A National Agenda for Research in Collaborative Care

Papers From the Collaborative Care Research Network Research Development Conference

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Overview

Charlotte Mullican, M.P.H.
Editor

At the AHRQ-funded Collaborative Care Research Network Research Development Conference in Denver in October 2009, key national leaders took major steps toward establishing a research agenda for collaborative care among primary care and mental health clinicians. This set of three research papers represents the fruits of that meeting. The papers support and advance AHRQ's portfolio of primary care research.

The Collaborative Care Research Network (CCRN), which convened the conference, is a sub-network of the American Academy of Family Physicians National Research Network. CCRN was created so that clinicians from across the country can investigate how to make collaborative care work more effectively. CCRN is one of the practice-based research networks of primary care clinicians and practices that work together to answer community-based health care questions and translate research findings into practice.

The authors (Miller, Kessler, and Peek) supplied the following orientation to these papers.

> The papers describe the creation of a research agenda for collaborative care. This emerging field emphasizes the recognition and care of mental health problems in primary care settings and the effective collaboration of primary care and mental health clinicians. Collaborative care is regarded as an important function of the patient-centered medical home (PCMH), and one avenue toward achieving PCMH goals for health, patient experience, and affordability. More research is needed to identify which particular functions or components of mental health and primary care integration lead to improved outcomes and add value in the PCMH. Such research will have clinical, system design, and policy implications.

This overview is intended to familiarize the reader with the interconnected purposes and concepts in the three papers and how to navigate them as a set.

The Papers

Establishing a Research Agenda for Collaborative Care (Miller, Kessler, and Peek). This paper presents the research agenda, identifying two sets of questions that need investigation in collaborative care. Part A questions describe the models and functions currently being employed in the field of collaborative care. Part B questions are evaluative. What collaborative care functions or models currently in use lead to improved outcomes and for whom? This is a research agenda to find out what makes or does not make a positive difference among the many variants of collaborative care seen in practice. The agenda is meant to be an ongoing process of mapping existing practice across the country and discovering which forms of it make a positive difference to whom.

In addition to the research agenda, the paper describes gaps in the literature, how the Research Development Conference was used to create the research agenda, and how it became necessary along the way to develop a lexicon for the common terms and components for collaborative care so that research questions can be framed in a consistently understood manner.

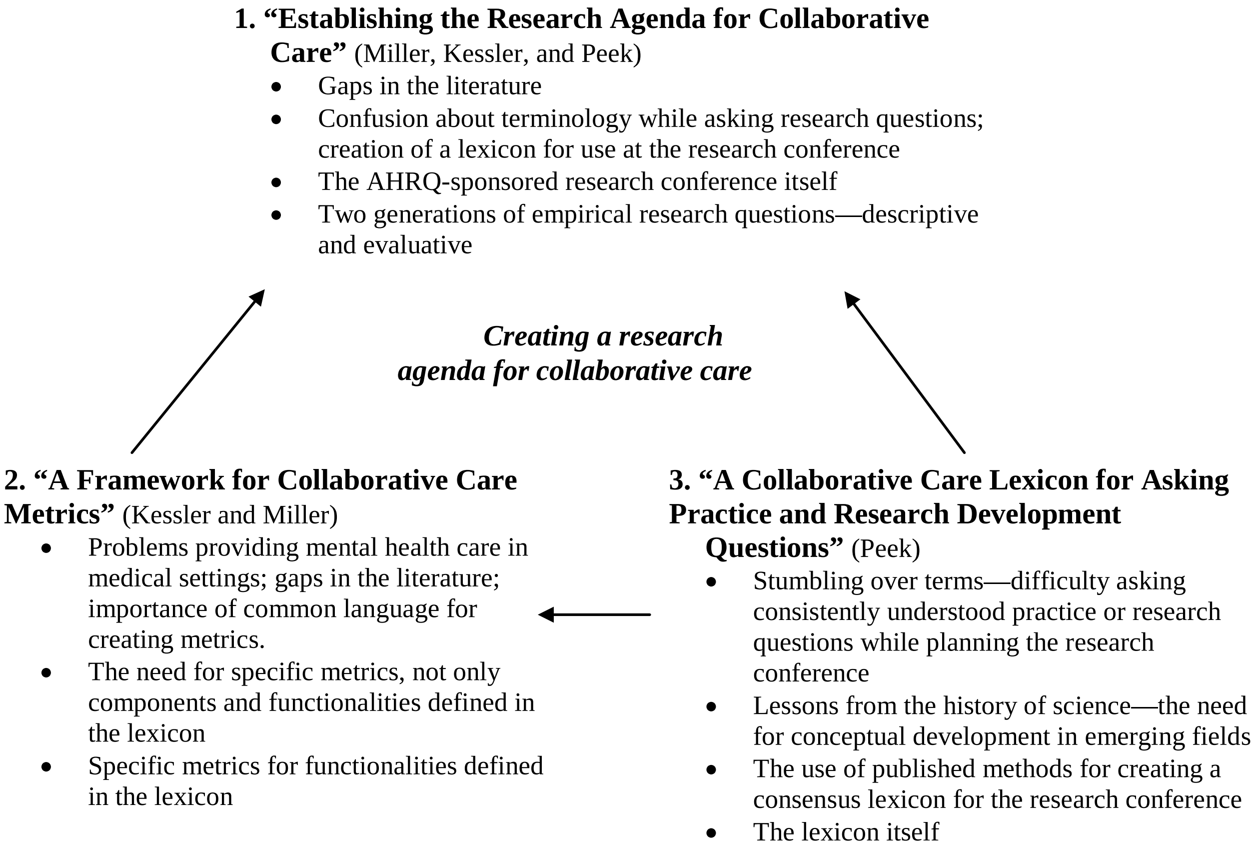
A Framework for Collaborative Care Metrics (Kessler and Miller). This paper serves as a researcher's tool for providing metrics (data elements) needed to carry out the research questions identified in "Establishing a Research Agenda for Collaborative Care." It proposes specific metrics for the degree that the necessary functions of collaborative care cited in the collaborative care lexicon (see below) and the research agenda are working in a given practice. It is one thing to have a lexicon or conceptual structure for asking consistently understood practice development and research questions—and another thing to have measurable indices (metrics) on hand that can serve as quantitative measures or approximations of otherwise qualitative descriptions of collaborative care practice that are contained in the lexicon and the research agenda.

The paper briefly reiterates the problems of providing mental health services to individuals in medical settings, the gaps in the effectiveness literature for collaborative care, and the importance of a consensual lexicon that provides consistently understood definitions for collaborative care functions and metrics derived from it.

A Collaborative Care Lexicon for Asking Practice and Research Development Questions (Peek). This paper can be considered the narrative "back story" of why and how the collaborative care lexicon was developed for AHRQ's research development conference. It reviews the difficulty of articulating consistently understood research questions (or even planning the conference) because of differences in language and concepts of what the components of collaborative care are and what they should be called. The paper reminds us that examples of definitional or lexical confusion are common in the history of science and that collaborative care is an emerging field that like others has had to refine its pre-empirical conceptual/definitional system prior to doing good science.

The method for creating this collaborative care lexicon for the conference is described, along with the lexicon itself; the benefits to clinicians, patients, policymakers, and researchers; and the budding applications in other emerging fields of healthcare such as palliative care, patient-centered medical home, and shared decision-making.

Figure 1: Interrelated purposes and content of the three papers



1. "Establishing the Research Agenda for Collaborative Care" (Miller, Kessler, and Peek)

- Gaps in the literature
- Confusion about terminology while asking research questions; creation of a lexicon for use at the research conference
- The AHRQ-sponsored research conference itself
- Two generations of empirical research questions—descriptive and evaluative

Creating a research agenda for collaborative care

2. "A Framework for Collaborative Care Metrics" (Kessler and Miller)

- Problems providing mental health care in medical settings; gaps in the literature; importance of common language for creating metrics.
- The need for specific metrics, not only components and functionalities defined in the lexicon
- Specific metrics for functionalities defined in the lexicon

3. "A Collaborative Care Lexicon for Asking Practice and Research Development Questions" (Peek)

- Stumbling over terms—difficulty asking consistently understood practice or research questions while planning the research conference
- Lessons from the history of science—the need for conceptual development in emerging fields
- The use of published methods for creating a consensus lexicon for the research conference
- The lexicon itself

From Lexicon Definitions to Practical Metrics: the Flow of Concepts in the Papers

Orienting the reader to the purpose of each paper and how they connect is easy. What is more challenging (and more important) is to prepare the reader for the flow of concepts from one paper to the next. In particular the reader should be prepared to see how research questions framed with terms from the lexicon end up becoming metrics that are also derived from that same lexicon. The collaborative care lexicon contributes to language for the research questions and for the elements to be measured and the specific metrics as shown partially below. We hope the reader finds the journey through these papers interesting and energizing—perhaps enough to participate in the research itself.

Establishing the Research Agenda for Collaborative Care

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Abstract

The ongoing crisis in health care continues to be driven by the twin concerns of cost and quality. Recent healthcare policy changes promote significant system reorganization (e.g., patient centered medical homes and accountable care organizations) aimed at increasing coordination and comprehensiveness of care as a way to both contain cost and increase quality. Improvements in the coordination between mental health and primary care offer a prominent example of an area of healthcare reorganization that can contribute to both better quality and lower costs. The phenomena and practice of mental health and primary care have been linked inextricably, and a body of research highlights the benefits of integrating mental health into primary care and addresses mental health and physical health simultaneously. However, despite significant positive outcome data on integration, most research on mental health in primary care has been disease specific, using targeted interventions not always indicative of standard clinical practice. Systematic reviews on integrating mental health and primary care have concluded that despite the benefits of integration or the benefits of increased attention to mental health problems in primary care, more research is needed to understand the effects of specific strategies, levels of integration, care processes, or financial models on outcomes. Taking into account these gaps in evidence along with what is already known, this paper reports a research agenda for mental health in primary care created at the Collaborative Care Research Network Research Development Conference in Denver. This manuscript will propose two sets of research questions for the field of integrated mental health and primary care.

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Introduction

It is well known that the majority of mental health-related complaints presented by patients are to their primary care providers[1-4]: consider that psychosocial issues are present in approximately 70% of primary care visits,[5] and conditions such as depression are some of the most common seen in primary care.[6] New models for integrating mental health care into primary care have been proposed, yet research on this integration has yet to catch up with clinical innovation, often leaving many practices wondering which model or strategy is best for them.[7] This discussion deals with the component of patients' mental health issues that are routinely brought to the primary care setting—problems that are already considered part of the mission of primary care.[8] While some patients with severe and persistent mental illnesses are seen in primary care, the majority of this population is followed in mental health clinics.[9] These patients are very much in need of primary care services integrated into their mental health settings. Many of these patients die prematurely of their medical illnesses due to lack of medical intervention largely because their mental health issues make it difficult for them to seek and receive primary care in primary care clinics.[10,11] When one examines the literature on mental health and primary care, the majority of the findings support specific interventions for targeted disease conditions.[7,12]

The Agency for Healthcare Research and Quality (AHRQ) commissioned a report systematically reviewing the literature on integrating mental health and primary care in late 2008. This Minnesota Evidence-Based -Practice Center report on Integration of Mental Health/Substance Abuse and Primary Care synthesized the evidence and concluded that integration of mental health into primary care works, but it remains impossible to tease apart the model or level of integration from the added attention paid to a specific disease (e.g., depression).[7] The report went on to challenge the healthcare field to begin to study which elements of integrating mental health into primary care (including financial models) lead to desired outcomes. While the report offered suggestions for areas of future research on integration, it did not set a research agenda or identify how a research agenda could fill the gap between what we know and what we need to know.

