

# Translating Evidence to Practice: Two Stories from the Field

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**Abstract** Translating research evidence into daily practice is a challenging process at the organizational level. Conceptual models about this process point to the importance of resources for change and environmental influences as two key factors that need to be addressed in translation efforts. Two organizational case studies focused on improving care for adults with depression are described that illustrate lessons about translating evidence to practice that may be helpful to others.

**Keywords** Evidence-based practice · Quality improvement · Depression · Financing health care · Mental health integration

An impressive body of evidence supports the integration of mental health care into primary care. Prestigious national bodies have recommended integrated care, including the Institute of Medicine (IOM) (2006), the President's New Freedom Commission (2003), and the National Business Group on Health (Finch & Phillips, 2005). Several systematic reviews (Williams, Dietrich, & Gerrity, 2007; Gilbody, Whitty, Grimshaw, & Thomas, 2003), including a cumulative meta-analysis (Gilbody, Bower, Flecher, Richards, & Sutton, 2006), have demonstrated the strength of supporting evidence for collaborative care for adults with depression, one model of integrated care. Why, then,

are there so few examples of dissemination of this evidence-based care into daily practice? While there are many islands of excellence, most of the health care system remains stuck in a siloed reality in which mental health care and primary care are mostly separate.

Much is known about what leads to successful translation of research findings to practice. The Agency for Healthcare Research and Quality (AHRQ) (2009) has estimated that it may take up to two decades for research findings to become part of routine clinical practice. It has also been demonstrated that neither traditional continuing medical education nor dissemination of written practice guidelines provide any sustainable change in practice (Davis, Thomson, Oxman, & Haynes, 1995; Oxman, Thomson, Davis, & Haynes, 1995).

This paper will explore several models of translation of research findings into practice. Case examples will be used to illustrate how these models apply to efforts to translate research to practice. Since there is strong research evidence about effective models of integrated care for adults with depression, the cases are drawn from two organizations that are at various stages of implementing evidence-based systems of care for depression.

## Translating Research into Practice

Knowledge of research evidence is necessary but not sufficient to change and improve practice. There has been a good deal of thinking about other necessary factors for successful implementation and similarities among models used to describe factors that help and hinder efforts have emerged. Table 1 summarizes the three models described in this paper and demonstrates the common themes, including the need to consider the resources for change and

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**Table 1** Common elements among models of translating evidence to practice

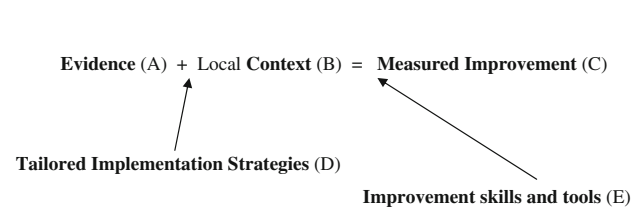
	Evidence	Resources for change	Environmental influences	Other
Davis, Evans, & Jadad (2003)	Predisposing	Enabling	Enabling reinforcing	
Batalden & Davidoff (2007)	Knowledge of scientific evidence	Knowledge of improvement strategies, skills and tools.	Knowledge of local context Tailoring strategies to local context	Knowledge of measurement
Solberg (2007)	Care process knowledge	Change process knowledge	Facilitators and barriers	Priority

environmental influences. Resources for change refers to both the knowledge and skills needed to implement changes in work processes and to the personnel and financial support that must be invested to support practices as they implement changes. Environmental influences occur at the level of the practice and in the larger state and national healthcare environments.

Davis et al. (2003) describe the PRECEED model, in which translation happens through predisposing factors (knowledge about the desired change and skills necessary to achieve the change), enabling factors (those that create conducive conditions for the change) and reinforcing factors (those that support and sustain the change). Traditional CME approaches can predispose towards a change but other approaches such as clinical decision support and audit and feedback are necessary to enable and reinforce the change.

Batalden and Davidoff (2007) put forth a model of translation of evidence into practice that describes five knowledge systems, each important to successful implementation. Research evidence (A) must be introduced with knowledge of local context (B). Measurement (C) must be used to track implementation and outcomes. Implementation strategies must be tailored to local conditions (D), and a good measurement system can be used to assess the impact of local modifications on expected outcomes. Knowledge about improvement methods, tools and skills (E), as well as about leading and executing change, are also important components of successful implementation (Fig. 1).

