

# Increasing Access to Specialty Care: Patient Discharges From a Gastroenterology Clinic

Delphine S. Tuot, MDCM, MAS; Justin L. Sewell, MD, MPH; Lukejohn Day, MD; Kiren Leeds, BA; and Alice Hm Chen, MD, MPH

Utilization of specialty care in the United States continues to rise. Over the past decade, ambulatory referrals for specialty care increased more than 150%, such that 1 out of every 5 visits to a primary care provider (PCP) now results in a referral to a specialist.<sup>1</sup> Simultaneously, inadequate access to specialty care remains among the most pressing healthcare issues for safety net patients across the United States.<sup>2</sup> A 2002 study of 5 medium-sized US cities found that without exception, specialty access in the safety net was strained, with wait times for nonurgent appointments as long as 6 to 12 months.<sup>3</sup> Contributing to this issue is the high percentage of specialty care visits that are for routine follow-up care.<sup>4</sup> The imminent expansion of Medicaid demands a redesign of the primary care/specialty care interface to ensure timely access to high-quality specialty care.

The Patient-Centered Medical Home-Neighborhood (PCMH-N) framework of healthcare delivery proposed by the American College of Physicians aims to reduce care fragmentation and other inefficiencies prevalent in patient care in the United States.<sup>5</sup> Through mutually agreed upon expectations and clearer communication, the PCMH-N proposes new roles for both PCPs and specialty care providers. This could include reallocation of routine follow-up care from specialists to PCPs for appropriate patients, enabling specialists to spend more time providing the type of care for which they are trained: managing rare or complex conditions, directing complex diagnostic evaluations, and/or performing therapeutic interventions requiring their expertise. Reallocation of routine “follow-up” specialty care within the PCMH-N stands to increase availability of, and access to, specialty care. However, the development, implementation, and impact of such efforts have not been examined.

In the San Francisco safety net, the supply-demand mismatch for gastroenterology (GI) care has been particularly vexing. In 2005, the wait time for a routine ambulatory GI clinic appointment was 11 months. This was decreased substantially after the implementation of eReferral, an electronic patient referral system.<sup>6</sup> However, in 2012 the wait time re-

## ABSTRACT

### Objectives

Access to specialty care among safety net patients in the United States is inadequate. Discharging appropriate patients to routine primary care follow-up may improve specialty care access. We sought to identify, by consensus, patients who could safely be discharged from a gastroenterology (GI) clinic, and to evaluate the impact of the discharges on GI clinic work flow.

### Study Design

Pre- and post intervention.

### Methods

We developed and implemented a modified Delphi process. Gastroenterologists and primary care providers (PCPs) rated their comfort (using 5-point Likert scales) with discharging patients immediately post endoscopy for 24 clinical scenarios, assuming formal recommendations were communicated to the PCP. We examined the impact of implementing these criteria on clinic wait times and on the ratio of new to follow-up visits.

### Results

All gastroenterologists (100%; 7 of 7) and 71.0% of PCPs (130 of 183) participated. Consensus was achieved for 13 of the 24 clinical scenarios for which discharge criteria were developed. Post intervention, 403 patients were discharged from the GI clinic, compared with 0 patients in the same 4 calendar months pre-intervention. The ratio of new to follow-up appointments increased from 0.9:1 to 1:1 ( $P = .05$ ). Median wait time for the third next available appointment at GI clinics decreased from 158 days to 74 days ( $P = .0001$ ).

### Conclusions

Discharging patients from specialty care back to primary care with consensus standards is one method to improve access to specialty care. Understanding the concerns of all stakeholders is necessary to refine and disseminate this process to other specialties and healthcare systems to ensure timely access to specialty services for all patients.

*Am J Manag Care.* 2014;20(10):812-819

mained stagnant at 6 months, still far longer than desirable. To address this pressing issue, we sought to use the PCMH-N framework of shared responsibility and care coordination to develop consensus criteria for patients who could be safely discharged from GI clinic and receive their follow-up care in their medical home. Specifically, our goals were to: 1) use formal consensus methodology to identify a subgroup of patients who could safely be discharged from the San Francisco General Hospital (SFGH) GI clinic to primary care (assuming high-quality communication and provision of anticipatory guidance) and 2) develop, implement, and study the impact of formal discharge criteria on GI clinic work flow, with a focus on wait times for new GI clinic appointments. If successful, this method of developing consensus statements and concordant policy changes could be disseminated to other specialties and strengthen the PCMH-N model of health-care delivery.

