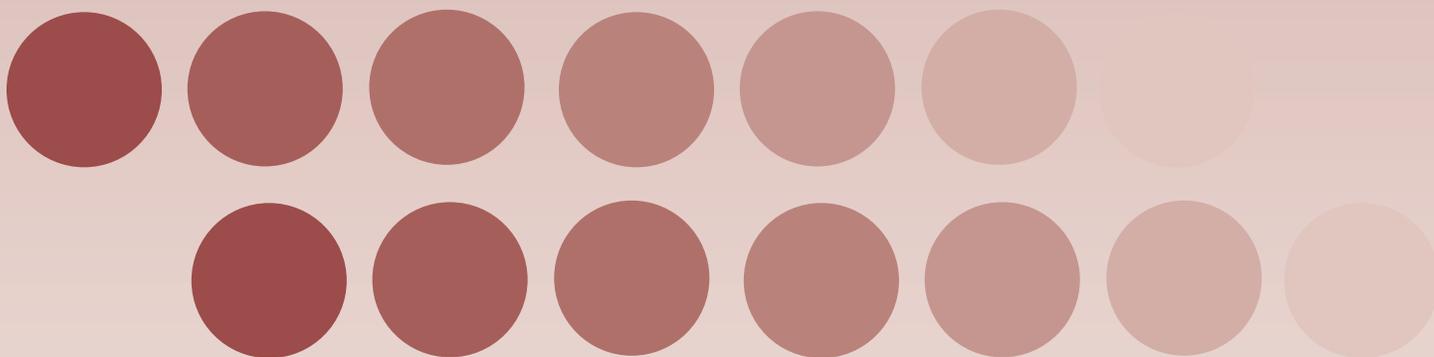
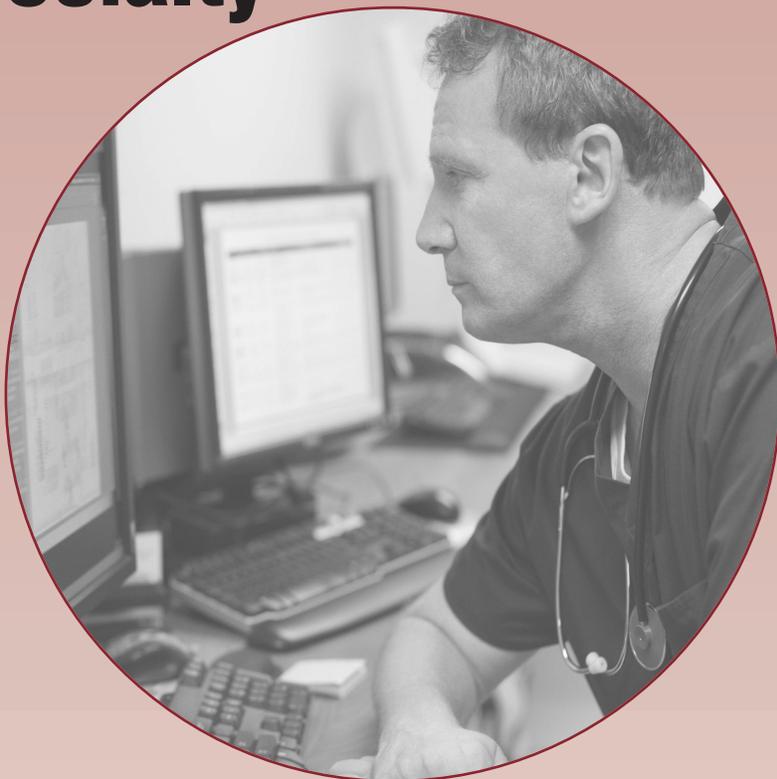


Final ACTION Contract Report

Use of an Electronic Referral System to Improve the Outpatient Primary Care–Specialty Care Interface Implementation Handbook



Agency for Healthcare Research and Quality
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Use of an Electronic Referral System to Improve the Outpatient Primary Care–Specialty Care Interface

Implementation Handbook

Prepared for:

Agency for Healthcare Research and Quality
U.S. Department of Health and Human Services
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Rockville, MD 20850
www.ahrq.gov

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Preface

This project was funded as an Accelerating Change and Transformation in Organizations and Networks (ACTION) task order contract. ACTION is a 5-year implementation model of field-based research that fosters public–private collaboration in rapid-cycle, applied studies. ACTION promotes innovation in health care delivery by accelerating the development, implementation, diffusion, and uptake of demand-driven and evidence-based products, tools, strategies, and findings. ACTION also develops and diffuses scientific evidence about what does and does not work to improve health care delivery systems. It provides an impressive cadre of delivery-affiliated researchers and sites with a means of testing the application and uptake of research knowledge. With a goal of turning research into practice, ACTION links many of the Nation's largest health care systems with its top health services researchers. For more information about this initiative, go to <http://www.ahrq.gov/research/action.htm>.

What Is eReferral?

A HIPAA-compliant, Web-based referral and consultation system

- Linked to electronic medical record (EMR), with auto-population of relevant EMR data.
- Referring providers enter free text referral questions.
- Mandatory use for enrolled specialty clinics.

A new model for primary care – specialty care collaboration

- Individualized review and response to each referral by a designated specialist clinician (MD or NP).
- Iterative communication between referring and reviewing clinicians until both agree that the patient either does not need an appointment or the appointment is scheduled.

A tool that allows specialist reviewers to—

- Redirect referrals if inappropriate for clinic or other options available.
- Provide information for PCP management of condition, with or without an appointment.
- Request clarification of question or additional workup prior to specialty appointment.
- Expedite specialty clinic appointments if clinically warranted.

For more information on eReferral, contact Alice Chen at achen@medsfgh.ucsf.edu.

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University of California, San Francisco (UCSF), San Francisco General Hospital (SFGH) eReferral Program

Statement of the Problem

Over the past decade, access to specialty care has become arguably one of the most pressing issues for safety net providers and patients across the country, with wait times for some specialties extending to nearly a year. There is a dearth of specialists, particularly surgical specialists, who are willing to see uninsured and Medicaid patients, resulting in a severe mismatch between supply of and demand for specialty services. Compounding this crisis are inefficient referral processes notable for poor or absent communication between referring and specialty providers, and systems dependent on handwritten referrals and unreliable faxes to schedule appointments.

San Francisco is no exception. San Francisco General Hospital (SFGH), through a partnership with the University of California, San Francisco (UCSF), serves as the primary provider of specialty care for the city's 72,000 uninsured as well as many of its Medi-Cal and Medicare patients. Prior to eReferral, the wait time for some routine specialty appointments was as long as 11 months.

If a referring provider wanted to expedite her patient's appointment, she had to try to reach (call, email, or page) and convince a specialist of the urgency of the request. There was no equitable mechanism for specialists to triage urgent cases, as they only heard about patients when the referring provider made an extra effort to contact them.

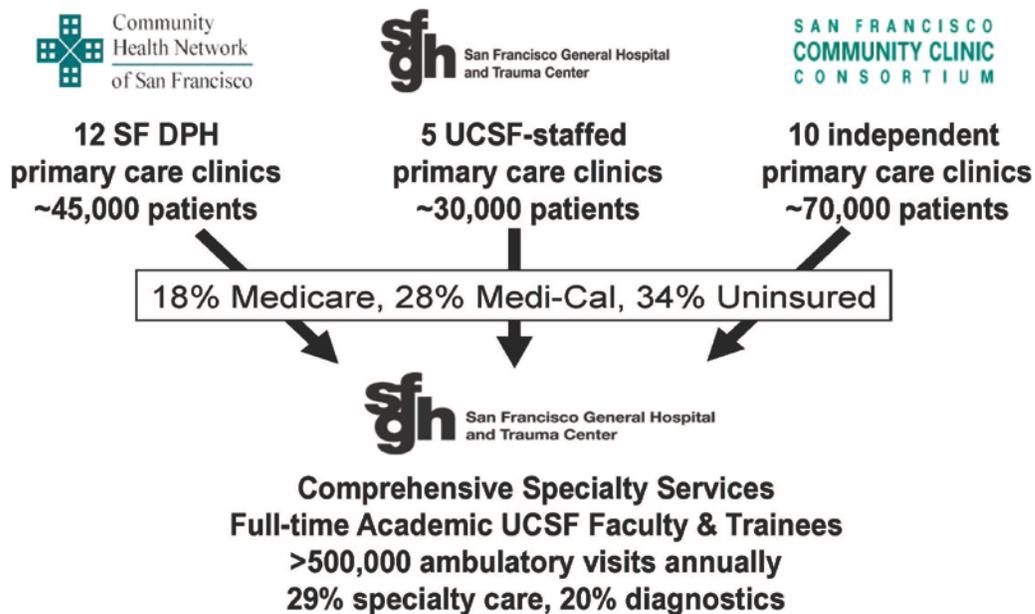
When the patient did present for care, the specialist would often find that the initial evaluation was either incomplete or had not been forwarded, or that the consultative question was unclear. Sometimes the referral was unnecessary. Less frequently, but more concerning, the specialist might find that the patient's case was urgent and should have been seen earlier.

The system was frustrating to primary care providers, specialists, and patients alike.

The Delivery System

San Francisco General Hospital is part of the San Francisco Department of Public Health (DPH), which also includes a network of community clinics and a skilled nursing facility. The City's sole public hospital, SFGH operates 252 acute care beds. In fiscal year 2007-2008, SFGH provided 529,098 outpatient visits, 29 percent of which were specialty care visits and 20 percent of which were for diagnostic services. The payer mix for these visits was 34 percent uninsured, 28 percent Medi-Cal and 18 percent Medicare. Major specialty clinics at SFGH include (but are not limited to) cardiology, dermatology, endocrinology, gastroenterology, general surgery, hematology-oncology, nephrology, neurology, neurosurgery, obstetrics and gynecology, ophthalmology, orthopedics, otolaryngology, plastic surgery, podiatry, pulmonary, rheumatology and urology. SFGH's physician services are provided by UCSF faculty, fellows and residents. The hospital currently uses a hybrid paper and electronic medical record (EMR).

Figure 1. San Francisco General Hospital's Core Referral Network

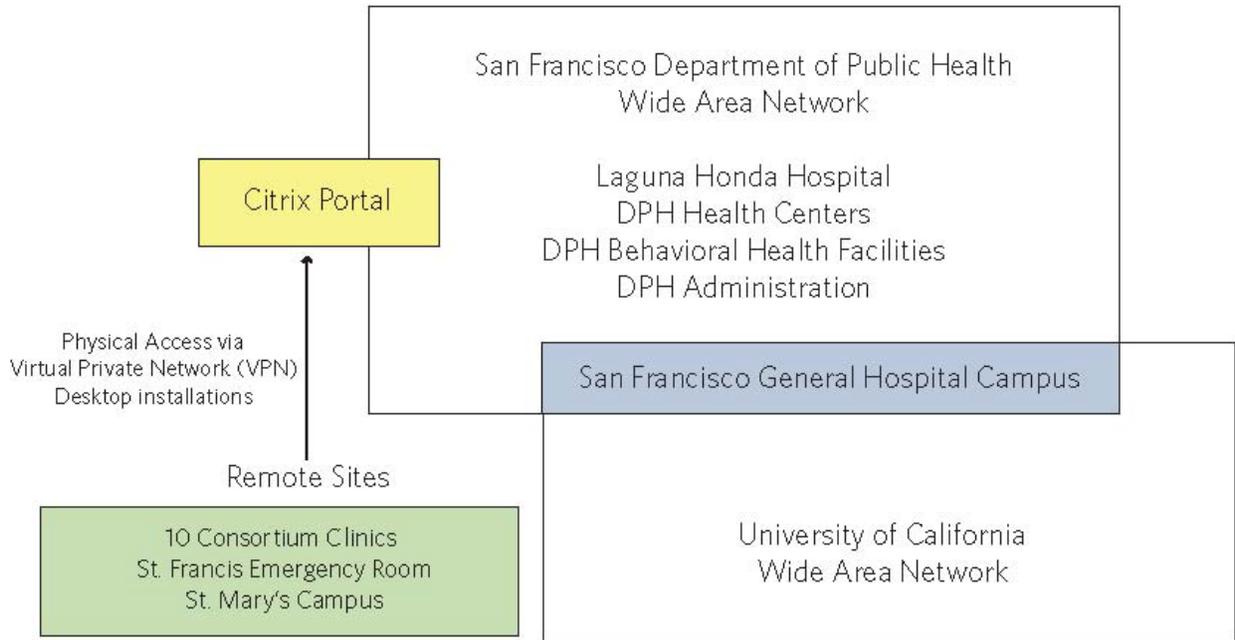


SFGH's core referral network for specialty clinics consists of a diverse group of 27 primary care clinics that have differing levels of access to the DPH electronic medical record (EMR) (see Figure 1). The clinics include 5 hospital-based primary care clinics, 12 Community-Oriented Primary Care (COPC) clinics, and 10 San Francisco Community Clinic Consortium (SFCCC) clinics. Referrals for diagnostic studies (e.g., MRI) originate from both primary care and specialty clinics.

- Hospital-based primary care clinics include family medicine, internal medicine, pediatrics, positive health (HIV primary care), and women's health clinics. The family medicine, internal medicine, pediatrics, and women's health clinics serve as continuity clinic training sites for UCSF residents. While the physicians are UCSF employees, the clinic staff are city employees. Together, these five clinics serve as primary care home for more than 30,000 patients. These clinics have immediate access to the DPH EMR, with all but the women's health clinic having computer terminals in each patient care room.
- COPC clinics include a network of twelve primary care clinics located in neighborhoods across San Francisco that together serve as the primary care home for nearly 45,000 patients. Both physician and clinic staff are City employees. Each of the clinics has reliable access to the DPH EMR. Many, but not all, COPC clinics have terminals in each patient care room.
- Consortium clinics consist of 10 independent clinics, including 3 Federally Qualified Health Centers and three free clinics. SFCCC clinics together serve over 70,000 people per year. Each health center employs its own physicians and clinic staff, and each has a local Practice Management System whose primary function is billing; two have an EMR. Connectivity to the DPH Network and EMR is provided via a limited number of workstations configured with the DPH's VPN (Virtual Private Network) software.

To access the DPH EMR, SFCCC users must complete three authentication steps: (1) login to the VPN, (2) login to the Active Directory network domain (via Citrix Portal), and finally (3) login to the DPH EMR. Once connected, response time has been poor and there have been frequent reports of network disconnections. Figure 2 below shows an overview of the network topology and interfaces among the organizations that participate in eReferral.

Figure 2. Overview of computer networks accessing eReferral



Referral Process Prior To eReferral

Prior to eReferral, all specialty referrals required completion of a paper referral form (Figure 3). The referring provider handwrote the patient name and telephone number, the referring provider name, provider ID, practice site, telephone and fax number. If the referring provider was a resident, he had to enter this same information for an attending provider. There was an 8.5” by 1.5” area to write in the reason for consultation, including pertinent history, physical findings, and diagnostic data.

The completed form was faxed over to the specialty clinic, typically while the patient was still in clinic. Some clinics required a phone call prior to faxing the form; others required a follow-up phone call to make the appointment after the fax was received. Referrals were scheduled on a first-received, first-scheduled basis. There was no centralized method to track referrals. If the receiving fax machine was not functioning or had run out of paper, the referral was unlikely to be completed.

