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Blueprint for the Dissemination of Evidence-Based Practices in Health Care

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ABSTRACT: Aimed at fostering the broad adoption of effective health care interventions, this report proposes a blueprint for improving the dissemination of best practices by national quality improvement campaigns. The blueprint's eight key strategies are to: 1) highlight the evidence base and relative simplicity of recommended practices; 2) align campaigns with strategic goals of adopting organizations; 3) increase recruitment by integrating opinion leaders into the enrollment process; 4) form a coalition of credible campaign sponsors; 5) generate a threshold of participating organizations that maximizes network exchanges; 6) develop practical implementation tools and guides for key stakeholder groups; 7) create networks to foster learning opportunities; and 8) incorporate monitoring and evaluation of milestones and goals. The impact of quality campaigns also depends on contextual factors, including the nature of the innovation itself, external environmental incentives, and features of adopting organizations.

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OVERVIEW

Despite the substantial literature on evidence-based clinical care practices that have proven effective in controlled environments and trials, a major challenge for health care systems has been to spread these advances broadly and rapidly.¹ The literature suggests that it takes an average of nine years for interventions that are recommended as evidence-based practice in systematic reviews, guidelines, or textbooks to be fully implemented.^{2,3} Such a sizeable research–practice gap raises the question of why new ideas and actions are not spread and adopted faster.

Diffusion is the process by which an innovation—whether an idea, practice, or object that is perceived to be new by the adopter—is communicated through certain channels over a given period among the members of a social system.⁴ An S-shaped rate of adoption of the innovation is typically formed by the relatively slow initial diffusion, which then speeds up when a critical mass has occurred, and finally levels off as the number of individuals who have not yet

adopted the innovation dwindles. Although most innovations have an S-shaped rate of adoption, the slope of the S often varies from innovation to innovation, with some ideas diffusing more rapidly than others.

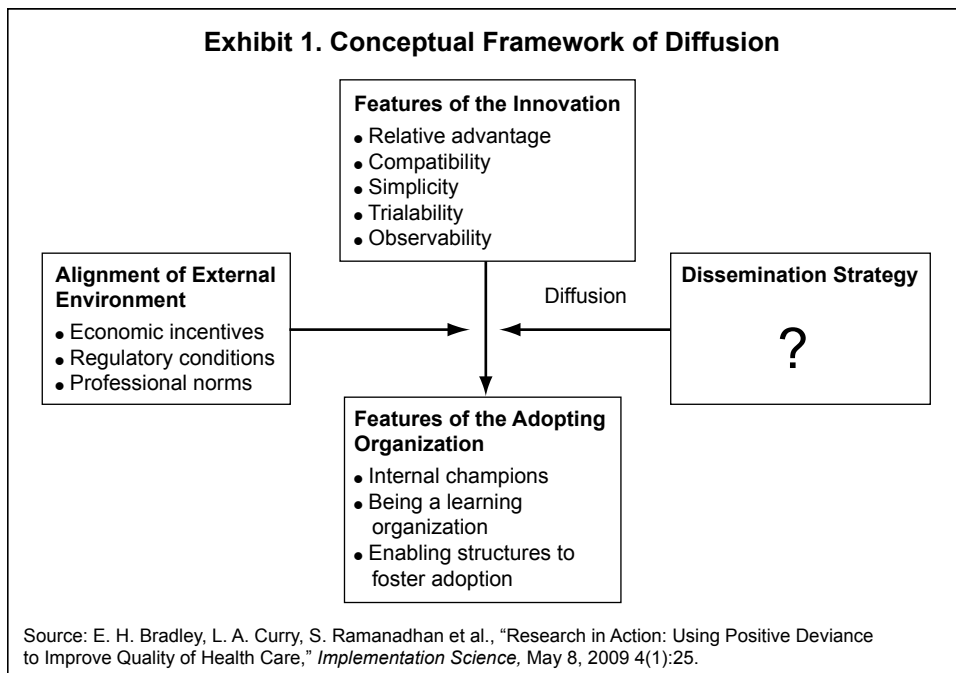
In this report, we propose a conceptual framework (Exhibit 1) that identifies several factors that influence the shape of the trajectory of diffusion of innovations throughout industry. Building on previous evidence described in the diffusion literature, we grouped these factors into four broad domains: 1) the features of the innovation,^{5,6,7,8,9} 2) the features of the adopting organization,^{10,11} 3) the alignment of the external environment with adoption of the innovation,^{12,13} and 4) the dissemination strategy.^{14,15,16,17} Although the components of three of the four domains have been well described in the literature, there is relatively little systematic research on the dissemination strategy's factors—the focus of this review.

