Online Diaries for Qualitative Evaluation

Gaining Real-Time Insights

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Abstract: Interactive online diaries are a novel approach for evaluating project implementation and provide real-time communication between evaluation staff members and those implementing a program. Evaluation teams can guide the lines of inquiry and ensure that data are captured as implementation develops. When used together with conventional evaluation strategies, interactive online diaries allow for an in-depth understanding of project implementation, as well as the challenges program staff members confront and the solutions they develop. Interactive online diaries also can help evaluators address challenges such as self-reporting bias, documenting project evolution, and capturing implementers' ongoing insights as they develop. These insights might otherwise be lost to the evaluation process. The authors describe the development and use of this online approach in the evaluation of a foundation-sponsored program to improve the provision of preventive care in physicians' offices. The program included 17 practice-based research networks and their participating primary care practices.

Keywords: *diary method; process evaluation; health care quality improvement; online evaluation methods; real-time evaluation; qualitative evaluation method*

The evaluation of quality improvement in medical care suffers from a tendency to focus on outcome measures to the relative exclusion of process (Bosch, van der Weijden, Wensing, & Grol, 2005). Most evaluation teams have some information about what a quality improvement initiative produces but very little information about the processes involved in producing those outcomes (Leviton & Horbar, 2005; Stange et al., 1998). As funders and policy makers better understand the challenges, opportunities, and benefits of evaluation approaches that emphasize learning as well as accountability (Cronbach et al., 1980; Shadish, Cook, & Leviton, 1991;

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Weiss, 1980), methods that foster learning and in-depth insights into the implementation process are needed. This is particularly important in health care settings, in which insights into implementation and practice change are critical for understanding and ultimately translating and transferring successful interventions.

One approach for evaluating quality improvement and practice change in primary care settings involves combining quantitative methods with qualitative approaches that involve intensive, in-person observation and interviewing members of primary care practices over time (Cohen et al., 2004; Crabtree, Miller, & Stange, 2001; Crabtree et al., 2005; The DOPC Writing Group, 2001; Miller, Crabtree, McDaniel, & Stange, 1998; Stange, Miller, Crabtree, O'Connor, & Zyzanski, 1994). These multimethod evaluations involve direct practice observation and tend to focus on evaluating one intervention conducted in a number of practices in a fairly small geographic area. Results provide detailed insights about how to foster practice change and institute improvement in such settings.

Although evaluators can learn from such methods, the evaluation of health care programs typically involves multiple interventions conducted across large geographic regions and may include upward of 100 practices. Additionally, direct ongoing contact with actual practice members implementing an intervention is rare in the evaluation of health care programs. This makes the use of intensive practice observational and interviewing methods to gain an in-depth understanding of practice organization and change impractical. We developed an interactive online diary method to mitigate these challenges.

The online diary method fosters ongoing interaction with project team members who are working closely with practice members to implement quality improvements. Online diaries provides program evaluators with the ability to gain access to in-depth, detailed insights from research teams regarding the implementation of quality improvement interventions in primary care settings and to foster learning among evaluators and research teams. In what follows, we describe this method and its use in the Prescription for Health program.

The Diary Method

Diary methods involve the collection of data that are typically written by participants over time. Each individual participant maintains his or her own diary. Diary methods are a relatively common data collection strategy and have been used to evaluate health behaviors (Hufford, Stone, Shiffman, Schwartz, & Broderick, 2002; Shiffman & Stone, 1998), people's use of time (National Research Council, Commission on Behavioral and Social Sciences Education, 2000), and children's development of language (Mervis, Mervis, Johnson, & Bertrand, 1992). Diary methods have also been used in educational program evaluation to assess students' learning and perceptions over the entire term of a 1st-year physics course (McAlpine, Wilson, Russell, & Cunningham, 2004) and as a method for understanding the teaching and learning process (Stake, n.d.).

Three characteristics distinguish the use of diary methods. First, diaries can be distinguished with regard to their structured or unstructured nature, what Jones (2000) referred to as solicited and unsolicited diaries. Solicited diaries have highly structured templates created by investigators, whereas unsolicited diaries are unstructured and written without inducements and attempt to portray participants' constructions of social reality or events. Second, diary methods may involve collecting real-time data or data that foster the recall of events. Real-time diaries collect contributions at regular and more frequent intervals than diaries that foster recall of events. Real-time diary keeping strategies are commonly used to assess health

behaviors in a more reliable fashion (Hufford et al., 2002; Shiffman & Stone, 1998). Third, diaries vary in the extent to which they foster feedback and interaction between the diary keepers and those collecting and evaluating the diary data. This feature of diaries is connected to the frequency of diary making, the method used for collecting diary data (e.g., paper and pencil, electronic), and the intent to foster interaction between diary keepers and evaluators. For example, in health behavior diaries, contributions are collected at regular intervals, and this is often accomplished through electronic means. This creates the opportunity for interaction between data collectors and diary keepers and is a particularly important feature when diaries are used to foster learning and health behavior change. In contrast, paper-and-pencil diaries do not lend themselves to real-time interaction between evaluators and diary keepers. When using paper-and-pencil diaries, evaluators contact participants after receiving completed diaries to probe for further details, clarify entries, and obtain missing information (National Research Council, Commission on Behavioral and Social Sciences Education, 2000). Here, the emphasis is on collecting "accurate" and "complete" data rather than fostering an interactive learning environment.

The interactive online diary approach we describe is an unstructured or unsolicited diary implemented via an online or electronic format and created to collect implementation data as well as to foster learning among evaluation and research team members. In what follows, we describe the context in which the online diary was developed and used, articulate the steps involved in developing and implementing the online diaries, and discuss what the day-to-day management of this data collection approach entails.

The Creation and Implementation of Online Diaries

The Evaluation of Prescription for Health

We developed the online diary for use in Prescription for Health: Promoting Healthy Behaviors in Primary Care Research Networks, a national program of the Robert Wood Johnson Foundation in collaboration with the federal Agency for Healthcare Research and Quality (AHRQ). This program targets four health risk behaviors that are the nation's leading causes of preventable disease, disability, and premature death: lack of physical activity, poor diet, tobacco use, and the risky use of alcohol (Mokdad, Marks, Stroup, & Gerberding, 2004). Grant funding is provided to primary care practice–based research networks (PBRNs), primary care practices that are mostly affiliated with the academic, clinical, or nursing departments of university health centers.

Primary care practices were the target of this initiative because visits between providers and patients in the primary care setting provide an important opportunity to address lifestyle issues through health risk appraisal, brief counseling, and linking patients with supports to initiate and maintain behavior changes (Kottke, Solberg, Brekke, Cabrera, & Marquez, 1997; Stange, Goodwin, Zyzanski, & Dietrich, 2003; Stange, Woolf, & Gjeltema, 2002; Whitlock, Orleans, Pender, & Allan, 2002). Grantees were to implement and test practical ways to integrate health behavior change interventions into primary care clinics or offices that were members of the research networks.

