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Learning Collaboratives: Insights And A New Taxonomy From AHRQ's Two Decades Of Experience

ABSTRACT Learning collaboratives are increasingly used as mechanisms to support and hasten the diffusion and implementation of innovation, clinical evidence, and effective models of care. Factors contributing to the collaboratives' success or failure are poorly understood. The Agency for Healthcare Research and Quality (AHRQ) has sponsored collaboratives for nearly two decades to support improvements in health care quality and value by accelerating the diffusion and implementation of innovation. We examined AHRQ's experience with these collaboratives to characterize their attributes, identify factors that might contribute to their success or failure, and assess the challenges they encountered. Building on the literature and insights from AHRQ's experience, we propose a taxonomy that can offer guidance to decision makers and funders about the factors they should consider in developing collaboratives and planning their evaluation, as well as to researchers who seek to conduct research that will ultimately help decision makers make better investments in diffusing innovation and evidence.

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Learning collaboratives (also known as communities of practice, learning communities, learning collaboratories, learning networks, knowledge networks, and quality improvement collaboratives) comprise multiple parties that join forces to accomplish a goal and obtain or create explicit and tacit knowledge.[1] Collaboratives have different purposes and structures. Some are knowledge oriented, seeking to foster deeper knowledge related to a practice, whereas quality improvement collaboratives are problem focused, striving to improve care delivery and outcomes. We use *collaboratives* as an umbrella term for these learning groups and focus on their application in health care improvement.

Learning is a natural human activity. In a collaborative it is inspired by social connectedness and sharing. The social activity of learning is a hallmark of collaboratives, which leverage and support peer-to-peer learning, expert-to-peer learning, or both.[1,2]

Collaboratives seek to hasten the diffusion of knowledge. Everett Rogers defines *diffusion* as "the process in which an innovation is communicated through certain channels over time among the members of a social system."[3(p11)] Many health care delivery innovations and evidence-based practices spread slowly, especially those that are complex, don't immediately ease burdens (but may do so over time), require precious resources, or lack an influential leader as champion.[4–6]

The evidence about the effectiveness of learning collaboratives is mixed, even though their use has increased in both the public and private sectors.[2,7,8] Evaluating the impact of collaboratives is challenged by factors such as the complexity of the innovation, the evidence-based practice or task that is its focus, the cultural

and social context, its duration, and the lack of valid and reliable process and outcome metrics.[9,10] Additionally, collaboratives often occur in a changing environment with other concurrent improvement or change efforts. Therefore, isolating the collaborative's impact can be difficult. Factors that may contribute to the success or failure of collaboratives—where success is defined as the achievement of agreed-upon goals and failure is nonachievement—include type and intensity of facilitation, mode and frequency of communication, and governance structure.[2,9,11]

Health services researchers have articulated the need to study the context and impact of collaboratives, including their benefits and unintended consequences.[8,9,11] As the volume of published information increases, organizing that information in a coherent manner will facilitate understanding and comparisons. Taxonomies serve as tools that classify, arrange, and order information in a hierarchical structure, thereby reducing chaos and misunderstanding.

The Agency for Healthcare Research and Quality (AHRQ) has sponsored collaboratives for nearly two decades, starting with the Practice-Based Research Network in 2000 and continuing through to the current EvidenceNOW and Patient-Centered Clinical Decision Support initiatives.

In this article we examine AHRQ's experience with collaboratives. We identify factors that may have contributed to their success or failure and use these insights to develop a taxonomy that can be used to understand collaboratives' attributes and help decision makers make better investments in diffusing innovation and evidence. This taxonomy can also inform research on critical questions about collaboratives' effectiveness.

Study Data And Methods

The taxonomy of learning collaboratives was constructed through a multiphase, iterative, consensus-based process. First, we conducted a literature search on learning collaboratives, taxonomy development, and existing taxonomies (for our search strategy, see the online appendix),[12] which yielded approximately 370 relevant peer-reviewed articles. Given the large volume, we limited our review to systematic and scoping reviews and used their reference lists to find additional relevant literature. We supplemented the peer-reviewed literature with a grey literature search using Google.

