



Workflow Redesign: A Model for California Clinics

Introduction

Patient flow, particularly initial patient access and cycle time, is crucial to community clinic practice efficiency and capacity, which in turn affects revenue and provider and patient satisfaction.¹ As a clinic improves patient access, it increases the timeliness of patient care, and thus may improve outcomes, and in some cases the odds that a patient will receive care at all. Balancing appointment supply and demand, and establishing and managing provider panels, can increase access and improve practice efficiency and patient satisfaction. Moreover, effective panels and resulting continuity can strengthen prevention efforts, improve outcomes for patients with diseases that can be detected early, and help manage chronic conditions through regular monitoring.

Improved access and practice efficiency, and resulting clinical improvement, depend on factors specific to each clinic—such as goals and priorities, physician preferences, and patient population—which together constitute a particular practice system. While there are many approaches a clinic might take to address individual aspects of practice efficiency, meaningful practice redesign requires a thorough understanding of the practice's patient care processes and identification of practice-specific strategies for improving efficiency. Such practice redesign requires a multi-component approach, which can be enabled and enhanced by the application of a comprehensive, field-tested framework for change.

In 2007, the California Primary Care Association (CPCA), funded by the federal Bureau of Primary Health Care and facilitated by Mark Murray and Associates, launched the Optimizing Primary Care Collaborative (OPCC) as a one-year learning project. The collaborative, with 21 community clinic teams, was designed to reduce patient flow delays in primary care settings and to improve clinical care. Following the first year's work, in 2008 the same partners organized a second OPCC, with additional funding from the California HealthCare Foundation (CHCF). A total of 24 community health clinics from California and Arizona participated in the 2008 OPCC. The collaborative used a learning community framework to help clinic teams set goals, collect data, and measure effects.

Upon completion of OPCC in 2009, CHCF supported an evaluation of its methods and outcomes by White Mountain Research Associates (White Mountain). The evaluation found that the level of improvement varied among clinic sites, but that there was marked overall success: Virtually all participants saw improvements, with 88 percent of teams reporting positive changes in at least two access and patient satisfaction measures, and 63 percent reporting positive changes in three or more of these measures. The greatest improvements were in access and cycle time. Most clinics also undertook the calculating of practitioner panels, to help manage both provider efficiency and patient care. Notably, virtually all teams reported that the OPCC framework introduced them to new approaches to system

improvement or helped them to use known redesign approaches in a more strategic way.

The evaluation provided clear evidence that the OPCC learning community framework is a viable vehicle for introducing not just particular patient flow improvements but true system redesign. The value of adopting strategies used by peers, and of troubleshooting issues in a learning community environment, was broadly reported by the participating teams. The findings suggest that the OPCC framework has strong potential as a model for other community clinics throughout California. This issue brief summarizes the OPCC project, and is intended to complement the evaluation report prepared by White Mountain and published simultaneously with this brief.²

Project Background

Strategies for Patient Flow Improvement

It is well-understood among researchers that improving patient flow is key to increasing medical practice efficiency and capacity, which can both generate more revenue and improve patient and provider satisfaction.³ Better patient flow depends on practice-specific factors, including goals and priorities, provider practice style, and patient characteristics.⁴ Collaborative improvement strategies, using “whole system” approaches to optimize patient flow, have been implemented across a range of health care settings.⁵

Practice-specific strategies that can optimize patient flow might involve shaping demand, matching supply and demand, and increasing capacity, and could include:

- Reducing the number of appointment types;
- Reducing backlog;
- Extending return visit intervals (within a clinically appropriate range);
- Predicting and anticipating patient needs;

- Managing bottlenecks;
- Maximizing visit activity to reduce future demand;
- Supplementing face-to-face visits through other media (e.g., telephone advice and triage, email, and group visits);
- Expanding the role of nurses and non-clinician staff, thus reducing non-clinical tasks performed by physicians;
- Balancing capacity and demand on a daily, weekly, and long-term basis; and
- Synchronizing patients, information, and resources within the office.⁶