Solberg (2007) also talks about the importance of combining knowledge of evidence (care process knowledge) with knowledge of how to improve (change process knowledge). He points out that, with competing demands and limited resources, some process of prioritization needs

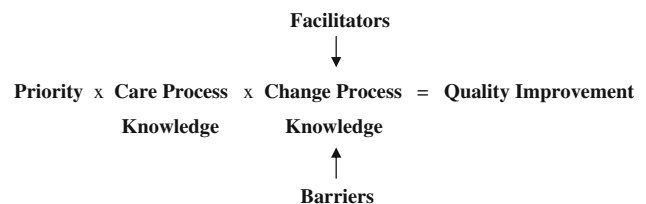
**Fig. 1** Batalden and Davidoff's (2007) five knowledge systems

to take place. He also recognizes that various facilitators and barriers will have influence over the ultimate level of success in improving practice (Fig. 2).

### Evidence Summary

The AHRQ recently published an evidence report titled Integration of Mental Health/Substance Abuse and Primary Care (Butler, Kane, & McAlpine, 2008). They define integrated care as some communication or coordination between primary care and mental health providers to meet both the mental and general health needs of their patients. This report concluded that there is evidence that integrated care produced positive outcomes. Because of limited published research, though, they conclude that it is not possible to distinguish whether integrated care provides benefits over the non-specific effects of increased attention to mental health problems in primary care. It is also not clear that higher levels of integration lead to better outcomes than lower levels.

Much of the literature reviewed by AHRQ is related to care for adults with depression in primary care. In 2003, a review of educational and organizational interventions to improve depression care showed evidence of benefits for multifaceted interventions that generally included clinician and staff education, use of standard measures and registries, and collaborative care, including care management and informal psychiatric consultation (Gilbody et al., 2003). They concluded, though, "the implementation of the findings from this research will require substantial investment in primary care services and a major shift in the organization and provision of care."

**Fig. 2** Solberg's (2007) model of improving medical practice

Another systematic review in 2007 came to similar conclusions about the benefits of multifaceted organizational interventions, and emphasized that a common element of successful trials was care management (Williams et al., 2007). The types of care management services that have been demonstrated to be effective are generally not reimbursed or otherwise supported in most primary care settings.

A cumulative meta-analysis and review of longer-term outcomes from studies about collaborative care for depression was published in 2006 (Gilbody et al., 2006). This study demonstrated that collaborative care achieves better outcomes at 6 months of follow up than standard care, and that the evidence base for this finding has been consistent since 2000, as additional studies have reinforced the presence of a moderate beneficial effect. This level of benefit is comparable to that found for brief psychological treatment for depression. There were 37 studies with over 12,000 patients that were included in the 6 month outcome analysis.

Collaborative care in this analysis was defined as a multifaceted intervention that involved at least two of the following three roles working together to identify and treat depression in the primary care setting:

- Primary care clinician—along with other primary care staff, the clinician might initiate a depression screening process or receive the results of depression screening initiated by others. The primary care clinician might discuss treatment options with the patient and recommend self-management activities including education, stress management, and/or lifestyle changes that could enhance other treatment activities. The primary care clinician might start depression treatment and be involved in decisions about modifying treatment.
- Care manager—functions as a link between the patient, primary care clinician, and, in many cases, a mental health specialist. The role of the care manager is to follow up and monitor care rather than to provide care, in most cases. The care manager is often involved in supporting self-management activities with the patient. He or she frequently monitors response to treatment using a standardized tool, and reports that information to other members of the collaborative team.
- Mental health specialist—most often a psychiatrist, this member of the team generally has a supervisory and/or advisory role. The degree of their involvement in the collaborative team varies in different studies. In some cases, the role is only to be available to provide advice when requested by the primary care clinician. In other cases, the mental health specialist supervises the care of all patients with depression in the practice. This is often accomplished by meeting regularly with the primary

care clinician and/or the care manager to review the care of patients being treated for depression.

There was heterogeneity in the details of the interventions studied, in the populations enrolled in the studies, and in the results. The analysis demonstrated some associations between the intervention and the results. Studies in which all three components of the collaborative model were present were more likely to be effective (and with less heterogeneity) than those with less fidelity to the full model. Better outcomes were also associated with the background of the care manager (mental health background was favorable) and the supervision of the care manager (regular supervision, usually by a psychiatrist, was better than ad hoc supervision).

