascular disease risk for each practice using "Plan-Do-Study-Act" (PDSA) cycles. The facilitation protocol included at least 5 face-to-face quarterly practice facilitation visits, with at least monthly contact (in-person visits, telephone calls, or e-mails) in between the in-person visits. Facilitators participated in 2 2-day in-person training sessions and all facilitators participated in monthly coaching calls to harmonize their approach.

Data Sources
Practice facilitators kept written field notes and observations about their facilitation activities, in a web-based intervention tracker, after each encounter, whether in-person or virtual. The notes included a combination of discrete field data about the activities completed as well as free-text fields where practice facilitators were encouraged to record observations about the clinics, staff, and quality improvement activities. This study was conducted using secondary analysis of deidentified data and did not require institutional review board approval. For this analysis we used open text data recorded by practice facilitators for each selected practice. We also used data describing practice characteristics (eg, geographic location,

number of clinicians) from the H2N practice questionnaire completed by an office manager in each practice at the start of the study.

Selecting Practices for Analysis

Due to the high number of practices and the volume of field notes kept by the facilitators, we used practice characteristics data from the baseline H2N practice questionnaire to select a subset of practices for analysis. We based our selection on 2 of the 3 components in the conceptual framework for practice improvement proposed by Solberg.[20] This framework posits that the presence of 3 elements facilitate improvement efforts: change process capability, prioritization of efforts to improve, and care process content. The study questionnaire asked about the practice's self-reported priority for improving cardiovascular disease preventive care in the next year. Practices were categorized as either low (1 to 5) or high priority (6 to 10). The questionnaire also included an adapted version of the Change Process Capability Questionnaire (CPCQ).[21–23] The CPCQ was developed and validated by Solberg and colleagues to measure organizational capability to manage change within a primary care practice setting.[24] We calculated CPCQ scores and categorized practices' CPCQs as high (7 to 28) or low (−28 to +6). We randomly selected 6 practices from each of the 8 strata created by the 3 baseline characteristic categories for analysis (high/low priority, high/low CPCQ and Qualis or Oregon Rural Practice and Research Network facilitation organization). We reviewed the completeness of coaching notes for each of the sampled practices and excluded practices for which coaching notes were not available for 3 or more consecutive months of the 15-month study period (n = 4), resulting in 44 practices with complete data for analysis.

Coding Scheme

We created a coding scheme to identify implementation strategies documented by practice facilitators during the H2N study. The coding scheme used for categorizing practice facilitator implementation strategies is based on the ERIC framework, which identifies 73 distinct implementation strategies.[2] The research team reviewed the 73 ERIC implementation strategies and removed 42 that were thought by the team to be not relevant to the H2N intervention (eg, *Use financial strategies* was eliminated because changing clinical financial structures was beyond the scope of practice facilitation in the H2N study). The final ERIC strategy list was also reviewed for completeness and gaps by the practice facilitation supervisor for the H2N study, who verified that it reflected activities included in facilitation training or guidance provided to facilitators during the study. The primary coder (JS) did preliminary coding of a sample of 6 practices. The full research team (LMB, MP, AC) dual-coded, reviewed and reconciled random samples of text from these 6 practices. During this review, 2 implementation strategy codes (*Conduct small cyclic small tests of change*, *Facilitation*) were removed because they represented prescribed implementation strategies of the planned intervention for the study rather than implementation strategies chosen by the facilitator. One implementation strategy needed more specification: the original implementation strategy code based on a reported implementation strategy "*Assess for readiness and identify barriers and facilitators*" was disaggregated into 3 separate implementation strategies: "*Assess for readiness or progress*, *Assess barriers that may impede implementation*, and *Assess facilitators that enhance implementation*." Finally, 2 codes were used interchangeably in the coding and were merged in the analysis: *Capture and share local knowledge* and *Promote network weaving*. One ERIC implementation strategy, *Organize clinician implementation team meetings*, was renamed *Develop and support teams* to allow coding to capture support for implementation teams that included nonclinicians. This resulted in a final codebook with 30 implementation strategy codes.