Table 1 provides a description of the interventions tested in Round 1 of Prescription for Health. Many of these interventions (e.g., motivational interviewing, goal setting, brief interventions by the provider) have been found to be effective in other settings and under ideal conditions. Therefore, an important focus of Prescription for Health was to understand how

Table 1
Description of Interventions for Prescription for Health: Promoting Healthy Behaviors in Primary Care Research Networks, Round 1

Project ID Number	Intervention Description
1	Standardized paper-based health risk practice assessments; patients receive pedometers, nutrition/activity logs, walking club, and coaching
2	Wireless Web tablet assessment used to assess patients' concerns (diet and activity); triggers discussion; patients offered group counseling
3	Practice-tailored patient assessment tools and clinician training in brief counseling intervention; tested penetration of three different brief interventions models (provider, specialist, health educator) for smoking and risky drinking; practice-tailored assessment tools; clinician training
4	PDA-based risk survey for teens; triggers clinicians to initiate MI and action plan; follow-up e-support
5	Tailored practice improvement to increase pediatrician counseling on diet and physical activity; practice selected intervention options from menu of proven prevention strategies
6	Practice-tailored assessment protocol to identify overweight/obese patients; referral to a health coach for MI-based program
7	PDA-guided clinical assessment of patients' eating and smoking behaviors using the five A's model; patient referral to health coach for support
8	"Staged"-based Web portal for patients to access evidence-based resources on health behaviors (tools to facilitate change, community services information, assistance in arranging help from practices)
9	Practices engaged in a personal behavior change for improving eating and physical activity; later, practices offer same intervention (goal setting, pedometers, telephone follow-up) to patients
10	Searchable Web-based community health promotion resource; assessed impact of this tool on clinician discussions of health behavior change, patient readiness to change, and actual change
11	Goal setting with patients overweight and at risk for diabetes; practice protocol developed to identify eligible patients' triggers; goal setting with patients overweight and at risk for diabetes; patients receive pedometer and monitored via nurse surveillance
12	PDA-based decision support tool to improve clinicians' ability to provide patient-tailored counseling (tobacco, diet) at point of care; practice-developed clinician trigger for PDA use
13	Comparative analysis of (a) using innovative Web-based patient activation tool, (b) using Web tool plus linkages to a practice improvement approach, and (c) using Web tool and linkages to the practice improvement approach plus practice linkages to community resources
14	Interactive educational program based on MI; practice protocol for member screens and identifying eligible patients; patients select intervention intensity (written material, Web site, telephone counseling)
15	Prescription pad triggers clinician referral to established wellness program, providing telephone support (physical activity and smoking cessation)
16	Health system nurse consultant facilitates tailored quality improvement effort to enhance delivery and documentation of five A's
17	Clinicians integrate behavior change action plans into routine visits; research staff members assist with patient recruitment, follow-up calls, and record reviews

Note: PDA = personal digital assistant; MI = motivational interviewing; five A's = ask, advise, agree, assist, arrange. If not mentioned in the description, the project addressed all four target behaviors (diet, physical activity, smoking cessation, and risky drinking).

to translate and develop practical ways to integrate health behavior change interventions into the routines of primary care (Bodenheimer, Wagner, & Grumbach, 2002; Wagner, Austin, et al., 2001; Wagner, Glasgow, et al., 2001).

From an evaluative perspective, one of the most important features of the Prescription for Health projects to evaluate was the primary care practices' ability to implement, integrate, and sustain the interventions being tested. The online diaries were created to gain the insights, experiences, and observation of the 17 investigative teams. Online diaries were interactive, secure, Web-based logs in which project team members recorded implementation experiences and observations. Evaluation team members read, responded to, and analyzed these accounts.

Start-Up: Creation of the Online Diaries

Diary rooms were housed on the AHRQ-sponsored PBRN extranet. Using a platform called QuickPlace, diary "rooms" were created for each research team in which secure Web diaries could be posted. An information technology expert from the AHRQ tailored the QuickPlace platform to meet the evaluation team's specifications. Features of the online diary rooms included the ability to (a) write a diary entry in a text box, (b) post diary entries as attachments, (c) save diary entries to edit further before posting, (d) restrict the readership of a diary entry, (e) send automatic e-mail notifications at the time of posting the first entry in a string, and (f) foster communication among members of each investigative team and between research team members and the evaluation team. Additionally, a "help" button was created to assist diary keepers in the writing process. Using findings from the content analysis of grant applications (described below), the evaluation team formulated general and project-specific questions to post to this help box.

Once diary keepers were identified for a project, password access was created. Diary keepers had access to their own diary rooms only. The AHRQ provided full technical assistance for the 17 diary rooms. After we articulated our vision for the diary rooms, three or four telephone meetings with the information technology expert were needed to develop the site and ascertain password access for diary keepers.

Identifying Diary Keepers

A crucial part of the online diaries was to identify the appropriate people on each research team to make online diary entries. To gain insight into the implementation process, it was essential to select people who would be in close contact with practices during implementation. The selection of diary keepers required that we understand the scope and focus of each project and understand the function or role of each member of the research team. To accomplish this, a content analysis of all funded grant applications was conducted, and a list of potential diary keepers for each project was created by the evaluation team. The evaluation team contacted principal investigators (PIs) to discuss diary-keeper selection. For most projects, three to five people were identified to be diary keepers, with at least one or two individuals who would be in close contact with practices during the implementation process. Information was obtained from each diary keeper (name, affiliation, and e-mail address) to facilitate the creation of password access to each investigative team's diary room.

Introducing Research Teams to the Online Diary

As mentioned above, PIs were the first to be introduced to the idea of the online diaries during telephone calls with the evaluation team prior to the beginning of the study.

Subsequently, the evaluation team offered more in-depth training on how to use the online diaries during an orientation conference for all funded projects. This was accomplished in two ways. First, the evaluation team provided training to the whole group, demonstrating how to use the online diaries and providing general guidelines for diary keeping. Second, the evaluation team met with each research team individually to discuss its project and the types of implementation experiences and observations that might be most useful to capture via the online diaries. Diary keepers were asked to make entries twice a month and to share their observations and experiences regarding project development and evolution, recruitment, and implementation. Face-to-face meetings with research team members were opportunities to educate research teams as to the potential value of this data collection tool, persuade them to make diary entries, and provide some guidance as to how often to post and what to include in diary entries. Additionally, materials were posted to each diary room explaining the diary-keeping process and providing information, including an exemplar diary entry, designed to assist diary keepers.

