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# Research and Evaluation in the Transformation of Primary Care

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*Across the United States, primary care practices are engaged in demonstration projects and quality improvement efforts aimed at integrating behavioral health and primary care. Efforts to make sustainable changes at the frontline of care have identified new research and evaluation needs. These efforts enable clinics and larger health care communities to learn from demonstration projects regarding what works and what does not when integrating mental health, substance use, and primary care under realistic circumstances. To do this, implementers need to measure their successes and failures to inform local improvement processes, including the efforts of those working on integration in separate but similar settings. We review how new research approaches, beyond the contributions of traditional controlled trials, are needed to inform integrated behavioral health. Illustrating with research examples from the field, we describe how research traditions can be extended to meet these new research and learning needs of frontline implementers. We further suggest that a shared language and set of definitions for the field (not just for a particular study) are critical for the aggregation of knowledge and learning across practices and for policymaking and business modeling.*

**Keywords:** integrated behavioral health, behavioral research methods, implementation research, natural experiments, primary care behavioral health

**A**cross the United States, integration of behavioral health is taking place in diverse primary health care settings for compelling reasons (see Kathol, Butler, McAlpine, & Kane, 2010) and supported by diverse groups and agencies, for example, the AIMS Center at the University of Washington (Advancing Integrated Mental Health Solutions, <http://uwaims.org>), the Academy for Integrating Behavioral Health and Primary Care (Agency for Healthcare Research and Quality, <http://integrationacademy.ahrq.gov>), and the SAMHSA-HRSA Center for Integrated Health Solutions (Substance Abuse and Mental Health Services Administration, <http://www.integration.samhsa.gov>). The literature shows that integrating care can improve quality and patient experience, create efficiencies, and save money (Kathol, deGruy, & Rollman, 2014; Blount, 2003; Butler et al., 2008; Carey et al., 2010; Craven & Bland, 2006). What it does not yet show is how to make the clinical, organizational, and professional changes nec-

essary to accomplish and sustain integration—or which of these changes yield the greatest benefits. Primary care practices and the systems that host them are attempting to integrate behavioral health<sup>1</sup> into their fabric, and through demonstration projects and pragmatic trials, they are learning how to implement and sustain these efforts. These studies are designed to affect policy and payment as well as develop clinical models. However, this mostly unexplored territory contains a broad range of questions—a new field of inquiry—that involves the “how” as well as the “what” for aggregating and spreading learning about clinical, organizational, financial, and professional arrangements and methods that support integrated behavioral health. This field of inquiry asks what outcomes can be expected from various models, which components account for the outcomes, and how research methods and measures might need to be adapted.

In this article, we make the case for an expanded repertoire for research and for the need to pull generalized knowledge from many local implementations or natural experiments. We identify the most important research traditions and their durable foundational elements. We describe several ways that research inquiry must be extended from these foundations to meet current needs for the study

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<sup>1</sup> Following the Agency for Healthcare Research and Quality (AHRQ) lexicon for behavioral health integrated in primary care (Peek & the National Integration Academy Council, 2013), behavioral health is defined here as including mental health care, substance abuse care, health behavior change, life stressors and crises, stress-related physical symptoms, and ineffective patterns of health care utilization.

of primary care transformation. We conclude by recognizing the importance of psychologists' participation in this new field.

## **Today's Health Care Environment and the Scope of Research Information Needed**

Perhaps the most visible feature in the health care environment today is the attempt to transform it—to remedy access, quality, experience, and cost problems (Commonwealth Fund Commission on a High Performance Health System, 2013; Grundy, Hagan, Hanson, & Grumbach, 2010; Institute of Medicine 2000; Margolius & Bodenheimer, 2010). The goal of this transformation is often referred to as the Triple Aim—improved health, improved patient experience, and reduced cost of care (Berwick, Nolan, & Whittington, 2008). An operating model to achieve the Triple Aim is the patient-centered medical home, or PCMH (see *Joint Principles of the Patient-Centered Medical Home*, American Academy of Family Physicians, American Academy of Pediatrics, American College of Physicians, & American Osteopathic Association, 2007; Rosenthal, 2008; Stange et al., 2010). The PCMH emphasizes “whole person care” and recognizes that integrating behavioral health and primary care is important to improving health, care quality, and patient experience and to containing costs (Croghan & Brown, 2010; deGruy, 1996; deGruy & Etz, 2010; Dickinson & Miller, 2010; Hogan, Sederer, Smith, & Nossel, 2010; Institute of Medicine, 2006; Mauer, 2009). This environment of transformation calls for a broader scope of research information than might have been the case in the past.

### **Generalized Knowledge Is Needed From Local Implementations and Natural Experiments**

Demonstrations of integrated care are taking place across the country as natural experiments driven by local implementers in the context of their communities. Local implementers' (e.g., clinical and administrative leaders and managers) primary responsibility is arguably to improve the local situation, not to produce generalizable knowledge. There are a number of reasons for this. Often, the work of change and of making programs work is challenging enough without also producing research knowledge for the field. Leaders and implementers may lack research capacity or relationships and view complex study designs, randomization, and fixed interventions as incompatible with program-building and rapid-learning quality improvement goals and methods. This is a reasonable view. However, when innovators integrate behavioral health and primary care without identifying functional elements, characteristics, or experiences likely to work or not and likely to apply across settings, lessons about how to integrate behavioral health care are lost for others following in the footsteps of frontline innovators. This loss of potential learning is great when experimentation is widespread, as it is today. Thus, a secondary aim of local implementation of integrated be-

havioral health can be to contribute in a practical way to generalizable knowledge. While rapidly evolving quality improvement efforts and natural experiments do not lend themselves to study through randomized controlled trials (RCTs), as we discuss later in the article, other methods are compatible with natural experiments and answer a broad range of research questions that produce practical and generalizable knowledge.

