

# UCSF

## UC San Francisco Previously Published Works

### Title

Electronic Preconsultation as a Method of Quality Improvement for Urological Referrals

### Permalink

<https://escholarship.org/uc/item/0cp9w5hk>

### Journal

Urology Practice, 1(4)

### ISSN

2352-0779

### Authors

McGeady, James B  
Blaschko, Sarah D  
Brajtbord, Jonathan S  
et al.

### Publication Date

2014-11-01

### DOI

10.1016/j.urpr.2014.06.005

Peer reviewed

## Electronic Preconsultation as a Method of Quality Improvement for Urological Referrals

James B. McGeady,<sup>\*,†</sup> Sarah D. Blaschko,<sup>\*,†</sup> Jonathan S. Brajtbord,<sup>\*</sup> Justin L. Sewell,<sup>\*</sup>  
Alice Hm Chen<sup>\*</sup> and Benjamin N. Breyer<sup>‡,§</sup>

*From the Departments of Urology (JBM, SDB, JSB, BNB) and Medicine (JLS, AHC), University of California-San Francisco, San Francisco General Hospital and Center for Innovation in Access and Quality (JLS, AHC), San Francisco General Hospital, San Francisco, California*

### Abstract

**Introduction:** Preconsultation exchange is a method to promote expedited care among health care providers through communication between primary care providers and specialists before a clinic visit. We evaluated the efficacy of a preconsultation exchange in streamlining patient visits to the urology clinic with an emphasis on resource efficiency in a safety net hospital.

**Methods:** Between April 1, 2011 and March 31, 2012 there were 1,705 electronic referrals to our urology department. A random sample of 500 referrals was selected for evaluation, of whom 487 patients met study inclusion criteria. Scheduling outcome and preconsultation exchange were evaluated for each chief complaint.

**Results:** Patients with operative or procedural chief complaints, or potential oncologic diagnoses were most likely to be scheduled directly to the urology clinic. Of the 487 patients 36 (7.4%) were treated for benign urological conditions by primary care providers and did not need to be seen in the urology clinic. For 13.5% of patients recommended laboratory and radiological tests were obtained before the initial urology clinic visit as a result of preconsultation exchange.

**Conclusions:** Electronic preconsultation exchange served as a method of quality improvement by promoting urology clinic efficiency. Unnecessary appointments were limited and the completeness of appropriate laboratory and imaging studies at the initial visit was increased. Health care was streamlined by increased access to urological care and by management of benign urological conditions without a formal clinic visit in appropriate cases.

*Key Words:* urology, quality improvement, referral and consultation, primary health care, clinical protocols

### Abbreviations and Acronyms

BPH = benign prostatic hyperplasia

CC = chief complaint

LUTS = lower urinary tract symptoms

PCP = primary care provider

The outpatient referral process between PCPs and specialists is an integral component of patient care. In 2009 more than half of clinic visits in the United States were with a specialist and more than a third of nonelderly patients seen by PCPs were referred to a specialist.<sup>1,2</sup> There is a growing supply and

demand mismatch among patients who need specialist urological care and urologists, which is likely to intensify with the aging population and insurance expansion provisions in the Patient Protection and Affordable Care Act.<sup>3</sup> This supply and demand mismatch may be more acute in safety net settings.

Submitted for publication April 17, 2014.

Study received institutional review board approval.

\* No direct or indirect commercial incentive associated with publishing this article.

† Equal study contribution.

‡ Correspondence: Department of Urology, University of California-San Francisco, San Francisco General Hospital, 1001 Potrero Ave., Suite 3A20, San Francisco, California 94117 (telephone: 415-206-8805; FAX: 415-206-5153; e-mail address: bbreyer@urology.ucsf.edu).

§ Financial interest and/or other relationship with American Medical Systems and Procter.

Thus, we used urology clinic referrals to study preconsultation exchange in an eReferral system and its potential for more streamlined cost-efficient care.