Figure 3. Sample completed referral form

COMMUNITY HEALTH NETWORK OF SAN FRANCISCO
 OUTPATIENT CONSULTATION REQUEST

CONSULT APPT. DATE: NOV-13 APPT. TIME: 9:00 AM Ref. No. 100433 Date Rec'd 11/01/06

DATE REFERRED: 11/1/06 PATIENT PHONE: 415 308-2447 REFERRING PROVIDER: General Surgery (ASAP) LOCATION: SPGHAC, 1001 Potrero, San Francisco

TO: (Clinic or Consultant) General Surgery (ASAP) LOCATION: SPGHAC, 1001 Potrero, San Francisco

REFERRING PROVIDER (print) R. Kelly SIGN: [Signature] LOCATION: SPGHAC, 1001 Potrero, San Francisco CHN # 021651 PHONE: 216 2407 FAX: 415 308 2447

REFERRING ATTENDING (print) Sach, Natalie SIGN: [Signature] LOCATION: SPGHAC, 1001 Potrero, San Francisco CHN # 021651 PHONE: 216 2407 FAX: 415 308 2447

PRELIMINARY PROVIDER (if different from Referring Provider) (print) Rosa Valdez SIGN: [Signature] LOCATION: SPGHAC, 1001 Potrero, San Francisco CHN # 021651 PHONE: 216 2407 FAX: 415 308 2447

Reasoning provider: Complete top part of form and fax to consultant. For Tertiary Care patients, fax request to Utilization Management office at 415.395-5587. Health Plans may require an additional authorization form or phone call.

Reason for Consultation: (include pertinent history, physical laboratory findings, medications) (Use LCH progress notes, dates)
57yo M w/ metastatic colorectal CA, cecal lesion, recurrent pain, intussusception on CT 10/1/06. Pls eval for palliative resection for recurrent partial obstruction by mass.

REASON FOR CONSULTATION: ASAP.

REFERRING PROVIDER'S TREATMENT PROCEDURES: (include date of last visit)
NO. BASE CALL PRIMARY PROVIDER AND ME OR NOT FROM PHO. / NO. PROC. PROCEDURE, SURGERY OR COMMISSION PLANNED

CONSULTANT'S REPORT: DATE SEEN: NOV 13 2006 GSN LCH PROVIDER: [Signature]

TRAUMA: NOV 13 2006

PH: 57yo M w/ metastatic colorectal CA, cecal lesion, recurrent pain, intussusception on CT 10/1/06. Pls eval for palliative resection for recurrent partial obstruction by mass.

ATTENDING PROVIDER: [Signature] SIGN: [Signature] CHN # 021651 PHONE: 216 2407 FAX: 415 308 2447

DATE INFORMATION SENT TO REFERRING/PRIMARY PROVIDER: NOV 13 2006 BY: [Signature] PHONE: 216 2407 FAX: 415 308 2447

White Copy - Referring Provider • Yellow Copy - Clinic Use • Pink Copy - Patient

5771219, 77104 (Rev. 07/04)

As mentioned previously, if a referring provider wanted to expedite her patient’s appointment, she had to contact (call, email, or page) and convince a specialty provider of the urgency of the request. There was no systematic mechanism for specialty providers to triage urgent cases, as they only heard about patients when the referring provider made the effort to contact them. Similarly, there was no formal mechanism to obtain consultant advice regarding the need for referral or to guide pre-referral evaluation. Providers could page the fellow or resident on call for the desired specialty service to discuss the case, or contact a trusted colleague for a “curbside consultation.”

When the patient presented for the initial consultative visit, the specialist often did not have access to the faxed referral form. Even when the referral was available, the amount of information that could be conveyed in the space provided was limited; there were also problems with legibility. Given that most of our patients have low functional health literacy and up to 40 percent are limited-English-proficient, the patient was often unable to provide additional insight into the reason for the visit. As a result, specialists sometimes spent the first visit trying to elucidate the reason for consultation and ordering diagnostic studies that should have been ordered by the referring provider.

Before the advent of eReferral, the wait time for some routine specialty appointments had become unacceptably long. In the Gastroenterology Clinic, if you requested an appointment on January 1st, the next available appointment was on November 30. Most of the medical specialty clinics faced similar, if not as severe, challenges, with wait times routinely over 3 to 4 months. The table below shows a series of wait times (in days) for the next available new patient appointment for four different medical specialty clinics.

Table 1. Wait times (in days) for the next available new patient appointment for four different medical specialty clinics

Clinic	4/22/05	2/21/06	5/22/06	8/16/06	11/8/06
Endocrine	157	226	231	232	204
Nephrology	223	241	228	310	184
Pulmonary	97	121	129	148	120
Rheumatology	N/A	169	184	141	205

eReferral History

In 2005, wait times for a routine appointment in the Gastroenterology (GI) Clinic had climbed to over 11 months. In response, the GI Division Chief Dr. Hal Yee, in collaboration with SFGH IT staff (Kjeld Molvig, Dr. Bob Brody, and Dr. Fred Strauss) developed a mandatory electronic referral system for the GI Clinic that allowed a specialist reviewer to clarify the reason for referral, provide education and guidance, request additional work-up, and triage appointment requests when needed. As part of the planning process, the proposed system was vetted with the medical directors of the SFGH, COPC, and Consortium primary care clinics.

The results of the pilot electronic referral submission and review system were dramatic: less than a year after implementation, the wait time for a routine GI Clinic appointment had dropped from 11 to 4 months without any increase in GI Clinic capacity. This was a result of referrals that were managed without an appointment, referrals that had been redirected to more expeditious care (e.g., referring patients who needed liver biopsies to interventional radiology, which had a very short wait time), as well as avoided specialty clinic follow-up visits resulting from more complete pre-visit work-up. Other benefits of the system included the elimination of illegible consults and lost faxes, and a newfound ability to track all referrals electronically as well as measure the volume of clinic referrals over time.

As a result, the San Francisco Health Plan, the local Medicaid managed care plan, awarded UCSF/ SFGH a series of three grants totaling \$1.5 million to spread the system to multiple medical and surgical specialty clinics as well as to MRI, CT, and ultrasound scans. Led by Dr. Alice Chen in collaboration with specialty leads for surgery (Julia Galletly, NP) and radiology (Dr. Alex Rybkin) as well as a lead evaluator (Dr. Margot Kushel) and project coordinator (Ellen Keith), the team has now implemented eReferral in 28 clinics and services.

Technical Specifications

eReferral is a HIPAA-compliant, Web-based application for secure electronic referrals and consultations from referring providers to participating specialty clinics at SFGH. The application is hosted on a Microsoft® Internet Information Services (IIS) Web server, with a Microsoft SQL server 2000 back end. The application is a hybrid of Microsoft’s Active Server Pages Web technology and the newer .NET platform.

SFGH contracts with Siemens Corporation to access its Invision/Lifetime Clinical Record (LCR) EMR set of products. The eReferral system is tightly integrated with this EMR. Since the LCR and eReferral are both Web-based systems, user login credentials and patient context are easily passed from the LCR into the eReferral system. The navigation paths to eReferral are from within the LCR. Users move between the applications in a relatively seamless fashion.

Patient data integration between eReferral and the LCR has been much more difficult to develop and maintain than the navigational integration described above. This is primarily because the LCR application is hosted remotely in the Siemens data center located in Malvern, Pennsylvania. As a result, patient data is not immediately accessible to internally developed applications at SFGH. There are no ODBC or network connections available to the data sources in Malvern. To address this, the IS Department has developed its own patient data warehouse that is populated by evening batch data downloads from the Siemens data center.

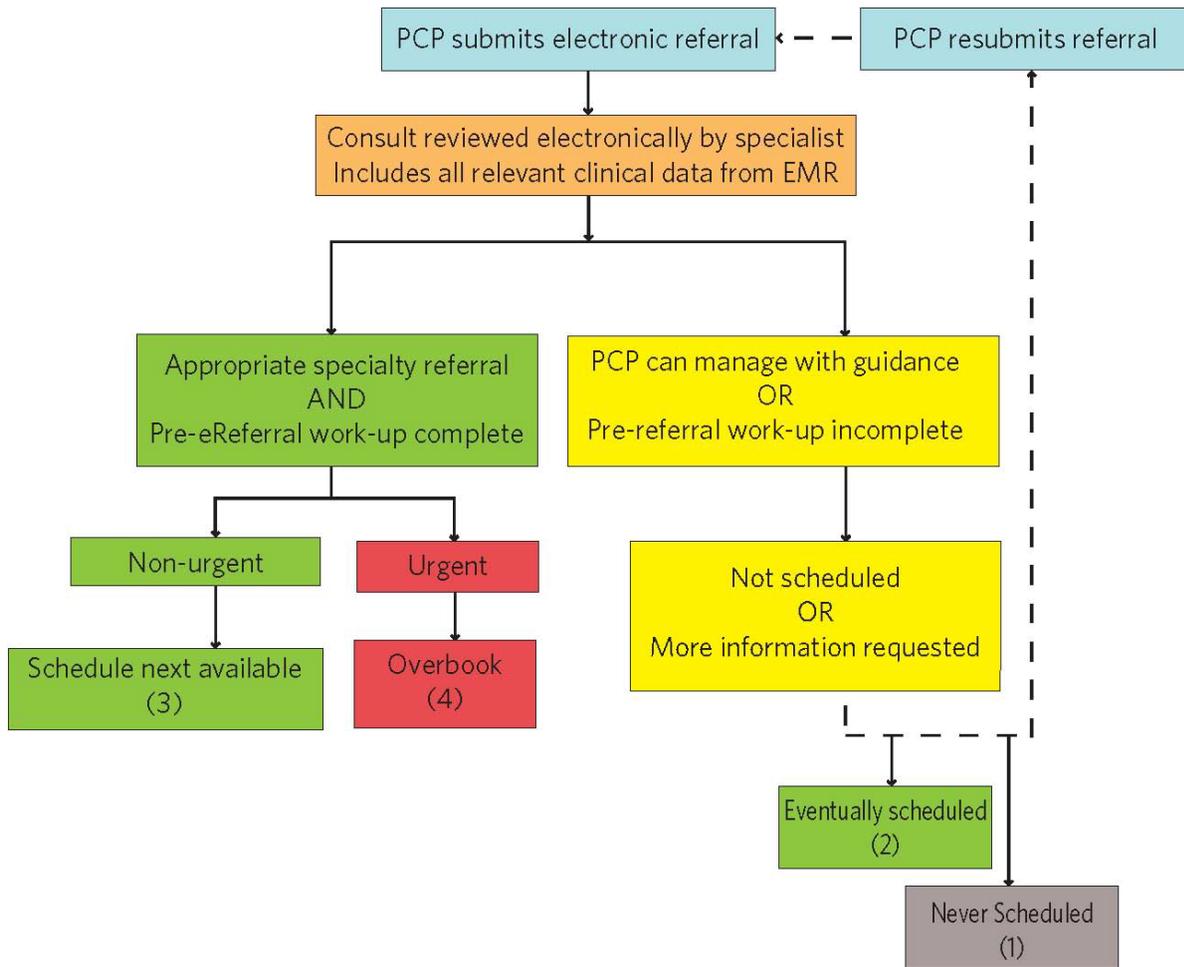
The patient demographic data elements shown inside the eReferral form are from the SFGH data warehouse and are refreshed nightly. This means that an eReferral form always displays current patient demographics (phone number, address, and primary care physician information). Importantly, when a user wants to update demographic information for an eReferral, he is forced to make the changes in the EMR rather than in the eReferral.

Appointment scheduling is also integrated between the LCR and the eReferral system. Scheduling staff receive appointment requests through the eReferral system, but make appointments using the LCR Resource Scheduling product. During evening processing, the LCR appointment is matched with the appropriate eReferral form, marking it scheduled and completing the form without any additional input required from the clinic staff. Lastly, eReferrals are integrated into the individual patient's LCR chart under Notes/Reports. eReferrals are uploaded into the LCR via an HL/7 Results Transaction interface.

eReferral Overview

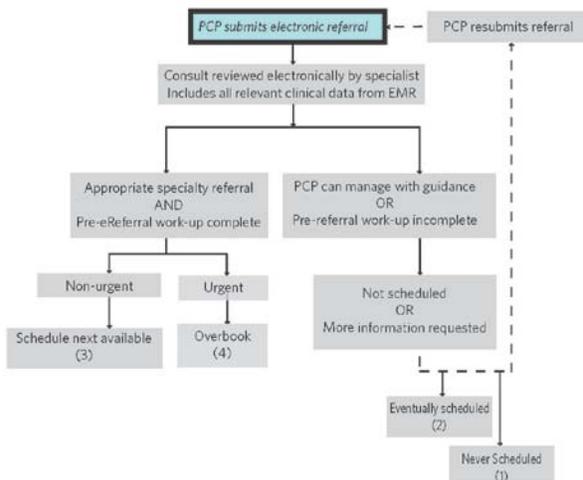
eReferral is an integrated electronic referral and consultation system that allows repeated exchanges between the referring provider and a specialist reviewer until the clinical issue has been addressed, with or without a specialty clinic appointment. This process allows the reviewer to sort each incoming referral into one of four categories: (1) cases that can be managed by the referring provider with guidance from the specialist and therefore do not need to be scheduled, (2) premature referrals where additional diagnostic work-up or history would make the scheduled specialty visit more efficient, (3) routine, appropriate cases that can wait for the next available appointment, and (4) urgent cases that require an expedited appointment. eReferral also provides an opportunity for case-based education by the specialist.

