Multi-institutional collaborative and QI network research

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Behavioral and Psychological Aspects of the Physician Experience with Deimplementation

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Abstract

Introduction: Deimplementation, or the structured elimination of non-evidence–based practices, faces challenges distinct from those associated with implementation efforts. These barriers may be related to intrinsic psychological factors, as perceptions and emotions surrounding the discontinuation of established practices appear to differ from those associated with practice adoption. This study aims to explore barriers and facilitators experienced by pediatric clinicians engaging in deimplementation projects. **Methods:** We used behavioral economics concepts to inform our qualitative study design following a theory-informed inductive approach. We conducted semistructured interviews with participants from two national quality improvement collaboratives where the primary outcomes were deimplementation measures. Using purposeful sampling, we recruited project leaders at institutions in the top and bottom quartiles from within each collaborative. Finally, we conducted a thematic analysis using a combination of inductive and deductive coding. **Results:** In total, we interviewed participants from 12 high-performing sites and 7 low-performing sites. Participants identified nine concepts associated with successful deimplementation practice and three psychological barriers that impacted behavior change: (1) loss, (2) fear, and (3) action bias. Participants further identified four overarching strategies for mitigating the identified psychological barriers, including (1) making allowance for nonconformism; (2) permission to change; (3) normalizing; and (4) reframing. **Conclusion:** There is potential for more effective deimplementation through the proactive incorporation of an awareness of specific psychological barriers of loss, fear, and action bias, as well as specific mitigation strategies to address the psychocognitive experience. *(Pediatr Qual Saf 2022;7:e524; doi: 10.1097/pq9.0000000000000524; Published online January 21, 2022.)*

INTRODUCTION

Deimplementation, or the structured attempt to eliminate non-evidence–based practices, has garnered increasing attention over time as the focus on high-value healthcare has intensified.[1] Most current frameworks for approaching deimplementation build upon the structural elements-proven effective in implementation science.[2–4] Although relying on strategies developed by implementation science may be a rational extrapolation, an awareness of distinct challenges associated with deimplementation is emerging. In particular, intrinsic psychological factors appear to have a unique impact on deimplementation efforts, as perceptions surrounding the discontinuation of established practices differ from those associated with practice adoption.[5–7]

With an increased focus upon deimplementation,[1,8,9] there is an urgency to understand how to accomplish the task more effectively. Early descriptions of the phenomenon of deimplementation acknowledged that, although a recommitment to evidence-based medicine should drive deimplementation, "rational, quantitative evidence may not necessarily be the only or even main factor driving healthcare decisions."[10] Ubel and Asch[7] expanded on this by proposing potential psychological barriers to deimplementation, classifying them as biases arising from preconceptions, clinical experience, and seeing causality when it is not present. Helfrich et al[5] further suggested that two complementary strategies contingent on the dual processing model of cognitive psychology frame approaches to deimplementation: (1) unlearning or applying solutions predicated on reflective cognition to consciously change beliefs about an ineffective practice and alter behavior accordingly and (2) substitution, or promoting solutions which rely on automatic cognition.[4]

The future success of deimplementation initiatives requires developing an evidence-based specific to

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discontinuing ineffective practices, as much of the existing literature is theoretical. In this study, we used a qualitative approach to elicit the attitudes of physicians participating in two distinct pediatric quality improvement (QI) collaboratives focused on deimplementation. Our specific aim was to explore the facilitators and barriers experienced by providers participating in QI initiatives focused upon discontinuing practices.

METHODS

Study Design and Research Team

We conducted a multisite qualitative study from May 2019 through March 2020. We followed a theory-informed inductive approach, based upon assumptions that understanding a phenomenon varies by individual. Thus, by compiling the perspectives of multiple individuals, we gain a richer understanding of the phenomenon.[11] We used principles from behavioral economics to inform our research questions, study design, analysis, and conclusions.[11]

Behavioral economics describes the psychological, emotional, and social factors that influence an individual's decision-making.[12] Within this context, individuals are assumed to exhibit a pattern of predictably irrational decision-making.[12] The framing and perception of risk and attribute substitution often influence decisions,[13] which are particularly relevant to decision-making in healthcare.[14]

The research team consisted of three pediatric hospitalists. One of the researchers, S.L.R., was directly involved in leading the projects studied and thus did not conduct interviews. The remaining two researchers were not involved in either QI project. However, the research team has collaborated on previous national presentations regarding deimplementation.