Next, we collected information about fifteen of AHRQ's collaboratives from websites, internal document archives (including progress and final reports), informal and formal evaluations, and the experiences of program leads. In some cases, our data collection was limited to archived information. For each collaborative, we gathered and compiled structured information relevant to key attributes as identified in the literature as well as through the data collection and review process.[1,5,7,9,13,14] Key attributes included the collaborative name and dates of its AHRQ support, its composition (the types and numbers of members and their geographic representation), the scope of collaboration, type of collaboration (participatory or directed), supporting roles, communication channels used and their frequency of use, derivative knowledge products, decision to join, sponsor, governance, results, challenges, and sustainability. As we compiled this information, questions about attribute definitions were identified. Answers to these questions were deliberated, and consensus was achieved, through group discussion. These key attributes served as the foundation for the proposed taxonomy.

Once the data on the key attributes were collected, we reviewed the results and analyzed similarities and differences through a series of three meetings over one month and mapped these attributes to existing frameworks. We began with Rogers's diffusion of innovation theoretical framework,[3] which was well aligned with the patterns that emerged from our analysis. However, the framework did not include critical elements we identified or the level of detail required for the taxonomy to inform collaborative development, implementation, and evaluation. We then reviewed and considered taxonomies that we had found through the literature search. None met our purposes or fully captured all of the identified attributes. Some taxonomies that we reviewed (for example, "A Facilitation Task Taxonomy for Communities of Practice")[15] focused only on the facilitation of collaboratives or were too specific and did not allow for the inclusion of many of the attributes we had identified. Others (such as the "Taxonomy of Collaboratories")[16] broadly addressed general principles of scientific collaboration but were not specifically relevant to health care collaborations. The Wilder Collaboration Factors Inventory,[13] a validated tool addressing nineteen collaboration success factors in six categories (environment, membership characteristics, process and structure, communication, purpose, and resources), included many of the collaborative attributes we had identified.

We mapped the key attributes identified from AHRQ collaboratives to the four elements of Rogers's framework (innovation, communication, time, and social systems). We then mapped the key attributes of AHRQ's collaboratives to the Wilder Collaboration Factors Inventory.

Finally, we added key attributes not included in either the Wilder Collaboration Factors Inventory or Rogers's framework. We built out the taxonomy by layering the two models and further integrating results from our analysis for key elements not included in these models to develop a set of primary, secondary, and tertiary taxonomic elements. As Lawrence Green and colleagues noted,[17] blending diffusion with other theories can help guide and facilitate new approaches to implementation. In the process of layering and integrating, we reached consensus through discussions, coming to agreement on the elements.

Study Results

THE AGENCY'S COLLABORATIVES AHRQ's collaboratives varied on a number of dimensions. They covered various change initiatives, ranged in size and scope, had different governance structures, used different types and sources of data to characterize outcomes, and approached sustainability differently. The type of collaboration and related support also varied, depending on the purpose of the collaborative and member characteristics and roles. (The appendix lists AHRQ's collaboratives, their purposes, and their members.)[12]

TAXONOMY The AHRQ learning collaborative taxonomy includes four primary elements (innovation, communication, time, and social systems) and nineteen secondary elements (exhibit 1), as well as seventy-eight tertiary elements (see the expanded taxonomy in the appendix).[12]

▶ **INNOVATION:** Rogers defines an innovation as "an idea, practice or object that is perceived as new by an individual" or group, noting that newness "may be expressed in terms of knowledge, persuasion or a decision to adopt."[3(p12)] Innovations may be almost entirely composed of information, which typically was the case in the AHRQ collaboratives. We adapted Rogers's definition by expanding it to include the nondirected, organic sharing of ideas and practices that, in the end, might or might not be objects of diffusion. We made this adaptation to allow for learning through the exchange of ideas.

One secondary element here is type of change. Collaboratives vary by type of change sought: to advance knowledge, improve quality or safety, and develop or sharpen skills. In a quality improvement collaborative, one or more evidence-based practices may be diffused to alleviate a known deficiency in quality or safety. The EvidenceNOW collaborative seeks to improve cardiovascular risk management in primary care by increasing performance on a bundle of four related evidence-based clinical practice recommendations.