## METHODS

### Setting

SFGH is the main source of specialty care for the San Francisco safety net, the public healthcare delivery system that serves San Francisco's uninsured and underinsured residents. This network serves approximately 20% of San Francisco's population and includes PCPs who work in hospital-based primary care clinics, community clinics managed by the San Francisco Department of Public Health, and independently funded community health centers. The GI clinic at SFGH is the primary source of gastrointestinal specialty care within the system, receiving nearly 5000 patient referrals per year.

### Delphi Consensus Process

Using *International Classification of Diseases, Ninth Revision, Clinical Modification* codes from GI clinic, we identified the top reasons for ambulatory GI visits at SFGH, focusing on high-volume clinical entities. We found that a large number of patients were scheduled for clinic appointments to review biopsy results after undergoing esophagogastroduodenoscopy (EGD) and/or colonoscopy for routine, noncomplex indications not requiring long-term GI follow-up. Such clinical conditions included patients undergoing EGD for dyspepsia or melena, colonoscopy for colorectal cancer screening/surveillance or hematochezia, and EGD plus colonoscopy for iron deficiency anemia.

### Take-Away Points

Discharging patients from specialty care back to primary care via consensus standards is one method to improve access to specialty care.

- A modified Delphi process involving primary care providers (PCPs) and gastroenterologists was used to identify safe patient discharges to primary care, resulting in a health system policy change.
- Providers were engaged with the process; 100% of gastroenterologists and 71.5% of PCPs participated
- Out of 540 patients, 403 were discharged from our outpatient GI clinic within 4 months of the start of the intervention.
- We enhanced access to our outpatient GI clinic; median clinic wait times decreased from 158 days pre-intervention to 74 days post intervention.

An advisory panel consisting of PCPs and specialists developed a modified Delphi process<sup>7</sup> involving all SFGH gastroenterologists and a random sampling of half of the PCPs who practice in the San Francisco safety net. The consensus process consisted of 2 rounds of online surveys over a period of 6 months. The goal of each survey was to ascertain provider comfort levels discharging post endoscopy patients who fit certain clinical scenarios from the GI clinic immediately after their procedure rather than having them follow up in the GI clinic, which was the previous standard. Such patients would receive their endoscopy results by mail as well as in their primary care medical home rather than in the GI clinic. Key informant specialists and PCPs helped refine the surveys, which were created and distributed using REDCap, an academic software solution that supports clinical and translational research.<sup>8</sup>

During the first round of surveys, gastroenterologists were asked to rate their comfort discharging patients in 5 different post endoscopy clinical scenarios, with 4 to 8 different possible pathology results, for a total of 24 unique clinical situations, assuming formal recommendations were communicated by the specialist to the PCP via the electronic medical record (EMR). A 5-point Likert scale was used to grade comfort levels. Possible responses were "not comfortable," "mildly uncomfortable," "ambivalent," "somewhat comfortable," and "very comfortable." PCPs were asked to rate their comfort receiving patients with identical clinical scenarios directly after endoscopy, assuming formal recommendations were communicated to them by a gastroenterologist via the EMR. Responses were analyzed with simple descriptive statistics.

In round 2, the same surveys were distributed to the Delphi participants, this time including aggregated response data from the first round. For each survey question, the most common response and distribution of PCP and specialist responses from round 1 were provided. Participants were again asked to rate their comfort discharging or receiving patients under specific clinical scenarios,

taking into account the aggregated group data from the previous round.

Consensus was defined by >95% of participants agreeing on whether a patient should be discharged from the GI service, with <2% of participants responding with the opposite extreme option (“not comfortable” or “very comfortable”) and <5% of participants responding with the less extreme opposing option (“mildly uncomfortable” or “mildly comfortable”). Results were provided to the advisory panel, which subsequently formulated discharge criteria for the clinical entities for which consensus had been achieved. To ensure appropriateness and acceptability, discharge criteria were reviewed and edited by key-informant specialists as well as primary care clinic medical directors.