Participant Recruitment and Sampling

We conducted interviews with project representatives from two national QI projects focused on deimplementation. Through the VIP network, 35 sites participated in the Stewardship in Bronchiolitis (SIB) project in 2015–2016, and 48 sites participated in the Improving Community-Acquired Pneumonia (ICAP) project in 2014–2015. We chose SIB and ICAP to ensure interviews captured a range of experiences as they represent two possible models for deimplementation, unlearning, and substitution.[5] Within SIB, the deimplementation measure involved recommendations to stop using albuterol to treat bronchiolitis, consistent with unlearning. In ICAP, the project involved substituting broad-spectrum antibiotics with narrow-spectrum antibiotics to treat pneumonia. VIP is an ongoing pediatric QI collaborative, and this article builds upon previous qualitative interviewing with participants.[15,16]

For these projects, emergency department (ED) and inpatient units had their performance measured individually. Thus, the 35 SIB sites contributed 70 departments, and the 48 ICAP sites contributed 96 departments. We created top and bottom quartiles in each department for both projects; as such, a site could be in the top-performing quartile in one department and the bottom for the other. Sites were eligible for enrollment in our study if they were top or bottom quartile performers in the ED or inpatient unit for either SIB or ICAP. Accordingly, we purposefully sampled both high and low performers.

The principal investigator (C.E.M.) recruited participation from site leaders who received no incentive for participation. We continued enrollment until we reached thematic sufficiency, where subsequent interviews revealed few new concepts.

Data Collection

Individual interviews were audiorecorded and professionally transcribed. We developed a semistructured interview guide incorporating behavioral economics concepts from previous studies.[6,12,14,17–19] The guide included open-ended questions surrounding three main areas: (1) specific actions undertaken to promote deimplementation measures, (2) facilitators or barriers to success, and (3) the emotional experience of stopping a practice (Supplemental Digital Content 2, ***http://links.lww.com/PQ9/A356***). We piloted the guide with participants at institutions not eligible for the study and revised the guide for clarification and refinement around the research aims.

After obtaining verbal consent, a single research team member conducted all interviews. To build credibility and transferability, we performed member checking with participants after the interview by summarizing the main points discussed. In addition, the interviewer documented postinterview field notes after each interview to support reflexivity. The American Academy of Pediatrics' institutional review board approved the study.

Analysis

Using the theory-informed inductive approach to thematic analysis,[20] two authors (C.E.M. and S.A.H.) independently read and elicited de novo concepts from the data. After the first two interviews, the entire study team met to discuss emerging concepts, conceptual overlap, and coding discrepancies. We repeated this process through the first five interviews. Subsequently, we developed a codebook, allowing for coding consistency through the remaining analytic process. The codebook was used to recode the initial five interviews and the remaining interviews. Nine interviews were independently double-coded by research team members and verified between coders. The study team collaboratively resolved any discrepancies. After that, the remaining 10 interviews were coded by a single research team member and verified by another team member for agreement. During the coding of the interviews, the research team met monthly to discuss categorizing the codes and emerging themes. Last, we utilized axial coding to explore the relationships between themes.

We performed coding using Dedoose (version 7.0.23; Los Angeles, Calif.).

RESULTS

We identified 42 sites in the top quartile and 24 sites in the bottom quartile. We then interviewed project leaders from 19 sites, 12 high-performing sites, and 7 low-performing sites. Ten included sites participated in SIB and 9 in ICAP. Sites represented all five geographic regions within the United States. Interviews lasted 22–46 minutes and generated 413 excerpts.

We identified facilitators and barriers to deimplementation and specific strategies to mitigate the identified barriers. Our conceptual model represents this interplay (Fig. 1).

Strategies that Facilitate Successful Deimplementation Practice

Participants described multiple techniques used in deimplementation that promoted a successful behavior change. These included the use of incremental change, updating or developing order sets, engaging key stakeholders, establishing buy-in, building respect and trust through personal relationships, having identifiable leadership, using strategic communication, providing audit and feedback, and educating on the evidence. Table 1 provides exemplary quotes.

Psychological Phenomena that Function as Barriers to Deimplementation

We identified three primary psychological phenomena that inhibited behavior change within the context of deimplementation: (1) loss, (2) fear, and (3) action bias. Eighteen of 19 participants described loss as a barrier within their project, with the only exception being one inpatient site in the bottom quartile for SIB. Similarly, 14 of 19 participants discussed aspects of fear; those not discussing fear worked in both clinical settings (two inpatient SIB, one inpatient ICAP, and two ED ICAP providers) and were in top and bottom quartiles (three top performers and two bottom performers). Last, participants in 15 of 19 interviews discussed concepts of action bias. The four participants that did not discuss action bias were all top quartile inpatient ICAP providers.