Day-to-Day Management of the Online Diaries

The process of maintaining the diaries took an average of 15 person-hours per week. Two members of the evaluation team received an e-mail notification each time a new diary entry was posted. Diary entries were read by one team member at the time they were posted, addressing any immediate concerns and copying entries into a word processing program to facilitate sharing with evaluation team members. Later, diary entries were put into a text management database called FolioViews. Diary entries were collected weekly and distributed to evaluation team members. Weekly meetings lasting approximately 3 hours were held, during which time each diary entry was read aloud and discussed. Discussions often required evaluation team members to examine and discuss earlier diary postings as well as original grant applications to track implementation processes and understand the project aims and timeline. Team members' areas of expertise and experience in medical practice change, medical practice organization, health behavior change, anthropology, and communication often shaped the discussions and influenced how postings were understood and subsequently addressed.

At these meetings, the evaluation team decided how to respond to the week's diary entries, and one person corresponded with the diary keepers, posting the evaluation team's responses. The evaluation team regularly posted responses to diary entries that were designed to ascertain more information or elaboration from a diary keeper. This activity took between 1 and 2 hours a week, depending on the number and depth of responses posted. Correspondence with diary keepers included posting requests for diary entries every 2 weeks and positing questions that responded specifically to the diary entries team members posted.

The Yield From Diary Entries

In this section, we show what can be expected from this evaluation approach, explain how to recognize high-quality diary entries, and describe techniques we used to elicit better diary entries.

Quantity and Quality of Diary Entries

All 17 grantees complied with the request to provide diary entries to the evaluation team. Fifty-seven investigative team members were identified to keep online diaries, and 592 diary entries were made. The median number of diary entries made per investigative team per

month for 13 months was between 3 and 4 (ranging from less than 1 to 9 per month). There was great variation in the number of diary entries made across projects. For example, Project 10 identified 2 diary keepers who posted more than 90 diary entries over the course of the initiative, whereas Project 2 agreed to have 1 team member make diary entries, and this person posted 11 diary entries during the program period.

Although making regular diary entries was important, equally important was the entries' quality, which also varied greatly across project teams. At one extreme were postings of brief project progress reports and meeting agendas, and at the other extreme were lengthy reports of observations and reflections on the implementation process. Lower quality diary entries were those that tended to be brief and focus on administrative details rather than implementation experiences. Additionally, these diaries tended to make high inference claims. That is, the writers reported that events, experiences, or observations happened and/or offered their analyses or assessments of events or experiences but did not include any of the details to substantiate or support their observations, experiences, and assessments. The following three diary excerpts illustrate this extreme.

Case Illustration 1. This entry was posted by a coinvestigator. This person played an important role in coordinating the intervention across the practice sites and handling other research-related administrative issues.

> We continue to get IRB [institutional review board] approvals for the 8 clinics; as IRB approval is obtained, chart audits for baseline data are being conducted by each of the clinics and sent to us for tabulation and entry into the extranet. The wide variety of stipulations imposed by each of the 8 clinics' IRB committees has been a learning experience! Client recruitment has begun in one site and other sites are getting ready to begin the process. (Project 1 diary entry, November 12, 2003)

Case Illustration 2. This entry was posted by a project coordinator who played a mostly administrative role in this project and commonly posted meeting minutes as diary entries.

> PROJECT MEETING
>
> In attendance: [names of four people in the meeting]
>
> Things are very exciting and moving forward. Pre-study surveys have been distributed to all participants, and two have been completed and returned! Additionally, initial contact has been made with a number of potential subjects. Software issues were discussed and the final copy edits are being completed on the Palm version. The PC version is also getting closer to completion. Final testing will be performed prior to deployment. As a safety precaution, all participants will be asked to back-up their files prior to downloading the software. However, as a back up, we will perform additional testing of the system using our own hand-held. Considerations for budget revision were discussed, such as Stephanie's time, and the cost of her activities associated with the study, as well as Ralph's time and expertise, and cost of any further development of the product and/or platforms. Recruitment of outside clinicians, as subjects, was also reviewed. (Project 12 diary entry, May 20, 2004)

Case Illustration 3. This entry was posted by the coinvestigator for this project responsible for overseeing the study as well as coordinating the research effort in each practice.

> Please find enclosed a copy of our 8-month progress report submitted to the NPO [National Program Office]. We are actively engaged with the Intervention Practices. Walk-throughs have been completed at all offices except one. Information gleaned from the walk-through was shared

> with the staff over lunch on the day of the walk-through. Each site is currently completing their independent walk-through by an administrative and nursing staff member. Staff members are also completing our survey. We will be doing our second curriculum presentation to the practice staff the week of March 7th. We are also currently testing the intake form in one practice. The other practices will begin using the intake form beginning in March. Planning for the community-wide intervention has begun. All employees in the first community have been given a second chance to complete the online assessment. Please see enclosed letter. (Project 13 diary entry, February 12, 2004)

In each of these diary entries, the authors focus mainly on administrative events and offer high-inference claims such as "IRB . . . has been a learning experience." There may be various reasons diary entries such as these lack substance. The foremost reason is that research team members, particularly PIs, do not see value in the diary-keeping process. In some cases, PIs did not make substantive diary entries themselves and treated diary keeping as an administrative task, often giving this responsibility to project coordinators and others who did not have close contact with practices. In other projects, it was only the PIs who had close contact with practices during implementation, and getting insight into this process was very difficult, particularly if PI "buy-in" was minimal and competing demands for time were great. Other diary-keepers reported struggling with not knowing what to write in the diaries. The interactive nature of the online diaries, however, made this barrier surmountable. As we show below, once an entry was made, the evaluation team would prompt for a more complete account of an event, experience, or observation by asking the author follow-up questions. Thus, if we could get a diary keeper to make an entry, we could work with him or her through this interactive medium to fill out the important details of his or her account.

In contrast, many diary entries contained substantive, detailed, low-inference observations, experiences, and reflections. Entries of this type were most useful to the evaluation team in that they provided details about the implementation process. These diary entries also tended to be longer. The following diary excerpts are more detailed, substantive diary entries.

Case Illustration 4. This diary keeper was a practice consultant or facilitator. She was a research team member who worked with the practice to help them implement the improvement. Her work with the practice began with an evaluation or assessment of the practice and a meeting with key practice members to discuss and tailor the intervention. She recounted such a meeting in this diary entry.