For example, the majority of studies used in the AHRQ systematic review focused on depression, using a specific model. Therefore, empirical questions around what other models, diseases, and strategies could benefit from integration could not be created and addressed. The twin challenge of this inquiry then is to create a research agenda that combines studying the effect of integration or collaboration as a system attribute in action across specific treatments or conditions and studying the effect of specific treatments on specific patient groups or specific conditions. In other words, a research agenda for mental health in primary care needs to ask questions about the generalized effects on clinical and financial outcomes of different kinds of collaboration and collaborative care teams *and* the effects of specific collaborative care treatments on outcomes for different patient groups. This makes a research agenda conceptually challenging, but this is the reality and the gaps that require study.

For the purposes of this paper, we are using the global definition of collaborative primary and mental health care proposed by Miller, Mendenhall, and Malik[13], which identifies collaborative care as the larger construct addressing the integration of mental health providers and services into primary care. The reader will note that clarity in language will become a prominent theme in this paper both in terms of content and research agenda.

Methodology

The Collaborative Care Research Network Research Development Conference in Denver, Colorado in October 2009 brought together a group of national leaders in primary care, mental health, practice-based research networks (PBRN), research, and healthcare systems. The meeting was audiotaped and transcribed to ensure accurate reporting of information.

The White Papers

One important aspect of this conference was the series of white papers, solicited and written prior to the conference, covering areas germane to collaborative care and research. To prepare participants for setting a research agenda, several areas needed to be reviewed and addressed. The paper titles and authors are listed in Table 1. While each paper represented an original and significant contribution to the conference, the collaborative care lexicon paper (the basis for the Peek paper in this series) will be highlighted here because, without clarification and definition of a common language, creating a research agenda would be difficult. The financing paper is not included in this current collection because it pertains more to billing and payment issues than a research agenda. The paper has been used by Ms. Reynolds in her work with the National Council for Community Behavioral Healthcare.

Table 1: White paper topics developed for this conference

A Framework for Collaborative Care Metrics: Kessler and Miller (included in this series)

Financing of Collaborative Healthcare Services: The Who, What, When and Where of Billing Issues: Reynolds and Miller

Toward a Conceptual System for the Field of Collaborative Care: A Starter Lexicon for the Collaborative Care Research Network: Peek (precursor to Peek article in this series)

Toward a Collaborative Care Lexicon

The Collaborative Care Research Network **(**CCRN), a sub-network of the American Academy of Family Physicians National Research Network and a PBRN, was created to pose and answer collaborative care research questions in a way that can be consistently understood in practices across the Nation. By enrolling primary care practices that had integrated mental health, the CCRN would be able to answer research questions germane to mental health and primary care integration. The conference leadership also led the CCRN and believed that the network could be the platform to carry out the research agenda. But the program committee’s initial experiences framing research questions revealed confusion about the terms in common use, especially regarding the components of collaborative care that are the subject of research. The program committee also realized that funding agencies and policymakers need consistently articulated concepts for this field. Such conceptual clarity, or pre-empirical work, has preceded the empirical success we associate with mature scientific fields. The lexicon paper established a common vocabulary to ensure that all discussion participants were using the same language to talk about mental health in primary care. This lexicon or conceptual system for this new scientific field was created as a product for AHRQ and was used to formulate research questions.

A method for creating a lexicon that would have standing in the field would have to be consensual and analytic (a disciplined transparent process—not a political campaign); involve actual implementers and users who know the field well; focus on what functionalities look like in practice (not just on principles or values); and be amenable to gathering around it an expanding circle of "owners" and contributors (not just an elite group coming up with a declaration). The lexicon white paper employed methods for defining complex subject matters that meet these requirements called "paradigm case formulation" and "parametric analysis."[14] A paradigm case formulation is a vehicle for creating a definition that maps both similarities and differences—a consistent core and acceptable variations. A parametric analysis is a vehicle for being explicit about how one instance of collaborative care might differ from another instance.

It was clear early on in the planning of the conference that the lexicon paper would play a significant role in framing the discussion and creating a research agenda. Similarly, the group recognized the need to use a consistent lexicon when describing collaborative care. Collaborative care is used in this document to describe an ongoing relationship among clinicians (i.e., mental health/behavioral health/substance abuse and primary care) over time.[15] This is not a fixed model, but rather a larger construct consisting of various components which, when combined, create models of collaborative care practice.[16,17]

Collaborative Care Metrics and Evaluation Framework

To research and evaluate mental health in primary care, we needed a unifying construct to serve as a framework for measuring the success of collaborative care. The Kessler and Miller metrics white paper included in this series defines the conceptual relationships among structure, process, and outcome, building on the work of Miller, Mendenhall, and Malik.[13] Peek[18] has discussed a "Three Worlds" model of collaborative care, which says that all actions in collaborative care have clinical, operational, and financial dimensions and that these must be made to work together. For example, a new clinical model will no doubt require operational changes and often business model changes. This approach is consistent with other contemporary concepts and measurements within healthcare, such as the Triple Aim described by Berwick and colleagues.[19]

The Method for Producing the Research Agenda—the Conference

The work flowed over the 1.5-day conference from:

- Orientation to the perspectives and desired conference outcomes brought by participants,
- Introduction of the lexicon as a vocabulary for use during the conference,

- Orientation to the research picture in the field so far—from clinical and financial perspectives,
- Exploring and synthesizing collaborative care research agendas dealing with clinical, operational, and financial aspects of collaborative care
- Examination of challenges for comparative effectiveness research in collaborative care—and how that relates to policy issues and diffusion of research.

The time was divided between large group conversations and small group tasks that were brought back to the large group. A facilitator was employed to keep the group on task and on time. Scheduled time for informal conversations that helped generate ideas and synthesis also occurred at breaks and meals.

Results

The following results propose a new research agenda for collaborative care building on what is known from the white papers and reports such as the AHRQ systematic review. Current knowledge is limited regarding the extent and characteristics of collaborative care practice. Further, the lack of a consistent evaluation model with specified outcomes has impeded large scale translational opportunities. The following research recommendations concern primarily 1) the knowledge that ultimately needs to be gained (what kinds of collaborative care strategies work best for whom—with triple aim outcomes in mind); and as a means to that end, 2) the need to acquire a level of robust organized knowledge of what is presently occurring in practices in the field that claim to be practicing collaborative care. This latter point is especially salient in creating a practice-based research network agenda for the CCRN.

Therefore, two sets of research questions need empirical investigation in collaborative care. Part A questions are descriptive. What is going on in the field by way of collaborative care? What models and functions are being employed in the field? Part B questions are evaluative. What collaborative care functions or organizational supports being used lead to improved outcomes and for whom? This research agenda has been created to find out what makes a positive difference (or not) among the many variants of collaborative care seen in practice. The agenda will be an ongoing mixture of mapping existing practice across the country and discovering which forms make a positive difference to whom.

While having Part A questions fully answered before Part B questions could help describe collaborative care settings and outcomes of any studies of care delivered in those settings, it is not required. To help tease out the effects of collaborative care as a strategy from the effects of greater effort and attention being paid to the assessment and treatment of mental health problems, a better understanding is needed of what constitutes a collaborative care practice. Also, the overall collaborative care characteristics may play critical outcome roles in all phases of mental health problem management from identification/screening to treatment to improvements in patients' mental health status to effects on other aspects of patients' health care. It will be necessary to place a practice or practices participating in any outcomes studies on the continuum of collaborative care as part of the methods section of any such study.

A. **Descriptive Questions**: What is currently going on in collaborative care—the extent to which variations in practice models, target populations, and other dimensions are using the lexicon as a nosology or definitional framework. This amounts to creating a systematically articulated picture of collaborative care practice as actually done—specifying the similarities and differences in language people can consistently understand.

B. **Evaluative Questions**: With "A" Questions in view, what collaborative care arrangements work best for whom—with triple-aim outcomes in mind.

The research questions below are divided into parts A and B. It is recommended that part A questions be undertaken in the first phase of work and then move as quickly as possible to part B questions that can actually be studied effectively in existing practices.

The ***Part A research questions*** look at how practices vary along the dimensions of the collaborative care parameters created by Peek in his lexicon white paper in this series; answers to these questions will demonstrate how various collaborative care practices may differ. The following research agenda will require referencing Peek's parameters (See Figure 5, Parameters of Collaborative Care Practice, in "A Collaborative Care Lexicon for Asking Practice and Research Development Questions" in this collection.) In brief, a parameter is a key characteristic of collaborative care that contributes to the conceptual whole. Parameters might describe the types of clinicians or clinical functions included on the team, the types and frequency of interactions between primary care and mental health clinicians, the type of clinical setting involved, characteristics of the patient population, and the like.

Populations Seen in Collaborative Care (Parameter 3)

1. Who is being seen in collaborative care practice (genuine cases of collaborative care as delimited by the paradigm case). Proportion, number, and other descriptors of patients with mental health presentations in each range category of mental health need (See Figure 5 in "A Collaborative Care Lexicon for Asking Practice and Research Development Questions" in this collection.)

    a. Medical presentations that need behavioral /mental health treatment as part of the plan
    b. Medical or mental health presentations that require improvement in health behaviors
    c. Comorbid or multimorbid medical and psychological/mental health presentations
    d. Social conditions affecting physical or mental health--social determinants of health
    e. Mental health and substance abuse conditions within the scope of primary care management
    f. Severe mental health and substance abuse conditions beyond the scope of primary care management

2. In what care settings, venues, or sectors are these patients receiving collaborative care?

    a. Primary medical care
    b. Specialty medical care

  c. Specialty mental health care (where primary care providers are part of mental health teams)

3. In what stage of life are the patients who are receiving collaborative care?

    a. Children/pediatrics
    b. Adults/young adults—nongeriatric
    c. Geriatrics
    d. Advanced illness/end of life

Characteristics of the Practices Seeing These Patients

4. How are these patients identified for collaborative care (Parameter 4)?

    a. Targeted as members of specific populations, such as a disease or risk group vs. non-targeted, such as any patient deemed by anyone to need collaborative care—“all comers”
    b. Identified by patients or clinicians vs. system indicators or systematic screening

5. What is the distribution of practices along a continuum of integration/collaboration? (Parameter 2)

    a. Coordinated—basic collaboration at a distance
    b. Co-located—basic collaboration on-site
    c. Integrated—in a partially or fully integrated system

6. Do practices move along this continuum of integration or level of collaboration? In what directions and on what timeline?

7. What is the distribution of clinical functional capabilities that are represented on the team or that can be quickly called in for care of patients? (Parameter 1) A more simplistic approach is to list the distribution of professional degrees or disciplines among clinicians working as teams or collaborating in integrated models.

8. What is the range of patient perspective on the purpose, course, and usefulness of collaborative care treatment (and the degree to which they recognize it as such)?

9. What is the distribution of practices along a continuum of organization development or maturity?

    a. From being starter pilots to being larger and more visible projects to being mainstream implementations (Parameter 5)
    b. Level of office practice consistency/reliability for collaborative care—from informal/nonstandard to partially routinized to standardized processes (Parameter 7)
    c. Business model type—e.g., from fee-for-service to addition of bundled payments to models of total cost/revenue (Parameter 8)

   d. Ability to collect and use practice-based data—from little or none to mature data collection and use (Parameter 9)

10. How representative are Collaborative Care Research Network (CCRN) practices of collaborative care practices outside the network?

The ***Part B research questions*** look at which collaborative care arrangements work best for whom, considering the triple-aim outcomes. Part B questions are asked within the specified outcomes and evaluation framework. Therefore, research questions about "outcomes" can and should include:

- Metrics for access, identification, and treatment
- Metrics for clinical experience, patient experience, financial performance, and provider experience

These results are intended to help build a national database assuring representation from a broad range of practice conditions so that underrepresented practice and patient types are included in analyses.

