In January 2004, the Institute for Healthcare Improvement (IHI) launched an initiative designed to develop and test an exclusively Internet- and phone-based system of adult learning dedicated to improving access in primary care. Called the “Virtual Breakthrough Series,” or VBTS, the initiative was modeled on the methodology used in IHI’s Breakthrough Series (BTS) for collaborative improvement. The VBTS was designed as a demonstration project, not a research project, to show that it was feasible to conduct a Breakthrough Series collaborative virtually and produce outcomes comparable to those of a traditional BTS, at substantially reduced cost. The specific outcomes to be measured were reductions in waiting time both for and at an appointment in physician office practices.

The project’s ultimate aim was to improve outcomes and quality of care by using IHI’s BTS collaborative model, which is designed to rapidly diffuse knowledge and spread best practices on the basis of an “all teach, all learn” philosophy—but at greatly reduced cost and to a much broader audience than can feasibly be reached through the traditional face-to-face BTS model. A traditional, face-to-face IHI collaborative is a short-term (6–15-month) learning-and-action project that brings together a large number of teams (usually 20 to 40) from hospitals or clinics to achieve rapid, significant improvement in a specific area. Each team typically consists of three members who attend three learning sessions (LSs), with an additional two or three members who work on improvements in their local organization. The total number of people participating in collaborative LSs has ranged from 40 to more than 700.
Since 1995, IHI has sponsored more than 50 BTS collaboratives, on dozens of topics, involving more than 2,000 teams from more than 1,000 health care organizations. A growing body of literature has considered the effectiveness of the BTS model, with some studies finding some significant improvements, while other studies find little or no improvement.2–8 Although IHI has demonstrated that the BTS collaborative model can be a valuable change agent,3,10 the model’s design of face-to-face meetings carries inherent limitations. A BTS collaborative is both expensive and time-consuming, with the result that many individuals and organizations cannot participate. The virtual BTS (VBTS) was a test of a new model to determine if an entirely electronic version of the BTS collaborative, using Internet and phone, would be feasible and could produce outcomes comparable to those of a traditional, face-to-face BTS. Further, we predicted that a VBTS would significantly reduce costs to participating hospitals and clinics through conservation of staff time, elimination of travel costs, and reduction in tuition costs. We also predicted that the speed, immediacy, and convenience of synchronous and asynchronous distance communication would allow for knowledge transfer and spread of change concepts comparable to a traditional BTS.

The main outcome measure for the VBTS, as for traditional BTS collaboratives working on reduction in waiting times, was the average number of days to third-next-available appointment. The ultimate aim of the VBTS was to decrease delays both for and at appointments, by using IHI’s BTS methodology, but at greatly reduced cost and involving many more organizations than can feasibly be reached through a traditional face-to-face model. This article reports the results of the demonstration project and its implications.

Developing the Collaborative Topic

The topic chosen for the VBTS prototype was “improving access and office efficiency in primary care” (defined as a system in which patients can be seen by their primary care provider when they choose, even on the same day). Because four traditional national BTS Collaboratives had already addressed this topic, IHI had established materials already in place, as well as benchmark results for comparison.11,12 Teams in the VBTS tested specific change ideas within the Access and Efficiency Change Package, a collection of 11 change concepts that have been shown to improve outcomes in previous Collaboratives (Table 1, pages 575–576).

Participating Organizations

Twenty health care organizations were selected to participate in the VBTS. Organizations were selected on the basis of documented characteristics of successful improvement teams,13 including senior leadership involvement, plans to spread the improvement, access to appropriate technology, and assurance that improving access is a primary goal of the organization. IHI’s usual fees for this initial prototype were covered by a grant from the Alfred P. Sloan Foundation.