Some collaboratives do not have an explicit aim identified in advance but rather offer a platform for discussions that might or might not result in the identification and diffusion of innovations. The Medicaid Medical Directors Learning Network, which acted as a de facto affinity society for Medicaid medical directors, served as a forum for discussing—among other things—state Medicaid drug coverage policies.

Another secondary element here is the degree of prescription, which is the extent to which the convener of the collaborative sets forth a predetermined agenda. In some collaboratives, the convener determines the aim as well as what specifically is to be diffused. This was the case with the Community Care Coordination Learning Network, which focused on implementing the Pathways Model to connect vulnerable populations to primary care. For others, such as the Medicaid Medical Directors Learning Network, the participants drove the agenda. Other collaboratives fell somewhere in between, with the convener setting the overall aim but with the routes to achieving that aim being user driven.

Scope, another secondary element, refers to breadth of focus—which in turn refers to collaboratives' aims and geographic boundaries. Some collaboratives have a narrow focus, as exemplified by the Medication Therapy Management Learning Community. This collaborative sought to improve care for patients at risk of complications from uncontrolled type 2 diabetes in feder-

EXHIBIT 1

The Agency for Healthcare Research and Quality's learning collaborative taxonomy

Primary elements[a]	Secondary elements
Innovation	Type of change[b] Degree of prescription[c] Scope[c] Supporting tools[b]
Communication	Mode or venue[b] Directionality[c] Frequency[b] Degree of formality[c]
Time	Duration of learning collaborative[b] Duration of member recruitment[a,b] Rate of attainment or adoption[a,b] Sustainability of learning collaborative[b]
Social systems	Degree of credibility of host or convener and leadership[c] Membership characteristics[c] Governance[c] Purpose and degree of shared vision[c] Culture of the learning collaborative[c] Members' activity level[c] Roles, process, and structure[c]

SOURCE Authors' analysis. [a]Derived from Rogers EM. Diffusion of innovations (see note 3 in text). [b]Derived from authors' analysis. [c]Derived from Mattessich PW, Monsey BR. Collaboration (see note 13 in text).

ally qualified health centers in Houston, Texas. Others were broad in scope. For example, the Chartered Value Exchange Learning Network focused on improving quality in twenty-four regions across the US, which represented one-third of the US population.

The final secondary element here is supporting tools. Resources, products, or technology serve to improve the understanding of the innovation, increase efficiency in its adoption and spread, and provide other support. In diffusing best practices for public report design, the Chartered Value Exchange Learning Network showcased report designs supported by research. When tools are unavailable or the membership characteristics or diffusion environment is sufficiently unique, collaboratives may develop their own tools either through experts or as a collective. The Emergency Department Use Learning Community developed a protocol to guide stakeholders in working together across systems to reduce the nonurgent use of emergency services.

▶ **COMMUNICATION:** How, when, and where members and conveners of collaboratives, along with invited experts or innovators, share their messages, knowledge, resources, and insights is important in ensuring the attainment of goals.

One secondary element here is the mode or venue. Communication can occur in person or virtually—for example, via phone calls, teleconferences, webinars, one-on-one coaching on the phone, on-site coaches, in-person meetings, personal and list-based email, and dedicated websites that list resources and members' contact information.

All AHRQ collaboratives have used a virtual component such as webinars, calls and teleconferences, email communications, an online platform for sharing documents, or a dedicated website. In-person meetings, held by most AHRQ collaboratives at least annually, were important because they promoted social interaction and fostered efficient peer-to-peer learning.

Another secondary element is directionality. The source and path of communication may be peer-to-peer, expert-to-peer, or both. All AHRQ collaboratives have encouraged unstructured peer-to-peer learning, and some have also encouraged structured peer-to-peer learning—for example, by seeking out early adopters or high performers and providing a platform for them to share their wisdom. Some collaboratives incorporated expert-to-peer learning. The Chartered Value Exchange Learning Network's twice-monthly webinars routinely featured national experts. Others have invited experts to in-person meetings or arranged site visits to early adopters.