Populations Seen in Collaborative Care

1. Is improved patient access to mental health in primary care associated with:

   a. Frequency of patient self-identification of mental health problems?
   b. Overall patient volume (% of panel)?
   c. The frequency of appropriate patients identified by the practice?
   d. The frequency of patients referred to outpatient mental health outside the primary care team?
   e. Treatment initiation, completion, and attendance rates—including successful referrals?

2. How do collaborative care interventions affect the outcomes of selected comorbid conditions or disease clusters, e.g., diabetes, depression, and coronary artery disease?

3. Are patient experiences better in collaborative care practices?

4. Are clinical outcomes better for care of conditions or situations in collaborative practices than in usual care?

Performance Characteristics of Practices Seeing Patients in Collaborative Care

5. What functional components of collaborative care have the greatest effect on outcomes? That is, what makes the difference? A vocabulary for pointing to those components and functions appears in Peek's collaborative care parameters.

   a. Does progression along a continuum from less to more collaboration or integration produce better outcomes? For which patients or patient groups? How does the level of communication between mental health providers and primary care providers impact clinical care? (Parameter 2)
   b. Does choice of target population or how patients are identified for collaborative care affect outcomes—do some populations benefit more than others? (Parameters 3 and 4)
   c. Are there differential effects of care management models, team composition, involvement of various disciplines, and/or roles and responsibilities on clinical, operational, and financial outcomes? (Parameters 1,2,4)
   d. Do practices with higher levels of organizational development, reliability, consistency, and ability to collect and use practice-based data get better outcomes? Do they yield clearer or more powerful data for research? (Parameters 5,7,8,9)
   e. What role does the delivery setting (Parameter 3-A—primary medical setting, specialty medical setting, or specialty mental health setting) play on outcomes for patients with severe mental illness in a collaborative care model?

6. Can we profile practices according to Peek's parameters at a more detailed level taking into account model specific information and operational components so that results from these profiles will differentiate kinds of practices and provide the initial basis for a scale of collaboration, likely effectiveness, or practice development level? Or simply: Can we show that placement on scales of collaboration and/or practice Development level is positively associated with clinical outcomes?

Financial Research Questions

A method for collecting cost and cost outcome data needs to be developed and made part of regular data collection for practices engaged in collaborative care. General recommendations:

- Target the research on financial and other outcomes that matter for the stakeholders—patients, providers, States, schools, payers, employers, Medicaid population, Medicare population.
- Employ broad categories of collaborative care outcomes meaningful to that range of stakeholders, such as access outcomes, identification outcomes, and treatment outcomes.

1. What does it cost to establish and maintain a collaborative care practice, including the relative costs of key elements (i.e., mutual recordkeeping, time for behavioral health and physician consultation) at both individual patient and practice level?

   a. What are the startup costs of a practice moving from usual care to a collaborative care model? This includes the incremental costs of changing primary care team composition and function from usual care (primary care physician and nurse team) to collaborative care by adding care manager, onsite behavioral health provider, or other mental health providers and the operational, infrastructure, or IT support that these entail.
   b. What are the ongoing costs to a practice for maintaining these collaborative care functions once established and start-up costs accounted for?

2. Which collaborative care practice models or characteristics achieve the desired financial outcomes for practices, plans, purchasers, employers, and patients?

    a. Are different financial models of support for collaborative care associated with differences in clinical and operational outcomes? Are different financial models associated with achieving those results sustainably over time? Are some business models better than others?
    b. Does level of integration/collaboration have a financial impact—initial cost, long-term cost, total cost of care?
    c. What financial metrics and financial outcomes for collaborative care are most convincing to stakeholders: e.g., reductions (or improved appropriateness) in utilization, effect on per patient per month, lost employee productivity, patient out-of-pocket expense, and other financial variables?

Summary

If the field of collaborative care is to advance, it needs a more substantial evidence base on which specific components or functions in collaborative care practices lead to desired outcomes for patients, providers, and other stakeholders. The field needs a research agenda, but first needs a defined lexicon. The evidence is especially important as part of the imperative to improve quality while bending the cost curve in primary care—such as through the patient centered medical home. Identifying such gaps in the evidence, the Agency for Healthcare Research and Quality supported a small conference on creating a research agenda for collaborative care as the first step in addressing this need.

As described in this paper, a two-part approach is needed for developing this collaborative care evidence base. At the very beginning, robust descriptive data will need to be collected to take a snapshot of the field and who is doing what and where—a descriptive study of the naturally occurring experiments and developments in collaborative care in all its various forms. Thus far, there have been no attempts to do this nationally. While this descriptive work is underway, a second set of studies can begin to evaluate the cost and effectiveness of various models of collaborative care delivery taking into account the clinical, operational, and financial perspectives of health care system design and the care, experience, and affordability perspectives of patients. To articulate and answer these collaborative care research questions, a basic conceptual system for this important subfield must be developed and in place in this project—something that enables researchers, clinicians, and policymakers to talk to each other using a common vocabulary and an organized way of specifying the required components of collaborative care. As the field expands the evidentiary support for collaborative care, clinicians, administrators, insurers, and policymakers will have more information to inform decisions on healthcare.

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A Framework for Collaborative Care Metrics

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Abstract

The difficulties in identifying and accessing services for mental health concerns and symptoms are well documented. This is particularly challenging in primary medical care where many persons present mental health or stress-related symptoms that interact with their overall health picture, but are not ready to accept referrals to specialty mental health and behavioral health care. Systematic reviews on integrating mental health with primary care (collaborative care) have concluded that despite the benefits of integration (or of increased attention to mental health problems) in primary care, more research is needed to understand the effects on outcomes of different specific approaches to clinical integration, care processes, or supporting financial models.

These discussions about collaborative care have been limited by the lack of a shared language and conceptual framework that define its core elements or allow us to identify which elements combined in which ways lead to positive outcomes. A consensus-based lexicon of collaborative care was developed for (and by) participants in the AHRQ-funded Collaborative Care Research Network Research Development Conference in Denver, Colorado in October 2009. (See "A Collaborative Care Lexicon for Asking Practice and Research Development Questions," in this collection.) From that work emerged five defining clauses (a paradigm case) necessary for inclusion in a collaborative care practice and thirteen elements to be measured (parameters) that specify the acceptable differences between instances of collaborative care practice. This now allows us to calculate standardized metrics to benchmark and evaluate the process and outcomes of collaborative care delivery. In addition, such standardized metrics provide the ability to generate profiles and patterns of practice that can be used to evaluate the effectiveness of different aspects of collaborative care. This paper presents the rationale, framework, and examples of initial metrics derived from the paradigm case and parameters of collaborative care. Where needed, project-specific metrics can be developed using this framework.

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Access to Behavioral Care for Medical Patients: Insufficient

Quality mental health services are identified as the most difficult subspecialty for primary care physicians to access.[1] A survey of 6,600 primary care physicians reports that two thirds cannot gain access to outpatient mental health services for their patients. Difficulty in accessing mental health care is at least twice as high as for any other medical subspecialty.[1] A lengthy literature suggests that the detection of mental health issues and referral to appropriate treatment resources, if available to primary care, have only marginally improved over the last fifteen years.[2,3] Even if access and identification are improved, specific treatment (appropriate evidence-supported interventions responding to different patient problems and needs) continues to be generally unavailable to primary care patients and their physicians.[4] Taken together, lack of access, lack of identification of care need and unavailability of evidence supported treatments represent troubling structural and process limitations to achieving overall quality of care. Taking into account these gaps in evidence, a research agenda for mental health in primary care was created at the 2009 research development conference that is reported in a companion paper in this collection. (See “Establishing the Research Agenda for Collaborative Care”).

In response, there is a growing trend and a variety of efforts to collocate and integrate mental health, substance abuse, and health behavior services into primary care practice. However, as of yet, support for such efforts has not been widespread throughout the larger healthcare policy, planning, or delivery systems. One potential reason for this is the lack of a shared lexicon describing the essential functional dimensions of collaborative care and the differences in how these are carried out between one practice and another. Without such a lexicon, policy and practice development efforts and discussions are much more difficult because it is not clear to all participants in the discussion exactly what is being talked about. Without such a lexicon, there cannot be a standardized evaluation model and set of metrics to measure the effectiveness of the plethora of collaborative mental health initiatives that have emerged and will continue to do so.

Uncertainty About Characteristics of Ideal Care

A 2008 AHRQ evidence report (Butler et al) suggests that while collaborative care appears effective, we cannot presently identify the elements that contribute to that effectiveness. Also, there is no way to discriminate between the relative impact of interventions that have demonstrated effectiveness and the impact of mere increased organized attention to patients’ mental health problems.[5] Further, the amount of collaboration in a practice necessary to enhance effectiveness has not yet been demonstrated. The present range of mental health interventions in primary care includes enhanced referral to specialty mental health care; collocated specialty care practice located in primary care; care managers, such as nurses or medical assistants under psychiatric supervision with a focus on a single psychiatric diagnosis (usually depression); and specially trained mental health clinicians who provide services in collaboration with primary care providers. These interventions are provided by a variety of mental health and non-mental health professionals with varied training and background conducting a broad range of clinical activities with varied degrees of organizational engagement and working with a broad range of financial models. Patients served are sometimes homogeneous and sometimes heterogeneous in diagnosis, gender, race, and ethnicity. Organizational characteristics and locations of settings vary, as does financing of the initiatives. Across this breadth, there has been no consensus in the field about how to define or evaluate the effectiveness of each of these models or components.

Discussing Collaborative Care With a Common Consensually Derived Language

In "A Collaborative Care Lexicon for Asking Practice and Research Development Questions," included in this volume, Peek defines the parameters of the paradigm case of collaborative care "lexicon" and the methodology used to generate it. This lexicon articulates in detail five defining functions necessary for a practice to qualify as a collaborative care practice (a paradigm case), and nine dimensions that provide a vocabulary for how one genuine collaborative care practice might differ from another on key dimensions (parameters). This lexicon amounts to a vocabulary with which to ask research questions and specify metrics. Some have referred to this as an "operational definition" that maps both similarities (essential functions) and differences (how one practice might legitimately differ from another one). In this paper we identify metrics corresponding to the functions identified as core parameters of the lexicon. We suggest that these metrics can serve as an evaluative framework for collaborative care, allowing us to benchmark collaborative care practice and conduct comparative effectiveness research.

The Need for Definition and Measurement

The definition offered by Peek's collaborative care lexicon in and of itself advances the discussion surrounding the inclusion of mental health as part of health care reform's emergent models of primary care. Crucial to the argument for inclusion is the ability to 1) consistently describe collaborative care functions in their different forms, 2) measure and then evaluate the degree of presence or absence of these functions, and 3) look at practices to discover which combinations of these functions are associated with desired outcomes (evaluation of effectiveness) of collaborative care. Evaluation of effectiveness requires both dimensions to evaluate and specific measures/metrics within each collaborative care function. Such parameters and metrics must parallel those being used to evaluate the rest of contemporary healthcare. This implies that collaborative care (i.e., mental health care integrated into primary care) should be held to accountability, monitoring and structure, process, and outcome standards that Donabedian has suggested as the key dimensions to enable the evaluation of overall quality of healthcare.[6]

Parameters of Measurement

Peek's paradigm case provides a framework for defining collaborative care and allows us to observe and evaluate relationships between structure, process, and outcome. The paradigm case contains not only clinical but also operational and financial functions because all "three worlds" working simultaneously in harmony are required for consistent and sustainable success. This position is consistent with the contemporary conceptual and measurement dimensions of the Triple Aim (care, health, and cost) identified by Berwick and colleagues.[7]

The Triple Aim states that improvement in health care requires simultaneous attention to three aims: 1) Improve the health of the population; 2) enhance improving the patient experience of care, and 3) reduce, or at least control, the per capita cost of care.[7] There are considerable similarities between Peek's and Berwick's ideas. Attention to the clinical world implies improvements in health as well as patient experience; attention to the operational world reminds us of the operational and organizational aspects inherent in care; and attention to the financial world reminds us that practices require sustainable business models and that affordability is an aim for healthcare which is the direct concern of both schemas. Thus, both the "Triple Aim" and the "Three Worlds" paradigms support care driven by a team with a shared mission, using improved clinical systems to deliver improved care to a population of patients supported by operational and financial systems. Such care is continuously evaluated through improvement processes and effectiveness measurement.

