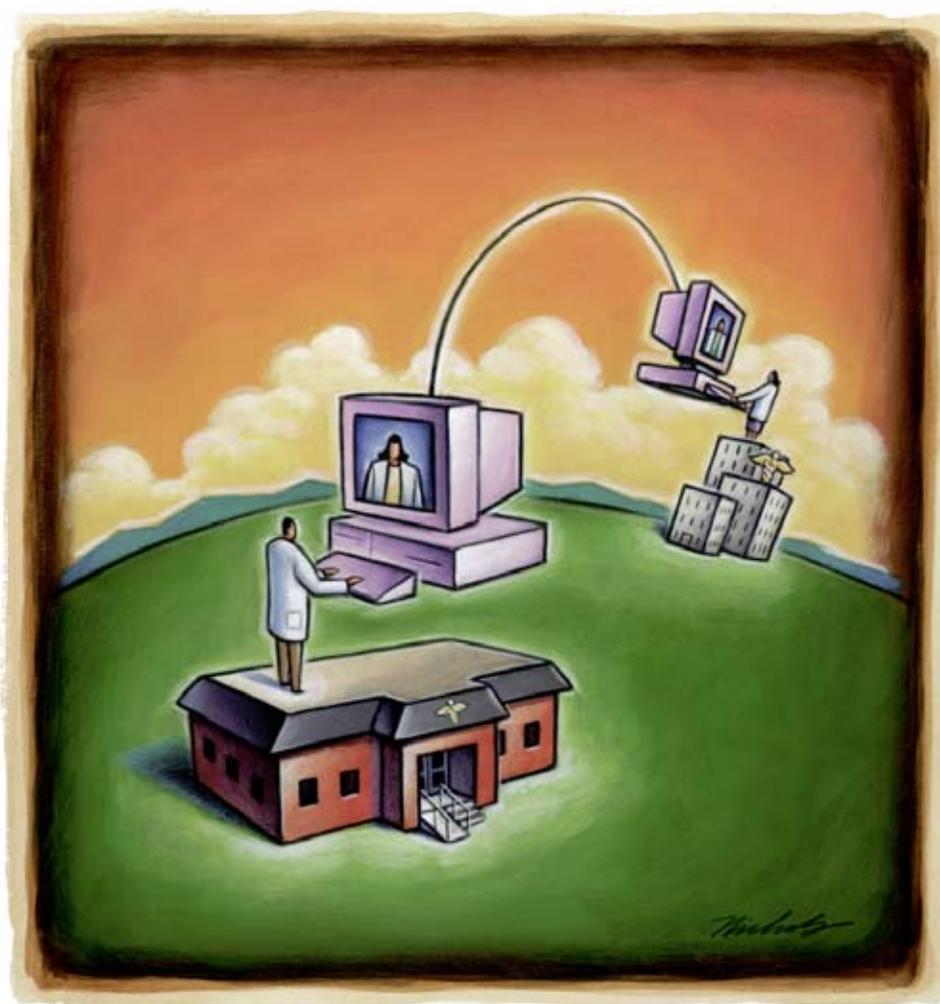




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Bridging the Care Gap: Using Web Technology for Patient Referrals

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Bridging the Care Gap: Using Web Technology for Patient Referrals

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by

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About the Foundation

The **California HealthCare Foundation** is an independent philanthropy committed to improving the way health care is delivered and financed in California. By promoting innovations in care and broader access to information, our goal is to ensure that all Californians can get the care they need, when they need it, at a price they can afford. For more information on CHCF, visit us online at www.chcf.org.

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I. Introduction

REFERRING PATIENTS FOR FOLLOW-UP OR SPECIALTY care is an extremely disjointed process, regardless of whether the referring providers sit in a primary care practice, community health clinic, or a hospital emergency room. Typically, all participants—patients, referring and receiving providers and their administrative staff, and the payer—must rely on paper, telephone calls, and faxes for communication and coordination. The result is numerous opportunities for miscommunication (or lack of communication), delays in the referral or follow-up care, and the lack of a viable method for referring providers to check on progress.

For patients, the typical process means being sent off with a piece of paper and instructions about where to seek care on their own. They may not have an existing relationship with a primary care provider or specialist, and may need to contact a number of potential care sites before they find one that is taking new patients or has an appointment available within a reasonable amount of time. Physicians and other clinicians who refer patients to another provider know that many of the referrals they initiate are likely to be delayed, and some may not happen at all. The resulting gaps in care are frustrating for both physicians and patients, can have serious health consequences—particularly when urgent follow-up is needed—and contribute to costs of care when patients with nowhere else to turn seek care in emergency rooms.

Innovative Approaches to Arranging Care

Provider organizations are increasingly turning to Web-based technology to assist them in transforming the unmanageable paper process into a more standardized program that is more likely to connect patients with the referral and follow-up care they need.

Introducing automation promises to bridge the communication gap between referring and receiving providers, and in some cases, the payers underwriting the patient's care. It can also give the providers involved information about the status of individual referrals, how well the program is working, and trends in the volumes and types of referrals being managed. For patients, the automated process can match them with a specific provider that not only has the capacity to provide care, but is also willing to accept their insurance or self-pay status. They can leave with a

successful connection, and sometimes, even an actual appointment.

When the Web-based applications include the ability to create rules that request and respond to information about individual referrals, the process can be further expedited to integrate clinical rules for appropriateness set by specialists and ensure that prior diagnostic work-ups are in place. This new capability provides the ability to transform the process by ensuring that referrals are appropriate, as well as by communicating patient-specific information between referring and receiving providers.

All in all, the goal is to have a more orderly, reliable, and successful referral process.

To introduce other provider organizations to these possibilities, the California HealthCare Foundation commissioned research to identify and describe the Web-based applications being used by all types of providers nationwide. Because this product niche is quite new, identifying all of the participating users proved challenging. The research team used Web research and outreach to many associations and individuals to identify organizations with operating programs and the vendors who have developed and, in most cases, sell Web-based applications designed for this purpose. However, given that this area has yet to evolve into a clearly defined segment of the software marketplace, the authors believe that while the identified products are illustrative, the portrait is probably not complete.

The purpose of the report that follows is to provide an overview of the Web-based applications for arranging referral and follow-up care and the types of practice sites they support. The results suggest that while this innovation has the potential for broad adoption, the initial steps have come from public health systems and other safety-net providers. These organizations are targeting two important types of patient hand-offs that often fail to occur: referrals by emergency departments for patients in

need of follow-up care, and referrals by primary care providers for patients who need to see a specialist or ancillary care provider.

Eight Web-based applications are described in this report, five of which are now commercially available. All take advantage of Web technology, greatly reducing the need to purchase additional user devices for participating care sites. The systems are administered by an application service provider, which saves the purchasing organization from the technical challenge and expense of hosting the software on its own servers.

In addition to an overview of the software systems, this report includes an explanation of their functions, characteristics, and technology requirements; considerations for organizations that may wish to implement them; a summary of success and challenges experienced by early adopters; and four case studies from the field.

Further information about vendors and developers and the capabilities of the identified software solutions is provided in the appendices.

II. Overview

EACH OF THE WEB-BASED REFERRAL SYSTEMS REVIEWED for this report is designed to more effectively link patients who need specialty, follow-up, and primary care with appropriate care sites and providers. This effort includes supplying the referring providers with tools they can use to:

- Initiate the referral while the patient is being seen;
- Track and review the referral process;
- Identify and control referrals by factors such as payer and plan, reason for referral, work-up, schedule openings, and other conditions;
- Facilitate communication with the receiving provider about the referral, and vice-versa; and
- Help patients understand and manage their referrals, using methods such as printed hand-outs at the point of referral, letter generators, and reminder notices to contact the patient.

Types of Referrals and Settings

The programs identified in this study were initially developed to address one or both of two referral situations:

- Emergency room providers referring patients to primary care clinics; and
- Primary care providers referring patients to a specialist physician or ancillary care provider (such as an imaging center).

Certainly, other referral situations—such as an attending physician referring a patient to primary care upon discharge from the hospital, or an emergency-room physician referring a patient to a specialist—could also benefit from a more organized approach to ensure access to follow-up care. However, although vendors and developers of Web-based applications mentioned such referral scenarios and their systems are able to facilitate them, examples from the field were not provided, and interviews and case studies could not be performed.

Applications Identified

Eight different Web-based software applications are discussed in this report. Six of the applications were initially developed to facilitate referral from primary care to specialty care. Of these, one was primarily developed for a telemedicine network (Eceptionist) and another has since expanded to include emergency department, hospital, or specialty referral back to the primary care provider (Cook County IRIS). Two applications were designed to accommodate referral from the emergency department to primary care providers (My Health Direct, ER Connect).