### **Research Questions Are About More Than Conditions**

Patients in primary care often have more than one active problem—and they may have diverse goals for health or readiness to address different problems. In addition, improving health (the first aim of the Triple Aim) is more than achieving better disease outcomes. Thus, research in primary care and behavioral health includes but must go beyond disease-specific outcomes to include functional and patient-centered or patient-defined outcomes that affect patient experience (the second aim of the Triple Aim) and meet patients' needs or expectations (Davies, 1994; Ware, 1991). Moreover, these outcomes are desired for populations of patients in communities, not only for a few individuals or subpopulations who happen to engage in care.

### **Different Stakeholders Have Different Needs for Information**

Patients and clinicians care whether disease states and functional status improve, that care is a good experience that keeps patients healthy and supports healing when they are ill, and that patient time and money invested are well spent. Practices care whether new workflows, team members, and protocols are implementable, achieve valuable outcomes, entail manageable up-front and ongoing costs, and are eventually experienced by clinicians and staff as improvements over previous methods. Purchasers and health plans care whether health and patient experience are improved while cost is reduced and whether a given clinical product is defined and delivered consistently so that standards can be established and monitored. Legislators and policymakers care whether their constituents are healthier, are satisfied with the system, and find it affordable and that services are cost-effective—and need such information to shape policy decisions. Finally, stakeholders need effective strategies for implementation if effective demonstrations are to be translated with consistency into other health systems and settings (Woolf, 2008; Woolf & Johnson 2005). Thus, research needs to focus not only on *what* works but on *how* to make something work.

Researchers must be aware of the wide slate of research questions that audiences consider important, and when engaging in research to answer these questions they must choose outcomes that matter to stakeholders while producing “answers” in a practical timeframe. Research can identify elements essential for success, including preconditions necessary for integrating behavioral health, processes for accomplishing that integration, ease of disseminating or transporting changes to new settings, and data to inform system and policy changes necessary to sustain such

changes. This calls for research that simultaneously examines implementations from intertwined clinical, operational, and financial perspectives (Peek, 2008), viewing natural experiments in integrated care from all these perspectives simultaneously (Davis et al., 2013). That is, research questions and studies must be designed to accommodate the many interrelated “moving parts” of complex health systems in the process of change.

## **The Contributions of Foundational Research to the Field of Integrated Behavioral Health**

### ***Randomized Controlled Trials on Collaborative Care***

Traditional clinical research has focused on studying the effect of incorporating elements of behavioral health care in the primary care setting. For example, foundational RCTs on collaborative care for depression demonstrated that models involving coordination among primary care physicians, care managers, and consulting psychiatrists improve patient outcomes (Unützer et al., 2002). This model has served as evidence for efforts to scale up approaches for depression care (Solberg et al., 2010), and research reviews (Blount, 2003; Butler et al., 2008; Craven & Bland, 2006) point to other RCTs that focus on other populations and integration models. These first-generation RCTs provide a foundation for the field, and as a study design, RCTs played an important role in this seminal research, as well as our continuing studies. However, RCTs, particularly efficacy RCTs, are not well suited to the study of quality improvements, demonstration projects, and other natural experiments going on around the country today for a number of reasons.

First, RCTs are best for studying single therapeutic agents or interventions whose efficacy is unknown. In demonstration projects, multifactorial interventions may be implemented that combine therapeutic factors already known to be efficacious with system resources, such as care management. The aim of this work is sustainable change, and interventions may change mid-course in response to what is learned during the conduct of a study, for instance, to enhance their implementation or outcomes. RCTs require a level of control that does not provide the flexibility required in assessing this type of change.

Second, standard RCTs usually recruit homogeneous study groups; RCTs as originally conceived systematically excluded patients with comorbid conditions. The natural experiments happening today are developing and implementing interventions that address broader groups of patients with a mix of problems, as actually found in practice and in populations. Different methods are required to appreciate variations among patients with various combinations of comorbidities.

Third, traditional clinical trials often make substantial expenditures to ensure full implementation and high fidelity of the prescribed intervention and aggressive and comprehensive measurement of study variables; some trials pay practices for the disruption caused by the study. As a result,

these studies are often not sustainable beyond the grant. In contrast, demonstration projects focus on sustainable change—with evidence-based interventions implemented in ways that are feasible and sustainable in the local context, with mid-course modifications in the intervention being made to achieve this.

Fourth, outcomes of concern in a traditional efficacy trial are typically narrow, such as remission of a disease state or improvement in severity of a clinical condition. Questions addressed by contemporary integration projects are generally broad, multifactorial, and multilevel and require assessing intermediate process variables as well as clinical status, patient well-being, quality of care, cost, and feasibility. Traditional clinical trials typically are designed with the patient as the unit of analysis and use randomization to compare the effect of an intervention to placebo or control. In integration demonstration projects, the practice is typically the unit of analysis, as these projects aim to change practice and learn if an intervention is an improvement over usual care. In addition, it is difficult and even counterproductive to randomize patients and practices or to restrict an intervention or system design in one part of an organization when cross-fertilization and spreading good ideas is a goal.