The various factors that influence the spread of innovation are on a continuum between pure diffusion (in which spread occurs spontaneously through decentralized and informal efforts) and active dissemination (in which spread occurs purposefully through centralized and formal efforts). This report focuses on active dissemination, that is, planned efforts to persuade

targeted groups to adopt an innovation.¹⁸ National quality campaigns are examples of active dissemination efforts and encompass both centrally driven efforts and interorganizational networks to provide structured opportunities to exchange ideas and foster innovation at the local level.

NATIONAL QUALITY CAMPAIGNS AND THE ADOPTION OF EVIDENCE-BASED PRACTICES

Amid persistent data showing that many patients do not receive guideline-based care, national quality campaigns have been formed to motivate and support widespread adoption of evidence-based practices to improve quality of care. Recent examples include the 100,000 Lives and 5 Million Lives Campaigns sponsored by the Institute for Healthcare Improvement,^{19,20,21,22} the D2B Alliance for Quality led by the American College of Cardiology,²³ and the Home Health Quality Improvement National Campaign sponsored by Medicare.²⁴ Although there is some debate regarding the magnitude of impact,^{25,26} evidence suggests that these campaigns can measurably increase adherence to guidelines, potentially leading to marked reductions in preventable deaths.^{27,28,29,30}



Drawing inspiration from electoral politics as a management structure for driving action to a common goal, the Institute for Healthcare Improvement (IHI) identified the campaign model as a way to connect thousands of facilities in their efforts to improve the quality of health care.³¹ Similar to other models of learning in networks such as collaborative improvement projects, campaigns seek to create communities

of learning that focus on changing behavior on a large scale.³² Perhaps distinct to the campaign model of spread, however, is the open access to campaign materials, regardless of whether hospitals are enrolled or not enrolled. By engaging hospitals with varying levels of participation, campaigns seek to mobilize a critical mass of organizations that work collaboratively to achieve specific targets.

Study Methods

We used only published literature for this synthesis. We searched Medline, CINAHL, Scopus, PsycINFO, and Cochrane databases for literature on health care quality campaigns with the key words *quality, improvement, campaign, and alliance*. We also reviewed the reference lists of the included papers.

We included studies that were written in English, contained data on the effectiveness of care processes or outcomes, were in a health care setting, and met the criteria for a quality campaign. Drawing from the extant literature,^{33,34,35} we defined a quality campaign as an organized, multifaceted approach to quality improvement that involves the following features:

- open enrollment;
- a specified target and a firm deadline;
- feasible interventions for which efficacy is documented in the peer-reviewed literature and reflected in standards set by relevant specialty societies and government agencies;
- structured activities and tools to advance improvement, exchange ideas, and share experiences of participating organizations;
- open access to campaign materials;
- voluntary participation; and
- a mass of organizations enrolled.

A total of 702 abstracts of studies were identified. During the screening process, 674 papers were excluded on the basis of the abstract because they did not fulfill the inclusion criteria or because of duplication. A total of 28 articles underwent detailed review. An additional 16 were subsequently excluded; nine studies contained no data on effectiveness or outcomes and seven did not meet our criteria for a quality campaign based on further examination. The 12 articles that met our inclusion criteria were based on the 100,000 Lives and 5 Million Lives Campaigns sponsored by IHI, the D2B Alliance for Quality led by the American College of Cardiology, and the Home Health Quality Improvement National Campaign sponsored by Medicare. The campaign impact measures differed from process measures (number of organizations that enrolled) to targeted practice changes (adoption of recommended practices); we analyzed and reported recurrent themes regarding features that were viewed as effective, recognizing that the evidence of effectiveness varied by campaign.