Figure 4. eReferral submission process



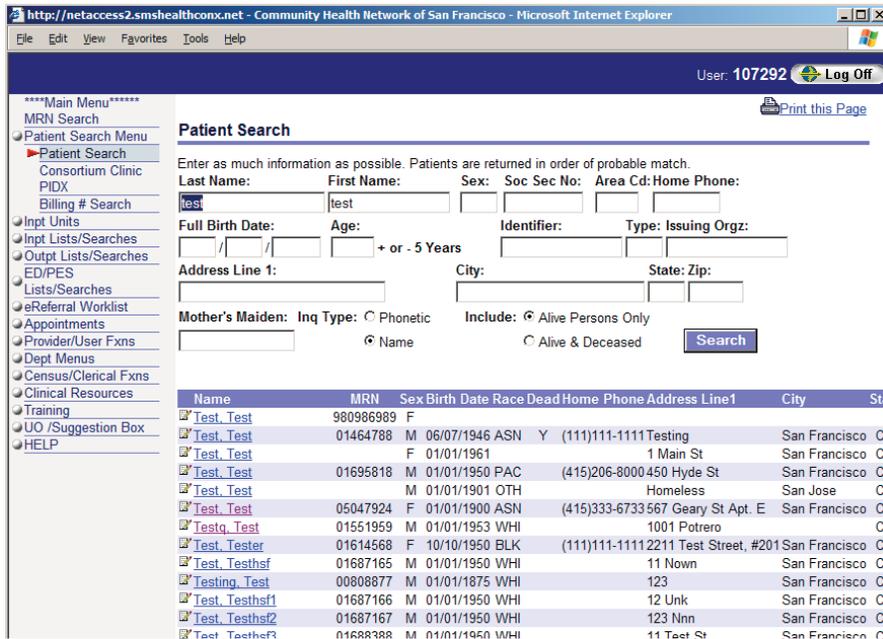
eReferral Submission Process

Figure 5. Referral submission process with step 1 highlighted



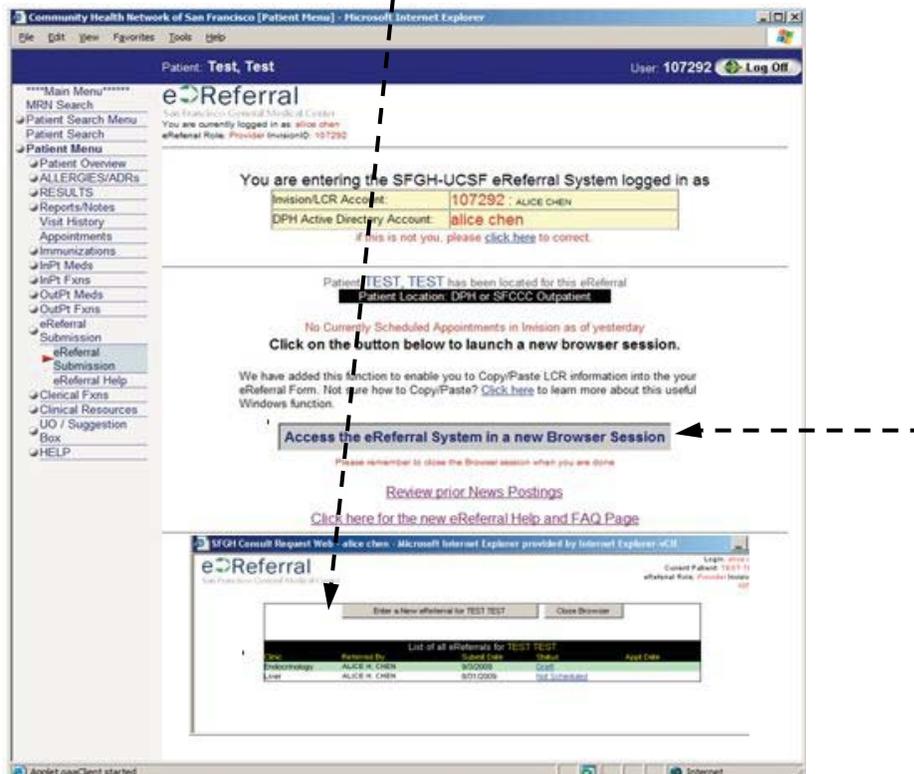
To submit an eReferral, the referring provider must first access the hospital's EMR and select an individual patient.

Figure 6. Patient search window



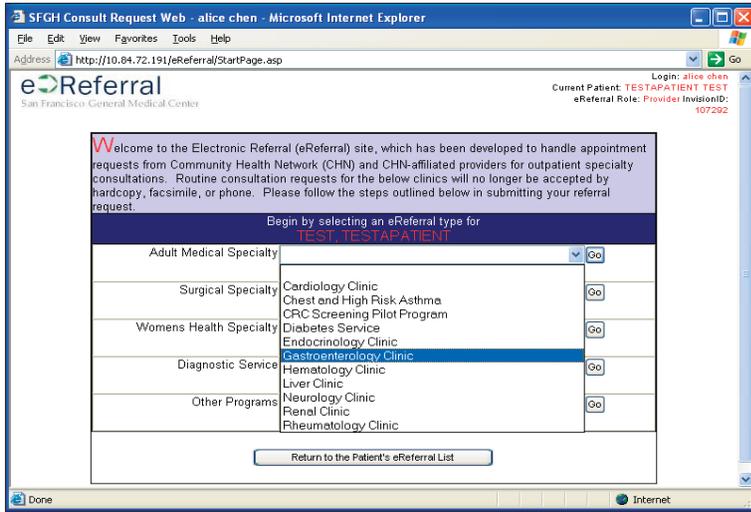
The Web-based program is launched from inside the patient's medical record, and displays a list of all prior eReferrals that have been submitted for the patient in order to alert referring providers of previous referrals.

Figure 7. Initial eReferral window



The referring provider selects the desired specialty clinic or service from a drop-down menu.

Figure 8. Specialty clinic or service selection window



Some clinics have screening questions that are designed to direct referring providers to the correct clinic (e.g., to prevent patients with liver conditions from being referred to the gastroenterology clinic, rather than the liver clinic).

Figure 9. Referring provider screening questions window

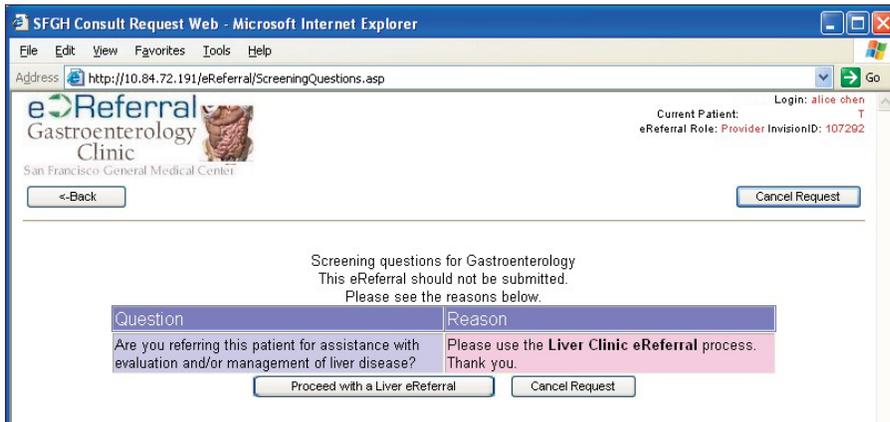
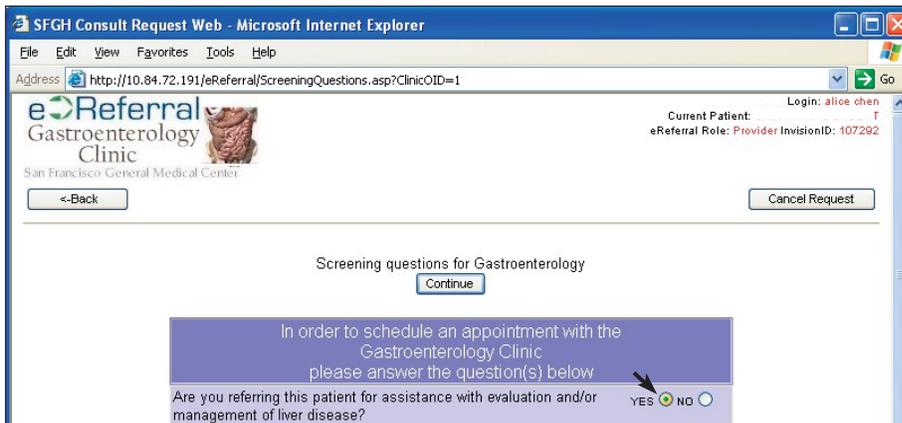
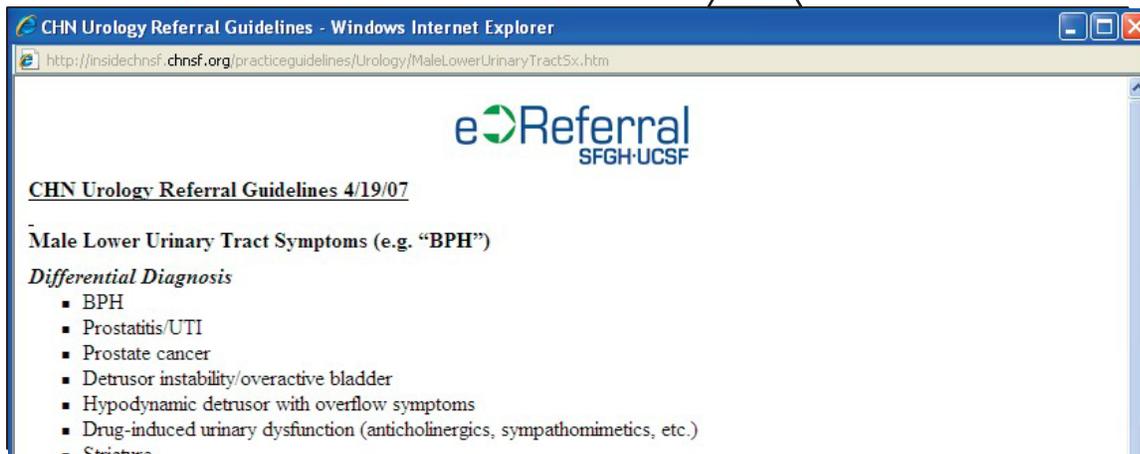
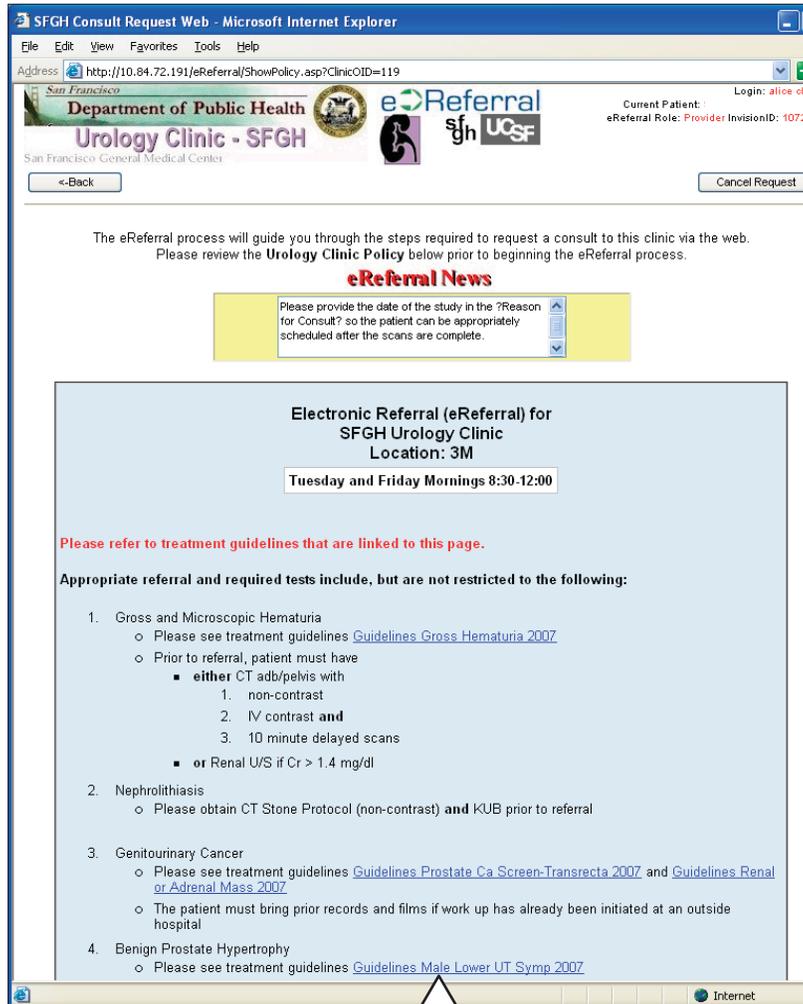


Figure 10. Referring provider screening questions window with reason



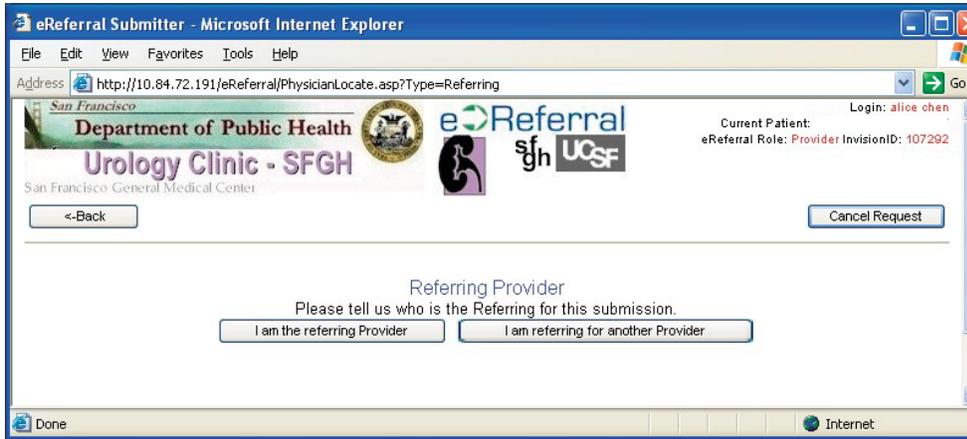
Each specialty clinic or service has a policy page that lists common reasons for referral and the names and contact information of the specialist reviewer; some have developed and posted pre-referral guidelines for the most common referral conditions.

Figure 11. Sample urology clinic policy window, and posted pre-referral guidelines window



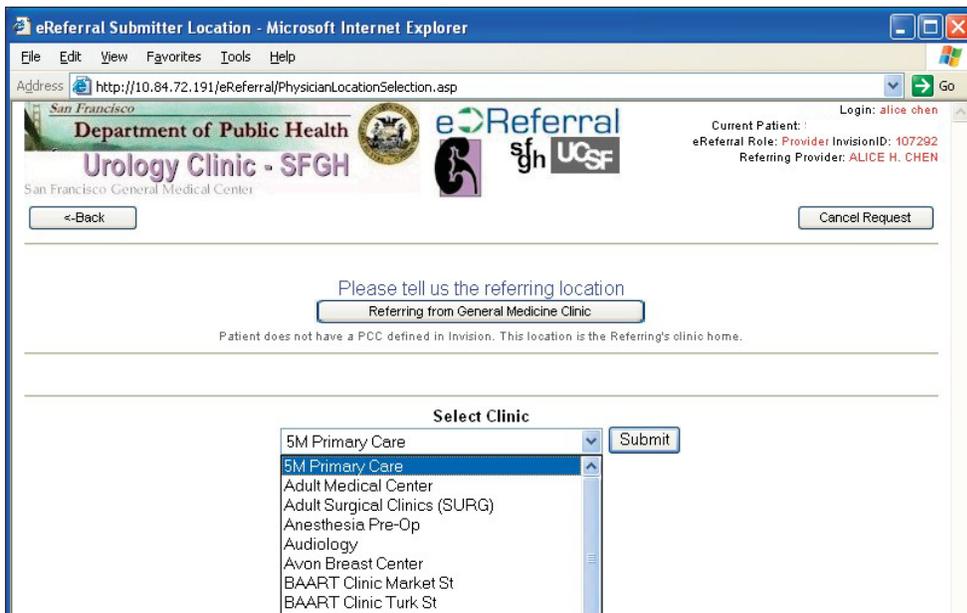
In order to minimize the need for manual entry, which is both time consuming and subject to error, relevant provider and patient information is automatically populated from the DPH EMR into the eReferral form. If the user is an MD or NP, the program allows her to automatically select herself as the referring provider or choose another provider.

Figure 12. Referring provider selection window



The program defaults the referring location to the patient's primary care clinic (if assigned), but can be changed to another referring location as needed (e.g., if the patient is being referred by the neurologist for a MRI).

Figure 13. Referring provider location window



If the user is a resident or NP, he must select an attending provider.