Collaboratives to Facilitate System Redesign

In 2007, CPCA launched the first OPCC initiative, supported by the federal Bureau of Primary Health Care and facilitated by Mark Murray and Associates. This was a one-year learning collaborative designed to reduce delays in access to care and at appointments, to improve clinical care with a special focus on cancer, and to improve provider and staff satisfaction. A total of 21 teams from the Health Disparities Collaborative’s Pacific West Cluster region completed the 2007 OPCC.⁷

OPCC was offered again, beginning in April 2008, with goals similar to the 2007 collaborative. Each 2008 OPCC team was charged with creating three project aims within three categories of primary care optimization: access, office efficiency, and clinical care. OPCC Phase I activities, with 16 community health clinic teams (15 from California, one from Arizona), included a pre-work teleconference cycle, five “learning sessions” (the first and last of which were in-person meetings), five one-hour monthly team teleconferences, and team reports. Phase II activities, with eight teams, also included quarterly team calls and reports. During the course of the collaborative, team improvements were documented regarding access, office efficiency, and clinical care, as well as team efforts

regarding program sustainability and internal spread of the redesign processes.

In 2009, CHCF funded White Mountain to conduct an evaluation of OPCC to document program successes, challenges faced, and evidence of sustainability and spread. Both quantitative and qualitative methods were used to evaluate the learning community, including success in improving access, office efficiency, and clinical care outcomes. A combination of surveys and interviews with community clinic staff was used to document OPCC's longer-term impact on system-level sustainability and on the spread of change strategies, tools, and resources to other clinic sites.

Project Findings

The framework for OPCC, after the establishment of teams, included setting goals, systematically collecting data, implementing and testing changes, and measuring impact, including the potential for sustainability. These components were applied to three areas of practice concern: access to care, office efficiency, and clinical care.

Goal Setting

At the beginning of the collaborative, each team developed a set of goals regarding access, efficiency, and clinical care. Each team determined for itself those goals it believed were both important and attainable for its practice.

Access to Care and Office Efficiency Goals

Improving access to care, in the context of OPCC, meant reducing the time between a patient's request for an appointment and the availability of one. For "short" appointments with a primary care provider (PCP), many teams sought to achieve same- or next-day access for their patients, while a few teams set their access goal at between two and five days. Some teams extended the time-frame for "long" appointments, and a few teams concentrated their access aims on increasing after-hours appointments. Some teams also worked on reducing patient no-shows.

Another aspect of improving access addressed in the collaborative was balancing supply (the number of appointment slots each provider could offer per time period) and demand (the number of patient visits requested per time period). A practice with more supply than demand wastes resources and loses revenue by failing to make use of available provider time. On the other hand, a practice with greater demand than supply experiences access delays, which affect patient satisfaction and, ultimately, health.

Many teams also sought to identify and/or determine the proper size of provider panels. This was seen as contributing to overall efficiency and also as a way for the practice to better assess and track clinical care, especially for periodic screenings and chronic disease care. Establishing provider panels can improve patient satisfaction, help define workloads, predict patient demand, reveal differences in provider productivity, improve clinical outcomes, and reduce costs. Some teams also sought to improve appointment continuity (patients being seen by their regular PCP), which was considerably easier to achieve once provider panels were determined.

The other most prominent OPCC office efficiency goal was reduction in cycle time—the time between a patient's arrival at and departure from an office appointment. About half of the teams aimed to reduce overall cycle times to an hour or less, while other teams aimed for 45 minutes. Some teams targeted specific aspects of their practice for this goal (e.g., pediatric appointments).

Clinical Care Goals

Clinical care goals varied considerably, in both focus and target populations, across the various OPCC teams. They included increases in the overall rate of patients who received:

- Screenings for various cancers (mammograms; pap tests; prostate examinations; colon examinations);
- Vaccinations;

- LDL screening; and
- Diabetes management (inclusion in a registry; follow-up; retinal screening; A1c reduction; and self-management).