Despite the widespread participation by hospitals in such national quality campaigns, relatively little has been written about the components of the diffusion strategy that are most central in promoting faster, more effective spread of new practices for improving quality of care. In addition, although research has identified measures of organizations' readiness to change,³⁶ these efforts have not been conducted in the context of national quality campaigns. Previous research has identified several contextual factors in the diffusion, or take-up, of innovations, including features of the innovation itself, of the external environment, and of the adopting organization; however, the key features of effective dissemination strategies, particularly those related to national quality campaigns, remain largely unknown.

Four National Quality Campaigns

100,000 Lives Campaign. In December 2004, the Institute for Healthcare Improvement (IHI) launched the 100,000 Lives Campaign. This national initiative had a goal of preventing 100,000 hospital deaths through improvements in the safety and effectiveness of health care, with a focus on six evidence-based practices: 1) deployment of rapid response teams, 2) delivery of reliable evidence-based care for acute myocardial infarction, 3) prevention of adverse drug events through medication reconciliation, 4) prevention of central line-associated bloodstream infections, 5) prevention of surgical site infections, and 6) prevention of ventilator-associated pneumonia.³⁷ On June 14, 2006, 18 months after its launch, IHI announced that the campaign had more than met its goal by saving 122,300 lives. Although methodological concerns regarding the "lives saved" calculations make it difficult to interpret the campaign's true accomplishments,^{38, 39} the campaign succeeded in generating a previously unprecedented amount of social pressure on hospitals to participate: more than 3,100 hospitals, representing three-quarters of all hospital beds, took part.⁴⁰

5 Million Lives Campaign. Building on the 100,000 Lives campaign, the 5 Million Lives Campaign

sponsored by IHI sought to reduce 5 million instances of medical harm from December 2006 through December 2008.⁴¹ In addition to continuing the six interventions of the 100,000 Lives Campaign, the 5 Million Lives Campaign added six more, including: 1) prevention of pressure ulcers, 2) reduction of methicillin-resistant *Staphylococcus aureus* (MRSA) infection, 3) prevention of harm from high-alert medications, 4) reduction of surgical complications, 5) delivery of reliable and evidence-based care for congestive heart failure, and 6) getting hospitals' boards of directors to support the project ("get boards on board").

At its formal close in December 2008, the campaign had enrolled 4,050 hospitals, with more than 2,000 facilities pursuing each of the campaign's 12 interventions. Although IHI has not released a national "harms avoided" number, signs of progress include 65 hospitals reporting going a year or more without a ventilator-associated pneumonia, and 35 reporting going a year or more without a central line-associated bloodstream infection in at least one of their intensive care units.⁴²

D2B: An Alliance for Quality. In November 2006, the American College of Cardiology, in partnership with 38 professional associations and agencies, launched D2B: An Alliance for Quality (D2B Alliance) in an effort to reduce delays in treatment for patients who have had a particularly severe type of heart attack known as an ST-segment elevation myocardial infarction (STEMI). Such delays, which have been shown to substantially reduce survival, are measured by "door-to-balloon (D2B) time," the time interval between hospital arrival and treatment with percutaneous coronary intervention (PCI), which can reestablish blood flow to the heart following blockage.^{43, 44, 45} In order to support participating hospitals' efforts to achieve D2B times within 90 minutes for at least 75 percent of patients, the D2B Alliance advocated the adoption of six key evidence-based strategies: 1) activation of the catheterization laboratory (cath lab) by emergency department physicians, 2) one-call activation of the cath lab, 3) readiness of the cath lab team within 20 to 30 minutes, 4) prompt data feedback, 5) commitment of

the hospital’s senior management, and 6) a team-based approach.