Coding

An experienced qualitative researcher (JS) applied the coding framework to identify implementation strategy codes present in the practice facilitator notes, working through all content for each practice until all session notes from the 44 practices had been coded. A second coder (GK) independently coded a subset of practice session notes (24 notes entries randomly selected from across 13 practices). In 66.7% of notes reviewed together, the secondary coder identified at least 1 additional code/missing code (an average of 1.1 additional codes per note). Using this figure as an estimate, we calculated that the primary coder identified an average of 87.7% of codes. Representative quotes for each implementation strategy are displayed in the Appendix.

Analysis

For each implementation strategy, we calculated the number and proportion of practices where that implementation strategy was coded at least once at any time during the 15-month intervention period. We also calculated the proportion of practices for which the implementation strategy was coded at least once, for each of the 5 quarters of the intervention period. We then categorized each implementation strategy as commonly used (used at least once in 80% to 100% of practices), moderately used (used at least once in 20%-<80% of practices), rarely used (used at least once in 1-<20% of practices), or absent (0%).

Results

Primary care practice characteristics are summarized in Table 1. There were 21 (48%) rural and 23 (52%) urban practices included in our analysis (Table 1). A third (32%) of practices employed 6 or more clinicians, 18% of practices were federally qualified health centers, and 50% were independent primary care practices.

Of the 30 implementation strategies in the codebook, we identified 26 that were used by practice facilitators in this study (Table 2). Among the 26 strategies, 5 were commonly used, 9 were moderately used and 12 were rarely used (Table 2). One commonly used implementation strategy, *Develop and/or implement tools for quality monitoring*, was used with 100% of the practices analyzed. Several of the moderate implementation strategies were used with more than 70% of practices, including *Use data experts*, and *Distribute educational materials*. Moderate implementation strategies that were used with fewer than 40% of practices included *Assess facilitators that enhance implementation*, *Train for leadership*, and *Promote adaptability*. The rarely used implementation strategies included: *Audit and provide feedback*, *Facilitate relay of clinical data to clinicians*, *Remind clinicians*, *Involve patients/consumers and family members*, and *Obtain and use patients/consumers and family feedback*.

We examined the proportion of practices with which each implementation strategy was used for each of the 5 quarters of the 15-month practice facilitation effort (Table 2). We found that the commonly used strategies were generally used with a high proportion of practices across multiple quarters. The rarely used strategies were used only with a small number of practices in each quarter.

Table 1. Characteristics of Primary Care Practices Included in Analysis

Characteristics	Study Practices N = 44
Coaching organization, n (%)	
Qualis Health	23 (52.3%)
Oregon Rural Practice and Research Network (ORPRN)	21 (47.7%)
Location, n (%)	
Rural	21 (47.7%)
Urban	23 (52.3%)
Number of clinicians, n (%)	
One (solo)	8 (18.2%)
2 to 5	22 (50.0%)
6 or more	14 (31.8%)
Average panel size for full-time clinician, median (IQR)	1,000
Number of patient visits per week at practice, median (IQR)	140
Organizational type, n (%)	
Federally Qualified Health Center	8 (18.2%)
Health/Hospital system	14 (31.8%)
Indian Health Service/Tribal Organization	0 (0.0%)
Independent	22 (50.0%)
Specialty, n (%)	
Family Medicine	39 (88.6%)
Internal Medicine	1 (2.3%)
Mixed	4 (9.1%)

Abbreviation: IQR, interquartile range.

We explored whether there was an association between the baseline practice characteristics used for sampling practices and the implementation strategies that were commonly used. The group of commonly used implementation strategies remained commonly used within all practice subgroups (eg, high CPCQ vs low CPCQ) (data not shown).

