What strategies are used by clinician champions to reduce low-value care?

Michael L Parchman1, Lorella G Palazzo1, Jessica M Mogk1, Janna C Webbon1, Lauren Demosthenes2, Elizabeth Vossenkemper3, George Hoke4, Joshua Moskovitz5,6, Leslie Dunlap7 and Roberto Diaz del Carpio8

Abstract

Background: Clinician champions are front-line clinicians who advocate for and influence practice change in their local context. The strategies they use when leading efforts to reduce the use of low-value care have not been well described. The purpose of this study is to identify and describe strategies used by six clinician champions who led a low-value care initiative in their clinical setting.

Methods: Qualitative data collected during an overuse reduction initiative led by clinician champions were used to identify strategies, guided by the Expert Recommendations for Implementing Change compilation of strategies. Clinician champions were asked to rank the importance of these activities and indicate which one of the six most important activities they would be willing to discuss in an interview. A 30-min semi-structured interview was conducted with each clinician about the activity they selected and thematically analyzed.

Results: Twelve Expert Recommendations for Implementing Change strategies were identified. The top six strategies discussed during interviews were: build a coalition, conduct a local needs assessment, develop a formal implementation blueprint, conduct educational meetings, use facilitation, and develop clinical reminders. Common themes that emerged across all interviews were the use of data to engage clinicians in conversations, including the patient’s perspective in designing the interventions, and investing the time upfront to plan and launch the initiative because of the inherent challenges of relinquishing a service.

Conclusions: Clinician champions identified multiple strategies as important when de-implementing a low-value service. Many were used to engage in conversations with stakeholders, including leadership, providers, and patients, to increase buy-in and support, challenge beliefs, promote behavior change, and gather insights about next steps in their effort. Future work is needed to better understand how to prepare clinicians for this role and to understand the mechanisms through which these strategies might be effective.

Keywords

Low value, clinician champion, de-implementation, de-adoption, overtreatment, overuse, implementation science, medical reversal, harmful

Date received: 8 September 2021; accepted: 10 December 2021

1Kaiser Permanente Washington Health Research Institute, Seattle, WA, USA
2University of South Carolina School of Medicine Greenville, Greenville, SC, USA
3Tri-Cities Community Health, Pasco, WA, USA
4University of Virginia School of Medicine, Charlottesville, VA, USA
5Department of Emergency Medicine, Albert Einstein College of Medicine, New York, NY, USA
6Department of Public Health, Hofstra School of Health and Human Services, New York, NY, USA
7University of New Mexico Hospital, Albuquerque, NM, USA
8CareMore Health, Cerritos, CA, USA

Corresponding author:
Michael L Parchman, Kaiser Permanente of Washington Health Research Institute, 1730 Minor Ave., Ste. 1600, Seattle, WA 98101, USA.
Email: michael.x.parchman@kp.org

Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (https://creativecommons.org/licenses/by-nc/4.0/) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (https://us.sagepub.com/en-us/nam/open-access-at-sage).
Introduction

Although there is a growing body of knowledge about strategies to improve the implementation of underused, evidence-based practices, less is known about how effectively engage clinicians in efforts to reduce the use of low-value care. Also known as overused, inappropriate, or unnecessary care, these are services for which the potential for patient harm is greater than the benefit. Spurred by a growing body of evidence about both the volume of unnecessary health care services and the harm they inflict on patients, interest is growing in identifying effective strategies and approaches to reduce the use of these services. It is commonly recognized that factors affecting successful de-implementation are often multi-level, complex, context specific, and interact in ways that are uniquely different from implementation of an evidence-based service. In addition, individual health care organizations have distinct patterns of overuse that persist over time, suggesting the need for interventions embedded within the organization to address the culture of how care is delivered. One such intervention found in some studies to reduce low-value care is that of the clinician champion. Educating colleagues, advocacy, relationship building, problem-solving, implementing new care pathways, monitoring progress, and standardizing processes across service lines, and use of a participative leadership style.