### Outcome Measures—Impact of Discharge Criteria

New discharge criteria representing a change in policy were officially implemented in January 2013. A pre-post study design was used to examine the impact of the discharge criteria on the SFGH GI clinic work flow, using the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework of evaluation.<sup>9</sup> Outcomes measures included administrative data that are routinely collected in clinic. Post implementation data were collected from January 1, 2013, through April 30, 2013, and were compared with previously collected data (pre-implementation) from January 1, 2012, through April 30, 2012. Impact of the intervention on access to GI care (effectiveness) was the primary outcome, defined by days to third next available new patient appointment, the third most commonly used metric to evaluate access to care to ambulatory services. A secondary effectiveness outcome was the ratio of new to follow-up ambulatory visits. Reach was determined by the absolute number and percentage of patients discharged from the GI service, among those who had an endoscopy with biopsy performed. Adoption or fidelity of the intervention was defined by the percentage of patients actually discharged who met official criteria. Fidelity data were abstracted from medical charts for 1 week of each month during the study period.

### Analysis

Chi-square and *t* tests were used to examine the statistical significance of differences, pre- versus post intervention, in number of patients discharged from the GI clinic, the ratio of new to follow-up ambulatory visits, and clinic wait times. *P* values <.05 were considered significant.

### Ethical Considerations

This study met criteria for a Quality Improvement Project, as defined by the University of California-San Francis-

co Committee on Human Research, and therefore did not require formal review by an Institutional Review Board.

## RESULTS

### Participants

A total of 140 providers participated in the modified Delphi process, including all 7 SFGH gastroenterologists and 130 of 183 (71.0%) PCPs. Gastroenterologists had a 100% (*n* = 7) response rate during both rounds of the Delphi process. The gastroenterologists were evenly split in patient care experience; 3 had 6 to 10 years' experience since graduation from medical school, while 4 had 21 or more years' (Table 1). Among PCPs, the response rate was 71.0% (*n* = 130) during round 1 and 59.0% (*n* = 108) during round 2. Of the PCPs who participated, there was an even distribution of patient care experience, ranging from 0 to 21-plus years since graduation from medical or professional school. Approximately 58.4% of participating PCPs were attending physicians, 16.2% were physician trainees, and 25.4% were nurse practitioners or physician assistants (Table 1). Demographic characteristics were similar among PCPs who did not participate in the Delphi process, of whom 44% were attending physicians (data not shown).

### Delphi Process Results

Consensus among PCPs and gastroenterologists regarding scenarios in which patients could or could not be safely discharged was achieved for 4 of 24 clinical scenarios after round 1. In round 2, PCP and gastroenterologist responses became more similar, with 13 of 24 clinical scenarios achieving consensus (Table 2). The largest shifts in agreement between the 2 rounds were noted among clinical scenarios for which gastroenterologists felt very strongly in round 1 that a patient should not be discharged, prompting PCPs to shift their responses in round 2 (Figures 1D and 2B and scenarios 3D, 4H, and 5D embedded in Figures S3-S5, eAppendix at [www.ajmc.com](http://www.ajmc.com)).

### Discharge Criteria

Discharge criteria were formulated for clinical scenarios for which consensus was achieved with the Delphi process. These included patients referred for colonoscopy for either colorectal cancer screening/surveillance or hematochezia who had adequate bowel preparation and benign pathology, as well as patients who completed an EGD for dyspepsia with normal pathology, no alarm symptoms, and no anemia (Table S4 in eAppendix at [www.ajmc.com](http://www.ajmc.com)). To ensure that criteria and accompanying recommendations were clear for PCPs, the discharge criteria included the

■ **Table 1. Participant Characteristics**

	Primary Care Provider	Gastroenterologist
<b>n</b>	130	7
<b>Gender, n (%)</b>		
Male	39 (30.0)	6 (85.7)
Female	90 (69.8)	1 (14.3)
<b>Years since medical school graduation, n (%)</b>		
0-5	44 (34.1)	0 (0)
6-10	18 (13.95)	3 (42.9)
11-15	26 (20.2)	0 (0)
16-20	19 (14.7)	0 (0)
21+	22 (17.1)	4 (57.1)
<b>Role</b>		
Physician	76 (58.4)	7 (100)
Nurse practitioner or physician assistant	33 (25.4)	—
Trainee/resident	21 (16.2)	—
<b>Number of clinic half days per week</b>		
≤4	85 (65.9)	5 (71.5)
>5	44 (34.1)	2 (28.5)

Numbers may not always sum to 130 because of missing data.

requirement that GI faculty review all pathology results; document a report in the EMR with results, recommendations, and anticipatory guidance for the PCP; and send a letter with biopsy results and recommendations to patients.