Still another secondary element is frequency. Collaboratives may vary in the frequency of their interactions. AHRQ collaboratives have been similar in terms of the frequency of their contacts and programming. All have had at least one mechanism that enabled peer-initiated communication 24/7. Most have also featured programming such as webinars or team meetings that occur at least monthly, and most have offered annual in-person conferences.

Collaboratives can play a critical role in the development and evolution of learning health systems.

The final secondary element here is the degree of formality—that is, the degree of structured, convener-orchestrated diffusion. All AHRQ collaboratives have encouraged unstructured peer-to-peer learning, which is informal and organic. The collaboratives have varied in terms of the extent to which unstructured peer-to-peer learning is paired with more formal models. Most of the collaboratives have featured both informal and formal components. The Medicaid Medical Directors Learning Network offered web-based conferences on specific topics as well as "open mic" conference calls to allow members to speak about pressing issues.

▶ **TIME:** We modified Rogers's time measures (the length of time to make a decision to change, the innovativeness of the adopter, and the rate of adoption) and added two more elements to our taxonomy. We use the term *elements* because the term *measures* has implications in health services research that are not applicable here.

The duration of the learning collaborative (a secondary element), or the time period from inception through operation to conclusion, is dependent on several factors including the complexity of the work to be accomplished, the time needed to complete the work, and funding. The duration of AHRQ collaboratives has ranged from two to seven years.

The duration of member recruitment (another secondary element) involves the dual processes of convener outreach and deliberation by prospective members, which in turn involves consideration of the pros and cons of participating and potentially their employers' permission. For AHRQ's collaboratives, time to recruit members has ranged from instantly to years. In some

AHRQ's experience illustrates the potential of collaboratives to accelerate the diffusion of innovation and advance research.

cases, such as the Multiple Chronic Conditions Research Network, participation was a requirement of a related grant award, so the decision to participate was presumed when the award was made. Member recruitment for the Medicaid Medical Directors Learning Network was intentionally protracted, as newcomers were welcomed throughout the collaborative's existence.

Rogers's "innovativeness of the adopter"[3] time measure relates to readiness to change, willingness to try new ideas, and inclination to take risks. When potential participants of a collaborative are seeking the change offered, their decision time to join is shorter. In the Patient- and Family-Centered Care Learning Community and the Quality Improvement Organizations Learning Network, invited hospitals that were certain they wanted to implement the change and had already dedicated staff and other resources to it joined the collaborative quickly.

Rogers's "rate of adoption"[3] time measure reflects the length of time required for a percentage of the members to adopt an innovation. We adapted this measure to create another secondary element—rate of attainment or adoption—that reflects the length of time required for goal attainment. All eleven hospitals in the Patient- and Family-Centered Care Learning Community implemented patient and family advisory councils within two years, which created a benchmark that additional hospitals joining the collaborative used to gauge their progress toward this goal.

The last secondary element here is the sustainability of the learning collaborative. Collaboratives may be sustained or disbanded after the period of sponsorship. In some cases, when AHRQ's funding was ending, assistance was provided to collaboratives via outreach to potential funding organizations. The Emergency Department Use Learning Community was sustained when a collaborative member, the Voices of Detroit Initiative, decided to operate the collaborative. In contrast, the National Health Plan Collaborative was not sustained.

▶ **SOCIAL SYSTEMS:** This primary element of diffusion recognizes the social nature of diffusion, learning, and collaboration, and the concept of systems—interrelated parts that make up a whole.

One secondary element here is the degree of credibility of the host or convener and the leadership. The credibility or integrity and trustworthiness of these people influences member recruitment, retention, and engagement for the duration of the collaboration. The Patient- and Family-Centered Care Learning Community engaged a national expert to help persuade prospective members that joining the collaborative would be of value.

Another secondary element is membership characteristics. Members of a social system play a key role in facilitating or impeding the diffusion of innovations.[3] This element captures the geographic dispersion of members, size of the group, homogeneity of the membership, and openness to new members.