Data Collection and Reporting

Because OPCC teams varied in organizational structure, staff and management support, available resources, patient population, and other organizational and team-specific factors, data collection and reporting differed considerably across teams and measures. As shown in Figure 1, the number of teams reporting on specific measures ranged from only 19 percent for continuity to 94 percent for access, with only 25 percent reporting on clinical measures. However, at least half of all teams reported on five tracking measures, and 80 percent of teams reported on four.

Performance Measures

Within the data collection limitations noted above, significant improvements were documented for access to care and cycle time. Almost every OPCC team was able to document positive changes in at least one access measure. Of the 16 teams that reported data across both Phase I and Phase II of the 2008 OPCC, 14 teams (88 percent) reported positive changes in at least two

access measures, and ten teams (63 percent) reported positive changes in three or more of these measures. Positive changes in either short or long next available appointments were reported by 75 percent of teams.

Over half of reporting teams from 2008 documented reductions in cycle time. Also notably, 81 percent of teams were able to calculate their panel sizes, and some of these were able to determine the most appropriate panel size for their individual providers. The results, by category, can be summarized as follows:

Access. Three-fourths of all teams reporting access data substantially reduced access time, as measured by the days to the third next available appointment, for either short or long appointment types, and across multiple provider panels.

Cycle Time. Of 11 teams reporting on average cycle time, six demonstrated overall decreases and/or decreases for at least one of their clinics. Additionally, six teams reported cycle times of 60 minutes or less.

Supply/Demand. Few teams managed to provide data on changes in supply and demand ratio, but of the ten teams that initially documented greater supply than demand (out of 13 teams reporting on the issue), five teams were able to achieve a better balance.

Figure 1. OPCC Teams Overall Performance, by Measurement Category, 2008–09

	ACCESS TO CARE AVERAGE DELAY*	CYCLE TIME	SUPPLY/ DEMAND	NO-SHOW RATE	CONTINUITY	CLINICAL MEASURES	PANEL SIZE†
Teams Reporting on Measure	Phase I: 92% Phase II: 100% Overall: 94%	Phase I: 75% Phase II: 50% Overall: 69%	Phase I: 83% Phase II: 75% Overall: 81%	Phase I: 83% Phase II: 100% Overall: 88%	Phase I: 17% Phase II: 25% Overall: 19%	Phase I: 25% Phase II: 25% Overall: 25%	Phase I: 83% Phase II: 75% Overall: 81%
Teams Reporting Positive Changes in Measure <small>(as % of all teams reporting data)</small>	Phase I: 75% Phase II: 75% Overall: 75%	Phase I: 56% Phase II: 50% Overall: 55%	Insufficient data	Phase I: 50% Phase II: 50% Overall: 50%	Phase I: >90% (1 of 2 teams) Phase II: >90% (1 of 1 team)	No overall pattern, but each of four teams reporting had improvement in at least one measure or from one provider.	Phase I: 83% Phase II: 75% Overall: 81%

*Third next available appointment—short or long.
†Team documentation of its panel sizes.

No-Show Rate. Of 14 teams tracking no-show rates, 50 percent reported an improvement.

Clinical Measures. Only four teams reported on clinical measures but each of those showed improvement in at least one measure. The improvements included one overall team increase and one provider increase in the rate of mammogram screenings, one provider increase in pap test rates, one clinic increase in colon cancer screenings, and one clinic increase in provider-patient discussions about cancer screenings.

Panel Size. Most teams had not calculated individual provider panels before the beginning of OPCC, let alone determined what “ideal” provider panel sizes would be for their individual providers. So, the fact that 13 of 16 teams (81 percent) were able to calculate individual panel sizes during the course of the collaborative indicated significant progress. Four of those teams also managed to determine appropriate, practice-specific panel sizes for their individual providers.

