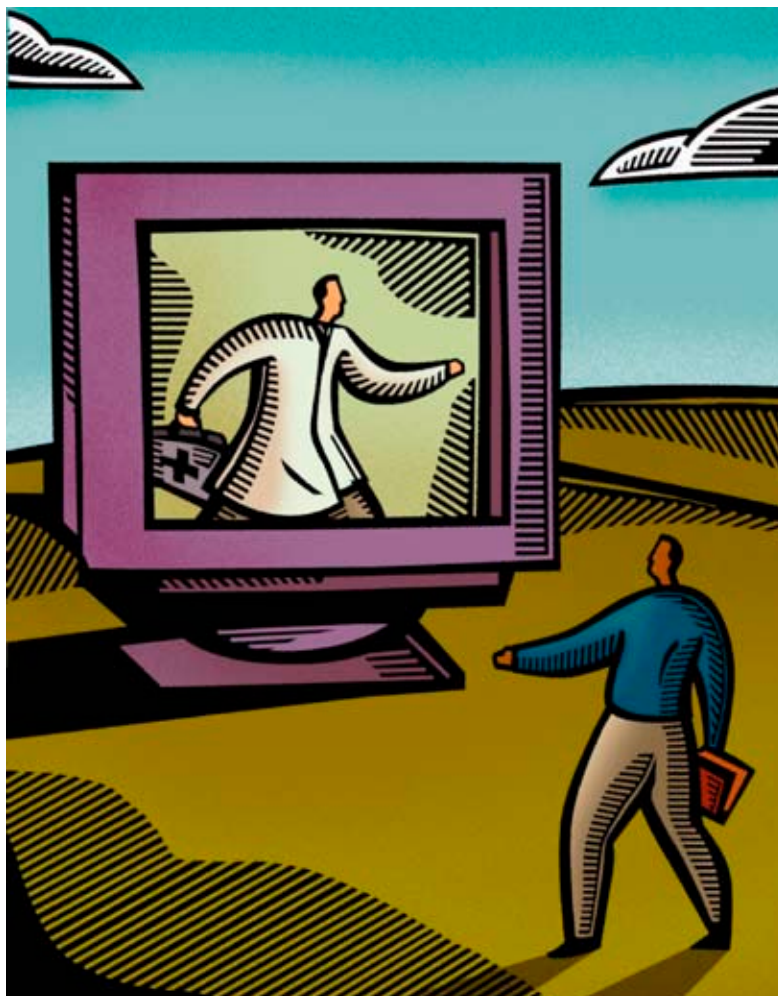# Telehealth in Community Clinics:
Three Case Studies in Implementation

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About the Authors

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Executive Summary

In 2007, the California HealthCare Foundation funded the "Telemedicine in Clinics" project with the goal of exploring the role that a telehealth system could play in improving access to specialty care services for patients of community health centers (CHCs). The three CHCs participating in the project — Open Door Community Health Centers (Open Door) based in Arcata, La Clínica de La Raza (La Clínica) based in Oakland, and the Southside Coalition of Community Health Centers (Southside) in South Los Angeles — represented three different settings in which to explore the challenges of planning and implementing telehealth programs to improve access to care.

■ Open Door, a rural CHC with nine sites across the north coast of the state, provided 170,000 primary care visits in 2008. Telehealth activities supported under the grant included an upgrade to and expansion of Open Door's extensive, longstanding telehealth infrastructure; specific telehealth expansion supported by the grant included adding a school-based clinic as well as introducing a number of specialty programs at existing sites in areas such as behavioral pediatrics, diabetes education, and psychiatry.

■ La Clínica is an urban/suburban clinic organization with 26 sites across three counties in the East Bay, through which it provided more than 262,000 patient visits in 2008. Under this project, La Clínica launched a store-and-forward teledermatology program at seven sites, its first venture into telehealth.

■ Southside is a network of seven independent organizations in South Los Angeles, all of which serve an urban population. The seven organizations represent 18 community and school-based health centers, and collectively provided 397,000 primary care visits in 2009. Like La Clínica, Southside implemented a teledermatology program at several clinic sites, its first telehealth foray.

The case studies in this report highlight the experience and lessons of each of the three community health organizations as they planned and implemented their telehealth programs. Each case study addresses facilitators and barriers to program implementation and operation, and reports on patient and provider satisfaction.

Each organization's telehealth experience was different. Open Door, building on well-run, existing telehealth infrastructure and on its extensive telehealth experience, was able to launch a number of new telehealth sites and programs. La Clínica was able to successfully implement a teledermatology program that dramatically reduced patient wait times for specialist dermatology care, though implementation took longer than anticipated, financial arrangements with the consulting dermatologist were not optimal, and referrals did not reach anticipated numbers. Southside also implemented a teledermatology program but had some difficulty engaging all of its sites and providers, in part due to the autonomy of each organization within the clinic network and to the lack of adequate telehealth administrative staff.

Despite these different experiences, common themes emerged across clinic settings:

- All of the health centers saw reductions in wait times for patients needing access to specialty care.

- There was high overall patient satisfaction with the telehealth process, and a lack of resistance to the technology use.

- Provider satisfaction was slightly mixed, with Open Door and La Clínica providers strongly supportive of their programs but with some Southside providers resisting implementation or preferring in-person referrals.

- All sites reported significant challenges in managing the workflow and scheduling changes necessary to implement telemedicine, but were able to accomplish the changes through the use of clear protocols, procedures, and workflow charting.

- All three organizations emphasized the importance of a robust (although longer than anticipated) planning phase at the outset of the project.

This case studies report discusses in detail the telehealth experiences of the three health center organizations, and the key lessons learned from those experiences. Published simultaneously with this report are three related papers: *Chronicling an Entry into Telehealth: Open Door Community Health Centers, Financial Analysis of Open Door Community Health Centers' Telemedicine Experience,* and *Financial Analysis of La Clínica de La Raza's Telehealth Experience* (www.chcf.org).

I. Introduction

OVER THE PAST TWO DECADES, TELEHEALTH has become a nationally-championed method for overcoming barriers to access among uninsured and other low-income patients in both urban and rural settings. Also called telemedicine, telehealth is the use of telecommunications technology and specially-adapted equipment to provide health care, health information, and health education across a distance. Telehealth can reduce travel costs and time for both patients and providers, a significant issue where physician-to-patient ratios are inadequate, particularly so with regard to specialists.

With improved health service delivery through telehealth, patients can receive care for acute conditions in a local and familiar setting, timely treatment for medical problems that previously they would have had to wait a long time to receive or perhaps would have forgone entirely (in either case, risking deterioration in their condition), and better management of chronic conditions. Further, by allowing a primary care physician to manage a condition, telehealth can reduce in-person visits to specialists, thereby further decreasing time and costs for patients. It also frequently has the added benefit of raising a primary care physician's skill and experience level in those specialties for which there are telehealth consultations.

Recognizing the potential value of telehealth but at the same time understanding the difficulty many community health centers (CHC) have had in implementing and sustaining such programs, in 2007 the California HealthCare Foundation (CHCF) provided grant funding to assist three very different community clinic organizations in launching or expanding telehealth programs and exploring business models that might lead to sustainability. The three CHCs in California chosen to receive this funding were the Open Door Community Health Centers (Open Door) based in Arcata, La Clínica de La Raza (La Clínica) based in Oakland, and the Southside Coalition of Community Health Centers (Southside) in South Los Angeles. Despite their commonalities — serving primarily uninsured and other low-income patients as Federally Qualified Health Centers (FQHC), and a willingness to embark on telehealth programs to improve specialty care access — these health organizations provided a number of contrasts in terms of their settings, patient demographics, and telehealth experience and ambitions:

■ **Open Door.** Open Door is a rural health center organization with nine sites that serve primarily low-income patients over a vast geographic area in Humboldt and Del Norte Counties in northwest California. Open Door provides family practice, pediatrics, women's health, prenatal and birth, and other services, including some other specialty care. At the time it received 2007 CHCF funding for new telehealth efforts, Open Door already had longstanding, extensive telehealth programs, and with the new grant sought to ambitiously expand these programs in a number of ways.

■ **La Clínica.** La Clínica provides primary care services at 26 urban and suburban sites in Alameda, Contra Costa, and Solano counties. One of the state's largest community-based health centers, La Clínica conducts more than 262,000 patient visits annually (2008), delivering primary care, dental, optical, women's health,

prenatal and postnatal, preventive medicine, health and nutrition education, adolescent care, mental health, behavioral health case management, referral, pharmacy, radiology, and laboratory services. The single telehealth program for specialist dermatology care that La Clínica embarked on with CHCF grant funding was its initial foray into telemedicine.

- **Southside.** Southside is a loosely structured network of autonomous clinics in South Los Angeles. Southside's seven member clinics work collectively, but each clinic ultimately retains independent authority over its practice. Southside's members represent 18 community and school-based health centers that collectively provided 397,000 primary and urgent care encounters to 152,000 unique patients in 2009, including primary care, pediatrics, geriatrics, women's health, urgent care, and prevention, educational, and social services. Before the single dermatology specialty care telehealth program it began with CHCF support, Southside had not provided any telehealth services.

As it turned out, the three community health centers had significantly different experiences with the telehealth programs they implemented with support from CHCF. Open Door was able to leverage its success with ongoing telehealth programs into new telehealth sites, expanded services and infrastructure, and the ability to offer telehealth services to CHCs outside the Open Door network. Even with its long telehealth history, however, Open Door faced significant resistance to one of its new programs when providers were left out of the planning phase. La Clínica, on the other hand, which was new to telehealth, implemented a much more modest, single-purpose program that provided its patients with access to dermatology specialty care

through a combination of telehealth consultations and in-person visits. Southside also limited itself to a single dermatology telehealth program, but had more limited success than La Clínica did in implementing the new service. The experience of each of these organizations, including the aspects of each program that helped and hindered its implementation, is discussed in the following case studies.

II. Open Door Community Health Centers

Background

Founded in 1971, Open Door provides health care to the mostly rural residents of Humboldt and Del Norte Counties and surrounding areas in northwest California. Open Door's nine sites, plus one mobile dental clinic, serve many patients who have limited access to care due to financial, geographical, or social barriers. The services Open Door provides include family practice, pediatrics, women's health, prenatal and birth, family planning, geriatrics, dental care, urgent care, mental and behavioral health, STD testing and counseling, HIV/AIDS care, alternative medicine, health education, and smoking cessation.

At the time it received CHCF funding for new telehealth efforts in 2007, Open Door already had a longstanding, extensive telehealth program. This section offers a brief overview of Open Door's entry into and development of telehealth. For a more comprehensive history of both Open Door and its telehealth experience, see *Chronicling an Entry into Telehealth: Open Door Community Health Centers* (www.chcf.org), published simultaneously with this case study.[1]

Entry into Telehealth

Open Door has been a pioneer in developing telehealth programs. In the late 1990s, Open Door recognized the potential of telehealth to increase access to scarce specialty care, in particular dermatology and psychiatry, to its rural patient population. Open Door's participation in telehealth began through a program sponsored by Blue Cross of California, which donated telehealth equipment and training to many rural health care providers in the state in the 1990s and early 2000s. In 1999,

Open Door began using simple video and computer equipment to connect patients at its Eureka, Arcata, and Crescent City clinics to a variety of specialists at locations ranging from the University of California, Davis, to Cedars-Sinai Medical Center in Los Angeles. Also in 1999, Open Door began to use this equipment to connect with a group of psychiatrists in Santa Rosa, some 200 miles to the south. As with many similar efforts across the country to initiate telehealth programs at that time, however, the lack of reimbursement for telehealth visits from both public and private payers limited the program's success.

Development of the Telehealth and Visiting Specialist Center

By the end of 2005, Open Door was conducting more than 130,000 visits annually across eight clinical sites.[2] Because of this volume and the related need for specialty services, Open Door began evaluating options for expanding specialty care in a way that would be financially sustainable. The result was the Telehealth and Visiting Specialist Center (TVSC), a centralized location for Open Door's telehealth programs and specialty care services. The TVSC opened in Eureka in 2006, intended primarily to centralize costs related to telehealth programs while increasing access to scarce specialty care and decreasing patient and provider travel.

Open Door realized, however, that a clinic dedicated solely to telehealth was unlikely to be financially sustainable. Thus, they conceived of the TVSC as offering both in-person and telehealth consultations, with outside as well as Open Door's own specialists. Open Door now contracts with a number of specialty care providers who offer

both in-person and telehealth care at the TVSC, including cardiology, endocrinology, orthopedics, and pulmonology. Open Door employs its own psychiatrist and diabetes educator (nurse practitioner) to work at the TVSC. Open Door also employs other full-time clinicians who provide both in-person and telehealth consultation but who are not based at the TVSC.