Limitations

Our study has several potential limitations. There was variability in the amount of information recorded by the practice facilitators in their field notes as well as in the types of information recorded. As a result, there may be ERIC strategies employed that we were not able to identify or that the field notes may not have completely captured when a specific strategy was employed within a practice, resulting in an underestimation of frequency of use. Building our coding framework from the ERIC strategies may have limited the types of implementation activities we were able to identify. We were limited in the

Table 2. Implementation Strategies Used by Practice Facilitators with Primary Care Practices

Implementation Strategy		Percent of practices with which practice facilitators used the strategy (n = 44)					
		At Least Once During the Study	Q1	Q2	Q3	Q4	Q5
Commonly Used (Present in > 80% of sampled practices)	Develop and/or implement tools for quality monitoring	100%	93%	93%	77%	63%	63%
	Assess barriers that may impede implementation	95%	70%	63%	61%	43%	43%
	Assess for readiness or progress	93%	75%	45%	36%	39%	27%
	Develop and support teams	91%	41%	52%	73%	49%	55%
	Conduct educational meetings	86%	53%	43%	23%	11%	16%
Moderately used (present in 20 to 80% of sampled practices)	Use data experts	75%	45%	50%	34%	30%	11%
	Distribute educational materials	73%	30%	39%	34%	32%	23%
	Capture and share local knowledge and promote network weaving	66%	18%	32%	18%	23%	27%
	Identify and prepare champions	61%	32%	20%	25%	9%	23%
	Conduct ongoing training	59%	27%	18%	30%	14%	16%
	Prepare patients/consumers to be active participants	45%	9%	16%	16%	20%	18%
	Assess facilitators that enhance implementation	36%	27%	9%	5%	0%	5%
	Train for leadership	32%	18%	7%	7%	5%	0%
	Promote adaptability	30%	2%	18%	9%	7%	11%
Rarely used (present in <20% of sampled practices)	Conduct educational outreach visits	14%	5%	5%	5%	0%	0%
	Involve patients/consumers and family members	14%	9%	2%	0%	2%	2%
	Facilitate relay of clinical data to clinicians	11%	7%	2%	2%	2%	0%
	Remind clinicians	11%	0%	5%	9%	2%	0%
	Tailor strategies	11%	0%	5%	9%	2%	0%
	Obtain and use patients/consumers and family feedback	9%	7%	2%	2%	0%	2%
	Build a coalition	9%	0%	2%	0%	5%	2%
	Identify early adopters	7%	5%	2%	5%	0%	0%
	Develop/use a formal implementation blueprint	7%	2%	2%	0%	0%	2%
	Audit and provide feedback	7%	0%	5%	2%	2%	0%
	Make training dynamic	2%	2%	0%	0%	2%	0%
	Inform local opinion leaders	2%	0%	0%	0%	0%	2%

*Present in the first five quarters, for practices with data in the first five quarters of the Healthy Hearts Northwest (H2N) study.

number of practices we were able to include due to time and resource constraints. Our selection of practices was also limited to those that had complete data on the variables used to stratify and select our sample: the priority score, CPCQ score and coaching organization. It is possible that selecting practices for analysis based on characteristics other than the 3 used in this study might result in a different distribution of ERIC strategies employed by these facilitators. The quantitative summary of implementation strategies employed by practice facilitators may not fully demonstrate the variation and nuance of implementation strategy selection and application in practice facilitation efforts. An additional limitation is that we did not obtain information or perspectives from clinicians or other team members in the participating practices. Thus, we are unable to assess what additional resources or support the practices may have needed for this study's quality improvement effort.

Discussion

This study identified 5 commonly used implementation strategies enacted by practice facilitators in a study designed to test the effectiveness of practice facilitation for improving quality of cardiovascular disease preventive care in primary care settings.[21] The commonly used strategies were employed with a large proportion of practices across the duration of the practice facilitation effort. This suggests that these strategies may be important to an effective practice facilitation approach. It is more challenging to interpret the temporal pattern for moderate and rarely used strategies because of the relatively small numbers. How do these findings align with previously published implementation research findings on facilitation? Practice facilitation has been conceptualized as an interactive, problem-solving approach to supporting improvement,[23] and 3 of the commonly used strategies (*Develop and support teams, Assess for readiness or progress, and Assess barriers that may impede implementation*) reflect interactions between the facilitator and the practice that support a problem-solving approach. Walunus et al[24] found that the most successful practice facilitation approaches include elements of training the individuals within the practice, which is reflected in facilitators' frequent use of the *Develop and support teams* and *Conduct educational meetings* implementation strategies. This also aligns with the health care facilitation logic model and mechanistic map developed by Kilbourne and colleagues who describe the importance of activities that promote engagement and acceptance of the facilitator by the involved social system within the care setting.[25]