> After the rollercoaster of Holidays and illness I am gearing up to full speed. I completed the 2nd visit with a practice yesterday. This is a staff of 3: physician, MA [medical assistant], receptionist, in a multiple physician facility in a community perceived to be more affluent and professional. I met with all 3. In reviewing the chart audit I stated that we were confident that the audit did not reflect the preventive services the practice was providing and indicated some difficulty in interpreting notations like "discussed lifestyle modifications" Dr. stated he was quite confident he is addressing all behaviors and 5 A's thoroughly and was satisfied to remain status quo. He stated he did use catch-all phrases like "Lifestyle modification" as documented evidence and assurance that he is addressing all behaviors and believes that he would be "covered in a court of law". He recognized that this may not satisfy the HMO [health maintenance organization] or others (ie: P4H [Prescription for Health]) but he is not practicing medicine to the approval of HMO's. He also stated that he dictates his notes at a per line fee and tries to keep his dictation thorough but at a minimum cost. I suggested that another legitimate documentation is the utilization of flowsheets that would not have a cost and be even less time than dictation. He had mentioned at the 1st visit that he was considering revising his flowsheet (he composed it) and perhaps he would consider revisions to reflect and track the targeted behaviors. To that he said he would consider

enhancing the flowsheet but saw no other opportunity for improvement. I discussed staff documentation and noted credit was given for the MA's notation in contacting a patient regarding lab results and discussing diet and exercise. Staff assures that they will document all such contacts. I spoke with the MA, who is very experienced, capable, and has a long term, well established relationship the doctor. I asked what she could offer to do or had ideas/interest in improving the system r/t to preventive service delivery. I observed some obvious discomfort in her mannerisms. She undoubtedly would willingly comply with the physician's instruction or plan of action if he were to initiate but I believe she is not in the practice of suggesting or being pro-active in initiatives in this area perhaps viewed as exclusively the physicians territory. So I was not successful in getting the practice to implement an initiative for improvement. Only the Dr. agreed to consider revising his flowsheet; which could reflect an improvement r/t chart audit. The staff is not comfortable in initiating anything without the Dr's directive. I stated that I would follow-up to see if the Dr had giving this any consideration and if a plan could be put into place, they agreed. Managed care is prevalent in this area and the perception of their intrusiveness and perceived attempt to mandate care delivery has created an atmosphere of resentment to some degree. Practices have become guarded. (Project 16 diary entry, January 16, 2004)

Case Illustration 5. This diary entry was written by a physician extender or health coach who was situated in one of four practices (she moved from practice to practice). Physicians referred patients in need of dietary and physical activity counseling to her. She engaged with patients using motivational interviewing techniques.

In listening again to an interview with K, where she revealed suicidal thoughts, I can hear my voice soften as we move from talking about diet and exercise into the depression scale. When her answers to the first few questions in that section are "nearly every day" and "every day" my pacing slows down and my voice gets softer, gentler. After she begins to cry I ask, "May I give you a hug?" She nods yes. I hug her large body and feel it relax. She cries more. Then I sit and return to the questionnaire. As she answers more of the questions in a similar vein of serious depression I resonate with her feelings. I decide to recap her feelings and then share my own experience with sorrow. This is the critical and unconventional juncture that I think is delicate but key. I say, "I remember one winter when I felt that way. I had an ectopic pregnancy and I felt very sad." The look on her face was one of complete appreciation. It was as though I not only said I understood but proved in specifics that I was human and vulnerable. Even though the specifics were different from her situation, she knew I was WITH her.

Similarly, when she got to the alcohol section of the inventory, she began to talk about her father's drinking and violence. I did 2 uncommon responses at that moment. I shared that I too had a family member who drank too much and that I also had been hit as a child. Then I used my psychology background to add that the impact of growing up with an alcoholic has implications in adult life (teachable moment). Finally I offered a specific help of a local Al Anon group (referral). We moved to a discussion of her primary care doc. and antidepressants. She agreed to try them, even though at the start of the interview she had expressed that she thought pills meant mental illness. She asked me to talk to the doctor on her behalf saying, "You understand this better . . ." After I said goodbye to her and scheduled a 2 week follow-up I went to the nurse to make contact with the doctor immediately. K appeared beside me a few minutes late asking for directions to the Al Anon meeting. I was impressed that she remembered and wanted to take an action step. This example is one of many that I use with patients. Because I am noticeably in shape I had been concerned that I may not be appropriate because I eat a very healthy diet and exercise regularly and do not struggle with weight issues. Due to the training, where I struggled with behavior change around my driving habits, I understand the process. I share my bad habit (fast driving) as a way to help patients who seem confused by decision exercise. They often seem shocked and appalled at such an admission from a health worker. But it opens doors where they frequently go from denial to openness about their unhealthy habits. (Project 6 diary entry, January 26, 2004)

These case illustrations demonstrate the type of detail regarding the diary keepers' experiences, observations, and reflections that was particularly useful to the evaluation team. In Case Illustration 4, the diary keeper reported the details of her meeting with practice members to discuss their intervention. From this entry, the reasons for the lack of uptake in this practice (e.g., the doctor did not see the value of the intervention) are observable to an outsider. In Case Illustration 5, the diary keeper shared her reflections of working with a patient to make a weight- and exercise-related behavior change. The diary keeper's observations and experience provide a great deal of insight into the process of coaching patients to take better care of their health.

The evaluation team rated all 17 projects in terms of the extent to which detailed observations, experiences, and reflections on study processes were recorded. First, each evaluation team member rated diary contributions individually on the basis of his or her own perceptions of quality. Second, the team discussed these rating, placing particular emphasis on those teams that were rated differently by team members. Once rated by quality of overall contribution, the evaluation team worked as a group to order and identify diaries by quartile.

It is important to note that there was a great deal of agreement in our ratings of research team diaries; the evaluation team spent over a year reading the diary entries together and formulated similar opinions about each research team's contributions to the online diary. The purpose of creating these ratings was not to achieve a measure of validity or reliability with regard to these qualitative and quantitative ratings but to portray the quantity and quality of data generated by this method. This information may be useful to evaluators considering this method, and it was useful to research teams who wanted to know where their diary contributions stood in relation to those of the other funded teams.

Four important characteristics separated those projects in the top quartile from those in the bottom quartile: (a) familiarity with writing field notes, (b) a recognition of the value of writing and reporting insights from the implementation process, (c) a recognition of the value that feedback from an external group of experts in qualitative research and practice-based interventions might have for their projects, and (d) the selection of research team members who were "on the ground" and working closely with practices and patients to make diary entries.

In Table 2, we present quality ratings and the quantity of diary entries for each of the 17 projects. Although we are not suggesting a statistical association between these two features of diary entries, there are some patterns worth noting. In general, projects that provided good diary entries, especially those rated in the highest quartile, were also those that provided more entries per month. Conversely, the lowest quality diaries were kept by those making the fewest entries per month. However, the quantity of entries did not differentiate the two middle quartiles.