Longer-term outcomes, up to 57 months post intervention, were available for 11 of the original 37 studies. They demonstrated a continued trend for positive outcomes compared to usual care at 12, 18, 24 months, and 5 years, although the 24 month outcome did not reach statistical significance (Table 2).

The RESPECT-Depression study and the IMPACT study together accounted for 2,206 of the 12,335 patients in all 37 studies (18% of the total patients). They serve as the evidence-based practice models for the case studies that will be discussed later.

The study entitled “Re-Engineering Systems for the Primary Care Treatment of Depression (RESPECT-Depression)” was funded by the MacArthur Foundation (Dietrich et al., 2004; Dietrich, Oxman, Williams, & Schulberg, 2004). Five healthcare organizations enrolled 405 patients who were either starting or changing treatment for depression in this study, from 60 different practices. This study included all three elements of collaborative care, as follows:

- The primary care clinician and other staff screened patients for depression using the Patient Health Questionnaire (PHQ-9). The primary care clinician initiated treatment and referral to the care manager. The primary care clinician made decisions about treatment modifications with input from the care manager and consulting psychiatrist.

**Table 2** Longer term outcomes of collaborative care for depression (from Gilbody et al., 2006)

	Standardized mean difference (with 95% CI)	Statistically significant?
6 month outcomes	0.25 (0.18–0.32)	Yes
12 month outcomes	0.31 (0.01–0.53)	Yes
18 month outcomes	0.25 (0.03–0.46)	Yes
24 month outcomes	0.15 (–0.03–0.34)	No
60 month outcomes	0.15 (0.001–0.30)	Yes

- The care manager communicated with the patient after depression treatment was initiated or modified by the primary care clinician. Most care managers were nurses with primary care or mental health backgrounds. Social workers also sometimes served as care managers. The care manager contacted the patient periodically, following a protocol that specified contacts at one week, one month, and then continued monthly until remission. These contacts usually involved repeating the PHQ-9 to monitor response to treatment, and an assessment of barriers to the treatment plan and an attempt to troubleshoot any barriers. The care manager also helped the patient with self-management activities, including accessing educational resources about depression and its treatment. The care manager met with the consulting psychiatrist weekly in person or by phone to review all active cases of depression and was generally responsible for communicating suggestions about management to the primary care clinician.
- The consulting psychiatrist met weekly with the care manager to review cases. Suggestions for changing the treatment plan were made to the primary care clinician. These most often happened through messages delivered by the care manager, but when messages were complicated or urgent, sometimes the psychiatrist would contact the primary care clinician directly. The consulting psychiatrist was also available to the primary care clinician as needed for questions or other advice at other times.
- The care manager in the IMPACT trial had a larger role than in RESPECT and many other trials. Patients enrolled in the trial were referred to the care manager, who was called the depression clinical specialist (DCS). The DCS provided education and self-management support, and monitored treatment adherence and response, as was true of the care manager in RESPECT. In addition, the care managers, who in this trial were either nurse practitioners or psychologists, were able to provide a form of cognitive behavioral therapy referred to as Problem Solving Treatment in Primary Care (PST-PC), as one treatment option for patients in the study. Care managers met regularly with a team that included the consulting psychiatrist and a liaison primary care clinician to review active cases of depression and develop suggestions for treatment modification that were then decided upon by the patient and primary care clinician.
- The consulting psychiatrist met regularly with the care manager and a primary care clinician liaison, as mentioned above. Recommendations were made for treatment modifications for patients who were not responding to treatment. For complex patients with diagnostic questions or persistent symptoms, the consulting psychiatrist could see the patient for a traditional consultation and provide further recommendations.

The results showed that patients treated with the RESPECT model as opposed to usual care achieved better outcomes regarding depression symptom levels at 3 and 6 months. Patient satisfaction with depression care was also significantly better at 6 months.

