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From Evidence to Impact: Recommendations for a Dissemination Support System

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Abstract

While finding effective solutions to child and adolescent health problems is very much a scientific endeavor, getting those solutions into widespread practice largely is not. This paper applies lessons from business and engineering to highlight the shortcomings of current approaches to science translation. In challenging the status quo, the paper introduces and defends three propositions: that many evidence-based programs are not worth disseminating; most research- tested versions of programs are not ready for widespread use; and most intervention developers and testers make poor disseminators. These propositions provide the basis for recommending three components of an enhanced dissemination support system, and the conceptualization of a new model to disseminate evidence-based solutions to promote child and adolescent health.

Introduction

There is an urgent need for more scientific knowledge about how to disseminate and implement evidence-based programs. There is an equally great need for actual dissemination and implementation of evidence-based programs. Forced to choose, which should be pursued: dissemination knowledge or actual dissemination?

It is a false dichotomy, of course. We want and need to improve outcomes among children and adolescents. But, the pathways to success are quite different for dissemination knowledge versus actual dissemination. Gaining knowledge about dissemination and implementation is an exercise in science, resulting in insights and recommendations. Increasing actual dissemination requires building systems and infrastructure. Dissemination knowledge can help guide the development of dissemination support systems, but alone, is insufficient to generate greater use of proven products.

Thoughtful investments in dissemination infrastructure are critical for moving research-tested programs into widespread use. To understand the kinds of dissemination systems and infrastructure that might be needed to advance child and adolescent health, we consider three propositions:

1. Many evidence-based programs are not worth disseminating.
2. Most research-tested versions of programs are not ready for widespread use.
3. Program developers make poor disseminators.

Each of these propositions illuminates the need for a different core function within a dissemination support system. Corresponding to the three propositions respectively, we recommend development of:

1. *User review panels* to identify interventions for which there is genuine demand;
2. *Design and marketing teams* to convert in-demand interventions into practice-ready programs; and
3. *Dissemination field agents* to generate awareness, provide training, and support use of evidence-based, practice-ready programs by adopters.

Each of the propositions and core functions are briefly described. We conclude by describing how the core functions would be integrated into a single dissemination support system.

Proposition 1: Many Evidence-Based Programs Are Not Worth Disseminating.

Across a range of domains, promising products and ideas routinely fail to gain widespread adoption. In many cases, such failure is not just common, it is an overwhelming probability. Among new technology products, for every 3,000 raw ideas, only 100 are developed as exploratory projects, 10 of which become well-developed products, 2 of which receive a full-fledged launch in the marketplace, and 1 of which becomes a successful product (Stevens & Burley, 1997). Similarly, the U.S. Patent and Trademark Office receives 275,000 applications per year, of which 150,000 are approved, yet only 7,000 of these are ever licensed (2.5%), and even among licensed innovations, the majority are never used (Lemley, 2001).

In contrast, many scientists seem to operate under the assumption that every empirically supported intervention should be pushed into wider dissemination. Our proposition is not meant to dampen the growing enthusiasm for disseminating research-tested solutions, but rather to balance it with a broader understanding of how spread occurs and a more realistic view of its probability and sustainability.

Uptake or spread of an innovation is driven by more than just research evidence (Orleans, Gruman, & Anderson, 1999). Potential adopters' preferences, needs, and capacity matter, as do social forces like colleagues' opinions and perceived practice norms (Dearing & Kreuter, 2010). These factors are more influential in driving spread than are judgments about "results," and are essential for optimal dissemination (Goldstein, Cialdini, & Griskevicius, 2008; Green et al., 2006).

As an example, MIYO is an online tool for creating customized versions of evidence-based cancer control interventions (Kreuter, Fernandez, et al., 2012). When the U.S. Centers for Disease Control and Prevention (CDC) launched its National Colorectal Cancer Control Program in 2009 (Joseph, DeGross, Hayes, Wong, & Plescia, 2011), it encouraged state and local grantees to use MIYO. Qualitative analysis found that practitioners liked the tool

because it was easy to use, helped them with outreach, and produced high-quality, customizable content for many different target populations. Very few comments ($n = 3$) were made about MIYO delivering evidence-based interventions. Practitioners were using MIYO because it solved a problem easily and efficiently, not because it was evidence-based.