BTS Model

In the traditional BTS model, participants learn about the topic in face-to-face LSs from faculty experts, who present a vision for ideal care and specific changes necessary to achieve the ideal. A change package is designed to improve performance in the local system, and an improvement advisor guides team members through the steps needed to test, adapt, and implement the changes. Teams test these process changes using the Model for Improvement4 during action periods between the LSs. Teams report on and share their experiences, both successes and failures, during monthly phone calls and at the second and third LSs. Each team documents, measures, and reports on its progress monthly through a shared Internet site. Faculty and staff also make monthly assessments of each team’s progress. The final results of collaborative work are presented at a National Congress and at other meetings.

VBTS Model

To adapt the classic BTS model to a virtual model, we conducted a literature and expert review of e-learning. We incorporated lessons about issues such as the best way to prepare faculty, deliver content, and conduct sessions in the virtual environment15,16 into the VBTS design.

Technology Issues

Selecting and implementing new technologies was the first step in transforming the face-to-face BTS into a virtual model (Figure 1, page 577). We evaluated...
Understand Supply and Demand
Understanding the patterns of both supply and demand on a weekly, monthly, or seasonal basis allows for focused efforts to shape demand to match supply, and/or increase (or decrease) supply during periods of high (or low) demand. Measure supply, measure demand, and then compare the two.

Reduce the Backlog
Backlog consists of appointments on the future schedule that have been put off due to lack of space on the schedule to do this work sooner; working down the backlog recalibrates the system to improve access. To reduce and eliminate backlog, first measure it, and then create and use a deliberate backlog reduction plan (e.g., temporarily add appointment slots; temporarily add staff and/or schedule additional overtime hours; determine if patient needs can be met without an office visit).

Reduce Appointment Types
Practices with improved access make no distinction between urgent and routine appointments because the goal is to do today's work today. When the provider is present the patient is seen, and when the provider is absent the patient is offered the choice of an appointment the next time the provider is present or today with another care team member. All other special appointment types, such as those for disease entity or physicals by age groups, can be eliminated.

Develop Contingency Plans
Even if the supply and demand in a clinic are generally in balance, there will be times when there is a surge in demand (demand outstrips supply) that is either expected (e.g., flu season) or unexpected (e.g., many walk-ins on one day). Expected and unexpected variations in supply can also occur (e.g., vacations or emergency sick leaves). To avoid disrupting the normal flow of clinic practice, clinics agree upon a standard protocol to follow for each event, including clear responsibilities for each staff member. Examples include a policy for late patients; scripts for common occurrences; plans for vacations and sudden provider absences.

Reduce Demand
One key way to improve access is to reduce unnecessary demand for various services so that those patients needing a particular service can receive it in a timely way.

Examples of reducing demand include creating alternatives to one-on-one visits; managing and decreasing no-show appointments; increasing the interval for return appointments; using "max-packing" to address as many patient needs as possible during the visit in order to reduce future work.

Optimize the Care Team to Increase Supply
The clinic has to understand the types of services it provides, and then decide who should be involved in the work and how the work should be divided among the care team. This approach begins with demand and adjusts supply to meet the demand (within the limits of clinic resources). This is different from an approach that sets an arbitrary care team mix and then tries to fit the demand into the supply. Examples include cross-training staff; reducing variation in provider styles; ensuring that clinicians and staff work to their highest level of experience and skills; establishing standard protocols to move work away from providers.

Balance Supply and Demand for Non-Appointment Work
The supply and demand for non-appointment work (messages, refills, lab review, etc.) needs to be balanced within the timeframe of a day. First, measure the non-appointment work by category for each type of staff member (provider, nurse, medical assistant, receptionist, other), and then compare it to the amount of work time that the worker can deliver. If any one worker has more work (demand) than they can do (supply) each day, that work will either not get done or it will get pushed off to the future. Next, shape the demand, match the appropriate supply to the demand, and work on improving the process.