### Impact of Discharge Criteria

Between January and April 2013, 74.6% (403 of 540) of patients who had an endoscopy requiring a biopsy were discharged from the GI clinic, compared with 0 patients in the same 4 calendar months (January to April 2012) prior to the intervention ( $P < .001$ ). Fidelity of the intervention was high, with 100% of eligible post colonoscopy patients and 86.7% of eligible post EGD patients discharged from the GI clinic, based on chart review of 4 weeks of endoscopies during the study period (1 randomly selected week per month). Implementation of discharge criteria led to an increase in the ratio of new to follow-up appointments in the GI clinic, from 0.9:1 pre-intervention to 1:1 post intervention ( $P = .05$ ). Wait time for the third next available appointment decreased substantially, from a median of 158 days to 74 days ( $P = .0001$ ) (Table 3).

## DISCUSSION

With this study, we demonstrate that the PCMH-N framework of shared responsibility and care coordination can be used to develop consensus guidelines about patients who can be safely discharged from a GI clinic with anticipatory guidance to PCPs. In our system, such patients included individuals who needed to receive their endoscopic biopsy results. We thus focused our efforts on achieving

consensus about which subgroup of patients could receive their biopsy results outside of a GI appointment in an efficient and safe manner, without danger of missing a malignant diagnosis, as well as one that was patient-centered and acceptable to all providers. In so doing, we achieved our primary goal of increasing access to GI care by substantially decreasing wait times for new patient appointments, and increasing the ratio of new to follow-up visits in the GI clinic. Additionally, we highlight the power of the Delphi process to achieve consensus and use it in an innovative way to enact change at the healthcare delivery system level.

Limited access to specialty care was the main driver of our consensus building process. Many solutions exist to help alleviate poor specialty access<sup>10</sup>; these include hiring additional specialists (including nurse practitioners or physician assistants) to increase the supply of specialty providers; strengthening PCP capacity to care for individuals with specialty conditions via continuous medical education<sup>11</sup>; and using asynchronous telehealth technologies to reduce the demand for in-person specialty visits.<sup>6,12</sup> Identifying patients who no longer need face-to-face specialty care, in particular, is one important contributing factor that has not often been discussed in the United States, but it has been significantly employed to increase access to specialty care in the United Kingdom.<sup>13-15</sup>

Barriers to successful discharge of patients from specialty care to primary care include poor interprovider communication and limited provider-patient communication and trust.<sup>16,17</sup> Characteristics of our delivery system that help address these barriers include a closed network of patients and shared access to the hospital EMR, which facilitates

**Table 2.** Post Endoscopy Clinical Scenarios Included in the Modified Delphi Process

**Patient undergoes a colonoscopy for positive FOBT/FIT, personal history of polyps, or family history of polyps/colon cancer. The bowel preparation was good to excellent. Any polyps identified were completely removed.**

- a Normal endoscopy, normal pathology
  - Pathology with hyperplastic polyps or few <1 cm tubular adenomas
  - Pathology with advanced neoplasia
- b Malignant colonic neoplasm

**Patient undergoes colonoscopy for hematochezia. No clinical suspicion for upper GI bleeding source prior to endoscopy. Bowel preparation was good to excellent. All polyps identified are completely removed.**

- a No cause for hematochezia identified; patient is not anemic and has no alarm symptoms; biopsies are normal.
- b No cause for hematochezia identified; patient is anemic and/or has alarm symptoms; or biopsies are abnormal.
  - Nonmalignant cause of hematochezia identified that does not require endoscopic evaluation in the next 12 months.
- b Malignant cause of hematochezia identified.

**Patient undergoes an EGD and colonoscopy for iron deficiency anemia. The bowel preparation was good to excellent. Any colonic polyps identified are completely removed.**

- No cause for anemia identified; patient does not have any alarm symptoms.
- b No cause for anemia identified; patient has alarm symptoms.
  - Nonmalignant cause of anemia identified that does not require repeat endoscopic evaluation in the next 12 months.
- b Malignant cause of anemia identified.