The purpose of this study is to identify and describe strategies employed by clinician champions who led an initiative to reduce the delivery of a low-value service across a diversity of care settings. Three questions guided our study:

1. What strategies do clinician champions use when leading an initiative to de-implement an overused service?
2. How do clinician champions employ that strategy to support de-implementation efforts in their project?
3. When discussing these strategies, what additional insights about how a clinical champion can be effective are common across the six initiatives?
Methods

Study design

An observational study of six clinicians who led an overuse reduction projects to address a low-value care service in their clinical setting.

Subjects and setting

Six clinicians from safety net settings across the United States were recruited to participate in a 16-month program from April 2019 to July 2020 address overused services in their setting. We prioritized safety net settings, which serve populations that are uninsured or covered by Medicaid or other vulnerable populations because of the interest of the funder, the Robert Wood Johnson Foundation, in health equity. Clinicians were asked to submit an application that included a description of their setting and their targeted low-value care service. In addition, we required evidence of leadership support and endorsement of each individual as a champion by providing a letter of support. Descriptions of the selected clinicians, their clinical setting, and the overuse topic they selected for their project are given in Table 1. Clinicians met monthly with a mentor and participated in a monthly meeting to share progress on their overuse reduction project. After 12 months, each clinician presented the results of their project during a Capstone meeting to an invited national audience.

Data collection and analysis

All data were collected as part of a planned formative and summative evaluation of their learning experiences for the purpose of developing a more formal program for future cohorts of clinician champions. An overview of the steps taken to collect and analyze the data to answer the three questions is shown in Figure 1. Here, we describe the specific methods used for each question.

Table 1. Clinician champions, their projects, and important strategies.

| Clinician | Setting | Project | Important strategy |
|-----------|---------|---------|-------------------|
| 1. Primary care general internist | Academic residency program faculty | Overprescribing of opioids for chronic pain | Clinical reminders |
| 2. Emergency department physician | Urban/inner city emergency department | Imaging for low back pain | Facilitation |
| 3. Obstetrician/gynecologist | Academic health center | Postnatal visits for hypertensive disorder of pregnancy | Building a coalition |
| 4. Inpatient podiatry physician assistant | University hospital | Antibiotic stewardship for diabetic foot sores | Local needs assessment |
| 5. Internal medicine hospitalist | University hospital | Multiple lumens peripherally inserted central catheters | Educational meetings |
| 6. Pediatric advanced nurse practitioner | Federally qualified health center | Cough/cold medicine for infants/children | Implementation blueprint |

Question 1. What are the most important strategies used by the value champions?

Data collection. Qualitative evaluation data were collected from eight sources during the project (see Supplemental Appendix 1). We used template analysis to analyze source documents from these eight data sources employing a code list drafted by LP and iteratively refined and agreed upon by the project team.28 Five coding memos focused on central aspects of the clinicians’ projects and experience were developed: (1) project implementation strategies, (2) sequencing of project steps, (3) training needs and gaps, (4) lessons learned, and (5) insights into preparing new clinician value champions.

Analysis. Guided by the Expert Recommendations for Implementing Change (ERIC) compilation of intervention strategies, two team members (MP and LP) reviewed the five coding memos to identify strategies used by the clinicians during their projects.1 Strategies from the coding memos that appeared to match items in the ERIC taxonomy formed an initial list that MP and LP revised and finalized through discussion. Twelve of the 73 ERIC strategies were found to be represented across the clinicians’ projects: audit and provide feedback, build a coalition, conduct educational meetings, conduct educational outreach visits, conduct local consensus discussions, conduct a local needs assessment, develop a formal implementation blueprint, provide facilitation, inform local opinion leaders, intervene with patients/consumers to enhance uptake and adherence, involve patients/consumers and family members, and use clinical reminders. Clinicians were then asked to rate the 12 strategies by relevance for the success of the projects (with 1=most
Questions 2 and 3. How did they employ their strategy? What strategies/approaches were common across the projects?

Data collection. Three team members (MP, JM, and JW) conducted 30-min phone interviews with each clinician about the strategy they selected for their interview. Two interviewers attended each interview. All interviews were conducted using a set of common prompts: (1) Tell me about your strategy and how you used it, (2) I want to hear about your thinking as you planned to use this strategy, (3) Was this strategy used earlier or later in your project and why? (4) How did this strategy work with other strategies or pieces of your project? and (5) Did you encounter any barriers and how did you approach them? Interviews were recorded with consent and transcribed.