Approximately 1,000 of the 1,400 U.S. hospitals that perform primary PCI enrolled in the D2B Alliance, a 70 percent penetration rate. By March 2008, the alliance achieved its goal, with more than 75 percent of patients with STEMI having D2B times within 90 minutes. Although patients treated in hospitals enrolled in the D2B Alliance for at least three months were significantly more likely than patients treated in nonenrolled hospitals to have D2B times within 90 minutes, the magnitude of the difference was modest.⁴⁶

Home Health Quality Improvement National Campaign. In January 2007, Medicare launched the Home Health Quality Improvement National Campaign to improve quality of care by reducing avoidable hospitalizations during Medicare-paid home health episodes. Approximately 5,600 (63%) Medicare-certified home health agencies enrolled as participants in the year-long campaign, which consisted of a series of efforts to encourage home health providers to adopt best practices in reducing unnecessary acute care hospitalizations of home health patients. The campaign provided monthly evidence-based Best Practices Intervention Packages on topics such as hospitalization risk assessment, medication management, and transitional care

coordination, as well as monthly reports of participants’ acute care hospitalization rates.

Although hospitalization rates appeared to improve in agencies participating in the national campaign compared with those not participating, the differences were eliminated in matched pairs that controlled for baseline performance, secular trends, and length of services.⁴⁷ Campaign materials were said to have been widely used among both participating and nonparticipating agencies; however, use of the materials was significantly more common among agencies whose performance improved.

BLUEPRINT OF BEST PRACTICES IN DISSEMINATION

Based on the shared characteristics of the four national quality campaigns described, we developed a blueprint of effective strategies for the dissemination of evidence-based practices through national quality campaigns (Exhibit 2). The conceptual framework shown in Exhibit 1 comprises the eight strategies that we identified. The existing literature is not able to evaluate which of the eight strategies are most important and if any subset is sufficient; however, we believe the blueprint’s strategies work together and should be understood as a full package.

Exhibit 2. Blueprint of Effective Strategies in the Dissemination of Evidence-Based Practices Through a National Quality Campaign

- Strategy 1. Highlight evidence base and relative simplicity of recommended practices.

- Strategy 2. Align the campaign with the strategic goals of the adopting organizations.

- Strategy 3. Increase recruitment by integrating opinion leaders into the enrollment process and employing a nodal organizational structure.

- Strategy 4. Form a coalition of credible campaign sponsors.

- Strategy 5. Generate a threshold of participating organizations that maximizes network exchanges.

- Strategy 6. Develop practical implementation tools and guides for key stakeholder groups.

- Strategy 7. Create networks to foster learning opportunities.

- Strategy 8. Incorporate monitoring and evaluation of milestones and goals.

Strategy 1. Highlight evidence base and relative simplicity of recommended practices.

The literature suggests that recommendations that are perceived to be evidence-based and credible as well as relatively simple are more likely to be adopted than those that may have more limited evidence or are perceived as complex.⁴⁸ Therefore, campaign practices that were selected for dissemination by the quality campaigns were viewed as having relative advantage compared with current practice, were compatible with organizational resources (i.e., did not require major capital investment or information system redesigns), were relatively simple to adopt, were observable, and could be piloted in a trial-and-error approach. Importantly, the evidence underlying many of the campaigns' recommended practices was published in leading peer-reviewed journals, lending credibility to the practices and appealing to both clinicians and administrators. The recommendations also helped to distill a large volume of scientific evidence to a short list of specific recommendations. The ability to package recommendations in a checklist of sorts has been described as useful in other applications⁴⁹ and was apparent in the literature on quality campaigns as well.

Strategy 2. Align the campaign with the strategic goals of the adopting organizations.

The campaigns occurred within a wider context of guidelines, policy, incentives, and other strategies to improve care. For example, the D2B Alliance efforts occurred in an environment that was also promoting improvements in door-to-balloon time. In 2006, the Centers for Medicare & Medicaid Services (CMS) began publicly reporting hospital achievement of door-to-balloon times of 90 minutes or less and included modest financial incentives for meeting performance targets. In launching the D2B Alliance the same year public reporting of this measure began, the campaign aligned itself with the adopting hospitals' strategic goals of improving performance relative to this core measure. The D2B Alliance campaign was also aligned with hospitals' goals of gaining chest pain center accreditation and of enhancing a hospital's strength in the cardiology market. Similarly, five of

the six practices recommended by the 100,000 Lives Campaign were already being required or promoted by a major federal or Joint Commission initiative at the launch of the campaign.

Strategy 3. Increase recruitment by integrating opinion leaders into the enrollment process and employing a nodal organizational structure.