Grants from the federal Health Resources and Services Administration (HRSA) reimburse FQHCs for the cost of care to medically underserved patients.[3] Though these payments do not fully cover the cost of services to uninsured patients, they are crucial to Open Door, 30 percent of whose patient population is uninsured. Open Door also receives a large portion of its reimbursements from Medi-Cal (32 percent of its patient population), and lesser amounts from Medicare, state- and county-funded programs for indigent care, private insurance, and sliding-scale patient self-payments. Each program has unique requirements for eligibility and payment, as well as differing reimbursement rates. Managing these matters of reimbursement is crucial when considering the addition of specialty care (including telehealth), which frequently is more costly than primary care, to a clinic's licensed scope of services. So, in conjunction with building the TVSC, Open Door applied to HRSA to expand its scope of services and to obtain a related adjustment to its Medi-Cal reimbursement rate.[4] For Open Door, the approved new scope of services, which included the higher-cost new telehealth component, and related increased reimbursement rate, was the single most critical factor in the financial success of the TVSC. For an extensive look at the financial issues involved in Open Door's telehealth programs, see *Financial Analysis of Open Door Community Health Centers' Telehealth Experience* (www.chcf.org), published simultaneously with this case study.

The TVSC has allowed Open Door to do more than connect to specialists outside of its organization and outside of its service area. Open Door now has contracts to provide specialty services via telehealth to other organizations across the state, serving as a "hub" site (location of consulting specialist) as well as a "spoke" (location of patient and/or referring provider). As a hub, the TVSC, located in the northwestern corner of California, has provided specialist visits via telehealth to clinics in 14 counties, as far away as Riverside and Imperial counties in the southeastern part of the state.

Expansion of Telehealth Network and Services

Open Door used its 2007 CHCF funding to expand its existing telehealth network, intending to further mitigate certain problems faced by its patient population, including an overall shortage of medical providers, difficult access to specialist care, and limited public transportation. In particular, Open Door wanted to reduce travel for its patients: A patient survey in 2005 found that average travel distance to see a specialist in person was 558 miles round trip, with an average travel time of 12 hours. By expanding its network to include new sites, low-income rural residents (the bulk of Open Door's patients) would have increased access to care through telehealth provided at their Open Door home clinics instead of facing such grueling travel.

Using the CHCF funds, Open Door expanded its network by adding five mobile telehealth carts at five clinic locations, including a school-based clinic.[5] Open Door also purchased five additional provider stations, which increased its capacity to provide specialty encounters.[6] The CHCF funding also enabled Open Door's telehealth infrastructure to grow, expanding programs such as behavioral health, school-based health care, psychiatry, diabetes care,

and HIV/AIDS care, and extending its reach beyond Open Door's own clinics to health centers across the state. The following is a description of these expanded programs.

Pediatric Behavioral Health

Open Door has had significant difficulty in recruiting pediatricians, especially in the area of behavioral health. The Open Door pediatrician with this expertise, based at the Arcata clinic site, had to travel to Crescent City and Willow Creek to see patients, roundtrips of more than three hours and two hours, respectively. The expanded telehealth infrastructure allowed the pediatrician to provide these specialty behavioral consultations from the TVSC, and also to work with pediatricians at remote sites.

Diabetes Management and Education

Its expanded telehealth network allowed Open Door to provide diabetes management and education within its organization, to both patients and its own providers, at remote clinic sites. A nurse practitioner provides both telehealth and in-person encounters from the TVSC. These visits have been well-received by diabetic patients, allowing many of them to avoid long travel that can be not only uncomfortable and inconvenient but also counterproductive to their health management. Open Door saw an immediate positive impact on health outcomes as a result of this telehealth diabetes management and education program. Preliminary data from a small sample (65) of patients seen via the TVSC in the early stages of the program showed improvement in the frequency of low-density lipoprotein testing and screening for diabetic retinopathy, as well as an average two-point decrease (improvement) in hemoglobin A1c levels.

School-Based Primary Care: Blooming Lily Clinic

Telehealth also allowed Open Door to more efficiently deliver primary care services. In 2000, Open Door opened a clinic site in the small town of Smith River, located 90 miles from and more than a two-hour drive north of the clinic's main site in Arcata. In its early stage, providers were seeing an average of only four to six patients per day at the Smith River clinic, but it was viewed by the community as an integral local health resource. Over time, the continuing low number of patient visits made it difficult for Open Door to maintain provider staffing, and in 2007 operations were reduced to one day of service per week.

After extensive discussions with the community and a local elementary school (whose pupils constituted a significant part of the clinic's patient population), an alternative was developed: Using Open Door's new equipment, a telehealth-based clinic was provided to the school during the day and to the wider Smith River community at other times. Now called the Blooming Lily Telemedicine Clinic, this program allows Smith River children to remain on school grounds for their health care visits rather than having someone transport them to a medical appointment in Crescent City, 20 miles north, or in Arcata, 90 miles south. Staffed by a full-time licensed vocational nurse, Blooming Lily is connected via videoconferencing to physicians at Open Door's Del Norte Clinic for remote consultations.

Psychiatry

In 2004, prior to the TVSC, Open Door hired a psychiatrist to serve multiple clinic sites. The provider rotated among these several locations, spending upwards of four hours per day driving between them. While this was a boon to patients, it took its toll on the provider, and after about a year,

citing the stress and strain of this practice dynamic, the psychiatrist left Open Door. In the absence of such multiple-site, in-person services by a specialist, however, it was the patients who had to spend significant time and energy traveling to receive care, if the care was available at all. Thus Open Door decided to at least partially address through telehealth the related problems of patient access and provider availability.

With increased telehealth infrastructure, a new Open Door psychiatrist now sees patients via teleconferencing at the TVSC two hours a week on average, and thus can limit her travel to other Open Door clinics to once a month. This allows patients to receive care based at their own primary care clinic, with the capability to access psychiatric services when necessary to stabilize them and transition their care back to their primary care provider. Telehealth has allowed patients to access the psychiatrist more frequently than if they had to travel to Eureka or wait for the psychiatrist to travel to their home clinic.

Non-Clinical Telehealth Capacity

Open Door has developed its telehealth capacity to go beyond the provision of clinical services. The TVSC has become a remote classroom: The clinic uses the TVSC to provide a six-week training course in Spanish-language interpretation for its health care workers at its remote sites, and its staff psychiatrist has delivered lectures for primary care providers at the other Open Door sites via videoconferencing. Open Door has also used the telehealth equipment to conduct medical staff and administrative meetings across clinic sites. With nine clinics spread across two counties, travel time and expense for in-person meetings are substantial. By decreasing their travel, providers, nurses, and other staff no longer need to use time they would otherwise spend on direct care in order to attend training, planning, or information

sessions. Moreover, there is no need for presenters to repeat trainings or other sessions at multiple sites.

Open Door's medical director also used the telehealth equipment to hold frequent meetings with clinic managers when they rolled out a new electronic health records system across Open Door sites. TVSC telehealth equipment has even allowed Open Door's medical director to remotely provide clinical leadership services on an interim basis to another health center, with a medical director vacancy, in the next county. Open Door's medical director was able to conduct weekly medical staff meetings with the other clinic's providers, supervise quality assurance peer reviews, and provide general supervision.

HIV/AIDS Treatment Program

Open Door has begun conducting telehealth visits as chronic disease management encounters for Open Door's patients living with HIV/AIDS. Open Door's Humboldt clinic has two HIV/AIDS specialists on staff, and the new telehealth equipment has allowed these specialists to connect with patients from two other, distant clinic sites. Before this telehealth service, patients had to drive to Humboldt every three months for care; with telehealth, patients can access care on a more frequent and less restrictive basis, and can do so in the more comfortable setting of their home clinic.

Beyond Current Programs

The TVSC and the telehealth network allow Open Door to continue to add services with only limited added infrastructure and incremental costs. Open Door is about to embark on a new effort to provide pulmonary rehabilitation via telehealth for its patients with chronic respiratory diseases, who now must receive this care at Mad River Community Hospital in Arcata. Given their chronic conditions, frequent travel for in-person therapy is often a great

burden. Under the new program, the patients will be able to present at their local clinic to run through an evaluation during a live video visit, using equipment connected to a pulmonologist and pulmonary rehabilitation coordinator at the TVSC. The patient's regimen will then consist of one to two telehealth visits a week for education, self-management training, and monitoring.

Facilitators and Barriers to Telehealth Implementation

End-User Acceptance

Acceptance of a telehealth program by the providers who are to use it is crucial to its success. For example, an Open Door program to implement telehealth visits for obstetricians at Mad River Community Hospital failed because it was never embraced by the specialists involved. Obstetricians within Open Door's NorthCountry Clinic are often called to attend to deliveries at the Mad River hospital. In that event, patients with a scheduled office visit for one of those obstetricians could be seen by another provider, or return for a rescheduled visit. A provider videoconferencing workstation was installed at the Mad River hospital to allow Open Door obstetricians who had gone there to remotely see their clinic patients who showed up for their office visit, thus reducing the number of patients who saw a different provider and minimizing the rescheduling of office visits for those patients who asked to be seen by the scheduled provider. It turned out, however, that the obstetricians felt that they were using all their time at the hospital productively, and so resisted interrupting their work there for telehealth visits, especially since other providers offered good quality care for the in-clinic patients. Given the obstetricians' resistance, this telehealth arrangement was soon discontinued.

Telehealth Champion

A major facilitator to Open Door's telehealth program is their full-time telemedicine development director (TDD). While most CHCs developing telehealth programs do not have the resources to fund a full-time position at start-up, an existing staff member may take on a "champion" role to shepherd a program's development. Part of the champion's role is to encourage providers and staff, especially after initial implementation enthusiasm has waned. This leader also needs to understand the program's barriers and drawbacks. These include changes in clinical and administrative workflows associated with program implementation. Clinic visits may take longer, with more coordination to set up and synchronize the real-time encounter, and administrative staff may be necessary at both ends of the visit. Open Door's TDD is a registered nurse with both clinical care and clinic management experience, and extensive experience with telehealth programs, and thus can talk to providers about the program's clinical impact from a position of experience.

Additional Support Staffing

One of the biggest unanticipated lessons learned during Open Door's telehealth implementation was the level of support staff needed to operate the programs — much more of an added burden than the technical resources. Significant coordination is required on both sides of a telehealth visit to ensure that all necessary information is available to the specialist at the time of the clinical encounter, that the technology is set up and functional, and that the arrival of patient and provider is synchronized. Open Door created a special telemedicine coordinator position at the TVSC to lead this work and to coordinate the telehealth programs. Similar to the TDD, the coordinator has a clinical background (medical assistant), which helps to ensure that

the necessary referral paperwork is complete. She also is the first person to contact for equipment troubleshooting, and her comfort with technology was cited as one reason for her success. Currently, she spends 80 percent of her time fulfilling her telemedicine coordinator duties, and 20 percent of her time as a medical assistant.

Open Door found that several phone calls were needed between the two telehealth sites (hub and spoke), plus testing of the equipment, work-up of the patient, and case management, all before the visit. In addition, the TVSC telehealth coordinator spends significant time calling patients to confirm appointments and ensuring that all of the telehealth visit slots are filled, since they are often harder to backfill than in-person visits. This work has resulted in Open Door having a relatively low (15 percent) telehealth visit patient no-show rate. Feedback from providers at Open Door indicated that the telehealth programs would not be as successful without this extra staff time.

Operational Workflow

Initially, Open Door envisioned its telehealth programs as a separate undertaking rather than as another set of patient care tools to be integrated into existing programs by providers and staff. Based on this notion, Open Door first designed its program so that providers would see telehealth patients in four-hour shifts, under the assumption that providers would want to remain seated and interacting with patients via videoconference over an extended, uninterrupted period of time. It turned out, however, that providers were not comfortable with seeing patients only via telehealth over extended periods. This led Open Door to introduce a hybrid model in which approximately 80 percent of the encounters took place in-person, and 20 percent via telehealth. The new model has allowed providers to serve a broad spectrum of patients but without lengthy prescheduled blocks of telehealth-only patient encounters. Open Door now views the telehealth technologies as part of its suite of delivery services and not as a separate program of care.