Loss

Providers described various aspects of loss accompanying deimplementation efforts. One aspect of loss was a sense of helplessness. As one provider stated, "You lose part of your toolkit, so you feel less effective." (SIB 8). The second major aspect of loss was a sense of betrayal of an individual's training or prior practices. This barrier included the loss of connection to mentors or prior institutions respected by the participant and the concept that giving up a practice projects a negative connotation on the previous way of practicing, "It makes you feel like

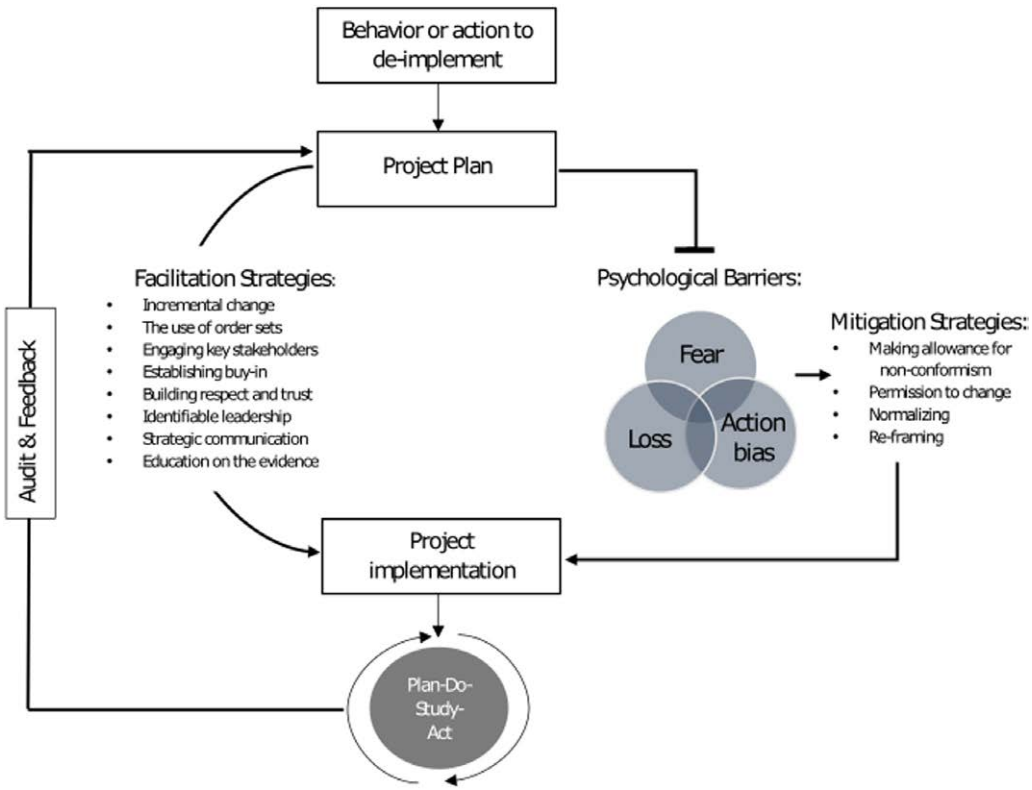

Fig. 1. Conceptual model for representing facilitation strategies, barriers, and mitigation strategies to deimplementation within a QI project.

Table 1. Exemplary Quotes of Strategies that Facilitate Successful Deimplementation Practices