In a simulation study by Waltz et al,[24] implementation scientists and implementation practitioners were asked to rate each of the 73 ERIC implementation strategies in terms of perceived feasibility and perceived importance. The commonly used strategies we identified in our study were all strategies that were also rated as highly feasible by both implementation scientists and implementation practitioners in the Waltz study. While our study did not gather information from facilitators about their perceptions of feasibility of strategies, our findings may suggest avenues for future research to explore facilitator and practice characteristics that influence selection of implementation strategies. Furthermore, future research might examine whether the use of practice facilitation approaches that enact most or all the commonly used strategies are associated with improvements in patient outcomes. This would further demonstrate the value of commonly used practice facilitation strategies.

Waltz and colleagues also used responses from implementation scientists and implementation practitioners to group related strategies into conceptual categories. Three of the commonly used implementation strategies our study identified (*Assess for readiness or progress, Assess barriers that may impede implementation*, and *Develop and/or implement tools for quality monitoring*) are included in the evaluative and iterative strategies category described by Waltz et al.[24] This aligns with the previously noted conceptualization of facilitation as an interactive and iterative problem-solving process.[26–28] The remaining commonly used strategies map to the Waltz et al training and educating stakeholders category (*Conduct educational meetings*), or the developing stakeholder interrelationships category (*Develop and support teams*). These 3 categories of implementation strategies identified by Waltz may serve as a framework for the implementation strategies that form the foundation of practice facilitation.

We identified 9 implementation strategies moderately used by practice facilitators and 12 implementation strategies rarely used by practice facilitators. The facilitators' use of these strategies with some, but not all practices, demonstrates that facilitators most likely tailor implementation efforts to local context. This would be consistent with the findings of a study of practice facilitation by Nguyen et al[12] that "remaining flexible and aligning with organizational priorities" was viewed as a critical approach for practice facilitators. It is also consistent with the recognition that deploying a single set of ERIC implementation strategies for an intervention may not be appropriate for all settings and tailoring the selection of implementation strategies to setting is important.[29–31] This is also consistent with Kilbourne and colleagues mechanistic map of facilitation whereby contextual factors are predictive of the facilitation activities undertaken.[25]

Implications

Given the limited resources of many health care settings, and the popularity of facilitation as an approach to improve quality and outcomes of care, our findings which describe the activities of practice facilitation, address a critical gap in the understanding of the dynamic process of how facilitators engage with primary care practices is needed.[25] These

commonly used strategies may form a framework for design of practice facilitation interventions in both research and practice facilitation.[25] If our findings are confirmed in future research, applications could include preparation and training of facilitators and might be designed to ensure a high level of competency across the 5 commonly used strategies. However, future implementation science research is needed to expand our knowledge of how facilitation works to improve care in primary care settings. From a methodologic perspective, this will require a consensus among researchers on what observations or data should be routinely collected in studies that use practice facilitation, ideally grounded in a theory of how and why facilitation is effective.

Conclusions

The 5 implementation strategies identified as commonly used by practice facilitators aligns with the conceptualization of practice facilitation as an interactive, problem-solving approach to supporting change in ambulatory practice.[4,5] The commonly used implementation strategies may form a framework for design of practice facilitation interventions in both research and practice and inform the training of facilitators who would use these strategies.

To see this article online, please go to: http://jabfm.org/content/ 37/3/444.full.