Clinical and Patient Impact

Open Door's primary objective with the expansion of its telehealth network was to improve its patients' access to specialty care. The following describes the perceived clinical and patient impacts of Open Door's overall telehealth programs.

Patient Satisfaction

As part of its telehealth expansion efforts, Open Door conducted patient satisfaction surveys at four of its clinics from January 2008 to June 2009. Based on these surveys, patients showed high satisfaction with the telehealth programs overall. Using a Likert response scale, with a range of 1 to 5, with 5 being the highest score ("Strongly Agree"), Open Door patients across four clinics rated all survey items highly, on average between 4.4 and 4.8. Comfort in talking about health care (4.4) and access to care (4.4) items showed the lowest mean scores, with savings in travel time and/or money the highest (4.8). This latter finding indicates that telehealth has allowed patients to receive care in their primary care clinic, reducing travel to remote specialty providers (e.g., in Eureka or Sacramento), and saving patients money in travel costs and lost wages, a significant consideration for Open Door's mostly low-income patient population.

Although patients reported slightly lower scores on comfort in talking about health care (4.4) and access to care (4.4), these are still high ratings. Importantly, their slight discomfort did not cause them to report being unsatisfied with the visit or to not recommend telehealth services to others.

Table 1. Open Door Telehealth Patient Satisfaction Survey, January 2008 to June 2009

SATISFACTION QUESTION	OVERALL n=39	CLINICS A n=5	B n=15	C n=10	D n=9
I felt the provider was able to understand my condition and provide the right care.	4.7	4.6	4.4	4.9	4.4
The care I received was the same or better than if I had met the provider face-to-face.	4.6	4.4	4.1	4.2	4.2
I was able to see and understand the provider clearly.	4.5	4.6	4.3	4.8	4.4
I felt comfortable talking about my healthcare issues this way.	4.4	4.6	4.2	4.9	3.9
Without telemedicine I would not have been able to have this type of medical care.	4.4	4.4	4.5	4.7	3.9
Telemedicine saved me travel time and/or money.	4.8	4.8	4.5	4.7	4.2
I would use telemedicine services again if needed.	4.6	4.8	4.6	4.7	4.4
I would recommend telemedicine services to others.	4.7	4.8	4.6	4.9	4.4
I felt that I had enough privacy during my visit.	4.7	4.6	4.4	4.8	4.3
Overall, I was happy with today's telemedicine visit.	4.6	4.8	4.5	4.8	4.6

Source: Open Door Community Health Centers.

Discomfort in talking about health care via telehealth may be related to the fact that patients are not used to receiving care via teleconferencing; as they become accustomed to this new delivery model, they may become more comfortable.

Open Door Provider Satisfaction

Providers conducting consultations via telehealth also completed their own satisfaction survey as part of the program evaluation, with items scored on a Likert scale from 1 to 5, with 5 being the highest score ("Strongly Agree"). The specialty breakdown of the providers surveyed included 33 family medicine/pediatrics, five psychiatry, three orthopedics, and three cardiology. The results were encouraging in that, overall, items were endorsed in the neutral (3) to agree (4) range. Variance worth noting, however, was found within specialty visit assessments. The family practice/pediatric providers offered the highest (or tied with highest) endorsements in five of the

items measured. Psychiatric assessments were the lowest, especially the two items related to technology use.

Follow-up discussions with Open Door's psychiatrist revealed that that her telehealth encounters take more time than in-person visits, due to difficulties in trying to read a patient's non-verbal cues and to a patient and provider unintentionally interrupting each other because of the slight audio delay. While telepsychiatry encounters were effective, they varied by patient diagnoses. Patients with psychoses or severe depression who spoke in affected tones were not optimal individuals for telepsychiatry due to the psychiatrist's difficulty in reading their verbal cues. In addition, diagnostic impressions and the evaluation of physical side effects were not felt to be as accurate with telepsychiatry. However, providers noted that a major benefit of telepsychiatry is that it can improve the provider/patient relationship because the provider can see patients more frequently, though

Table 2. Open Door Telehealth Provider Satisfaction Survey, January 2008 to June 2009

SATISFACTION QUESTION	OVERALL	CONSULTATIONS			
		PSYCH	FP/PEDS	ORTHO	CARD
The quality of care provided was the same or better as could be provided in an in-person appointment.	3.4	3.4	3.3	4.0	3.0
I had no technology difficulties during the remote consultation.	3.7	2.8	4.1	5.0	3.0
I had no difficulties obtaining pertinent exam findings prior to the remote consultation.	3.7	3.8	3.5	3.3	4.0
Communication and/or cultural barriers did not interfere with the quality of the remote consultation.	4.0	3.8	4.4	4.0	4.0
Clinical decision-making was successfully accomplished.	4.1	4.2	4.3	4.0	4.0
I could talk to the patient easily and openly.	4.1	4.2	4.3	4.0	4.0
I found the technology easy to use.	3.9	3.6	4.0	4.0	4.0
I felt confident that I was able to provide the appropriate level of healthcare for the patient using the remote technology.	4.1	3.6	4.4	4.0	4.3
I would recommend telemedicine/telehealth services to other physicians/ consultants.	3.8	4.0	3.8	3.0	4.3

Source: Open Door Community Health Centers.

it may be best to conduct initial psychiatric visits in person, with follow-up visits via telepsychiatry.

The quality of care satisfaction item had the lowest endorsement overall (neutral range), with cardiology endorsements scoring the lowest and orthopedics the highest. Significantly, over all specialties, respondents felt confident that they were able to provide the appropriate level of care for their patients using telehealth (4.1) and that their clinical decision-making was successfully accomplished (4.1). Recommending telehealth visits to others fell within the neutral to agree range (3 to 4). These results complement what providers discussed in interviews: While many Open Door providers reported that in-person encounters were preferable to telehealth, they all acknowledged that telehealth encounters were an effective alternative for the same level of care for the majority of previously non-available specialties.

Overall Open Door Satisfaction

Patients surveyed at Open Door gave high satisfaction ratings for their telehealth visits, especially in the overall summary rating of whether they would recommend telehealth services to others. Of special note, they expressed satisfaction with the level of privacy during the telehealth visit, a common concern among programs considering implementation.

Many Open Door providers reported that in-person encounters were preferable to telehealth encounters, but all acknowledged that telehealth encounters were an effective alternative for the same level of care for the majority of previously non-available specialties. Patient responses to the survey and the provider interviews also highlight the benefits of saved travel time and/or costs for both patients and providers.

Patient and Provider Travel Benefits

There is universal agreement at Open Door that telehealth provides an enormous benefit in travel savings for patients. Open Door's service area encompasses more than 6,200 square miles, larger than some states, with some patients living 45 minutes to two hours away from an Open Door specialist. Videoconferencing units allow patients to receive the consultation at their primary site of care. For example, without local telehealth capabilities, children and their parents in Smith River would have to travel 90 miles to the Humboldt Open Door Clinic in Arcata for a pediatric behavioral health visit.

Prior to the introduction of telehealth services, patients needing access to specialty care outside the scope of Open Door services had to travel to San Francisco or Sacramento; for example, there is a high demand for hepatitis chronic disease management in the Willow Creek Community Health patient population, but the closest liver clinic is in San Francisco, over 300 miles away. The telehealth program allows these patients to seek care in their community.

Moreover, Open Door's telehealth programs have reduced the need for providers to travel extensively for patient care. For example, prior to the telemedicine program, twice a month Open Door's consulting pediatrician traveled a round-trip total of 144 miles from Arcata to the Del Norte Community Health Center site in Crescent City to see children for behavioral consultations. Now that pediatrician can consult with the Del Norte pediatrician through the videoconferencing unit for these same visits, reducing time, effort, and stress for the provider, as well as costs for Open Door in the form of travel expenses and non-productive travel time.

III. La Clínica de La Raza

Background

Since 1971, La Clínica de La Raza (La Clínica) has provided primary health care services across the East Bay of Northern California. It has grown from a single storefront clinic staffed by five volunteers to encompass 26 service delivery sites in Alameda, Contra Costa, and Solano counties. Now one of the largest community-based clinic agencies in California, La Clínica conducts more than 262,000 patient visits annually (2008), delivering an array of services, including: medical, dental, optical, women's health, prenatal and postnatal, preventive medicine, health and nutrition education, adolescent care, mental health, behavioral health, case management, referral, pharmacy, radiology, and laboratory.

Two-thirds (66 percent) of La Clínica patients have incomes at or below the federal poverty level, and 94 percent of patients are either uninsured or have public health insurance. The racial/ethnic composition of its patient population is 71 percent Latino, 14 percent white, 9 percent African American, and 6 percent Asian. Similar to other low-income populations, access to specialty care is a significant issue for La Clínica's patient population and often translates into lengthy wait times or, even more troubling, complete lack of access.

Planning and Budgeting for Telehealth

La Clínica began considering implementing telehealth services in 2002 as part of an effort to increase operational efficiency and improve access to culturally and linguistically appropriate health care for its low-income patient population, with an emphasis on specialty care. La Clínica hired an outside consultant to conduct a needs assessment, identify barriers, and make recommendations for moving forward with a telehealth program. The consultant recommended telehealth as an option but La Clínica was unable to implement it because the clinic's energy was focused at the time on completion of a ten-year community redevelopment project.

In late 2007, La Clínica again addressed the possibility of a telehealth program. Funded by a planning grant from CHCF, La Clínica developed an implementation plan for a new telehealth project, led by key agency stakeholders who assessed clinical, administrative, and information technology (IT) needs, as well as readiness for telehealth. This core planning group consisted of the chief executive officer, medical director, planning director, IT director, associate medical directors/IT champions, dental director, and eye clinic supervisor. La Clínica's planning department developed a Web-based survey to solicit feedback from medical, mental health, and health education staff regarding their experience with telehealth, their receptiveness to technology use for service access, and their identification of needs for specialty care and training in telehealth technology.

The majority of respondents indicated that telehealth would be useful for increasing patient access, so the planning process moved on to an assessment of what the most appropriate telehealth program would be. The planning team surveyed providers across its clinics on their priorities, seeking a balance between clinical importance and ease of implementation. The top three priorities identified were health education, dental services, and dermatology. Health education was eventually eliminated based on low clinical importance,

while dental was eliminated by the complexity of a telehealth implementation.

With regard to dermatology, La Clínica found a balance between high clinical importance and ease of technical implementation. There was a significant need for dermatology care among its patients, both insured and uninsured, but a serious problem with access. La Clínica sampled referral data for five of its clinics from a two-week period and found that the average wait-time for access to dermatology appointments ranged from ten days at one clinic to more than 117 days, excluding holidays and weekends, at another. The average wait time from referral date to appointment date for a dermatology visit across all the clinic sites was more than two months (62.3 days). For patients without insurance, wait times for a dermatology appointment at Highland Hospital, the Alameda County facility that many of La Clínica's uninsured patients are referred to, were sometimes up to a year.

With dermatology settled on as the first telehealth program, the next step was to identify a dermatologist to provide the consultations. La Clínica sought an arrangement by which the consultant's costs would be covered while La Clínica patients would be provided access with minimal out-of-pocket expenses. One straightforward arrangement would have been for the consulting specialist to bill Medi-Cal for services provided to Medi-Cal-eligible La Clínica patients. But there are few dermatologists who bill Medi-Cal and none could be found who were willing to enroll as a Medi-Cal provider (a lengthy process) in order to receive La Clínica patients.

La Clínica was eventually able to structure a contractual relationship with a dermatologist at the University of California, San Francisco (UCSF) to provide teledermatology (te708m) consultations via a store-and-forward model. Under the contract,

La Clínica providers forward both digital images and clinical notes to show and describe a patient's dermatology issue, using a customized software application; the UCSF dermatologist reviews the information and electronically sends written recommendations to the La Clínica providers. The contract also calls for the UCSF dermatologist to provide an in-person clinic at La Clínica's central site in Oakland once a month, during which follow-up issues can be addressed. The dermatologist agreed to

Technical Needs/Software Selection

The technical components of implementing telederm at La Clínica created a planning challenge. Providers wanted a Web-based referral system that they could access anywhere, but there were infrastructure limitations: La Clínica's local area network had largely reached its access capacity. Also, there was limited IT support staff at La Clínica to take on evaluating the needs of a telehealth program. As a result, La Clínica relied heavily on an outside telehealth consultant, who was paid through CHCF planning grant funds.