While RCTs have great value, this design is not appropriate for the study of demonstration projects and evolving natural experiments in integrated behavioral health. Instead, different research designs and methods of measurement and analysis are needed to study these natural experiments in order to produce generalizable knowledge (Berwick, 2008; Pawson & Tilley, 1997; Riley, Glasgow, Etheridge, & Abernathy, 2013; Speroff & O'Connor, 2004). The next section reviews a sample of research approaches that might be used to study improvement and implementation in the field of integrated behavioral health care.

### ***Implementation Research***

Interventions shown to be efficacious in controlled and well-supported clinical trials are often much less effective when implemented in real-world settings (L. W. Green, 2008; McGlynn et al., 2003; Westfall, Mold, & Fagnan, 2007), and this conundrum has, in part, led to a new area of research called implementation research. Implementation research is concerned with

understanding how programs are implemented, translated, replicated, and disseminated in real-world settings. It expands the focus of traditional research from discovering what works to also discovering how it works in specific contexts. In traditional medical or health services research, studies testing the efficacy and effectiveness of interventions, such as randomized, controlled trials, maximize internal validity by attempting to control dynamic and complex contextual factors. In contrast, implementation research emphasizes establishing external validity so that knowledge about how to effectively implement programs can be applied to a wide range of settings. (Damschroder, Peikes, & Petersen, 2013, p. 1)

Pragmatic clinical trials (PCTs; Peikes, Geonnotti, & Wang, 2013) are one type of design that can be used when doing implementation research. Like RCTs, PCTs employ



randomization, but at the practice rather than the patient level, and study an intervention in real-world settings with representative practice samples and broad patient samples nested within these practices. PCTs meet the decision-making needs of stakeholders by demonstrating the clinical outcomes, cost, experience, and ability to implement an intervention, and they help establish whether to adopt a clinical model. These studies emphasize *effectiveness* of an intervention in real-world settings over *efficacy* (which presumably has already been established) and external validity over internal validity. With regard to internal validity, PCTs and other effectiveness studies must maintain an important balance between fidelity to the integration model or intervention being tested and the need for frontline clinics to adapt the model over time based on experience, fit, and sustainability in the local environment (Cohen et al., 2008).

Implementation studies often employ mixed methods designs; these are designs that combine a range of qualitative (e.g., observation, interview, focus group) and quantitative methods (e.g., patient and practice members surveys, chart, and financial audit). Implementation studies used mixed methods because the collection of quantitative and qualitative data provides a more complete understanding of whether an intervention worked, why it worked, and how it was implemented across settings (Wisdom & Creswell, 2013). Mixed methods designs are particularly useful for studying complex interventions such as we see in PCMH projects (Agency for Healthcare Research and Quality, 2013; Nutting et al., 2009) and other integrated behavioral health efforts.

Implementation research using designs such as PCTs and mixed methods may be understood within the broad scope of health services research, a field that became more prevalent in the health sciences in the late 1960s through the establishment of a federal health services study section and department within the (then) Department of Health, Education, and Welfare (Lohr & Steinwachs, 2002). Implementation research and effectiveness studies, including PCTs and other designs, are sometimes considered “an expanded toolbox” (Peikes et al., 2013) for researchers and have emerged to address the “How can it be made to work?” as well as “What works?” questions required for decision-making in practice transformation. One downside of such studies is that they require large numbers of practices, and recruitment can be difficult. Additionally, demonstration projects and natural experiments do not select or recruit practices in traditional ways, making the application of the PCT more challenging since randomization at the clinic level is often not possible. Next, we discuss practice-based research networks (PBRNs) as a structure for mitigating these challenges.

### **Practice-Based Research Networks (PBRNs)**

PBRNs are a structure for doing research across many practices, not a research method or set of study topics. PBRNs have been a feature of primary care research in the United States since the early 1980s (Davis, Keller, DeVoe, & Cohen, 2012; L. A. Green & Hickner, 2006). Practices are linked in networks to study problems relevant to pri-

mary care, to reach adequate study power across multiple practices, and to ease patient recruitment for clinical trials, and they may use aggregated electronic health records (EHR) data. PBRNs are useful today for these and other purposes, and over 100 primary care PBRNs are in existence, including at least one composed entirely of practices interested in studying integrated care—the Collaborative Care Research Network (Sieber et al., 2012).

PBRNs have the potential to become very important to behavioral health integration research, even though they are presently underused (L. A. Green, Cifuentes, Glasgow, & Stange, 2008; McMillen, Lenze, Hawley & Osborne, 2009). Federal funding agencies such as the Agency for Healthcare Research and Quality, the National Institute of Mental Health (NIMH), and the Patient Centered Outcomes Research Institute (PCORI) are funding large, multisystem, multistate PBRNs that pool data electronically across EHRs. NIMH has funded the Mental Health Research Network (MHRN; <http://www.healthpartners.com/hprf/research/research-areas/mental-health/mhrn/index.html>), which includes a range of integrated health systems such as Group Health, Kaiser Permanente, and the Henry Ford Health System and has supported NIMH-funded studies such as the DIAMOND study. We discuss the DIAMOND study in more detail below. Another example of this type of network is OCHIN, Inc. (DeVoe et al., 2011). OCHIN is one of the largest networks of safety net practices in the nation, with 336 primary care clinics in 12 states, with more than 4,817 providers and over 1,500,000 patients. OCHIN has the capacity to pull together big data sets to study a range of research questions and to recruit practices to participate in implementation research. These networks are ideal for studying implementation efforts that require large numbers of practices to achieve minimal levels of statistical power, as well as natural experiments and demonstration projects, because of ease of data collection across systems and practices and availability of longitudinal data (before a natural experiment starts and long after it ends). EHR-linked PBRNs make it possible to use more rigorous repeated time series designs to evaluate change efforts and to select and examine data from a matched comparison group of practices.