The study entitled “Improving Mood—Promoting Access to Collaborative Treatment (IMPACT)” was funded by the Hartford Foundation, the California Healthcare Foundation, the Hogg Foundation and the Robert Wood Johnson Foundation (Unutzer, Katon, Callahan, Williams, & Hunkeler, 2002). Eight healthcare organizations took part in the study, which involved 18 primary care clinics. A total of 1,801 patients aged 60 or older were enrolled in the study. This study also involved all three elements of collaborative care, including:

- The primary care clinician and staff enrolled patients in two ways—either referral after being identified as having depression during a clinical encounter, or a systematic screening process was developed. Primary care clinicians worked with patients to make treatment decisions and were responsible for managing medications, with input from the care manager and consulting psychiatrist.

The IMPACT intervention led to improved depression outcomes, better reported functional status and quality of life, and better patient satisfaction with depression care at 12 months of follow up than did usual care. A recent study found the IMPACT intervention reduced patient health care costs over a four-year period (Unutzer et al., 2008).

### **Institute for Clinical Systems Improvement Case Study**

The Institute for Clinical Systems Improvement (ICSI) is an independent, non-profit organization that brings medical groups, hospitals, health plans and other groups together to improve the quality of patient care in Minnesota and surrounding states. ICSI began in 1993 as a collaboration among HealthPartners, the Mayo Clinic and Park Nicollet Health Services. ICSI started by creating evidence-based guidelines, and has recently moved in a new strategic direction with the goal of transforming health care in Minnesota. In 2005 ICSI brought stakeholders together to redesign care for depression, by identifying a best practice model and supporting its implementation.

Multiple barriers to high-quality, value-driven care for depression were identified. They ranged from technical problems like unclear medical coding of depression

services, to cultural and adaptive challenges such as the prevailing stigma for patients and providers to discuss mental health issues. Diagnostic criteria were not always assessed through reliable means and providers often lacked the right tools to detect major depression. Follow-up care for depressed patients was unreliable and inconsistent. Care was often fragmented, not coordinated or not provided at all. Physicians who spent extra time managing their patients' depression typically were not compensated for the additional care.

These barriers suggested the need to redesign how primary care managed patients with depression, and to improve health plan reimbursement for best practices. In 2006 ICSI formed a steering committee comprised of provider groups, health plans, purchasers and patients. As a neutral convener, ICSI offered a safe environment for the collaboration and fair process necessary for difficult conversations. Jurgen Unutzer, MD, MPH, University of Washington, principal investigator of the IMPACT study provided external expertise.

ICSI's review of existing literature, including those described previously, indicated that a collaborative approach to depression care yields better patient outcomes than standard care. A decision was made to adopt an evidence-based model of depression care to disseminate to practices in Minnesota. The effort was named Depression Improvement Across Minnesota—Offering a New Direction (DIAMOND).

The IMPACT model served as the structure for DIAMOND. It had a firm conceptual framework, an established training program with support materials, and linkage to the Wagner Chronic Care model. It showed significantly improved outcomes based on broad implementation and ongoing measurement of both sustained outcomes and cost data. Also, it linked conceptually to the fundamentals ICSI stands for: evidence-based, collaborative, focused on measurement, and support for implementation.

DIAMOND adopted six key components of depression care, which were based on the collaborative care model developed by Katon et al. (1996), and on IMPACT:

1. *Standard and reliable use of a validated screening tool for assessment and ongoing management of depression.* Statewide agreement was reached on the use of the PHQ-9 (Kroenke, Spitzer, & Williams, 2001).
2. *Systematic patient follow-up tracking and monitoring.* Repeat PHQ-9 measurements and use of a patient registry will be employed to improve reliability of the process.
3. *Use of evidence-based guidelines and a stepped-care approach for treatment modification/intensification.* The Institute for Clinical Systems Improvement

(2008) Major Depression in Adults in Primary Care guideline and results from the Sequenced Treatments to Relieve Depression (STAR\*D) studies (Rush, Trivedi, & Wisniewski, 2006; Trivedi, Rush, & Wisniewski, 2006) serve as supporting resources.

4. *Relapse prevention plan for patients ready to move out of the care management program.* Planning will be done with patients to help them recognize symptoms that might signal a relapse or recurrence and to develop an action plan for how to respond if those symptoms occur.
5. *Care manager role.* This is a new role for a clinic staff person who educates, coordinates, and troubleshoots services for patients with depression. The care manager maintains contact between the patient and the practice to minimize loss of the patient to follow up, a common problem in the acute phase of depression treatment. The registry is used as part of this process.
6. *Psychiatrist consultant.* A psychiatrist works with the care manager regularly for consultation and caseload review. Either the psychiatrist or care manager communicates treatment suggestions to the primary care clinician.