Additionally, the reviewed applications represent a variety of provider systems. Four programs (San Francisco eReferral, Los Angeles RPS, Cook County IRIS, Santa Clara Access Express) primarily facilitate referral from both public and nonprofit community clinics into public specialty clinics. These are

essentially closed systems where public providers function as the primary source of specialty care for safety-net patients. In contrast, the Eceptionist and ERP/ERS systems are designed for coordination between private primary and specialty care providers. Lastly, the two emergency department referral systems are used to manage referrals between community hospitals and private community clinics or independent primary care providers.

Not surprisingly, distinctions in both the care setting and provider system characteristics often highlight differences in how the applications function and the way they were designed. Four of the reviewed systems are homegrown solutions developed to meet the needs of specific provider organizations; one is now available as a commercial product. The other four were purchased from commercial vendors and modified as needed.

Table 1. Applications and Products

PRODUCT	VENDOR OR DEVELOPER	REFERRAL SITUATION	PROVIDER CONNECTION
eReferral	Developed by San Francisco General Hospital	Primary care provider to specialist	Public and community clinics to public specialty clinics
RPS	Developed by Los Angeles County Department of Health Services	Primary care provider/specialist to specialist	Public and community clinics to public specialty clinics
IRIS	Developed for Cook County Health and Hospitals System by Proximare Health, Inc., now offered by Proximare Health, Inc.	Primary care provider to specialist/ancillary Emergency department/hospital to primary care provider	Public and community clinics to public specialty clinics
Access Express	Customized for Santa Clara Valley Health and Hospital System by Health Access Solutions, now offered by Health Access Solutions	Primary care provider to specialist	Public and community clinics to public specialty clinics
Eceptionist	Eceptionist, Inc.	Primary care provider to specialist/ancillary Primary care provider to telemedicine provider	Developed for telemedicine; now being used by large health systems and networks
ERP/ERS	inetMD, Inc.	Primary care provider to specialist	Community clinic to independent specialists
ER Connect Clinic Connect	Developed for Orange County Health Care Agency by NetChemistry, Inc.	Emergency department to primary care provider	Private hospitals to independent primary care providers and community clinics
My Health Direct	Global Health Direct, Inc.	Emergency department to primary care provider	Private hospitals to community clinics

III. Functions and Capabilities

THIS CHAPTER REVIEWS THE FUNCTIONS AND CAPABILITIES available in Web-based solutions for provider organizations. Some are common to all of the applications, others are defined by the variations in program design they support.

Details concerning the functions and capabilities in the eight identified applications are provided in Appendix B.

Referral Initiation

In all eight systems, a user initiates the referral by completing an online Web-based request form at the point of care. New patients must be registered, a step requiring entry of a small number of data elements (demographics and insurance information). Most vendors reported that the application can support downloading patient demographics from the local registration or billing system, but manual entry remains the most common method.

The applications reviewed in this report vary in the extent to which they allow referring providers to initiate a referral based on defined criteria. Most limit the available search terms to basic categories such as type of service or diagnosis. In some systems, the pick list can be further filtered according to the patient's insurance type or plan, home Zip code, access to public transportation, and any gender or language preference for their health care providers. The criteria are set for each participating receiving site, enabling the referral process to operate according to these terms of participation.

The desirable mix of filtering criteria depends upon the type of program and the setting. Within a single organization that provides both primary and specialty care under the same corporate umbrella or a community network of providers all committed to caring for any patient regardless of their insurance status, insurance type is not needed for matching. In applications designed to support appointment scheduling, search criteria also include an open appointment slot for the type of service being requested. The importance of match criteria such as distance from home and accessibility via public transportation depends on location and the patient population served.

Tracking and Notification

All of the eight systems create a referral record for each service request and provide some sort of notification at the receiving site. In addition, all are designed so that staff members at the receiving sites can be system users, reviewing incoming referrals electronically, sending and receiving referral-related messages and notifications, and viewing referral status information. However, the systems are also designed to communicate with some or all receiving sites via one-way fax or mailed paper copies of referrals. Providing this more basic option (which replicates the traditional manual process) is important to permit participation of receiving sites not able or willing to invest in the infrastructure necessary for online notification.

All of the products permit users to view the status of any particular referral, although the scope of tracking depends upon the information captured during the referral process. At the most basic level, the system records the time and date that each referral request was initiated. Depending upon the application and how many other referral-related tasks it automates, referrals can be tracked according to:

- Appointment booked;
- Appointment kept (or missed);
- Authorization obtained; and
- Report back to referring provider received.

For staff assigned to monitor referrals so that corrective action can remedy delays and roadblocks, the systems also provide lists of referrals in delayed status (i.e., appointments missed, referral not completed within 30 days, etc.). Some of the applications also notify participating service sites when the status of a referral has changed via an alert sent to the system inbox, sometimes with a parallel electronic mail notice to an external email system.

Patient notification is accomplished by printing personalized instructions that can include an appointment date and time or where to call, contact

information for the receiving site, and sometimes directions, public transportation options, and instructions relating to the requested service. One system includes the option to notify patients of booked appointments via interactive voice response.

Clinical Review/Approval

Receiving providers (specialists in particular) typically review referrals before scheduling an appointment to ensure that the requested type of service or provider is appropriate and that all the relevant information will be available when the patient is seen. The Web-based applications described in this report offer different approaches to automating clinical review and approval in the referral process, and broadly reflect the unique provider culture and organizational arrangements that characterize their systems. In all cases, however, referral review and approval processes are standardized.

For example, whereas the two referral systems that link emergency departments with primary care providers (My Health Direct, ER Connect) do not include clinical review requirements, each of the six specialty referral systems have defined review processes. Four of these systems rely on manual review of referral requests by receiving providers, who can then select from a menu of options to accept, deny, or request additional information for referrals.

Two applications (Santa Clara Access Express, Cook County IRIS) have rules-based auto-approval, though they differ greatly in design. The IRIS system incorporates complex branching logic into the questions and answers used to capture information, whereas Access Express requires referring providers to respond to a uniform and limited number of questions for each specialty. The solutions permitting rules-based auto-approval also give referring providers the option to appeal denials and route the record to an electronic inbox where it is reviewed by a team or designated person of authority in the specialty practice.

In all the applications, the clinical review and approval requirements were designed to respond to the unique nature of the referral network and under the leadership of participating clinicians.

Information Exchange

As with the clinical review/approval process, all eight applications support standardized requirements and processes for referral submission and information exchange. All allow referring providers to submit free-text comments about the diagnosis or procedure for which the patient is being referred as part of the referral request. A few also allow other pertinent patient information, such as lab, medication, and claim data, to be linked to the referral.

Each of the Web-based systems is designed to facilitate a feedback loop between referring and receiving providers. In addition to responding to referrals with additional information or work-up requests and the posting of acceptance/denial decisions, most of the systems allow the referring provider to attach and electronically transmit free-text notes or document files (notes, images, test results) scanned, pasted, or downloaded from an electronic health record (EHR).

Scheduling

Though the systems reviewed here have contributed to more timely and transparent referral approvals, most do not yet offer real-time scheduling. More commonly, they support preliminary steps toward arranging care by facilitating referral approval, identifying the appropriate care site or provider, notifying both parties to the match, and indicating that one or the other is to initiate a telephone call to book the appointment. Two of the eight applications allow for real-time scheduling using a “stand-in” approach (discussed in the following chapter). Receiving care sites can post available appointment slots in the application for direct booking from the referral site. This makes it possible for patients to leave with a booked appointment.

Table 2. Core and Variable Functions of Web-based Referral Systems

FUNCTION	CORE	VARIABLE
Clinical Review/Approval	<ul style="list-style-type: none"> Review/approval process standardized in each setting 	<ul style="list-style-type: none"> Manual vs. rules-based review/approval Approval/denial/redirect options Provider communication/feedback tools on initiated referrals
Information Exchange	<ul style="list-style-type: none"> Receiving provider can request more information/work-up Information submission requirements standardized in each setting Referring providers can add free-text notes 	<ul style="list-style-type: none"> Format and level of information sent with referrals Link to EHR Format of progress note (scanned, pasted, downloaded from EHR)

Scheduling would be accomplished more easily if the referral management applications were electronically linked to the local scheduling system, allowing users to book appointments directly. This enhancement is on the high-priority wish list for one of the eight systems, but none now operate in this way.

Administrative Approval and Insurance Screening

The eight systems support a number of approaches to integrating insurance/payer screening directly into the referral process, generally based on the requirements of participating providers. The most basic matches each patient request with a receiving provider who will take the patient’s type of insurance without involving the payer directly. In all other respects, the receiving site is then responsible for determining patient eligibility, coverage, and, if needed, authorization of the referral. At the other end of the range, some applications can route authorization requests electronically to the payer and allow posting of authorization status (by the insurer or someone in the provider site who obtains authorizations via telephone) so that it can be used as a way to track referrals.