Figure 14. Attending provider selection window

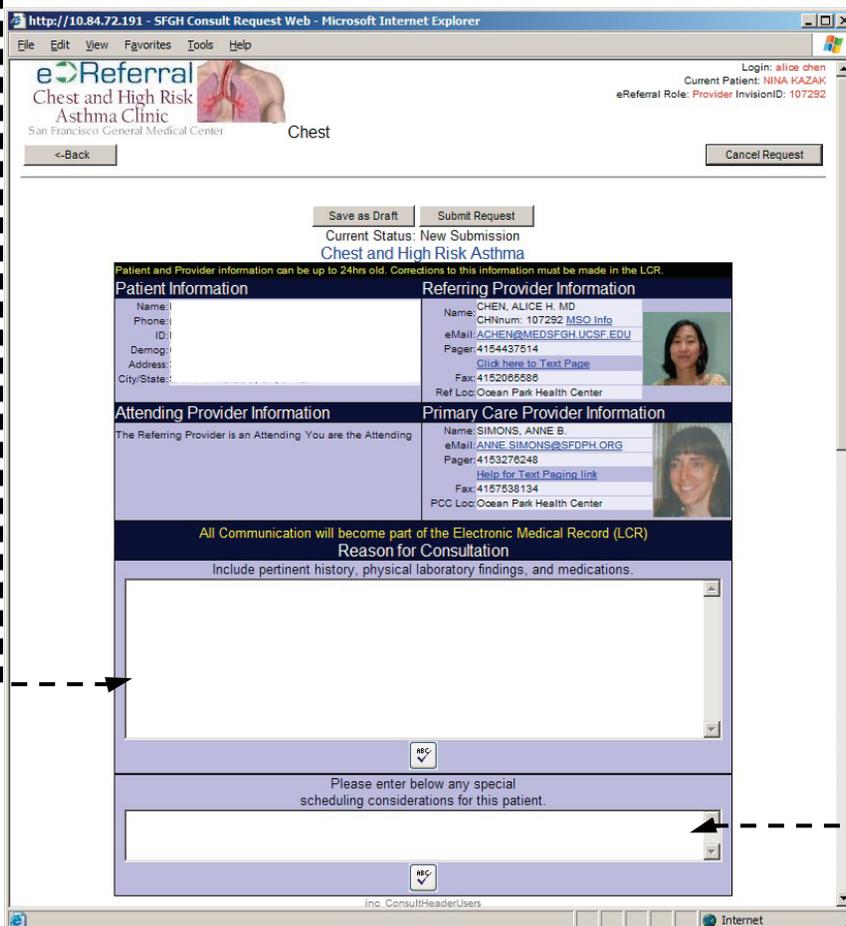


Based on these selections, the patient, referring provider, attending provider and primary care provider contact information is auto-populated from the DPH EMR.

The reason for referral is entered as free text.

There is also an area to enter any scheduling considerations; for example, if a patient's work schedule only permits him to attend an appointment on a given day of the week, or if a patient will be out of town for some period of time.

Figure 15. Patient information window



Some diagnostic services (e.g., sleep studies) require additional standardized clinical information.

Figure 16. Standardized clinical information selection window

Please enter below any special scheduling considerations for this patient.

Inc. Consult/Headed/Uses

Required information to Schedule in the Sleep Study

Neck Circumference Inches Enter integers only

Height Inches Enter integers only

Weight Pounds Enter integers only

Is the patient a habitual snorer? Yes No

Does the patient have hypertension? Yes No

Has anyone noticed the patient stops breathing during sleep? Yes No

Does the patient complain of excessive daytime sleepiness? Yes No

Has the patient ever nodded off or fallen asleep while driving a vehicle? Yes No

Expectation of Consultation Diagnostic Assistance

Obstructive Sleep Apnea Screening
Patient must be asked all questions above

Central Apnea Screening
must have room air ABG within past 90 days

Referral by ENT for pre-operative sleep evaluation

CPAP or BIPAP renewal/titration
must indicate current settings and reason for renewal/titration request

Optional: Other pertinent medical diagnosis not mentioned in the above referral

Initial Specialist Review

Each clinic designates one or more specialist clinician (MD or NP) reviewers who are responsible for responding to all referrals in a timely fashion. The reviewer assesses each referral for appropriateness, completeness, and urgency, and uses the portal to either approve an appointment for the patient or to initiate further discussion with the referring provider.

Each clinic has an electronic “Consultant Worklist” that contains all eReferrals that have been submitted for that clinic.

Figure 17. Initial specialist review window

SFGH Consult Request Web - Microsoft Internet Explorer

Address: http://10.84.72.191/eReferral/WorkListByClinic.asp?ReferralType=Chest&ClinicOID=8&View=Consultant

eReferral
Chest and High Risk Asthma Clinic
San Francisco General Medical Center

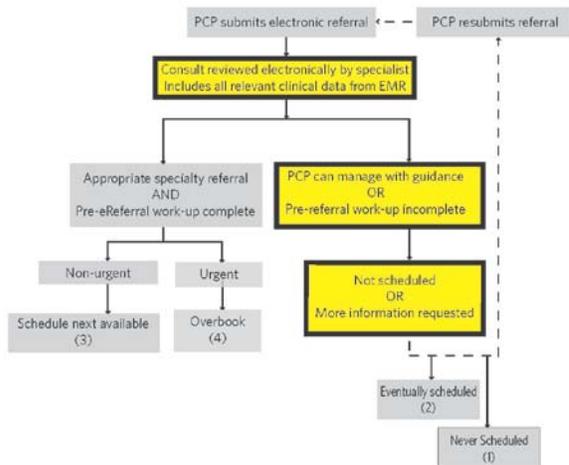
You are currently logged in as **alice chen**

Consultant View

Requested Last	Patient Name	MRN	Referring Provider	Admit Status	Internal Note
5/1/2009 5:37:00 PM			NOBLETTE, LAURIE A.		New Note
3/24/2009 6:45:00 PM			SUBBARAMAN, RAMNATH		New Note
5/5/2009 12:57:00 PM			MARION, CHARLES		New Note
4/30/2009 1:44:00 PM			PALAZUELOS, MARIE		New Note
5/4/2009 12:55:00 PM			NOBLETTE, LAURIE A.		New Note
5/4/2009 3:01:00 PM			POFF, SUSAN		New Note
5/4/2009 2:06:00 PM			TANG, AUDREY		New Note
5/5/2009 11:49:00 AM			DAVIS, J. LUCIAN		New Note

[Click here to access eReferral History in it's own Browser Session](#)

Figure 18. Referral submission process with steps 2, 3, 4 highlighted



For each eReferral, the reviewer responds to the referring provider by either entering a free text response and/or inserting a standardized "boilerplate" response.

If after reviewing a referral the specialist reviewer thinks (a) the patient can be managed by the referring provider with guidance, (b) the reason for consultation is unclear, or (c) the referral requires additional diagnostic evaluation or history in order to make a schedule visit more efficient, she responds to the referring provider and selects "Not Scheduled."

Figure 19. Reviewer response to referring provider window

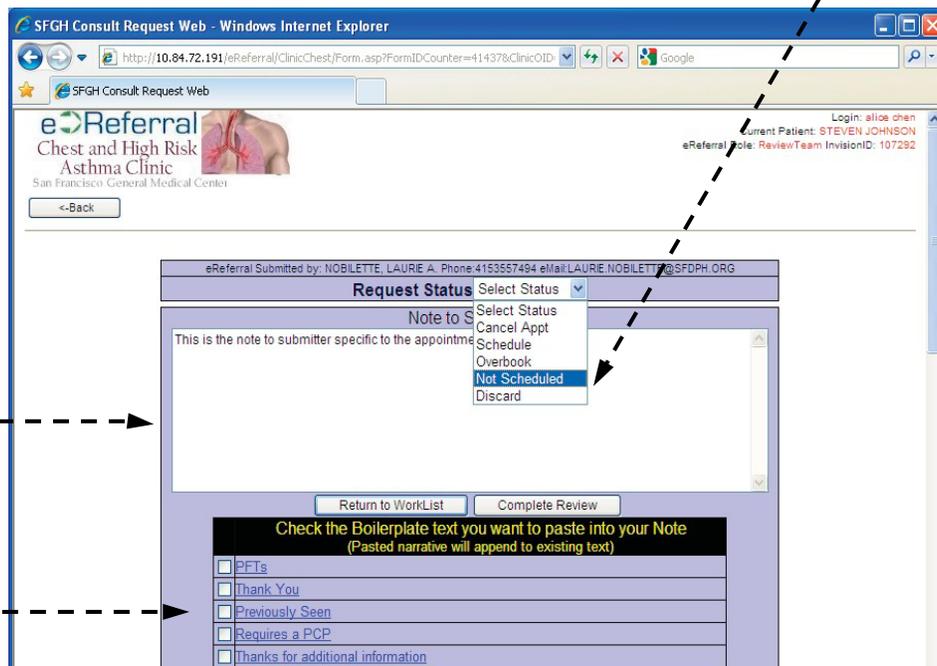
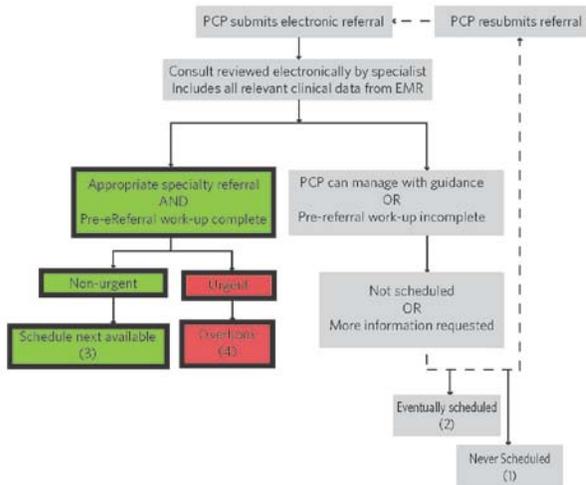
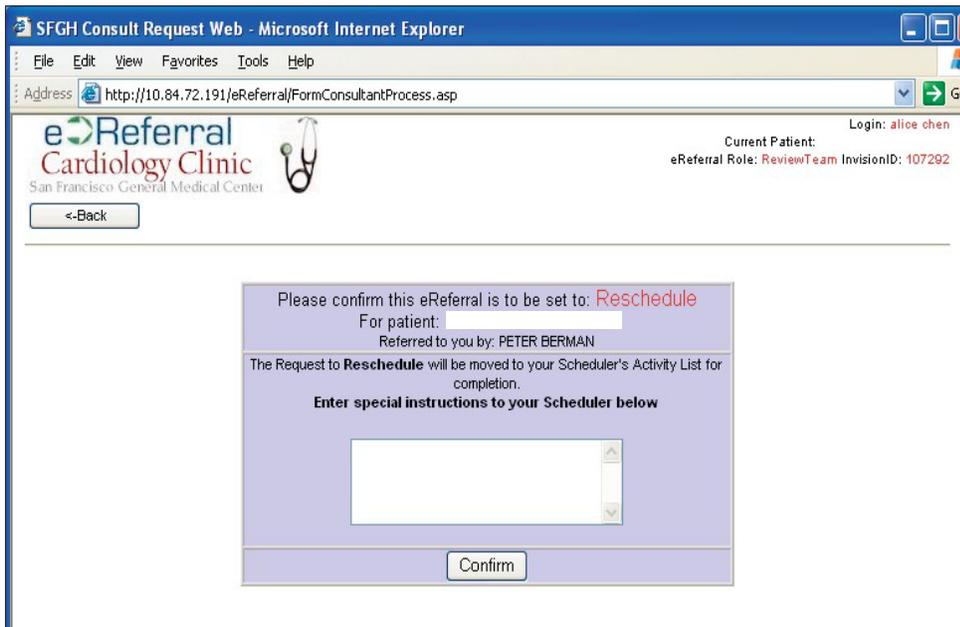


Figure 20. Referral submission process with steps 3, 4, 5 highlighted



For patients who are approved for an appointment (“Schedule” or “Overbook”), the reviewer can enter scheduling instructions for the clerical staff (e.g., “overbook in two weeks” or “schedule for next available”).

Figure 21. Scheduling instructions window



The reviewer can select the diagnostic test results that, if available for a given patient, are automatically appended to the referral.

Figure 24. Diagnostic test results window

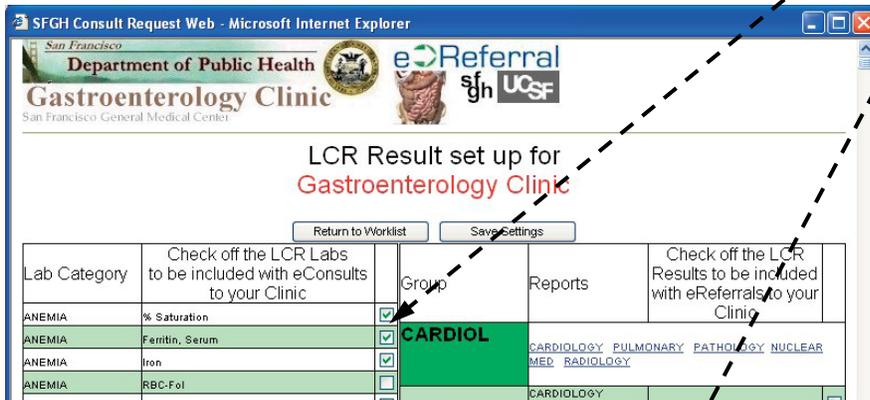
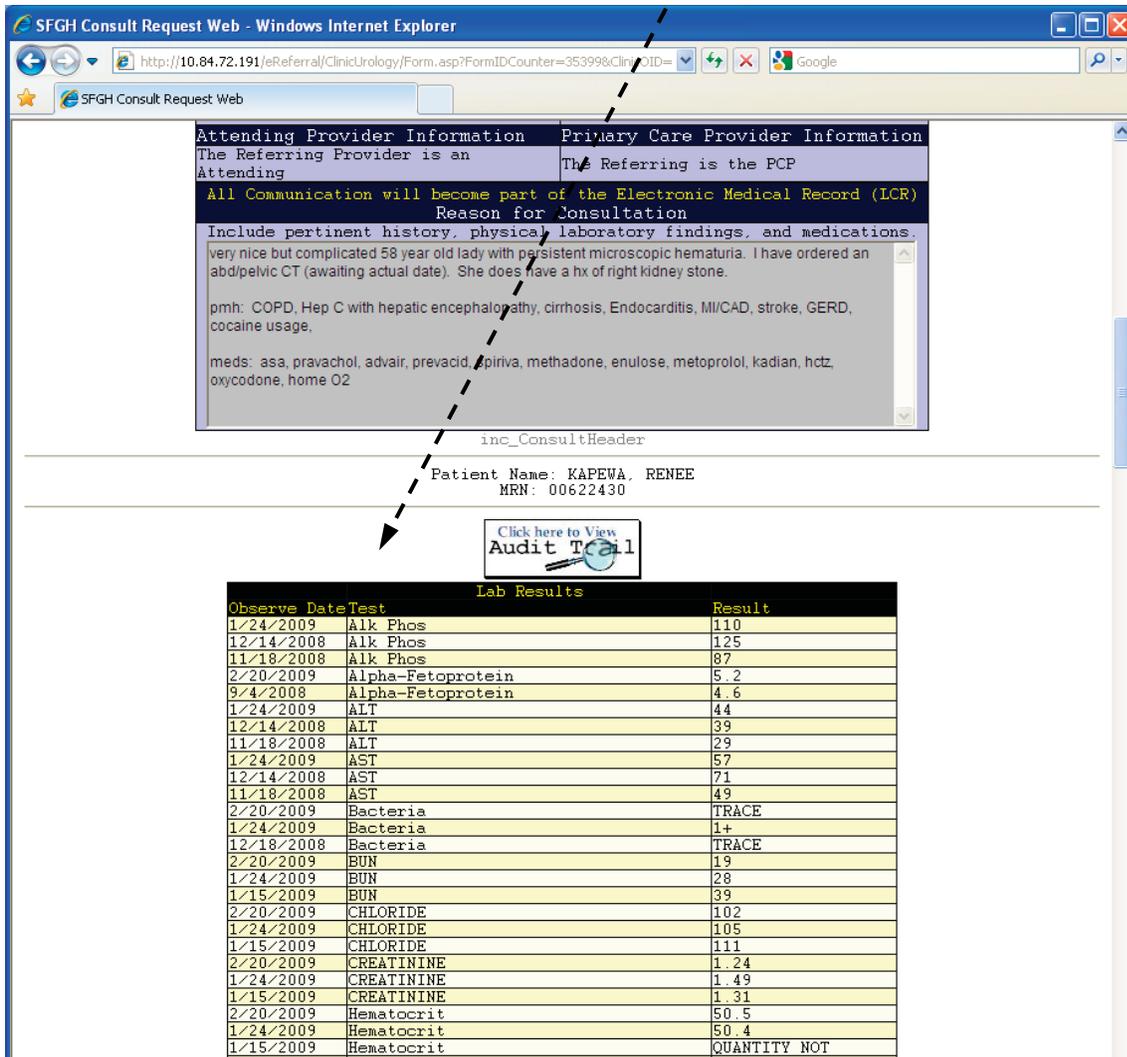


Figure 25. Test results window with consult and lab results



The reviewer has the ability to develop a library of commonly encountered conditions or situations.