Minimizing the impact of the telederm program on clinical workflows was a top priority for La Clínica—providers were critical to the program's success and would not be supportive if disruptions from the referral system outweighed its value. For this reason, La Clínica and its telehealth consultant reviewed a wide range of referral systems, some Web-based, some server-based. Ultimately, based on the consulting dermatologist's opposition to a Web-based system and La Clínica's bandwidth limitations, a model that utilized Second Opinion software, installed on a La Clínica-hosted server, was chosen. The software required an up-front licensing fee of $25,000, and $2,000 for annual maintenance. This system had the advantages of an easily customized Web referral template, the ability to integrate notification into the consulting dermatologist's e-mail system, and the capacity to store pictures, referrals, and consultations so that La Clínica providers and staff could easily access them.

provide up to 720 consultations (telederm and in-person) for a period of one year, on a flat-fee basis.

A goal of both CHCF and La Clínica was to pilot a telehealth program that would be sustainable beyond the CHCF funding term. Thus, La Clínica developed a budgeting model that could be sustainable based on payer reimbursement for regular follow-up with La Clínica primary care providers and for visits conducted in the once-a-month, in-person dermatology clinic. La Clínica estimated the volume of telederm patients based on existing dermatology demand within its practice, then estimated the number of patients who would be recalled to La Clínica for an in-person dermatology follow-up. La Clínica would be able to bill for these follow-up visits at its FQHC rate for insured patients (approximately $190 per visit) or on its sliding-fee scale for those who are uninsured (an average of $50 per visit). The follow-up projections were informed, in part, by its discussions with Open Door Community Health Centers in Arcata, which had previously implemented a telederm program.

La Clínica became aware, however, that this model is financially tenuous, and acknowledges the possibility of the telederm program ending at the end of its grant cycle should the revenue component not meet projected targets. The question of financial sustainability is discussed later in this paper, and is examined extensively — based on actual program data from a six-month period of implementation — in a report, *Financial Analysis of La Clínica de La Raza's Telehealth Experience* (www.chcf.org), published simultaneously with this case study.

Facilitators to Implementation

Consultants

In the lead-up to implementation, the staff at La Clínica — who were new users of telehealth — found that access to experienced telehealth consultants was invaluable. Several consultants provided input on both broad issues, such as clinical workflow changes, and on specific technical matters, such as the types of software available and how to customize them. The consultants were also helpful in providing a level of comfort regarding the security of data being shared, and in streamlining the referral system access procedures. For example, the program's software system allowed providers on both ends to customize the referral template to ensure that information for both parties met their clinical documentation needs; the consultant worked closely with both sides to adapt this template.

In addition to using individual consultants, La Clínica staff visited Open Door Community Health Center in Arcata to discuss Open Door's telehealth programs, which provided valuable insights into the intricacies of a successful telehealth program at a similar organization.

Champions

Very early in the planning process it was clear that La Clínica had providers who were both enthusiastic about telehealth and willing to promote the new program to their peers. One component cited by staff as critical to successful implementation was officially dedicating 10 percent of a key La Clínica provider's time to the planning and implementation of the telederm program. This provider champion assisted other clinical providers, reviewed and tested referral software programs, provided key input into workflow evaluation, and supported the telederm implementation team as the program rolled out. In

addition, the associate medical directors at the initial implementation sites (Transit Village pediatrics and adult medicine sites, and the teen clinic Clínica Alta Vista) were strong supporters of the telehealth approach to improving access for their patients and acted as local champions, promoting telederm to their medical staff.

Project Coordinator

The most important facilitating factor cited by La Clínica staff was the role played by its telemedicine project coordinator (TPC), hired specifically for this program. Identified as a key position during the planning phase, La Clínica recruited a TPC who had the following qualifications: a solid clinical background; basic IT knowledge; the capability to build trust with clinic providers; and the administrative and organizational skills needed to create policies, procedures, and clinical protocols.

La Clínica's TPC conducted training for all providers and medical assistants on the use of the digital camera and the quality required in the photos, procedures for documentation, entering the referral information into the telederm referral software system, and procedures for follow-up when indicated by the consultation information received. Also, over a two- to three-week post-implementation period, the TPC visited each site in person, to help out as needed, walking staff through telederm visits and the referral process. The TPC also distributed policies and procedures for the telederm program, ensuring that they reached all implementation sites. By the end of each site implementation, the TPC also identified and trained a "super user" to be a first point of contact for questions that arose after the implementation phase.

Known Specialist

A key element in the dynamic between a primary care provider (PCP) and a specialist is the PCP's trust in the quality of care a referred patient receives. A referral relationship is usually built over a number of years and on the experiences of patients who see a specialist in person and then report back to the PCP regarding the consultation. A store-and-forward telehealth referral, however, is quite different: Patients do not interact directly with the consulting specialist, and the referring PCP usually interacts with the specialist only indirectly. For La Clínica, this was a key reason to select a dermatologist with whom many of its providers had a pre-existing relationship. As it turned out, a number of La Clínica doctors had completed their residencies at UCSF's training hospital, San Francisco General, and had worked with the same dermatologist that La Clínica eventually contracted with for telehealth consults. This became an important component of buy-in to and trust in the telederm program by La Clínica providers, who were thus confident not only in the telederm consults themselves but also in any follow-up consults the patient had at the in-person dermatology clinic, which would be conducted by the same dermatologist.

Barriers to Implementation

Internal Barriers

During the planning phase of its telehealth project, La Clínica's providers recognized what were likely to be internal problems with implementation: lack of technical system support due to limited IT staff resources, clinic scheduling, patient acceptance, and reimbursement. Overall, providers felt that telehealth was an interesting concept that could expand access for La Clínica's patients, but would require a great deal of logistical planning and extensive training.

Contractual Arrangement with Specialist

It was clear from early in the planning process that La Clínica could not afford to hire its own dermatologist, whose starting salaries average $270,000 per year.[7] Therefore, a significant barrier to implementing telederm for La Clínica was identifying and contracting with an outside dermatologist. Most dermatologists contacted proved reluctant, not because of the use of telehealth itself but because of billing. The complexity of enrolling as a Medi-Cal provider and the level of detail required for documenting each consult in order to bill Medi-Cal were major hurdles, and ultimately La Clínica was unable to find an otherwise appropriate dermatologist willing to bill Medi-Cal for the consultations. Instead, La Clínica had to develop a contract that paid a fixed fee for a set amount of consultations.

After an extensive search, in May 2009 La Clínica signed a one-year professional services agreement with UCSF for the provision of telederm services. This contract provides for 720 consults over a year, including both telederm and monthly in-person consults and procedures on-site at La Clínica's Transit Village location in Oakland for patients who had a telederm consult but require an in-person specialist follow-up. Because of the flat-fee structure, La Clínica bore the risk that the allotted number of consults, on which the contract fee was calculated, would not be used. And indeed, that turned out to be the case. Fortunately, however, the consulting dermatologist indicated a willingness to continue consulting beyond the contract year until the target number of consults has been reached.

IT Structural Limitations

Another barrier identified by La Clínica was the need to implement the telehealth program within the existing infrastructure of its IT systems. Because the sending and retrieving of digital image files requires significant bandwidth, La Clínica had to select a software system that would not slow down its local area network traffic. This required a calibration process to determine the minimum resolution of pictures—and thus the smallest file size—that would still allow fully effective telederm consultations. The providers at La Clínica were eager to use a Web-based system for capturing, sending, and storing the teleconsults, but the high bandwidth requirements of such a system made this model untenable for La Clínica. In addition, the consultant with whom La Clínica contracted was opposed to using a Web-based system, based on concerns with the security of the image files being stored, particularly should the company storing the digital files go out of business.

La Clínica and UCSF agreed to use a model of the Second Opinion software system that allows the images to remain stored on La Clínica's servers. When the consulting teledermatologist receives a notifying e-mail, she can access the images through her e-mail system. A limitation of this model, however, is that she cannot review images from prior consultations, because they are on a secure server at La Clínica but not in UCSF's system.

La Clínica worked with a telehealth consultant to customize Second Opinion so that an e-mail notification would be sent to the dermatologist announcing that a consult was ready for review. The dermatologist could then directly access Second Opinion through a link within the e-mail notification itself, without having to log into a second system. This single-sign-on function, however, is limited to one computer, which means that the dermatologist cannot, for example, log on to perform the consult from locations beyond her office, as would be the case with a Web-based system.

Patient Information Security

From the consulting dermatologist's perspective, a barrier to developing a teleconsulting relationship was the recommendation by UCSF's risk management team to minimize the risk associated with providing teleconsults, including discouraging the creation of a patient record within UCSF's system. There were also concerns raised about where the patient's personal health information — including the digital images and referral forms sent for review — would be stored. A secure, encrypted e-mail sent through the system was initially proposed as a simple technical solution. This would have meant that the files would be stored on UCSF's e-mail servers, however, and therefore was not an option.

Learning Curve Regarding Referral Information

One of the nuances of store-and-forward telederm is that a dermatologist must make a diagnostic decision based on a combination of the images and the patient information provided in the form of text to explain the picture's context. Without being able to interview the patient directly during a store-and-forward consult, the dermatologist must rely heavily on the written information provided in support of the consult. This has required La Clínica to ensure not only that its clinical providers use an agreed upon and standardized telederm referral form, but also that the information is complete and accurate from a dermatology perspective. There has been a learning curve for providers on both ends of the consultation regarding the right balance of text to provide for an effective consult. Reviews conducted by the TPC to ensure that this balance was achieved have been instrumental to the process moving forward.
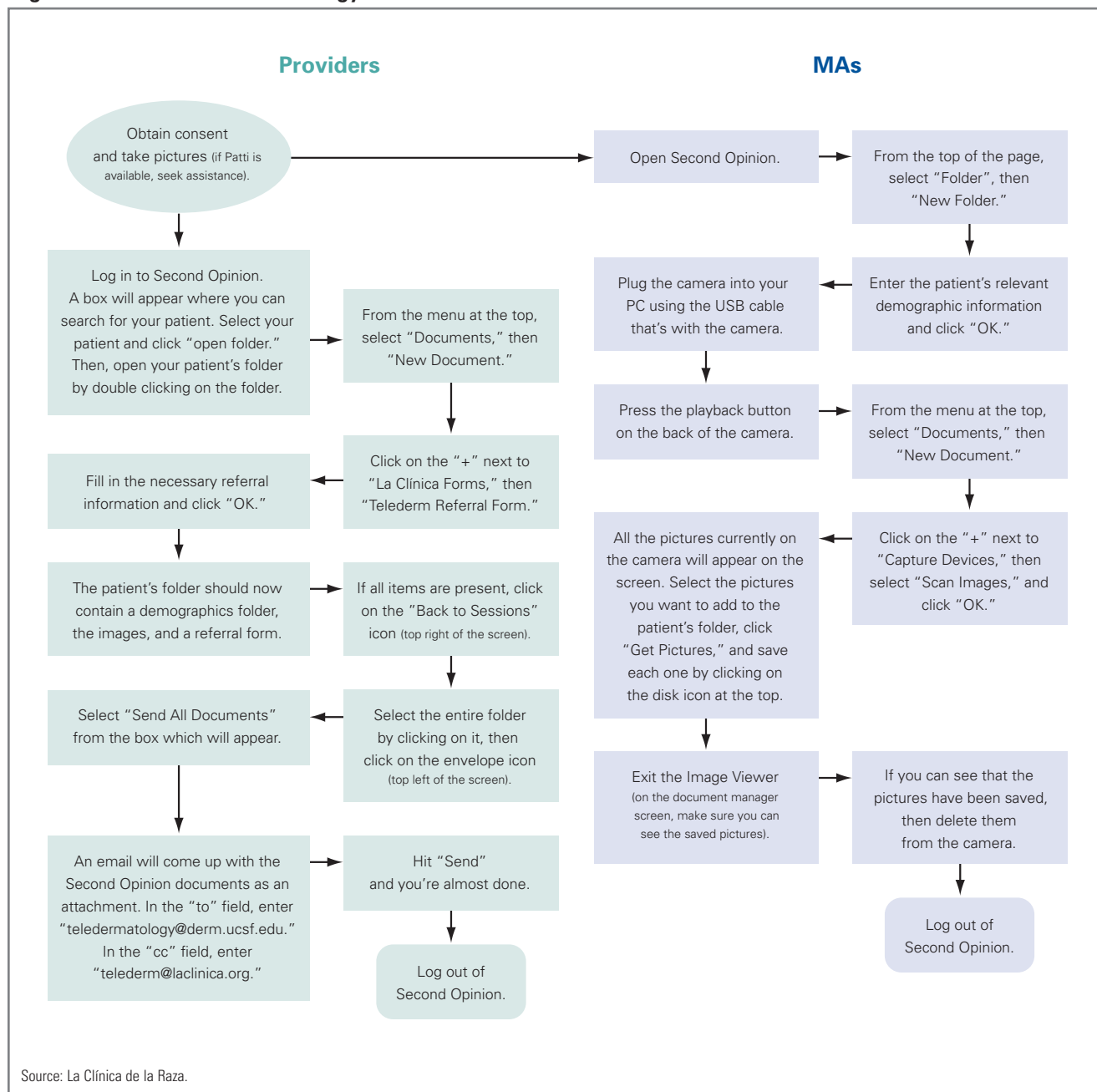
Operational Workflow

La Clínica has implemented the telederm program at seven of its 23 locations. In order to standardize program procedures, La Clínica developed a set of protocols, trained each site's providers in the protocols, and distributed copies of policies and procedures to all sites. Standardizing implementation across all participating sites involved the staff learning about the program through their monthly staff meetings and the TPC conducting on-site trainings and demonstrations, then walking providers through their first several encounters.