These findings illustrate the critical difference between *evidence* and *demand*, which closely align with what scholars characterize as the “push” and “pull” of dissemination. Scientific evidence leads us to push interventions out to potential adopters, while demand, or pull, is what potential adopters actually want (Rabin, Brownson, Kerner, & Glasgow, 2006). Demand is adopter-centric, not science-centric. It reflects the motivation of potential adopters and what’s consequential to their work (Dearing & Kreuter, 2010).

By training, scientists tend to be fixated on evidence. We have developed systems of review to determine the consistency and strength of evidence for a particular class of interventions. We have created guides that summarize evidence and recommend some approaches over others (Guide to Community Preventive Services, 2012). We have compiled compendiums of effective programs and made them available online (Collins, Harshbarger, Sawyer, & Hamdallah, 2006). These valuable resources likely have helped improve practice. But they could be even more useful if they also contained information about demand.

For example, CDC’s website of *Effective Interventions for HIV Prevention* provides information about and implementation resources for research-tested behavioral interventions, many of them focused on youth (CDC, 2013). Presumably the rate of uptake by practice organizations varies across these 30+ interventions, and presumably the variability in demand is explained by more than chance. Perhaps some interventions are simpler or cost less to implement than others or more easily adaptable. Such information can only come from adopters and users, not developers and funders.

To date, information on user demand for proven programs has been rare, even in otherwise well-designed and information-rich databases like *Effective Interventions* or the National Cancer Institute’s *Research-Tested Intervention Programs* (NCI, 2014). Consequently, the interventions cataloged in these repositories are conferred roughly equal status as “evidence-based” within their listings. By comparison, it would be unheard of in a retail environment to retain products that no one was buying, let alone give them equal attention and shelf space.

How might our perspective on dissemination change if we considered demand alongside evidence? Figure 2.1 shows a distribution of six hypothetical programs, each represented by a dot and plotted along intersecting axes of evidence strength and demand. If you were choosing to promote one of these for widespread adoption and had only the “evidence” axis on which to base your decision, the choice would be simple: program F. But when you simultaneously consider the “demand” axis, programs D and E must also be considered.

A program that is supported by moderate evidence but is in high demand likely will have greater uptake and population impact than one with strong evidence but that no one wants to use. As Green and colleagues point out in a review of dissemination lessons learned from tobacco control successes, without demand, no amount of scientific evidence will yield optimal dissemination (Green et al., 2006).

In summary, scientific evidence should not be the only, or even the predominant, factor in prioritizing programs for dissemination. Certainly evidence matters, and program effectiveness should be a prerequisite for dissemination. We must be far more selective in determining which ones potential adopters truly want and need. And to make these judgments, we will need a systematic approach for gathering demand data.

Proposition 2: Research-Tested Versions of Programs and Interventions Are Seldom Ready for Widespread Use.

Few would contest that conditions in a study are often quite different from those faced by practitioners trying to implement the same intervention in the field. Studies can ensure exposure to and use of an intervention by dedicating significant staff resources to program delivery, following a strict protocol administering the intervention, and/or paying participants to complete the intervention. The number of people who will receive an intervention is not only known in advance, but often tightly controlled and paced, and tends to be small.

Without these resources, supports, and incentives, many interventions are ill-suited to compete in the marketplace of programs and products that practice agencies might consider. For example, can an evidence-based intervention be effectively delivered to a larger population by a smaller staff at a tiny fraction of the budget it enjoyed as a study? Will members of the target audience like it and use it when not being paid to do so? Can the intervention be adapted, and if it can, will it be as effective in a modified form?

As we have described elsewhere (Kreuter & Bernhardt, 2009; Kreuter, Casey, & Bernhardt, 2012), there is a general process through which many promising consumer products and services are made ready for the market. It includes market research, product adaptation and reformulation, and audience segmentation. It involves creating and executing a dissemination strategy, with steps related to building partnerships and a distribution system and providing technical assistance and user support.

But few, if any, research teams have the expertise and capacity—let alone the interest and resources—to adequately prepare an intervention for wider use outside a scientific study. Consequently, even programs or approaches with the most compelling empirical support may be far from ready for use by practitioners. Spread of proven interventions will require more practice-ready solutions. Establishing systems and processes that bring this critical work to trained experts holds greater potential for return on investment.

Proposition 3: Program Developers Make Poor Disseminators.