Synchronize Patient, Provider, and Information
To eliminate delays and smooth the flow for both providers and patients during an office visit, the patient and provider should be in the exam room along with all needed equipment and information (including test results, preventive care screens, etc.) at the stated appointment time. Some specific ideas for synchronizing the appointment processes include start every appointment on time; ensure that all needed information, equipment, and supplies are available for visit; use rooming criteria check sheets to ensure the patient is prepared for the provider (e.g., “shoes off” for diabetes patients).

continued
several types of collaboration software, with the intention of supporting not only the first VBTS but also other IHI projects with Web conferencing needs. The Web communication company we selected provides integrated telephony (audio is available through the Web connection), as well as video- and audio-conferencing capabilities.

IHI’s extranet, a secure section of IHI’s Web site, was used as a central platform on which teams could enter data and track their measures, as well as post qualitative, narrative descriptions of their work (for example, changes tested, barriers experienced), and share presentations, team storyboards, and other documents. A collaborative listserv (e-mail distribution list) was established for both administrative communication and to facilitate content discussion. In addition, the change package, with detailed explanation, was made available on IHI.org.

Planning

The VBTS planning group consisted of three faculty members, chosen for their experience and expertise in the topic; four IHI staff members (authors); and one IHI staff member, who provided technology expertise. As is done for all collaboratives, the planning group developed a project charter that specified the goals, measures, and expectations of participating teams and IHI; conducted informational phone calls with prospective teams; developed the collaborative time line and monthly review and assessment schedule; and designed the collaborative pre-work. Selection criteria for the organizations to be chosen were refined to ensure the greatest likelihood of success, and teams participated in an electronic application process on the basis of these criteria—which included a willingness to participate in a test of the virtual model.

IHI developed measurement strategies to evaluate the progress and results of the participating sites, as well as the measures that would evaluate the VBTSs’s success. Experts in distance learning worked with the faculty to adapt the traditional curriculum to a virtual one, and faculty and staff received training and coaching in online teaching and learning.

Conducting the Collaborative

Pre-Launch Activities

In the pre-launch period (the six weeks before the first virtual LS), IHI conducted several activities with the teams that were designed to build community, including training on the IHI extranet and Web communication technologies, presentation of Web-based storyboards, and clinic walkthrough summaries.
In the storyboard activity, teams created graphics presentation using a template that described the organizations, the team members and their roles, information on the numbers of patients that would be affected by their improvement work, and data on current delays at appointments and days until third-next-available appointment. Teams posted their storyboards on the extranet for other teams to review and then presented them during the all-team storyboard call.

Teams also completed a clinic walk-through, in which members “became” patients with a specified clinical issue, making an appointment, driving to the clinic, finding a parking space, filling out forms, and waiting for a provider—in short, experiencing each step of the process patients go through at the local site. Team members documented their ideas for improvement, as well as their feelings about the experience. These results were posted on the extranet for access by all teams.

All these activities were aimed at helping teams get to know one another, identifying other teams with similar data and challenges, increasing comfort with the VBTS technology, introducing the models and measurement system, and setting expectations. A particular focus of the pre-launch period was building the collaborative community culture that develops at traditional, face-to-face LSs.

Learning Sessions

The first LS was presented via the Internet and telephone for five hours daily for three days, for a total of 15 content hours. The agenda included much interaction during lectures, with frequent breaks and breakout time for teams to work together with faculty assistance. Faculty and teams used the Web-based chat modality extensively during the session, giving faculty who were not formally presenting an opportunity to clarify or augment pertinent points and giving team members an opportunity to ask questions. During the first LS, teams learned about (1) the online collaborative technology and the implications of distance collaboration and (2) the change package and Model for Improvement. Each team developed an aim statement and set specific goals for reduction in delays (both for and at appointments) and determined the initial changes they would test.

The schedule for the second LS was modified based on feedback from the first session. This session was held on two consecutive six-hour days and included more interaction among teams and between teams and faculty; longer breaks; and more time built in between activities. The third LS was similar to the second but was characterized by more team input (as opposed to faculty presentation) than the second LS. As in a traditional BTS, the VBTS used an “all teach, all learn” environment, in which the faculty selected the top two performing teams to present their tests and data.