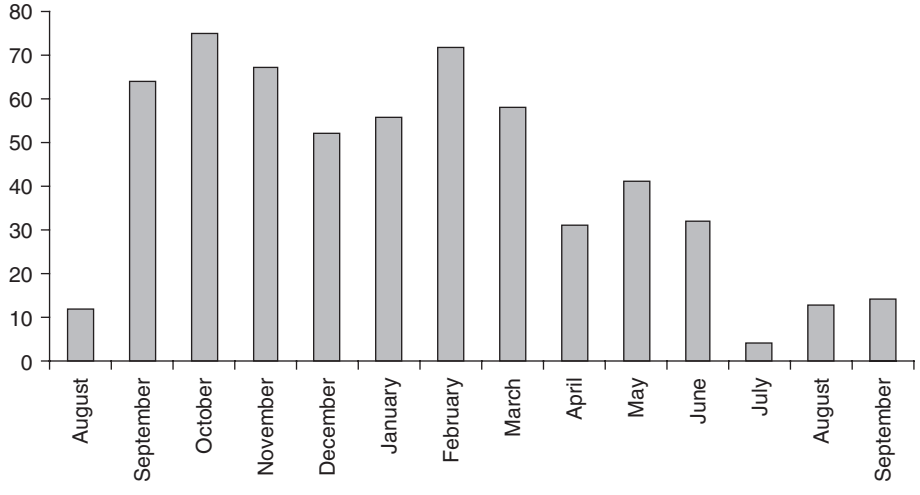
Diary Keeping Over Time

As seen in Figure 1, the quantity of diary entries posted over the course of the funding period varied. Several factors influenced the quantity of diary entries made by project teams. First, face-to-face contact or the anticipation of face-to-face contact with the evaluation team increased the number of diary entries a project team made. For example, the overall number of diary entries made per month peaked in September and October 2003, following the first convocation of Prescription for Health grantees. During this meeting, the evaluation team emphasized the importance of the online diaries and worked with investigative teams to address barriers to the diary-keeping process. Additionally, projects receiving site visits typically increased their number of diary postings just prior to and a few weeks following the site visits.

Table 2
Quality Ranking of Project Diaries and Overall Quantity of Diary Entries Made

Project Number	Median Number of Entries per Month	Overall Number of Diary Entries Made	Number of Diary Keepers
Highest quality quartile			
10	8 to 9	93	2
16	6 to 7	80	6
6	5 to 6	71	4
5	2 to 3	38	3
Second-highest quality quartile			
9	3 to 4	40	5
11	2 to 3	29	3
15	1 to 2	20	3
4	1 to 2	22	3
3	1	13	1
Third-highest quality quartile			
14	2 to 3	38	5
8	1 to 2	20	2
17	1 to 2	19	4
7	2 to 3	33	2
Lowest quality quartile			
2	<1	11	1
1	2 to 3	29	4
12	1 to 2	23	5
13	<1	12	2

Figure 1
Frequency of Posting Online Project Diaries Across Prescription for Health Projects



Second, diary postings from the evaluation team encouraged postings by investigative team diary keepers. Diary keepers received automatic reminders to make diary entries every 2 weeks. This was successful in encouraging most diary keepers to make regular entries. Additionally, once an entry was received, the evaluation team responded to it, often with questions that made subsequent postings by one or more diary keepers relevant.

Evaluation Team Responses to Diary Entries

Typically, the evaluation team responded to diary postings in ways that attempted to clarify prior postings, elicit elaboration or further explanation of an experience or observation, identify implementation challenges, encourage reflection, and offer informational, intellectual, and emotional support. Below are examples of the evaluation team's responding activities.

Clarification of a Prior Posting

This diary entry was posted by a PI. She reported an error made by the referring physician. Note that BMI means body mass index and IFG means impaired fasting glucose.

> The patients have been quite discouraged when they find out that they do not qualify. Upon talking to the physician that referred the patient, he was not calculating the patients' BMI, but instead referring them on the basis of IFG. (Project 11 diary entry, December 24, 2003)

> Thanks for the update. When we read your diary we were not sure what IFG stood for. Could you tell us? [Response continues.] (Evaluation team response, January 8, 2004)

Eliciting Elaboration

Example 1. In Project 9, patients received pedometers and sheets to log daily steps walked. Larry, a member of an intervention practice, was responsible for calling patients to see how they were doing and find out the numbers of steps they had walked in a week. The author of the diary entry was a project director and practice liaison reporting his observation of Larry's experience with this log.

> I went over how to use the patient log—it seemed as though Larry was a little overwhelmed about the number of calls—I told him to do his best and to let me know what worked or did not work. (Project 9 diary entry, March 8, 2004)

> Thanks for the diary entry. Can you tell us more about the patient enrollment portion of the project? What are you asking practices do in order to enroll patients? We see that making telephone calls is part of it. Can you tell us more? (Evaluation team response, March 10, 2004)

Example 2. These diary entries were made by the PI and the practice liaison, respectively. This project developed a personal digital assistant (PDA)–guided clinical assessment of patients' eating and smoking habits to be used by doctors during encounters. This PDA protocol facilitated referral to a health coach for further counseling when warranted. The PI was reporting that the health coach training and the interface with doctors, a significant part of this intervention, was completed, while offering few details regarding how this happened.

> The PI and co-PI met on 10/13 to discuss the P4H protocol and the health coach interface, determining that a patient flow visit to the practices prior to program initiation will be required before that protocol can be completed. (Project 7 Diary Entry 1, October 14, 2003)

> As noted by the PI on 9/9 and 9/16, we had 5 health coaches trained to interface with MD offices and supplement the MD advice. (Project 7 Diary Entry 2, October 14, 2003)

> You both refer to working on the interface between health coaches and practices in your diary entries. We were hoping that you might say more about this interface. Can you speak about the practice/organizational issues involved in connecting health coaches and practices, as well as the interfacing of advice (what kind of advising/counseling are clinicians doing and what are health coaches expecting to do to supplement that)? How is this interlacing (if you will) accomplished by your team? (Evaluation team response, October 22, 2003)

Identifying Implementation Challenges

This project asked adolescents to complete a PDA-based health risk assessment in the waiting room. This information from the assessment is printed and placed in patients' charts before the visits. Physicians were asked to provide counseling (develop change plans) with patients when warranted. This entry reported an important implementation challenge.

> Clinicians have not been good about trying to incorporate the action plan into their visits. They report struggling with goal setting and not remembering to do it. We are currently working with their staff to have an action plan clipped with chart when Palm screener is handed to the kid in order to cue the doctor. (Project 4 diary entry, January 9, 2004)

> We did send another response via email. We also wanted to respond to your diary entry here. We looked over your original proposal because we weren't sure we were clear on the study protocol for physicians. The patients fill out the questions on the palm in the waiting room then the physician gets the palm screener. What happens next? Do some physicians go through the questions and others don't? Then what? Do some physicians choose to do the action plan and others choose not to? If they don't go through the action plan, do the patients still get referred to the health educator? What do you think the barriers are to using the palm screener and then working with the patient to develop an action plan? We're asking for two reasons. One, we want to better understand how this protocol is being operationalized in practices and where problems are arising. Two, we wanted to encourage your team to engage practices (the whole practice) who are not doing the action plan in a discussion of how they might make the action plan process work in their practice. What needs to be done to make this kind of intervention work in their practice? Do you think that this might work? (Evaluation team response, January 2, 2004)

Encourage Reflection

This project conducted weight counseling groups with children and parents. The author of the diary entry was the person who led and trained others to lead the group sessions. She reported learning what it takes practices to incorporate changes of this type but did not report details.