Collaborative Care Measures and Metrics

Eden and Simone[8] suggest a structure for presentation of metrics to evaluate health care. They suggest that in addition to identifying the content and methodology for constructing the metric, one can identify sources balanced among research, practice, and the utility of the metric for patients, primary care practices, and larger systems. So the target is a measure, clearly stated, with strong sources of support and with utility to multiple stakeholders.

Peek's paradigm case and parameters of collaborative care provide a framework for examples of metrics derived from those parameters and values. We do not suggest that they are exclusive of other metrics particularly suited to particular quality improvement or research projects and questions. We hope that this initial set will generate thoughts and ideas that will augment this effort. Again, the purpose of collecting a set of metrics for collaborative care practices is not to establish a preordained hierarchy. Rather, we will generate practice patterns to enable comparison of these patterns of metric performance with other performance and outcome variables so that we may understand any potential associations among them. Table 1, next page, presents the elements to be measured, the metric to be calculated, and the source for the metrics.

It is likely that, initially, there will be few fully realized examples of the paradigm case of collaborative care. So it should be in a developing field. The intent of this paper is to advance the effort, advance the work in practices, and provide the opportunity for contrasts. These contrasts will help researchers evaluate the effectiveness of the field and test models and elements. They are not seen as the right metrics nor are they all encompassing. Rather, they allow for a translation of Peek's work in a fashion that supports consistent measurement and thus consistent description with common language.

Table 1. Vocabulary and metrics for defining level of collaborative care implementation

Defining clauses for collaborative care	*Elements to be measured (from parameters of collaborative care)*	*Metric*—relative presence or absence of these elements in a practice	Data source for that metric
1. A team	Clinical functions available through the different team members	Treatment provided by a physician and behavioral health clinician	Clinical record
	Level of sharing physical or "virtual" space	Evidence of behavioral health clinician on site or documentation of working relationships between collaborating clinicians in separate sites	Employment record or formal document outlining relationship
	Level of training for collaborative care	Evidence of team member completion of collaborative care training in the last year	CE documentation
	Level of shared professional culture	Percent of total set of markers for a fully shared professional culture	Markers from Doherty, McDaniel, Baird[9]
2. With a shared population and mission	Overall practice mission and patient panel	Pick one category from: a) primary medical care, b) specialty medical care, c) specialty mental health care	Practice license or certification
		Identified set of patients served by practice	Panel management report
	Identified population seen for collaborative care	Percent of total practice patients seen collaboratively with: a) mental health conditions, b) medical conditions/chronic illnesses with behavioral health factors, c) physical symptoms without medical basis, or d) any complex patient	Medical chart audit or EHR report
	Screening methods for that population	Percent of patients in target population screened.	Quality improvement report
		Percent of patients screened that were identified for collaborative care	Quality improvement report
	Assessment methods for that population	Number of patients receiving assessment contrasted with number screened positive	Chart audit or EHR
	Treatment and follow up methods for that population	Number of patients enrolled in collaborative care compared with number of patients assessed	Chart audit or EHR
		Number of patients enrolled in care who complete care episode	Chart audit or EHR
3. Using a clinical system	Population-level identification system	Evidence of an operating consistently used screening system for specified patients	System documentation and data reports
	Bio-psycho-social care plans in record	Percent of patients with care plans with documented evidence of bio-, psycho-, or social aspects of health, care and function	Chart audit or EHR
	Shared medical record	Documentation of single chart or transparent EHR access	Chart audit or EHR
4. Supported by an office practice and financial system	Clinical operational systems and processes that support collaborative care	Integrated referral, scheduling, data collection, communications, billing and office support systems	Documentation of systems
	Sustainable financial model(s) that support collaborative clinical work	Documentation of sustainable financing	Financial reports
5. With continuous QI and effectiveness measurement	Routine collection and use of practice data from QI and improving effectiveness of collaborative care.	Plan for data collection and use of collaborative care data	Quality improvement plan and project reports

Summary

A limitation to the progress of planning, implementation, policy, and financial changes necessary to eliminate the divide between mental health and medicine is the lack of a clear lexicon describing the parameters and values of collaborative care. Such a lexicon would have widespread use advancing the field of collaborative care and support both a research agenda for the field and a set of metrics consistent with the lexicon that can be used to operationalize the research agenda. This paper provides the framework and specifications of a set of metrics that can allow quality improvement within practices as well as provide a tool to assist in research to assess the comparative effectiveness of collaborative care. It allows us to respond to the call of the Butler et al evidence report to identify specific elements of collaborative care models that contribute to such effectiveness.[5]

The researchers suggest that the approach outlined in this paper is consistent with the major themes of contemporary quality and focuses on the dimensions of structure, process, and outcome that are core to all quality care evaluation. This paper may offer an opportunity for a national system of evaluating collaborative care of mental health and health behavior in medical settings.

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A Collaborative Care Lexicon for Asking Practice and Research Development Questions

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Abstract

The Collaborative Care Research Network (CCRN), a sub-network of the American Academy of Family Physicians National Research Network and a practice-based research network, was formed to develop and implement a national, practice-based research agenda to evaluate the effectiveness of collaboration between behavioral health/substance abuse clinicians and primary medical care clinicians. Although research to date generally confirms positive outcomes from collaborative care, it is not clear just what components or methods account for those positive outcomes. Funding agencies and policymakers would like to know that so they can make focused investments in this area, particularly in context of the patient-centered medical home. The CCRN is designed to pose and answer such research questions in a way that can be understood consistently across geographically diverse practices. But experiences framing such research questions led to confusion about the meanings of terms in common use, especially regarding the components or dimensions of collaborative care that are the subject of research questions. Funding agencies and policymakers need consistently articulated concepts for this new scientific field rather than the highly variable language for these concepts presently in use. This lexicon or conceptual system for the field was created and used to formulate research questions as a product for AHRQ. Such conceptual clarity, or pre-empirical work, has preceded the empirical triumphs we associate with mature scientific fields and is expected to release much more focused energy for empirical investigation in this field as well.

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Introduction: A Place in a New Movement for an Old Idea

Today's foment in the field of healthcare is both exciting and confusing. New ideas in healthcare come forward while old ideas find renewed meaning in new contexts. The pace and intensity of conversation and experimentation intensifies as unsustainable costs and escalating concerns with quality, insurance coverage, and patient experience intensify. Thanks in large part to these pressures, interest in the concept of "patient-centered medical home," "health care home" or "advanced primary care" (all synonyms) has been exploding. This concept invokes whole person/patient-centered care, care coordination, and attention to psychosocial factors (Rosenthal, 2007; Nutting et al, 2009; Cutler, 2010). In turn this has breathed renewed interest into a forty-year-old subfield whose subject matter is improved integration of biomedical and psychosocial healthcare—or more specifically "medical-mental health integration" or "collaborative care." The same or similar subject matter also is called "integrated care," "shared care," "co-located care," "primary care behavioral health," "integrated primary care," or sometimes "behavioral medicine"—and this is just a start. Each of these terms encompasses a similar core of subject matter for implementation and study. But each of the names for that subject matter has emerged from different practice, intellectual, geographical or disciplinary traditions—as if dialects of a more general language loosely understood by insiders or "native speakers" in that field. To find a meaningful place in the patient-centered medical home (PCMH), the field of collaborative care must not only show its effectiveness empirically, but become a field more consistently and widely understood in language and practice by the public and the practitioners themselves.

The field requires more consistent language today than in the past. The field requires more than loose insider vocabulary, more than the dialects of local collaborative care pioneers and implementers. To enter the mainstream of the PCMH, collaborative care requires a consistently understood set of concepts and language for basic terms and foundational elements. Such language must help everyone navigate the subject matter in a consistent and precise enough way to enable the practical work of

1. Practice redesign shaped by
2. Performance evaluation leading to
3. Patient engagement; and sustained by
4. Policy and business model change.

Researchers, system designers, quality improvement and performance measurement experts, and policymakers require a common language. Of course, so do patients and citizens who are supposed to participate in and benefit from the experience of collaborative care and to know what they are "buying" when they choose clinics and health plans.

Inconsistent understanding of core concepts in collaborative care is far from a theoretical concern. For example, in planning the Research Development Conference for Collaborative care in 2009 (Miller, Kessler, and Peek, in this volume), very practical concerns pointed to the need for a common language or lexicon. Building on decades of previous clinical and research explorations, research funders, policymakers, and others trying to redesign healthcare have become increasingly interested in collaborative care as a means to accomplishing the larger goals of primary care or of the PCMH. But as their voices were heard during research agenda planning, they often indicated that collaborative care clinicians and advocates seemed to be "all over the map", even naming their field inconsistently. To them, it felt more like encountering a cacophony of individual voices without a structure of shared concepts rather than talking with a group using a consistent framework for their subject matter. While policymakers and research funders remained persuaded by the *potential* value of collaborative care, they felt handicapped in advocating for it publicly or behind the scenes because of the perceived lack of consistency or rigor of the concepts in use. The composite message received leading up the conference was, "It would help if you all talked about the components and terms of your field in a much more consistent way than you do now."