Although many program developers have studied the dissemination process (Olds, Sadler, & Kitzman, 2007), they may still lack the resources, infrastructure, and business skill sets needed to disseminate and sustain programs. For example, there are many crucial steps that must occur between the time a newly manufactured automobile rolls off the assembly line and the time it first pulls into an owner's driveway. These intermediary steps—including packaging, promotion, transfer, distribution, inventory management, promotion, sales, communication, training, technical assistance, product service, coordination, and evaluation—comprise a marketing and distribution system. Collectively, they are essential for bringing

products from the point of development to the point of use or consumption (Coughlan, Anderson, Stern, & El-Ansary, 2006).

Applied to the challenge of getting evidence-based programs into widespread use, we find that many marketing and distribution functions either don't exist, are not assigned, or are taken on by those unqualified to do them well (Kreuter & Bernhardt, 2009; Kreuter, Casey, & Bernhardt, 2012). Researchers are busy developing and testing programs. Practitioners are busy delivering programs and services, but open to better solutions when they are practical and feasible. Between the two lies a substantial gulf that neither group of professionals is particularly well suited to bridge.

There are at least three broad lessons from marketing and distribution systems that can inform our thinking about disseminating evidence-based programs and interventions. First, in a marketing and distribution system, all tasks are assigned. For every link in the distribution chain, someone is responsible for carrying out specific tasks. Someone transports new cars from the manufacturer to dealerships. Someone creates advertisements. Someone sells the cars to customers. There is no equivalent delineation of roles and responsibilities for translating research to practice.

Second, there is specialization of labor. The person who transports new cars from the manufacturer to the dealership is not the same person who services the cars when they need repair. Different tasks require different skill sets. Yet in moving research into practice, we often ask or implicitly expect researchers and developers to carry out many of the tasks on their own. This is an inefficient use of researchers' and developers' time, and underestimates the amount and type of expertise needed for effective dissemination.

Finally, all the steps in a marketing and distribution system are highly integrated. Even though the tasks are carried out by separate entities, there is a high level of coordination across them.

Building a Dissemination Support System

Respectively, these three propositions suggest that: (1) dissemination should be more demand driven; (2) a dissemination support system should yield practice-ready programs and products; and (3) specialists—not researchers—are needed to promote and support the spread of innovations. Correspondingly, we recommend three components of a dissemination support system that could help accomplish these outcomes: *user review panels*, *design and marketing teams*, and *dissemination field agents*.

Figure 2.2 illustrates how these components might fit into a more comprehensive dissemination support system. In the figure, current approaches are shown in black, while the proposed new components are shown in green or gray. Interventions that are found through existing processes of expert or evidence review to be empirically supported would then be examined by members of a *user review panel*. Panel members' recommendations would dramatically reduce the pool of programs considered for dissemination to only those that were both scientifically proven and in demand. These would be turned over to a *design and marketing team* that would make them into practice-ready programs, and turn them over

to a cadre of *dissemination field agents* who would work directly with potential adopters to support them in selecting, trying, and using the programs.

User Review Panels.

A new process is needed to supplement systematic evidence reviews and compendiums of effective programs with proactive and systematic input from potential users. The goal of this process would be to identify those for which there is genuine demand from organizations that would use them. Once promising programs are identified, investments should be made to develop them further. A consequence of this approach is that some research-tested solutions that have been empirically supported will *not* be recommended for further development.

We envision a panel made up of leading decision makers from key stakeholder organizations that are involved in service delivery and practice. Such a group would initially review existing evidence-based approaches and programs, and later routinely review new solutions as they emerge. A major collateral benefit of such input is shown in the first feedback loop in Figure 2.2 In addition to identifying proven interventions with high user demand to be further developed by the design and marketing team, the user review panel's recommendations would be shared with funders and scientists to shape future research priorities and intervention strategies being developed and tested.

While individual studies and projects often include such input in the early stages of intervention development (Klesges, Estabrooks, Dzewaltowski, Bull, & Glasgow, 2005), the recommendation here is for standing panels that would review research-tested programs as a formal part of a structured dissemination support system. Panels would function more like a grand jury than project-specific consultants, consider a range of "cases" brought before them, and be empowered to request and consider additional information before making a recommendation.