> As of tomorrow night, we will have convened 50% of our planned intervention groups (a total of 8 groups are planned), and we are on schedule. We are learning much about what it takes to help a practice to incorporate a change such as this. We are hoping to have additional funding to take this project into other primary care offices. (Project 5 diary entry, May 4, 2004)

> Thanks for the update, and so fast too!! When you have a chance to "download" again via the diary . . . you mentioned at the end of your posting that you are learning a lot about how to help practices implement this sort of change/program/intervention into their practices. Can you reflect on and share what you are learning. It would be extremely valuable. This could even be done as evaluation team reflective process. (Evaluation team response, May 4, 2004)

Offering Intellectual Support

This diary keeper was the health coach. She worked extensively with patients, counseling them to lose weight. She posted the de-identified notes she kept on each patient to the diary room. They accompanied this entry.

> Eval Team and Team mates, I am attaching a rather long piece which represents some ongoing notes on patients that I have collected. I would benefit from direction and input because it is time consuming to keep notes on so many patients. Perhaps in the final analysis it may be better for me to write about recurring themes. Or if you find some particular patients more fascinating than others I could extend those profiles. I'm going public with these in draft form so you can see some raw material and help me to hone in on how to use it in revised versions. (Project 6 diary entry, February 4, 2004)

> The patient summaries are going to be extremely valuable. At the moment, they seem to be a bit spotty, even thin on detail. We were thinking that you might do a few things. First, you might begin to identify a variety of patients (select a sample that gets the greatest variation in experiences). Second, we think it might be worthwhile for you to have a brainstorming session on the details that you would want in a patient summary. A few pop into our minds right away. Beginning BMI, BMI at various points throughout the intervention and at the end, patient questions, patient eating habits, patient psychosocial issues, patient scoring on the questionnaires they filled out (at least the parts that are relevant), the advice or suggestions that are given to the patient at each meeting, how patient responds to this, does patient follow-up with clinician or other health care provider . . .) So I guess what we're suggesting is to develop a really THICK report for an identified sample of key patients. We think this will be important for your analysis. (Evaluation team response, February 9, 2004)

Providing Information

The evaluation team provided information to diary keepers in regard to troubleshooting the diary-writing process, connecting grantees with the people who could help them with problems (e.g., reported budget problems, trouble with survey software), as well as information in the form of analysis, questions, and references to articles. This is exemplified in the following excerpt:

In this entry, we responded to several diary entries from this research team. This project had a practice facilitator working with each intervention practice to implement an improvement that involved charting whether patients received "five A's" (ask, advise, agree, assist, arrange) counseling for smoking, diet, physical activity, and/or risky drinking behaviors). In this entry, we reported on an emergent theme from their diary entries, one that had important implications for their intervention.

> Thank you all for your diary entries. This project provides you with tremendous opportunity to learn. One thing that we've been observing from your fieldnotes is this: Your intervention has a lot of face validity, but it seems you may be struggling to get practices to make system changes.
>
> One place where this manifests itself is with the physician liaison's difficulty recruiting physicians/practices into the study. The physician liaison asked several questions (mostly rhetorical) in her

diary entry about recruitment (i.e. is it a design issue? would it be better accepted if we did it differently) As you search for answers to these very important questions, we were wondering if it might not be useful to talk with the people who are resistant or dropping out of the study. Why were they hesitant to join the study? If you decide to do this kind of debriefing, we would suggest doing it one-on-one rather than in a focus group.

Another place where we observed this kind of struggle manifesting itself is in your notes about working with practices to make a plan for change. Based on your experiences working with practices, is it difficult to find ways to connect different groups of people? Are there ways of engaging multiple stakeholders in making decisions about what to do, so that the change is one that the system totally supports? Is it possible to do this when you (as a research team) come in with a somewhat focused agenda regarding what you aim to improve? What happens when this is not aligned with what the practice sees and or wants to improve?

These are not easy questions to answer. In fact, we were wondering if you're reaching a point in your project where it might be useful to have evaluation team retreat to begin reflecting on these issues and your next steps in this project (as well as future work). If you consider this possibility, it might be useful to include some of the practice members participating in your intervention as well as maybe some of those who declined or dropped out. Their input may be very valuable.

Also, we're attaching a paper what we developed out of Kurt Stange's study that looks at quality improvement and practice change. We don't know if it will be useful to you or not, but here it is (FYI it's in press at Journal of Healthcare Management).

Keep up the great work with the diaries, The Evaluation Team. (Evaluation team response to Project 16 diary entries, February 9, 2004)

Emotional Support

This diary entry was made by the health coach in this project. Her training, in large part, occurred on a real-time basis. That is, after some initial training, she worked with patients, audiotaping these counseling sessions to review later with her trainer. These tapes were also considered data, and as a result, she and her team would listen to them together. The audiotapes were transcribed. Here, she reported her experience when reviewing one transcript.

Today I am reading a transcript of an interview I had with a patient. I find my behavior in the interaction appalling. From the standpoint of Motivational Interviewing, I am way off course. I direct the interaction by using an article called 10 Ideas for Eating Healthy with a patient who is functionally illiterate. I conduct the discussion, as a teacher would run a traditional tutorial. Even as a teacher I am alarmed at how directive I am with this patient. Just because a patient can't read doesn't mean I need to deliver the material from an article in such a condescending manner. My intention had been to provide information to a patient who had expressed interest in learning about what constitutes healthy eating. But, I hover over her. The transcript speaks for itself. Professional development is imbedded in seeing my works on the page. Also, I dread anyone else counting the infractions because I feel embarrassed at how directive I am during that session. Habits for over 20 years of professionalism may be as hard for me to alter, as the patients' eating habits are for them. I am a person who embraces growth and change, at least consciously and conceptually. Yet, I see my habits of interacting as those of an intellectual snob. It takes so much of my energy to gear my language to suit the clients. I pride myself in meeting people where they are in their process. But my slant is so ego inflated that I find it disturbing. (Project 6 diary entry, June 17, 2004)

Thanks for the diary entry. As I read it, I can't help but think about how hard you are being on yourself. I know I've said this before. I hope (and encourage you) to share the insights you are sharing here with your group. I know you are posting them publicly, but I don't know how much your team uses this site. Maybe you want to talk about these issues with them, if you haven't already? . . . I have to say I am curious about the interaction you describe with this patient. Working with a person who does not read, particularly when you have an article or written

materials to share (this is the core of your intervention—written materials) poses a particular set of problems for you and the patient. These are probably not easily overcome, even for the seasoned health coach. (Evaluation team response, June 17, 2004)

Responses to Queries From the Evaluators

As we show above, we responded to diary postings with requests for updates, as well as with responses that sought clarification, additional information, insights, experiences, and reflection. In large part, our responses were designed to ask questions that thereby made subsequent postings (responses) from diary keepers relevant and elicited further elaboration on important implementation issues. Our analysis of the diary entries suggests that these types of questions were quite successful in eliciting subsequent postings from investigative teams. Seventy-three percent of the diary entries we posted that requested updates, clarifications, or elaborations received responses from diary keepers (n =139).