A key aspect of the campaign model of dissemination is the ability to mobilize a critical mass of organizations. In order to generate enthusiasm and engage as many organizations as possible, the campaigns were launched with highly public announcements that ranged from national campaign kickoff meetings to publications in leading journals. The enrollment process also benefited from the integration of opinion leaders in garnering the support of senior management. The enrollment process for the D2B Alliance, for instance, required a signature from an administrator and clinician committing to the goals of the campaign. In the Home Health Quality Improvement National Campaign, visible grassroots leaders (campaign champions and key stakeholders) worked at both the local and national levels to recruit participating organizations.

In three of the campaigns, employing a nodal organizational structure greatly enhanced the recruitment process. Inspired by the mobilization efforts employed by political campaigns, the 100,000 Lives and 5 Million Lives Campaigns organized a national network of voluntary field offices—referred to in the campaign as “nodes”—that acted as conveners, teachers, and drivers of progress.⁵⁰ Typically led by state hospital associations and quality improvement organizations, the nodes served as local drivers of the campaigns' national agenda and provided more intensive local support.⁵¹

The D2B Alliance also employed a nodal organizational structure, capitalizing on the established organizational structure of the American College of Cardiology (ACC). Using the channels of the ACC state chapters, the recruitment process was greatly enhanced by being able to quickly establish a “sales force” of ACC state chapter governors and council

members who were able to approach cardiologists, senior administrators, and other opinion leaders about enrolling their hospitals in the campaign.

Strategy 4. Form a coalition of credible campaign sponsors.

The credibility of the four campaigns was bolstered by broad support from prominent national organizations. For example, endorsement of the 100,000 Lives campaign by federal, national, and state organizations created a powerful impetus for change and future collaborations. The engagement of professional organizations and well-known leaders in the field also lent credibility to the efforts of the four campaigns. For example, in the D2B Alliance, the reliance on ACC state chapter governors to champion and raise awareness about the campaign fostered faster and more widespread enrollment and commitment to the campaign by hospitals.

Strategy 5. Generate a threshold of participating organizations that maximizes network exchanges.

An important influence on an organization's decision to adopt recommended practices is whether a threshold of similar organizations has done so or plans to do so.⁵² One of the key features of all the campaigns was the breadth and geographic diversity of their participating hospitals. For instance, the 5 Million Lives Campaign enrolled more than 4,000 hospitals, representing nearly 80 percent of U.S. hospital beds, and the Home Health Quality Improvement National Campaign enrolled nearly 5,600 home health agencies, representing 63 percent of Medicare-certified HHAs.

A benefit of the campaign model, which seeks to disseminate information widely and rapidly, is the potential for bandwagon effects as hospitals seek to improve because peer institutions are improving. The credibility of campaign sponsors (e.g., IHI and Medicare) and evidence-based practices (e.g., CMS core measures) generated significant social pressure for organizations to join, as the adoption of the recommended practices came to be perceived as the norm. Widespread participation in the campaign was further bolstered by campaign design features, such as open

access to campaign materials and the lack of an enrollment fee. At the same time, open, free campaigns may risk attracting enrollees with less depth of commitment, potentially leading to slow take-up rates.⁵³ The tradeoff is important to consider when designing quality campaigns.

Strategy 6. Develop practical implementation tools and guides for key stakeholder groups.

As dissemination requires more than a good idea, practical tools are needed to link innovations with widespread adoption. The campaigns each developed a range of implementation tools, such as “how-to” guides, toolkits, newsletters, and success stories. The campaigns also provided structured opportunities, including conference calls, webinars, facilitated workshops, and online communities to exchange information and practical insight to adapt known protocols to particular settings.

Some campaigns developed tools to support different subpopulations, such as conference calls to discuss the unique needs of rural hospitals enrolled in the 100,000 Lives campaign and best-practice intervention packages tailored to meet different levels of interest and implementation in the Home Health Quality Improvement National Campaign. The latter campaign also provided participants with monthly reports of their acute hospitalization rates.

Strategy 7. Create networks to foster learning opportunities.