Data Analysis and Reporting

The ability to generate referral reports is one of the most valued benefits of initiating a Web-based referral system. Each of the applications identified here has a library of available standard reports that users can request for a particular date range and other standard variables (e.g., referral type, receiving provider type). All but two also offer a report writer that provides more flexibility to tailor reports addressing a particular management concern. (The two currently lacking this capability have included it in their enhancement plans.)

IV. Technology Characteristics and Requirements

ALL OF THE APPLICATIONS REVIEWED IN THIS REPORT were developed to take advantage of Web technology. As a result, the vendors (or sponsoring agencies in the case of homegrown systems) offer the products as an application service provider (ASP), meaning that the vendor or sponsor provides and maintains the software on its own servers. All of the vendors are also willing to sell the application and turn hosting over to the customer, although remote hosting remains the prevailing model.

IT Requirements/Hardware

Because the applications are Web-based, IT requirements for referral and receiving sites are minimal. Sites where referrals are initiated need one or more computers with Internet access (preferably high-speed), and at least one printer. More computer workstations are required when physicians and other providers interact with the system directly to initiate and track referrals. If the referral process includes attaching information scanned from paper medical records, referring sites also need one or more scanners.

In sites that receive referred patients, workstations and printers are likewise needed if staff members manage the application online—that is, perform tasks such as posting available appointments or reviewing/approving incoming referral requests. In a number of the systems reviewed for this report, however, the only requirement for receiving providers is a fax machine.

Interfaces

Several vendors claim that their applications can support interfaces with external applications used in customer sites. However, with the exception of simple registration interfaces for downloading minimal patient demographics, customers operate the identified system in isolation. The difficulty of creating interfaces with legacy systems from disinterested vendors is often cited as the major barrier.

Registration

The most common interface among the eight systems reviewed for this report links the referral software to patient registration systems or modules. The interface both helps identify the patient as an eligible care recipient and reduces user workload by automatically

downloading demographic data (such as address, telephone number, etc.) that otherwise must be entered manually. It is possible to submit referrals without this interface, however doing so addresses one of the biggest user complaints: having to re-enter data that already exists in electronic form.

Scheduling Interfaces

Another useful interface that has yet to be incorporated into most Web-based applications is direct access to scheduling systems for real-time booking of patient referral appointments by either the referring or receiving provider. Except for one product that also incorporates a scheduling application, no systems reviewed for this study are being used with a scheduling interface.

It is important to note that the scheduling provided by applications described in this report refers to “second-hand” or “stand-in” scheduling, in which receiving providers manually post available appointment blocks, and then enter those that are filled back into their scheduling systems.

EMR/Patient Record Interfaces

Two types of EMR/patient record interfaces were identified in the programs and software applications reviewed for this study:

- One program includes a link to the hospital clinical information system used to report progress notes. It is used by referring providers (who are notified when the note is available) to review specialist consult notes and reports.
- The other is an option available with one application to provide direct access to the program from within ambulatory EMR systems, such as during order entry or charting. It is not being used by any providers examined for this study.

Clinical Guidelines

Direct access to clinical guideline content (such as Milliman and other commercial products) is available with one system. The vendor provides a link that users can employ during referral record creation and review. Commercial guidelines require a separate license fee.

Other systems include options to insert specific guideline content (developed by customer organizations) into modules such as rules-based questions and answers, and work-up questionnaires (for example, “Is the patient currently using a corticosteroid inhaler?”).

Planned Enhancements

The most common enhancements on developers’ drawing boards are new interfaces, including those for:

- Demographic data downloads;
- Direct appointing booking;
- System event downloads (such as kept and no-show appointments);
- Direct access to EMRs for patient record reporting; and
- Direct access from EMRs to facilitate the creation of referral records.

Other planned responses to user requests include report writers (to enhance standard reports and limited ad-hoc reporting tools), rules-based approval with branching-logic questions, and options to develop custom rules-based questions by payer and plan.

V. Considerations in Getting Started

THE RESEARCH FOR THIS REPORT HIGHLIGHTED A number of important considerations for the development and implementation of Web-based referral systems:

- Most are designed to formalize existing provider relationships, rather than develop new affiliations;
- It is important that the systems be configured to help providers define and manage the terms of their participation according to patient volume, payer type, processes to ensure clinical appropriateness, and other considerations;
- Developing new clinical review/approval processes requires clinician buy-in and should reflect local perspectives and system characteristics; and
- Implementation is easy; however, developing provider networks, terms of participation, and clinical review/approval processes requires time and commitment.

Developing a Network

A key element of all eight Web-based referral programs was agreement about the roles to be played by referring and receiving sites and providers. In all of the examples identified, most if not all participants were part of the public/private safety net or had a long-standing history of working together on behalf of a shared patient population. The simplest path for other organizations considering a more formalized referral relationship is to start with the network of providers that is already closely affiliated.

To establish similar programs where such close affiliations and history of working together do not exist, the necessary partnerships involve:

- Agreements from primary care clinics and practices to provide primary care to patients diverted from emergency departments or referred for follow-up care by an emergency department; and
- Agreements from specialist and ancillary providers to provide referral care to patients referred from primary care clinics and practices.

Terms of Participation

For the Web-referral system users reviewed for this report, the challenge was less about finding providers willing to receive referred patients than establishing the details about the flow and pre-conditions: how many patients, what types of insurance, and how to ensure clinical appropriateness. Control of all of these aspects by the receiving sites and clinical departments proved to be essential, even among closely affiliated participants.

For example, when asked to make a designated portion of the clinic or practice schedule available to referring providers for direct booking of appointments, many are reluctant to participate. Doing so requires not only blocking the slots in the local scheduling system, but also updating the local schedule when a referring site books an appointment. To navigate this problem, successful partnerships in the identified programs found it crucial to leave control in the hands of the receiving site, allowing it to post appointments and make adjustments as necessary in the referral system.

Rules for Clinical Review/Approval

In persuading specialists to participate, several organizations found another key element was the ability to replace the traditional manual review with questions geared to gaining sufficient background information to determine the clinical appropriateness of a given referral, and to deny or defer referrals when clinical appropriateness could not be established. Building this into the program required a prolonged process to establish consensus regarding the guidelines to be used, as well as a software application that could incorporate them into the referral request transaction. In one organization, it took a full year to develop, review, and gain approval for the initial set of rules. These addressed the ten most common diagnoses/reasons for referral for each specialty department, and limited the considerations to be employed in approving or denying each type of referral to no more than three.

Considering the Provider Setting

An important consideration is the provider setting in which the system is being implemented. Not surprisingly, in those where receiving providers all fall within the same corporate umbrella (e.g., public specialty clinics), there are more opportunities to specifically define shared clinical guidelines and approval criteria. In an open referral setting, however, the systems are more likely to emphasize clear processes, appropriate availability of information, and provider control over terms of participation.

The Implementation Process

Except for the work required to establish clinical guidelines and rules, implementation was reported to be simple and fairly straightforward.

The use of Web-based applications simplified ensuring user access. Several interviewees reported that all participating sites already had computer workstations with broadband access. Others successfully funded necessary purchases with grants or temporarily instituted paper-based referrals where providers did not have the ability to enter referrals directly.

The fact that all commercial systems were offered as an ASP further simplified the implementations. Vendors typically performed both initial application configuration and set-up, support that largely obviates the need for IT-savvy staff in the customer sites.

System Interfaces

The other technical consideration is the ability to interface with external systems. For obtaining patient demographic and insurance information at the front end of the referral process, the desirable interfaces are with registration, practice management, and possibly EHR applications. Interfaces with scheduling systems allow receipt of information updates concerning booked and kept appointments (and potentially, direct scheduling). The ability to attach electronic clinical documentation from an EHR would also be desirable. Interfaces add

technical complexity and cost; they are limited in the identified referral programs to fairly simple links for downloading information such as a patient address and telephone number. One program also includes an interface to the enterprise patient care documentation system to permit referring providers to view consultation reports and other communications from specialists.

Costs

Costs for purchasing, implementing, and operating the systems vary according to multiple factors, including whether the system is homegrown or purchased and whether it is hosted remotely.

Application Licensing, Subscription, and Maintenance

All of the commercial systems identified in this report are offered in the ASP model, in which the customer avoids both high upfront costs for purchase, implementation, and technology infrastructure, as well as the risk of a prolonged implementation process. These characteristics make a big difference to organizations wishing to offer a more manageable and effective referral process to their providers and patients. This is particularly true for organizations in the safety net, which appear to be most engaged in this innovation so far.

The vendors of these systems charge a straight subscription fee or a one-time licensing or installation fee, plus subscription and/or maintenance costs (see Appendix B for details). Straight subscription fees are yearly charges for the entire network; subscriptions used in conjunction with licensing and other one-time fees are based on volume metrics such as number of users. The common industry maintenance fee is 18 percent of the license purchase price. Some vendors also include fees for special services, such as assistance with clinical rules development.