The temporal pattern seen in Figure 1 also supports our claim that interacting with diary keepers encouraged postings. After April 2004, we reduced the frequency of our reminders to diary keepers. Many projects were well under way, and diary contributions were substantial, so we transitioned into a single-case analysis mode in which all available data for a project (e.g., diaries, grant applications, interview and site visit notes, communications, and available survey data) were examined in greater detail. During this time, reminders for updates and responses to postings were still sent, but with less frequency; greater emphasis was placed on examining the data already gathered. At the same time, the grantees were transitioning from implementation and data collection to data analysis. Both factors likely contributed to the decrease in the number of diary entries posted after April 2004.

Analysis of Online Diary Data

As described above, a "real-time" process analysis was conducted that involved the ongoing iterative process of reading and reflecting on the diary data as they were collected (Miller & Crabtree, 1999). When projects were well under way and diary contributions were substantial, the evaluation team transitioned into a single-case analysis mode in which all available data for a project (e.g., diaries, grant applications, interview and site visit notes, communications, and available survey data) were examined in greater detail. This analysis proceeded iteratively and involved an immersion-crystallization approach (Borkan, 1999; Crabtree & Miller, 1999).

First, data were examined to identify overarching, organizing themes. As a team, we reflected on data collected for each project team, discussing original diary entries as well as the notes we generated during our real-time analysis of these data. Subsequently, team members were identified to "take the lead" on a project to identify, describe, and articulate project themes via the development of a preliminary report. Descriptive preliminary summary reports containing extensive quotes from a project's diary were created. These reports were then used to conduct an in-depth cross-case comparison to identify cross-cutting themes (Borkan, 1999; Crabtree & Miller, 1999; Rogers, 2003). To accomplish this, each preliminary report was read independently, looking for common patterns across projects and working to reach consensus in regard to the key implementation lessons. This involved reexamining relevant data within and across projects when discrepancies arose, corresponding with grantees to collect additional data to confirm or refute insights or themes, particularly when themes were present in one project but absent in others.

Table 3
Findings or Emergent Themes From the Analysis of Online Diary Data

- Practices and patients enthusiastically respond to interventions that provide an additional health behavior change resource; practices eagerly refer patients to this resource, and patient recruitment is easy, with referrals often exceeding what research teams can offer. The data suggest that many patients want someone to talk with when undertaking a health behavior change, and when given options, patients choose intervention approaches that facilitate interaction with a counselor or coach over those that are self-guided.

- Although physician extenders relieve practices of the work involved in facilitating and supporting health behavior change in patients, resources are needed to financially support physician extenders and provide extensive and continuous training, and patients and extenders would benefit from access to a local care team (e.g., clinicians, psychologists, social workers) for follow-up, consultation, and referral for treatment of issues that surface during counseling sessions (e.g., depression).

- Developing tools that rely on computer-based technologies requires the early involvement of experts (e.g., computer programmers, designers) to not only design, develop, and customize these tools but also work with the research team to develop realistic timelines that include time for pilot- and beta-testing. Integrating a new tool or approach into a primary care practice (computer based or otherwise) requires a good understanding of the practice systems. The collection of practice-level data aimed at identifying systems of organization and routine care processes in practices would help researchers tailor their tools to better fit the practice setting.

- Although research teams displayed flexibility when tailoring interventions to practices, this process was commonly problem focused and reactive. There is little evidence to suggest the use of a formal organizational change model to proactively guide these efforts. Using a change model proactively, in some cases, may have led to more successful implementation efforts.

- Our data suggested that several participating PBRNs, particularly those with long histories of successful PBRN research, had well-developed strategies for generating enthusiasm for participation in studies and managing the research projects conducted in their PBRNs. There was evidence that this extensive research experience, as well as a history of conducting projects with finite endpoints (e.g., card studies and chart audit surveys), may have socialized research teams and member practices into a "project mentality," treating interventions as finite research "projects" that have definable endpoints rather than improvements that may become a permanent part of the practice organizational design. Fostering this kind of project approach or project mentality may well be counterproductive if a study seeks to stimulate the practice to make sustained changes to their existing care processes. In fact, there were a number of diary entries that appeared to set up an expectation among physicians that the goal of the research is to enroll a set amount of patients and that this was all that was expected for participation.

Source: Adapted from Cohen, Tallia, Crabtree, & Young (2005) with permission from American Academy of Family Physicians.
Note: PBRN = practice-based research network.

At the culmination of Round 1, a final report was prepared for each investigative team that included an analysis and synthesis of our findings. These reports were presented to PIs prior to our meeting with them at a closing convocation attended by representatives from each project. Feedback from research team members indicated not only that our analyses were useful but that our interpretations of their implementation experiences were in line with their own understanding of these events. This provided a member-checking function and a level of validation of our analyses.

Findings from the analysis of Prescription for Health diary data are summarized in Table 3 and reported in more detail elsewhere (Cohen, Tallia, Crabtree, & Young, 2005). As Table 3 shows, analysis of diary data provided important insights into the implementation of health behavior change interventions in the primary care setting.

Discussion

The most valuable evaluations are tailored to meet the knowledge needs of the programs being evaluated. In some cases, measuring the outcomes associated with a program may be a sufficient evaluation goal. In other cases, in which understanding the complexity of the implementation process is essential to evaluating the feasibility, transferability, and sustainability of the interventions or improvements being tested, the evaluation of outcome measures alone may be inadequate. Although qualitative methods have been shown to be appropriate for assessing such complexity (Miller, McDaniel, Crabtree, & Stange, 2001), these methods need adaptation to overcome barriers such as the number and dispersion of study sites often associated with evaluation efforts. The online diaries we developed appear to be a useful method for accessing and collecting in-depth implementation insights while mitigating barriers of distance and dispersion common in evaluation.

Benefits of Online Diaries

The advantage of online diaries as described here is the ability to approximate the diary interview method (Corti, 1993), in which diary entries are followed by detailed interviews of respondents. In our evaluation, the best of the online diaries simulated this process by permitting follow-up over time. The evaluation team could follow the evolution of implementation and the direction of implementers' reflections and follow up with diary keepers by posting questions that elicited more detailed accounts of crucial experiences and observations. This process, in the best cases, encouraged and yielded "thick" descriptions (Geertz, 1973) of events from those diary keepers not accustomed to this type of writing.