Consistent Language for Research in Collaborative Care

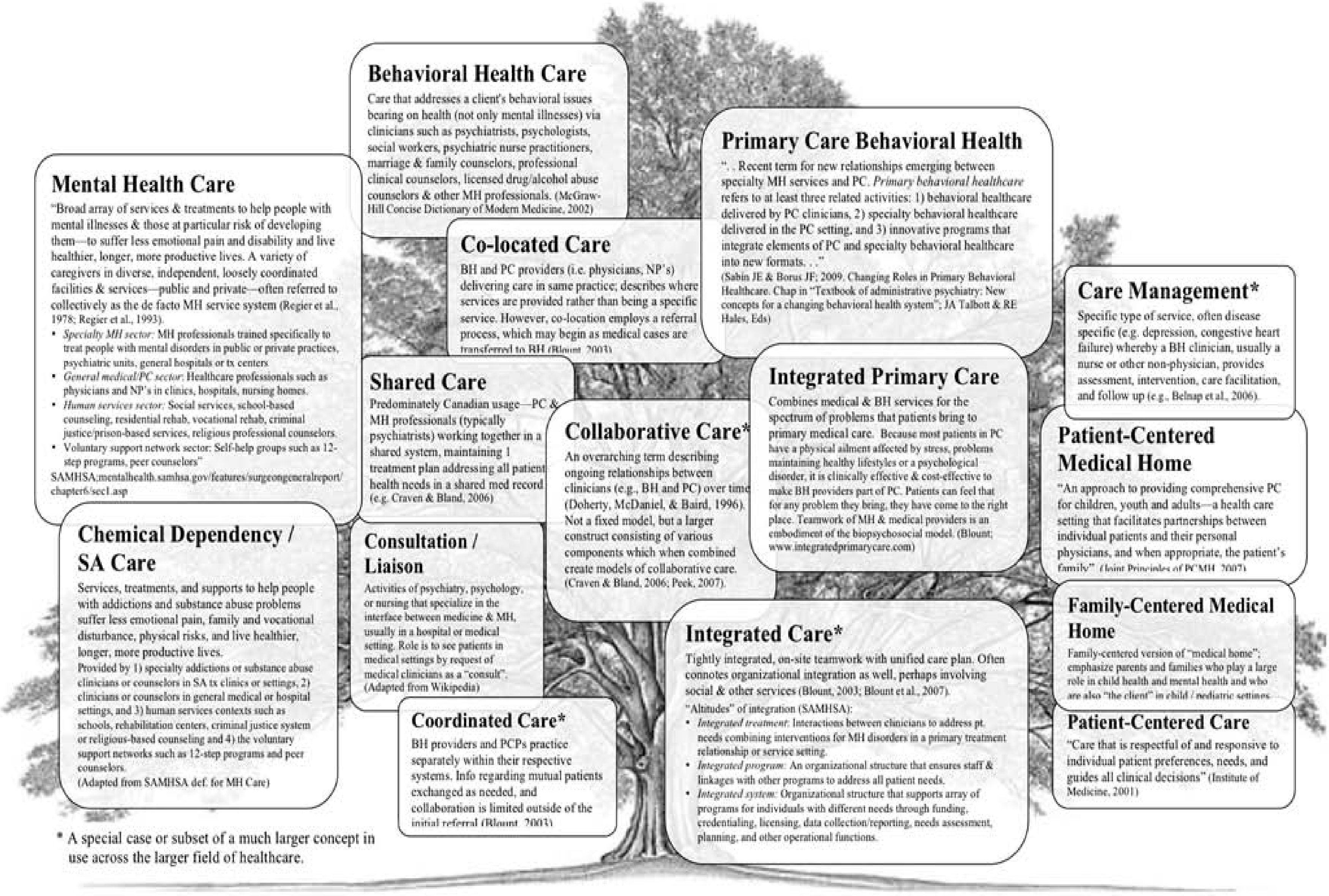
While systematic review of many years of research in collaborative care is globally positive (Butler et al, 2008), it has not been able to point specifically at what components or active ingredients are getting positive results when they occur. Consequently, the national research development conference was needed to create that research agenda. But even in conference planning conversations, people stumbled over language—with conference calls slowed down by observations such as "I'm not sure we mean the same thing by that," or "I thought I understood where you were going 5 minutes ago, but now I don't think we meant the same thing by X," and "I wonder if what I call Y you call Z, and if there is really any difference." In a starter list of research questions brainstormed by the committee, the terms "continuum of integration," "extent of collaborative care components," and "degree of collaborative care" appeared—along with a conversation about whether these are the same and whether anyone would know how to measure them. It became very difficult for the program committee to formulate an initial series of unambiguously understood research questions for collaborative care that could be examined, refined, or replaced by the broad audience invited to the research conference. The following questions arose:

"Do we have a good enough *shared* vocabulary (set of concepts and distinctions) for asking research questions together across many practices? Do we mean similar enough things by the words we use or how we distinguish one form of practice from another for purposes of investigating their effects? Do we have a shared view of the edges of the concept we are investigating—the boundaries of the genuine article or the scope of our subject matter? If we don't share enough of that vocabulary, we will *think* we are asking the same research questions, using the same distinctions, conducting the same interventions, or measuring the same things—but we *won't* be—and will confuse our network practices and our funding organizations. . ."

Confusion over terms in collaborative care typically takes two forms.

Meanings of commonly used terms. What are the differences between mental health care and behavioral health care? What are the differences between collaborative care, integrated care, integrated primary care, shared care, coordinated care, co-located care, and consultation / liaison? These and other common terms frequently stopped conversations while individuals in the group tried to verify what others meant when using a particular term. As a result of these conversations a literature-based "family tree of related terms in use in the field of collaborative care" was created and appears in Figure 1, next page. This was relatively easy to do and served as a common dictionary for the planning committee. But that was just the beginning.

Figure 1. Family tree of terms in use in the field of collaborative care



Mental Health Care

"Broad array of services & treatments to help people with mental illnesses & those at particular risk of developing them—to suffer less emotional pain and disability and live healthier, longer, more productive lives. A variety of caregivers in diverse, independent, loosely coordinated facilities & services—public and private—often referred to collectively as the de facto MH service system (Regier et al., 1978; Regier et al., 1993).

- *Specialty MH sector:* MH professionals trained specifically to treat people with mental disorders in public or private practices, psychiatric units, general hospitals or tx centers
- *General medical/PC sector:* Healthcare professionals such as physicians and NP's in clinics, hospitals, nursing homes.
- *Human services sector:* Social services, school-based counseling, residential rehab, vocational rehab, criminal justice/prison-based services, religious professional counselors.
- Voluntary support network sector: Self-help groups such as 12-step programs, peer counselors"

SAMHSA;mentalhealth.samhsa.gov/features/surgeongeneralreport/chapter6/sec1.asp

Behavioral Health Care

Care that addresses a client's behavioral issues bearing on health (not only mental illnesses) via clinicians such as psychiatrists, psychologists, social workers, psychiatric nurse practitioners, marriage & family counselors, professional clinical counselors, licensed drug/alcohol abuse counselors & other MH professionals. (McGraw-Hill Concise Dictionary of Modern Medicine, 2002)

Co-located Care

BH and PC providers (i.e. physicians, NP's) delivering care in same practice; describes where services are provided rather than being a specific service. However, co-location employs a referral process, which may begin as medical cases are transferred to BH (Blount, 2003)

Primary Care Behavioral Health

". . Recent term for new relationships emerging between specialty MH services and PC. *Primary behavioral healthcare* refers to at least three related activities: 1) behavioral healthcare delivered by PC clinicians, 2) specialty behavioral healthcare delivered in the PC setting, and 3) innovative programs that integrate elements of PC and specialty behavioral healthcare into new formats. . ."

(Sabin JE & Borus JF; 2009. Changing Roles in Primary Behavioral Healthcare. Chap in "Textbook of administrative psychiatry: New concepts for a changing behavioral health system"; JA Talbott & RE Hales, Eds)

Care Management*

Specific type of service, often disease specific (e.g. depression, congestive heart failure) whereby a BH clinician, usually a nurse or other non-physician, provides assessment, intervention, care facilitation, and follow up (e.g., Belnap et al., 2006).

Shared Care

Predominately Canadian usage—PC & MH professionals (typically psychiatrists) working together in a shared system, maintaining 1 treatment plan addressing all patient health needs in a shared med record (e.g. Craven & Bland, 2006)

Collaborative Care*

An overarching term describing ongoing relationships between clinicians (e.g., BH and PC) over time (Doherty, McDaniel, & Baird, 1996). Not a fixed model, but a larger construct consisting of various components which when combined create models of collaborative care. (Craven & Bland, 2006; Peek, 2007).

Integrated Primary Care

Combines medical & BH services for the spectrum of problems that patients bring to primary medical care. Because most patients in PC have a physical ailment affected by stress, problems maintaining healthy lifestyles or a psychological disorder, it is clinically effective & cost-effective to make BH providers part of PC. Patients can feel that for any problem they bring, they have come to the right place. Teamwork of MH & medical providers is an embodiment of the biopsychosocial model. (Blount; www.integratedprimarycare.com)

Patient-Centered Medical Home

"An approach to providing comprehensive PC for children, youth and adults—a health care setting that facilitates partnerships between individual patients and their personal physicians, and when appropriate, the patient's family" (Joint Principles of PCMH, 2007)

Chemical Dependency / SA Care

Services, treatments, and supports to help people with addictions and substance abuse problems suffer less emotional pain, family and vocational disturbance, physical risks, and live healthier, longer, more productive lives.

Provided by 1) specialty addictions or substance abuse clinicians or counselors in SA tx clinics or settings, 2) clinicians or counselors in general medical or hospital settings, and 3) human services contexts such as schools, rehabilitation centers, criminal justice system or religious-based counseling and 4) the voluntary support networks such as 12-step programs and peer counselors.

(Adapted from SAMHSA def. for MH Care)

Consultation / Liaison

Activities of psychiatry, psychology, or nursing that specialize in the interface between medicine & MH, usually in a hospital or medical setting. Role is to see patients in medical settings by request of medical clinicians as a "consult". (Adapted from Wikipedia)

Family-Centered Medical Home

Family-centered version of "medical home"; emphasize parents and families who play a large role in child health and mental health and who are also "the client" in child / pediatric settings.

Integrated Care*

Tightly integrated, on-site teamwork with unified care plan. Often connotes organizational integration as well, perhaps involving social & other services (Blount, 2003; Blount et al., 2007).

"Altitudes" of integration (SAMHSA):

- *Integrated treatment:* Interactions between clinicians to address pt. needs combining interventions for MH disorders in a primary treatment relationship or service setting.
- *Integrated program:* An organizational structure that ensures staff & linkages with other programs to address all patient needs.
- *Integrated system:* Organizational structure that supports array of programs for individuals with different needs through funding, credentialing, licensing, data collection/reporting, needs assessment, planning, and other operational functions.

Coordinated Care*

BH providers and PCPs practice separately within their respective systems. Info regarding mutual patients exchanged as needed, and collaboration is limited outside of the initial referral (Blount, 2003)

Patient-Centered Care

"Care that is respectful of and responsive to individual patient preferences, needs, and guides all clinical decisions" (Institute of Medicine, 2001)

* A special case or subset of a much larger concept in use across the larger field of healthcare.

Necessary components of collaborative care. What actually has to be in place for a particular practice to be regarded as doing collaborative care? This was by far the more difficult challenge and would not be met by the “family tree of terms.” It is all too easy for a practice, a clinician, or an administrator to say, “Collaborative care--yes we already do that. We have a social worker in the hospital and a psychiatrist across town on our referral list.” But for many on the program committee, this would not count as a genuine instance of collaborative care. But on what basis? Who says? What is the package of functional components that we all agree is necessary for a particular practice to be doing collaborative care? This was important for many reasons—identifying genuine instances of collaborative care in practice, identifying differences between those genuine instances, knowing what practices should or shouldn’t be recruited into a collaborative care research network, and of course knowing what you are buying and what functions you want to support if you are designing a system, payment model, or public policy.

Without common language for the subject matter of collaborative care and what counts as the genuine article, creating a national research agenda and other developmental tasks for this field would be difficult to accomplish. Without common language, little practical work in the field would likely be accomplished on a meaningful scale in short timeframes, and instead would take place slowly in isolated pockets using localized dialects—something that had characterized the field up to that time. One of the conference tasks would have to be creating a usable “lexicon” or system of concepts for this newly rediscovered field.