Analysis. Interview transcripts were reviewed and coded by three team members (JM, JW, and MP) using Atlas.ti software. Transcripts were first coded using a simple/high-level process that created a code as a comment for each “unit of meaning,” defined as a section of text that all fell into a common theme. Units of meaning could overlap or have multiple codes applied to them. Two individuals coded each transcript independently using this process and then met to review their codes and develop/refine a final list of codes.

Before completing a second round of coding, LP, JW, and MP iteratively refined the code list, when possible aligning codes with strategy descriptions in ERIC and renaming code groups accordingly. With the code list finalized, the interview transcripts were recoded. LP applied thematic analysis to the coded transcripts and drafted a coding memo collecting themes surfaced across interviews, along with illustrative quotes. The project team reviewed and refined the memo, which was shared with the clinicians for feedback. The Kaiser Permanente of Washington Institutional Review Board completed an administrative review and issued a non-research determination.

Results

The six clinicians were diverse in their clinical training and in their settings, and the overuse topics they chose to address in their project (Table 1). They represented in- and outpatient settings, rural and inner-city urban clinics, and included an advanced nurse practitioner, a physician assistant, and four physicians.

The ranking of the relative importance of all 12 identified strategies is shown in Table 2. The six most important strategies selected by the clinicians for their interview along with illustrative quotes are shown in Table 3. The strategies were: build a coalition, conduct a local needs assessment, develop a formal implementation blueprint, conduct educational meetings, use facilitation, and develop clinical reminders.

Building a coalition involved recruiting supporters both outside and inside the local clinical setting to enhance buy-in and support from colleagues. For example, to decrease imaging for low back pain in the emergency department, it was important to recruit supporters in the department of radiology. To reduce use of peripherally inserted triple lumen intravenous catheters at the time of hospital discharge, engaging home health nurses was critical. The value champions commented on the need for such a coalition, which served as a support system to counter resistance to relinquishing an established medical practice, help survive leadership turnover, and overcome setbacks during the initiative.

The local needs assessment was important in both informing the selection of a low-value care service to address and identifying supportive stakeholders and resources. For example, the needs assessment often incorporated opinions...
of providers and patients about relinquishing a specific low-value service before committing to that low-value care service for their project. The assessment conducted prior to launching an effort to reduce the use of intravenous antibiotics for diabetic foot ulcers revealed a larger institutional antibiotic stewardship campaign with resources that were useful for the value champion’s project. As a result, the needs assessment also informed the [de-]implementation blueprint for the value champion’s project. As a result, the needs assessment also informed the [de-]implementation blueprint for the value champion’s project. As a result, the needs assessment also informed the [de-]implementation blueprint for the value champion’s project. As a result, the needs assessment also informed the [de-]implementation blueprint for the value champion’s project. As a result, the needs assessment also informed the [de-]implementation blueprint for the value champion’s project.

The formal [de-]implementation blueprint was a quality improvement (QI) project charter. A QI charter is a living document that clearly states the aims of the project, provides a brief rationale for why it is important, describes expected outcomes, defines what is in scope and out of scope, specifies measures and data needs, and provides a proposed schedule of activities along with who is on the improvement team. Value champions used the QI charter to both to obtain and continuously engage leadership support in the face of competing organizational priorities and leadership turnover, and as a communication tool to improve buy-in from colleagues and key stakeholders across their organization. It was also valuable to champions as they managed their project and helped them keep track of next steps.

Educational meetings attended by clinicians were used to present evidence about the overused service to enhance buy-in and support. These meetings often included a story of patient harm from the targeted service in their clinical setting. They occasionally invited a local specialty opinion leader who presented additional evidence and the rationale behind reducing the use of the service.

Value champions also focused on facilitating conversations to engage colleagues either in one-on-one discussions or in group meetings about the overuse reduction initiative. These conversations were often used to address concerns about relinquishing a service, and perceived barriers to doing so. They were frequently unplanned and sometimes included recent provider-specific data about rates of overuse of the low-value service.