Hardware

Since the typical approach to application hosting is the ASP model, provider organizations need only

ensure that sufficient Web-enabled workstations, printers, and faxes are available in user sites. Interviewees from the identified programs all reported that emergency departments, physician practices, and clinics almost always have these devices in place for other uses. One program, however, needed a sufficient quantity of additional user devices that external grant funding was arranged to cover the cost.

Implementation and Vendor Support

Costs for vendor support are associated with each of the implementation efforts discussed above. Associated vendor charges are typically bundled into fees for one-time installation support.

Other Implementation Costs

Provider organizations implementing one of the identified Web-based applications incur additional costs, primarily in staff resources devoted to set-up and training. Dedicated staff include a system administrator who is also heavily involved in all of the initial implementation activities such as functionality, user access assignment, and typically, arranging and delivering training. Long-term tasks for this staff role are less time-consuming, but include managing system upgrades and problem solving.

Clinicians from multiple departments and disciplines must also devote significant time and effort to the introduction of a Web-based referral system, particularly when clinical rules are being developed for specialty referrals.

Homegrown Solutions

In terms of functions, the most complex solutions identified for this report were custom-developed for specific provider organizations or communities. (Two of these are now also commercially available, and dissemination plans are underway for the others.) Although specific cost information is not available, it is presumed they were substantial. In at least two cases, significant grant funding helped to underwrite the development.

VI. Successes and Challenges

SPONSORS OF THE REFERRAL PROGRAMS REVIEWED IN this report—public health systems and safety-net providers—have limited resources for research. In addition, the software applications themselves are relatively new. As a result, formal impact studies have not been undertaken, and information on successes and challenges is mostly anecdotal. However, the anecdotal evidence obtained from the case studies summarized here suggests some initial progress in meeting program goals. This chapter describes those successes from the perspectives of the program administrators, referring providers, and receiving providers. The challenges identified are more generic and are discussed from a single point of view—that of overall program management.

Program Sponsors

Improved data collection and reporting capability was a common benefit of the Web-based referral applications highlighted by program administrators. Several reported that prior to implementation of the referral applications, services were run without the accurate information on referral volumes, patient characteristics, and other information needed to understand the nature or quality of referral patterns, assess capacity shortages, or allocate resources. Generally, the only information source was paper-based logs, which were often incomplete, unreliable, and in some cases, rarely used.

Administrators reported that immediate access to reliable, up-to-date information has placed them in a much stronger position to identify and understand their referral patterns and target improvements in the referral process; use data to identify mismatches between demand and supply and justify requests for more resources; and track and demonstrate improved processes, efficiencies, and outcomes resulting from the program. As an example, the Santa Clara Valley Health and Hospital System identified previously unrecognized outlier utilization among patients and departments. These discoveries allowed them to target improvements in referral and scheduling practices that had been operating incorrectly for several years. Additionally, the San Francisco eReferral program has been able to track the number of referral requests to participating specialties over time, highlight the proportion of booked, over-booked and denied requests, and

identify a number of issues related to referral patterns and processes.

A few of the program administrators highlighted preliminary improvements in appropriate utilization. Some examples include:

- As described in the case study from Aurora Sinai Medical Center, the implementation of the My Health Direct system in the emergency department has resulted in a 45 percent decrease in emergency room visits, and 92 percent of patients referred to a primary care provider have not returned to the emergency department for routine medical treatment.
- The Orange County Health Care Association reports that referring emergency department patients to assigned home centers for follow-up care has resulted in an increase in community health center utilization.
- At the Cook County Health and Hospitals System, where an estimated at 20 to 25 percent of total referrals were previously sent to the wrong department or provider specialty, a Web-based system is credited with reducing misdirected referrals.

Referring Providers

For referring providers, the greatest reported value is the assurance that the patient is more likely to receive needed care. Even when the patient leaves without a specific appointment, an appropriate provider has been identified and the process leading to an appointment has been set in motion.

Other benefits include:

- **Communication with receiving providers.** This includes the option to send notes to clarify the reason for referral or relay something specific about the patient. Many systems also offer the option to review progress notes from the referral visit, which helps to facilitate follow-up care.
- **Tracking.** Every system includes tools for tracking the referral from the time the request is

issued until long after the referral is completed. La Clinica de Familia uses its program to assign a nurse, medical assistant, or other staff to each referral as a way to ensure that the visits occur. It also provides a new source of online care history.

Receiving Providers

Receiving providers benefit in a number of ways. They can control the flow of referrals by specifying services, patient insurance, and, in some program models, patient volumes accepted. This not only affords local control, but also leads to a more orderly, predictable process.

All of the identified applications also provide a legible and complete referral request, either by fax or the software itself. The receiving provider may see:

- Information verifying patient insurance eligibility and insurance authorization (including the authorization number);
- Information about any special needs the patient may have, such as preferred language and interpreter;
- Pre-review according to established clinical appropriateness criteria, including completion of work-up testing and other interventions;
- The ability to send and receive electronic messages about specific patients in a secure manner; and
- Relevant imaging results and other medical record information appended by the referring provider.

In one case, the improved process was reported to have freed up capacity for specialty care when fewer repeat visits were needed, because patients arrived with completed work-ups and the right information available the first time. Specialists at another program also remarked that communication tools—their ability to send referring providers messages with questions, requests for further information, and reasons why a request is being denied—is having a noticeable effect on the quality of initial requests. That is, referring providers have learned to try important initial steps before requesting referrals,

order appropriate work-ups, and include comments and attachments that facilitate both the approval and priority assignment of the referral request.

Challenges

Both vendors and leaders of programs using Web-based solutions report that challenges remain. Areas where the referral process could still be improved include:

- **Entry of patient demographics.** As noted earlier in this report, users of systems without interfaces for downloading a patient's address, telephone number, and other demographic information place a high priority on replacing this manual task with downloads from other systems.
- **Scheduling.** Ideally, every patient referred for follow-up or specialty care would leave with an appointment in hand, but few programs are structured to make that possible. Accomplishing this requires a very close working relationship between the referring and receiving sites and overcoming a widely held reluctance to relinquish control over even a portion of the schedule. In cases where the circumstances are right, interfaces with scheduling systems would be much better than the current approach to "stand-in" scheduling. None of the systems examined now offer such links, but several are planning to develop them in the future.
- **Physician data entry.** Several programs, particularly those that use rules-based clinical approval modules, are designed with questions targeted at physicians, and therefore provide better results when physicians interact with the system to provide the responses. However, physicians at some sites are reluctant to add this task to their workload, while others lack adequate workstation access. Leaders in several programs identified in this report continue to work on this issue.
- **Training.** Training was listed as a major challenge by staff from two sites: one cited the need to overcome the problems resulting from physicians

who do not directly enter data; the other singled out the continuing burden imposed by frequent staff turnover. Ensuring that all users attend training is also challenging. The approach at one site is to require training before users are assigned a username and password.

- **Developing rules.** Rules-based approval modules are appealing for delivery of predictable, automatic, and timely approval/denial judgments about specialty referrals. However, developing the necessary questions, answers, and criteria—and reaching consensus about them—requires significant time from the specialists. Once the system is live, the rules also require careful management to control new releases, keep version records, and provide a process for modification recommendation, review, and approval.
- **Event logging.** Tracking the status of individual referrals requires that each step in the process is recorded in the system. Accomplishing this is easiest at the initial stages, when requests are initiated, approved, or denied. The greater challenge is getting users to log follow-up events, such as when an appointment is booked, rescheduled, kept, or missed. One vendor planning a scheduling system interface intends to capture schedule status updates, as well as to permit direct appointment booking. Some sites report that receiving providers do not reliably post consult notes. Of the eight programs described in this report, two help enforce progress note posting by sending automatic reminder messages to receiving providers.

VII. Conclusion

EARLY ADOPTERS OF WEB-BASED SOLUTIONS TO FACILITATE referral and follow-up care all report good progress—both in reducing the barriers for patients and establishing a more orderly and manageable process for managing the complicated task of handing-off patients. Both provider organizations and vendors are gaining more experience and identifying ways to improve both the referral process and the technology solutions.

Awareness of both the magnitude of the care gap discussed in this report and the implications for cost of care and health outcomes is clearly increasing. A number of efforts are underway in California and the nation to facilitate more efficient specialty referral and redirect patient care from the emergency department to more appropriate settings.

Vendors identified in the study report a growing number of inquiries, and an increasing number of homegrown solutions are becoming available as products. All of this activity points to the growing interest in this product area and the increasing likelihood that it will become a recognized part of the vendor marketplace and the clinical landscape.

VIII. Case Studies

FOUR CASE STUDIES HAVE BEEN ASSEMBLED TO ILLUSTRATE not only how the use of a Web-based application enabled different provider organizations and communities to set up an improved referral process, but also the operational challenges that the system addressed. The cases profiled range from relatively small providers with a limited number of referrals to more complex organizations serving large patient populations.