The TPC developed a standard telederm workflow sheet that begins with the provider obtaining the patient's consent to have pictures taken for a store-and-forward telederm consultation and includes detailed instructions on the type of images required for the consultation (see Figure 1 on the following page). The medical support staff then enters the patient's basic demographic information into the referral software system and the provider adds clinical notes. The software generates a unique referral number so that the patient is not identified in the e-mail subject line. Depending on the clinic site, either the provider or a medical assistant takes the pictures of the dermatology issue and uploads them for inclusion with the referral. The entire consent, data-capture, picture-taking, and uploading process typically adds five minutes to each visit.

When the referral is complete, the clinic staff submits it through the software to the consulting dermatologist, with a copy to the TPC, who ensures that the image is of sufficient quality and that the data is complete. If there are problems, the TPC sends the referral back to the PCP for additional information or other follow-up. Once the specialist completes the consultation and sends back the follow-up notes, both sides again receive an e-mail notification. The La Clínica TPC is also notified

Figure 1. La Clínica Teledermatology Workflow

Providers

Obtain consent and take pictures (if Patti is available, seek assistance).

Log in to Second Opinion. A box will appear where you can search for your patient. Select your patient and click "open folder." Then, open your patient's folder by double clicking on the folder.

From the menu at the top, select "Documents," then "New Document."

Fill in the necessary referral information and click "OK."

Click on the "+" next to "La Clínica Forms," then "Telederm Referral Form."

The patient's folder should now contain a demographics folder, the images, and a referral form.

If all items are present, click on the "Back to Sessions" icon (top right of the screen).

Select "Send All Documents" from the box which will appear.

Select the entire folder by clicking on it, then click on the envelope icon (top left of the screen).

An email will come up with the Second Opinion documents as an attachment. In the "to" field, enter "teledermatology@derm.ucsf.edu." In the "cc" field, enter "telederm@laclinica.org."

Hit "Send" and you're almost done.

Log out of Second Opinion.

MAs

Open Second Opinion.

From the top of the page, select "Folder", then "New Folder."

Enter the patient's relevant demographic information and click "OK."

Plug the camera into your PC using the USB cable that's with the camera.

Press the playback button on the back of the camera.

From the menu at the top, select "Documents," then "New Document."

Click on the "+" next to "Capture Devices," then select "Scan Images," and click "OK."

All the pictures currently on the camera will appear on the screen. Select the pictures you want to add to the patient's folder, click "Get Pictures," and save each one by clicking on the disk icon at the top.

Exit the Image Viewer (on the document manager screen, make sure you can see the saved pictures).

If you can see that the pictures have been saved, then delete them from the camera.

Log out of Second Opinion.

Source: La Clínica de la Raza.

via e-mail and tracks the outcomes of all telederm consultations. Providers report that they usually get back the consultations from the specialist within a few days, allowing for quick follow-up with patients.

In all cases, the consultant's recommendations are printed out and included in the patient's chart, often with the picture taken during the visit. When the consultation indicates that in-person follow-up with the specialist is needed, the patient is seen at a monthly in-person dermatology clinic at La Clínica that is staffed by the same dermatologist who conducted the teledermatology consultation. This follow-

up clinic provides assurance to La Clínica and its patients that pressing dermatology issues will be addressed by a specialist in a timely manner.

Each PCP determines individually when to use a telederm consultation. In most cases, the PCPs have found the consults reassuring, confirming for them and their patients the PCP's initial diagnosis and therefore not requiring a follow-up, in-person visit. In a few cases, a PCP has received guidance from the specialist to have a patient immediately seen in-person for a serious condition, or for a condition that was not improving with the existing treatment plan.

Financial Sustainability

During the planning phase, La Clínica conducted a financial sustainability analysis of the proposed telederm program. Although the program's underlying capital costs and those of the planning phase were supported by the CHCF grant, La Clínica did not want to rely on grant funds to support the

ongoing operational cost of patient care. Therefore, La Clínica identified both costs and revenue that would be attributed to the telederm program on a daily basis. These included: a portion of the TPC's salary (20 percent); a portion of the medical assistants' time (four hours per month); billing assistance (eight hours per month); ongoing fees for software support; and the fixed fee to be paid to the dermatologist.

On the revenue side, La Clínica estimated that approximately 25 percent of patients receiving a telederm consult would require an in-person follow-up visit, either with a PCP or the dermatologist. La Clínica estimated the revenue associated with these visits, using its payer mix to determine the portion that would be covered by Medi-Cal, third-party payers, or its sliding-scale fees. La Clínica's FQHC Section 330 grant for the uninsured provides a subsidy for these visits as well.

Part of the revenue equation was the assumption that there would be at least 60 telederm consultations per month. As of January 2010, however, eight months after the start of its staggered implementation, La Clínica had yet to reach this level of referrals (though its consulting dermatologist has indicated her willingness to continue doing consults beyond the contract year in order to achieve the target number). This continuing low volume may leave La Clínica in the difficult position of having to decide whether to continue the telederm program on other than purely financial sustainability grounds.

Of note, La Clínica initially sought to structure its telederm program so that a specialist would bill third parties — particularly Medi-Cal — for consultation services, which would reduce the need for La Clínica to bear these costs. But the complexity of becoming enrolled as a billable provider with Medi-Cal deterred many small specialty providers from engaging with La Clínica on this basis, so La

Clínica was forced to enter the flat-fee contract. If the costs of the contracted consulting dermatologist could be eliminated from its expenses (through a third-party payer arrangement), La Clínica would be in a very different, more positive financial position. For a detailed look at the financial aspects of La Clínica's telederm program, see the report *Financial Analysis of La Clínica de la Raza's Telehealth Experience* (www.chcf.org), published simultaneously with this case study.

Perceived Clinical and Patient Impact

La Clínica's primary objective with the telederm program was to improve its patients' access to specialty care. However, an unexpected positive consequence was that the consults helped improve the level of dermatology service, and self-confidence in it, delivered by its own PCPs. In reviewing the surveys conducted of perceived clinical and patient impact of the telederm program as implemented, these and other benefits stood out.

Wait Times/Access to Care

As discussed earlier in this report, when reviewing its patient population in planning for the program, La Clínica found significant, sometimes extremely long delays in patient wait times for dermatology referral visits, even among its insured patients. With implementation of the telederm program, La Clínica has seen a huge reduction in the wait times for dermatology patients. La Clínica reviewed a sample of appointments needing dermatology referrals over a two-week period after implementing the telederm program, from the same clinics that were sampled pre-program, and found the average turnaround time for a telederm consult coming back to a PCP to be only 3.1 days. See Table 3 for a summary of the average turnaround times for a dermatology

Table 3. Turnaround Times for Dermatologist Consultation, Post-Telederm Implementation

	ESTIMATED TURNAROUND TIME (DAYS)*
Fruitvale Transit Village – Family Medicine	3.0
Fruitvale Transit Village – Pediatrics	1.3
Clínica Alta Vista (Teen Clinic)	5.3
La Clínica Monument	N/A[†]
La Clínica Pittsburg	3.0
La Clínica Vallejo	N/A
San Antonio Neighborhood Health Center	3.1

*Calculated as difference between referral date and date consultation received back from specialist, excluding weekends and holidays.

[†]No telederm referrals made during the two-week sample review period.

Source: La Clínica de La Raza.

consultation after implementation of the telederm program at La Clínica.

The telederm program has also been of great value to La Clínica's providers and patients by reducing the number of unnecessary dermatology referrals. In many cases, La Clínica providers found that the consulting dermatologist was able to confirm for them that they had begun the appropriate treatment for their patients. This eliminated the need for these dermatology patients to take additional time off work or caring for families to attend an in-person specialist appointment, reduced the overall burden on the health system, and provided a measure of assurance for La Clínica's patients and providers alike.

Patient and Provider Satisfaction

La Clínica providers report that the telederm program has offered a significant improvement in the quality of care they provide to patients. In a survey of provider satisfaction conducted as part of program implementation, providers showed high

to very high satisfaction with the program overall. Using a Likert response scale, with a range of 1 to 5, La Clínica providers agreed (score of 4.4) that they were satisfied with the overall program, were satisfied with the quality of the telederm consults (4.3), and would even prefer the telederm consult (4.1) over an in-person dermatology referral.

Overall, La Clínica's providers also report being more comfortable with their initial dermatology diagnoses since implementation of the telederm program. While initially concerned that telederm would interfere with their patient-provider relationship, the La Clínica providers instead have found it to be a complementary practice tool. In addition, many providers have found that having a picture attached to the patient's chart provides a more effective level of documentation for future treatment: It serves as a clearer reminder of the condition being evaluated and of the patient's progress under the course of treatment.

An unexpected bonus to the La Clínica providers has been the archive of telederm pictures and resulting diagnoses that have been accumulated through the program. La Clínica's medical director has used this archive as a tool for conducting in-service dermatology training for the clinic's providers. At quarterly medical staff meetings, La Clínica has used the pictures and other information to review common dermatology conditions and to discuss treatment options and recommendations.

As for the patients' response to the program, to date La Clínica has found no resistance from patients when offering them a telederm consultation rather than a referral for an in-person dermatology visit. La Clínica has not had a single patient refuse to sign the consent form that permits the pictures to be taken and forwarded to the dermatologist for review. La Clínica has also received anecdotal feedback

that indicates a positive patient experience with the telederm program.

Operational Efficiencies

In La Clínica's original exploration of telehealth in 2002, it considered the potential for leveraging the telecommunications systems for provider education by connecting remote clinical sites to the central facilities. La Clínica's sites are spread over three large urban and suburban counties with significant traffic congestion, requiring extensive travel time and lost productivity to attend meetings in person. Under the CHCF telehealth grant, La Clínica has purchased and installed a video conferencing bridge that allows multiple sites to be connected simultaneously. La Clínica has begun using this video conferencing equipment to conduct both administrative and clinical staff meetings.

In the first month after the video conferencing equipment was installed, La Clínica conducted a quality improvement meeting, administrative management meetings, and town hall meetings to discuss health care reform, in addition to staff wellness program discussions. Numerous providers and administrative staff have reported an improvement in staff communications as well as the satisfaction of not having to travel to a central location to attend meetings. Providers no longer have to choose between attending a meeting and drastically reducing their workload for a day to accommodate the travel. La Clínica anticipates leveraging the video conferencing equipment for further clinical and administrative staff training opportunities.

Lessons Learned

A number of lessons were learned, and can be taken from, La Clínica's experience of planning and implementing its telederm program. Summarized here are some of the key lessons.

Planning

La Clínica providers and administrators uniformly agreed that the extensive planning process they undertook, beginning with a survey of providers on their priority clinical impact areas, contributed to the program's successful implementation. Providers and staff were extensively involved in the planning process, which assured clear communication about the timing, goals, and projected impact of the project, and facilitated their support throughout both planning and implementation.

Having access to knowledgeable and experienced telehealth consultants in the planning process was also important for La Clínica. While La Clínica has an experienced planning department and IT support team, neither had previously implemented a telehealth program. Of note, a consultant's recommendations regarding specific referral software were initially resisted by La Clínica staff. In response, the consultant facilitated a telederm software learning and exploration process with the La Clínica staff, which allowed them eventually to reach the same conclusions the consultant had reached, but with a greater level of comfort and buy-in. La Clínica also helped avoid a number of pitfalls by spending time during the planning process with other CHCs that had implemented telehealth, learning about evaluating workflows, selecting software referral systems, and developing protocols.