PBRNs can be the laboratory to answer many questions related to effective translation of evidence-based integration models into practice (Westfall et al., 2007). While NIMH has funded a network of integrated health systems to study serious mental illness, funding could be expanded to create networks with the infrastructure to study behavioral health integration efforts more broadly. This will take effort, as primary care practices that are integrating care often do not consistently document in accessible form information such as clinical assessments for depression, quality of life, or work life function that could be useful for studying integrated care. In part, this is because EHRs are not designed to help practice members document this information in discrete fields and in part because practices may not have learned the value of collecting this information and developed workflows to routinely support consistent documentation (Shank, Willborn, Pytlikzillig, & Noel, 2012). Thus, infrastructure is needed to expand the data

collection capacities of member clinics within new or existing PRBNs to include extracted EHR data that could be used to measure behavioral health integration efforts or better integrated care of mental health and chronic conditions.

### **Quality Improvement Research**

Even when practices are not participating in PBRNs or are not structured to engage in RCTs, they usually have experience with quality improvement (QI) processes as a way to reflect and improve. Systematic processes for using QI methods to create change that leads to measured improvement have long been proposed (Batalden & Davidoff, 2007; Grol, Baker, & Moss, 2002; Margolis, Provost, Schoettker, & Britto, 2009; Solberg 2007). But “to be a science, quality improvement studies need to be embedded in a theory and be generalizable” (Neuhauser & Diaz, 2007, p. 77) rather than be applicable only to the setting in which the quality improvement activity took place.

A research challenge is therefore to draw on QI activities to create generalizable knowledge on what interventions work and how to implement them. This requires thoughtful design, which may involve implementing improvements across multiple settings and deploying research methods during the QI process to extract and aggregate generalizable findings. Such research may track and monitor the progress of QI efforts at the level of individual patients, panels or subpopulations, and the clinic or organization. Such research may also deal with the domain of “collaboration” (Batalden & Davidoff, 2007, p. 2) that involves relationships, communication, managing conflict, group learning, and the culture of health care professionals, including their sense of identity. Such cultural shifts have been described as part of the “how” of implementation (McDaniel, Campbell, & Seaburn, 1995; Nutting et al., 2009, 2010).

Designing QI efforts to produce generalizable knowledge can also enhance the QI process. Organization members who are engaged in QI need routine access to relevant clinical and operational data to quickly inform system learning by identifying what is or is not working. This allows for efforts to be adjusted as needed. Thus, such data can inform QI efforts and serve as a research protocol. How to create such frameworks and how to improve clinic implementation through routine collection and use of data are areas where researchers have something to offer clinics and the field. Next, research approaches and examples are described for addressing the research challenges described in the context of demonstration projects and natural experiments in integrated behavioral health.

### **Extending Research Approaches to Study Behavioral Health Integration**

Implementation research and practice-based research offer new opportunities for studying implementation and delivery of integrated care models in realistic settings and for answering many kinds of practice-based questions. However, the study of on-the-ground innovation requires ex-

pansion of how we think about research. While there are many changes in research methods we might consider, we focus here on just two: (a) a common language for our work and (b) designing research to learn and generalize from multiple system change efforts.

### **A Shared Lexicon—Consistent Definitions for Integrated Behavioral Health in Action**

RCTs and all other empirical study designs rely on definitions to clarify the meaning of integration in the context of the study. Stipulative definitions (“For the purposes of this study, *X* is defined as . . .”) do not develop language to be consistently understood and applied across the field but develop language—operational definitions—to be used in the context of the study at hand. In contrast, researchers studying natural experiments, demonstration projects, and quality improvement efforts need to use terms and concepts consistently across the field to produce generalizable knowledge. Yet this is often not the case, particularly in newly emerging fields. As Proctor and Brownson (2012, p. 296) pointed out, “Studies often use different labels for what appear to be the same construct, or use one term for the outcome’s label or nominal definition but a different term for operationalizing or measuring the same construct.” A lexicon is critical in this work because it becomes a shared vocabulary for framing questions, measures, and results (Miller, Kessler, Peek, & Kallenberg, 2011). It helps researchers place their work within a body of research; it helps identify what has been learned, what questions remain, and also what concepts describe the intervention and measures for both the process and outcome of integration.

The need for shared language came into sharp relief during the planning for a meeting in 2009 to develop a national research agenda for integrated behavioral health (Miller et al., 2011). Experts were using the same words to refer to entirely different concepts or practices and struggled to communicate effectively. Participants agreed that significant further progress could not be made until a common lexicon was developed for the field, recognizing that such unifying language is a normal stage of development in emerging scientific fields (Peek, 2011).