Table 3. Case Study Participants

ORGANIZATION	PROGRAM MODEL	SOFTWARE APPLICATION
Aurora Sinai Medical Center, Milwaukee, Wisconsin		
<ul style="list-style-type: none"> Emergency department in community hospital 	<ul style="list-style-type: none"> Post-triage Follow-up care Emergency department to primary care physician 	My Health Direct
La Clínica de Familia, Las Cruces, New Mexico		
<ul style="list-style-type: none"> 9 community health clinics 	<ul style="list-style-type: none"> Primary care physician to specialist/ancillary 	inetMD
Santa Clara Valley Health and Hospital System, California		
<ul style="list-style-type: none"> County health system 10 primary care clinics 25 community health centers 	<ul style="list-style-type: none"> Primary care physician to specialist 	Health Access Solutions
Cook County Health and Hospitals System, Illinois		
<ul style="list-style-type: none"> Cook County Health and Hospitals System 3 hospitals 16 community health centers 	<ul style="list-style-type: none"> Primary care physician to specialist Emergency department and specialty clinics to primary care provider 	IRIS

Aurora Sinai Medical Center – Emergency Department

Setting

Aurora Sinai Medical Center (Aurora Sinai) is a 195-bed, full-service community hospital in Milwaukee, Wisconsin, that is part of Aurora Health Care—the largest integrated health system in southeastern Wisconsin.

Value Proposition

Aurora Sinai's motivation for acquiring My Health Direct was to help staff find and schedule on-the-spot appointments for patients requesting ambulatory care at the hospital emergency room, and those needing ambulatory follow-up after receiving emergency care. In the years leading up to the My Health Direct implementation in 2006, Aurora Sinai was losing almost \$25 million a year, with a large portion of the loss attributed to ambulatory care delivered in the emergency room, particularly to uninsured and Medicaid patients.

At the time, Aurora Sinai's emergency room averaged 80,000 patient visits per year. In an effort to reduce losses and overcrowding, in 2005 the hospital implemented an emergency room triage program designed to divert patients with routine care needs to ambulatory facilities. The program worked. However, it required turning patients away, a practice that led to criticism from the local press and declining morale among staff who found it difficult to say "no" to patients who needed care and often did not understand how to arrange for it elsewhere.

In the words of Emergency Department Medical Director Paul Coogan, M.D., providers and other emergency room staff were begging for a way to, "get 'em an appointment." However the hospital did not have the staff resources to provide that service quickly (a manual appointment process they attempted to operate was slow and inefficient).

Implementation

The appeal of using My Health Direct is that it has enabled staff to schedule an appointment while the patient waits, and do so quickly (within two to three minutes). As a result, instead of turning patients away, staff can provide them with confirmed appointments and printed directions to the ambulatory care site, and printed instructions. My Health Direct enables the hospital to supply similar assistance to patients who receive emergency care and need help booking follow-up appointments.

Several types of clinics are available for referrals: federally qualified health centers (FQHCs), independent community-based providers, and several Aurora ambulatory clinics. Aurora Sinai initially negotiated with Aurora clinics to accept Medicare, Medicaid, and commercially insured patients; and with the FQHCs to accept Title 19 and other uninsured populations, as well as Medicaid and Medicare patients. Shortly after the program began, it was decided to route most Medicare patients to Aurora clinics and most Medicaid patients to FQHCs because of favorable reimbursement in the different settings. Receiving clinics control the volume and type of patient routing by posting their schedules in My Health Direct. They also specify the type of services and insurance they will accept for each appointment slot they post.

Most emergency room clinicians, including physicians, use the My Health Direct system to arrange appointments for patients who do not require emergency care. After accessing My Health Direct via a PC with an Internet connection, the user first checks to see if the patient has a record in the system. If not, registering the patient requires manually entering a small number of demographic data elements such as name, date of birth, telephone number, and home address.

The user then starts the referral process by specifying the series of criteria to be used in matching the patient with an appropriate service provider and appointment: patient insurance type, service type, distance from home, day of the week, preferred language, and need for public transportation. Based on the open appointment slots entered by the participating receiving sites, My Health Direct displays those that meet each characteristic as it is specified; as more criteria are entered, the list of possible appointments is shortened to the matching subset. Sometimes, one or more criteria, such as distance from home, must be modified and another search performed if the first round does not yield a match acceptable to the patient.

After consulting with the patient, the user selects and confirms an appointment. This serves as a trigger for the system to automatically transmit a confirmation notification to the receiving provider, including the reason for referral, and remove the appointment slot from availability for booking. The user then prints a patient handout (in the patient's language of choice) that includes details about the referral such as appointment date and time, address of care site, contact information, and public transportation access. In addition to the reason for the referral and basic patient information, the referral record also includes a free-text field the referring provider can use for clinical or other notes to the receiving facility.

Referral records are retained in My Health Direct for subsequent query and reporting. This provides access to not only the referral history and details for any patient, but also tallies of referral volumes by service types, patient insurance types, receiving provider sites, etc. When the provider initially opens a patient record, for example, before looking for a new appointment, he or she can review all past appointments made for that patient.

Results and Benefits

Emergency department providers approved the implementation and quickly adopted the system as part of their every day routine. The major benefit of the new program enabled by My Health Direct is that emergency room staff can triage patients, rather than turning them away with nothing more than a list of recommended telephone numbers to call. For emergency department staff, this has been a huge morale booster. They report that the system is quick and easy to use and are happy to have a way to navigate between the financial realities of operating a hospital and the inevitable stream of ambulatory patients with nowhere else to turn, leaving them better able to focus on emergency care.

For hospital and emergency room administration, the Web-based referral enabled effective use of the triaging program to improve emergency room utilization and operation. Annual emergency

department visits have been reduced from almost 80,000 to fewer than 43,000, staffing has been appropriately reduced, and patient wait times are shorter. Emergency room improvements also have contributed to reducing overall hospital losses, from the previous levels of almost \$25 million per year to the "low single-digit(s)."

In addition to shorter wait times, patients who come to the emergency department needing ambulatory care get the unexpected (and welcome) service of referral to a care site where they can be seen not only for their immediate complaint but also find a medical home for regular care. Though Aurora Sinai has not done extensive utilization analysis, staff there have determined that:

- Ninety-two percent of patients referred via My Health Direct are not returning to the emergency department with ambulatory care needs; and
- Four times as many My Health Direct appointments are kept after patients leave the emergency department (compared with appointments scheduled using the old, non-electronic methods).

Emergency room staff use My Health Direct to schedule approximately 4,000 appointments per year at Aurora Sinai.

Challenges

The major challenge Aurora Sinai has encountered with implementing and using My Health Direct is provider (and other user) dissatisfaction at having to manually enter patient demographic data (address, telephone numbers, etc.) when registering new patients, rather than simply downloading it from the hospital system. My Health Direct has developed an interface that works with other systems. Aurora is in the process of consolidating their patient databases and plans to provide an interface to My Health Direct by the end of 2008.

La Clinica de Familia

Setting

La Clinica de Familia (LCDF) operates nine community health centers providing medical, dental, and social services to a largely rural area of southern New Mexico near the Mexican border. Clinic staff include 20 physicians and five nurse practitioners. Many of the patients served are indigent and must travel quite a distance from small communities to receive care.

Value Proposition

The majority of the medical services provided by LCDF are focused around primary care, so patients are typically referred to external providers for most specialty care, as well as diagnostic services such as imaging. Because the patient population has a high disease burden, especially diabetes, primary care visits often generate one or more referrals. The goal at LCDF is that patients needing a referral leave with a scheduled appointment and without any unresolved reimbursement issues. To accomplish this, clerks in the medical clinics make all the necessary telephone calls while the patient is still in the clinic.

LCDF now uses inetMD as the information and communication backbone of the referral program. Managing the process on paper created numerous problems. Clerks were filling out forms for each referral and, because of the high volume, were often not able to keep up with such paperwork during the clinic day. Once the patient had departed, it was extremely difficult to track individual referrals and ensure they were completed successfully. For some high-priority types of referrals, such as mammograms, relying on file folders or log sheets was not only time-consuming but often ineffective. And because LCDF also had no information on either the total volume of referrals or the number of patients referred to individual receiving providers and sites, it could not accurately assess the overall performance of the referral program (e.g., turnaround time, referrals without reports received). Basically LCDF decided to invest in the

Web-based system as a way to make the process more standardized and manageable.

Implementation

inetMD is used in all of the medical clinics to process referrals to a specialist or dental provider in another LCDF clinic, or to an external specialist or ancillary provider such as an imaging center. The physician or nurse practitioner initiates the process by writing one or more referrals for the patient. Office clerks work with patients to arrange follow-up care. They first enter the request into inetMD, where they can check the patient's past referral history to see if the patient has already been referred for the same service, and then select an appropriate site after consulting with the patient about distances, transportation, and other compatibility criteria.