With the IMPACT model as a solid framework, ICSI focused on each of the elements to adapt them to the local context. This involved only slight modification of terminology and/or presentation. Dr. Unutzer served as an advisor, which helped maintain fidelity to the IMPACT model.

### Patient Eligibility

While the IMPACT study evaluated collaborative care for adults age 60 years and older, the ICSI DIAMOND steering committee decided to make the DIAMOND model available to any adult aged 18 and over. The evidence was strong that similar models had been effective for broader adult populations. Stakeholders wanted to broadly apply the new payment model. Including all adults could also test the value of a collaborative approach to employer/purchaser groups by assessing the effect on workplace productivity and decreasing absenteeism. Other patient eligibility criteria included diagnosis of major depression or dysthymia with any of three diagnosis codes: 296.2×, 296.3× and 300.4×, and a PHQ-9 score of 10 or above at the time of the primary care visit.

Disenrollment criteria included patient transferring care or refusing care, physician discretion, or if the patient has two consecutive months in remission. The maximum time a patient can stay in the program is 12 consecutive months (for coverage of service).

## Broaden Care Team

Broadening the depression care team beyond the primary care physician was important to provide higher quality and more consistent care. DIAMOND-certified clinics hired one or more care managers with a clinical background in nursing or mental health. The care manager contacts patients to help them manage their depression through:

- Patient education
- Patient self-management support
- Facilitation of stepped-care therapy
- Coordination with primary care and mental health practitioners
- Relapse prevention

The care manager's contacts with patients may include telephone calls, e-mails and/or face-to-face meetings. This accessibility and flexibility enables more frequent contacts and greater continuity of care than is possible with brief, infrequent physician visits.

The DIAMOND model also engages the services of a consulting psychiatrist. He or she reviews the care manager's caseload and advises the care manager and primary care physician regarding changes in treatment for patients who are not improving. This might include recommending that the patient see a mental health provider or change medication. In all cases, the primary care physician makes treatment decisions and initiates any changes.

Psychologists, social workers and other mental health providers continue to play a key role in DIAMOND. Patients may be referred for therapy or other services as part of their treatment plan. DIAMOND provides tools for primary and specialty care to share information in order to provide quality care.

## Care Payment Redesign

Once the care delivery model was determined, ICSI set out to develop a new payment model. The funding for IMPACT was based on research monies. ICSI sought a sustainable model that would reimburse medical groups for providing services proven to lead to better outcomes.

Critical to the discussions was referring to the evidence and recognizing best practices not currently being reimbursed. These included care manager patient contacts, the role of the psychiatrist in caseload review, communication between the physician and psychiatrist via the care manager liaison, and work related to the registry. Through collaboration among provider groups and health plans, a new payment model was developed whereby health plans agreed to pay for a bundle of services. A funding operations subgroup established the details regarding frequency

of payment, defining patient activation and inactivation, and claims process.

Certified DIAMOND groups receive a depression care management payment monthly for each enrolled patient to cover all bundled services. A single billing code, useable only by DIAMOND sites, was established. The specific fee to be paid is negotiated between each health plan and medical group to avoid any violation of anti-trust law. The DIAMOND steering committee recommends there be no patient co-pays or deductibles. Each health plan considers this course of action and makes its own decision.

The reimbursement covered these bundled services:

- Care manager patient tracking, use of the registry, contacts with patients in the program for support, education and facilitation of treatment, administration and use of the PHQ-9, and relapse prevention visits.
- Psychiatrist weekly consultation with the care manager for caseload review.

## 2008 Launch

The DIAMOND initiative was launched in 10 primary care clinics in Minnesota in March 2008 and 20 additional sites in September 2008. The clinics had to complete a sequence of training activities that included assessment of operational readiness, participation in collaborative team meetings and conference calls, and data submission. Training focused on operational workflow, clinical best practices, and implementation tools. Teams reported on their progress at each session, and fellow participants asked questions and provided feedback to improve practices. Participating members continue networking and provide some of the training to new groups. Best practices learned from the initial clinics are being incorporated into training for subsequent clinics being certified to offer DIAMOND. New clinics are being added every 6 months through 2010.