OPCC Impact: Responses from Team Leaders

Post-project interviews were conducted with clinic team leaders from both the 2007 and 2008 collaboratives. The interviews sought information on how specific strategies for change affected operational processes and efficiencies. The interviews also sought responses on the participating clinics’ plans for sustaining positive changes. Finally, the interviews sought feedback regarding the collaborative methods used by the project staff.

A Web-based survey also was conducted with team leaders and other core team members from OPCC. The survey focused primarily on the extent to which participants used the various strategies for redesigning access, office efficiency, and clinical care as taught through the collaborative. The survey also documented perceived benefits gained and barriers encountered in implementing the various redesign strategies.

Specific Change Strategies

Team leaders were asked about specific system-level change strategies introduced at their sites through the collaboratives. In particular, they were asked which strategies were most and least successful, and which ones they continue to use. The following change strategies were reported to be the most successful and continue to be used.

Regularizing Broad Collaboration

All teams sought, in various ways, to institute broadly collaborative elements into their regular practice processes. Some teams had group “huddles” each morning to sort out the day’s priorities, while others held regular, brief (half-hour) cross-disciplinary meetings to generate ideas about what works and what does not, as a way to engage staff in providing routine feedback and developing creative solutions. A number of groups also focused on using a team-based approach to care, which included pairing medical assistants (MA) with providers, and sometimes creating “teamlets” pairing a physician, nurse practitioner, or MA with a health coach.

Establishing and Managing Panels

Defining panels is a crucial practice redesign strategy, since panel size ultimately can affect patient satisfaction, help define workload, predict patient demand, reveal differences in provider productivity, improve clinical outcomes, and reduce costs (by improving continuity and outcomes, and by appropriately reducing return visit intervals).⁸ During the course of OPCC, participating groups began to measure and manage panels—both a practice panel (the group’s patients) and individual provider panels, making certain that all patients were assigned to a particular provider. Some groups instituted the “four-cut” method both to establish individual provider panels and to make a patient assignment for each specific visit.⁹ Making every clinician responsible for his/her own patients can enable clinics to measure both how those patients are doing and how the clinician is performing.

Reducing Backlog

Almost all OPCC groups introduced backlog reduction strategies. Some added more appointments each day, by starting earlier or ending later, or by adding more provider “sessions” (scheduled work periods, usually half-days) per week. Each of these strategies, it should be noted, requires increased staff support. Some teams implemented an “open access” system, leaving appointment slots available so that patients could have a same-day visit with their assigned provider. And some teams implemented a reminder system for managing “fail-to-keep” appointments.

Balancing Supply and Demand

Groups instituted a variety of methods to reduce imbalances in supply and demand. Some teams reduced the number of appointment types, since each added appointment type creates a channel of appointments, some of which can become clogged while others remain unfilled. Other teams learned to balance daily supply and demand through contingency scheduling plans. These plans included building in scheduling flexibility (not trying to schedule the same number of appointments for each day) and modifying supply based on recognition of and response to patient population demand patterns (day-of-the-week and seasonal). Other contingency planning involved post-vacation scheduling—leaving blocks of open time for a provider returning from vacation to see those patients who deferred appointments during the provider’s absence.

Some teams addressed supply and demand variations by seeking to reduce demand. One method for doing so was to lengthen the time between return visits (within medically appropriate time-frames), thus allowing for shorter access times for other panel patients and permitting more patients overall to be served. Another demand-reduction method used by some teams was that of improving continuity (which, in turn, depended on establishment of provider panels). If patients are seen by someone other than their regular provider, they are more

likely to seek an additional appointment to see “their” provider, even if that is medically unnecessary. Thus, lack of continuity increases demand-per-patient, which ultimately limits the total number of patients who can be served by that clinic.

Pay-Per-Visit Can Work Against Making Changes

Most OPCC-participating clinics are reimbursed on a pay-per-visit basis. As a result, there can appear to be a conflict between some changes in office processes (e.g., reducing visits-per-patient and shifting tasks from clinicians whose time is billable to non-clinicians) and the financial interests of the clinic. Thus some clinic leaders among OPCC participants initially resisted certain changes that in the short-run reduced the number of billable patient visits. This resistance can be overcome, however, when leadership understands that if the number of visits-per-patient and the amount of provider non-clinical time are both reduced, the clinic can use the provider time it gains to expand its patient population. By so doing, it can again reach just as many or more billable visits while even better meeting its mission by serving more patients overall.