They worked to enhance engagement across the health care team by engaging with individual team members to develop reminders tailored to their role and workflow that supported relinquishing the overused service. These were

Table 3. Description of most important strategies selected by champions for interviews.

| Strategy                        | ERIC definition                                                                 | Illustrative quote                                                                 |
|--------------------------------|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Build a coalition              | Recruit and cultivate partners in the implementation effort                      | “I knew there were some leaders in my system that were supportive, so I got them on board early. And then if I could get a resident involved that would garner really strong support. Then I could go to the team of workers who it would involve and even if they weren’t supportive, they were like, well, yeah, you know we’ll do it.” (Clinician #4) |
| Use facilitation               | A process of interactive problem solving and support that occurs in a context of a recognized need for improvement and a supportive interpersonal relationship | “I think in any culture shift you really have to be smart about the engagement, and I think facilitation is one of the most useful ways to do that.” (Clinician #2) |
| Conduct a local needs assessment | Collect and analyze data related to the need for the innovation                 | “To say . . . ‘Why in practice are we doing something?’ . . . and then kind of debunking the myths from there and facilitating the conversation to make them realize the importance.” (Clinician #2) |
| Develop an implementation blueprint | Develop a formal implementation blueprint that includes all goals and strategies. Use and update this plan to guide the implementation effort over time | “Essentially . . . we were able to just kind of crunch a few numbers and see: Is this really an issue here? Is this a local problem in our facility?” (Clinician #5) |
| Develop clinical reminders     | Develop reminder systems to recall information and/or prompt them to use the clinical innovation | “I’d refer back to that charter and be, OK, does this all align with what we’re trying to measure at the end?” (Clinician #6) |
| Conduct educational meetings   | Hold meetings targeted toward different stakeholder groups to teach them about the clinical innovation | “People need a reminder, something that helps them to make their life easier.” (Clinician #1) |

ERIC: Expert Recommendations for Implementing Change.
not just clinical prompts for the ordering physician, they also included prompts for care team members or checklists that would enhance the support clinicians need with patients. The champion then assisted them with implementation, either as a clinical reminder in the electronic health record or as staff member checklists.

Common themes across all six interviews are given in Table 4 with illustrative quotes. Champions described how they used data strategically in conversations and presentations to their peers to engage them in behavior change and create a safe learning environment for further discussions about the overuse topic in the future. Champions not only engaged in conversations with peers within their own clinical setting, but also found value in connecting with other colleagues in departments across their organization to form partnerships. These connections fostered an understanding of the potential impact of de-implementing the targeted service in those settings, and planning for future potential de-implementation projects. Incorporating the perspective of the patient was also a common strategy. Champions found this useful not only when addressing concerns among their clinician peers that relinquishing the service would not be acceptable to patients, but also to inform the design of their interventions to include patient engagement in the effort.

Finally, clinicians frequently mentioned the difficulty of changing existing behaviors and challenging an entrenched culture of overuse, compared to the effort required to implement an evidence-based service. Recognition of this difficulty motivated their efforts to form a strong coalition of partners across their organization, incorporate the patient perspective to counter resistance by providers, and include patient stories of harm during educational meetings. Clinician champions reported that these stories were an effective means of engaging colleagues during educational opportunities and were complimentary to sharing data.

Discussion

Clinician champions identified multiple strategies as important in their work to de-implement a low-value service. Many, if not most of the important strategies were helpful in their effort to engage in conversations with stakeholders, including leadership, providers, and patients. The purpose of these conversations was to increase buy-in and support, challenge beliefs, promote behavior change, and gather insights about next steps and strategies for their work as a clinician champion. Even the implementation blueprint, which was a QI charter, was used by clinicians as a communication tool when meeting with colleagues and stakeholders to discuss the de-implementation project. This multi-strategy focus is consistent with previously published de-implementation frameworks and theories of behavior change that show how conversations can influence people to relinquish an established routine or behavior.\cite{10,27,30,33}