Because the LSs were offered online, requiring no travel outside of the community, many organizations set up conference rooms where additional members of the organization beyond the immediate improvement team could attend these important events. The conference room was set up with a speaker phone, computer, projector, and screen, allowing many more people to hear, see, and participate in the session. These participants included additional members of the direct care team,
members of new teams to whom spread of the improvements was intended, and senior leadership. While some of these additional participants attended the entire session, others selected the sessions that were of particular interest to them, and simply went to the conference room at the time when the session that they were most interested in was being presented.

Action Periods

The action periods, which occur between LSs, were generally the same as those that take place in a traditional BTS. In the VBTS, they included additional synchronous work (via large all-collaborative conference calls and small-group cluster phone calls, held monthly, led by faculty, and organized by time zone). The smaller groups allowed teams to work on solving specific problems with input from others. Asynchronous work also took place (for example, listserv communication, discussion groups, team reports on changes and measures). Content information about how to improve access was available to the teams at IHI.org. Discussion groups, project management tools, and reporting tools were located on IHI's extranet, where each team maintained their own data and their own team home page.

Each month, teams submitted a report including data for each of their key measures, along with an update on changes tested and implemented, barriers encountered, and lessons learned. Faculty read and analyzed the reports, and responded with coaching via the listserv and through small-group cluster calls. Teams were encouraged to read each other's reports, looking for tips, ideas, and common experiences.

National Congress

The final event of the VBTS was a virtual National Congress, held in June 2005, at which teams shared their learning with the public. Public members received materials via e-mail and were given an electronic link to use to participate in the Congress. Registrants were encouraged to test their ability to connect days to weeks in advance by participating in an electronic session set up for that purpose. On the day of the event, the public connected via phone and Internet to the Web communication company’s platform and participated in plenary and breakout sessions, as well as the chat room.

Measures

Measures designed to evaluate the success of the VBTS fell into the following two main categories:

- Access measures, which showed whether the changes the teams made on site led to reductions in delays for and at appointments (for example, number of days to third-next-available appointment, cycle time, daily supply and demand, and panel size).
- VBTS versus BTS comparison measures, which were used to evaluate the relative success of the VBTS compared with either the target for any BTS or with a traditional face-to-face BTS collaborative. A 1-to-5 Improvement Assessment Scale (IAS) was used; the scale helps collaborative directors and improvement advisors determine how well teams are doing in meeting improvement goals and implementing changes. (A detailed description of the assessment scale is provided in Table 2, page 579.) IHI, which developed the IAS in 1998, has used it to assess all teams participating in its BTS collaborative projects.

Results

Seventeen of the initial 20 organizations completed the collaborative. Three organizations elected to drop out of the collaborative, owing to a change in senior leadership, a change in day-to-day leadership, and competing priorities.

Days to Third-Next-Available Appointment

Average days to third-next-available appointment is a measure used by teams to track performance at the individual clinician level. In the VBTS collaborative, this measure fell from 23 days to 10 days during 12 months (60% reduction), as shown in Figure 2 (page 580). The Shewhart statistical process control (SPC) chart shown in this figure, with limits calculated to the end of the collaborative, indicates that this improvement trend was significant. A comparison of the same measure in a traditional BTS collaborative that IHI also conducted in 2004–2005 (Figure 3, page 581) shows a decline from 60 days at the start to just under 10 days during a 9-month period (83% reduction). Although the starting points for days to third-next-available appointment for teams in the VBTS and BTS differ considerably, more research is necessary to ascertain the reasons for this difference; it may have reflected the selection of organizations more
experienced in improvement for the VBTS. However, teams in both the VBTS and the BTS made significant improvements, with reduction in days to third-next-available appointment to an average of about 10 days.