Changing Phone Triage

A number of teams changed their phone triage process so that every patient who requests a same-day appointment gets one without first having to go through a nurse. Patients were still offered the option of first speaking with a triage nurse, and a large proportion of patients chose to do so, in many cases obviating the need for an appointment. Some teams also set up a patient call-back process that triaged urgent and non-urgent phone messages, thereby eliminating many phone interruptions for staff and resulting in more timely return calls.

Developing Cycle Efficiencies

Teams developed various ways to increase office efficiency, which not only moved patients through the visit cycle more quickly but also freed up time to provide faster initial patient access and, ultimately, allowed

clinicians—physicians and nurse practitioners—to serve more patients. These efficiency methods included:

- Performing care team workload analysis, which examines the work clinicians have been doing and should be doing, then ensuring that each staff member handles tasks that reach the full level of their competency, freeing others from tasks that they are no longer needed to perform;
- Shifting non-clinical work away from clinicians, such as by training MAs to do most patient education;
- Conducting interruption studies, which analyze the nature and frequency of interruptions to clinical visits, in order to reduce those interruptions;
- Flow-mapping office processes (e.g., intake, laboratory and specialty referral, prescription refills) in order to spot and rectify inefficiencies;
- Standardizing patient examination rooms, so that any clinician can see any patient in any available room, and feel comfortable doing so; and
- Improving visit preparation by making sure that examination rooms are stocked with necessary supplies, including those particular to the specific visit, and by checking the patient chart to ensure that all necessary patient information (e.g., lab results, notes from previous visits) is included.

Unexpected Consequences

Teams were asked about unintended or unexpected consequences—positive or negative—that resulted from their redesign processes. Several teams reported that they had anticipated resistance from providers but instead found little such resistance, and provider satisfaction improved. A number of teams also noted a positive impact at the staff level, including a reduction in staff turnover. One team reported less nonproductive work as a result of increased continuity of care (for example, less responding to calls from upset patients); similarly, another team noted that its receptionist's overall phone

time with patients was dramatically reduced. A number of teams reported that their MAs expressed greater work satisfaction due to their pairing exclusively with one provider; these teams reported that providers, too, were pleased with the effects of pairing. Finally, during the course of the collaboration, one team rediscovered the value of a chronic disease management system and regained its focus on making it operational.

Only one team reported continuing negative consequences, which included resistance to provider panels and difficulty establishing a stable support team around one provider. This team is trying different strategies to overcome these barriers and to create a more functional team.

Sustainability and Spread

Teams from the 2007 collaborative were asked whether they had developed specific plans for sustaining the gains they had made through implementation of their practice redesign strategies. Most teams reported having struggled with developing sustainability plans, due to some or all of the following: competing program priorities; lack of commitment from management; staff shortage or turnover; limited infrastructure; difficulty in creating stable and/or cross-disciplinary teams; lack of an automated data collection system; lack of staff buy-in; and resistance to change in role definitions. Also, most Phase I teams from the 2008 OPCC reported that it was simply too early in the process (at the time the interviews were conducted) for them to think about sustainability.

Some teams did manage to make efforts toward sustainability. These included embedding the redesign strategies, from the beginning of the collaborative, into their daily, routine care operations and expanding them beyond the OPCC project. Other efforts regarding sustainability involved obtaining solid institutional support, including from the medical director and chief operating officer. Another consisted of maintaining vigilance around measurement (particularly with panel

size), permitting ongoing course corrections based on the data collected, with an eye toward framing the redesign as part of the routine quality improvement process.