Conceptual confusion is a normal stage for developing fields. The CCRN research conference planning committee decided it had to sharpen the concepts and language used in the field if it was to successfully create a research agenda—the “deliverable” of the AHRQ-funded conference—and increase rigor and consistency in the way this field is portrayed among not only researchers, but clinicians, administrators, payers, employers, policymakers, and patients themselves. All mature scientific or technical fields have lexicons (systems of terms and concepts) developed to allow collaborative and geographically distributed scientific, engineering, or applications work to take place.. Systematically related concepts have an esteemed place in the history of mature fields that we now take for granted, e.g., electrical engineering, physics, and software development—and have enabled them to become mature sciences or technologies with associated empirical triumphs. In many cases the conceptual or pre-empirical development of these fields was done so long ago that we take it for granted and now see only the empirical achievements. But it takes a generally understood system of concepts and distinctions to do good science. Here is an example of lexicon development from 19th century science:

> At the time of the first International Electrical Congress in Paris in 1881, there were no fewer than 12 different units of EMF (electromotive force), 10 different units of electric current and 15 different units of resistance. The principal result of this first Congress was to give official endorsement to a proposal concerning the ohm and the volt. Ampere, coulomb and farad were also defined, *all done as one conceptual system*...Governments saw that it had become necessary for commercial transactions and trade to take quick, official, and common action about the very different units that were in use. Secondly, it appeared necessary to provide a forum of scientists, manufacturers, and learned societies. *Its responsibility would be to study and to establish terminology for the whole field of scientific and technical concepts.* (Excerpted from International Electrical Commission (IEC); www.iec.ch/zone/si/si_history.htm)

Without this system of electrical concepts becoming community property with standing across all electrical researchers, the field could not have developed into the mature form of empirical science that we now witness. But the effect was immediate: "The first Congress of 1881 has borne good fruit. It has not only brought about a rapprochement between electricians of all countries, but it has led to the adoption of an international system of measurement which will be in universal use." (From "The Electrical Congress of Paris, 1884." *Nature* 30, 26-27; 8 May 1884).

Electricity, physics, and other sciences had their stages of conceptual confusion, and all met the challenge by creating a consistent and practical set of concepts by which anyone could navigate the field and collaborate in practice and research. The program committee regarded this as a normal, respectable, and practical task for the field of collaborative care.

Historically, subject matters that include the terms "behavior," "mental health," "psychosocial," or "collaborative" in their names have stereotypically been seen as soft, subjective, or not as conducive to scientific investigation in the usual sense, despite the existence of extensive literature and research. Different published papers often employ disparate conceptual and language systems, and this can lead to a sense (especially as seen by those outside the field) that the field is not quite worked out or is being re-created by each author. As important as "behavior" is to contemporary healthcare and the medical home, there remains a sense that it is a fuzzy concept compared to traditional medical areas. The behavioral dimensions of health and healthcare not only entail studying immensely complex phenomena, but may be considered immature fields compared to their biomedical cousins. Creating a lexicon for collaborative care was seen as not only essential for success of the funded conference on collaborative care, but to begin to put at least some "behavioral" or "collaborative" language as it relates to primary healthcare delivery on a more systematic and consistent conceptual foundation that would be accessible to anyone.

Some contemporary observers (Ossorio, 2006; Bergner, 2006) have pointed out the need for widely accepted conceptual systems for use in behavioral fields and psychology—fields that ultimately encompass collaborative care. The connection between the conceptual and the empirical in the creation of psychology as a new scientific field is illustrated by the following excerpt from *"An open letter from Isaac Newton to the field of psychology"* (Bergner, 2006).

> At the risk of offending, I should like in this letter to offer my principle hypothesis regarding why your field has not to date arrived at any manner of broadly accepted, unifying theoretical framework, and has not for this reason realized the scientific potential, importance, and respect it would rightly possess… You have understood aright the basic truth that science is ultimately concerned with how things are in the empirical world. However, you have neglected the further truth that often, as in my own case, much non-empirical work must be undertaken if we are to achieve our glittering empirical triumphs. To lament that you have not found your Newton is, of course, to state what seems widely agreed in your day: that your young science has not to date arrived at any manner of broadly accepted, comprehensive intellectual framework that accomplishes what I accomplished with my Principia…

> In order to create the framework of the system of the world, it became apparent that some of the concepts at hand in 1665 would not suffice for my purposes. Thus it was that I set about to formulate a new system of concepts, *all precisely defined and related one with another*. In doing so, I determined that some of the then existing concepts were quite serviceable; “velocity” and “acceleration” come readily to mind in this regard. However, I found it necessary to formulate several new concepts. Thus it was that I formulated—dare I say I invented—the concept of “force.” Further, I found it necessary to give new and different meanings to the concept of “mass” if it was to perform its needed function in my system. *And so it was that I created, from parts old and new, a conceptual system that could draw the precise distinctions that I needed drawn to accomplish my objectives…* (italics mine)

A Method for Creating a Lexicon for Collaborative Care

For a lexicon to become more than one person’s invention for one limited study or application, it would need to serve the practical purposes of a broad range of people over a broad range of applications. This could not be created and published as an opinion by one person. But that is the usual approach to proposing definitions, and gives rise to the sense of cacophony that policymakers and researchers have noticed. Instead, a method for creating a lexicon with standing in the field would have to:

- Be consensual but analytic (a disciplined, transparent process—not a political campaign)
- Involve actual implementers and users (“native speakers” of the field, not only observers, consultants, and commentators)
- Focus on what functionalities look like in practice (not just on principles, values, goals, or visible ‘anatomical features’)
- Portray both similarities and differences (specify both theme and legitimate variations)
- Refine and employ existing familiar concepts that are serviceable to the extent possible
- Be amenable to gathering around it an expanding circle of “owners” and contributors (not just an elite group with a declaration)

Fortunately, methods for defining complex subject matter that meet these requirements exist in the published literature-- “paradigm case formulation” and “parametric analysis,” as described by Ossorio (2006). The product is described later in this paper. It serves as a lexicon or, perhaps more accurately, an operational definition for posing collaborative care research and practice development questions described in the other two papers in this collection.

The process to create that lexicon was facilitated by this author in two stages—starting with a small core group of CCRN program committee members that consisted of Benjamin F. Miller, Gene Kallenberg, and Rodger Kessler. The present author then wrote a lexicon white paper that was used as a starting point for collaborative care vocabulary at the research conference and that serves as the basis for the present paper. A larger circle of contributors to this lexicon included research conference participants and those who attended a Collaborative Family Healthcare Association Conference presentation on this topic three weeks later. With their wisdom incorporated, the lexicon shown later in this paper became the organizing system for collaborative care research questions that were the product of the CCRN research conference submitted to AHRQ.

About definitions, paradigm case formulation, and parametric analysis. Before describing the product—the lexicon itself, it may be helpful to some readers to step back and contrast paradigm case formulation and parametric analysis with the usual approach to creating definitions. The usual approach to definitions is to create one or two sentences such as "collaborative care is X, Y and Z." Often creating definitions is pragmatic for the purposes of just one study or project. If a definition were created to structure the concepts for an entire field, it would attempt to identify genuine instances of collaborative care on the basis of uniformities in common across all those instances. But collaborative care is characterized not only by *uniformities* (a common core), but by many *differences* between instances of collaborative care. The definitional challenge is to develop a consistent shared language for *both commonalities and differences* without devolving into "anything counts." A simple one-sentence definition such as "collaborative care is X, Y, and Z" would likely be oversimplified, full of qualifications and exceptions, or considered wrong or incomplete by many.

For complex subject matters such as collaborative care, a *paradigm case formulation* is a better vehicle for creating a definition because it maps both similarities and differences at any level of detail desired. For example, the concept of "family" is also complex subject matter and would be very difficult to define in a single sentence that would satisfy everyone. The paradigm case formulation approach to definition of "family" starts with one archetypal statement (the paradigm case) that no one could possibly disagree with—and then goes on to systematically describe what could be changed (transformations of the paradigm case) and still be "family" (Figure 2).

Figure 2: Paradigm case formulation of "family" (Ossorio, 2006; pp. 26-27.)

1. *Paradigm case:* A husband and his wife living with their natural children, who are a seventeen-year-old son and a ten-year-old daughter.
2. *Transformations*:

    T1. Eliminate one parent but not both.
    T2. Change the number of children to N, N > 0.
    T3. Change the sex distribution of children to any distribution other than zero boys and zero girls
    T4. Change the ages of the children to any values compatible with the ages of the parents.
    T5. Any combination from T1, T2, T3, and T4.
    T6. Add any number of additional parents.
    T7. Add adopted and other legally defined sons and/or daughters.
    T8. Eliminate the requirement of living together.
    T9. Change the number of children to zero if husband and wife are living together.

Note that constructing a paradigm case formulation calls for careful decisions and the exercise of judgment in regard to which cases to include or exclude. Disagreement may arise among different persons. For example, T6-T9 seem much more likely to elicit objections ("I wouldn't call that a family!") than T1-T5.

In this example, the paradigm case and its transformations *become* the "definition" of family. Some may attempt to go back and substitute a one-sentence definition of the usual sort found in great diversity and abundance in dictionaries, in professional publications, and on the Web. But the limitations of the one-sentence definitions are why the paradigm case formulation method was employed for the collaborative care lexicon.

A complementary device, *parametric analysis* (understanding the dimensions of something), goes on to create a specific vocabulary for how one instance of collaborative care might be the same or different from another instance across town. In the “family” example, two of the parameters would be “number of children” and “number of parents.” A simple illustration is shown below:

If you go to the lumberyard and ask for a 2x4, the person behind the counter will ask three questions:

1. How long?
2. What grade?
3. What species?

If you say, “I need an 8-foot, #2, fir”, they will go back into the stacks and get one. There is little left to say to specify a 2 x 4. These three parameters are the finite ways 2x4s can differ from one another. The parameters and some of the possible values for each parameter are illustrated in Figure 3.

Figure 3. Parameters of 2x4’s

Parameters	**Possible Values for Each Parameter**			
1. Length	4’	8’	12’	16’
2. Grade	# 1	#2	# 3	C Select
3. Species	Fir	Pine	Maple	Oak

A scientific example of parametric analysis is the specification and comparison of different colors employing the three parameters of color: brightness, hue, and saturation. Any color can be specified through supplying a value (as used in the scientific sense, not to suggest a value judgment) for each of these. (The values are defined in the Munsell color chart [Ossorio, 2006; pp. 35-36].) Parametric analysis is used to fine tune product design and market competitiveness parameters for industrial products and software because it allows the designer to measure the influence of all parameters on the outcomes desired—and the tradeoffs between them (Thieffry, 2008).

Parametric analysis sets the stage for comparative effectiveness research in collaborative care—in which one set of arrangements is tested against a different set. The “arrangements” are expressed through the parameters and the particular values of each parameter.

The Product—a Lexicon for Collaborative Care

The lexicon product used for the collaborative care research conference and as a structure for the resulting research agenda (see Miller, Kessler, Peek, and Kallenberg in this volume) is described next, using two figures.

Paradigm Case Formulation

In Figure 4, next page, a series of five clauses (with clarifying sub-clauses) describes one archetypal instance of collaborative care in action about which *everyone* in the group says, “That’s an indubitable case of collaborative care in practice if there ever was one.” Note that this is structured in a similar way to the definition of “family” shown in Figure 2 on page 31. This is the consensual, non-controversial starting point.

The transformations listed beneath each clause describe the acceptable variations on the archetypal paradigm case that also qualify as collaborative care. This step is necessary to account for the legitimate differences between instances of collaborative care are—and to expand the range of what counts as collaborative care in practice. Transformations themselves were consensual, as were the clauses and sub-clauses.

This “paradigm case formulation” represents a definition of collaborative care that maps both the core concept and its acceptable variations—and therefore the edges of what in practice is considered genuine collaborative care for purposes of asking research and practice development questions.

Figure 4 is already a densely packed description, but this operational definition could be given as many “pixels” as needed to make the distinctions required for particular applications. For example, more specific definitions of terms that appear in the paradigm case formulation could be provided as needed for practical purposes, perhaps taken from the “family tree of terms” (Figure 1 on page 27) or from other literature-based sources. Annotations could also be supplied that explain or clarify the reasoning, identify isolated exceptions, or clarify other questions that may arise during its use. For the purposes of this article, elaborations such as this are not included. Going the other direction, compact lower-definition descriptions of collaborative care that contain very few “pixels” could also be derived to suit other purposes, such as for an “elevator speech”—a brief description of the essence of collaborative care without the details.