Strategy	Exemplary Quote
Incremental change	We had a lot of pushback, even from some of the veteran attendings…And we tried to create sort of a stepwise approach… and I think that was more helpful for our providers…It was really not scientific, to be perfectly honest. It was more trying to create a culture change that was comfortable for people to start with and then go from there. SIB 8
The use of order sets	One of the things that I did do is I changed our electronic ordering system…I took ceftriaxone out of the pneumonia order set. ICAP 3
Engaging key stakeholders	I would say to find the key stakeholders or the influencers, the champions, the people that will be listened to. Those people you have to have on board or they're going to… submarine you. SIB 10
Establishing buy-in	We went to their ED meetings… and once you get the buy in from them and know that are in, then they're not just setting up to change something because we want them to but because they understand and are on board also. SIB 2
Building respect and trust	[The pediatricians] did not want to take away that trust in their medical home and with their primary care physician, and the pediatricians didn't want that trust to be broken. [We had to] make sure to respect and value everybody's role in the patient's medical care. SIB 5
Identifiable leadership	I think peer behavior is huge. I am so lucky that I have a really good partner in quality in the emergency department, because we've been able to do a lot of continuum of care projects like this. He is very knowledgeable, and he has a very calm demeanor, and he's very smart, and I think he's a natural leader. And so, he is one of those people that you call an influencer, I would say, in the ED, and I think that's very helpful. SIB 8
Strategic communication	And so we ran the project in a coordinated way, tried to learn from each other, share data with our same resources, be consistent across the three facilities in terms of what we set as goals. SIB 6
Audit and feedback	We actually had a dashboard that we still use. The group gets together with pulmonology, RT, ER, hospitalist, all that…The dashboard was created during the project with length of stay, readmissions… and complication rate. We included rates of empyema, escalation of care, like antibiotics, going onto another antibiotic, that kind of stuff…So we were able to show we were moving up to the project…and it wasn't causing harm. ICAP 7
Education on the evidence	So I think the biggest thing we did was make sure that everybody was aware of the guidelines. So we have Tuesday conferences every week with our entire division, …and we shared it in a conference explaining the guidelines and making sure everybody was aware. ICAP 9

ER, emergency room; RT, respiratory therapy.

you're wrong or have been wrong... And you don't want to admit that because we're all type A personalities and we're always right, and that's just how it is" (SIB 9).

Fear

The described fears accompanying deimplementation efforts included fear of a missed diagnosis, unanticipated clinical deterioration, lawsuits, and parent or outpatient provider dissatisfaction with care, "It's so much ingrained in your brain that you don't want to change for the fear of the child developing some complications. Or something not working. Or the patient deteriorating and needing some other measures. Or transferring to PICU… So that may be a reason why someone is reluctant to change." (ICAP 1). Specific repercussions associated with provider and family dissatisfaction included concerns about continued referrals and decreased quality scores: "They feel like they're in this glass bubble of constant evaluation and looking for good feedback from the families. And if the family complains that they didn't get albuterol, they feel like they get their hand slapped because they didn't get good family patient satisfaction" (SIB 7).

Action Bias

Participants described the concept of action bias, the tendency to favor action over inaction, in several ways. First, the result of deimplementing a practice or behavior is often viewed as inaction. For example, explaining the absence of active treatment to families and other providers took more time and effort than ordering an additional intervention, "It's definitely easier to just order a test…there's a perception that it's just easier to do the task and not have to worry about convincing someone that they don't need it" (SIB 10). Participants also discussed how the structure of the medical system, including provider incentives and referring physician and parent expectations, encourages a tangible intervention, "[ED physicians] are not being taught to do nothing. I mean, in the office as pediatricians a lot of times supportive care is considered OK, but in the ED you've got to do something…whether it is giving an IV, giving a chest X-Ray, or giving a treatment to see what happens" (SIB 2). In addition, participants described how their altruistic desire to improve sick patients predisposed them to act, "I think all of us in medicine are fixers or we're actually people who want to do something, and we want to make people feel better…Even if it doesn't work, you've tried, and you've given the patient your best shot, and it's easy not to consider the longer-term ramifications of side effects, overuse, those types of things" (ICAP 8).

Strategies to Mitigate Psychological Barriers within Deimplementation

Participants identified four overarching strategies for mitigating the identified psychological barriers, including (1) making allowance for nonconformism, (2) permission to change, (3) normalizing, and (4) reframing. Table 2 demonstrates exemplary quotes of strategies and substrategies.

Making Allowance for Nonconformism

Participants described the importance of defining parameters when a generally nonrecommended intervention may be allowed to promote buy-in, and in some cases, is medically justified. A substrategy is the idea of promoting a non-zero approach, that is, acknowledging that the appropriate target for most therapies, laboratories, or

Table 2. Exemplary Quotes for Mitigation Strategies Targeting Psychological Barriers in Deimplementation