**Patient undergoes an EGD for dyspepsia.**

- b Normal EGD. Biopsies are normal and cause of dyspepsia is not identified.
- a EGD demonstrates gastritis without discrete ulcers. Chronic active gastritis, *H pylori* positive, and identified as likely cause of dyspepsia. Biopsies negative for dysplasia.
- a EGD demonstrates gastritis without discrete ulcers. Chronic active gastritis negative for *H pylori*, identified as likely cause of dyspepsia. Biopsies negative for dysplasia.
  - EGD with gastric ulcers. Biopsies demonstrate chronic active gastritis, *H pylori* positive, identified as likely cause for dyspepsia. Biopsies negative for dysplasia.
  - EGD with gastric ulcers. Biopsies are negative for *H pylori* or dysplasia.
- b EGD with duodenal ulcers. Biopsies demonstrate *H pylori* present, identified as likely cause of dyspepsia. Biopsies negative for dysplasia.
- b EGD with duodenal ulcers. Biopsies negative for *H pylori* but identified as likely cause for dyspepsia. Biopsies negative for dysplasia.
  - Malignant cause of dyspepsia identified.

**Patient undergoes an EGD for reported history of melena.**

- Cause for melena not identified. Biopsies are normal. Patient is not anemic, doesn't have alarm symptoms, and has no recurrent melena.
- a Cause for melena is not identified. Biopsies are normal. Patient is anemic and/or has recurrent melena or other alarm symptoms.
  - Nonmalignant cause for melena is identified, not requiring repeat endoscopic evaluation in the next 12 months.
- Malignant cause for melena identified.

EGD indicates esophagogastroduodenoscopy; FOBT/FIT, fecal occult blood test/fecal immunochemical test; GI, gastroenterological.

<sup>a</sup>Denotes consensus achieved after 1 round.

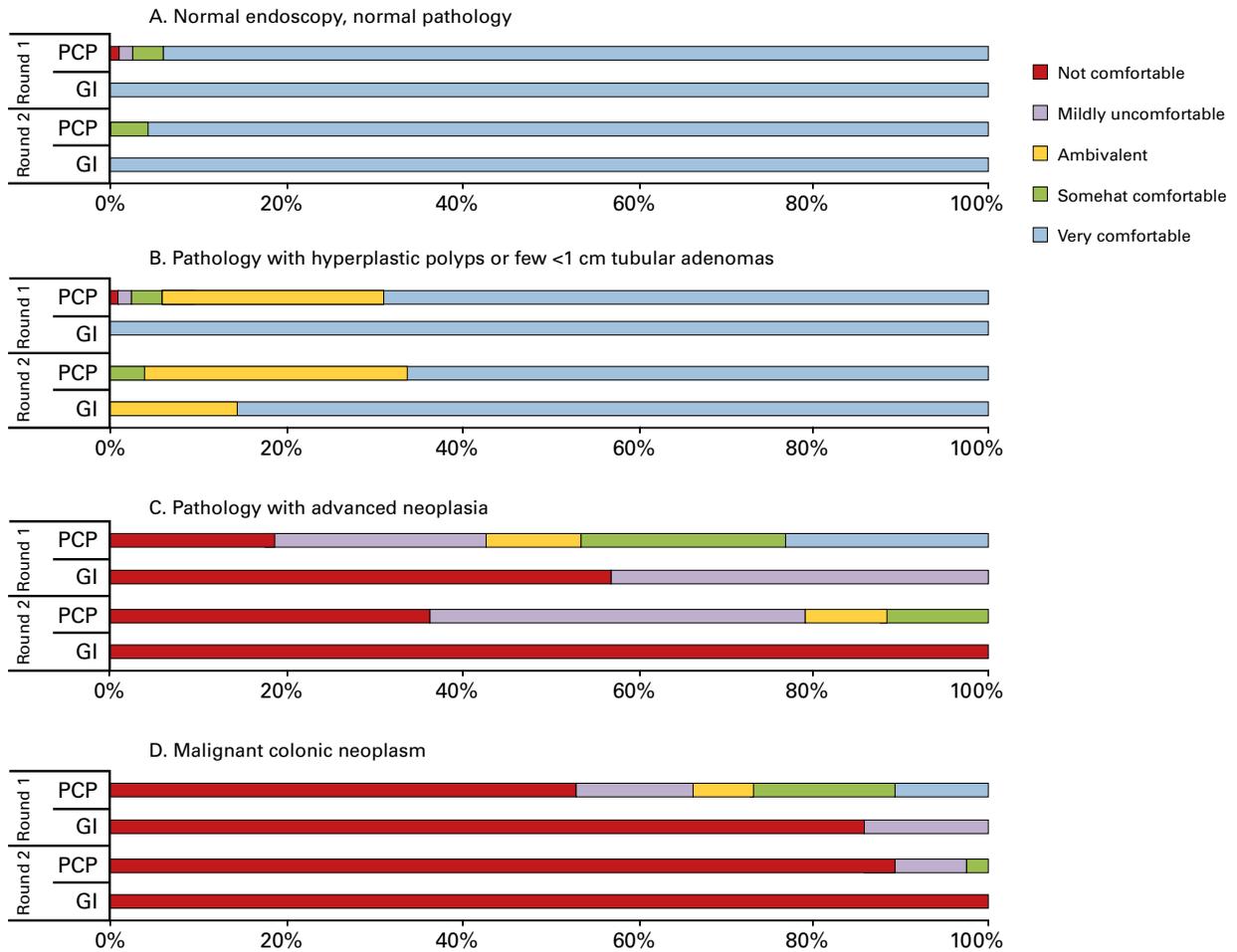
<sup>b</sup>Denotes consensus achieved after 2 rounds.