References

1. Proctor EK, Powell BJ, McMillen JC. Implementation strategies: recommendations for specifying and reporting. Implement Sci 2013;8:139–11.
2. Powell BJ, Waltz TJ, Chinman MJ, et al. A refined compilation of implementation strategies: results from the Expert Recommendations for Implementing Change (ERIC) project. Implementation Sci 2015;10:21.
3. Powell BJ, McMillen JC, Proctor EK, et al. A compilation of strategies for implementing clinical innovations in health and mental health. Med Care Res Rev 2012;69:123–57.
4. Harvey G, Kitson A. PARIHS revisited: from heuristic to integrated framework for the successful implementation of knowledge into practice. Implement Sci 2016;11:33.
5. Berta W, Cranley L, Dearing JW, et al. Why (we think) facilitation works: insights from organizational learning theory. Implementation Sci 2015;10:141.
6. Nagykaldi Z, Mold JW, Aspy CB. Practice facilitators: a review of the literature. Fam Med 2005;37:581–8.
7. Chase SM, Nutting PA, Crabtree BF. How to solve problems in your practice with a new meeting approach. Fam Pract Manag 2010;17:31–4.
8. Baskerville NB, Liddy C, Hogg W. Systematic review and meta-analysis of practice facilitation within primary care settings. Ann Fam Med 2012;10:63–74.
9. Liddy C, Hogg W, Singh J, et al. A real-world stepped wedge cluster randomized trial of practice facilitation to improve cardiovascular care. Implement Sci 2015;10:150.
10. Shelley DR, Ogedegbe G, Anane S, et al. Testing the use of practice facilitation in a cluster randomized stepped-wedge design trial to improve adherence to cardiovascular disease prevention guidelines: HealthyHearts NYC. Implement Sci 2015;11:88.
11. Harvey G, Loftus-Hills A, Rycroft-Malone J, et al. Getting evidence into practice: the role and function of facilitation. J Adv Nurs 2002;37:577–88.
12. Nguyen AM, Cuthel A, Padgett DK, et al. How practice facilitation strategies differ by practice context. J Gen Intern Med 2020;35:824–31.
13. Stetler CB, Legro MW, Rycroft-Malone J, et al. Role of "external facilitation" in implementation of research findings: a qualitative evaluation of facilitation experiences in the Veterans Health Administration. Implement Sci 2006;1:23
14. Dogherty EJ, Harrison MB, Graham ID. Facilitation as a role and process in achieving evidence-based practice in nursing: a focused review of concept and meaning. Worldviews on Evidence-Based Nursing 2010;7:76–89.
15. Laferriere D, Liddy C, Nash K, Hogg W. Navigating change: how outreach facilitators can help clinicians improve patient outcomes. J Am Board Fam Med 2012;25:232–7.
16. Harvey G, Lynch E. Enabling continuous quality improvement in practice: the role and contribution of facilitation. Front Public Health 2017;5:27
17. Hemler JR, Hall JD, Cholan RA, et al. Practice facilitator strategies for addressing electronic health record data challenges for quality improvement: EvidenceNOW. J Am Board Fam Med 2018;31:398–409.
18. Ritchie MJ, Parker LE, Kirchner JE. From novice to expert: a qualitative study of implementation facilitation skills. Implement Sci Commun 2020;1:25.
19. Parchman ML, Fagnan LJ, Dorr DA, et al. Study protocol for "Healthy Hearts Northwest": a 2x2 randomized factorial trial to build quality improvement capacity in primary care. Implement Sci 2016;11:138.
20. Solberg LI, Asche SE, Margolis KL, Whitebird RR. Measuring an organization's ability to manage

change: the change process capability questionnaire and its use for improving depression care. Am J Med Qual 2008;23:193–200.

21. Parchman ML, Anderson ML, Dorr DA, et al. A randomized trial of external practice support to improve cardiovascular risk factors in primary care. Ann Fam Med 2019;17:S40–S49.

22. Parchman ML, Anderson ML, Coleman K, et al. Assessing quality improvement capacity in primary care practices. BMC Fam Pract 2019;20:103.