Our findings support the three potential mechanisms through which a clinician champion might be successful in promoting high-value care with their colleagues as described by Stammen et al.\cite{26}: (1) effective transmission of knowledge
about benefits and harms, (2) facilitation of reflective practice, and (3) creation of a supportive environment. As an example of effective knowledge transmission, one champion mentioned the importance of a story about patient harm in their efforts to engage their colleagues during educational meetings. Reframing overuse as a patient harm has been previously described as an effective intrinsic motivator for change. Another champion described the strategic use of data in reflective conversations with colleagues about unnecessary care in their clinical setting. It is important to note that it was not just the provision of data to clinicians that champions found important, rather it was the discussion with a peer about the data that champions reported as important. This approach is consistent with prior published literature about the value of using social norms when providing clinician feedback. Finally, implementing clinical reminders about the value of using social norms when providing clinical decision support, similar to what was found important, rather it was the discussion with a peer about the data that champions reported as important. This approach is consistent with prior published literature about the value of using social norms when providing clinician feedback.6

Commonly used co-interventions included clinician education, clinician feedback, and clinical decision support, similar to the strategies used by the clinician champions in this study. Especially noteworthy was the recognition by champions of how difficult it was to ask individuals to relinquish delivery of a service, and the need to address a culture of overuse within their organization (see Table 4). This recognition might explain why the champions invested several months to identify existing resources, develop a strong coalition of supporters within their organization, gather data on overuse of their targeted service, and understand the perspectives of both patients and multiple other stakeholders within their clinical setting before moving forward with interventions to decrease the use of a service. The importance of engaging with patients is evident as it was one of the six common themes that emerged across all interviews with the champions, consistent with current literature. In spite of these challenges, four of the six clinician champions reported success at reducing the use of their targeted low-value care service.

One limitation of this study is the small sample of clinician champions working to reduce low-value care. Thus, it is possible that a greatly expanded sample of clinician champions that would allow for saturation to be reached when collecting the qualitative data might reveal additional strategies. However, prior studies examining the work of clinician champions, including reviews across several studies, only describe their role and approach when implementing a new program or intervention, rather than reducing the use of a service. In addition, de-implementation studies using clinician champions only address one low-value care service in one type of clinical setting, and do not provide in-depth analysis of the strategies or approaches used by the champion. In contrast, the diversity of settings and types of low-value care services addressed in this study suggests that these findings may be robust and generalizable about strategies used by clinician champions when reducing the use of a low-value service. Another limitation is the focus in the analysis on a predefined list of implementation strategies in the literature is a limitation. Our attempt to narrow the list of applicable ERIC strategies to those mentioned in the eight existing data sources may have unnecessarily restricted the choices of “important” strategies for the clinicians to choose from in our survey. However, the additional themes surfaced across all six interviews may suggest new approaches not previously identified.

Conclusion
The strategies identified by clinician champions as important to the success of their low-value care project were used to increase buy-in and engage diverse stakeholders across their organization in including leaders, managers, as well as frontline clinician and staff. Future research is needed to identify the specific competencies needed to train clinician value champions in the use of these strategies, evaluate their effectiveness in de-implementing other low-value services across a broader diversity of clinical settings, and further our understanding of the underlying mechanisms behind the effectiveness of a clinician champion to reduce low-value care delivery.

Abbreviations
ERIC: Expert Recommendations for Implementing Change; QI: quality improvement.

Acknowledgements
The authors would like to thank Chris Tachibana for editing assistance with the manuscript. They would also like to thank the individuals who served as faculty for the value champions training program for input and guidance with the manuscript: John Mafi, Kelly Rand, Robert Fogerty, Reshma Gupta, Kathy Reins, Josh Liao, and Scott Cook. A pre-print version of this manuscript was posted on June 1, 2021 on Research Square: https://www.researchsquare.com/article/rs-559651/v1

Author’s contributions
MLP and LP conceived the study, developed, and implemented the study design. JM and JW contributed to data collection and analysis of the data. LD, EV, GH, JM, LD, and RDC participated in data
interpretation and contributed to writing the results and discussion. Drs Parchman and Palazzo had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

**Declaration of conflicting interests**
The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

**Funding**
The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Supported by the Robert Wood Johnson Foundation, Grant # 75607.