A consensus lexicon for behavioral health integrated in primary care was created using methods published in *Descriptive Psychology* (Ossorio, 2006; see Bergner, 2010) with support from AHRQ and its Academy for Integration of Behavioral Health and Primary Care. A one-page outline of this lexicon appears in Figure 1. Six essential functions for integration appear in the left column. Twelve parameters that provide a vocabulary for identifying how these essential functions might differ across settings appear in the right column. These defining functions and parameters were iteratively clarified and refined until the question “What do we mean by that?” could be consistently answered. Those clarifications appear in the full lexicon (Peek & the National Integration Academy Council, 2013). This lexicon helps build the field by creating a shared language that can unite stakeholders in clearer conversation. One example is the use of the lexicon’s defining functions of

**Figure 1**  
*Outline of Lexicon for Behavioral Health Integrated With Primary Care*

<p><b>What</b>  The care that results from a practice team of primary care and behavioral health clinicians, working together with patients and families, using a systematic and cost-effective approach to provide patient-centered care for a defined population.</p> <p>This care may address mental health and substance abuse conditions, health behaviors (including their contribution to chronic medical illnesses), life stressors and crises, stress-related physical symptoms, and ineffective patterns of health care utilization.</p>	
<p><b>Defining Clauses</b>  <i>What integrated behavioral health needs to look like in action</i></p>	<p><b>Corresponding Parameters</b>  <i>Calibrated differences between practices</i></p>
<p><b>How</b></p> <ol style="list-style-type: none"> <li>1. A practice team tailored to the needs of each patient and situation <ol style="list-style-type: none"> <li>A. With a suitable range of behavioral health and primary care expertise and role functions available to draw from</li> <li>B. With shared operations, workflows and practice culture</li> <li>C. Having had formal or on-the-job training</li> </ol> </li> <li>2. With a shared population and mission <ol style="list-style-type: none"> <li>A. A panel of patients in common for total health outcomes</li> </ol> </li> <li>3. Using a systematic clinical approach (and a system that enables the clinical approach to function) <ol style="list-style-type: none"> <li>A. Employing methods to identify those members of the population who need or may benefit</li> <li>B. Engaging patients and families in identifying their needs for care and the particular clinicians to provide it</li> <li>C. Involving both patients and clinicians in decision-making</li> <li>D. Using an explicit, unified, and shared care plan</li> <li>E. With the unified care plan and manner of support to patient and family in a shared electronic health record</li> <li>F. With systematic follow-up and adjustment of treatment plans if patients are not improving as expected</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>1. Range of care team function and expertise that can be mobilized</li> <li>2. Type of spatial arrangement employed for behavioral health and primary care clinicians</li> <li>3. Type of collaboration employed</li> <li>4. Method for identifying individuals who need integrated behavioral health</li> <li>5. Protocols <ol style="list-style-type: none"> <li>A. Whether protocols are in place or not for engaging patients in integrated care</li> <li>B. Level that protocols are followed for initiating integrated care</li> </ol> </li> <li>6. Level of shared care plan use <ol style="list-style-type: none"> <li>A. Proportion of patients in target groups with shared care plans</li> <li>B. Degree to which care plans are implemented and followed</li> </ol> </li> <li>7. Level of systematic follow-up</li> </ol>
<p><b>Supported by</b></p> <ol style="list-style-type: none"> <li>4. A community, population, or individuals expecting that behavioral health and primary care will be integrated as a standard of care.</li> <li>5. Supported by office practice, leadership alignment, and business model <ol style="list-style-type: none"> <li>A. Clinic operational systems and processes</li> <li>B. Alignment of purposes, incentives, leadership</li> <li>C. A sustainable business model</li> </ol> </li> <li>6. And continuous quality improvement and measurement of effectiveness <ol style="list-style-type: none"> <li>A. Routinely collecting and using practice-based data</li> <li>B. Periodically examining and reporting outcomes</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>8. Level of community expectation for integrated behavioral health as a standard of care</li> <li>9. Level of office practice reliability and consistency</li> <li>10. Level of leadership/administrative alignment and priorities</li> <li>11. Level of business model support for integrated behavioral health</li> <li>12. Extent that practice data is collected and used to improve the practice</li> </ol>

Note. From *Lexicon for Behavioral Health and Primary Care Integration: Concepts and Definitions Developed by Expert Consensus* (p. 2) by C. J. Peek & the National Integration Academy Council, 2013, Rockville, MD: Agency for Healthcare Research and Quality. Each defining clause and parameter is spelled out in detail in the full lexicon.

integrated behavioral health as a performance framework from which to create measurement constructs for quality of integration. Each lexicon-defined function has a set of measurement constructs and specific measures (in the *AHRQ Atlas of Integrated Behavioral Health Quality Measures*, Korsen et al., 2013).

In addition to informing the efforts of researchers, this shared lexicon can be used by other stakeholders to help answer their own questions about a new service or way of thinking about care. Patients and families want to

know what they can expect from integrated behavioral health. Clinicians and medical groups want to know what core functions to implement when they advertise themselves as delivering integrated behavioral health. Purchasers such as employers want to know what they are buying for their clients with any change in service or cost. Health plans or insurance companies want to know what functions they will require medical groups to provide to health plan members with insurance benefits for integrated behavioral health. Policymakers want to know



what functions need to be supported by policies or business models and if these are according to a unified field or differ by care system, agency, discipline, and research project. It will be easier for all these stakeholders to move forward *together* in conversation and action if the field can speak with consistency regarding functional definitions and basic terminology, even though definitions and terms will evolve over time. Other groups have also flagged the importance of shared language in this emerging field (AIMS Center, n.d.; Collins, Hewson, Munger, & Wade, 2010; Heath, Wise Romero, & Reynolds, 2013).