La Clínica staff indicated that they might have spent additional time conducting workflow analyses to ensure that each step in the telederm process was well-documented and incorporated into the trainings.

It is important to ensure that the follow-up steps are clearly delineated after receiving the dermatology consultation from the specialist, including patient contact, chart documentation, and responsibility for performing each step. La Clínica found significant variation in how different sites implemented the telederm protocols, something it would seek to change if beginning the project again.

La Clínica staff also reported that having had a dedicated IT staff person working with the implementation teams would have made the telederm implementation smoother. La Clínica's IT department trained a number of its technical support staff on how to install and configure the referral software for end-users. As each of the seven La Clínica sites rolled out the telederm program over a period of months, someone from the IT department was called upon to set up the software. This resulted in multiple IT staff doing one or two implementations each, rather than one person doing all of them. Both IT staff and clinical staff indicated that, in hindsight, there would likely have been a more consistent, and therefore more effective, installation and trouble-shooting process had the same person implemented all seven sites.

Financial Model Considerations

La Clínica underestimated the difficulty of identifying and contracting with a dermatologist who would be willing and able to provide third-party billing for telederm and in-person visits. This challenge led to both delay and ultimately a less than ideal contractual arrangement. La Clínica had estimated only a few months for the contracting process which eventually took more than a year, causing them to put implementation on hold even though other program components were ready. In addition, the contract finally arrived at with the

consulting dermatologist provides a potentially unsustainable financial model for the program.

A telehealth program can result in significant indirect cost savings to a community. For example, patients can avoid having to take time off work and potentially losing wages in order to attend an in-person dermatology appointment. They can also reduce transportation costs and child care expenses. While La Clínica conducted patient satisfaction surveys to evaluate the perceived value of its telederm services, it did not at the same time attempt to evaluate the indirect cost savings to patients. Had La Clínica done so, it might have developed significant data to support continuation of the program for reasons separate from the question of revenue generation.

Monitoring and Evaluation

A comprehensive monitoring and evaluation plan allows a clinic to demonstrate the impact of its telehealth programs in measurable ways. During its planning process, La Clínica conducted an initial survey of its providers and staff to gauge their interest in and knowledge of telehealth programs, as well as their priority impact areas. La Clínica also evaluated patient wait times for dermatology appointments, giving them a baseline against which to compare. Throughout the implementation process, La Clínica surveyed both its patients and its providers to evaluate their satisfaction with a variety of program components. All of these efforts provided La Clínica with objective, quantifiable data with which to evaluate its program and to use as support in pursuit of further program resources.

IV. Southside Coalition of Community Health Centers

Background

Under a CHCF grant, in 2007 the Southside Coalition of Community Health Centers (Southside) in South Los Angeles began to plan for the implementation of a store-and-forward telederm program across its then-seven member clinics.[8] Launch of the service was targeted for Fall 2008. However, implementation has gone slowly: After nearly three years since the beginning of the grant, the program is operational at only four of Southside's member clinics. Moreover, the number of actual referrals at each participating site has been considerably lower than anticipated. Southside's experience offers insights into the impact of an organization's structure—in this case, a network that pools resources to improve specialty care access but in which each clinic maintains its autonomy—on implementation of a telehealth program. Southside's telehealth implementation experience also sheds light on the importance of establishing staff positions whose ongoing work is substantially dedicated to that program.

Overview of the Southside Coalition of Community Health Centers

Southside is a network of autonomous, nonprofit community clinics that have formed an association to better sustain, coordinate, and improve health care in South Los Angeles, a large portion of which is federally designated as a Medically Underserved Area, a Health Professional Shortage Area, and a Medically Underserved Population. Southside's members have a jointly defined mission and a formal Memorandum of Understanding to work collectively, but each clinic ultimately retains independent authority over its practice. Southside's patient population is for the most part poor and medically vulnerable; the network's mission is to sustain, coordinate, and improve health care for the publicly-insured, the underinsured, and the uninsured who might otherwise have no access to care. Established informally in 2004 to address common issues, including access to specialty care, in 2007 Southside became a not-for-profit 501(c)(3) corporation.

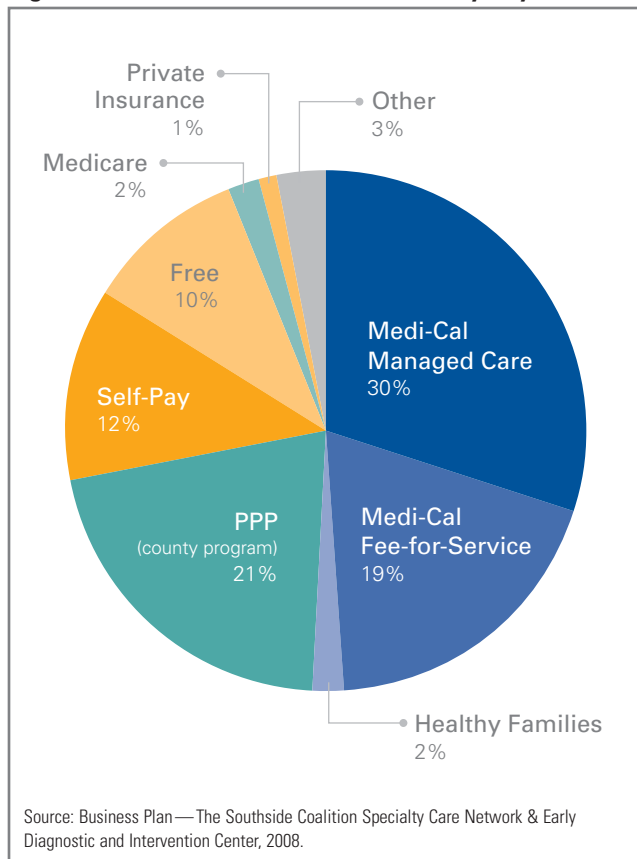The seven members of Southside during the period of evaluation for this case study were:

- Central City Community Health Center;

- Eisner Pediatric and Family Medical Center;

- South Central Family Health Center;

- St. John's Well Child and Family Center;

- T.H.E. (To Help Everyone) Clinic, Inc.;

- UMMA (University Muslim Medical Association) Community Clinic; and

- Watts Healthcare Corporation.

These seven coalition members, all of which are designated as FQHCs or FQHC look-alikes, represent 18 community and school-based health centers that together provided 397,000 primary and urgent care encounters to 152,000 unique patients in 2009.[9] Collectively, Southside clinics provide comprehensive primary care, including pediatrics, geriatrics, women's health, and urgent care, and a primary medical home to many of the underserved. They also offer other primary and secondary prevention services, such as health education and

promotion, case management, and other social services.

Medi-Cal and other publicly insured patients comprise approximately 50 percent of Southside's collective patient base. The remaining patient base consists of the uninsured and underinsured, who are given either free care or care provided on a sliding-fee scale (see Figure 2, below). Presently, Los Angeles County contracts with primary care clinics through the Public Private Partnership (PPP) program to provide primary care to the county's indigent residents. All Southside members are contracted PPP providers, which provides them with a reimbursement stream for its uninsured patients.

Figure 2. Southside Coalition Patients, by Payer Source

Source: Business Plan — The Southside Coalition Specialty Care Network & Early Diagnostic and Intervention Center, 2008.

Specialty Care Needs and the Teledermatology Project

Similar to other CHC provider organizations, access to specialty care is an issue for Southside member clinics. A primary objective of the Southside coalition is to improve access to specialty care for the largely uninsured and underinsured patient population in its service area. The telehealth pilot project offered by CHCF seemed a natural fit to address this need and, as discussed below, Southside elected to use the CHCF project to implement a store-and-forward telederm program.

Planning and Budgeting Stages

For Southside, evaluating its patient specialty access needs has been an integral part of its operations. In 2005, a feasibility study was conducted which included an examination of access to specialty care among Southside members' patient population. With a predominantly Medi-Cal or uninsured population, most of Southside's patients needing specialty care had only the Los Angeles County Department of Health Services (LA County) as an option, due to the limited number of specialists in the area who participated in Medi-Cal or other low-income health coverage programs, or who were willing to accept self-pay patients with severely limited resources. The feasibility study determined that the average wait time for specialty care appointments at an LA County facility ranged from six months to one year; the wait time for an in-person dermatology appointment was estimated at six months.[10]

Following the feasibility study, Southside began discussing opportunities to use technology to address some of its specialty care needs. The specialties that Southside considered might be particularly amenable to technological assistance, and in particular to telehealth, were endocrinology, mental/behavioral health services, and dermatology. Working under the

Southside found that moving from planning to implementation took significantly longer than expected. It did not hold telederm training sessions with participants from all member clinics until November 2008, followed by individual sessions with each clinic. The first clinic did not begin sending referrals until February 2009, while a second clinic did not make referrals until June 2009. Three other clinics were brought online through March 2010, though one clinic scheduled to participate subsequently dropped out because it has a volunteer dermatologist who sees the clinic's patients in-person, covering this clinic's need. To date, then, only four of the seven clinics are actually making referrals, and overall the volume of referrals has been well below Southside's expectations of 189 referrals per month: Southside members averaged only six referrals per month during the evaluation period, with a high of only 21 in any given month.[11] In recent months, the figures have been only slightly higher. Reasons for the delayed implementation, and for the low referral numbers, are discussed below in the section "Barriers to Implementation."

CHCF grant in the fall of 2007, Southside began a discussion among its clinic stakeholders to explore opportunities around telehealth as a model of care. Responsibility for making telehealth decisions was delegated to Southside's Medical Director Working Group, which engaged with the relevant IT staff at the clinics. The Medical Director Working Group recommended, and Southside's board approved, implementing a store-and-forward telederm pilot program across all seven clinics, with a target operational date of Fall 2008. Southside also decided to identify for the program a dermatology specialist located at a facility outside Southside's network but within the South Central Los Angeles community.

Facilitators to Implementation

Southside clinical administrators and medical leadership found helpful a number of resources made available during the planning cycle. CHCF facilitated access to people with telehealth experience in a variety of domains, providing Southside with useful background, logistical, and clinical information. Among these facilitated activities were:

- A University of California, Davis, telemedicine executive overview session and a Kaiser Permanente e-health forum, which highlighted telemedicine projects throughout California;

- A meeting for Southside medical directors with the founder of the Urban Telemedicine Center

in South Los Angeles and the dean of medicine at Charles R. Drew University of Medicine and Science, to discuss the best use of telemedicine for its needs;

■ A conference call with the telemedicine director at Open Door Community Health Centers in northern California, to learn more about its groundbreaking work in telehealth in a CHC environment; and

■ A telemedicine learning session with someone who had helped Blue Cross and Blue Shield to roll out their statewide telemedicine programs in California.

These sessions helped Southside better outline potential business models, workflow scenarios, and sustainability issues at the early stages of its telehealth planning. CHCF also made arrangements for site visits by Southside staff to meet with providers at Open Door Community Health Center (Arcata), Northern Sierra Rural Health Network (Nevada City) and Shasta Community Health Center (Redding). Through these site visits, stakeholders were able to see comprehensive telehealth programs firsthand and to discuss best practices and considerations for developing telehealth programs that are sustainable and that meet the needs of patients. Despite the value of these learning sessions and site visits, however, Southside had no single, consistent telehealth planning team that participated in them.

Southside also hired a consultant to assist with gathering information, and to provide general guidance on the technical resources and workflow needed to support the program. In conjunction with consultants, Southside developed policies and procedures, a standard consent form, a skin evaluation form (to be completed by the referring

provider), and a workflow diagram. During evaluation site visits, it was determined that those sites using the guidelines and following workflow protocols made the telederm program operate more effectively. For example, the workflow diagram indicates that the person who takes the pictures uploads them and checks them for clarity before the patient leaves the exam room. This is because the picture may seem clear on the camera, but be blurry once uploaded. Sites that deviated from the workflow and uploaded the photos after the patient left the clinic often needed to recall the patient for additional pictures. Southside clinics that used these standardized forms and followed the workflow guidelines reported that they were helpful in starting and sustaining the program.

Barriers to Implementation

From the beginning of its planning through implementation, Southside faced a number of hurdles that arose from its particular organizational structure, but which other health center organizations might not encounter. The two primary aspects of this structure are:

1. Each of Southside's members retains considerable autonomy with regard to clinic practices and processes. As an aspect of this structure, there is no central authority tasked and empowered with directing changes at individual clinics. Instead, Southside's central staff must work through the supervisory staff at each clinic to plan, train, implement, and support the telederm project, resulting in additional layers of discussion and coordination, delays, and variations among member clinics in implementation.