Strategy	Substrategy	Exemplary Quote
Making allowance for nonconformism		We had a major battle with infectious disease who, to this day, does not agree with using ampicillin as a narrow spectrum... So, then we changed the order set to say that ampicillin was first line. We did keep ceftriaxone on the order set, but people would have to click which antibiotic they wanted. ICAP 7
	Non-zero approach	The correct number of chest x-rays, I always tell people, isn't zero. The correct number of doses of albuterol isn't zero, to try and make it clear that our goal wasn't to completely eliminate those things because I actually would disagree with that philosophy as well. SIB 10
Permission to change		That's just what they had been taught, and so not doing what they had been taught to do by people whose judgment they respected and had told them that if they weren't doing this, they would run the risk of having complications or not treating the patient properly, not doing that was difficult. I think because there was part of them that was like, "These people were really smart. They were really, really smart people and they told me to do it this way." [So then I say,] "Okay so the smart people at the institution that trained you did do it this way when they taught you this 10 years ago, but you know what? They're doing it this way now! And they're really smart. They're still just as smart as they were 10 years ago when they taught you to do it the other way." ICAP 3
Normalizing		"This is what the evidence shows. This is what other institutions are doing. This is best practice. And it works. And patients are still recovering and are still healthy." So I think it was more so that approach, rather than trying to tell somebody that they weren't doing what's best. Because none of us have ill intention with any of our treatment plans or approaches. SIB 4
	Group norming	When I explained it to [providers] and used some local infectious diseases experts to say, "Hey this person backs this up," then that was better, because they were convinced, because a local person that they knew who deals with infectious diseases had sort of blessed it. ICAP 8
Reframing		"[We say,] 'We're starting a new practice, and this is what it is.' And so couching what we're doing in terms of starting something new – 'Now we are doing this,'- even if it's not doing something. 'Now we're doing watchful waiting; now we're doing whatever.'" ICAP 5
	Pre-empting expectations of action	We usually say, "Right now, I do not hear any wheezing" or, "Right now, the way your child sounds doesn't sound like they need breathing treatments. But the good thing is that we're here all the time, so I can come back in a couple of hours and if that is to change, then we can think about it again."… So it's more like using the benefit of being in the hospital and how we have the opportunity for reassessment, frequent reassessments. And if something were to change, then we could talk again. SIB 5
	Justifying time as action	I think again it comes with the idea that it's okay to spend an extra 25 seconds in a room saying why you don't need to do something. As opposed to just clicking the button and ordering it, to walking away and sort of making your life easier. SIB 10
	Substitution	We have to replace a bad habit with another habit. And if you don't have that replacement, it's really easy to just revert back to that bad habit, even if you ascribe to it as being bad. If you don't have something to replace it with, it is really hard to make the change. SIB 6
	Uncoupling	In the ER, we would say to the nurse, "Suction them and give them a neb." That's what we always did. So what I asked, just as a simple step, is that we separate those two pieces…That was our biggest success - just a simple step of don't do those two together. SIB 9

ER, emergency room; neb, nebulizer

procedures may not be zero. Finally, participants stressed the importance of defining occasional deviation from evidence-based medicine as a necessary part of the practice of medicine.

Permission to Change

Participants described how receiving explicit permission to stop prior practice patterns reduced the feelings of failure and betrayal that accompanied deimplementation efforts. However, participants also acknowledged that processing prior outlier cases, where a suboptimal outcome was associated with foregoing a treatment or practice being targeted for deimplementation and was critical for addressing the emotional aspects of changing practice.

Normalizing

Participants characterized normalizing as the social process through which new ideas and actions become routine. Normalizing is often accomplished by identifying actions as supported by well-known national organizations, and the need for such support was particularly important to legitimize discontinuing an established practice. Some participants noted that novel practices could become established without high-quality evidence, but discontinuation seems to require official sanctioning. Participants described group norming as positive motivation for change based on what others are doing locally (within individual institutions) and nationally (as part of a larger group or collaborative).

Reframing

Participants expressed the need to reframe inaction as action internally within their minds and externally through communication with others. Often reframing involved reconceptualizing ongoing monitoring or observation as an active process. Participants, particularly within the ED, described how time is critical, and justifying the time gained by avoiding an intervention was key to acceptance of deimplementation. In addition, participants highlighted the importance of communicating their mental shift to others, including parents or family, primary care physicians, intensive care physicians, and others within the care team. Practical actions to support psychological reframing included concepts such as substitution—framing other aspects of care as core interventions, such as overnight observation instead of treating with medications, and uncoupling—disassociating previously linked practices to discontinue one practice without the other.

DISCUSSION

Our study elucidates several facilitators and barriers that should be considered in planning and operationalizing deimplementation efforts. In addition, our interviews identified the concepts of fear, loss, and action bias as psychological phenomena challenging deimplementation efforts. Finally, participants identified multiple strategies that may help overcome these barriers.