**Ethics approval**
The Kaiser Permanente—Washington Region IRB determined that no IRB review for the data collected was required and provided a waiver from IRB review/ethics review. The waiver number is 1316272-1.

**Informed consent**
Informed consent was not sought for the present study because these data were collected to evaluate an educational program for purposes of improving future programs to develop clinician champions and a waiver from IRB review was obtained. That said, all clinician participants were given the option of participating in this evaluation.

**ORCID iDs**
Michael L Parchman https://orcid.org/0000-0001-7129-2889
Jessica M Mogk https://orcid.org/0000-0003-4102-7309
Joshua Moskovitz https://orcid.org/0000-0001-5840-8664
Leslie Dunlap https://orcid.org/0000-0001-6034-5084

**Supplemental material**
Supplemental material for this article is available online.

**References**
1. Powell BJ, Waltz TJ, Chinman MJ, et al. A refined compilation of implementation strategies: results from the Expert Recommendations for Implementing Change (ERIC) project. *Implement Sci* 2015; 10: 21.
2. Ellen ME, Wilson MG, Vélez M, et al. Addressing overuse of health services in health systems: a critical interpretive synthesis. *Health Res Policy Syst* 2018; 16(1): 48.
3. Grimshaw JM, Patey AM, Kirkham KR, et al. De-implementing wisely: developing the evidence base to reduce low-value care. *BMJ Qual Saf* 2020; 29(5): 409–417.
4. Colla CH, Mainor AJ, Hargeaves C, et al. Interventions aimed at reducing use of low-value health services: a systematic review. *Med Care Res Rev* 2017; 74(5): 507–550.
5. Kerenstein D, Chimonas S, Barrow B, et al. Development of a conceptual map of negative consequences for patients of overuse of medical tests and treatments. *JAMA Intern Med* 2018; 178(10): 1401–1407.
6. Bouck Z, Calzavara AJ, Ivers NM, et al. Association of low-value testing with subsequent health care use and clinical outcomes among low-risk primary care outpatients undergoing an annual health examination. *JAMA Intern Med* 2020; 180(7): 973–983.
7. Ganguli I, Simpkin AL, Lupo C, et al. Cascades of care after incidental findings in a US national survey of physicians. *JAMA Netw Open* 2019; 2(10): e1913325.
8. Berwick DM and Hack Barth AD. Eliminating waste in US health care. *JAMA* 2012; 307(14): 1513–1516.
9. Levinson W, Born K and Wolfson D. Choosing Wisely campaign: a work in progress. *JAMA* 2018; 319(19): 1975–1976.
10. Parchman ML, Henrikson NB, Blasi PR, et al. Taking action on overuse: creating the culture for change. *Healthc (Amst)* 2017; 5(4): 199–203.
11. Prusaczyk B, Swindle T and Curran G. Defining and conceptualizing outcomes for de-implementation: key distinctions from implementation outcomes. *Implement Sci Commun* 2020; 1: 43.
12. Norton WE and Chambers DA. Unpacking the complexities of de-implementing inappropriate health interventions. *Implement Sci* 2020; 15(1): 2.
13. Oakes AH and Radomski TR. Reducing low-value care and improving health care value. *JAMA* 2021; 325(17): 1715–1716.
14. Nilsen P, Ingvarsen S, Hasson H, et al. Theories, models, and frameworks for de-implementation of low-value care: a scoping review of the literature. *Implement Res Pract*. Epub ahead of print September 2020. DOI: 10.1177/233489520953762.
15. Berlin NL, Yost ML, Cheng B, et al. Patterns and determinants of low-value preoperative testing in Michigan. *JAMA Intern Med* 2021; 181: 1115–1118.
16. Trumbo SP, Iams WT, Limper HM, et al. Deimplementation of routine chest x-rays in adult intensive care units. *J Hosp Med* 2019; 14(2): 83–89.
17. Stinnett-Donnelly JM, Stevens PG and Hood VL. Developing a high value care programme from the bottom up: a programme of faculty-resident improvement projects targeting harmful or unnecessary care. *BMJ Qual Saf* 2016; 25(11): 901–908.
18. Oliver L, Gibson J, Kapu A, et al. Choosing Wisely: an APN-led initiative to reduce unnecessary chest x-rays in the cardiovascular ICU. *Crit Care Med* 2016; 44(12): 132.
19. Mafi J, Godoy-Travieso P, Wei E, et al. Evaluation of a Choosing Wisely™ intervention to reduce low value preoperative care for patients undergoing cataract surgery at a safety net health system. In: *December 4–7, 2017 10th Annual Conference on the Science of Dissemination & Implementation*, Arlington, VA.
20. Coronel E, Bassi N, Donahue-Rolfe S, et al. Evaluation of a trainee-led project to reduce inappropriate proton pump inhibitor infusion in patients with upper gastrointestinal bleeding: skip the drips. *JAMA Intern Med* 2017; 177(11): 1687–1689.
21. Miech EJ, Rattray NA, Flanagan ME, et al. Inside help: an integrative review of champions in healthcare-related implementation. *SAGE Open Med* 2018; 6(1): 1–11.
22. Flanagan ME, Plue L, Miller KK, et al. A qualitative study of clinical champions in context: clinical champions across three levels of acute care. *SAGE Open Med* 2018; 6(1): 1–8.
23. Damschroder LJ, Banaszk-Holl J, Kowalski CP, et al. The role of the champion in infection prevention: results from a multisite qualitative study. *Qual Saf Health Care* 2009; 18(6): 434–440.
24. Soo S, Berta W and Baker GR. Role of champions in the implementation of patient safety practice change. *Healthc Q* 2009; 12: 123–128.
25. Bonawitz K, Wetmore M, Heisler M, et al. Champions in context: which attributes matter for change efforts in healthcare. *Implement Sci* 2020; 15(1): 62.