Surveys, contact calls, networking opportunities and data analysis help ensure groups are following the model. ICSI has worked to ensure adherence to program elements while allowing for innovative and creative approaches to align with these principles.

## Measurement

ICSI is collecting both process and outcome measures as it evaluates DIAMOND. An extensive measurement plan provides insight into implementation, structural success of the model's components, and behavioral elements such as referring and activating patients into the program. A monthly review of data occurs within a measurement analysis group with follow-up discussion of findings. The

DIAMOND steering committee, the implementing medical groups, and the ICSI Board of Directors review resultant outcome reports. Measures are also aligned with Minnesota Community Measurement, which publicly reports clinical improvement measures in the state. A statewide business coalition associated with the national Bridges to Excellence programs also aligned with the DIAMOND measures and created a depression pay-for-performance (P4P) program within the state.

If there are early warning signs of problems with implementation, ICSI follows up with the individual groups, and this process will continue through the end of 2010, at a minimum. Care delivery process measures include patient enrollment and use of the PHQ-9. Care delivery outcome measures include patient response and remission rates at six and 12 months. Early data from the first 10 implementing clinics shows a 50% overall response rate at 6 months and a 35.5% overall remission rate at 6 months.

In addition to this internal evaluation process, the National Institute of Mental Health (NIMH) has awarded HealthPartners Research Foundation a grant to study the DIAMOND initiative over five years. The study will evaluate the impact of this approach on depression symptoms, cost and productivity outcomes. Effects on the care process and organizational factors will also be measured.

### MaineHealth Case Study

The MaineHealth system is an integrated delivery system with member and affiliate organizations (members are more tightly linked to the system than affiliates) located in southern, central, western and midcoast Maine. It is made up of acute care hospitals, a psychiatric hospital, home health agencies, long-term care facilities, a reference laboratory and practice management organizations. Physician practices are affiliated with the system either through members and affiliates or through physician hospital organizations (PHO). There are over 400 primary care clinicians and almost 900 specialists that are part of the system.

MaineHealth has had a Depression in Primary Care program since 2002, when it participated in the MacArthur RESPECT study. Further pilot testing of the program took place from 2003 to 2006 when MaineHealth participated in the Robert Wood Johnson Foundation funded Depression in Primary Care demonstration program. As a result of these activities, MaineHealth leadership decided in 2005 to spread the program throughout the system, initially focusing on dissemination through the Maine Medical Center PHO (MMC PHO), the PHO that includes primary care clinicians from all MaineHealth member organizations.

The MMC PHO provides two key resources that support the dissemination and sustainability of the depression in primary care model, a registry and a care management program. The PHO has developed a registry to gather and report data on primary care patients with common chronic conditions including asthma, cardiovascular disease, depression and diabetes. The registry allows primary care practices to track their patients with depression and provides regular reporting of processes and outcomes of care for people with depression. Practices have the ability to generate reports that list patients who are due for key processes of care and of patients whose most recent outcomes are not at goal.

The PHO also provides practice-based chronic illness care managers to MMC PHO primary care practices. Currently, 69 practices comprising 199 clinicians have care managers assigned to their practice at least part time. Care managers in this program are all nurses. Their roles include helping patients and families learn more about the conditions they have, and working with patients to set and monitor self-management goals and action plans, including goals related to medication adherence and lifestyle changes. In addition, care managers follow the protocols from the MacArthur RESPECT program for follow-up phone calls to monitor patients with depression who are referred by their primary care clinicians.

Primary care clinicians and practices participate in MaineHealth and MMC PHO programs voluntarily—there is no requirement at the system level that practices participate. Some primary care practice groups have influence over the participation of their employed physicians and practices.

Support for quality improvement activities in PHO practices comes from several sources. MaineHealth and the PHO provide educational sessions, practice outreach visits, and electronic learning opportunities to help practices learn about QI programs. The initial pilot testing of the depression program was done using the Learning Collaborative approach (from the Institute for Healthcare Improvement, 2009) with 23 practices taking part over three years. Practices that participate in a Learning Collaborative commit to sending a team to a series of meetings at which they learn about a new approach to care and then implement that approach in their practice, with support from the Collaborative faculty. Teams consist of at least one clinician, one administrative person such as a practice manager, and one clinical support person such as a nurse or medical assistant. Small tests of change are used to introduce and spread an innovation through the practice, with the team taking primary responsibility for making that happen. Some practice groups have their own internal QI personnel who provide support and expertise to help practices to successfully implement improvements.