### **Learning From Multiple Change Efforts**

System redesign requires organizations and the people within them to behave differently. This is a major undertaking. Organizations are dynamic and complex systems embedded in important relationships with the environment (Cohen, McDaniel, et al., 2004). For instance, a community mental health center may develop a vision and direction for integrated care but find that it is constrained by state and federal rules and payment systems. System change requires understanding the opportunities and challenges the environment offers, assessing motivation for change, and mobilizing an organization's resources and capacities (e.g., leaders, staff, physical space, money). When moving toward behavioral health integration, system redesign often involves shifting roles, new hiring, engaging team members in a new vision of the care process and its outcome, developing new work processes and workflows, and engaging stakeholders (e.g., payers, board members, and local, state, and national leaders).

There is evidence that "learning organizations" may be the most successful with system redesign (Carroll & Edmondson 2002; Institute of Medicine, 2007; Senge, 1990). Learning organizations have people who can (a) identify a change target, (b) determine how to move toward that target, (c) measure the effect of changes, and (d) create an environment where people in the organization can learn what is working and what is not and adjust accordingly. Becoming a learning organization usually involves access to and reflection on data (Carroll & Edmondson, 2002; Edmondson, 2003), some of which may come from quality improvement projects or iterative approaches to change (Batalden & Davidoff, 2007; Friedman, 2005). Data that organizations choose to examine may vary based on their programs and interests but may include clinical data relevant to integration efforts, such as "reach" data, or the penetration of behavioral programs among patients identified as in need of services, assessment of follow-through on primary care referral to behavioral health, changes in outcomes (such as Patient Health Questionnaire-9 [PHQ-9] score, Generalized Anxiety Disorder-7 [GAD-7] score, body mass index [BMI], quality of life) that might draw on information documented in the EHR, patient experience data that might come from using survey techniques to assess patients' reactions to new services and systems (e.g., the Consumer Assessment of Healthcare Providers and Systems, the Picker Patient Experience Questionnaire), as

well as financially related indicators that may be drawn for data on visit volume and billing information.

Learning organizations capable of improvement may evolve without concern for the generalizability of their models and approaches and without motivation to translate or scale successful changes to other settings. However, it is incumbent on researchers in this field to develop methods for looking across organizations that are working on integration challenges and to generalize the successes and failures (Balasubramanian et al., 2008; Cohen et al., 2011).

We next describe three examples of research studying natural experiments in integrated behavioral health to illustrate different approaches to intervention and research design. Two projects were less structured and guided by a shared vision of an endpoint, and one initiative had a great deal of structure and can be thought of as an "installation" across diverse settings. First we highlight features of system design change in natural experiments and how to learn from them. Then we describe each project in a way that illustrates how it addresses the expanded subject matter with expanded research methods.

### **Prescription for Health (P4H) and Advancing Care Together (ACT)**

Prescription for Health (P4H) was a national program of the Robert Wood Johnson Foundation that funded PBRNs to implement interventions to integrate health behavior counseling into the primary care setting (Cifuentes et al., 2005; L. A. Green et al., 2008). Advancing Care Together (ACT) is a state-based program of the Colorado Health Foundation that is supporting clinics in Colorado to integrate primary and behavioral health care (see <http://www.advancingcaretogether.org/>). At the time of this writing, ACT was two years into its three-year funding cycle. In both programs, frontline practice members were asked to identify their best ideas for achieving program goals—the integration of health behavior counseling in P4H, and the integration of behavioral health and primary care in ACT. There were 10 grantees in P4H (Round 2) and 11 ACT grantees. In each program, a grantee undertook a single, complex, multifaceted intervention, no two of which (interventions or settings) were exactly alike. Rather, a range of approaches was funded.

Research goals were (a) to identify cross-grantee findings or principles that guide successful implementation; (b) to assess the effectiveness of the innovations; and (c) to support PRBNs and clinics, the program office, and the technical assistance team in the learning process. To accomplish these goals, Cohen and the research team (Cohen et al., 2006, 2011) used a mixed method comparative case study design that was informed by the RE-AIM model (reach, effectiveness–adoption, implementation, maintenance; Glasgow, Vogt, & Boles, 1999) in both evaluations. This means that each grantee (i.e., clinic or PBRN) was considered a "case." The data collection methods were designed to get a deep understanding of the case and to harmonize data collection across cases (e.g., focus on similar phenomena, use the same data collection methods) in order to make comparisons and identify cross-case find-

ings. For instance, data collection in P4H included (a) the use of online diaries in which the people implementing or engaging in the change process recorded their experiences approximately every two weeks; (b) site visits to observe the new clinical workflow and interview clinic members; and (c) interviews with study team members and other key stakeholders (Cohen et al., 2006, 2011). In P4H, the National Program Office assessed patient outcome (Fernald et al., 2008; Glasgow et al., 2005) and practice expenditures (Dodoo, Krist, Cifuentes, & Green, 2008; Krist, Cifuentes, Dodoo, & Green, 2010). In ACT, these tasks are now under the umbrella of the evaluation. Table 1 shows how these two projects addressed seven features of contemporary integrated behavioral health research (the numbered rows) that were identified earlier in this article.