Many patients' care is covered by the county indigent care program or a special grant-funded program, such as the one in place for mammograms and other breast care. All of the referral sites and providers listed in inetMD accept these payers, as well as Medicaid, Medicare, and commercial plans, so that the clerk knows that patients will not face insurance-related issues. Reimbursement counselors are available in each LCDF site to sort out eligibility and enroll the patient in plans and special programs as necessary. The office clerk enters the type of insurance to be employed, and, when required by the insurance carrier, calls to obtain authorization. The clerk also calls the care site to obtain an appointment and enters the information about both the appointment date/time and insurance authorization number into the system.

Patients leave with a printed copy of information about scheduled referrals, including contact information in the event they cannot keep the appointment. The inetMD system automatically faxes to the receiving site.

When the receiving provider transmits an imaging report, a consult report, or other record communicating results back to the referring clinic,

the medical records staff logs the receipt and the result (i.e., normal or abnormal) into the system. Some types of referrals, such as mammograms and Pap smears, are tracked very closely—ensuring both that the testing happens and patients with abnormal findings receive timely and appropriate follow-up care. Medical record clerks can run reports in inetMD providing lists of outstanding referrals (e.g., scheduled two weeks ago, but no report received) for outreach to the referral sites and the patients involved (if, for example, the patient needs to schedule another appointment). The clerks record any status updates in inetMD so that the referral can continue to be tracked. They can also set up an electronic reminder to check in on a particular patient's referral status at a future date. Patients with an abnormal mammogram become the responsibility of a care coordinator who manages the breast care program, using inetMD to arrange and track follow-up care through further evaluation and treatment.

Results and Benefits

The major benefit for LCDF is that the referral process is now a manageable “closed loop.” Patients appreciate walking out with an appointment, and LCDF has been able to institute an organized process for tracking referrals to completion. Staff in medical records can easily obtain patient lists to use in outreach to patients and receiving providers without maintaining manual logs. For the first time, LCDF management can obtain complete tallies of the volumes and types of referrals from the clinics and identify where bottlenecks are occurring in completing all referrals in a timely fashion. The process also works well for receiving providers—they have a legible referral request that includes the patient's insurance information and any prior authorization.

Challenges

According to the program director, one of the major challenges is constant staff turnover in the clinics. Front-office staff, nurses, and medical records technicians all use the system, and he makes

monthly rounds to provide training for new staff and refresher training as needed. LCDF ultimately plans to expand the use of inetMD to include all referrals that emanate from the dental clinics, which now participate only as “receiving sites.”

Santa Clara Valley Health and Hospital System

Setting

The Santa Clara Valley Health and Hospital System (SCVHHS) is an integrated health care delivery system for residents of Santa Clara County, California. Facilities include Valley Medical Center, with 435 beds and 500,000 annual outpatient and emergency room visits, approximately 150 specialists, 10 primary care clinics, and several affiliated community health centers. Many of the patients served have Medi-Cal insurance or are uninsured.

Value Proposition

Prior to implementing the program, patient referrals within the health system were managed as paper requests forwarded to a central authorization center where they were manually reviewed, approved or denied, and scheduled. There were numerous problems with this process:

- Requests frequently were lost in transit or within the authorization center;
- Forms were often illegible and/or incomplete (i.e., missing diagnosis, reason for visit);
- There was no way to track individual referrals, and referring providers sometimes initiated multiple requests for the same patient and problem;
- Referring providers did not have adequate guidelines to make their decisions;
- Referring providers often did not receive reports, progress notes, or other feedback from the receiving provider;

- Receiving providers did not always know who had referred the patient and where to send consult reports or refer the patient for follow-up;
- Referrals were frequently misdirected; and
- SCVHHS often did not receive reimbursement for services provided to patients with insurance coverage other than the county insurance programs.

Valley Express was implemented to make it possible to improve referral management in all of these areas.

Implementation

All SCVHHS referrals are now processed using the Valley Express referral management system, which was purchased from Health Access Solutions and implemented in July 2007. The system had been used previously in other settings and the vendor made numerous modifications to accommodate the SCVHHS environment.

The process involves the following steps:

- Referring providers at the point of care initiate referral requests by entering patient identification information, the requested place of service, the specialty and/or a receiving provider, a diagnosis code (ICD or CPT), and a reason for referral. Coverage information is automatically populated via interface with the registration system.
- Specialty-specific questions (up to three) are generated and yes/no responses are used to automatically accept or deny the request. When the request is denied, the reason is displayed. For example, if the referring provider answers “no” to “has patient failed at least two courses of antibiotics?” the reply is, “at least two courses of antibiotics should be tried before ENT referral.” Questions and reasons for denial were developed by each specialty department to ensure clinical appropriateness.
- For patients with coverage from Medi-Cal or another county program, requests that pass clinical appropriateness rules are also

automatically authorized at the point of referral, and the patient either leaves the referring clinic with printed instructions for scheduling the visit, or (for pediatric referrals) with an appointment that is scheduled before they leave.

- Requests for patients with other coverage are held for payer approval and then forwarded. Referring providers also can request manual review of special cases that do not meet clinical criteria.
- Available online referral guidelines and clinical practice guidelines can be directly accessed during referral request entry.
- Staff in receiving provider sites review requests in their work queues in the system. Although they do not further triage approved requests, they use the system to route questions or requests for pre-visit work-ups back to the referring provider or forward special handling messages (such as “first available slot”) to scheduling staff.

Valley Express also enables electronic communication among the referring, receiving, and other providers. The system tracks the status and progress of requests, sending automatic event messages (such as “referral approved”) to appropriate providers (including the primary care clinician). Providers can use free-text note fields to describe patient conditions and ask or answer questions. They also can attach scanned and other electronic documents to referral records and print instructions for the patient.

SCVHHS and clinic staff credit several tactics for the successful implementation of the Valley Express system:

- Discontinuing the practice of triage in the specialty clinics has speeded the referral process and clarified clinical appropriateness guidelines—although it took 12 months for the specialty departments to reach consensus on a small number of guidelines (the maximum is three for each diagnosis/condition). The process was closely managed. Each department received a template, a list of the top ten diagnoses noted for referrals,

and specific guidelines about how to state denial responses. Questions were sent to referring providers for review and are continuously reviewed as part of optimization efforts.

- A “big-bang” implementation strategy was used; i.e., all referring and receiving departments went live at the same time, forcing an immediate transition from the paper-based process.
- User training is mandatory. All clinic users (providers, nurses, medical assistants, and referral coordinators) receive a 1.5-hour training course in how to use the system and maximize its potential.

Results and Benefits

SCVHHS staff have not been able to perform a formal study, however they have assembled considerable anecdotal evidence of the system’s success. The first positive reports came from referring primary care providers who immediately noticed that their requests were no longer being lost, and that auto-approval enabled them to confirm (or in the case of pediatric referrals confirm and schedule) referral approval with patients and give them printed instructions to take with them. This also has improved patient satisfaction because they now know that the referral has been approved and have instructions about where to call for an appointment.

Specialists were initially dissatisfied (primarily because they were accustomed to triaging requests manually) but have come to value the tools the system provides for tracking and managing approved referrals.

The other immediate benefit is reporting, which already helps staff identify utilization and other situations that need attention. Examples include:

- Outlier patient utilization trends, such as one patient who has been approved for 60 referral visits in less than 12 months;
- Ophthalmologist referrals to optometry (which are not covered by insurance);

- Patient referral requests with no apparent insurance coverage (which further research revealed indicate financial counseling had not occurred or failure to refer patients to their home counties);
- Emergency department referrals for chronic conditions (such as low back pain, which should be directed to primary care clinics instead of treated in the emergency department); and
- Real numbers of submitted, approved, and denied referral requests (by receiving departments, patient demographics, and payer/plan), as well as the extent of backlogs, durations, locations, and seasonal shifts.

Users suspect that recent reductions in no-show rates result from giving patients scheduling instructions or scheduling the referral visit at the point of care, as opposed to notifying the patient several days or weeks later that an appointment has been scheduled.

Challenges

SCVHHS offers the following lessons from their experience:

- Having physicians directly enter referral requests is the most effective approach. Initially, some physicians were reluctant to learn or take time out of their schedules to play this role. Training has helped, but some clinics continue to use paper forms and data entry by referral coordinators.
- Grants contributed funding to add numerous workstations in clinics, but SCVHHS continues to work on ensuring sufficient high-speed access everywhere.

SCVHHS uses an enterprise scheduling system that, ideally, would be interfaced with Valley Express. This would ensure that information about appointments booked and kept is always complete for purposes of referral tracking. So far, creating such an interface has not proven to be possible.

Cook County Health and Hospitals System

Setting

The Cook County Health and Hospitals System (CCHHS) in Illinois is one of the largest public health systems in the United States. It serves more than 5 million citizens, operates three hospitals and 30 community health centers, coordinates specialty care delivery throughout the network, and maintains partnerships and affiliations with other major medical centers and government agencies. CCHHS also contracts to provide specialty care to patients of local independent FQHCs.