**IAS Assessments**

As shown in Figure 4 (page 582), average monthly VBTS assessments were comparable to those in the traditional BTS.

A follow-up study completed six months after the VBTS’s conclusion showed that of the 10 teams that had achieved significant improvement (assessment of ≥ 4) by the collaborative’s end, 7 had maintained their gains or improved their results six months later (Table 3, page 582). Figure 2 shows average waiting time data for the six months after the conclusion of the VBTS (July through December 2005).

**Discussion**

This demonstration project shows that the VBTS collaborative achieved results that are comparable to those of a traditional collaborative on the same topic and at significantly reduced costs for both the participating and host organizations. However, further testing and refinement of the VBTS model, as well as ongoing comparison with traditional face-to-face collaboratives should help establish over time the conditions under which the VBTS can continue to achieve similar results to the traditional method. For example, in this first test of the VBTS, the number of teams was limited to 20, and faculty and staff with proven track records were selected to lead this work. In addition, the topic and measures selected were mature and robust. We recommend that future tests of the VBTS add more wide-ranging conditions such as a greater number of teams, less-experienced faculty, and use of a

<table>
<thead>
<tr>
<th>Assessment/Description</th>
<th>Definition</th>
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<tbody>
<tr>
<td>1 Forming team</td>
<td>Team is formed; target population is identified; aim is determined; and baseline measurement begins.</td>
</tr>
<tr>
<td>1.5 Planning for the project begins</td>
<td>Team is meeting, discussion is occurring. Plans for the project are made.</td>
</tr>
<tr>
<td>2 Activity, but no changes</td>
<td>Team actively engaged in development, research, discussion but no changes are tested.</td>
</tr>
<tr>
<td>2.5 Changes tested, but no improvement</td>
<td>Components of the model being tested but no improvement in measures. Data on key measures are reported.</td>
</tr>
<tr>
<td>3 Modest improvement</td>
<td>Initial test cycles are completed and implementation begun for several components. Evidence of moderate improvement in process measures (daily demand, daily capacity, team member/patient continuity).</td>
</tr>
<tr>
<td>3.5 Improvement</td>
<td>Some improvement in outcome measures (third-next-available appointment and office visit cycle time); process measures of daily demand, daily capacity, and team member/patient continuity continuing to improve; Plan-Do-Study-Act test cycles on all components of the change package; changes implemented for many components of the change package.</td>
</tr>
<tr>
<td>4 Significant improvement</td>
<td>Most components of the change package are implemented for the population of focus. Evidence of sustained improvement in outcome measures (third-next-available appointment and office visit cycle time); halfway toward accomplishing all of the goals. Plans for spread, consistent with the team’s aims, are prepared.</td>
</tr>
<tr>
<td>4.5 Sustainable improvement</td>
<td>Sustained improvement in most outcome measures (third-next-available appointment, future capacity, and office visit cycle time); 75% of goals achieved; plans for spread of the changes are in place.</td>
</tr>
<tr>
<td>5 Outstanding sustainable results</td>
<td>All components of the change package implemented, all goals of the aim are accomplished, outcome measures at national benchmark levels, and spread to a larger population begins.</td>
</tr>
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</table>
less-developed topic. By testing the VBTS under broader conditions, an even more robust model should emerge.

Because the results from this first VBTS are comparable to those of the traditional BTS model on the same topic, the business impact is based on potential cost savings not benefits. For a participating organization, the expected savings in direct costs that can be realized from participation in a VBTS and not having to travel to sessions is $11,979 (Table 4, page 582). These potential differences in cost are associated with the three LSs (since the action periods and other work do not differ between the models). Reductions in costs are achieved by not using staff time to travel to LSs and by not incurring travel costs. Newly incurred costs, however, are those associated with hosting the LSs at the participant’s home site and with long-distance phone charges for the LSs.