23. Balasubramanian BA, Marino M, Cohen DJ, et al. Use of quality improvement strategies among small to medium-size US primary care practices. Ann Fam Med 2018;16:S35–S43.

24. EvidenceNOW: Change Process Capability Questionnaire scoring: agency for healthcare research and quality. Available at: ahrq.gov.

25. Kilbourne AM, Geng E, Eshun-Wilson I, et al. How does facilitation in healthcare work? Using mechanism mapping to illuminate the black box of a meta-implementation strategy. Implement Sci Commun 2023 May 16;4:53.

26. Baker N, Lefebvre A, Sevin C. A framework to guide practice facilitators in building capacity. J Fam Med Community Health 2017;4:1126.

27. Walunas TL, Ye J, Bannon J, et al. Does coaching matter? Examining the impact of specific practice facilitation strategies on implementation of quality improvement interventions in the Healthy Hearts in the Heartland study. Implement Sci 2021;16:33.

28. Waltz TJ, Powell BJ, Matthieu MM, et al. Use of concept mapping to characterize relationships among implementation strategies and assess their feasibility and importance: results from the Expert Recommendations for Implementing Change (ERIC) study. Implement Sci 2015; 10:109.

29. Powell BJ, Beidas RS, Lewis CC, et al. Methods to improve the selection and tailoring of implementation strategies. J Behav Health Serv Res 2017;44:177–94.

30. Shade L, Reeves K, Rees J, et al. Research nurses as practice facilitators to disseminate an asthma shared decision-making intervention. BMC Nurs 2020;19:40.

31. Fernandez M, ten Hoor GA, van Lieshout S, et al. Implementation mapping: using intervention mapping to develop implementation strategies. Front Public Health 2019;7.

Appendix.

Appendix Table 1. Implementation Strategies Enacted by Practice Facilitators and Representative Quotes

Implementation Strategy		Percentage of Practices with Which the Implementation Strategy Was Used at Least Once During the Study	Representative Quote
Commonly Used (Present in > 80% of sampled practices)	Develop and/or implement tools for quality monitoring	100%	"Meeting to demo proposed changes to the data visualization in [the data dashboard] and ask for feedback." (139:1)
	Assess barriers that may impede implementation	95%	"The group, particularly [NAME], is perseverating on the data for [the outcomes].They still haven't shared it with us, stating it's not accurate yet. [NAME2] and I have attempted to allay concern, but with little effect as of yet. The problem is that without the data, it's prevented them from actualizing concrete ideas for addressing the [the outcomes]. Right now, we're skirting the high leverage changes, which is definitely a good thing, but we've yet to relate them to the [the outcomes] specifically. I am hoping that by the next meeting we can make some moves on the measures." (133:2)
	Assess for readiness or progress	93%	"They have made clear progress and completed tasks that are building their foundation to make thoughtful change." (131:2)
	Develop and support teams	91%	"Clinicians are engaged and have a desire to keep moving with embedding QI into their practice framework. They have acknowledged they can incorporate other staff members of the practice to be included in this work and learn QI techniques, to help keep this infrastructure in place after the Practice Coach has completed this project with them. We will start including the Office Manager." (215:2)
	Conduct educational meetings	86%	"We discussed the data and perception of the data and how the clinics will use it to plan their model for improvement" (952:1)
	Distribute educational materials	73%	"[NAME] to send the QI team the [outcomes] clinical evidence one-pagers once they are finalized." (131:4)
	Capture and share local knowledge and promote network weaving	66%	"I did share the tobacco-free readiness assessment that another practice of mine developed." (135:8)
	Identify and prepare champions	61%	"Considering needing a champion…[Doctor]. could be the person. She has shown great team spirit and initiative since arriving recently at [clinic] and is well liked and respected by peers." (621:10)
	Conduct ongoing training	59%	[NAME] and I will be doing a presentation on PDSA to the managers in the next couple of weeks." (948:2)
	Prepare patients/ consumers to be active participants	45%	"We talked about how we could get patients thinking about lifestyle changes and how they may impact their [blood pressure] before meeting with the [clinician]." (137:7)
	Assess facilitators that enhance implementation	36%	"Practice has a strong QI team and leadership support…. they have completed the integration of mental health and primary care successfully–strong in house cross functional team support with a focus on patient self-management, personal goal setting and motivational therapy." (784:4)
	Train for leadership	32%	"Facilitated a conversation with CEO regarding the loss of their QI manager and H2N. [NAME] decided to form a new QIC (Quality Improvement Committee) and add H2N to its ongoing agenda." (527:3)