The number and composition of these panels could be determined based on multiple factors, like practice setting, problem-focus, or population affected. For example, there could be separate user review panels for all interventions designed for delivery in schools. Alternatively, panels could be configured to focus on particular issues, such as childhood obesity or adolescent substance use, or on the needs of population subgroups, like adolescents. Ultimately, the organizations and agencies that put in place user review panels will make this decision.

Design and Marketing Teams.

A select few evidence-based approaches, programs, and interventions will emerge from the user review panel process as deserving of further development and promotion. As Proposition 2 argues, even these will need some attention to make them practice-ready. Design and marketing teams would carry out key operational functions critical to successful implementation, including, but not limited to, selecting user groups, adapting and packaging an intervention, building partnerships, establishing a distribution system, and providing training and technical assistance (Kreuter & Bernhardt, 2009).

Several elements of this approach are found in New York City's Public Health Detailing Program (Dresser et al., 2012; Larson et al., 2006), which uses the pharmaceutical industry's established marketing strategy to improve delivery of preventive services like vaccinations and screenings in at-risk neighborhoods. The program created and distributed "action kits" modeled after commercially produced products and containing clinical tools (e.g., reminder stickers and self-administered questionnaires), journal articles, guidelines on evidence-based care, and patient education materials. Small incentives (e.g., pens, sticky notes, bags) were provided to physicians and clinical office staff to promote use of the kits.

Evaluation of the program found increases in a multitude of behaviors (Dresser et al., 2012), illustrating how design and marketing capacity can be applied broadly to a range of different interventions. This is essential to ensure feasibility, as it is almost certainly impractical for every research and development unit to have its own design and marketing team. Thus, organizations and agencies seeking to facilitate the spread of evidence-based interventions could add this capacity and make it available to proven programs in high demand.

Dissemination Field Agents.

As a result of user review panels and design and marketing teams, there will emerge an ever-growing set of research-tested, in-demand, and practice-ready interventions. But the benefits of these solutions for families will only be realized if they are consistently integrated into practice. In our vision of a dissemination support system, dissemination field agents assume this responsibility.

Dissemination field agents must be intimately familiar with the menu of proven, in-demand, practice-ready programs. Their job is to generate awareness of these programs in target audiences, work closely with potential adopters to help them choose a solution that fits their needs, and provide the training and ongoing support to ensure that it can be adapted and used in their setting.

In a study of New York City's Public Health Detailing Program, six such "agents" were recruited and trained in clinical content, communicating recommendations and materials, overcoming barriers, and evaluation prior to visiting healthcare providers and staff in target neighborhoods. They made more than 2,500 visits to 202 sites, assisting providers and clinical staff in using practice tools and patient education materials from the action kits during brief 10-minute sessions. There is also evidence that training selected representatives from practice agencies to use evidence-based approaches can filter down through an organization via train-the-trainer pathways. In Iowa, such an approach led to dramatic gains in perinatal depression screening in health agencies (Segre, Brock, O'Hara, Gorman, & Engeldinger, 2011).

Both of these are examples of project-specific dissemination field agents. However, it is probably neither feasible nor sustainable to fund such positions for every intervention. To achieve economies of scale, our recommendation is that dissemination field agents be a centralized resource capable of advancing many different interventions for many different audiences. Even though the dissemination field agents would be hired by and work for the

dissemination support system, they would represent “products” from many different developers, and support each effectively.

In Figure 2.2, the second feedback loop (from the dissemination field agents to the design and marketing team) illustrates an important collateral benefit of this approach. Because field agents will be in close contact daily with organizations that are thinking about adopting or in the process of implementing different programs, the agents will have firsthand knowledge about which programs are appealing to users, and what about them is working well. This valuable consumer information can be shared with the design and marketing team to guide their continual refinement and improvement of programs.

Implementing the System

Who would fund and operate the proposed dissemination support system? What are its implications for intervention developers, research funding agencies, practitioners, and other stakeholders? Is it scalable? Sustainable? These are critical questions for which there aren't yet definitive answers.

There are, however, some core assumptions that can guide how we think about these issues. First, those developing such a system should learn from, if not build upon, existing efforts. Substantial dissemination-focused infrastructure exists and could conceivably be expanded to integrate the proposed new functions.

Second, although it is possible that the functions of the proposed system could be put in place at a project level, achieving the goals of broader spread and greater social impact will require a system that operates at a higher level and draws on a much larger inventory on evidence-based programs.