While the articles cited above detail how the elements of the data collection process unfolded, they do not expli-

cate certain important principles at the foundation of the approach. First, even as the research team built rapport with program leaders and grantees in P4H and ACT, it concurrently maintained its ability to critically examine (not necessarily critique) each project. Second, qualitative data and “reach” data (in ACT) were collected prospectively or in real time. Qualitative data included clinical member journals posted on the online diaries and observations and interview data from site visits and other program meetings, as well as documents that grantees submit to the program office (e.g., applications, annual reports). In ACT, the research team used “reach” data to assess the extent to which the target population the clinic identified was screened for a behavioral health or primary care need and the extent to which patients with identified needs received relevant services. Qualitative and reach data were collected prospectively because it enabled our research team to establish an

**Table 1**  
*Research in Natural Experiments: Prescription for Health (P4H) and Advancing Care Together (ACT)*

Aspect of research on natural experiments	P4H Round 2: 10 PBRNs, 107 primary care clinics	ACT: 9 primary care and 2 community mental health clinics
1. Improving health of persons, not only disease outcomes	Program focused on integrating health behavior counseling in primary care; targeted smoking, alcohol use, diet, and exercise.	Program focused on integrating behavioral health and primary care. Emphasizes whole-person care; does not target a single disease.
2. Working with the complexity of real clinical populations	PBRNs were funded to work with network practices; a wide range of geographic locations, clinics, and populations were served.	Primary care and community mental health centers in Colorado; no specific inclusion criteria for patients.
3. How a change strategy is identified and reconciled with local conditions	PBRNs identified change strategy; through trial and error, practices and PBRNs identified how to implement change.	Practices and their partner organization identified change strategy; through trial and error, they identified how to implement change.
4. Data collected and used for local learning	Qualitative data were available to grantees in real time; quantitative data collected via survey were available at the end of the study.	Qualitative data are available to grantees in real time; quantitative data are tracked via EHR and tracking sheet and are reviewed with clinics quarterly.
5. Identifying general principles across settings	An evaluation was funded to identify cross-project lessons. Mixed methods were used to identify how change was achieved and what outcome it produced.	An evaluation was funded to identify cross-project lessons. Mixed methods were used to identify how change was achieved and what outcome it produced.
6. Leadership, stakeholders, managing risk	A national advisory committee comprising clinicians, policy leaders, and other key stakeholders informed the program. Risk was managed locally since innovation was not dictated.	A committee of local and national leaders in integration, clinicians, and policy experts steers the program. Risk is managed locally since innovation is not dictated.
7. Use of a shared lexicon	Chronic care model, RE-AIM model, and common measures informed a dialogue. Screening, brief counseling, and coordination emerged as common elements in that dialogue.	The RE-AIM model informed the evaluation, but the research team did not superimpose models or approaches on innovators. Shared language may emerge from this in-progress program but is not an explicit emphasis of this work.

Note. PBRN = practice-based research network; HER = electronic health record; RE-AIM = reach, effectiveness—adoption, implementation, maintenance.



understanding of implementation experiences as they unfolded, to assess the uptake or penetration of the new intervention, and to engage in and foster a reflective dialogue within and across grantee teams. Additionally, prospective data collection and sharing informed program-level decisions and helped support grantees' learning needs by making data available on a timeline that could be used by grantees to adapt and improve the implementation of their innovations. These data were summarized and interpreted and discussed with grantees quarterly.

The research teams collected a range of relevant outcomes in ACT and in P4H to assess the effectiveness of interventions but did not compare the effectiveness of interventions, as this was not possible given the study design. These data were collected retrospectively or toward the end of the study period, when there was a cohort of patients who received the interventions. In ACT, outcomes collected included the GAD-7, the PHQ-9, a range of different substance use measures (depending on what the clinic chose to use to screen for substance use), as well as a range of common primary care measures such as BMI, blood pressure, and HbA1c. Finally, the research team collaborated with the program office personnel and grantees to widely disseminate findings to encourage spread. For instance, P4H was not only adapted for ACT but has inspired and directly informed a Prescription for Health program in Spain (Sanchez et al., 2009).

### ***DIAMOND (Depression Improvement Across Minnesota, Offering a New Direction)***

The Institute for Clinical Systems Improvement (ICSI), a regional quality improvement collaborative, facilitated this Minnesota-based initiative to implement evidence-based care for adults with depression in primary care settings. The initiative was developed by a steering committee from several ICSI primary care medical groups, five Minnesota-based health plans, two employer groups, and the Minnesota Department of Human Services. Jürgen Unützer, MD, from the University of Washington, provided training support and local application of the original RCT evidence basis upon which DIAMOND was patterned (the IMPACT study; see Unützer et al., 2002).

The DIAMOND initiative was implemented in 75 practices. One of the innovations was the inclusion of a payment model across health plans to support a clinical model whose efficacy was already established through the IMPACT RCTs. At its most basic, the care model included (a) consistent use of a validated tool for assessing and monitoring depression; (b) systematic follow-up and tracking using a patient registry; (c) use of an evidence-based stepped care approach, including relapse prevention; (d) a practice-based care manager to educate, monitor, and coordinate care with the primary care clinicians; and (e) weekly caseload review with a consulting psychiatrist to supervise the care manager and provide treatment recommendations to primary care clinicians. The initiative is described in more detail elsewhere (Crain et al., 2013;

Institute for Clinical Systems Improvement, 2013; Solberg et al., 2010, 2013).

A separate NIMH-funded study examined an even broader set of outcomes and measures. This study was developed in partnership with the DIAMOND initiative leaders from seven health plans, 85 clinics, and ICSI to evaluate the implementation and its effects on patients and other stakeholders. A staggered-implementation, multiple-baseline design was employed. The unique cooperative design and conduct of this study was characterized as "partnership research" (Solberg et al., 2010). The design made it possible to evaluate the DIAMOND initiative without interfering with or burdening clinics. Table 2 shows how the DIAMOND initiative and companion study addressed features of contemporary behavioral health research.