In addition to getting research team members to record their observations and experiences, the online diaries encouraged diary keepers to find small amounts of time to reflect on their intervention experiences. The online diaries offered the possibility to create a small reflective space where diary keepers could log on, making brief diary entries at their convenience. Diary keepers did this knowing that their research team members and evaluation team members would read these entries and engage in reflective dialogues with them without the time involved in fostering face-to-face interaction. Although we have not studied the implications of this interactive reflective process in detail, we believe this to have been a valuable process for many of the research team members. There is anecdotal evidence to suggest that comments from the evaluation team as well as the dialogue that occurred among research team members fostered learning and enhanced the direction and thinking of project team members. Future research should investigate the extent to which team reflection and interaction with evaluators via the online diary shaped the interventions under study and the implications this may have.

The online diary method also allows evaluation teams the ability to moderate the challenge of retrospective recall. Past research into primary care practice change and improvement suggests that small, everyday issues such as the difficulties getting computers and PDAs to "talk" to each other, the process involved in making a referral to a physician extender, and the time and flow of conducting a health risk assessment with patients can make or break the implementation of an intervention in this setting. Although these mundane challenges are addressed by research teams on a daily basis and therefore may be taken for granted, they are crucial to understanding the implementation of an intervention and its potential feasibility and sustainability.

Recall bias often limits access to the mundane, which tends to fade from awareness unless someone prompts people to retrieve it from memory (Bolger, Davis, & Rafaeli, 2003). Diaries have been used effectively in a variety of settings to collect data when retrospective recall

would bias reporting or make it incomplete (Bolger et al., 2003; Corti, 1993; Hoppe, Gillmore, & Valadez, 2000). Compared with retrospective reports, diaries may yield more accurate estimates of activities (Robinson & Bostrom, 1994).

Online diaries moderated the effects of retrospective recall by encouraging research team members to reflect on and share their experiences at short intervals. Most diary keepers made entries every 2 weeks. This interval seemed to balance the need to minimize the diary-keeping burden, while choosing a period of time in which mundane implementation experiences would still be memorable and reportable via the online diary. The diary entry excerpts shared in this article suggest that diary keepers were able to recall and record the more mundane details of implementation.

Online diaries also allow evaluation teams to engage with research team members in a way that builds rapport and collect information and insights. This may be used to conduct more focused and productive site visits with research teams. This latter benefit was unanticipated at the conception of this study. It is also worth noting that at the end of the program period, several of the better diary-keeping teams discovered that they had quite a bit of interesting text from which to draw for publications and grant proposals. These teams used the evaluation team as consultants or "auditors" for preliminary, independent analysis of their diary data. This was another important benefit of the online diary method.

Limitations of the Online Diary Method

One weakness of the online diary method in the context of Prescription for Health was the issue of compliance. This is a familiar problem for a wide variety of investigators that use diary formats. As Bolger et al. (2003) noted, compliance problems affect both the number of entries and also the validity of responses. In addition, our experiences using online project diaries in the current context suggests that lack of compliance can affect the completeness and consistency of information and the quality of introspection about implementation.

There are ways to mitigate compliance problems. In Round 2 of Prescription for Health, we remedied this problem in two ways. First, grantees were informed that the diaries were a condition of their award, as a part of evaluation activities. Second, we were in a better position in Round 2 to show how the diaries offere significant advantages to the diary keepers as well as to the evaluators. We communicated this to diary keepers in a number of ways, including presentations of cross-cutting preliminary findings from the online diaries at Prescription for Health grantee meetings and through the responses we posted to the diaries themselves. We created opportunities to highlight to diary keepers how important areas of inquiry could be better understood by observation and note keeping in the diary room. Our early assessment of these efforts suggests that these steps have increased compliance with the diary-writing effort.

A second limitation of the diary method is the difficulty of linking diary data to other evaluation data collected. The online diaries were conducted as part of a multimethod evaluation that included conducting a number of site visits and collecting practice-level data through the implementation of two surveys. One survey was designed to ascertain practice "demographic" information, and the other collected information about the organizational character of each practice. Although these methods provided data that complemented the online diaries, we struggled during the analysis phase to integrate these data sources. We have made two changes in our online diary-keeping process to help foster greater integration among data sources in Round 2 of Prescription for Health. First, all of our instruments require that research team members consistently use the same number to identify practices participating in their study. In addition to using this practice identification number when completing surveys, we have asked diary keepers to use these numbers when referring to practices in their

diary entries. This, we anticipate, will allow us to connect observations reported regarding practices in the diary entries with practice-level data collected by surveys and site visits.

Second, although online diaries provide insights into implementation process, there were inconsistencies in how individual practices' implementation experiences were reported. In an attempt to collected more consistent practice-level observations via the online diaries, we are requiring two check-in points using a template to guide the diary keepers' practice-level observations. This template mixes Likert-type scale practice assessment questions with open-ended questions that ask respondents to support their ratings with observations of the practice. For example the item "Staff members of this practice very frequently appear to be overwhelmed by work demands" (rated from *strongly agree* to *strongly disagree*) is followed by an open-ended item: "Please explain what led you to this rating. Provide concrete examples and observations where possible." One template must be completed for each practice participating in the study. This template offers a specific focus and framework for reporting practice-level observations and experiences. We anticipate this will result in more consistent collection of observational data and yield a better understanding of participating practices. We will be able to integrate these observations with other observations from the diaries, as well as information reported via our practice-level surveys.

A third limitation of the online diary method concerns the composition of the team implementing the online diaries. Our evaluation team was composed of multiple people, all of whom are experienced researchers, two of whom have experience in qualitative research methods, and one of whom is an extremely well-known qualitative researcher. Our expertise lent a great deal of credibility to our project and allowed us to function as evaluators, auditors, and consultants to the funded projects. Our experience with methods of naturalistic inquiry, practice change, and practice improvement also allowed us to analyze and respond to the diary entries in ways that elicited depth and richness around important practice implementation issues. The composition of the evaluation team may be an important part of this type of evaluation. Further research is needed to assess the importance of this on the diary-keeping process and to examine how those with less experience in collecting observational data might be trained to implement an online diary.

Conclusions

Interactive online diaries are a novel approach for evaluating project implementation and provide real-time communication between evaluation staff members and those implementing a program. Evaluation teams can guide the lines of inquiry and ensure that data are captured as implementation develops. When used together with conventional evaluation strategies, interactive online diaries foster in-depth insights into project implementation, including understanding the challenges the program staff members confronted and the solutions they developed. Interactive online diaries also can help evaluators address challenges such as self-reporting bias, documenting project evolution, and capturing implementers' ongoing insights as they develop. These insights might otherwise be lost to the evaluation process.

The time and effort involved in collecting online diary data are intensive compared with other methods used for evaluation purposes, but may be well worth the effort. Online diaries are not appropriate for all evaluations. It is crucial that those involved in evaluation design carefully consider the goals of the evaluation. If collecting in-depth process data over time is essential to understanding the value of a program, online diaries may be an appropriate method to consider.

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