Figure 26. Boilerplate library table

Note to Submitter Boilerplate Library for Gastroenterology Clinic

Boilerplate Name	Narrative	Edit	Delete
Address required	Patients are notified of eReferral scheduled appointments by mail to the address listed for them in the Invision/Lifetime Clinical Record (LCR). Therefore, without a correct address in Invision/LCR pa	Edit	Delete
appending new information for visit	In the future, you should just open the original eReferral form and add comments to it. This is the best way to ensure that your new info is present at the time of the patient visit. This time I have	Edit	Delete
can't schedule procedures with eReferral	Unfortunately, we can't schedule patients for procedures via eReferral. It is meant for new patient clinic referrals. Please contact the GI fellow on call to explain the need for rescheduling the proc	Edit	Delete
cancelled appt	We have investigated this, and neither the GI service or eReferral was responsible for this cancellation. The cancellation was a " " by an individual with code " ". It is likely that s	Edit	Delete
chronic diarrhea	Prior to scheduling a patient with chronic diarrhea for a GI clinic appointment please obtain the following tests: 1. Fecal tests including, a. Ova and parasites x 2-3, b. Clostridium difficile, c.	Edit	Delete
CRC screening program	For GI Hope study you need to submit an eReferral to the Colorectal Cancer Screening Pilot Project webportal, not the GI clinic portal. Go back to the pulldown menu where you will find it. Thanks, Hal	Edit	Delete
duplicate	duplicate	Edit	Delete
dyspepsia	It appears that you are referring the patient to GI Clinic for for dyspepsia. If this is correct, then please ensure the following	Edit	

The reviewer can grant other individuals access to the reviewer and scheduler worklists.

Figure 27. Access and role settings for clinic

Access and Role Settings for the Gastroenterology Clinic

Login Name	Access Level	Last Login	Edit	Delete
Gloria Rodas	Scheduler	6/19/2009 12:16:56 PM	Edit	Delete
Hal Yee	Consultant	6/19/2009 11:46:50 AM	Edit	Delete
Violet Garcia	Scheduler	4/21/2009 2:14:14 PM	Edit	Delete

Scheduling Process

Once the reviewer approves an appointment, the eReferral is forwarded to a “Scheduler’s Worklist,” an electronic list of all the patients who need to be scheduled for an appointment.

The worklist displays scheduling instructions from the specialist reviewer as well as any scheduling considerations entered by the referring provider. In addition, any “Overbook” appointments are flagged for urgency.

Designated clerical staff monitor each clinic’s Scheduler’s Worklist on a daily basis. Each patient must be manually scheduled in the hospital’s scheduling system, which is distinct from eReferral.

Figure 28. Scheduler view with schedule lists

The screenshot displays the "Scheduler View" interface within a Microsoft Internet Explorer browser window. The address bar shows the URL: `http://10.84.72.191/eReferral/WorkListScheduler.asp?ListType=Ready%20to%20Schedule&ClinicOID=48&View=Scheduler`. The page header includes the "eReferral Cardiology Clinic" logo and the text "San Francisco General Medical Center". A login message states "You are currently logged in as alice chen". Below the header, there are navigation buttons: "Appointment Schedule Lists", "eReferral History", "All Worklists", "Print Page", and "Close Browser". A "View" dropdown menu is set to "Show", and a "Save Checked Appointment List" button is present. The main content is a table with the following columns: "Scheduling Notes", "Patient Name", "MRN", "Referring Provider", and "Check if scheduled".

Scheduling Notes	Patient Name	MRN	Referring Provider	Check if scheduled
Scheduling Considerations: Note to Scheduler: Schedule for Hsue.			EACEN, KELLENE	<input type="checkbox"/>
Scheduling Considerations:			DEEKS, STEVEN	<input type="checkbox"/>
Scheduling Considerations:			NOBILETTE, LAURIE A.	<input type="checkbox"/>
Scheduling Considerations: Request to OverBook			HANSON, JOSHUA	<input type="checkbox"/>
Reschedule Request			TAM, ADELA	<input checked="" type="checkbox"/> Set by: alice chen @8/13/2009 6:04:15 PM
Scheduling Considerations: Note to Scheduler: Schedule for Gray. Please try to schedule with Dr. Gray (per Teresa DeMarco at UCSF)			HENDRICKSON, CAROLYN	<input checked="" type="checkbox"/> Set by: alice chen @8/13/2009 6:04:15 PM
Scheduling Considerations: Request to OverBook			CHANG, JENNIFER	<input checked="" type="checkbox"/> Set by: alice chen @8/13/2009 6:04:15 PM
Scheduling Considerations: Note to Scheduler: Schedule for Gray.			KANE, ADRIENNE M.	<input type="checkbox"/>
Scheduling Considerations: Request to OverBook			BAGDORF, BEVERLY	<input type="checkbox"/>
Scheduling Considerations:			CAMPBELL, SUSAN S.	<input type="checkbox"/>
Scheduling Considerations: Note to Scheduler: Schedule for Hsue.			LIN, ROYCE	<input type="checkbox"/>
Scheduling Considerations:			BERMAN, DETER	<input type="checkbox"/>

Overnight, when eReferral synchronizes with the hospital appointment database, the referral is removed from the worklist and an automated email is generated notifying the referring provider of the appointment. If multiple clerks are managing the worklist, they can use the “Check if scheduled” box to indicate to their colleagues that the appointment has already been made.

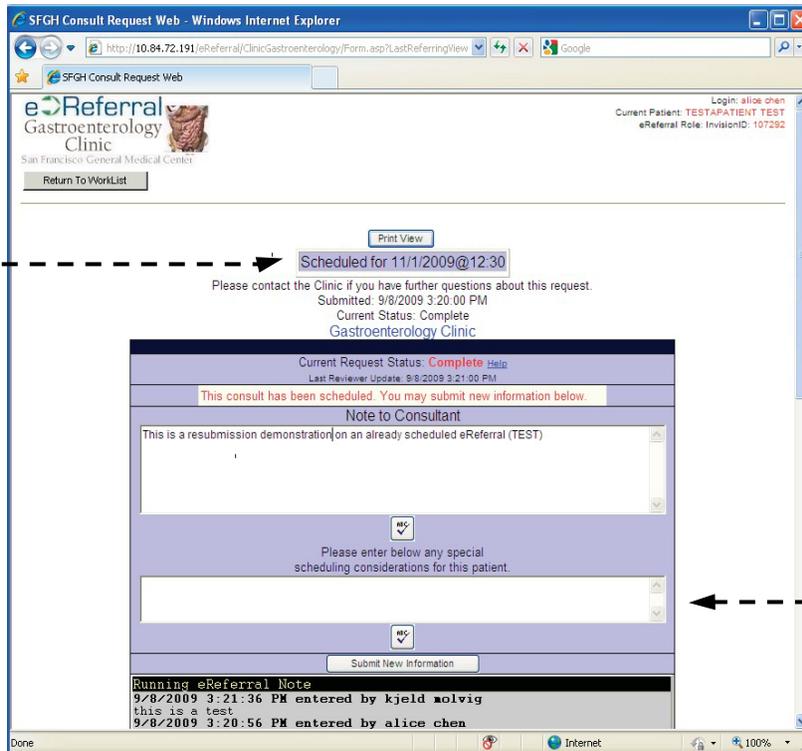
Patients receive an automated appointment notification letter at the time the appointment is made. Two weeks before the appointment date, the patient receives a second automated appointment reminder letter.

Scheduled Appointments

After an appointment is scheduled, the appointment date and time are displayed at the top of the eReferral.

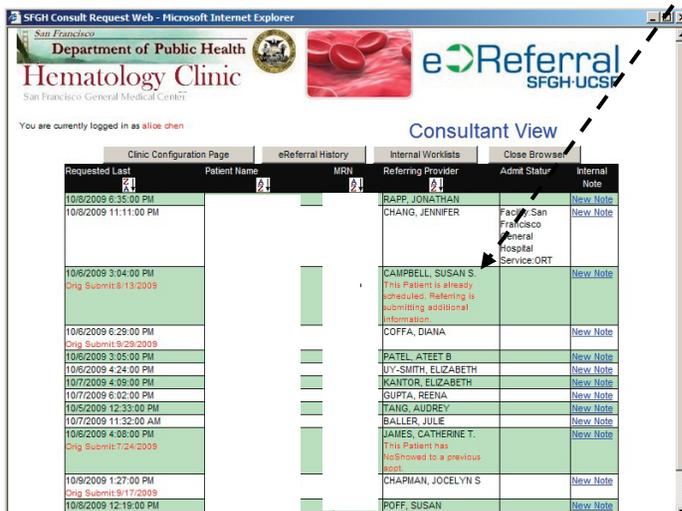
If the referring provider has additional information to relay to the specialist, or feels the appointment either needs to be expedited or delayed, he can submit additional information via the same eReferral.

Figure 29. Scheduled appointment



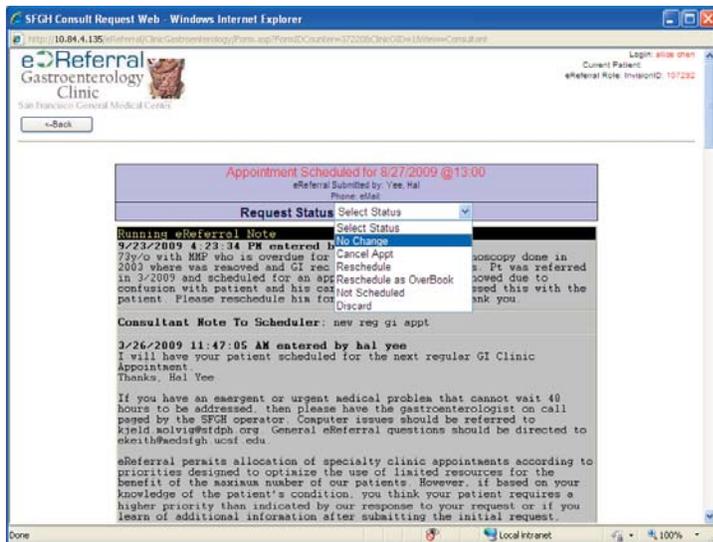
These resubmitted eReferrals are flagged on the Consultant Worklist as already having an appointment scheduled.

Figure 30. Consultant view of scheduled appointments



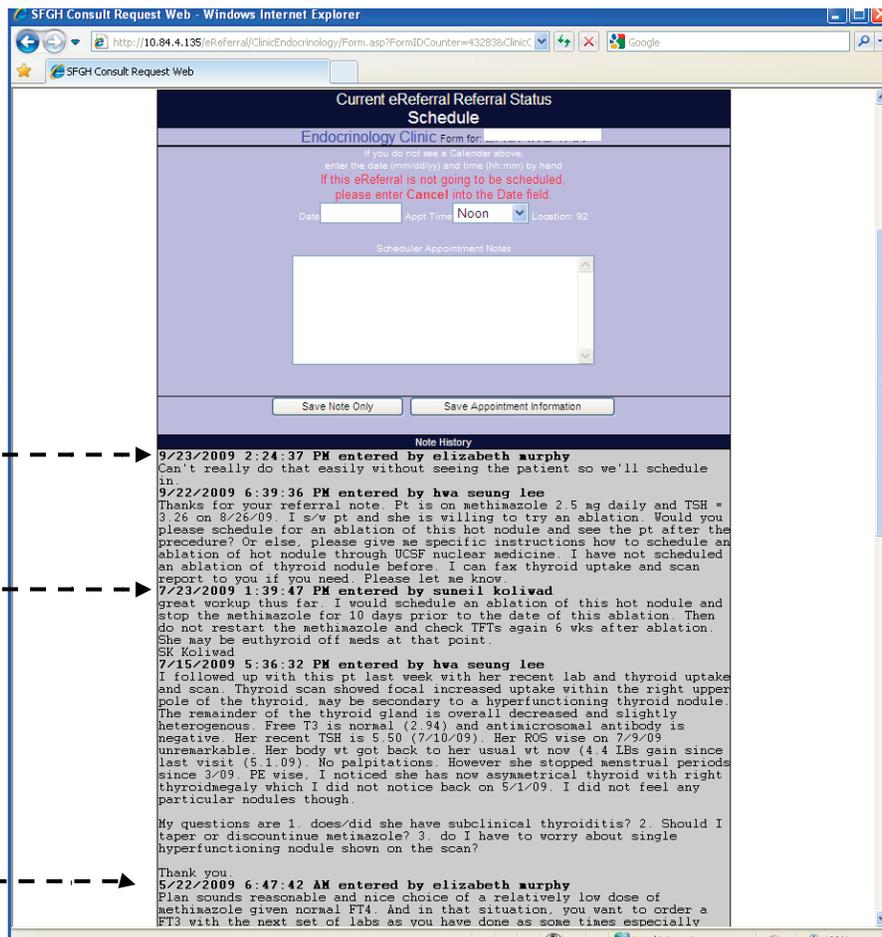
The specialist reviews the new information and can approve a change in the appointment date, can select “No Change” or ask the scheduler to cancel the appointment.