Many AHRQ collaboratives, such as the Chartered Value Exchange Learning Network, have engaged members across the US, while others, such as the Emergency Department Use Learning Community, had a narrow geographical reach and limited membership to one city.

Most collaboratives have had heterogeneity in their membership, including variability in the members' background and expertise levels. The Practice-Based Research Network engaged members from different professional backgrounds (for example, the network included academics, clinicians, and patients). Other collaboratives, such as the Medicaid Medical Directors Learning Network, have represented a homogeneous group (in this case, state Medicaid medical directors).

Another secondary element is governance. Policies regarding collaborative engagement and accountability can influence activities and goals. The body that sets those policies may be formal (consisting of a steering committee, advisory board, or governance council—that is, a group of elected, selected, or assigned leaders) or less formal, with members simply agreeing on engagement and accountability. Clear governance structures have been evident in AHRQ collaboratives, but no single approach to governance has been favored. The Medicaid Medical Directors Learning Network elected a steering committee to make decisions, while the Pa-

tient-Centered Clinical Decision Support Learning Network established both a steering committee and an advisory council.

Still another secondary element is the purpose and degree of shared vision. Why a collaborative exists and the extent to which its members are dedicated to its aims influences diffusion and goal attainment. Many AHRQ collaboratives have had a defined purpose and a shared vision, but others have been less proscriptive and have had flexible social structures with the capacity to evolve as members work together on priorities and their collective purpose. The Patient-Centered Clinical Decision Support Learning Network, for example, renamed itself (it was originally called the Patient-Centered Outcomes Research Clinical Decision Support Learning Network). This change reflected input from patients and others who saw value in a shared vision around patient-centeredness broadly, rather than a vision limited to specific types of research.

The culture of collaboration is another secondary element, and collaboration (that is, "a commitment to mutual relationships and goals")[13(p11)] is central to the collaborative culture. AHRQ collaboratives reflect the degree of trust, understanding, and respect; flexibility; participation; vested interests in processes and outcomes; ability to compromise; and adaptability of their participants. Together, these elements define a "culture"—or a wide range of social occurrences, involving behavior, beliefs, values, and norms.[18] Shared responsibility, mutual accountability, and resource sharing are key factors that form part of a distinct culture. The High Reliability Organization Learning Network serves as an example of the central role of culture in the success of a collaborative, as increased opportunities for interpersonal interaction led to increased sharing and deepened trust.

Members' activity level (another secondary element) may predict the performance of the collaborative. Some AHRQ collaboratives have required members to perform a specific task (for example, integrate pharmacists into primary care practice to support medication therapy management) or fulfill a requirement of their grants (such as submitting data to the national EvidenceNOW evaluation). However, several collaboratives have had members join voluntarily to seek input from others as they contemplate or start implementing an innovation.

The final secondary element entails roles, process, and structure. Several AHRQ collaboratives have been successful as a result of establishing defined roles, processes, and structures that help participants achieve their goals. Collaboratives with predefined champion roles have been able to engage members with relative ease; without champions, member engagement may suffer. For example, when the involvement of collaborative champions in the High Reliability Organization Learning Network declined, it was hard to engage members. Defined processes have helped several AHRQ collaborative leaders systematically measure success and refine metrics that enable stakeholders to evaluate their collaboratives.

Successful collaboratives require both time and money to support the needed infrastructure, tools, and participation.

Discussion

At a time of rapid change in health care delivery, when clinicians and health systems are confronting many seemingly insurmountable challenges, collaboratives are increasingly being created to accelerate the diffusion and implementation of innovations designed to the improve health care quality. Collaboratives can play a critical role in the development and evolution of learning health systems. However, there are large gaps in the evidence on how to most effectively and efficiently transform health care to improve individual and population health outcomes, thereby maximizing value. Collaboratives can both support concurrent learning about what works with respect to diffusion and implementation and support or inform needed research.