Teams were also asked whether they had spread their practice redesign within their health care delivery system—deeper within the improvement team, to the practice team from the improvement team, or from the practice or improvement team to an entirely new entity. All teams reported that they were interested in spreading the lessons learned, but few were in a position to spread full-scale to other sites. This may be due, in part, to the relatively short follow-up period between the time when 2007 OPCC teams completed the collaborative and the time when the follow-up interviews were completed (about eight months) and the even shorter follow-up for 2008 Phase I OPCC teams (about four months). However, almost all the teams reported “testing the waters” with other clinics to seek provider and senior management buy-in, and a few teams reported drafting plans for spread to some of their larger clinics and/or making presentations to other clinics about their practice redesign efforts. A couple of teams reported success in spreading particular redesign elements (such as calculating provider panels and improving cycle time) to other sites within their own health care system. Teams also have been strategically integrating some redesign elements into their

overall quality improvement processes as a vehicle for spread to other sites.

Feedback from Program “Dropouts”

The evaluators interviewed team leaders from clinics that began but did not complete the 2007 or 2008 OPCC (Phase I) collaborative. When asked about their primary reasons for not continuing in the collaborative, all cited the non-readiness of their clinic to participate and/or organizational factors; that is, none pointed to the perceived value of the collaborative itself. In fact, most of these dropout teams were enthusiastic about the collaborative’s potential; one of these teams reported that it had adopted several strategies suggested by the collaborative and hoped to participate in the future.

One team cited, as its reason for dropping out, its simultaneous participation in another, similar collaborative and an inability to sustain both. Another clinic dropped out because its practice management system was not equipped to accomplish the required data collection, and adding the necessary resources to do so would have severely strained its already critical financial situation. Other team leaders similarly noted that the timing was wrong for their clinic given its financial instability and/or lack of resources needed to fully participate.

What Would You Do Differently?

Regarding the collaborative’s impact on access and office efficiency, the teams were asked what they would do differently if they had the chance to begin the collaborative again. The following are selected responses from team leaders:

- “Took a long time to adopt the teamlet approach and would have liked to do this sooner.”
- “Unless there is buy-in from leadership, it isn’t worth investing in this.”
- “Need to make sure the infrastructure is there first.”
- “Involve more MAs on the team to get their investment.”
- “Would streamline data collection.”
- “Would have gone to an easier/smaller site first to get a ‘win’.”
- “Try to get panel size right off the bat.”
- “Would have involved a few more people—key support staff (receptionist, MA)—other than just the management staff to immerse clinic in OPCC culture.”

Leaders from teams that dropped out were also asked what they would have done differently. One team leader reported that, before committing to the project, she would have more carefully reviewed her clinic's finances because of the collaborative's "resource-intensive approach."

Follow-Up Web Survey Confirmed Results

2008 OPCC teams participated in a Web-based survey following completion of the collaborative, to supplement the direct interviews conducted. The survey focused on adoption of practice redesign strategies, the benefits and barriers to continued use of these strategies, and the overall impact on target outcomes. All 2008 Phase I teams participated in the survey, as did all but one team from Phase II. Respondents included both those who were involved in direct patient care and those in other roles (e.g., administration, management, data support, IT, and quality improvement).

New Design Strategies. Most teams reported that the design strategies they used were either entirely new to them or an expansion of existing strategies in new directions. This supports the results from the interviews, which indicated that many teams were introduced to new approaches to improving clinical care at the systems level and/or used redesign approaches that they had previously adopted but in a more strategic way.

Implementation Effort. Most teams reported that it was moderately difficult to implement the redesign strategies and time-consuming for providers and staff to learn how to use them. Nonetheless, two-thirds of team leaders reported that it was "extremely likely" their teams would continue to track measures to monitor improvements in access and office efficiency, with only 4 percent of respondents unsure whether their site would continue with measures monitoring.

The Business Case. About one-fourth of team leaders reported moderate to strong financial improvements as a result of OPCC. As for specific analyses related to financial benefits from redesign, 58 percent of teams reported working on the business case during their OPCC time, with another 12 percent reporting that they had begun to work on it following OPCC.