On the basis of the results from this initial demonstration, future VBTS collaboratives will require some modifications to maximize the likelihood of success and sustained improvement. Although the Web communication technology was well received by most of the participants, support is needed at local sites, both from information technology (IT) and from senior leadership. IT support must be available, especially before and at the first LS, to ensure access and connectivity. For example, some participants were unable to get online or did not know that they could not dial long distance from their conference room. For Web-based sessions, IHI now implements connection testing, in which participants can test their audio and Web connection within a certain time interval before the actual session. Streamlining of the electronic platforms for reporting is also needed (for both VBTS and traditional BTS) to eliminate potential confusion and thus to increase reporting and participation. For example, participants were required to enter data on the extranet as well as complete a monthly progress report spreadsheet and upload this document to the extranet, which some participants felt was a bit extraneous.

Changes at the participating organizations, which are needed to help ensure success, are the same as those identified in traditional collaboratives, such as a greater involvement by senior leadership, stable staffing and balanced supply (clinician availability) and demand (for services), and a committed core group and an organized team. Even though the participants do not travel to the collaborative, time must be built in to the providers’ schedules to ensure their availability when the sessions take place; clinic and personnel schedules and team members’
workloads must be modified to accommodate these sessions and to prevent team members from being distracted to attend to local “urgent matters.” Participation in distance learning may be more “invisible” and thus seem less important than traveling to meetings. The time and effort commitment for the participants are the same, except for actual travel time, but this may not be readily apparent to those outside the team.

The key success factors for teams in the VBTS, which are similar to those identified for teams in a traditional BTS, include the following:

■ Senior leader oversight, commitment, and involvement
■ High degree of physician involvement and championship of the improvements
■ Vigilance and attention to detail from the day-to-day manager of this work
■ Diligent testing and implementation of a high percentage of the change concepts
■ The ability to modify supply to balance demand during the collaborative’s time frame
■ Deliberate collection and analysis of data

On the basis of these results, IHI is considering VBTS collaboratives for future projects. Larger groups will be enrolled to assess scalability, and additional topic areas will be tested to ensure generalizability. Although IHI has more to learn from further testing, we hope that other health care organizations will test the virtual approach to conduct their own collaboratives to provide more insights into the virtual model’s performance.

Two VBTS Teams

Sidebar 1 (pages 583–584) highlights the work of two of the more successful teams in the VBTS. The biggest factor separating the best teams from others was the ability to balance supply and demand—that is, to make the changes necessary to bring the demand for their services in line with the supply (mostly clinicians) available. Some teams were not able to make this happen completely within the collaborative’s time period. Without this, it is impossible to greatly reduce or maintain the core outcome measure of days to third-next-available appointment.

Figure 3. The averages of this metric across participating clinicians, taken monthly, are shown. For clinicians taking multiple measurements per month, those values were aggregated (averaged) within that month before the general aggregation was made. Some clinicians did not have data for some months in the measurement period, but those clinicians’ data were still included in the aggregate for periods in which they had data. Data are drawn from IHI’s Improving Access and Efficiency in Primary Care BTS, October 2004–June 2005. BTS, Breakthrough Series.

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Figure 4. Average monthly assessments were comparable between the Virtual Breakthrough Series (VBTS) and the traditional BTS. IAS, Improvement Assessment Scale.

Table 3. Improvement Assessment Scale (IAS) Results for Virtual Breakthrough Series Teams After Six Months*

<table>
<thead>
<tr>
<th>&lt; 4 IAS assessment at end of Collaborative</th>
<th>≥ 4 IAS assessment at end of Collaborative</th>
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</thead>
<tbody>
<tr>
<td>&lt; 4 IAS assessment six months later</td>
<td>3 (43%)</td>
</tr>
<tr>
<td>Still no breakthrough, but continued to improve</td>
<td></td>
</tr>
<tr>
<td>≥ 4 IAS assessment six months later</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Breakthrough after end</td>
<td></td>
</tr>
<tr>
<td>Did not report six months later</td>
<td>4 (57%)</td>
</tr>
<tr>
<td>Total teams</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>1 (10%)</td>
</tr>
</tbody>
</table>

* *4* refers to the assessment in Table 3.