Figure 31. Scheduled appointment with running notes



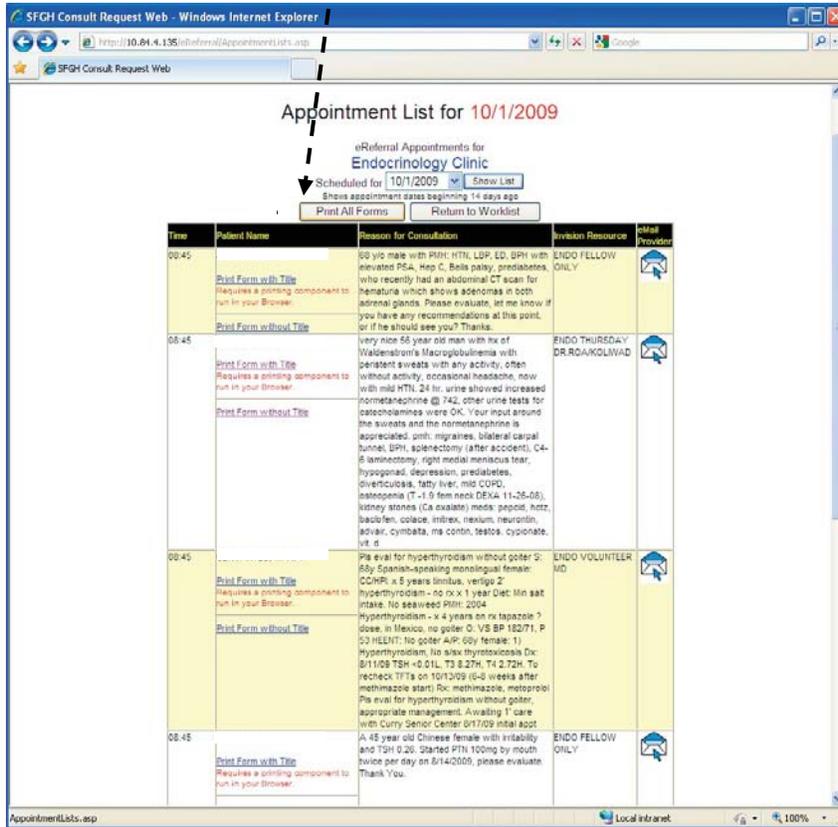
All exchanges are captured in the eReferral with an automated name, date, and time stamp.

Figure 32. Scheduled appointment with multiple dated notes



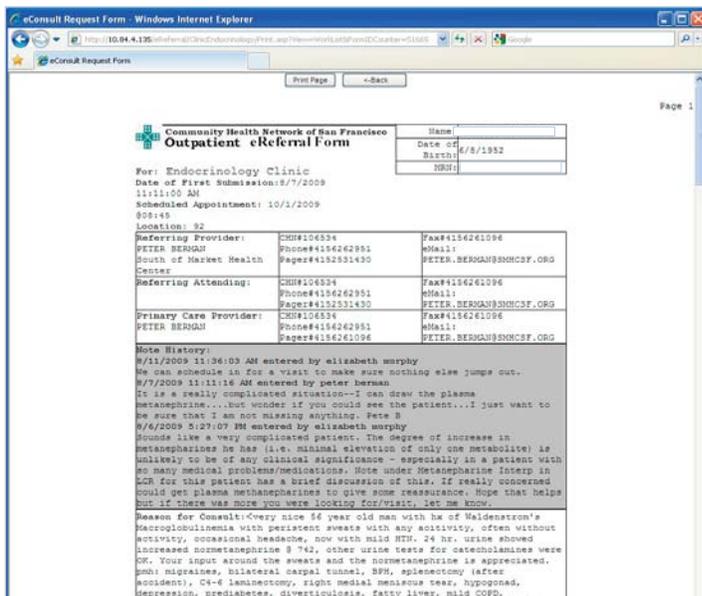
Clinic staff print out eReferrals before the appointment and attach the referral form to the patient's chart.

Figure 33. Appointment list



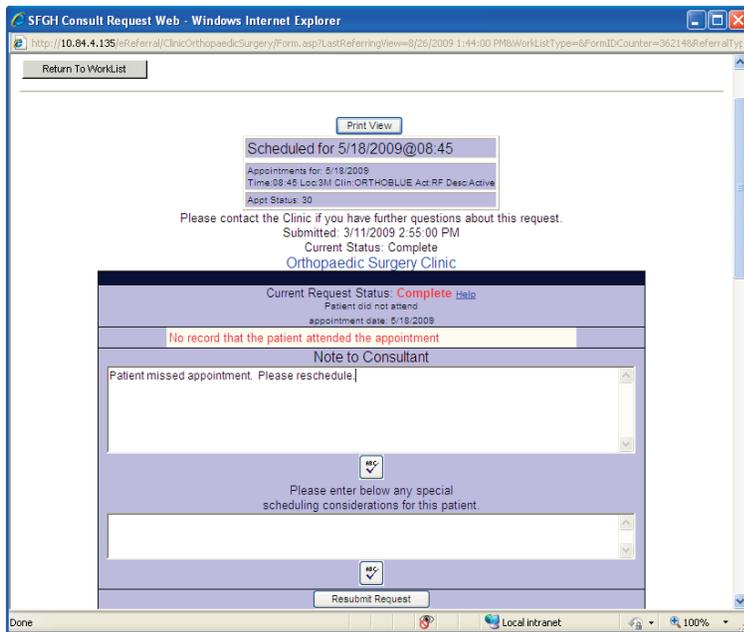
The specialist who is seeing the patient in clinic is able to review to the reason for referral as well as any subsequent exchanges between the referring provider and specialist reviewer.

Figure 34. Outpatient eReferral form



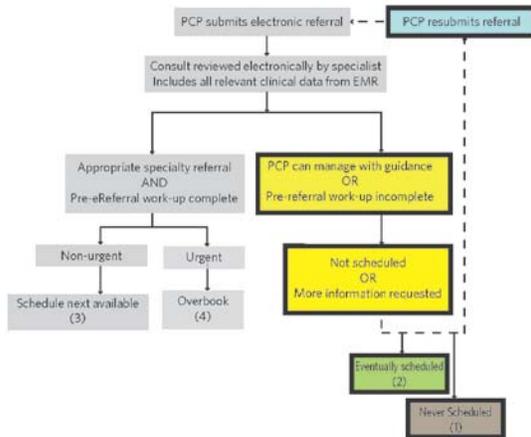
If the patient misses the appointment, the referring provider can resubmit the same eReferral up to 180 days after the missed appointment. After that time, a new eReferral must be submitted.

Figure 35. Scheduled appointment



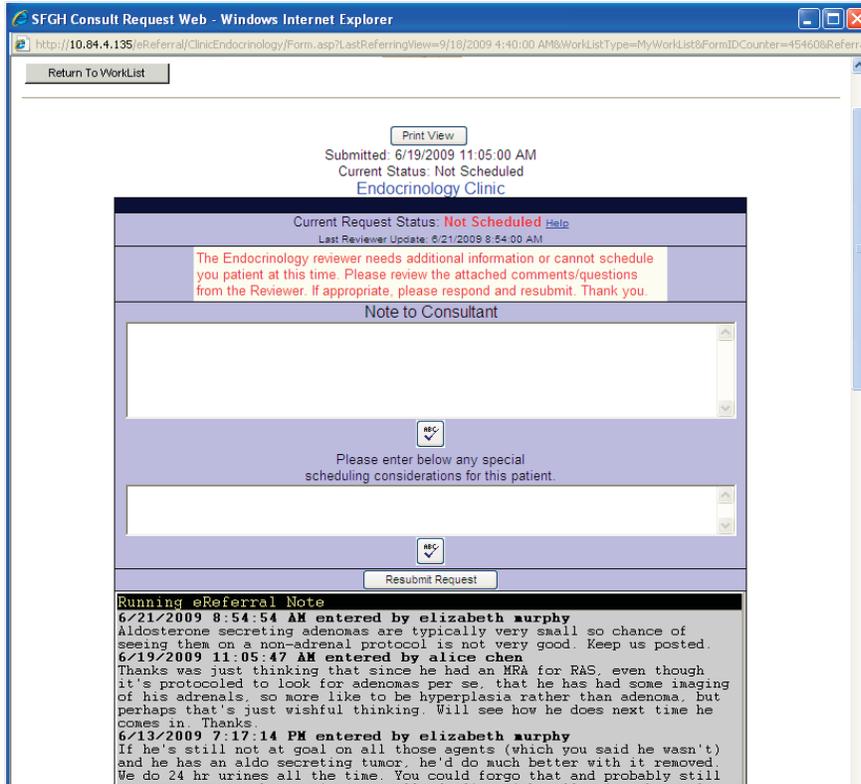
Not Scheduled eReferrals

Figure 36. Referral submission process with steps 1, 3, 4, 5, 6 highlighted



When the specialist reviewer decides to “Not Schedule” an eReferral, the referring provider receives an automated email requesting him to check the referral for the specialist reviewer’s response. The referring provider can provide clarification or additional information through the eReferral.

Figure 37. Current request status



These eReferrals are flagged on the Consultant Worklist as resubmissions.

Many of the referrals that are initially “Not Scheduled” are subsequently scheduled for appointments. eReferrals that are not scheduled remain open for resubmission for up to 180 days after the last specialist reviewer response. After that time, a new eReferral would have to be submitted.

Figure 38. Consultant view

The screenshot shows a web browser window titled "SFGH Consult Request Web - Windows Internet Explorer". The URL is "http://10.84.4.135/eReferral/WorkListByClinic.asp?ReferralType=Gastroenterology&ClinicOID=1&View=Consultant". The page header includes the "eReferral Gastroenterology Clinic" logo and the text "San Francisco General Medical Center". Below the header, it says "You are currently logged in as **alice chen**".

The main content area is titled "Consultant View" and contains a table with the following columns: "Requested Last", "Patient Name", "MRN", "Referring Provider", "Admit Status", and "Internal Note". The table lists 20 eReferrals. The "Requested Last" column shows dates and times, with some entries marked as "Orig. Submit: 9/21/2009". The "Referring Provider" column lists names such as YU, ALBERT Y., SHORE, WILLIAM B., and others. The "Admit Status" column shows various facility and service names. The "Internal Note" column contains a "New Note" link for each entry.

Requested Last	Patient Name	MRN	Referring Provider	Admit Status	Internal Note
9/23/2009 11:11:00 AM			YU, ALBERT Y.		New Note
9/23/2009 10:21:00 AM			SHORE, WILLIAM B.		New Note
9/23/2009 4:56:00 PM			SCHOENFELD, NAOMI C.		New Note
Orig. Submit: 9/21/2009					
9/23/2009 4:54:00 PM			KELLER, DEBRA B.		New Note
9/23/2009 11:34:00 AM			DHRUVA, ANAND	Facility:Laguna Honda Hospital Service:LHG	New Note
9/23/2009 1:36:00 PM			AXLINE, BRIANA M.		New Note
9/23/2009 3:02:00 PM			GHALY, CHRISTIA	Facility:San Francisco General Hospital Service:MED	New Note
9/23/2009 2:50:00 PM			GOLDBERG, ANNE LISE		New Note
9/23/2009 2:25:00 PM			RUSSELL, ANIKA	Facility:San Francisco General Hospital Service:FPR	New Note
9/23/2009 3:05:00 PM			HUYNH, JACK S.		New Note
9/23/2009 1:10:00 PM			BUSHMAN, SARI A.		New Note
9/23/2009 9:54:00 AM			WOTKE, DANIELA		New Note
9/23/2009 12:12:00 PM			KIM, ANN		New Note
9/23/2009 11:33:00 AM			COOMBS, LORINDA A.		New Note
Orig. Submit: 9/21/2009					
9/23/2009 12:12:00 PM			CHEN, ROSSAN		New Note
9/23/2009 11:22:00 AM			WU, SANDY WEN JUAN		New Note
9/23/2009 4:23:00 PM			MONTES, BEBECA		New Note

eReferral Documentation and Management

eReferrals are stored as part of the patient's EMR, and can be accessed either through the patient's eReferral portal (shown under eReferral Submission Process) or under the patient's Notes/Reports.

We have also developed a series of worklists that can be used to manage and track eReferrals:

Figure 39. Patient's EMR

The screenshot displays a web-based EMR interface for the Community Health Network of San Francisco. The browser window title is "Community Health Network of San Francisco [Patient Menu] - Microsoft Internet Explorer". The address bar shows a URL starting with "http://netaccess2.smshealthconx.net". The interface includes a navigation menu on the left with options like "MRN Search", "Patient Menu", "Patient Overview", "ALLERGIES/ADRs", "RESULTS", "Reports/Notes", "View", "Reports/Notes", "View ePDP", "Reports", "Enter/Update", "Progress Note", "ProgNotes", "Instructions", "Enter", "Correspondence", "ePDP", "Visit History", "Appointments", "Immunizations", "InPt Meds", "InPt Fxns", "OutPt Meds", "OutPt Fxns", "eReferral", "Submission", "Clerical Fxns", "Clinical Resources", "UO / Suggestion", "Box", and "HELP".

The main content area shows patient information: "Patient: [redacted]", "User: 107292", "Log Off", "Sex: F", "BD: 04/07/1930", and "MR#". There are links for "Print this Page" and "Print with Linked Report". A "Set Date Range" button is present. Below this, a section titled "Transcribed Reports (Up to 999 latest results)" is shown with a filter set to "All" and "Last Activity: 09/16/2009 13:38".

Time	Report Type	Link
<input type="checkbox"/> 16 Sep 2009 13:38	Primary Care	
<input type="checkbox"/> 10 Sep 2009 10:14	GI Progress Notes	P
<input type="checkbox"/> 29 Apr 2009 12:53	Primary Care	
<input type="checkbox"/> 29 Apr 2009 03:57	Primary Care	
<input type="checkbox"/> 09 Apr 2009 21:31	GI Progress Notes	
<input type="checkbox"/> 21 Jan 2009 15:44	Primary Care	
<input type="checkbox"/> 21 Jan 2009 11:44	Social Work Note	
<input type="checkbox"/> 21 Jan 2009 04:05	eReferral Gastroenterology	
<input type="checkbox"/> 17 Dec 2008 11:15	Primary Care	
<input type="checkbox"/> 31 Oct 2008 16:00	Primary Care	
<input type="checkbox"/> 31 Oct 2008 14:44	Social Work Note	
<input type="checkbox"/> 25 Jul 2008 15:25	Medicine	
<input type="checkbox"/> 29 Jan 2008 19:28	Medicine	
<input type="checkbox"/> 03 Dec 2007 06:44	Medicine	
<input type="checkbox"/> 04 Sep 2007 18:02	Medicine	
<input type="checkbox"/> 04 Sep 2007 06:27	eReferral Orthopedics	
<input type="checkbox"/> 07 Aug 2007 11:03	eReferral Gastroenterology	
<input type="checkbox"/> 19 Jul 2007 16:51	Medicine	
<input type="checkbox"/> 10 Jul 2007 18:44	Medicine	
<input type="checkbox"/> 22 Dec 2006 15:03	Medicine	
<input type="checkbox"/> 19 Dec 2006 18:20	Medicine	
<input type="checkbox"/> 03 Oct 2006 16:27	Medicine	

We have also developed a series of worklists that can be used to manage and track eReferrals:

Referring Provider Worklist: displays all eReferrals for a given referring provider.

When the specialist reviewer responds to an eReferral, the referring provider and PCP (if different) receive an automated email asking them to check their worklists for the specialist response. New eReferrals are marked with a red exclamation point on the worklist.

Opening the eReferral removes the exclamation point. If an eReferral remains unread/unopened by the referring or attending (if applicable) providers after two weeks, both receive an automated email reminder. These emails continue to be sent on a weekly basis until the eReferral is opened.