communication among providers and reduces concerns for patients being “lost to follow-up.” Poor communication among specialists and PCPs after specialty care visits has always been a major concern for providers.<sup>18,19</sup> Overcoming these concerns, with specialist provision of anticipatory guidance in the discharge consultation note, was key to achieving consensus in our study. Prior studies also suggest the importance of specialist availability for ongoing co-management after a patient is discharged from specialty care.<sup>17</sup> Our system’s use of eReferral, an electronic referral management system that facilitates virtual

co-management among providers,<sup>20</sup> may have further supported PCP and specialist consensus on discharge criteria. Also, in our system, specialists are salaried. This reduces the financial incentive for specialists to continually follow patients whose care could safely be returned to their medical home. The expansion of global payment systems under healthcare reform may further reduce financial barriers to specialists returning patients to primary care.<sup>21</sup>

Dissemination of the PCMH-N model of healthcare delivery across the United States is creating a more dynamic primary care/specialty care interface. Specialists

**Figure 1. Delphi Process Results**



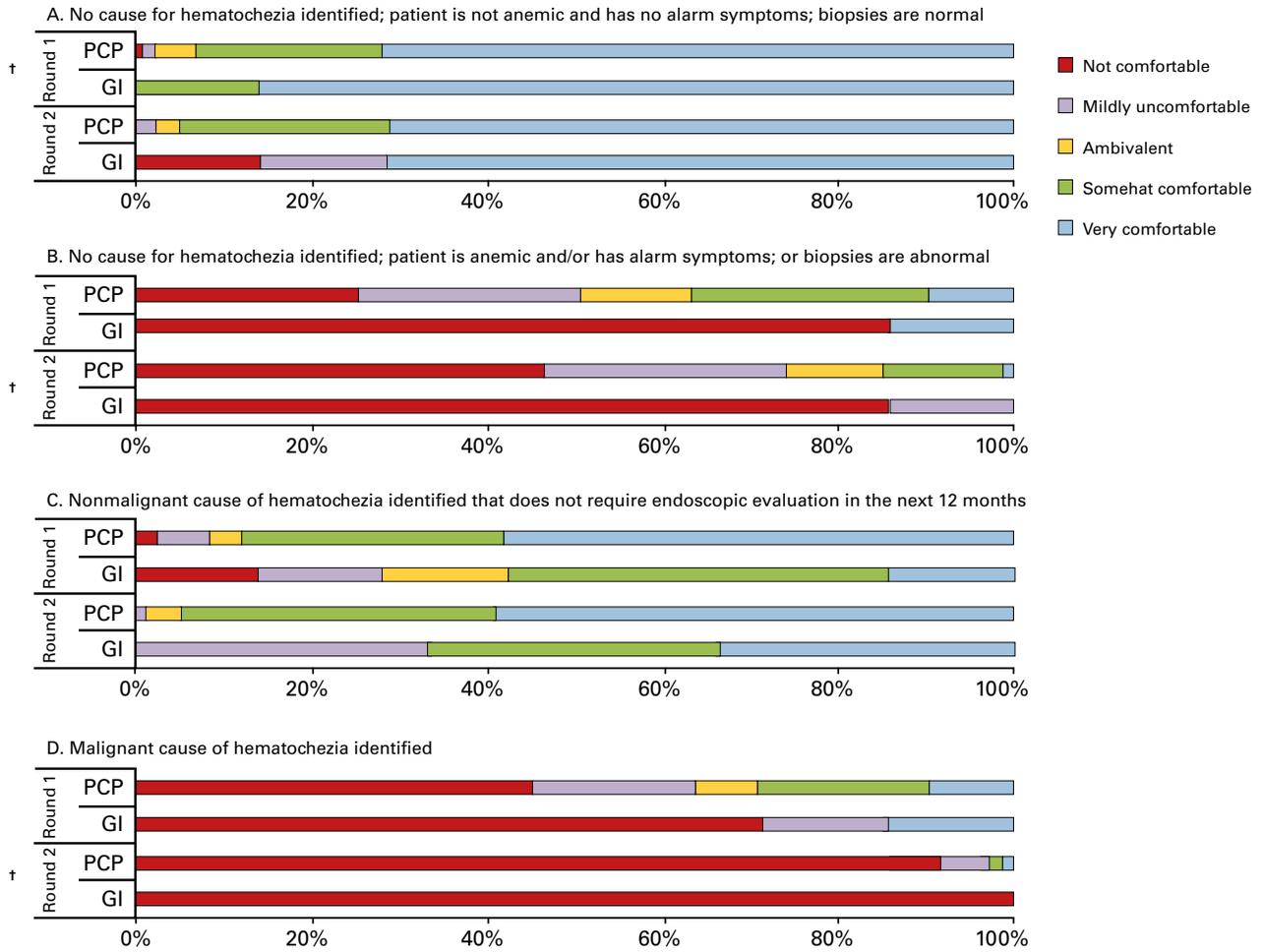
FOBT/FIT indicates fecal occult blood test/fecal immunochemical test; GI, gastroenterologist; PCP, primary care provider. PCP and gastroenterologist comfort levels discharging a patient from GI clinic after endoscopy if patient underwent a colonoscopy for positive FOBT/FIT, personal history of polyps or family history of ppolyps/colon cancer. The bowel preparation was good to excellent. Any polyps identified were completely removed. \*denotes consensus achieved.