Figure 4. A paradigm case formulation of collaborative care

1. **A team--**
   - **A.** **A family physician, clinical psychologist, and care manager working together (along with other clinic staff);**
     - **T1** **Change "family physician" discipline to any other physician discipline**
     - **T2** **Change "psychologist" discipline to any other mental health professional discipline**
     - **T3** **Delete "care manager."**
   - **B.** **Working in the same space—within the spatial and operational limits of a particular primary care clinic;**
     - **T4** **Change "limits of a particular primary care clinic" to "multiple clinics and clinical partners."**
     - **T5** **Change "working in the same space…" to "a set of working relationships between collaborating clinicians in separate spaces that achieves communication, collaboration, two-way referrals, and most other characteristics of on-site collaborative care."**
   - **C.** **Having had formal or on-the-job training and preparation for the clinical roles and relationships of collaborative care (for both medical and behavioral clinicians);**
     - **There is no transformation. Clause 1C is necessary for a particular practice to claim it is doing collaborative care.**
   - **D.** **Working in one new practice culture rather than separate and parallel behavioral and medical practice cultures; able and eager to identify and deal with the biopsychosocial range of problems; substantive clinical roles and standing in the clinic for the behavioral clinicians;**
     - **T6** **Change "single culture" to "recognition and commitment to continuing to build a shared single culture of care."**
2. **With a shared population and mission--**
   - **E.** **Identified with the same panel of clinic patients, under the same, shared mission of primary care, including assessment, treatment, and followup;**
     - **T7** **Change "mission of primary care" to "mission and boundaries of any other specialty or area of medicine."**
     - **T8** **Change "identified with same panel of clinic patients" to any identifiable subset of clinic patients for whom collaborative care is made available, e.g., an age group, disease cluster, other population.**
   - **F.** **With the BH clinician also operating under the mission and scope of primary care, including mental health, behavioral health, and chemical dependency—recognizing the boundaries of primary care and the need for specialty mental health, just as primary care physicians know when they need medical specialists;**
     - **There is no transformation (except as carried forward in T7). Clause 2F is necessary.**
3. **Using a clinical system--**
   - **G.** **Employing a population-level screening method to identify who needs this collaboration.**
     - **T9** **Change "population-level screening" to "identification system using epidemiological parameters, physician detection, etc., based on system capabilities."**
   - **H.** **Working from an explicit unified care plan document for each patient that contains assessments and plans for biological, psychological, and social aspects of the patient's health and healthcare; with team roles and goals—and how they are to be differentiated and integrated.**
     - **T10** **Change "unified care plan document in a shared medical record" either to**
       - **(A)** **"clinical information in separate records unified through routinely updated letters, phone calls, or other documents and ongoing clinician communication" or**
       - **(B)** **"the problem list and shared plans are contained in provider notes or other records in the same organizational medical record which everyone reads and acts upon."**
   - **I.** **With care plans that pay attention to the systems in which the patient operates or has membership, e.g., family, culture, language, schools, vocational, community;**
     - **There is no transformation. Clause 3I is necessary for a practice to claim it is doing collaborative care.**
   - **J.** **Contained in a shared medical record, with regular ongoing communication among team members and shared patient-clinician decision-making;**
     - **T11** **Delete "patient-clinician decision-making" or broaden to include "patient/family-clinician…"**
4. **Supported by an office practice and financial system--**
   - **K.** **Clinic operational systems, office processes, and office management that support communication, collaboration, and care management along with "traditional medicine," and that are as clear, effective, and efficient as can be found in primary care.**
     - **T12** **Delete "office processes that are as clear, effective, and efficient as can be found."**
   - **L.** **Sustainable financial model(s) that supports collaborative clinical work, such as (A) single pot of insurance benefits for all care, (B) traditional FFS, (C) bundled care management fees or capitation-type arrangement, (D) some form of pay for performance or quality bonuses, (E) philanthropic grants;**
     - **T13** **Delete or add any one or more modes of financial support as long as it still supports collaborative care operations.**
     - **T14** **Substitute "working toward sustainability" for "sustainably," regarding financial support.**
5. **And continuous quality improvement and effectiveness measurement.**
   - **M.** **Routinely collecting and using practice data for quality improvement, changing what you are doing, or effectiveness research as a normal ongoing part of the clinical practice.**
     - **T15** **Substitute "commitment and a proposal for routinely collecting and using practice data…" for: "routinely collecting and using practice data…"**

Parametric Analysis of Collaborative Care

In Figure 5, next page, nine parameters—dimensions for describing differences—are used to show how one instance of collaborative care practice might legitimately be different than another one. Each parameter comes with a set of possible values. The reader will notice formal similarity to the parameters of 2x4s shown in Figure 3 on page 30. Collaborative care is a more complex subject matter than 2x4s and hence contains more parameters and more complex alternatives for each parameter.

This parametric analysis is based on the similarities and acceptable differences expressed in the paradigm case formulation, but allows one practice to point, in a relatively simple concrete way, to how it is different from or the same as another practice. This can be useful in selecting practices that are similar enough to group for purposes of answering particular comparative effectiveness research questions and for practices to describe the particular focus and features of their own practice in specific terms. The parameters and/or paradigm case clauses could be turned into a practice profile or self-description by which practices could describe and compare themselves to others using consistently understood terms.

As with the paradigm case formulation, additional definitions, elaborations, or rationales could be supplied as needed for specific purposes. For example, research purposes will require specific metrics to accompany the cells in the parametric analysis—what you actually look at to decide what is going on in a particular practice (see Kessler & Miller in this volume). For purposes of this paper, such elaborations are not included.

Reaction to the Lexicon White Paper at the CCRN Research Conference

Reaction to the white paper at the conference was mixed. Most participants expected to immediately start formulating research questions, not wrestle with nomenclature and concepts. Because the program committee had just experienced frustrating definitional confusions that would certainly arise at the conference, the lexicon task and agenda item was added out of necessity. This was frustrating to some participants and welcomed by others. Although the paper was described as dense or challenging by all, the lexicon was felt by most to be a major help—a shift toward a common understanding of the field and the ability to articulate consistently understood research questions. E-mails followed in the days after the conference expressing either appreciation for engaging the pre-empirical language issues in the field or frustration for delaying the formulation of empirical research questions. Other applications of this methodology have also revealed that doing such pre-empirical work (as Newton and the 19th century electrical researchers did in their fields) is initially seen as a distraction by some and as foundational by others.

Figure 5. Parameters of collaborative care practice

<table>
<tr><th>Parameter</th><th>Source</th><th colspan="12">Possible values for that parameter</th></tr>
<tr><td colspan="14"><i>A team…</i></td></tr>
<tr><td>1. Team composition
All include patients/ families on team</td><td>From teams in published work, e.g., IMPACT, Primary BehH model</td><td colspan="3">PCP
+ Nurse/MA
+ Care coord.</td><td colspan="3">PCP
+ Nurse/MA
+ Care mgr
+ Consulting BehH</td><td colspan="3">PCP
+ Nurse/ MA
+ Care mgr
+ Integ BehH</td><td colspan="3">PCP
+ Nurse/MA
+ Care mgr
+ Integr BehH
+ Other (suited to practice pop.)</td></tr>
<tr><td>2. Level of collaboration or integration</td><td>Adapted From Doherty, McDaniel, and Baird; Blount</td><td colspan="4">Coordinated—basic collaboration at a distance
Referral-triggered periodic exchange of info between clinicians in separate medical and behavioral settings, with minimally shared care plan or clinic culture</td><td colspan="4">Co-located—basic collaboration on-site
Behavioral and medical clinicians in same space, with regular communication, usually separate systems, but some shared care plans and clinic culture</td><td colspan="4">Integrated—in partially or fully integrated system
Shared space and systems with regular communications, mostly unified rather than separate care plans, and largely shared culture and collaborative routines</td></tr>
<tr><td colspan="14"><i>With a shared population and mission…</i></td></tr>
<tr><td rowspan="4">3. Target population</td><td>A. Locus of Care</td><td colspan="4">Primary Medical Care</td><td colspan="4">Specialty Medical Care</td><td colspan="4">Specialty Care</td></tr>
<tr><td>B. Blount</td><td colspan="6">Targeted:
For specific populations such as disease, age, or other focus—“vertically integrated”</td><td colspan="6">Non-targeted:
For any patient deemed to need collaborative care—“all comers”—“horizontally integrated”</td></tr>
<tr><td>C. Life stage</td><td colspan="3">Children</td><td colspan="3">Adults/ young adults</td><td colspan="3">Geriatrics</td><td colspan="3">End of life</td></tr>
<tr><td>D. Kessler and Miller; Peek and Baird</td><td colspan="3">MH conditions:
Pts with one or more MH conditions, or family, partner and relationship problems affecting health</td><td colspan="3">Psychophys sx:
Pts with psycho-physiological/stress symptoms sx, e.g., headache, fatigue, insomnia, other</td><td colspan="3">Medical condition:
Pts with one or more medical diseases or conditions, e.g., diabetes, asthma, CHF, COPD</td><td colspan="3">Complex cases:
Complex cases or persons regardless of disease</td></tr>
<tr><td colspan="14"><i>Using a clinical system…</i></td></tr>
<tr><td>4. Method of population identification</td><td></td><td colspan="4">Patient or clinician:
Nonsystematic patient or clinician identification</td><td colspan="4">System indicators:
Epidemiological data, claims, other system data</td><td colspan="4">Universal screening:
All or most patients screened for being part of target pop</td></tr>
<tr><td>5. Program scale or maturity</td><td>Davis: From pilot to project to mainstream</td><td colspan="4">Pilot:
A demonstration of feasibility or starter “test of change”</td><td colspan="4">Project:
Multiple promising pilots gathered together and led visibly as a project aiming toward the mainstream</td><td colspan="4">Mainstream:
Full scale way of life in the organization—the way things are done, no longer a project attached to the mainstream.</td></tr>
<tr><td>6. Level of pt centeredness/ engagement</td><td>Level of shared decision making</td><td colspan="4">Little or none:
Chance, random; up to individual provider</td><td colspan="4">Limited:
Some effort to systematically do shared decision-making, but without a concerted system</td><td colspan="4">By protocol:
Build into clinical system for specific applications involving pt/family/clinician decisions</td></tr>
<tr><td colspan="14"><i>Supported by an office practice and financial system…</i></td></tr>
<tr><td>7. Level of office practice design and reliability</td><td>Reliability science and lean concepts</td><td colspan="4">Informal:
Referral, communication, and charting are non-standard processes that vary with clinician and clinical situation</td><td colspan="4">Partially routinized:
Some standards set for some processes but variability and clinician preference still operate</td><td colspan="4">Standard work:
Whole team operates each part of the system in a standard expected way that quickly reveals lapses and system errors</td></tr>
<tr><td>8. Business model/ financing</td><td></td><td colspan="1">FFS only</td><td colspan="2">FFS + small bundled care mgmt fee</td><td colspan="3">Large bundled care management fee + small FFS</td><td colspan="3">Separate medical and MH capitations</td><td colspan="3">One pool of funds for all care—medical or MH</td></tr>
<tr><td colspan="14"><i>And continuous quality improvement and effectiveness measurement…</i></td></tr>
<tr><td>9. Ability to collect and use practice data</td><td></td><td colspan="4">Little or no routine data collected and used</td><td colspan="4">Commitment to building system for collecting and using practice data</td><td colspan="4">Mature data collection and use in decision making for quality and effectiveness</td></tr>
</table>

Applications for the Lexicon

Asking Research Questions

The CCRN was formed as a practice-based research network for comparative effectiveness in collaborative care. That requires it to study practices doing different things and comparing the results. The lexicon helps in several ways:

Identify practices that qualify as already doing collaborative care. As said earlier, it is very easy for a practice to say in good conscience, "Collaborative care—we already do that." But when definition of the concept is fuzzy, there may be quibbles about whether that practice really does collaborative care. The *paradigm case formulation* establishes that definition publicly (via the paradigm case clauses and the parameters) so that practices can tell whether being recruited to the CCRN is appropriate for them. Moreover a practice that aspires to be part of the network but doesn't quite qualify, can see specifically what functional capacities to develop in order to do so.