Participants of the campaigns described using the network of enrolled hospitals to learn what worked in other organizations. In the Home Health Quality Improvement National Campaign, the creation of Local Area Networks for Excellence (LANEs) provided a standardized way to network with those seeking to reduce avoidable acute care hospitalizations. The 5 Million Lives Campaign and D2B Alliance created mentor networks so that participants could contact hospitals willing to offer one-on-one advice and share the key to their improvement results.

Striking a balance between the centralized efforts of the national campaign and the localized

efforts of the participating organizations, the 100,000 Lives and 5 Million Lives Campaigns created an infrastructure that operated at the national, nodal (regional), and individual hospital/health system levels. The tiered structure of the campaigns' learning network relied on experts and national partners to propose aims and offer widely applicable clinical guidelines but then used intermediaries—the nodes and affinity groups—to create local learning opportunities and identify successful facilities (mentor hospitals).⁵⁴ The goal of the tiered networks was to devolve control in order to support changes that occur at the frontlines of care, rather than providing guidelines at a distance.

Strategy 8. Incorporate monitoring and evaluation of milestones and goals.

Campaigns that have explicit and measurable aims benefit from the expectations and opportunity to do something great but also risk public failure.⁵⁵ To keep participants motivated, the impact needs to be measurable and, preferably, publicly reported.

A notable challenge in measuring campaign progress is striking the balance between evaluation efforts and the goal of engendering widespread participation. For example, it was not compulsory for hospitals to submit process and outcomes data in the 100,000 Lives Campaign, a choice IHI made in light of the campaign's voluntary nature and the burden associated with data collection and submission. Although the majority of the 3,000 participating hospitals submitted data, approximately 14 percent of hospitals submitted no data at all. By extrapolating results from nonsubmitting hospitals as well as other methodological concerns regarding the "lives saved" calculations, it has been difficult to assess the true impact of the campaign.^{56,57}

Determining the impact of the four campaigns was a challenge because of the potential spillover of effects in nonenrolled organizations and the inability to control fully for other secular events that may have contributed to improvements. Furthermore, since the campaigns typically included several related elements, evidence linked to the influence of specific elements of the campaign was lacking; the only impact evidence generated was related to the overall campaign efforts.

Despite these limitations, the primary goal of measurement for the campaigns reviewed was to quantify total improvement in participating organizations—improvement that resulted in an impressive numbers of lives saved and instances of harm and hospitalizations avoided.

FEATURES OF THE ADOPTING ORGANIZATION

Although the strategies outlined in the blueprint are central to promoting faster, more effective dissemination of new practices, the degree to which they succeed depends on the characteristics of the adopting organization. Although organizations that participate in national campaigns largely face similar external environments (e.g., public reporting of quality measures), they vary in their perceptions of the campaign's influence on their organization because of differences in their internal environments.

In a qualitative study of hospitals participating in the D2B Alliance, key contextual factors identified as pertaining to the internal environment included: 1) degree of perceived need to change practices, 2) degree of openness to external sources of information, and 3) degree of internal championship for the recommended changes. For example, staff in several hospitals where the campaign was perceived to have high influence said the campaign occurred at a time when they were searching for ways to reduce D2B times. In contrast, in hospitals where the campaign was perceived to have less influence, staff remarked they were already on the path to making the changes recommended by the D2B Alliance and therefore did not attribute changes to the campaign.

The importance of internal championship was also recognized by the 5 Million Lives Campaign, whose rallying cry, "get boards on board," helped spur boards of trustees to study harm in organizations, set and review improvement objectives, and support and recognize successes.