are expected to participate in population health and share responsibility for overall access to specialty care.<sup>22,23</sup> The primary care/specialty care interface and specialty referral patterns are influenced by a multiplicity of factors,<sup>24,25</sup> such as individual PCP expertise, time per appointment, wait times for PCP and specialty visits, patient expectations, provider reimbursement strategies, and regional practice standards. Thus, a “one size fits all” approach to developing specialty discharge criteria is not practical. Dialogue among PCPs and specialists, among other stakeholders, is key to developing interventions tailored for each healthcare delivery system.<sup>26</sup> The Delphi methodology of achieving consensus is one example of a way to engage stakeholders in this essential communication. Other formal consensus methods exist, such as the Nominal Group Technique and the RAND Appropriateness Method.<sup>7</sup> However, Delphi’s flexible, intuitive methodol-

ogy, and its ability to reach and allow a large number of diverse stakeholders to voice their opinions without being overshadowed by more forceful colleagues, makes it well suited to achieve consensus among providers within a PCMH-N. Indeed, it has been used to identify components of effective hospital discharge planning,<sup>27</sup> and to develop healthcare system solutions to tackle patient medication nonadherence.<sup>28</sup> Realizing that GI discharge criteria and policy changes might overly burden PCPs, we explicitly selected the Delphi process to engage PCPs across the system.

There are limitations to this study. The specific clinical conditions chosen for discharge in our study may not be relevant to other systems (ie, gastroenterologists in some systems may already discharge patients immediately after endoscopic procedures). However, the process of achieving consensus among PCPs and specialty care providers regarding which patients should be seen in a subspecial-

**Figure 2. Delphi Process Results**



GI indicates gastroenterologist; PCP, primary care provider.  
 PCP and gastroenterologist comfort levels discharging a patient from GI clinic after endoscopy if patient underwent a colonoscopy for hematochezia. No clinical suspicion for an upper GI bleeding source prior to endoscopy. The bowel preparation was good to excellent. All polyps identified were completely removed.  
 † denotes consensus achieved.