Third, success of such a system will require a reorientation in the thinking of many stakeholders. Developers will have to place a higher premium on the potential demand for solutions they create, be willing to leave behind programs they've developed that draw limited interest, and relinquish some control to marketing and dissemination professionals. Funders might more formally integrate information on user demand into funding priorities and announcements and look differently upon applications that propose interventions—even evidence-based ones—for which there has been little demand or uptake. Practitioners would play a much more active role in shaping the menu of available solutions by providing critical feedback at every stage of the dissemination process.

Finally, implementing the proposed system will require an organization to allocate substantial resources to the endeavor, including developing capacity in new areas with professionals who bring new skills often missing in research-focused agencies that have taken on this challenge to date. Barring an influx of new and long-term resources to establish a sustainable dissemination system, this would likely require an organization to spend less on something else, such as research.

An ideal system could be national in scale, comprehensive in its scope of topics, and combine centralized functions of user review and marketing with localized outreach (e.g.,

dissemination agents). However, like most innovations, it will more likely begin as a smaller scale innovation from a single agency, with a limited geographic and/or topical focus. For example, a state or national foundation might build the first such system to advance its particular mission. Strong candidates to lead in this area would need access to research-tested programs, well-established partner and constituent networks, and surveillance capacity to monitor the results.

Conclusion

Moving evidence-based child and adolescent health programs into widespread practice is a critically important goal for science. However, science alone is insufficient to support successful dissemination and implementation, and scientists may be particularly poorly suited to facilitate the process. Institutions that fund research and those that represent practice and service delivery systems should consider creating a dissemination support system that is less science-centric. Such a system should instead be driven by user demand, employ design and marketing experts to adapt research-tested interventions into practice-ready programs, and deploy field agents to work hand-in-hand with practice agencies to choose, adapt, and implement evidence-based programs. Collectively, these three components comprise an enhanced and efficient system for disseminating evidence-based solutions that can improve child and youth development and population health.

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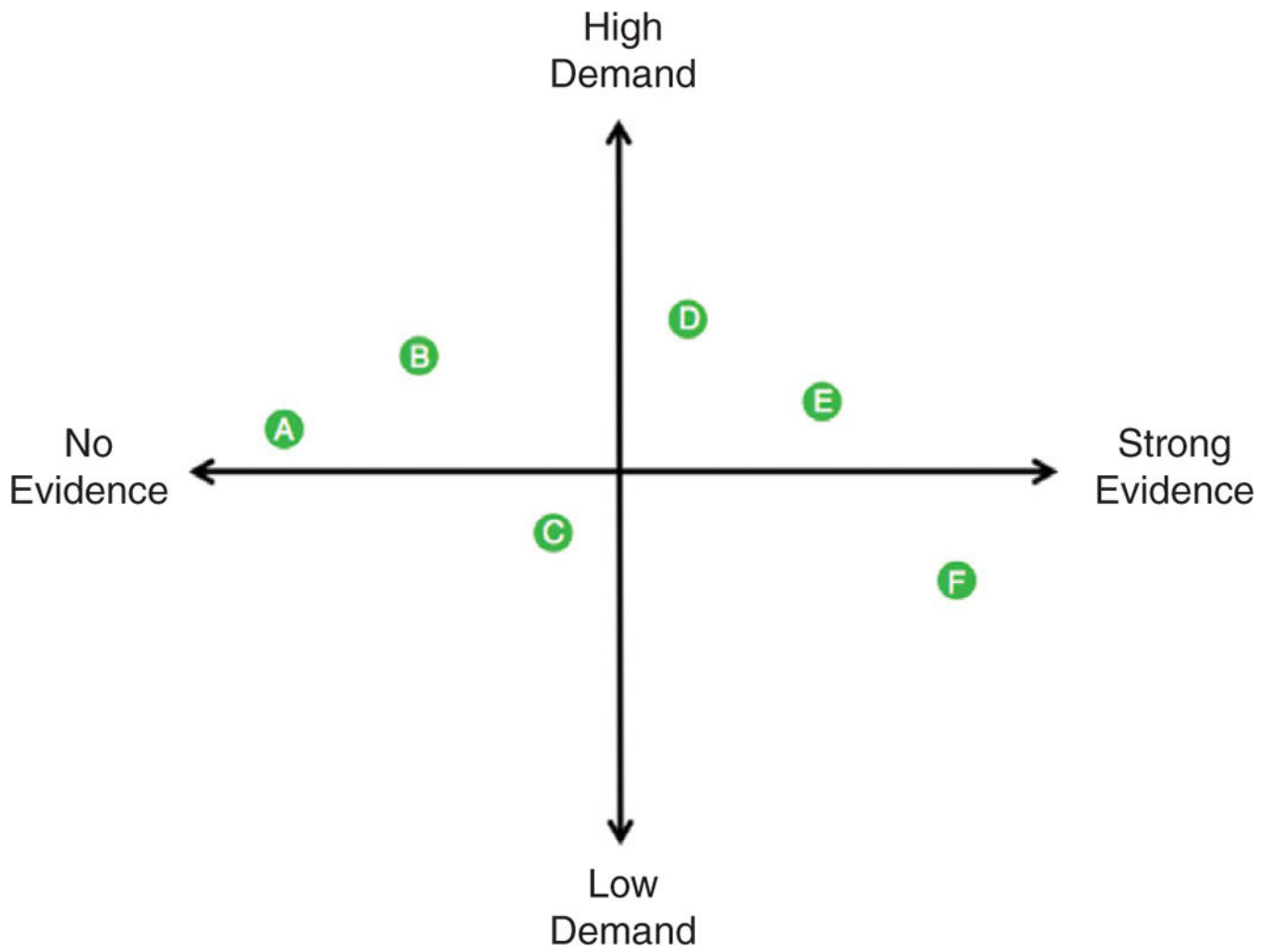