Standard processes and tools facilitate implementation, such as interdisciplinary teams, explicit goal setting, and frequent performance feedback.[21,22] Change management strategies promoting organizational culture change are also essential to successful implementation.[23] Our study participants reported that these elements are also important to deimplementation, with interviews highlighting the need for audit and feedback, stakeholder engagement, and building trust and respect among participants. These factors are perhaps unsurprising as both implementation and deimplementation efforts are inherently aiming to transition groups from a current state of action or thinking to a future, desired state.[24]

The psychological barriers to deimplementation described by our participants require intentionality to address when designing a deimplementation project. Most current approaches to addressing the underlying psychocognitive aspects to deimplementation target the concepts of "unlearning" or the reliance on education and change management skills to engage participants and change beliefs.[2–4,6] Newer literature also addresses practical strategies such as replacing behaviors to provide a tangible "new" choice to providers.[5,25] Aligning with Helfrich et al on the use of substitution, Parchman et al,[25] in work exploring decreasing medical overuse, discuss replacing behaviors rather than relinquishing choices. Our data suggest that both unlearning strategies, such as making allowance for nonconformism, and substitution strategies, such as reframing, may address overlapping psychological factors. For instance, while reframing addresses action bias by re-interpreting time as action, it also targets fear by proactively mitigating the expectations of families and providers. Our data underscore that deimplementation work needs to actively incorporate strategies that simultaneously address multiple underlying psychology aspects.

Although our participants identified strategies to address the psychological barriers to deimplementation, other concepts within behavioral economics have also been cited as possible facilitators of clinical practice change.[26] Concepts such as providing social reference points, changing default settings within electronic health records, and establishing peer comparison are effective in implementation science[26–28]; these concepts can promote successful deimplementation and warrant further investigation.

Translating the concepts identified in this study into a practical model to assist deimplementation efforts will require several steps. First, further investigation of the described psychological phenomena should occur in other samples and settings. Qualitative research is hypothesis-generating by design; we plan to test our concepts in future deimplementation projects and hope to see others investigate these ideas outside inpatient pediatrics. Based on our study, we hypothesize that addressing emotional and psychological aspects of discontinuing established practices may help normalize individuals' experiences and thus facilitate deimplementation. This may be done by incorporating the concepts described in Figure 1 into the planning of a QI project. For example, when developing a key driver diagram for a deimplementation project on febrile infants, an aim may be to reduce unnecessary lumbar punctures, with one of the primary drivers being fear of a missed diagnosis. To address this fear, a change idea could be reframing the necessity through shared decision-making with the family regarding observation without intervention. However, as the success of individual strategies will vary by context, future QI work to measure and compare the effectiveness of the proposed mitigation strategies suggested from our data will be necessary to establish the generalizability of these findings. Clinicians and researchers may consider QI methodologies such as step-wedge study designs to better characterize circumstances in which the specific mitigation strategies may be beneficial. Finally, we need future work exploring broader perspectives on deimplementation, including those of patients and families, to elucidate how their belief systems around non-evidence–based interventions influence efforts to eliminate these practices.

There are several weaknesses to this study. First, there may be participation bias, as many sites responding to interview invitations for this study had participated in other projects through the VIP network, including previous interviews for other qualitative investigations.[15,16] In addition, as both QI projects happened more than 5 years ago and deimplementation is an increasing area of discussion, recall bias may have altered participants' views of their experiences with these projects. Second, our participants only included pediatric practitioners. Although that may limit transferability to adult-focused interventions, our identified strategies for deimplementation were not inherently specific to pediatric needs or characteristics. In addition, although we purposively sampled top and bottom quartile performers to ensure we did not oversample one type of experience, the sample size was inadequate for quantitative comparisons between the groups. Although our initial objective was to capture the breadth of experiences, future work could further delineate data by performance. Our research team also consisted exclusively of pediatric hospitalists, which may have introduced bias into our analysis. However, we did utilize techniques of member checking and field notes to foster reflexivity. Finally, although our participants identified specific psychological phenomena and mitigation strategies, other phenomena and strategies at play within deimplementation were not captured or studied.

CONCLUSION

Our study elucidated several barriers to successful deimplementation experienced by pediatric providers participating in two QI projects focused on practice discontinuation, as well as mitigation strategies to address these barriers. There is potential for more effective deimplementation through proactive mitigation strategies to address the psychocognitive experience within de-implementation.

DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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