Preconsultation exchange consists of communication between providers designed to expedite care by 1) answering a clinical question without requiring a formal specialty visit or 2) helping complete initial evaluation before a specialty clinic visit. Preconsultation exchange may help facilitate a more thorough and streamlined referral process that fosters information management in which the PCP and specialist understand and agree on the treatment plan and relational continuity between the patient and providers.<sup>4</sup>

Although prior groups evaluated general aspects of integrated electronic referral systems,<sup>5,6</sup> few specialty specific analyses have been done. We performed a descriptive study of the usefulness of preconsultation exchange for urological conditions, which to our knowledge has not previously been described. We hypothesized that the opportunity to guide PCPs through the pre-urology clinic evaluation and provide stepwise, guideline directed treatment plans for benign urological conditions would decrease the number of unnecessary urology clinic visits.

## Methods

### *The eReferral System*

San Francisco General Hospital is a safety net hospital that provides a comprehensive array of subspecialty services with more than 200,000 specialty visits annually. It serves a network of more than 25 primary care sites across San Francisco. Waiting time for appointments after referral to specialty clinics can be greater than 2 months. The San Francisco General Hospital eReferral system, an integrated electronic referral and consultation system, was started in 2007 and has been previously described.<sup>5,6</sup> After a urology eReferral is initiated PCPs are presented with urology specific evaluation and management guidelines for common urological disease processes. If the management guidelines provided do not answer the clinical question, referring PCPs may generate an electronic form that is automatically populated with contact and demographic information, and urology specific laboratory results from the electronic medical record. A free text field allows the referring provider to ask a consultation question or describe the reason for urology clinic referral. Each referral is reviewed by an attending urologist.

After reviewing the consultation the urologist directs patient scheduling based on clinical urgency. Inappropriate consultations can be redirected at this time and the urologist can request additional studies before the clinic visit or communicate management solutions to the PCP if a clinic visit is not deemed necessary. The PCP and the urologist can communicate via eReferral in iterative fashion to best manage the consultation. All correspondence through the eReferral system is captured in the patient electronic medical record. During initial urology clinic visits this information serves as a quick reference for the consultation and the preclinical evaluation.

### *Study Population*

After receiving institutional review board approval we retrospectively reviewed the records of patients referred for outpatient urological consultation between April 1, 2011 and May 31, 2012. From the 1,705 urological consultations received during this period we selected a computer generated random sample of 500 patients. Patient age, gender and race, referring provider training level, total number of communication exchanges between practitioners, consultation final outcome (scheduled vs not scheduled) and the entire dialogue between referring/consulting providers was included in the data set for each patient. Repeat consultations for the same CC and consultations canceled by the PCP before the patient was seen in clinic were excluded from study. A total of 52 CCs were identified. Descriptive statistics were performed using Excel®.

## Results

In a 1-year period 1,705 eReferrals were submitted to the San Francisco General Hospital urology clinic. For 10 of the 500 randomly selected patients duplicate referrals (same patient and CC) were submitted by 2 providers. One duplicate was randomly removed from the sample for each of these patients. Three patients were excluded from analysis because the referring provider canceled the consultation. The remaining sample consisted of 487 patients.

The study population primarily comprised male patients (78.4%) with a mean age of 53.4 years. The patient population was ethnically diverse with relatively similar proportions of patients who were Hispanic (26.8%), Asian (25.8%) and white (25.3%). The remaining ethnic groups included patients who were black (17%), Native American (2.0%) and other/not specified (2.5%). Of the 487 patients 374 (76.8%) were immediately scheduled, 66 (13.5%) were scheduled after preconsultation exchange and 47 (9.7%) were not scheduled for a clinic appointment.

The top 10 most common CCs represented 374 of the 487 patients (76.8%). Of these 374 patients 215 (77.6%) were scheduled directly to the urology clinic and 36 (16.6%) were scheduled after preconsultation exchange. Increased prostate specific antigen was the most common referral (47 patients or 9.6% of the total sample). This was the most common CC scheduled directly to the urology clinic, which occurred 89% of the time for this CC (table 1).