Figure 2.1. Considering Strength of Evidence and Level of Demand in Evaluating Dissemination Potential of Health and Social Interventions

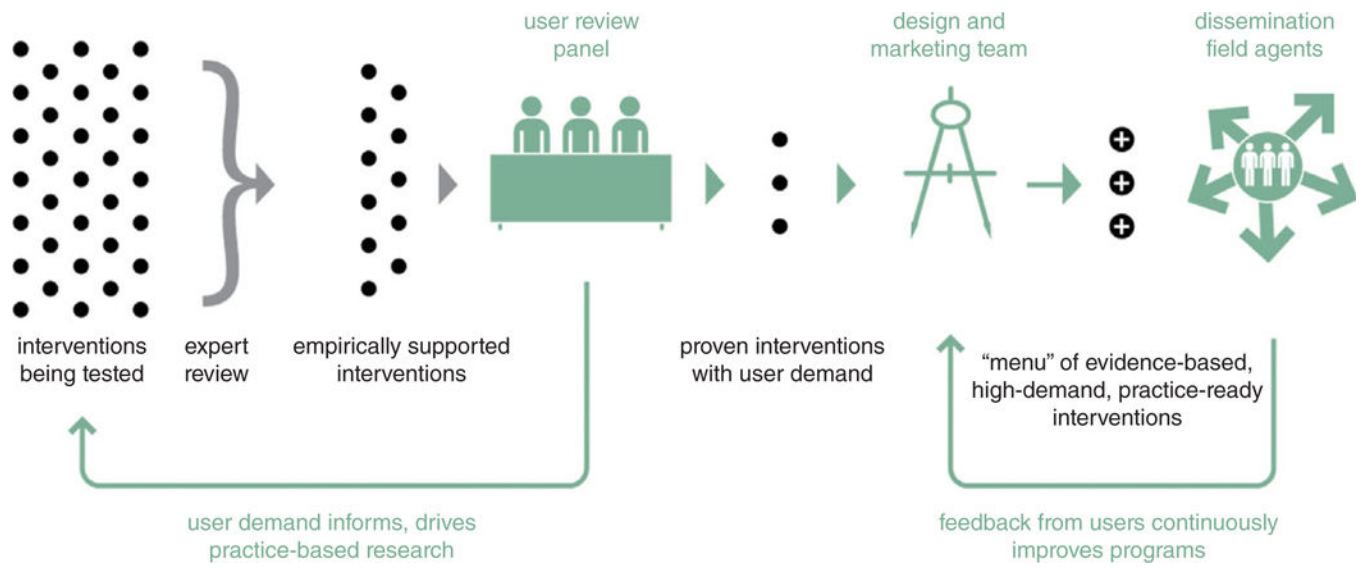


Figure 2.2.
Proposed Dissemination Support System