Figure 40. Referring provider worklist

The screenshot shows a web browser window with the URL <http://10.84.4.135/eReferral/TabWorkLists.asp>. The page title is "eReferral" and the subtitle is "San Francisco General Medical Center". There are buttons for "Close Browser" and "Refresh". The main content area has tabs for "My WorkList", "Other Provider WorkLists", "Submitter WorkLists", and "Lc". The selected tab is "Referring Provider Worklist for FRED STRAUSS-PRdoc#047894".

Request Time	Patient Name	Referred To	Request Status	PCP Provider	NonClinical Note
		Not Scheduled Hide	Status Help		
5/26/2009		Cardiology	Not Scheduled	STRAUSS	NonClinical Note
8/4/2009		Endocrinology	Not Scheduled	DYNER	NonClinical Note
8/14/2009		Gastroenterology	Not Scheduled	CHEN	NonClinical Note
8/24/2009		Gastroenterology	Not Scheduled	STRAUSS	NonClinical Note
9/21/2009		Neurosurgery	Not Scheduled	STRAUSS	NonClinical Note
9/22/2009		OrthopaedicSurgery	Not Scheduled	STRAUSS	NonClinical Note
10/7/2009		Gastroenterology	Not Scheduled	CHEN	NonClinical Note
		New Submission			
5/12/2009		OrthopaedicSurgery	Draft	STRAUSS	NonClinical Note
6/11/2009		Liver	Draft	CHEN	NonClinical Note
		Awaiting Scheduling			
9/14/2009		Ophthalmology	Schedule	STRAUSS	NonClinical Note
9/16/2009		Ophthalmology	Schedule	STRAUSS	NonClinical Note
9/22/2009		Ophthalmology	Schedule	STRAUSS	NonClinical Note
		Appt Scheduled Show All			
5/6/2009		Urology	Complete appt: 10/13/2009	STRAUSS	NonClinical Note
8/26/2009		Ophthalmology	Complete appt: 10/14/2009	STRAUSS	NonClinical Note
			Complete		NonClinical Note

Primary Care Provider Worklist: displays all eReferrals for a given primary care provider's patients, regardless of who made the referral.

Figure 41. Primary care provider worklist

http://10.84.4.135/eReferral/TabWorkLists.asp?ProviderType=PCP Provider=&InvisionID=&ShowPending=
 http://10.84.4.135/eReferral/TabWorkLists.asp?ProviderType=PCP Provider=&InvisionID=&ShowPending=True&ShowNotScheduled=
 My WorkList Other Provider WorkLists Submitter WorkLists Local

Primary Care Provider Worklist for alice chen
 This list includes all the eReferrals that have been submitted for your primary care patients that are not closed or
 Click here for an explanation of Inactive and Removed eReferrals.

Switch to Referring WorkList Access Removed eReferrals View Inactive eReferrals

Request Time	Patient Name	Referred To	Request Status	Referring Provider	NonClinical Note		
		Not Scheduled Display All Not Scheduled	Status Help	Change Referring			
		New Submission					
9/21/2009		Chest	New Submission	CHEN	NonClinical Note		
6/11/2009		Liver	Draft	STRAUSS	NonClinical Note		
		Awaiting Scheduling					
9/18/2009		Cardiology	Schedule	CHEN	NonClinical Note		
8/7/2009		HealthAtHome	Accept	CHEN	NonClinical Note		
11/26/2008		Respite	Accept	MCDERMOTT !	NonClinical Note		
5/16/2007		Colonoscopy	Schedule	CHEN	NonClinical Note		
9/16/2009		Gynecology	Schedule	CHEN	NonClinical Note		
8/24/2009		HealthAtHome	Accept	CHEN	NonClinical Note		
4/6/2007		Colonoscopy	Schedule	BAGDORF	NonClinical Note		
3/24/2007		Colonoscopy	Schedule	CHEN	NonClinical Note		
9/16/2009		Diabetes	Schedule	CHEN	NonClinical Note		
		Appt Scheduled Show All					
8/12/2009		Neurology	Complete appt:9/30/2009	CHEN	NonClinical Note		
8/31/2009		Neurology	Complete appt:10/2/2009	CHEN	NonClinical Note		
8/12/2009		Podiatry	Complete appt:10/5/2009	CHEN	NonClinical Note		
9/16/2009		OrthopaedicSurgery	Complete appt:10/15/2009	CHEN	NonClinical Note		
5/27/2009		Gastroenterology	Complete appt:10/22/2009	CHEN	NonClinical Note		
5/11/2009		Gastroenteroloov	Complete	CHEN !			

Local intranet

Referring Location Worklist: displays all eReferrals originating from a given clinic.

Figure 42. Referring location worklist

http://10.84.4.135/eReferral/TabWorkLists.asp - Windows Internet Explorer
 http://10.84.4.135/eReferral/TabWorkLists.asp
 eReferral
 San Francisco General Medical Center
 Current Patient: Login: alice chen
 eReferral Role: InvisionID: 107292
 Close Browser Refresh

My WorkList Other Provider WorkLists Submitter WorkLists Location WorkLists

Referring Location Worklist for Ocean Park Health Center

Status	Requested	Patient Name	MRN	Referring Provider	Referred To	Non Clinical Note	Click here
Complete and scheduled 08:30 6/30/2009 Invision Status: Canceled	9/24/2008			SIMONS, ANNE B.	Urology		<input type="checkbox"/>
Complete and scheduled 09:45 6/22/2009 Invision Status Code:	5/18/2009			TRUSTMAN, ADRIENNE	Ophthalmology		<input type="checkbox"/>
Not Scheduled	9/15/2009			SIMONS, ANNE B.	GeneralSurgery	9/23/2009 4:22:38 PM entered by shilian yu notified Dr.Simons.	<input type="checkbox"/>
Complete and scheduled 10:00 4/29/2009 Invision Status Code:	4/1/2009			SIMONS, ANNE B.	Ophthalmology		<input type="checkbox"/>
Not Scheduled	4/2/2009			JOHNSON, ELIZABETH C.	Urology	4/13/2009 2:59:09 PM entered by Lisa Johnson Thank you 4/8/2009 10:07:34 AM entered by Lisa Johnson as noted in original referral. U/S of scrotum was scheduled on the day I examined and referred patient, and was completed on APRIL3. Result is Right epididymal cyst, 1.2 cm, otherwise normal exam. in light of that result, do you want to see patient, or is ultrasound definitive?	<input type="checkbox"/>
Complete and scheduled 13:00 2/4/2010 Invision Status Code:	9/15/2009			SIMONS, ANNE B.	Gastroenterology	8/10/2009 1:19:43 PM entered by shilian yu notified Dr.Simons. (7/28/2009)	<input type="checkbox"/>
Complete and scheduled 13:30 12/2/2009 Invision Status Code:	7/9/2009			DEL TREDICI, AARON M.	Hematology	8/10/2009 3:04:27 PM entered by shilian yu letter sent to pt.	<input type="checkbox"/>
Complete and scheduled 13:42 4/14/2009	9/18/2009			SIMONS, ANNE B.	ENT		<input type="checkbox"/>

Done Local intranet 100%

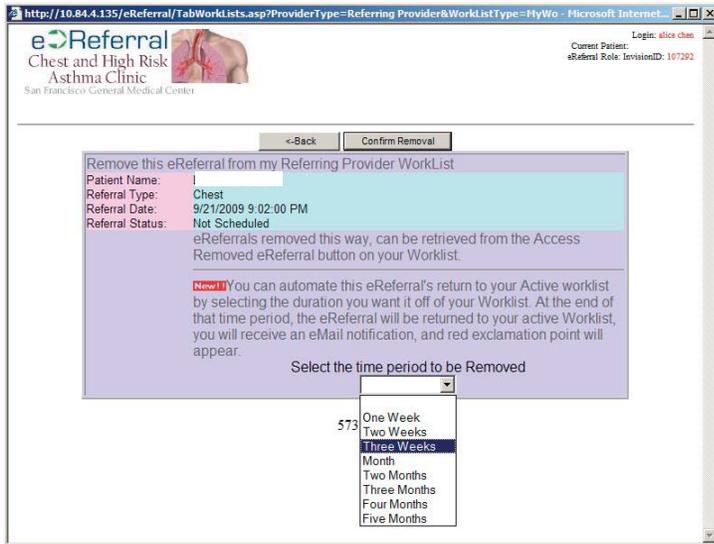
Primary Care Clinic Worklist: displays all eReferrals for patients assigned to a given primary care clinic.

Figure 43. Primary care clinic worklist

Status	Requested	Patient Name	MRN	Referring Provider	Referred To	ApptDate	Proc Note
Complete and scheduled 08:30 6/30/2009 Invision Status: Canceled	9/24/2008			SIMONS, ANNE B.	Urology	8/30/2009	
Complete and scheduled 09:45 8/22/2009 Invision Status Code:	5/18/2009			TRUSTMAN, ADRENNE	Ophthalmology	6/22/2009	
Not Scheduled	9/15/2009			SIMONS, ANNE B.	GeneralSurgery		
Complete and scheduled 08:15 11/8/2009 Invision Status Code:	8/14/2009			CHANG, JOLE	RadMRI	11/8/2009	
Complete and scheduled 10:00 4/29/2009 Invision Status Code:	4/1/2009			SIMONS, ANNE B.	Ophthalmology	4/29/2009	
Not Scheduled	4/2/2009			JOHNSON, ELIZABETH C.	Urology		
Complete and scheduled 13:00 2/4/2010 Invision Status Code:	9/15/2009			SIMONS, ANNE B.	Gastroenterology	2/4/2010	
Complete and scheduled 13:30 12/2/2009 Invision Status Code:	7/9/2009			DEL TREDICI, AARON M.	Hematology	12/2/2009	
Complete and scheduled 13:45 10/1/2009 Invision Status Code:	9/18/2009			SIMONS, ANNE B.	ENT	10/1/2009	
Complete and scheduled	9/17/2009			SIMONS, ANNE B.	RadMRI	10/3/2009	

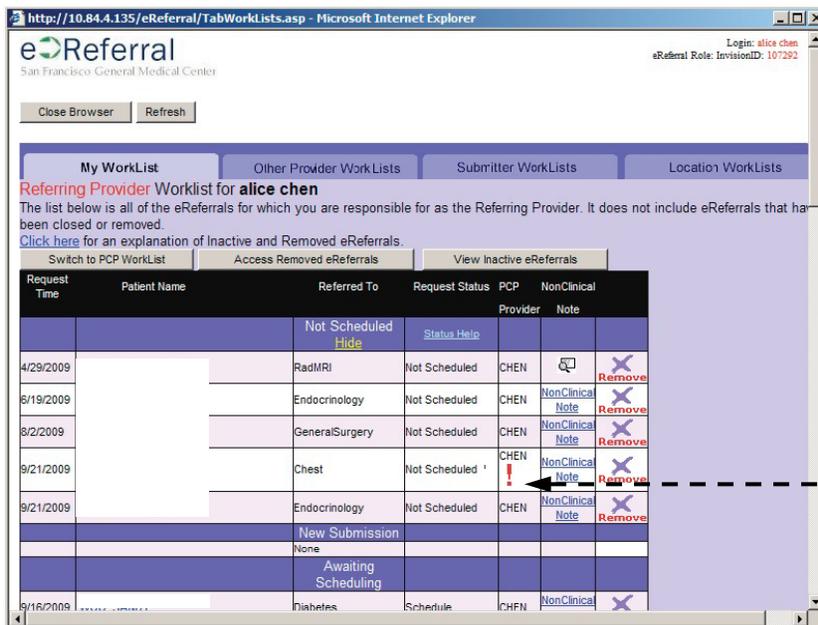
Several other functions have been developed in order to enhance the referring provider's ability to actively manage his eReferrals. He has the ability to temporarily remove eReferrals from his worklist for a designated time period.

Figure 44. Referring provider removing eReferral from worklist for designated time



After that period has elapsed, the eReferral is flagged and returned to his worklist and the provider is notified via an automated email to check the worklist. This serves as a tickler system for the referring provider, for example, in the case of a referral where the specialist reviewer has requested additional lab results prior to deciding whether the patient needs an appointment.

Figure 45. eReferral being returned to worklist



Providers are also able to communicate with their clinics' support staff via a "Non-Clinical Note" that is also displayed on the clinic worklist. This serves to relieve the provider of administrative tasks such as filling out lab requisitions and calling the patient to come in for the test.

Figure 46. Referring provider worklist

Date	Provider	Service	Status	Notes
9/9/2009	SOBEL	PlasticSurgery	Complete appt:10/27/2009	NonClinical Note
9/11/2009	SOBEL	Ophthalmology	Complete appt:10/27/2009	NonClinical Note
10/1/2009	SOBEL	RadMRI	Complete appt:10/28/2009	NonClinical Note
9/16/2009	SOBEL	RadMRI	Complete appt:10/28/2009	NonClinical Note
9/4/2009	MARQUEZ	Ophthalmology	Complete appt:10/29/2009	NonClinical Note
9/3/2009	SARKAR	Ophthalmology	Complete appt:10/29/2009	NonClinical Note
9/6/2009	SOBEL	Ophthalmology	Complete appt:10/29/2009	NonClinical Note
9/2/2009	SOBEL	RadMRI	Complete appt:11/2/2009	NonClinical Note
9/9/2009	SOBEL	Ophthalmology	Complete appt:11/3/2009	NonClinical Note
9/11/2009	AZARI	PlasticSurgery	Complete appt:11/3/2009	9/4/2009 2:48:45 PM entered by lisa tang Appt reminder sent today. Cr to be done on 10/26 930am w/ MEA <tr>
9/28/2009	MEI	RadMRI	Complete appt:11/4/2009	NonClinical Note
9/22/2009	SOBEL	UrtropaeicSurgery	Complete appt:11/4/2009	NonClinical Note
5/19/2009	SOBEL	ENT	Complete appt:11/4/2009	NonClinical Note
8/23/2009	HEUERMAN	Gastroenterology	Complete appt:11/5/2009	NonClinical Note
9/18/2009	MUKHTAR	Ophthalmology	Complete appt:11/10/2009	NonClinical Note
9/11/2009	KOLAVENNU	Renal	Complete appt:11/13/2009	NonClinical Note
9/25/2009	SHICT	PlasticSurgery	Complete appt:11/24/2009	NonClinical Note
8/20/2009	PEARSON	GeneralSurgery	Complete appt:11/30/2009	NonClinical Note
6/11/2009	SOBEL	Sleep	Complete appt:1/25/2010	NonClinical Note
9/15/2009	KOLAVENNU	GeneralSurgery	Complete appt:1/27/2010	NonClinical Note
6/26/2009	KOLAVENNU	Sleep	Complete appt:2/10/2010	NonClinical Note
9/4/2009	SOBEL	ENT	Complete appt:3/17/2010	NonClinical Note