One can see that these designs represent an emerging approach whereby individual practices or clinical systems can retain the flexibility and responsiveness to local events that will maximize their ability to change and improve while at the same time be organized into larger units of study that share conventions of language and concept, standards of measurement, and a commitment to learn from one another and make use of each other's successes and failures to accelerate the improvement process. This is a very important development in the history of implementation science. We are just now developing the "double vision" to generalize from local, context-specific observations and interventions. It is a good time to be a scientist in the world of integrated care.

## **Conclusion**

Psychologists are trained in a combination of research and practice and are systems thinkers. As Senge (1990) put it, "Systems thinking is a discipline for seeing wholes. It is a framework for seeing interrelationships rather than things, for seeing patterns of change rather than static 'snapshots'" (p. 68). Practice transformation calls for systems thinking *and* acting; it calls for organizing "pieces" so they add up to wholes, harnessing powerful connectivity between components, and bringing about patterns of change and learning rather than fixed solutions and final answers.

Many psychologists are quite familiar with systems thinking in the context of families, individuals, clinical care, organizations, and workplaces. These skills are also applicable to practice transformation and can inform research, program evaluation, and the creation of communities, in the workplace, that learn to use data and experience to affect change and continually improve. Psychologists' participation in integration research—from small local quality improvement or program evaluation projects to research studies sponsored through PBRNs or other structures—can make important contributions to the field of integration. One way is for us to partner with other researchers and scholars in interprofessional research teams to conduct research that addresses important integration-related problems that are

**Table 2**  
*Research on Natural Experiments: DIAMOND Initiative and Study*

Aspect of research on natural experiments	DIAMOND (Depression Improvement Across Minnesota, Offering a New Direction): 75 participating practices statewide
1. Improving health of persons, not only disease outcomes	This was a single-condition demonstration (depression), but most comorbidities such as anxiety and PTSD were allowed in the research sample as long as major depression was diagnosed. Depression is frequently comorbid with chronic medical illnesses, pain, and other symptoms. A long-range expectation was that the basic approach could be extended to other conditions or groups of conditions.
2. Working with the complexity of real clinical populations	Inclusion criteria were for age (adult) and <i>DSM IV</i> major depression, but most mental health (such as anxiety or PTSD) comorbidity was accepted (though not treated or monitored), along with whatever medical conditions the patient may have had.
3. How a change strategy is identified and reconciled with local conditions	Care model, payment model, and consistent assessment and monitoring of practice data collection were identified in advance. Practices were required to perform identified core functions, knowing there would be plenty of local adaptation of the "how." Fidelity to the model and areas for local adaptation were specified in writing in advance. The research study deferred to the operational needs and concerns of initiative leaders and their organizations.
4. Data collected and used for local learning	There was a choice of two methods for reporting a standard set of practice-generated data; these data were synthesized and reported to practices monthly within the initiative. Practices could compare their own performance with that of others in the cohort. The companion study collected data beyond the practice-based data of the initiative, with little interference or burden to the practices
5. Identifying lessons learned or general principles across settings	Lessons were learned from practices via learning sessions with interactions among practices and the initiative facilitating team. Research followed staggered introduction of care and payment change to 10–26 clinics every six months. There were new cross-sectional study samples of patients before the start and every week after for three years. Patient surveys for care experience, work productivity, and depression outcome measures were taken at baseline and 6 months later; there were health plan claims data and practice leader surveys related to implementation. Outcomes were tracked that mattered to each stakeholder.
6. Leadership, stakeholders, managing risk	Clinicians, patients, payers, employers, and state agencies formulated and steered the initiative and the study, which was done as "partnership research" (Solberg et al, 2010). Acceptable risk to participating stakeholders in the initiative was calibrated in the design phase. Likelihood of success was increased by: <ul style="list-style-type: none"> <li>• Practices applying to participate, showing why they believed they could implement the model—including sufficient leadership for the change—via written and phone readiness assessment.</li> <li>• ICSI-sponsored training for care managers, consulting psychiatrists, PCPs and leadership teams—for each new staggered cohort. Practices sat together and compared notes and learned from each other.</li> </ul>
7. Use of a shared lexicon	The DIAMOND Initiative lexicon was clear—with each core function spelled out clearly—and was closely related to language used in the original clinical trials on which DIAMOND was based. The study also used a consistent nomenclature for design, data collection, and reporting. The definitions were familiar in the field as well as specific to the initiative but were not offered as standard use in the field. For example "care manager" (the required functions) had an explicit and commonly understood meaning in the initiative and the study but was not proposed as a universal definition for the field.

*Note.* PTSD = posttraumatic stress disorder; *DSM-IV* = *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition; ICSI = Institute for Clinical Systems Improvement; PCP = primary care physician.

grounded in reality. Patterns of collaboration such as "partnership research" are emerging (Solberg et al., 2010). The roles that one can create as a leader in practice transformation or a collaborator in implementation or quality improvement research are typically not

prescribed, requested, or identified in job descriptions—though some are. These are emerging roles in an emerging field, and psychologists have the capacity as well as a great opportunity to develop, implement, and disseminate

inate care models that promote health care integration and thereby improve the health of this nation.

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