26. Stammen LA, Stalmeijer RE, Paternotte E, et al. Training physicians to provide high-value, cost-conscious care: a systematic review. *JAMA* 2015; 314(22): 2384–2400.

27. Cliff BQ, Avancena ALV, Hirth RA, et al. The impact of Choosing Wisely interventions on low-value medical services: a systematic review. *Milbank Q*. Epub ahead of print August 2021. DOI: 10.1111/1468-0009.12531.

28. Brooks J, McCluskey S, Turley E, et al. The utility of template analysis in qualitative psychology research. *Qual Res Psychol* 2015; 12(2): 202–222.

29. Langley G, Nolan K, Nolan T, et al. *The improvement guide: a practical approach to enhancing organizational performance*. San Francisco, CA: John Wiley & Sons, 1996.

30. Jordan ME, Lanham HJ, Crabtree BF, et al. The role of conversation in health care interventions: enabling sensemaking and learning. *Implement Sci* 2009; 4: 15.

31. Morgan DJ, Leppin AL, Smith CD, et al. A practical framework for understanding and reducing medical overuse: conceptualizing overuse through the patient-clinician interaction. *J Hosp Med* 2017; 12(5): 346–351.

32. Norton WE, Chambers DA and Kramer BS. Conceptualizing de-implementation in cancer care delivery. *J Clin Oncol* 2019; 37(2): 93–96.

33. Helfrich CD, Rose AJ, Hartmann CW, et al. How the dual process model of human cognition can inform efforts to de-implement ineffective and harmful clinical practices: a preliminary model of unlearning and substitution. *J Eval Clin Pract* 2018; 24(1): 198–205.

34. Liao JM, Schapira MS, Navathe AS, et al. The effect of emphasizing patient, societal, and institutional harms of inappropriate antibiotic prescribing on physician support of financial penalties: a randomized trial. *Ann Intern Med* 2017; 167(3): 215–216.

35. Hicks LK. Reframing overuse in health care: time to focus on the harms. *J Oncol Pract* 2015; 11(3): 168–170.

36. Liao JM, Fleisher LA and Navathe AS. Increasing the value of social comparisons of physician performance using norms. *JAMA* 2016; 316(11): 1151–1152.

37. Born KB, Coulter A, Han A, et al. Engaging patients and the public in Choosing Wisely. *BMJ Qual Saf* 2017; 26(8): 687–691.