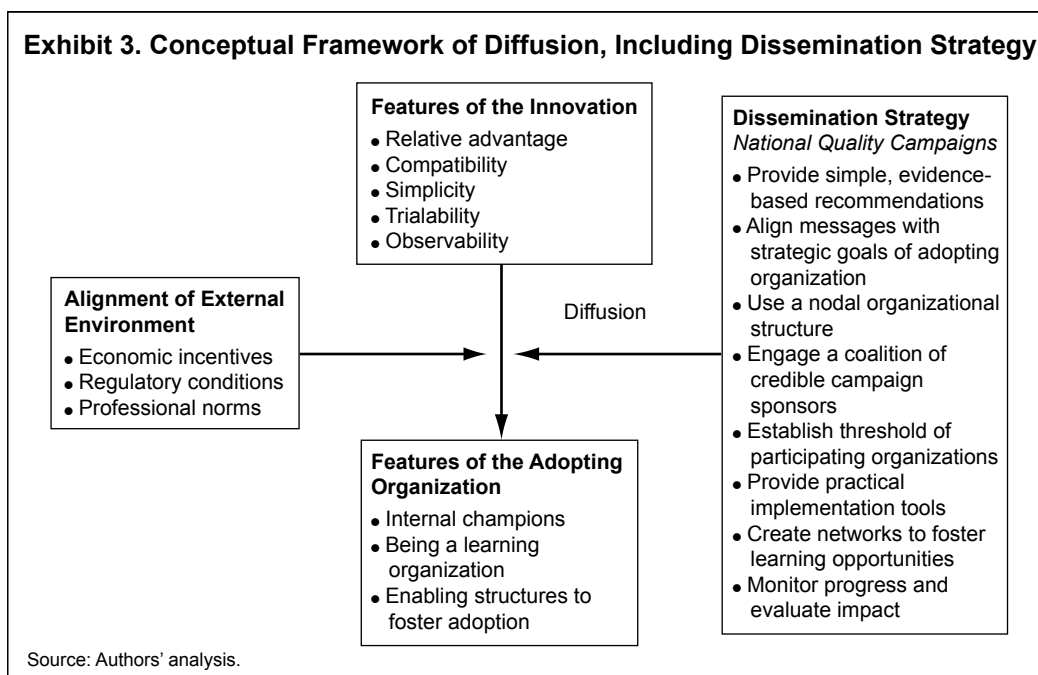
SUMMARY AND CONCLUSIONS

The experiences of four national quality campaigns informed the development of a blueprint for the active dissemination of evidence-based practices (Exhibit 3). Key factors affecting the design and implementation of the campaigns included: features of the innovation (e.g., evidence base and simplicity of the recommended practices), alignment of the campaign with the strategic goals of the adopting organizations, a nodal organizational structure to enhance recruitment efforts, and coalitions of credible campaign sponsors. Strategies that were central to fostering a collaborative learning environment included creating networks to foster learning opportunities, generating a threshold of participating organizations that maximizes network exchanges, and developing appropriate tools and guides for key stakeholder groups. Also, incorporating monitoring and evaluation milestones and goals created a source of motivation and a sense of accountability.

Although the strategies described here have been central to promoting faster, more effective dissemination of new practices, it is important to recognize that their impact depends on contextual factors, including the nature of the innovation itself, external environmental incentives, and features of the adopting organizations.

Limitations should be considered in interpreting the findings of this review. First, because this analysis relied exclusively on published research, it did not draw upon unpublished evidence from other quality improvement campaigns that might have yielded important insights, such as the H2H campaign or the Alliance for Quality Nursing Home Care. Second, there is the possibility that other relevant studies were missed, as the search was limited to those focusing on quality campaigns that met the inclusion criteria and published in English-language journals. There is also the possibility that key components of some quality campaigns may have been misclassified because of inadequate detail in the published paper about methods of dissemination. Third, although the outcome data reported by the campaigns are useful in evaluating the total improvement of hospitals that participated in the campaigns, the data could not be used to determine the impact of specific campaign elements. Last, the authors’ affiliation with the D2B Alliance resulted in greater emphasis on that campaign’s findings as a result of their direct experience with the campaign’s successes and challenges.

Finally, as policymakers and sponsors design and implement national campaigns to improve take-up rates of evidence-based practices in health care, they



might benefit from using the blueprint as a checklist for putting in place components that will maximize impact. Although important aspects of diffusion are outside the control of the dissemination strategy (such as the features of the adopting organizations or the external environments), greater use of the eight strategies identified in the literature are likely to promote more potent campaign efforts, more effective dissemination, and ultimately greater take-up of evidence-based practices. Ongoing evaluation of the impact of campaigns and of their specific components is needed to guide future refinement of these potentially important efforts to improve the quality of care.

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