Five of the top 6 CCs scheduled directly to the urology clinic were for potentially operative or procedural cases. Microscopic hematuria was the second most common referral and the second most common CC to be scheduled to the clinic directly and after preconsultation exchange. CCs not scheduled directly to the clinic were nonoperative and involved medical management of benign conditions. LUTS/BPH symptoms and recurrent urinary tract infections were the most common CCs that were managed only by preconsultation exchange with 59% and 27%, respectively, resulting in a scheduled clinic visit (table 1).

**Table 1.**  
Outcomes of 10 most commonly referred CCs evaluated by preconsultation exchange

Chief Complaints	No. Referrals/CC	% Scheduled		% Not Scheduled after Exchange
		Directly to Clinic	After Exchange	
Increased prostate specific antigen	47	89	11	
Microscopic hematuria	39	69	23	8
Ureteral stone	28	89	7	4
Chronic pelvic or testicular pain	25	68	20	12
BPH on maximal medical therapy	24	83	4	13
Renal mass	22	84	14	
LUTS	21	67	14	19
Erectile/ejaculatory dysfunction	20	90		10
Gross hematuria	20	60	40	—
Nonobstructing stone	16	81	19	—
Acute epididymo-orchitis	16	56	44	—
Totals (No.)	278	76.8 (374)	13.5 (66)	9.7 (47)
Top 10 totals (No.)	—	77.6 (215)	16.6 (46)	5.8 (16)

The majority of patients (59 of 487 or 12.1%) not initially scheduled after preconsultation exchange required additional laboratory or radiology assessment before the scheduled urology appointment. Of these 59 patients 26 (44%) needed multiple laboratory or radiological studies, or more information provided before a streamlined evaluation in clinic (table 2). Most patients not scheduled after preconsultation exchange were treated by the PCP after treatment recommendations were provided (24 of 487 patients or 4.9%) (table 2). Of the 487 patients 11 (2.3%) were not scheduled because the referral closed after 6 months of inactivity after the urologist asked a question or requested additional evaluation before scheduling the patient and this information was not received.

## Discussion

Care coordination issues arising from current health care referral methods are a major contributor to the patient "perilous journey through the health care system."<sup>7</sup> Currently most specialty referrals are through paper based or verbal media,

**Table 2.**  
Preconsultation exchange outcomes

Reasons	No. Pts (%)
Exchange:	66
Consultant requested additional laboratory or radiological testing	59 (12.1)
Consultant requested more information	4 (0.8)
Consultant provided treatment recommendations	2 (0.4)
Pt sent for interventional radiology procedure or radiation therapy before clinic visit	1 (0.2)
Not scheduled in clinic after exchange:	47
Management/treatment recommendations provided	24 (4.9)
Consulting provider asked question or test/study requested without reply	11 (2.3)
Reassurance provided for benign condition not requiring clinic visit	4 (0.8)
Requested radiological test ruled out urological issue	3 (0.6)
Inappropriate or erroneous consult	2 (0.4)
Requested laboratory tests ruled out urological issue	1 (0.2)
Pt already followed by other urologist	1 (0.2)
Consultant requested clarification of outpt progress note	1 (0.2)

which often result in ambiguous expectations, delayed diagnoses, duplicated testing, fragmented care and adverse outcomes.<sup>8–11</sup> Lack of efficient information exchange continues to be a formidable problem with medical consultations, resulting in inefficiency and increased health care costs.<sup>2,12,13</sup> We addressed how preconsultation exchange may address some of these inefficiencies.

In this study preconsultation exchange resulted in increased efficiency of care. Patients underwent diagnostic evaluation that otherwise would not have been complete before the urology clinic visit or they received PCP care after urology specialist advice. Before the first urology appointment laboratory tests or imaging was completed in 66 of the 487 patients (13.5%) as requested by the urologist through preconsultation exchange. Of the 487 patients 36 (7.4%) were treated for benign urological conditions by PCPs and did not need to be seen in the urology clinic. Benign nonoperative conditions such as chronic testicular/pelvic pain, LUTS/BPH, recurrent urinary tract infections and newly diagnosed erectile dysfunction were the most common CCs that could be managed by PCPs after preconsultation exchange and they did not require a clinic appointment. Patients with oncologic or benign operative related CCs were more likely to be scheduled directly to the urology clinic. This enabled surgical patients to be seen in clinic and be scheduled for surgery sooner.