Value Proposition

In 2001, CCHHS contracted with Proximare Health, Inc. to develop and implement the Internet Referral Information System (IRIS) as part of an effort to improve management of patient referrals within CCHHS provider organizations. Prior to IRIS, referral requests were submitted as paper forms, and the system used to manage the forms resulted in numerous problems and shortcomings, including:

- Lack of reliable and accurate utilization statistics CCHHS staff need to identify gaps in service and otherwise manage referral programs;
- Misdirected and inappropriate referrals;
- Inadequate fail-safe measures to ensure that patients with serious conditions were escalated for priority care;
- No central source or process for referring and receiving providers to track referrals (to monitor approval and/or scheduling statuses);
- No standard method or process for referring eligible patients (including Medicaid and uninsured) to primary care clinics; and
- No processes to help reduce ambulatory patient visits to emergency rooms.

Implementation

IRIS is designed to manage several kinds of referrals, including:

- Primary care (and to a lesser extent hospital) providers referring patients for specialty care; and
- Emergency room, specialist, and hospital providers referring patients to (or back to) primary care clinics.

Early on, it was decided that the system would automatically approve or deny each referral request based on clinical rules set by the receiving department. Those rules are applied via a department- and disease-specific branching logic question-and-answer process included as part of the online referral request. Rules development was a major undertaking and required department providers working with Proximare Health developers to specify questions, acceptable answers, branching options, and criteria for approval and denial, including reasons for denial.

The following describes the typical referral request, approval, scheduling, and visit workflow:

- The referring provider completes an online referral request form. Patient demographic data are automatically downloaded via interface with the CCHHS patient registration system. After the provider enters the reason for referral, diagnostic service, and department name and site, the system automatically initiates the rules-based question-and-answer process. Departments and sites are selected from pick lists that are screened by the referring provider and the place of service. In addition to branching questions and approval/denial status, receiving providers can also configure the rules with recommended and required work-ups, which are displayed in a red font. Denials include explanations. For example, if a provider referring a patient for asthma responds that the patient is not using corticosteroid inhalers, the provider is instructed to initiate that treatment before referring the patient.

- Referring providers who disagree with reasons for denial can appeal the decision, in which case the request is routed to a nurse care manager inbox for review. The system also flags request records with entries the receiving provider determines to be high-priority and automatically routes those requests to the nurse care manager inbox for special handling.
- The system manages appointment scheduling in one of two ways:
 - **“Stand-in” scheduling.** Receiving provider departments that agree to participate in a “stand-in” appointment service post available appointment dates and times in the IRIS system by service and payer type. As soon as the slot is selected, it is closed to other IRIS users. The system automatically forwards a message to the receiving provider, and instructions are printed and handed to the patient.
 - **Central appointments.** Referrals to receiving departments that do not participate in the stand-in program are automatically routed to an inbox in the Central Appointments department. When Central Appointments staff book and log the appointment date and time in IRIS, the system automatically sends messages to the referring provider, the receiving provider, and an intelligent voice response unit (IVR) used to notify the patient of the appointment date, time, and place.
- Receiving providers log each kept appointment and referral visit. They also can paste a progress note into the record, which they are strongly encouraged to do. Messages of these logged events also are sent to the referring provider.
- Referring and receiving providers can review the status of any referral, including: those pending a review or request for further information; approved but not scheduled (and the intervening elapsed time); approved and scheduled; appointments cancelled or not kept; visits completed; and visits completed but with

communication of results or consult report still to come.

Specialist and emergency department provider referrals (and referrals back) to primary care providers are also initiated by completion of an online referral request form. However, when primary care is selected as the receiving service, the system either:

- Displays a list of clinics that initiated a referral for the patient during the previous 24 months for selection and further processing; or
- Displays clinics with appointment openings (posted by the clinic) and within a geographical range defined by the patient’s Zip code.

Results and Benefits

Using IRIS has helped CCHHS improve referral management in many different ways:

- Administrators now have real information about demand/capacity gaps to use in allocating resources. As a result, referral backlogs have been reduced for mammography, colonoscopy, and gynecology services.
- Referring providers have a reliable way to check the status of each referral they request, including whether patients are making and/or keeping appointments for referrals.
- Receiving providers appreciate the controls the IRIS process automatically imposes on incoming referrals. Applying rules-based guidelines has almost completely eliminated the 20 to 25 percent rate of misdirected referrals. According to the medical director, it has enabled the CCHHS to “use specialists as specialists” —meaning that it has reduced the time specialists use making decisions about where patients should be seen and increased the time they spend delivering care. Inappropriate referrals (inadequate work-up or failure to try standard therapies first) are also substantially reduced.

- The system provides a framework that enables CCHHS to reliably manage more than 15,000 referrals per month.

Using IRIS has made it possible to refer patients from the emergency department or hospital to primary care providers able to take new patients, and in the process helped clinics appropriately ramp up their utilization rates and helped emergency departments reduce patient demand and waiting time.

Challenges

The biggest challenge has been convincing providers to make consistent use of the system. Because the referral approval process is rules-based, it requires a clinical understanding of the questions being asked and what the responses mean, and therefore, is most effective when referring physicians do their own data entry. Similarly, since it includes a feedback loop for receiving providers to log kept visits, attach progress notes, and refer the patient back to the primary care provider for follow-up, it is most effective when both providers follow and track each referral and are sure to log events, including no-shows and cancellations.

Another challenge is the level of effort required to develop and maintain clinical rules. Use of rules also requires careful version control, including version labeling, saved copies of each version, review and testing, and controlled release.

Appendix A: Developer/Vendor Contact Information

Homegrown Systems

ER Connect Clinic Connect

DEVELOPED BY:
NetChemistry, Inc.
Chris Cruttenden, president
www.netchemistry.com

DEVELOPED FOR:
Orange County Health Care Agency
Dan Castillo, administrator
www.ochealthinfo.com

eReferral

UCSF/San Francisco General Hospital
Hal Yee, Jr., M.D., Ph.D.
medicine.ucsf.edu/campuses/sfgh.html

RPS (Referral Processing System)

Los Angeles Department of Health Services
Hayley Buchbinder, staff analyst
www.ladhs.org

Commercial Products

Access Express

DEVELOPED BY:
Health Access Solutions
Dottie Robinson, executive director
www.healthaccesssolutions.com

DEVELOPED FOR:
Santa Clara Valley Health and Hospital System
Christine Tyler, director of special projects
www.sccgov.org/portal/site/hhs

Eceptionist

Eceptionist, Inc.
Trey Havlick
www.Eceptionist.com

ERP/ERS

inetMD, Inc.
Khan Phi, president
www.inetMD.net

IRIS

DEVELOPED BY:
Proximare Health, Inc.
Joe Sullivan, president
www.proxhealth.com

DEVELOPED FOR:
Cook Country Health and Hospitals System (CCHHS)
Enrique Martinez, M.D., chief medical officer
www.ccbhs.org

My Health Direct

Global Health Direct, Inc.
Tom Reilly, VP
Community Solutions
www.globalhealthdirect.com

Appendix B: System Overview and Feature Review

	MY HEALTH DIRECT	eREFERRAL	RPS	IRIS	ACCESS EXPRESS	ER CONNECT CLINIC CONNECT	ECEPTIONIST	ERP/ERS
General Overview								
Product History	Commercial	Homegrown	Homegrown	Homegrown, now Commercial	Commercial	Homegrown	Commercial	Commercial
Company or Developer	Global Health Direct, Inc.	UCSF/San Francisco General Hospital	Los Angeles County Department of Health Services	Proximare Health, Inc.	Health Access Solutions	Orange County Health Care Agency	Eceptionist, Inc.	inetMD, Inc.
Typical Referral Scenario(s)	ED to PCP ¹	PCP to specialist/ ancillary	PCP to specialist/ ancillary, specialist to specialist	PCP to specialist/ ancillary, and ED/hospital to PCP ²	PCP to specialist	ED to PCP ³	PCP to remote telemedicine receiving provider, and PCP to specialist/ancillary, any-to-any referral	PCP to specialist/ ancillary
Typical Customer Today	Hospital or Health System	Primary/Specialty Care Health System	Public Health Network	Public Health Network	Public Health Network	Public Health Network	Hospital or Health System	Community Health Center or Network
Pricing Model	\$50,000 per year, per hospital	N/A	N/A	\$50,000 per year, per IDN (system configuration/ management extra)	One-time: • \$85,000, plus • 2 cents per covered patient		Custom pricing	One-time: • \$4,650/PCP clinic • \$750/spec clinic, plus Subscription: • \$75/mo/PCP • \$45/mo/specialist
Technology Overview								
Technology Required/ Accommodated	PC, Web access, printer, fax	PC, Web access, VPN key	PC, Web access, printer, scanner	PC, Web access, printer, fax	PC, Web access, printer, scanner	PC, Web access, printer	PC, Web access, printer, scanner	PC, Web access, printer, scanner, fax
System Interfaces in Use	N/A	ADT/registration, receiving provider EMR	ADT/registration	ADT/registration	ADT/registration	RHIO data repository	Integrated scheduling	N/A

1. Clinics are screened by dates available, distance from patient home, patient language, and payer type/plan accepted.
2. Clinics screened for selection are those that have referred the patient within past 24 months, or (if no referrals) those with openings closest to patient home.
3. Clinics are pre-assigned via a separate OCHCA patient center assignment program.