Articulate (with sufficient definition) the comparisons to be made. For example, a research design might call for comparing different approaches to team composition and function such as the IMPACT (Unutzer et al, 2002) and DIAMOND (ICSI, 2008) approaches that use a consulting psychiatrist and a care coordinator vs. a generalist primary care behavioral health model (Strosahl, 1997) that employs an onsite mental health professional as a standard part of the medical team. Another example might be comparing otherwise similar practices supported by distinctly different business models. The *parametric analysis* supplies a three-level classification (pilot, project, mainstream) that allows researchers to choose cohorts of practices that are similar enough in that respect that their results can be meaningfully compared. These values can be further adjusted as the practical need arises for more (or fewer) distinctions.

Structure research questions and proposals. The papers in this collection framed the research questions using the vocabulary of the lexicon. This included 1) standard use of common terms found in the "family tree of terms," 2) a set of descriptive questions (What is really going on out there by way of collaborative care?) based in the clauses of the paradigm case formulation, and 3) a second set of evaluative questions using the parameters of collaborative care to help define the comparisons to make. The lexicon can then function as a consensus-based definitional reference for the terms and components listed in the research questions. Without that, it remains much more likely that the research questions will not be consistently understood across practices, investigators, or research funders.

Specifying Metrics

The lexicon provides distinctions for asking consistently understood practice development, practice evaluation, and research questions, but measurable indices (metrics) are also needed to serve as quantitative measures, or approximations of otherwise qualitative descriptions of collaborative care practice contained in the lexicon. Such data elements are needed for comparative effectiveness research to actually take place (See "A Framework for Collaborative Care Metrics" in this volume**)**.

Because of the variations in collaborative care practice, specific data elements and what should be expected to count as success will vary. But without a shared lexicon, choice of metrics may be regarded as subjective or arbitrary—as illustrated in these quotes from personal communications: “Metric discussions are being guided by the idiosyncratic opinions, experiences, and perspectives we each bring—and by who happens to be in which rooms during which discussions” and “everyone brings up their own favorite metrics”. Because the lexicon identified both core features and acceptable differences it can help metrics conversations be systematic in these ways:

What is reasonable to expect depending on the target population under study (parameter 3). What benefit is expected for whom and exactly what data elements to include depend on whether the collaborative care practice is aimed at children or adults; at mental health conditions or chronic medical conditions or both; or at a specific disease or subpopulation. The parametric analysis supplies a vocabulary for being specific about target populations so that performance measurement (and choice of specific data elements) for a given practice is based on their specific aims and not on a measure that is outside their scope.

What is reasonable to expect depending on level of practice development (parameter 5). Some collaborative care implementations may be limited startups or pilots, others are larger scale projects, and a few may be mainstream implementations within a larger organization or community. It would not be appropriate to compare results of limited pilots with mature large-scale projects or mainstream implementations because reasonable performance expectations for these will be different and the specific data elements available may be different. The parametric analysis supplies a three-level classification (pilot, project, mainstream) that allows researchers to choose cohorts of practices that are similar enough in that respect that their results can be meaningfully compared

A beginning set of internal process measures (based on the 5 paradigm case clauses). While the ultimate goal of collaborative care is improved care and health outcomes, the lexicon (and hence metrics) can also point to internal process measures—evaluation of processes that drive the performance that people ultimately care about. The paradigm case formulation includes five main clauses that describe collaborative care in action. Each clause can become the basis for an internal process measure for practice self-evaluation and quality improvement. Examples are shown in Figure 6, next page, with no attempt to specify actual data elements. Some of the parameters may also be a source of internal process measures. Such measures are important to shape practice performance to the standard that is intrinsically valuable to patients, policymakers, and the public.

Figure 6. Examples of lexicon-based internal process measures[1]—drivers of practice performance

1. **Level of clarity and consistency of the team available** to deploy for specific patients depending on their needs. This could be further broken down by the degree to which the team works in a shared or virtual common space, the degree to which they have been trained, and the degree to which they have achieved a common practice culture. These are sub-clauses A-D in the paradigm case formulation.

2. **Level that the team demonstrates sharing a common mission**. This could be broken down into the degree to which the team is designed to be responsible for the same group of clinic patients and the degree that medical and behavioral health clinicians operate under the mission and scope of primary care (or whatever area of medical care is the subject of the collaboration)

3. **Level of clinical system design that the team employs.** This could be the degree to which there is a population-level identification method in use; the degree to which care plans exist and integrate biological and psychosocial aspects of care and team roles; the degree to which this is all contained in a shared medical record that is instantly available to all team members.

4. **Level of consistent, reliable support from office practice systems and business model.** This could be broken down into reliability and efficiency of the office practice (does it work as intended every day, every time) and level of sustainability of the business model. (Does it financially support the key functions of collaborative care practice?)

5. **Level of collection and use practice data** for decision-making and quality improvement. This could be broken down into the breadth and depth of practice data that are collected and the degree to which the data are routinely used in decision-making to improve effectiveness.

[1] Each of these sample internal process measures comes from one of the 5 clauses in the paradigm case formulation (Figure 4, page 34) and the suggested breakdown for each corresponds to the sub-clauses.

Helping Policymakers Form Policies or Payment Models That Support Collaborative Care

Common language for collaborative care in its various forms makes it easier for policymakers to answer these important questions:

1. What exactly are people getting from “X” form of collaborative care—what’s the product?
2. What policies are needed to sustain those functions?
3. How much will people pay for that?
4. How do I justify that cost as a return on investment?

The lexicon can be used to begin to describe 1) what counts as collaborative care practice, 2) how to distinguish one form of collaborative care practice from another; and 3) what kind of benefit we should expect for whom and on what scale. These are only basic questions, but if the lexicon is used among policymakers and longitudinally over time) it may bring more respectability to the field as seen through policymaker eyes.

Helping Clinicians and Administrators Describe, Compare, and Shape Their Own Practices

The lexicon can serve as a reference for common terms describing required components of collaborative care—and legitimate differences between them. If groups of clinicians talk with each other and those outside the field using the lexicon, they will demonstrate the coherence of their field and their own ability to navigate its language.

Value to clinicians of clarified language. The following excerpt from a personal communication captures potential personal gain in clarified language, especially from the behavioral health side of the collaboration:

> . . . My early frustration was in not knowing what to call myself or how to present myself. Was I health psychology? Behavioral medicine? Behavioral health? Psycho-oncology? Regardless, I knew that to engage the medical establishment, the "field" of psychology needed consistency. I didn't know at the time that the very same issue would continue to plague me over my career. When I began working in primary care, I knew I had to get clear on my language. I was in multiple clinics, with multiple providers, and the only way they were going to keep straight what I offered was [for me and my colleagues] to start using the same language. I knew our field would be stuck without cleaning up our language. We could not even begin to strategize a research agenda without language clarity. . . whenever I speak to policymakers, I always use the same language. I describe to them the confusion of the field in not knowing what to call itself. . . pre-empirical clarification is the biggest issue not being addressed for collaborative care. . .

Value to practices as a structure for self-description or evaluation. The parameters and paradigm case clauses provide a structure that practices can use to ask themselves *what* they are doing, *how well developed or consistent* it is in actual practice, and what they are aiming for in their practice. The field has lacked such a shared framework for self-description or self-evaluation, with each practice typically inventing its own. This makes it more difficult for practices to compare and collaborate on practice improvement or create local or regional shared improvement agendas. The field needs a common framework for self-description and self-evaluation if it is to develop as a whole rather than in pockets. The parameters and the paradigm case clauses could be converted to derivative self-description tools ranging from informal, non-scientific "checklists" for organizing observations to a tested scientific instrument with metrics for comparing practices. Early experiments with this are beginning to take place.

Conclusion: The Need for Consistently Understood Concepts and Vocabulary in Emerging Fields

The author has been part of steering groups and planning committees in other emerging healthcare fields, i.e., palliative care, patient-centered medical home, and shared decision-making, that have experienced similar reasons to go through the painstaking process of developing a lexicon, conceptual framework, or operational definition. Through these experiences, it has become apparent that clearer and more consistent concepts and definition for a field are needed when:

1. Enough people are stumbling over language and what things mean—especially as encountered *in practice*, not only *in theory* or at the level of principles and values.
2. Enough people need clearer boundaries for an area X—what counts as, “This is an example of it,”--for describing to the public, setting expectations, assigning insurance benefits and certifications, or saying how something is different than “usual” care.
3. People ask, “What components are necessary for a given practice to really be X? What are the dimensions and milestones for practice improvement within these components?”
4. Researchers want to ask quality or research questions more consistently and clearly—especially in geographically distributed research or QI networks
5. There is a felt need to improve the consistency or reputation of an area with “outsiders,” e.g., policy-shapers, legislators, funders, and others who are not living the experience as “native speakers” of the field.
6. Your field is being distorted or misunderstood by the public or a vocal subset, or when practitioners are inconsistent in the way they present the field to the outside world.

Confusion about meanings of terms and conceptual structures appears to be limited not only to the areas described here. The collaborative care lexicon was presented to an audience at the 2010 AHRQ annual meeting—clearly a self-selected, non-random audience of 26 researchers, policymakers, administrators, and clinicians. A non-scientific survey using “clicker” audience response technology asked several questions related to the degree they encounter conceptual confusions in their own work. Even though informal, the results are suggestive of the extent of the problem (Figure 7, next page).

A journey has been underway to articulate and answer empirical collaborative care research questions and help practices achieve the performance that everyone needs them to achieve. The necessary pre-empirical development of a basic conceptual system for this important subfield is being undertaken—something that enables researchers, clinicians, and policymakers to talk to each other using a common vocabulary and an organized way of specifying the required components of collaborative care. The consensus-based collaborative care lexicon described in this paper is an evolving document to be shaped by succeeding groups. A process for involving a larger circle of reviewers is being planned, likely employing members of the Council of AHRQ’s National Academy for Integrating Mental Health and Primary Care. This process of involving ever-larger groups of reviewers who broaden and deepen the lexicon (and add their names as contributors) has been used successfully in the previously mentioned projects, e.g., a PCMH operational definition (Peek & Oftedahl, 2010).

Figure 7: Informal researcher–dominated audience poll on the extent confusion in language is a problem

To what extent can you relate to the experience of being on phone calls and in meetings that get stuck on language, concepts, and what is essential in a subject matter?	28% This happens all the time	52% Happens enough to be a problem	20% Happens enough to be a problem, but quickly resolved	0% Rarely happens
In what kinds of situations would clarified terms and concepts be most helpful to you?	12% Explaining or providing clinical care	8% Provider education and training	65% Forming a program evaluation or research agenda	15% Committee work on practice development and care model
What feature of this lexicon product strikes you as the most useful to you right now—either in practice development or in asking research questions?	13% The paradigm case description: what collaborative care looks like—theme and variations	42% The parameters: describing differences between one practice and another	25% Being the product of a consensual process rather than one person's opinion	21% Being able to ask evaluation or research questions in terms of the lexicon

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