More than a decade ago, John Ovretveit and colleagues[7] identified important questions about the use and effectiveness of collaboratives. These questions largely remain unanswered. A recent systematic review of collaboratives by Susan Wells and colleagues[8] underscores the limitations of existing literature for assessing collaboratives' effectiveness.

AHRQ's experience with a diverse portfolio of collaboratives over nearly two decades illustrates the potential of collaboratives to accelerate the diffusion and implementation of innovation and to advance research. These collaboratives have been aimed at different stakeholders (including

clinicians, researchers, and health system leaders) and have taken place in different settings (including primary care practices, hospitals, and health plans). Some were created to implement specific innovations, and others have been open-ended, so that participants drive the agenda.

Our analysis of AHRQ's experience allowed us to identify challenges and barriers to success for collaboratives. Common challenges included time for participation, development of trust, competition versus cooperation, and timelines for change. All of the collaboratives required resources and support to maintain and sustain. Outcomes varied, depending on participants and aims: improvement in care delivery, the identification of research question and methods, and increased patient and family engagement. In-person meetings in addition to virtual communication appeared to support the development of the common aims and relationships required to achieve targeted goals. There are unanswered questions about what factors contribute to success in what settings and circumstances, as well as how to overcome common challenges.

Our taxonomy serves as a classification scheme that can be used to support the development, evaluation, and study of learning collaboratives. Identifying characteristics of the innovation, time elements for implementation, communication strategies, and the elements of social structure of learning collaboratives provides a common framework to facilitate the description and understanding of these efforts. This taxonomy can be used to better understand differences between collaboratives and the factors that contribute to their effectiveness. The taxonomy can provide guidance to decision makers and funders about factors that merit explicit consideration in developing learning collaboratives and planning their evaluation, as well as to researchers who seek to answer critical questions. The taxonomy can be used to (prospectively) help design collaboratives, inform the selection of approaches and measures for evaluation, inform the reporting of studies that assess learning collaboratives, and provide a structure for comparison across studies.

Successful collaboratives require both time and money to support the needed infrastructure, tools, and participation. Funding may come from the public sector (federal, state, or local governments), from the private sector (foundations or health systems), or in the form of in-kind support from participants. A structured approach to collaborative design and implementation can help maximize the value of these investments. If sustainability is desired, approaches to sustainability need to be considered at the inception of the collaborative. Using the taxonomy to guide research and reporting, inform outcome studies, and enable comparisons can expand the evidence base about the factors associated with effectiveness in different contexts. Potential participants can consider these factors in deciding whether to join a collaborative, how to provide input so it meets their needs, and what type of participation would be most beneficial.

A number of limitations should be noted. First, we included most but not all fifteen of AHRQ's collaboratives. These represent AHRQ's major initiatives and capture diverse aims, composition, and experience, which allowed us to examine a wide range of experience. Second, while evaluations of some of the collaboratives have reported on the diffusion of innovation among collaborative members, these evaluations did not assess diffusion beyond the collaboratives. Third, the elements of the taxonomy were derived from the literature and AHRQ's collaboratives and might not represent the broader community funded by other federal agencies or the private sector. Nevertheless, the taxonomy's elements were aligned with those in the literature and should inform a much-needed structured approach to the development, implementation, and evaluation and research design of collaboratives that can be revised to accommodate other experiences. Fourth, our taxonomy has not been externally tested and validated. Doing so as a next step would strengthen its utility.

Conclusion

Collaboratives may serve as a mechanism to accelerate the diffusion of health system innovations to support improvements in care delivery. More evidence is needed on how they can best accomplish this. Decision makers and funders seeking to develop new collaboratives or enhance existing ones may benefit from explicitly considering the elements of our taxonomy in their design and functioning. The taxonomy can inform the development of a research agenda and priorities to better understand what factors lead to successful collaboratives. Such a common taxonomy provides researchers with a framework to foster comparison and synthesis across studies. Partnerships between decision makers and researchers can inform prospective design and evaluation, and provide much-needed evidence, by clearly articulating scope, structure, aims, duration, and metrics of evaluation, thereby enhancing learning collaboratives' effectiveness and the value from investments to create and sustain them. ■

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