## Implementation Process

Following MaineHealth's participation in the RESPECT-Depression study, the system was one of eight sites for the RWJF demonstration program. The expectations of this program included the development of a clinical model of depression care consistent with the Chronic Care Model (CCM) and of financial and system changes to sustain the clinical model. The RESPECT model was reformulated into the Five Key Changes (Table 3), comprising most of the elements of the CCM.

Twenty-three practices participated in Learning Collaboratives to implement this model, which required substantial resources from the practice and from MaineHealth. The opportunity to implement the model more widely in the system meant that there was a need to develop mechanisms for dissemination that were less resource intensive than Learning Collaboratives. The decision was made to use a stepwise approach to introducing the model.

The use of the PHQ-9 as a diagnostic tool and outcome measure is central to the depression program. This validated tool had proven easy to use and helpful to clinicians in our pilot work. It was decided that training primary care clinicians and staff to use the PHQ-9 would be the first step in dissemination. The strategy for training clinicians and practice staff to use the PHQ-9 took advantage of several related factors to support this training process. Those included:

- Depression is a common comorbidity for people with diabetes and affects diabetes outcomes.
- MMC PHO primary care practices were actively using a diabetes registry.
- The American Diabetes Association (ADA) had just come out with a revision of their practice guidelines, which included a recommendation to screen diabetic patients for common emotional problems.

This recommendation from the ADA was translated to a specific recommendation to screen all diabetic patients for

**Table 3** MaineHealth depression care model

Depression model component— five key changes	Chronic care model component
PHQ-9 as diagnostic and outcome measure	Decision support
Clinical improvement registry	Delivery system redesign
Self-management support	Clinical information system
Care management	Self-management support
Informal psychiatric consultation	Delivery system redesign

depression annually, using the PHQ-9. A pay-for-performance (P4P) program supporting this recommendation was initiated, rewarding primary care clinicians for obtaining training in using the PHQ-9 and integrating its use into daily practice. Eighty percent of primary care clinicians in the MMC PHO were trained during the first year of this program.

The focus of the depression program in subsequent years, supported by educational efforts and P4P programs, included:

- Treating depression with medications (as a result of feedback from primary care clinicians that they needed updated training on this topic)
- The use of care management and self-management support for depression
- The use of the PHQ-9 as an outcome measure (as well as a diagnostic tool) for depression.

The next new training program under development focuses on screening for common psychiatric co-morbidities of depression, such as anxiety disorders, substance use disorders, and bipolar disorders. This training will again be made available through a variety of approaches and will be supported by a P4P program.

One component of the RESPECT model that has not yet been added to the system-wide program is the role of the psychiatrist for caseload review. The barriers to this have included both financial considerations and availability of resources. Because of its demonstrated value in achieving desired clinical outcomes, efforts are currently underway to find ways to add this component, at least on a small scale initially.

## Financial and System Strategies

There has been much activity in Maine related to pay for performance for primary care management of patients with common chronic illnesses. A coalition of large employers, health plans, and practice organizations, the Maine Health Management Coalition (MHMC) has been working since 2002 to develop pay-for-performance measures. MHMC has facilitated a process by which data about performance has been posted on its website for several years. A 'mantra' of this process has been that data that is reliable enough for public reporting is also reliable enough for pay for performance programs. The MHMC has created a set of performance measures for its own reporting and encourages other organizations in Maine to use the same measures.

A variety of P4P programs have developed that have helped create conditions to support the MaineHealth Depression program. Incentive payments to primary care clinicians and practices have been available for 5 years by

the MMC PHO for performance on care for several common chronic illnesses. Health plan programs also exist from five of the six largest plans in the state. Performance measures related to depression care have been included in the MHMC recommendations. Financial incentives from the MMC PHO related to depression care have been available for 4 years and have totaled more than \$250,000.