Figure 47. Referring location worklist

Date	Location	Provider	Service	Status	Notes
9/10/2009	SARKAR, URMIMALA		Ophthalmology	Complete and scheduled 15:15 11/11/2009 Invision Status Code:	
7/29/2009	SELIGMAN, HILARY		Ophthalmology	Complete and scheduled 14:00 9/10/2009 Invision Status Code:	
9/2/2009	SOBEL, VALERIE A.		RadMRI	Complete and scheduled 09:30 11/2/2009 Invision Status Code:	9/4/2009 2:48:45 PM entered by lisa tang Appt reminder sent today. Cr to be done on 10/26 930am w/ MEA
8/31/2009	SOBEL, VALERIE A.		Rheumatology	Not Scheduled	
9/29/2009	SOBEL, VALERIE A.		Podiatry	Complete and scheduled 14:45 10/28/2009 Invision Status Code:	
6/17/2009	SOBEL, VALERIE A.		Ophthalmology	Complete and scheduled 13:30 7/30/2009 Invision Status Code:	
7/15/2009	SOBEL, VALERIE A.		Ophthalmology	Complete and scheduled 09:15 9/3/2009 Invision Status Code:	
4/1/2009	HEUERMAN, DEBORAH P.		OrthopaedicSurgery	Complete and scheduled	

eReferral Support

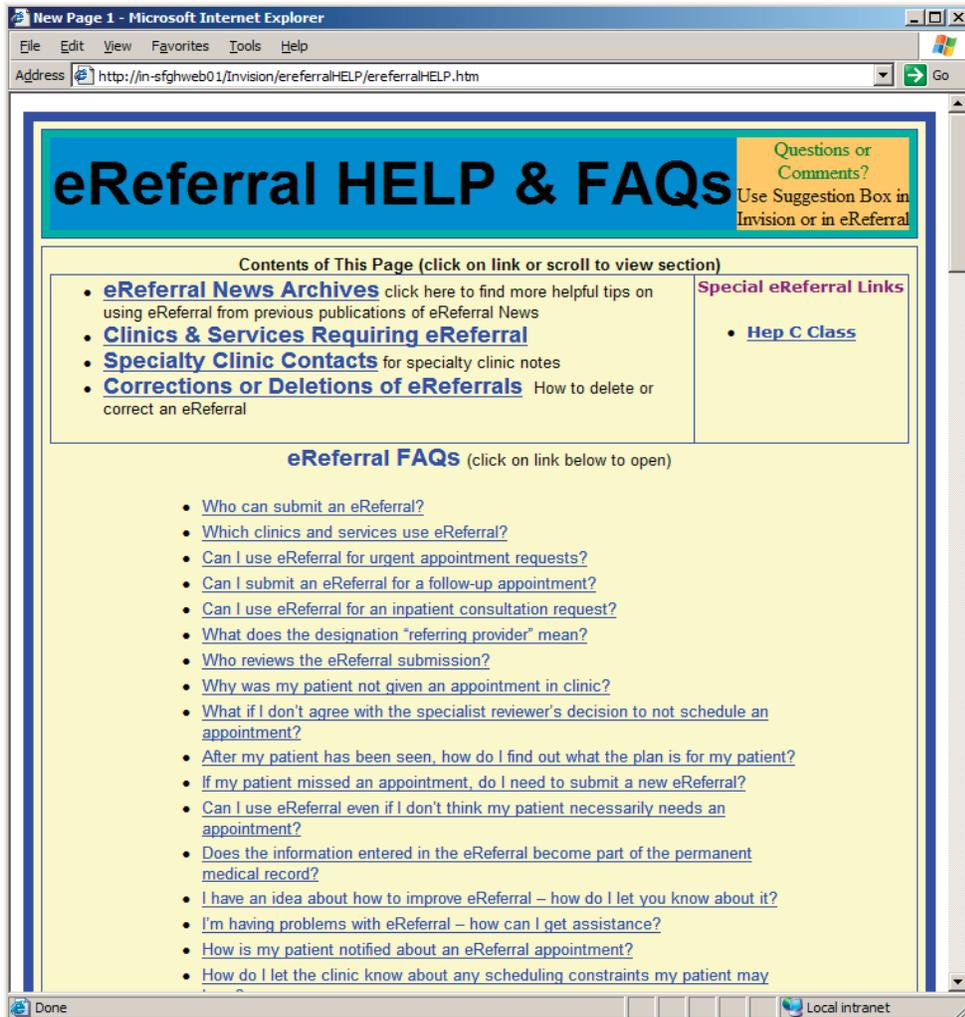
Suggestion Box: We encourage users to contact us with any problems with or suggestions for improving the program. We depend on this function to quickly identify problems with the program.

Figure 50. eReferral suggestion box

The screenshot shows a web browser window titled "Please enter suggestions or comments - Microsoft Internet Explorer". The address bar contains the URL: <http://10.84.4.135/eReferral/Reporting/SuggestionBox.asp?InvisionID.107292>. The page header features the "eReferral" logo and "San Francisco General Medical Center". A red "Suggestion Box" icon with a "Talk to us!" note is positioned in the top right. The main content area includes a pink text box with instructions: "Please do NOT use this for patient-specific or clinical issues. For patient-specific or clinical issues, please submit an eReferral. This box is for suggestions and feedback on technical and operational issues only. Thank you!". Below this is a large text input field. A green bar contains the question "Do you want to be contacted regarding this issue?" with a "Check box if Yes" and an unchecked checkbox. Below the green bar are two input fields: "eMail Address" and "Contact Phone Number". At the bottom are "Submit" and "Close Window" buttons.

eReferral FAQs: We have developed a series of Frequently Asked Questions and responses largely based on Suggestion Box submissions and questions from outreach and training sessions.

Figure 51. eReferral help and FAQs



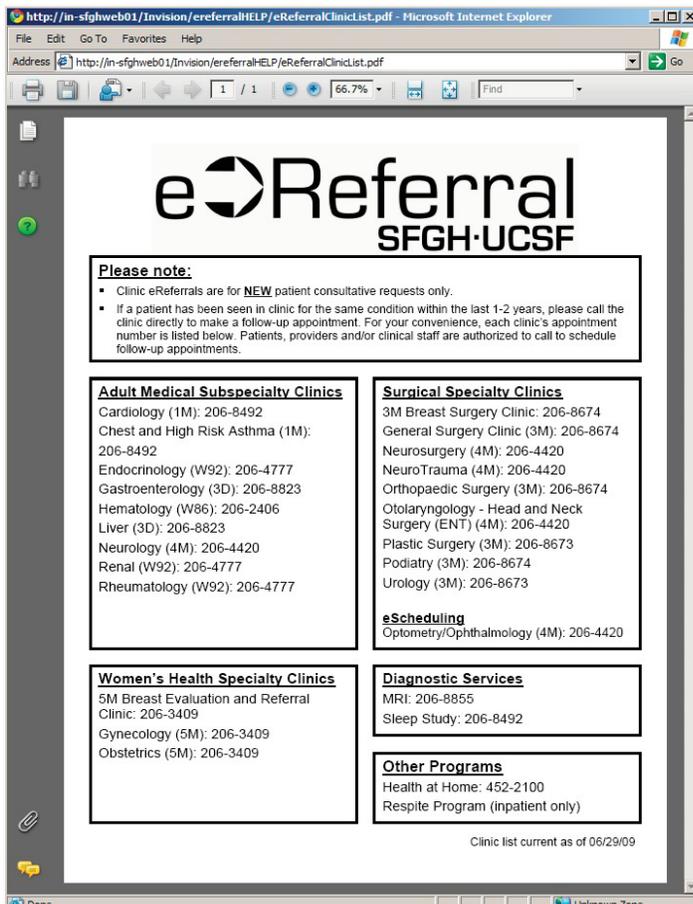
eReferral News Archives: We primarily use email to communicate with our large number of institutionally dispersed users. All eReferral-related emails are archived for users' reference.

Figure 52. eReferral news archives



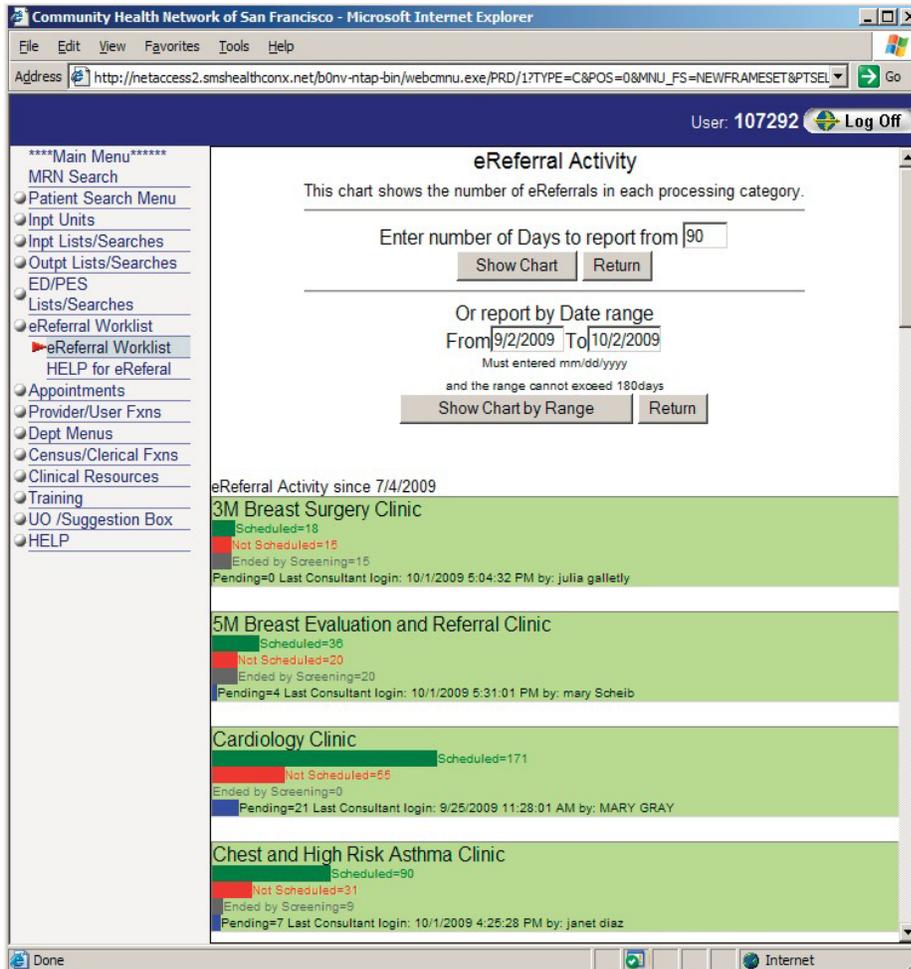
Clinics and Services requiring eReferral: This list is updated each time a new clinic or service begins to use eReferral.

Figure 53. Clinics and services requiring eReferral



eReferral Activity Chart and Reviewer Audit: We have developed a report that displays the volume and disposition of eReferrals by clinic for a designated time period. This can be used to track changes in volume of referrals. It is also used by administrative staff to monitor specialist reviewer response rates on a weekly basis; reviewers who have a backlog of pending eReferrals are contacted by email.

Figure 54. eReferral activity chart and reviewer audit



Clinic Implementation Process

Each specialty clinic or service interested in adopting eReferral must identify one or two specialist clinician reviewers who agree to review eReferrals on a regular, timely basis; referring providers expect to receive an automated email alert regarding their referral within 5 business days. Reviewers must be a licensed independent practitioner (MD or NP) who (1) has specialty knowledge and expertise covering the broad range of conditions that are referred to the clinic, (2) who is familiar with the SFGH specialty clinic's operations through regular patient care in the clinic, and (3) will be at SFGH for at least one year (i.e., rotating residents and fellows are not eligible to serve as reviewers). For NPs, an attending physician, either the Clinic Chief or Service Chief, serves as the supervising physician. At this time, the medical specialties have physician reviewers, while all but one of the surgical clinics have NP reviewers.

Each clinic must also identify designated clerical personnel to staff the specialty clinic's scheduling worklist. These clerical staff are hospital employees who receive training to use the eReferral program. Ideally, these individuals have basic facility with computers and internet programs, but the selection of the assigned clerical staff is the decision of each clinic's Nurse Manager.

The eReferral Team works with the clinic to develop appropriate screening questions, policy page, and any additional modifications that are needed. These additions and modifications are then added by the eReferral IS staff to the eReferral development server for testing. If there are significant modifications from the basic intake form (e.g., MRI, CT), the program is piloted in one or two clinics prior to being implemented system-wide.

Two weeks prior to a clinic or service conversion to eReferral, an email is sent notifying all providers of the conversion; after the start date, all paper and faxed referrals are returned to the referring provider to be resubmitted as an eReferral. During the week before conversion, the clerk(s) meet with a trainer to learn how to use the scheduler's worklist. Immediately after the clinic begins using eReferral, the designated specialist reviewer meets with the eReferral specialty lead to learn how to use the consultant worklist, and the clerks meet again with the trainer to resolve any questions or problems they have encountered.

Ongoing Improvements

One important feature of the eReferral program is the relative ease with which the program can be modified to meet the needs of the users. Many of the program's current functions are a result of specific suggestions from referring providers, specialist reviewers, or clerical staff who use eReferral. The eReferral team actively solicits feedback through structured surveys as well as through informal forums and the Suggestion Box.

Impact of eReferral

Decrease in Wait Times

We measured median wait times before and after the implementation of eReferral. We also tracked the percentage of referrals that—

- a. were not initially scheduled (these referrals were either inappropriate for the clinic, could be managed by the referring provider with some guidance from the specialist reviewer, needed additional diagnostic testing prior to appointment, or required clarification; prior to eReferral these would have resulted in the next available appointment),
- b. resulted in expedited appointments (this represents the triage function of eReferral; prior to eReferral these would have been scheduled without regard to clinical urgency unless the referring provider attempted to contact a specialist to plead the patient's case), and
- c. were never scheduled (defined as a referral that did not result in an appointment within 180 days after the last exchange between the referring provider and the specialist reviewer).

During the first 6 months after implementing eReferral, median wait times for non-urgent visits declined in 7 of 8 medical specialty clinics by up to 90 percent (range 17 - 90 percent, all

but one greater than 60 percent). In these same clinics, data from January 2007- June 2009 show the percentage of referrals that were not initially scheduled ranged between 22 and 67 percent. The percentage of referrals that were expedited (defined as an appointment scheduled before the routinely next available appointment) ranged from 1 to 37 percent. The percentage of referrals that were “never scheduled” ranged from 16 to 53 percent. (unpublished data)

High Levels of Primary Care Provider Acceptability

Referring provider acceptability was gauged through a Web-based survey of primary care provider experience. Among primary care providers, 71 percent felt that eReferral improved clinical care, 71 percent felt that eReferral provided improved guidance for pre-visit evaluation, and 89 percent felt that eReferral improved their ability to track referrals. (Kim Y, Chen AH, Keith E, et al. Not perfect, but better: primary care providers’ experiences with electronic referrals in a safety net health system. *J Gen Intern Med* 2009; 24(5):614-9.)

Improvements in Specialist Experience

Impact on specialists was assessed through an encounter-based survey of new patient appointments comparing patients referred using the prior (paper and fax based) referral process and those referred through eReferral. The reason for referral was difficult to identify in 19 percent and 39 percent of medical and surgical clinics using paper-based methods and in 10 percent of those using eReferral. (Kim-Hwang JE, Chen AH, Bell D, et al. “Evaluating the effect of electronic referrals for specialty care at a public hospital.” *J Gen Intern Med* 2010 Oct;25(10):1123-8.)

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Appendix A. Acknowledgments

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ENT: Christina Herrera with Andrew Murr
General Surgery: Danielle Evans with Michael West
Orthopedics: Dan Bertheau. Dorothy Christian, Brenda Stengele with Ted Miclau
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