2. As a collaborative rather than a centralized organization, Southside itself—as opposed to its member clinics—maintains only a

Contract with Local Dermatologist

Consistent with its broader mission to serve the South Los Angeles community, Southside was eager to arrange its telederm services with a specialist provider who practiced within the community, thereby permitting in-person visits with that specialist when necessary or requested by a patient, as well as keeping patient revenue within the community. In line with that objective, Southside was able to contract with a dermatologist who had been practicing in South Los Angeles for more than 20 years, who had already seen some of its patients for in-person visits, and who could be credentialed through an independent practice association (IPA) that six of the seven Southside members participated in (Health Care LA). In addition, this dermatologist was well-versed in telehealth, having been a consulting provider through Blue Cross's statewide telehealth referral program. The dermatologist was also a registered Medi-Cal provider, alleviating the need to structure a reimbursement contract for Medi-Cal patients seen via telehealth. The consulting provider agreed to see uninsured patients at the prevailing rate for Medi-Cal patient reimbursement ($55 per visit); thus far, Southside has been reimbursing the provider for these uninsured visits through a fee-for-service contract. This combination of factors has not only made collaboration with this consulting dermatologist an excellent fit for Southside but has also made it relatively easy to arrange.

Collaboration with this particular dermatologist, however, also may have slightly contributed to the lower than expected number of patients referred for telederm visits (though the extent of this effect has not been quantified). That is because once this dermatologist became a member of Southside's IPA, those patients who were enrolled in the IPA's Medi-Cal managed care plan became covered by Medi-Cal for in-person visits to the dermatologist. Since a number of these patients preferred to see the dermatologist in person, to the extent they did so they reduced the number of telederm visits.

small staff. During the initial period of the telederm project, its staff consisted only of an executive director, who had to take on the role of telemedicine program director on top of her other manifold duties, which contributed to the delay in initial implementation from 2008 to late 2009. Southside later hired a specialty care coordinator, but she was able to devote only a relatively small portion of her time to the telederm project, primarily on matters pertaining to on-site operational issues, because she was also responsible for assisting with other Southside specialty care. This left Southside's executive director still responsible for overall telederm implementation.

Because each member clinic in Southside maintains its own organizational autonomy, significant extra effort has been required to ensure that all participating members reach the same level of understanding of the telederm program. This dynamic has made reaching coalition-wide consensus extremely time-consuming, a problem exacerbated by the lack of central staff time to attend to the project. Initially, this resulted in an extended period of planning and decision-making. And when implementation commenced, coordinating the availability of staff and resources among the multiple member clinics and ensuring that timelines were both feasible and acceptable for all likewise proved to be a significant, time-consuming barrier. In the end, these delays pushed the program roll-out from Fall 2008 to late 2009.

The experience of the first Southside clinic to implement the project is illustrative of how the multi-layer dynamic and minimal project staffing contributed to delays. The first clinic to refer patients had several of their first referrals rejected due to the poor quality of the images sent. Because the clinic teams had not reviewed the images on the computer

prior to the departure of the patient, the patient had to be recalled for another visit to repeat the process. This first clinic also initially had a lower than expected volume of referrals given its overall patient volume. This, it turned out, was the result of some of the clinic's providers being unaware that the telederm referrals were now available through Southside, and so were still only making referrals for in-person visits through LA County. In addition, some staff were making referrals but failing to include photos and not consulting with the telederm site, which resulted in both sides being unaware of the absent photos. These combined shortcomings resulted in the need for another round of training and in Southside's executive director participating in an all-provider meeting at the clinic, with relevant referral staff in attendance, to reinforce the availability of the program and the procedures for using it.

Clinical staff at several sites expressed some concern over documenting the "true value" of the telederm services provided. The source of this concern was in part not having documentable feedback from patients on their perceptions of the care provided and also in part the lack of direct interaction between the telederm provider and the referring physicians. Southside providers knew the demographics and clinical background of the dermatologist, but none of the referring PCPs had been introduced to the specialist. Some of this clinic's providers indicated a desire to have a telephone or in-person dialogue with the dermatologist, yet they seemed reluctant to initiate that dialogue since they had not been officially introduced.

Operational Workflow

Operational workflow was an area where Southside received substantial insight from technical experts and other community clinic groups who had implemented telehealth programs. After reviewing

Technology Issues

When deciding on the technologies to be used to implement the telederm program, Southside considered contracting with a turnkey operation that would provide a Web-based application for sending referrals and receiving consultations. Southside also explored an off-the-shelf software application developed specifically for telehealth programs. The third option, which Southside ultimately decided to implement, was tied to its broader goal of developing a multi-specialty, in-person clinic. For this larger project, which as yet has not proceeded due to complications with billing and licensing under a network model, Southside had contracted for the development of a Web-based referral system, known as Coalition Care Net (CCN). Although the telederm program was being developed outside of the in-person specialist project, Southside began adapting CCN to include the attachment of digital images to referrals, as well as appropriate security and privacy technologies compliant with the Health Insurance Portability and Accountability Act (HIPAA).

One of the benefits of utilizing CCN for telederm was that it was already being used by the clinics for podiatry referrals. Having CCN built and customized for Southside, and having the ability to use it for multiple programs, has kept the overall costs down. On the other hand, there are also major complaints about the system. It does not integrate with any other existing (or planned) electronic system at any of the clinics, whether practice management or electronic medical records systems. This results in significant duplication of data capture (e.g., demographics, insurance status, and clinical notes) on each referral patient. Also, the consulting dermatologist complains that CCN does not allow the easy manipulation of digital images attached to the referral. For example, the dermatologist cannot enlarge the image to view it in finer detail, while other commercial telederm applications include this function.

numerous potential models for its telehealth program, Southside decided on what it called a distributed hybrid model.[12] In this model, a trained site coordinator or photographer would

be located at each clinic site and take photographs immediately following the patient's visit with the PCP. The site coordinator would then upload the photographs onto the CCN and make a referral for specialty dermatology care. A trained specialty care coordinator (SCC) would perform quality assurance, reviewing photos for quality and checking referral information for completeness. In addition to referring the patient information to the dermatologist, the PCP could automatically schedule the patient to return within a set time-frame (e.g., one to two weeks) or as needed for a follow-up visit rather than awaiting the referral results before scheduling. The distributed hybrid model was chosen in part because it seemed relatively patient-centric: It was anticipated that patient adherence rates would be very high because no additional diagnostic appointments would be needed.

As the model is actually used by Southside, the dermatologist receives the referral as an e-mail notification, logs into the CCN system, and views the descriptions and photos through the CCN software. The dermatologist, who maintains his own practice location, reviews the teleconsults in his office following his regular office hours. He then sends back recommendations to the referring clinics; copies to Southside's SCC are automatically generated. Referrals have generally been reviewed and sent back with consultation notes within 14 days of the initial referral. This has been a significant improvement for many of Southside's patients who would have had to wait months to be seen within the LA County system.

The telehealth program director (who is also Southside's executive director) and the SCC serve as the two primary program resources. They provide initial training at each site that chooses to implement the program, and the SCC conducts a quality check of each referral before it goes to the dermatologist.

Southside also contracted with an outside telederm expert to provide initial program training and guidance on structuring its referral templates. This expert also participated in initial training at the two pilot clinics, to introduce telehealth in general and telederm in particular, and to train the program site coordinators on their roles in the process. The expert also provided the SCC with training on quality control in reviewing telederm pictures.

Based on input from other clinics implementing telederm and from telederm experts, Southside's telehealth program director and the SCC developed a standardized telederm workflow. This workflow model was part of the initial training provided at each clinic. Under this workflow, all relevant patients are informed of the program's availability and structure. Then they are asked if they would like to participate or instead be referred to an in-person dermatology appointment. If they consent to participate (and all have, to date), a site coordinator gathers the required information for the CCN system, takes a picture of the skin issue to be reviewed, then uploads the images and referral and sends them to the SCC. The SCC reviews the quality of the images sent, ensures that the required data is provided, then forwards the referral to the dermatologist for review. Upon completion of the consultation by the dermatologist, both the SCC and the referring clinic's site coordinator receive e-mail notification that the information is ready for review by the PCP. Southside's telederm workflow diagram is provided in Figure 3 on the following page.

Within the workflow template, individual clinics have opted for variations. Some clinics have patients schedule a separate visit for the telederm component, specially focused on gathering clinical notes on the medical complaint and documenting it with photographs. Other clinics do the picture-taking and referral as part of the original visit, adding time

Figure 3. Southside Coalition Teledermatology Workflow

Source: Southside Coalition of Community Health Centers.
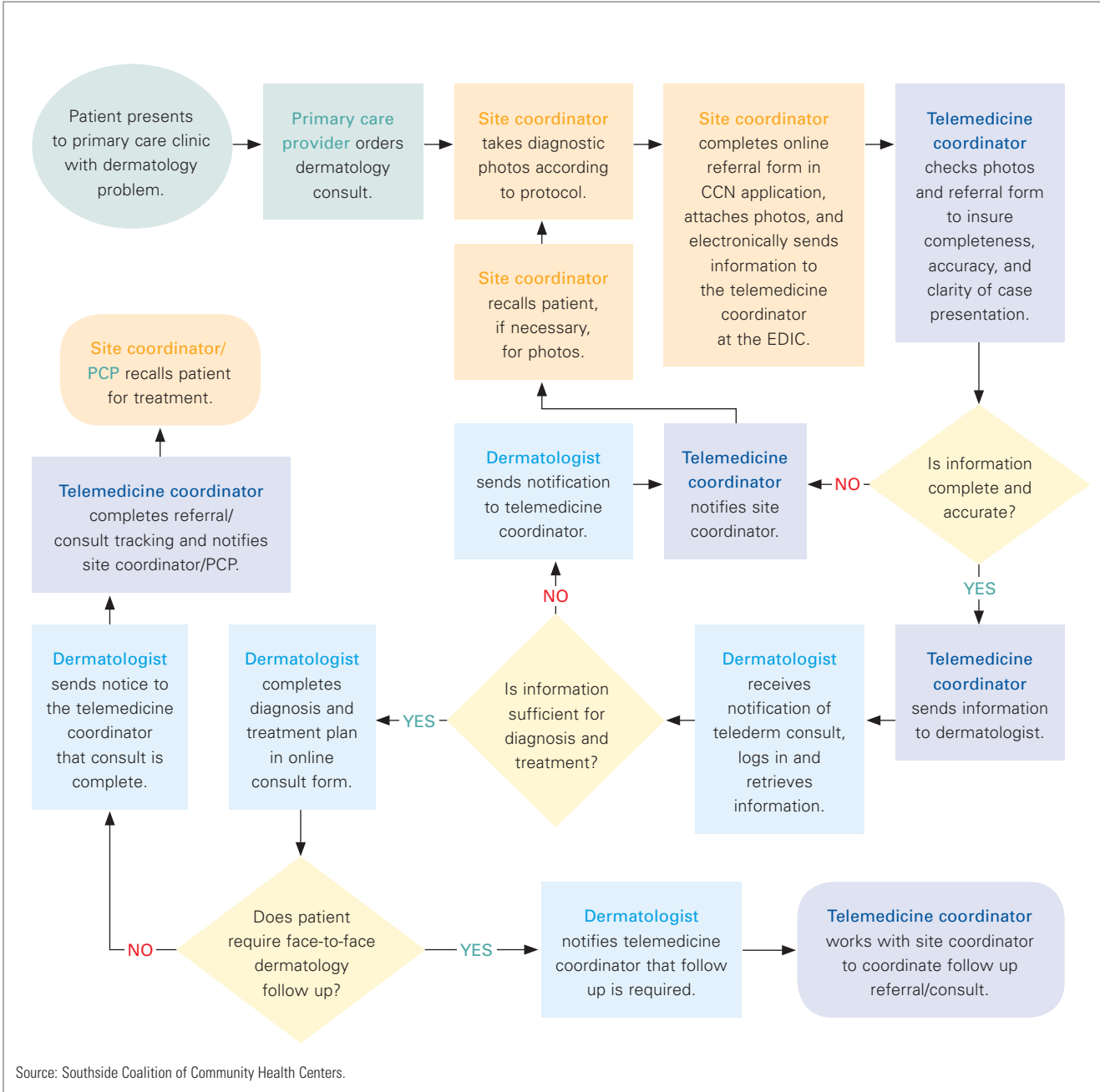
onto that appointment but not needing patients to return for a special visit. (There has not been enough patient feedback systematically collected by Southside to evaluate patient preferences between the two models.) There have also been differences in how clinics delegate telederm roles and responsibilities.