	MY HEALTH DIRECT	eREFERRAL	RPS	IRIS	ACCESS EXPRESS	ER CONNECT CLINIC CONNECT	ECEPTIONIST	ERP/ERS
Functions/Features: Referral and Scheduling								
Referral Initiation	Online PCP scheduling with search by: <ul style="list-style-type: none"> • Provider • Language • Provider gender • Location • Payer type/plan • Date/time • Religion • Service type • Public transportation 	Online clinical referral request with search by: <ul style="list-style-type: none"> • Department • Service 	Online clinical referral request with search by: <ul style="list-style-type: none"> • Department • Service 	Online clinical referral request with search by: <ul style="list-style-type: none"> • Department • Service • Diagnosis, plus Online PCP scheduling with search by: <ul style="list-style-type: none"> • Care history • Location 	Online clinical referral request with search by: <ul style="list-style-type: none"> • Department • Service • Diagnosis 	Online PCP referral request with search by: <ul style="list-style-type: none"> • Patient's assigned clinic⁴ 	Online clinical referral request with search by: <ul style="list-style-type: none"> • Department • Service 	Online clinical referral request with search by: <ul style="list-style-type: none"> • Department • Service
Administrative Approval	N/A	N/A	Referral request records routed to authorization work queue	Optional online payer authorization	Optional online payer authorization	N/A	Optional online payer authorization	Optional online payer authorization
Scheduling	Referring provider selects from appointments posted by receiving provider ⁵	Receiving provider schedules appointment based on urgency	Receiving provider books appointment	Referring provider selects from appointments posted by receiving provider, or approved referrals are routed to Central appointments	Patient calls receiving provider to book appointment	Notified receiving PCP office calls patient to book appointment	Notified receiving provider contacts patient to book appointment (Eceptionist supports multiple scheduling models)	Referring provider attempts to book before patient leaves, or patient is instructed to call receiving provider to book
Schedule Access Control	Receiving provider posts: <ul style="list-style-type: none"> • Dates/times • Payers • Services 	Receiving provider can prioritize appointments	N/A	"Stand-in" receiving providers post: <ul style="list-style-type: none"> • Dates/times • Payers • Services 	N/A	N/A	N/A	N/A
Patient Notification	Referring provider prints patient handout	Patient receives a computer generated appointment notification letter and subsequent reminder letter	<ul style="list-style-type: none"> • Receiving provider mails or faxes letter • Referring provider tracks and informs 	<ul style="list-style-type: none"> • Referring provider prints patient handout, and • IVR⁶ 	Referring provider mails or faxes approval with scheduling instructions	Referring provider prints handout with receiving clinic contact information	<ul style="list-style-type: none"> • Referring provider mails, emails, faxes, or hands letter with contact information • A patient portal and email/text message based patient notification and reminder tools also are available 	Referring provider mails or faxes letter with contact or appointment information

4. Clinics are pre-assigned via a separate OCHCA patient center assignment program

5. Selection of limited scheduling slots manually entered by receiving provider—system is not interfaced to a full-featured scheduling system.

6. Intelligent Voice Response unit: an automated telephone system that notifies patients of new appointments (in selected languages).

	MY HEALTH DIRECT	eREFERRAL	RPS	IRIS	ACCESS EXPRESS	ER CONNECT CLINIC CONNECT	ECEPTIONIST	ERP/ERS
Functions/Features: Referral and Scheduling, continued								
Receiving Provider Notification	Receiving provider receives message ⁷ or fax	Receiving provider receives computer-generated email	Completed referral request posted to receiving provider inbox	Completed referral records (with appointment updates) posted to receiving provider inbox and provider receives message	Approved referral status posted to receiving provider inbox and provider receives message	Completed referral record posted to receiving provider inbox	Completed referral request posted to receiving provider inbox	Completed referral request is posted to receiving provider inbox or faxed
Referral Status Tracking	Providers review all scheduled referrals	Providers track status via EMR	Providers review referral inbox for approval and appointment status changes	Providers review referral inbox for approval and appointment status changes. Also can track pending progress notes	Providers review referral inbox for approval and appointment status changes	Providers review customized work queue for referrals to PCP clinic	Providers review referral inbox for approval and appointment status changes	Providers review referral inbox for approval and appointment status changes. Also can track pending progress notes
Referring Provider Notification	N/A	Automatic message when approval or schedule status is updated	Approval and appointment are posted in referral record	Automatic message when schedule status is updated	Automatic message when schedule status is updated	N/A	Automatic message when approval or schedule status is updated	Automatic message when approval or schedule status is updated
Functions/Features: Clinical Review and Approval								
Clinical Information Sent with Referral	Referring provider documents with free text	Referring provider: <ul style="list-style-type: none"> • Documents with free text • Responds to department specific queries • Specialty-pertinent lab and radiology data automatically populates referral record 	Referring provider: <ul style="list-style-type: none"> • Documents with free text • Attaches scanned and other files 	Referring provider: <ul style="list-style-type: none"> • Documents via responses to branching rules queries 	Referring provider: <ul style="list-style-type: none"> • Documents via responses to rules queries • Documents with free text • Attaches scanned and other files 	Access to patient's hospital visit and claims-based lab, other diagnostic, and medication history	Referring provider: <ul style="list-style-type: none"> • Documents via template • Documents with free text • Attaches scanned and other files 	Referring provider: <ul style="list-style-type: none"> • Documents with free text • Attaches scanned and other files
Clinical Review	N/A	Receiving provider reviews referral record	Receiving provider reviews referral record	Automatic approval based on rules ⁸	Automatic approval based on rules ⁹	N/A	Receiving provider reviews referral record	Receiving provider reviews referral record
Referral Guidelines	N/A	N/A	Receiving provider can configure pop-up requisites in request entry	Receiving provider can configure rules with red-text prerequisites	Direct access (button) to online IDN guidelines	N/A	Client can configure custom referral protocols	Receiving provider can configure request entry prerequisites

7. Messages are postings to referral record and/or system messages, usually accompanied by an email or fax alerting provider that new information is available.

8. Referring providers can appeal denied referrals for manual review by a nurse care manager team

9. Referring providers can appeal denied referrals for manual review by the Chief of Referral Services

	MY HEALTH DIRECT	eREFERRAL	RPS	IRIS	ACCESS EXPRESS	ER CONNECT CLINIC CONNECT	ECEPTIONIST	ERP/ERS
Functions/Features: Other Information Exchange								
Feedback Loop to Referring Provider	N/A	<ul style="list-style-type: none"> Information requests Work-up requests Denial reason(s) Appointment kept, cancel, no-show Link to EMR progress note 	<ul style="list-style-type: none"> Information requests Work-up requests Denial reason(s) Appointment kept, cancel, no-show Scanned progress notes 	<ul style="list-style-type: none"> Information requests Work-up requests Recommend redirect, e.g. for different test Appointment kept, cancel, no-show Attached progress notes 	<ul style="list-style-type: none"> Information requests Work-up requests Appointment kept, cancel, no-show Attach progress note 	PCP progress notes posted to the record are available for review during subsequent ED visits	<ul style="list-style-type: none"> Information requests Work-up requests Denial reasons Appointment kept, cancel, no-show Attached progress notes 	<ul style="list-style-type: none"> Information requests Work-up requests Denial reasons Appointment kept, cancel, no-show Attached progress notes
Link to Patient Records	N/A	Receiving provider posts link to EMR progress note	Receiving provider can attach progress notes, reports	Receiving provider can attach progress notes, reports	Receiving provider can attach progress notes, reports	RHIO ED progress note is available for review by PCP	Receiving provider can attach progress notes, reports	Receiving provider can attach progress notes, reports
Functions/Features: Data Tracking and Analysis								
Management Reports	Library of standard reports	Library of standard reports and report writer	Library of standard reports	Library of standard reports and report writer	Library of standard reports	Library of standard reports and report writer	Library of standard reports and report writer	Library of standard reports and report writer
Functions/Features: Planned Enhancements								
Planned Enhancements	<ul style="list-style-type: none"> IDN MPI interface pilot Automated appointment reminders Receiving clinic scheduling system interface 	N/A	<ul style="list-style-type: none"> Scheduling system interface EMR interface – progress note Report writer 	<ul style="list-style-type: none"> Duplicate order checking Branding (custom rules for different payers/plans) 	<ul style="list-style-type: none"> Scheduling system interface Report writer Branching logic rules Ambulatory EMR interface 	N/A	N/A	N/A



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