MaineHealth also has its own organizational P4P programs related to system-wide measures of depression care. The organizational programs provide incentives that parallel the incentives at the clinician level, leading to an alignment that supports efforts to change clinical practice.

**Discussion**

These two case studies illustrate the complicated interplay among the evidence, the processes of implementing changes, and the system supports necessary to successfully bring evidence into practice. Attention to resources for change and to the environmental influences that may help or hinder implementation is crucial. Table 4 shows the alignment between the components of the models and the activities undertaken by ICSI and MaineHealth to implement their models of depression care.

It is worth noting several important aspects of successful translation illustrated by the implementation of these programs:

1. The importance of leadership to create conditions for successful implementation. In the case of ICSI, a trusted statewide organization found and adapted a model, convened participants, and worked on removing financial barriers. In the case of MaineHealth, the health system similarly found and adapted a model and provided resources to support aspects of the model that are not financially sustainable.
2. The dedication of resources to support the process of implementation. Both organizations have staff who are

responsible for bringing innovations to primary care practices, for developing tools that support the use of evidence-based approaches in practice, and for follow up and reinforcement to assist practices in making sustainable changes in the way they care for people with depression.

3. Changes in reimbursement or other system changes to remove financial barriers to sustaining changes in depression care. Because evidence-based depression care is not yet supported by the usual system of paying for care, each organization had to develop mechanisms to allow practices to address this barrier. By providing reimbursement for a bundle of evidence-based services for depression (ICSI) or by providing the registry and care managers that are part of the model and P4P rewards for certain aspects of depression care (MaineHealth), conditions were created under which evidence-based depression care can be translated into practice. Since “every system is perfectly designed to achieve the results it gets”, it is important to recognize that translating research into practice is explicitly a system redesign process.

The role of measurement is also crucial to the translation process. Local adaptation is an inevitable aspect of implementation. The risk of adaptation is that straying too far from the original model may affect the outcomes achieved. Lack of fidelity to the model may undermine the proven value of the model. By using process of care measures, the degree of fidelity to the model can be tracked. Outcome measures can then determine whether the adapted model is achieving anticipated outcomes. This approach also builds new knowledge by demonstrating the link between various processes and outcomes. A quasi-experimental design with concurrent controls can answer questions about fidelity that would be complex to answer using a series of randomized trials. This type of design can also help to explore the generalizability of a model beyond the benefits demonstrated by the initial research.

**Table 4** Alignment between components of ICSI and MaineHealth implementation of depression care models

	ICSI	MaineHealth
Evidence	IMPACT model	RESPECT model
Resources for change	Neutral, convening state-wide organization Learning collaboratives	Learning collaboratives Electronic learning Practice outreach visits Group educational sessions
Environmental influences	Bundled payment for care management and consulting psychiatrist services Care management program Common registry tool	Pay for performance Care management program Clinical improvement registry
Other	Measures of implementation and outcomes	Measures of implementation and outcomes

These case studies have not fully addressed the role that information technology might play in supporting translation of research to practice. There are several ways that IT can be helpful to this process:

1. IT can be used as part of a training process. MaineHealth has demonstrated that making training materials available electronically can overcome logistical barriers to training large numbers of people. Making materials available electronically also provides an opportunity for people to periodically review them and reinforce their initial training. Several of the DIAMOND tools and materials are available online and ICSI is currently developing an online care manager training program.
2. IT can be used to streamline data collection for monitoring implementation. A registry or electronic health record might be used to collect data for clinical purposes that can also serve to monitor the processes and outcomes of interest for implementation. Several ICSI organizations use a common registry tool to provide real-time feedback on patient enrollment figures, and response and remission rates.
3. IT can be used to deliver decision support to facilitate implementation. MaineHealth is currently using reminders about who is due for depression screening and is in the process of developing reminders about need for follow up assessment of depression symptoms. Reminders about other aspects of the model such as care management are being considered, as are treatment recommendations tied to PHQ-9 results. Some ICSI organizations have employed auto reminders, tickler systems and decision support to improve implementation of the DIAMOND model.

People who provide mental health care recognize the challenges in assisting individuals in making changes in their lives. Organizational change to translate research evidence into practice is quite similar. This should not be surprising, since organizational change requires individuals to change. Knowledge of the evidence is necessary, but not sufficient. Resources for the process of change and an environment that supports the change are also necessary for success.

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