Table 4. Direct Cost Savings in a Virtual Breakthrough Series (VBTS) and a Traditional BTS

<table>
<thead>
<tr>
<th>Cost Impact</th>
<th>Changes in Participant Costs</th>
<th>Participant Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>–</td>
<td>Travel costs to learning session (LS)</td>
<td>~$9,000</td>
</tr>
<tr>
<td>–</td>
<td>Time saved from not traveling to LS</td>
<td>~$3,600</td>
</tr>
<tr>
<td>+</td>
<td>Supplies and printing costs for participants at site</td>
<td>+$405</td>
</tr>
<tr>
<td>+</td>
<td>Long-distance phone charges for LS ($0.08–$0.05/min, &lt; $200)</td>
<td>+$216</td>
</tr>
<tr>
<td></td>
<td>Net change in participant costs</td>
<td>~$11,979</td>
</tr>
</tbody>
</table>

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The pilot began with an initial group of five family practice physicians. Marshfield Clinic tested and eventually implemented the following changes, among others:

- **Synchronize patient, provider, and information:** Start every appointment on time by asking patients to arrive 15 minutes before a scheduled appointment.

- **Understand supply and demand:** The fact that Monday had much more demand than supply resulted in a change to a provider's usual day off.

- **Obtain physician and staff buy-in:** Set expectations, trained staff on the concepts of advanced access, and shared data to display positive changes for patients.

- **Assign physician champion:** Instrumental in coaching and communicating with providers the need for change and how it would benefit them.

- **Reduce the backlog:** Physicians created backlog reduction plans.

- **Use future capacity chart** to determine when several providers would be out of the office on a given day and created contingency plan.

- **Create and implemented service agreements** between primary care and specialty care offices, including urology, ENT, nephrology, and orthopedics.

After achieving same-day access, Marshfield Clinic spread the changes to all 12 family practice physicians in the clinic, plus the pediatrician. The initiative was adopted systemwide, with spread to other departments in the clinic (internal medicine, ophthalmology, urology, and surgery).

### Results

Days to third-next-available appointment decreased in all departments (data not shown). In family practice and pediatrics, waiting times fell from a high of 24 days to 1 day (Figure, below).

**PracticePartners, Greater Portland Medical Group, Westbrook, Maine**

PracticePartners was a five-provider practice, including four physicians and one physician assistant. The physician assistant left the practice and was not replaced, which caused many access issues with appointment scheduling, telephones, and so on. PracticePartners tested and eventually implemented the following changes, among others:

- **Understand and balance supply and demand:** Provider schedules are reviewed during morning huddles and are used to anticipate needs and prevent constraints. Trends are identified and schedules are altered to satisfy demand. For example, high-demand days have fewer physicals to accommodate acute visits. Physicals are scheduled on days with lower call volume.

- **Reduce the backlog:** Providers created backlog reduction plans.

- **Reduce appointment types:** Appointment types were reduced to three types: OV15 (sick visits, follow-up visits); OV30 (male physical exams, new patients); and OV45 (female physical exams with Pap tests).
Develop contingency plans: Freeze providers’ schedules for two weeks after doctors are on service at the hospital or on vacation. Open up first week during the last week that the provider is on service, filling in prebook slots as patients call. Open up second week the first week that the provider is back. Office also freezes some prebook slots in remaining providers’ schedules to accommodate patients of the provider who is away.

Results
The practice’s goal was to reduce days to third-next-available appointment to less than 1 day (when the project started, average time was 30–35 days). By the end of the VBTS, the number of days to the third-next-available appointment for all providers was less than two days (Figure, left; each line represents one physician).

The practice found that the key to success was buy-in from all physicians and staff.

References