The shortcomings of referral systems with exchanges between PCPs and consultants include lack of completion of requested tests and loss of patients to followup. This was noted in 7.4% of referrals in a large multispecialty study at the VAMC (Veterans Administration Medical Center). Our study compared favorably with only 2.3% of patients (11 of 487) lost to followup but this could be further improved by safeguards, such as automated reminders after a period of clinical inactivity for patients. A key barrier to widespread adoption of preconsultation exchange is the development of reimbursement models, which is not a barrier in a safety net hospital where specialists are driven by the need to provide access. Some systems pay for preconsultation exchange on a relative value unit model or with a flat fee.<sup>7</sup> If insurance providers were to compensate specialists for preconsultation time, this barrier may disappear.<sup>7,14</sup>

Limitations of this study include the facts that it is a single institution, retrospective study and the cost savings achieved by eReferral are not available. Analysis is needed of the time that consulting urologists spend reviewing eReferrals in regard to the overall cost savings. Another limitation is the lack of followup information on outcomes and quality of care of patients treated by PCPs. Future studies of quality improvement through electronic preconsultation should include cost analysis and comparison of time from referral to completion of evaluation or operation for patients with vs without preconsultation exchange.

## Conclusions

Electronic preconsultation exchange promoted urology clinic efficacy by limiting unnecessary visits and increasing the completeness of laboratory studies and imaging in 13.5% of patients at the initial clinic visit. An electronic referral system has the potential to streamline health care and increase access to urological care by managing various urological referrals without a formal clinic visit.

## References

1. Davis KE and Carper K: Medical Expenditure Panel Survey Statistical Brief #381. Use and Expenses for Office-Based Physician Visits by Specialty, 2009: Estimates for the U.S. Civilian Noninstitutionalized Population, August 2012. Rockville: Agency for Healthcare Research and Quality 2012.
2. Mehrotra A, Forrest CB and Lin CY: Dropping the baton: specialty referrals in the United States. *Milbank Q* 2011; **89**: 39.
3. Pruthi RS, Neuwahl S, Nielsen ME et al: Recent trends in urology workforce in the United States. *Urology* 2013; **82**: 987.
4. Haggerty JL, Reid RJ, Freeman GK et al: Continuity of care: a multidisciplinary review. *BMJ* 2003; **327**: 1219.
5. Chen AH, Kushel MB, Grumbach K et al: Practice profile. A safety-net system gains efficiencies through 'eReferrals' to specialists. *Health Aff* 2010; **29**: 969.
6. Chen AH, Murphy EJ and Yee HF: eReferral—a new model for integrated care. *N Engl J Med* 2013; **368**: 2450.
7. Bodenheimer T: Coordinating care—a perilous journey through the health care system. *N Engl J Med* 2008; **358**: 1064.
8. Gandhi TK, Sittig DF, Franklin M et al: Communication breakdown in the outpatient referral process. *J Gen Intern Med* 2000; **15**: 626.
9. 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**: 614.
10. Chen AH and Yee HF Jr: Improving the primary care-specialty care interface: getting from here to there. *Arch Intern Med* 2009; **169**: 1024.
11. Kim-Hwang JE, Chen AH, Bell DS et al: Evaluating electronic referrals for specialty care at a public hospital. *J Gen Intern Med* 2010; **25**: 1123.
12. Conley J, Jordan M and Ghali WA: Audit of the consultation process on general internal medicine services. *Qual Saf Health Care* 2009; **18**: 59.
13. McPhee SJ, Lo B, Saika GY et al: How good is communication between primary care physicians and subspecialty consultants? *Arch Intern Med* 1984; **144**: 1265.
14. Straus SG, Chen AH, Yee H Jr et al: Implementation of an electronic referral system for outpatient specialty care. *AMIA Annu Symp Proc* 2011; **2011**: 1337.