Conclusion

OPCC is one of only a handful of comprehensive programs designed to help health care delivery systems provide timely and efficient patient care by way of system redesign. Through OPCC, CPCA project staff and its consultants were able to offer a unique set of skills to community health clinics for transforming and leveraging the way they deliver care to their patients. OPCC helped clinics offer patients same-day appointments, standardize appointment lengths, complete work in a timely fashion, and develop appropriate panel sizes so providers could effectively manage their patients. Together, these redesign elements helped increase patient and provider satisfaction and improve patient health.

Although the success of OPCC was variable across sites, virtually all participating clinics documented positive changes in at least one patient flow measure for some or all of their provider teams. These findings are particularly noteworthy given the organizational instability and economic uncertainty faced by a number of these community clinics.

The results of post-project interviews and surveys suggest that the learning community framework is a particularly appropriate vehicle for introducing practice teams to improvement models. The value of adopting strategies used by peers, and of troubleshooting issues in a true learning community environment, was a consistent theme in reports from the participating teams. There were varied opinions about the most effective program strategies, but teams consistently gave high ratings to the measures tracking, to the interactive and in-person learning sessions, and generally to the assistance received from the consultants. Ideally (budgets allowing), teams would have liked more one-on-one tailored and on-site technical assistance, a comprehensive strategy for including senior leaders in the redesign process, and more assistance achieving "buy-in" from other providers and staff.

On the whole, the positive response by participants in the OPCC projects suggests that this collaborative framework has strong potential for a larger rollout to other community clinics. Such a large-scale effort, with appropriate funding levels and organizational support, could serve as a catalyst for a more general shift in the way health care is provided in community health centers and clinics throughout California.

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ABOUT THE FOUNDATION

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ENDNOTES

1. Access to care is used in this brief to refer to the time between a patient's request for an appointment and the appointment offered. Cycle time means the time from patient check-in to completion of the medical visit.
2. White Mountain Research Associates, L.L.C. (S. Emont and N. Emont). *Evaluation of the Optimizing Primary Care Collaborative*. California HealthCare Foundation. 2010.
3. See, e.g., Nolan, T.W., M.W. Schall, D.W. Berwick, and J. Roessner. *Guide to Reducing Delays and Waiting Times*. Institute for Healthcare Improvement, 1996; Backer, L.A. "Strategies for Better Patient Flow and Cycle Time." *Family Practice Management*, June 2002; Institute for Healthcare Improvement. *Optimizing Patient Flow: Moving*

Patients Smoothly through Acute Care Settings. Innovation Series, 2003.

4. Backer, L.A., 2002; Institute for Healthcare Improvement, 2003.
5. Walley, P., K. Silvester, and R. Steyn. Sept/Oct 2006. "Managing Variation in Demand: Lessons from the UK National Health Service." *Journal of Healthcare Management* 51 (5); 309–22.
6. Institute for Healthcare Improvement. *Improving Access and Efficiency in Specialty Practices*. Breakthrough Series. October 2004; Boushon, B., L. Provost, J. Gagnon, and P. Carver. 2006. "Using a Virtual Breakthrough Series Collaborative to Improve Access in Primary Care." *Journal on Quality and Patient Safety* 32 (10); 573–84.
7. The 2007 OPCC included clinic teams from Alaska, Arizona, California, Hawaii, Idaho, Nevada, Oregon, and Washington.
8. Murray, M., M. Davies, and B. Boushon. April 2007. "Panel Size: How Many Patients Can One Doctor Manage?" *Family Practice Management*, American Academy of Family Physicians, 44–51.
9. Under the four-cut method, a patient who has seen only one provider for all previous visits is assigned to that provider for his or her current visit. A patient who has seen more than one provider is assigned to the provider he or she has seen most often. A patient who has seen multiple providers equally is assigned to the provider who performed the patient's most recent physical or health check. Remaining patients, who have not had a sentinel exam, are assigned to the provider they saw most recently.