Continued

Appendix Table 1. Continued

Implementation Strategy		Percentage of Practices with Which the Implementation Strategy Was Used at Least Once During the Study	Representative Quote
	Promote adaptability	30%	"The team needs to address time limitations and rework their goals to be more aligned. We took the remaining duration of this meeting to discuss how that will look and plan out [hypertension] next steps." (168:5)
Rarely used (present in <20% of sampled practices)	Conduct educational outreach visits	14%	On [Date, experts] will co-host a conference call with experts and a few other clinicians like you with whom we have had these [cardiovascular disease] risk calculator discussions." (540:3).
	Involve patients/ consumers and family members	14%	"Have three patients interested in inviting to the team. There are benefits to having patient involvement earlier in the QI process. Will consider inviting them to begin participating in March." (152:4)
	Facilitate relay of clinical data to clinicians	11%	"[NAME] will send out dashboards to clinicians at least a couple days in advance to allow them to reflect and digest the information and formulate questions/concerns, etc. in preparation for the clinician meeting." (131:8)
	Remind clinicians	11%	"[NAME] has put sticky notes on each clinician's computer reminding them to use the health maintenance area within the [electronic health record] because people are often just clicking through without documenting the work that they are doing around these measures." (687:7)
	Tailor strategies	11%	"They are addressing the smoking measure by adding a full stand-alone sheet of tobacco related questions that align with their [electronic health record] entry… We dove in to talking about the advantages of the tobacco use form and how it can streamline clinician time in finding and addressing patients that actually are interested in quitting or talking about alternatives. It could also prompt scheduling a specific appointment to address cessation separate from their acute issue. We spoke about rolling this form out sooner than [date]." (557:10)
	Obtain and use patients/consumers and family feedback	9%	"[NAME] brought up that several patients cannot afford their medications and she would like to somehow build questions into visits surrounding determining if patients can afford what they are prescribed, in a sensitive way." (582:6)
	Build a coalition	9%	"We spent the whole hour going over their QI plan and developing a new structure that would fit their current needs. They decided to have the [quality improvement] and [quality assurance] committees separate, but that they would report to each other quarterly on items that have cross over." (1213:2)
	Identify early adopters	7%	"Per [NAME] this is a huge part of how he orients his practice. He tries diligently to ensure this is done. This may vary across clinicians. I asked if we could discuss further how he does this so well with his patients at a later time. This could be very valuable info to spread across the practice." (129:10)
	Develop/use a formal implementation blueprint	7%	"First visit was consensus discussion and overview, second visit was building foundation for cross-sectional [quality improvement], and by the third visit we hope to review data together." (1240:4)
	Audit and provide feedback	7%	"Action: Audit 10 to 15 patient charts from the list 94 current smokers. Look to see if any smoking cessation counseling has been documented (this will help us determine if the documentation is being lost in the text/ is not in a field that the [electronic health record] can pull a report from)" (554:3)

Continued

Implementation Strategy	Percentage of Practices with Which the Implementation Strategy Was Used at Least Once During the Study	Representative Quote
Make training dynamic	2%	"[NAME] suggested using a delayed staff message that shows up on the day a patient is coming in and alerts the clinician to discuss the issue of importance. [NAME] has had success with this method, so [NAME2] wants to try it out and tweak as necessary." (917:2)
Inform local opinion leaders	2%	"They also talked about identifying clinicians that are a problem and reaching out from clinician to clinician or owner to owner to try and resolve the issue." (744:5)