For example, at some sites the clinical provider takes the photo, while others have a medical assistant do so. Regardless of these variants, site visits suggest that the clinics most successful in implementing telederm were those that had roles and responsibilities clearly outlined and understood by all staff.

Another aspect about which there has been variation in program implementation is that of consent forms. During the initial training with each clinic, guidance was provided on obtaining written consent to a telederm consultation and to having a picture taken as part of the consultation. Some sites, however, did not believe that they needed to obtain written consent prior to the telederm consultation itself. This variation in understanding, though now clarified, represents one of the challenges that arose because Southside did not have direct, daily oversight of all aspects of implementation at each clinical site.

Clinical and Patient Impact

Several Southside providers have indicated that they would like the program to establish a more interactive dialogue with the consulting dermatologist, in order to further their referring relationship. Nonetheless, since implementation of the program, providers have noted that most consultations have confirmed that they are appropriately treating dermatology issues. The telederm consultations have also highlighted the need for an in-service training for Southside's PCPs on conducting punch biopsies, a standard procedure for diagnosing deeper skin lesions. Southside has initiated such training, and once PCPs at Southside are comfortable performing this procedure, a number of telederm referrals are likely to be unnecessary.

Patients, too, seem to have both benefited from and reacted positively to the program. Southside found that no patients resisted the offer of a telederm consultation instead of an in-person dermatology visit. Nor has Southside had any patient refuse to sign the consent form that permits the pictures to be taken and forwarded to the dermatologist for review. Given that most Southside clinics do not bring patients back for a separate telemedicine visit, the clinics have not been able to compile much patient satisfaction data. However, there is anecdotal

Financial Sustainability

Southside is not currently billing any payer for telederm visits or referrals, and there are no plans to. Funding for the program has depended entirely on the CHCF grant and on existing Southside infrastructure. This makes program sustainability a pressing concern beyond the CHCF grant funding period. While Southside did not embark on the program with the notion that it would pay for itself, let alone generate revenue, it must nonetheless consider how to fund the program without it constituting too great a drain on other resources. Southside's executive director has met with numerous health systems in the Los Angeles metropolitan area to explore potential telehealth partnerships. The possibilities include:

- Creating a telederm relationship with an academic medical center that could support Southside's services under its grant programs;
- Working with local health plans so that consultations could be provided under a community benefit program; and
- Contracting with L.A. County for telederm services.

information to suggest that having a telederm consultation attached to a priority referral for follow-up in the Los Angeles County Health System has resulted in shorter wait times for appointments, from many months down to several weeks.

Lessons Learned

There are a number of lessons to be learned from Southside's experience of planning and implementing its telederm program, almost all of which arise from Southside's network structure. It should be noted that this structure provided some positive aspects to Southside's introduction of telehealth, in particular the significant benefits of pooling resources among the clinics for capital purchases (e.g., digital cameras, video conferencing equipment, and referral software) and shared staff (e.g., the telemedicine coordinator).

But for the most part, Southside's amalgamation structure and lack of centralized authority were a source of delay and complexity in both the planning and implementation of the program. For community clinic organizations that are considering implementing a telehealth program in collaboration with other clinics, there are notable considerations to be drawn from Southside's experience. While there can be significant benefits to pooling resources and staff, there are also added layers of time and complexity.

Consistent Buy-In and Implementation

The fact that neither the telemedicine coordinator nor even Southside's executive director had supervisory authority over staff at individual member clinics provided a considerable challenge in both planning and implementation. Thus, when networks consider implementing telehealth programs, special attention must be paid to the structure of communication and oversight among participating sites, to ensure that policies, procedures, workflows, and specific roles and responsibilities are agreed upon and uniformly understood not only across the entire organization but also at each level within the organization. In this regard, Southside has found that having site coordinators who are actively engaged in and promote the telehealth program to each clinic is invaluable. In addition, strong clinical leadership is crucial in planning and implementing any telehealth program, but meeting this need is more complicated when multiple organizations are involved in the same program, requiring clinical champions at each member clinic.

Technology Choices

Southside began its exploration of telehealth as part of the planning for a broader multi-specialty center. This led it to choose a software tool — CCN — that was not limited to dermatology referrals. While CCN required a relatively low front-end cost for Southside, its functionality has had to be adjusted as the program has progressed because it was not a tool that had been used before for telederm. Southside's experience points up the tradeoffs that need to be carefully considered between using a commercially available, off-the-shelf software platform with extensive functionality, or using a custom-built software tool with lower up-front financial costs but also lower functionality.

Monitoring and Evaluation Plan

A sometimes overlooked component when clinics develop telehealth programs is that of monitoring and evaluation. A comprehensive monitoring and evaluation plan allows a clinic organization to demonstrate concretely the impact of its telehealth program and should be developed during the program's planning phase. During the planning process for a wider specialty clinic, Southside developed a comprehensive series of metrics to evaluate its impact at one year, two years, and three years. Within these were metrics specific to the telehealth program. Southside set specific telehealth targets within the following categories: cost effectiveness; identification of additional financial resources; county contracts for uninsured care; use of technology to improve delivery and quality; model for replication with best practices; improved coordination of care; reduced wait times for appointments; and improved patient and provider satisfaction. As Southside's telederm program is still within the first year of implementation, these metrics have not yet been evaluated. Defining them prior to implementation of the program, however, has allowed Southside to monitor them from the start.

V. Conclusion

THE GOAL OF THE CASE STUDIES IN THIS report was to highlight the experiences of three community health care organizations as they planned, developed, and implemented new telehealth programs. While each organization's experience was different, there are several common themes across all three that may help inform other clinics as they explore telehealth options for improving access to specialty care services.

Planning Phase

All three health center organizations emphasized the importance of a robust planning phase, including an assessment of current IT capability, receptiveness among providers and staff to technology use for service access, and identification of specialty care needs and required training in telehealth technology.

■ While all three organizations analyzed wait times and travel distances to identify the specialty services that would most benefit their patient populations, La Clínica and Southside also conducted internal organizational surveys to assess both providers' perceptions of what specialties were needed and provider and staff receptiveness to using telehealth to access these specialties. This enabled the organizations to determine what was most likely to be used by the providers, which is instrumental to achieving buy-in. For example, this type of internal assessment of providers' willingness to use telehealth for a specific purpose might have helped Open Door's administrators to identify early on that its obstetricians did not feel the need for telehealth remote consultations, which

ultimately led to the discontinuation of that particular telehealth program.

■ Another common facilitating factor in planning for telehealth programs was visiting similar organizations that had been successful with telehealth. Open Door had no clinic to visit when it started its programs years ago, and so had to develop and operate them through trial and error. Since then, however, Open Door has demonstrated long-term success with its programs, and now is frequently a reference site for other agencies. Clinics considering implementing a telehealth program may be able to reduce errors by visiting existing community clinic-based telehealth sites. Seeing live telehealth demonstrations in other community health settings and talking with those who have implemented the programs in similar environments may help avoid certain pitfalls and more easily overcome challenges. Both Southside and La Clínica visited Open Door and learned from the development of its telehealth program. This provided them with valuable insight into the intricacies of a successful telehealth program at an analogous organization.

■ For La Clínica and Southside, which were setting up telehealth programs for the first time, program planning took significantly longer than they anticipated. Issues included difficulty identifying and setting up an agreement with the specialty provider and identifying and agreeing upon software.

Trusted Specialist Provider Relationship

All three health center organizations stressed the importance of the relationship with the consulting provider and, related to that, their preference for using specialist providers within their community. Open Door, as both a hub and spoke site, uses its own providers when possible as the consulting specialist; Open Door also contracts with local providers to come into the TVSC. For specialties where it needs to go outside of the community, Open Door has cultivated relationships with trusted organizations such as the University of California, Davis. Similarly, Southside was eager to keep services within the community and was able to contract with a dermatologist who had been practicing in South Los Angeles for more than 20 years. La Clínica ultimately selected a dermatologist with whom many of its providers had a pre-existing relationship.

Coordination and Workflow Challenges

All clinic sites reported coordination and workflow as major challenges but indicated that developing protocols, policies and procedures, and workflow diagrams can aid in program implementation and operation. One of the biggest lessons Open Door learned during the process of implementing real-time telehealth was that a substantial level of personnel support is required to operate the programs: Significant coordination is needed on both sides of a telehealth visit (even within an organization, providing services between sites) to ensure that all necessary information is available to the specialist, that the technology is set up and functional, and that the timing of patient and provider is synchronized.

For store-and-forward telehealth programs, a clear understanding and coordination of roles is essential to ensuring that clinical information and images are collected and transmitted accurately and completely to the consulting provider, that the referral

information is retrieved, and that follow-up occurs with the patient. Both La Clínica and Southside developed a standardized teledern workflow that was part of the initial training provided at each clinic. Visits to sites within both organizations revealed that those that adhered to the workflow, and whose staff responsibilities had been formally defined, had much better program implementation.

Reduction in Specialty Care Wait Time and Patient Travel

The impetus for developing telehealth programs for all three organizations was to increase access to specialty care, and all three organizations reported such increased access in the form of a reduction in wait time for a referral and/or in patient travel. Most notably, prior to teledern implementation, La Clínica reported wait times for dermatology appointments ranging from ten days at one clinic to more than 117 days at another, with an average of 62.3 days; post- implementation of teledern, the average turnaround time for a dermatology consultation at La Clínica was 3.1 days.

Discussions with Open Door revealed that without telehealth, travel distances were so great that many patients wound up forgoing care. For example, there is a high demand for hepatitis chronic disease management in the patient population at Open Door's Willow Creek Community Health clinic; however, the closest liver clinic is in San Francisco, over 300 miles away. The telehealth program allows these patients to seek care in their local community.

Satisfaction with Telehealth

Overall patient satisfaction with the telehealth programs has been high at all three sites. Patient responses to satisfaction surveys and provider interviews highlight that telehealth has allowed patients to receive care in their primary care clinic,

reducing wait times and travel to remote specialty providers, and saving patients money in travel costs and lost wages. Satisfaction results among the organizations' providers have been slightly more mixed. However, even those providers who reported preferring in-person encounters to telehealth all acknowledged that telehealth encounters were an effective alternative for the same level of care for the majority of previously non-available specialties.

Endnotes

1. See also National Opinion Research Center. *Health Information Technology in California's Rural Practices: Assessing the Benefits and Barriers.* California HealthCare Foundation, December 2009 (www.chcf.org); Johnston, B. and N.A. Solomon. *Telemedicine in California: Progress, Challenges, and Opportunities.* California HealthCare Foundation, July 2008 (www.chcf.org).

2. State of California, Office of Statewide Health Planning and Development. *2005 Final Database of Primary Care Clinics.*

3. Health Center Program Statute — Section 330 of the Public Health Service Act (42 USCS §254b).

4. United States Department of Health and Human Services, Health Resources and Services Administration, Bureau of Primary Health Care, Policy Information Notice 2008-01. *Defining Scope of Project and Policy for Requesting Changes.* Issued December 31, 2007, revised January 13, 2009.

5. The five clinics were Del Norte Community Health Center, McKinleyville Community Health Center, NorthCountry Clinic, Willow Creek Community Health Centers, and Blooming Lily Clinic at the Smith River Elementary School.

6. The new provider stations are located at Eureka Community Health Center, Humboldt Open Door Clinic, Del Norte Community Health Center, and two at the Telehealth and Visiting Specialist Center (TVSC).

7. 2009 Physician Placement Starting Salary Survey, Medical Group Management Association and the National Association of Physician Recruiters, cited in *New England Journal of Medicine,* NEJM Career Center, September–October 2009.

8. Southside has since added an eighth member clinic.

9. Southside Coalition of Community Health Centers. *Evaluation of Key Measures: Clinic Growth/Expansion of Services,* 2009.

10. Lia Margolis and Associates. *Multi-Specialty Clinic Feasibility Study for the Southside Coalition,* December 2005.

11. Southside Coalition of Community Health Centers. *Monthly Tracking Report for Specialty Services,* January 2009-February 2010; Southside Coalition of Community Health Centers. *Dermatology Referral Demand Analysis,* 2007.

12. This hybrid model combines elements of two other models: the "hub and spoke" model, in which the consulting specialist is located in one place (the hub) while the patient and/or consulting provider is in a remote place (the spoke); and the "rover" model, in which a specialty care coordinator moves between different sites to take photos of patients, which are then forwarded to the specialist along with other patient information.