**Table 3. Impact on Discharge Criteria on GI Clinic Work Flow, Pre-Implementation vs Post Implementation**

Outcome	Pre-Intervention	Post Intervention	P
<b>Reach:</b> Patients discharged from GI clinic among patients who had any upper endoscopy/colonoscopy (with biopsy) performed during study period (N, %)	0 of 419 (0)	403 of 540 (74.6)	—
<b>Fidelity:</b> Patients who met GI discharge criteria and were discharged <sup>a</sup>			
Colonoscopy	—	76 of 76 (100)	—
Upper endoscopy	—	13 of 15 (86.7)	—
<b>Effectiveness</b>			
Ratio of new to follow-up appointments in GI clinic	0.9:1	1.0:1	.05
GI clinic wait time (days + SE)	157.5 ± 10.7	73.5 ± 7.2	.0001

<sup>a</sup>Data obtained from 1 randomly selected week from each month, January to April 2013.  
 GI indicates gastroenterological.

ty ambulatory clinic is widely applicable. For example, our group is on the verge of completing a similar Delphi consensus-building process to identify patients who can be safely discharged from endocrinology clinic. Because

endocrinology is a non-procedure-based specialty, the types of patients selected for discharge will be those with chronic diseases who can be safely and efficiently managed in primary care with specialist guidance.

We captured data for 4 months, limiting our ability to study the intervention's longer-term impact on access to care or quality of patient care. Outcomes such as unintended consequences (eg, percentage of patients who were re-referred to GI after official discharge) were not captured with this study. Additionally PCP, gastroenterologist, and patient satisfaction with the discharge criteria and discharge process were not examined, nor was the potential change in workload for PCPs explored. These remain important areas of future research. Our study was performed in 1 safety net healthcare delivery system and may not be generalizable to other systems. However, many facilitators of this work exist in other healthcare systems, such as a shared EMR and/or a supply-demand mismatch of specialty care.

Increasing access to specialty care in safety net healthcare delivery systems is essential for the overall health of our most vulnerable populations. We demonstrate that thoughtfully discharging patients from specialty care back to primary care via consensus standards is one method to improve access to specialty care. Understanding the concerns of all stakeholders, including PCPs, specialists, and patients, will be necessary to refine and disseminate this process to other healthcare systems, in an effort to ensure timely access to specialty services for all patients.

**Author Affiliations:** Division of Nephrology, San Francisco General Hospital, University of California, San Francisco (DST); Division of Gastroenterology, San Francisco General Hospital, University of California, San Francisco (JLS, LD); Center for Innovation in Access and Quality, San Francisco General Hospital, University of California, San Francisco (DST, JLS, KL, AHC); Division of General Internal Medicine, San Francisco General Hospital, University of California, San Francisco (AHC).

**Funding Source:** This work was supported by the Kaiser Permanente Community Benefit Program, Northern California Region. DST is partially supported by K23DK094850 as well as the National Center for Advancing Translational Sciences at the National Institutes of Health, through UCSF-CTSI Grant Number UL1 TR000004. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the NIH.

**Author Disclosures:** The authors report no relationship or financial interest with any entity that would pose a conflict of interest with the subject matter of this article.

**Authorship Information:** Concept and design (DST, JLS, LD, AHC); acquisition of data (DST, JLS, LD, KL); analysis and interpretation of data (DST, JLS, LD); drafting of the manuscript (DST); critical revision of the manuscript for important intellectual content (DST, JLS, LD, AHC); statistical analysis (DST, JLS); provision of study materials or patients (DST); obtaining funding (KL, AHC); administrative, technical, or logistic support (KL, AHC); supervision (AHC).

**Address correspondence to:** Delphine S. Tuot, MDCM, MAS, San Francisco General Hospital, 1001 Potrero Ave, Bldg 100, Rm 342, San Francisco, CA 94110. E-mail: Delphine.tuot@ucsf.edu.

## REFERENCES

- Barnett ML, Song Z, Landon BE. Trends in physician referrals in the United States, 1999-2009. *Arch Intern Med*. 2012;172(2):163-170.
- Cook NL, Hicks LS, O'Malley AJ, Keegan T, Guadagnoli E, Landon BE. Access to specialty care and medical services in community health centers. *Health Aff (Millwood)*. 2007;26(5):1459-1468.
- Felt-Lisk S, McHugh M, Thomas M. *Examining Access to Specialty Care for California's Uninsured: Full Report*. Oakland, CA: California HealthCare Foundation; 2004. <http://www.chcf.org/~media/MEDIA%20LIBRARY%20Files/PDF/A/PDF%20AccessToSpecialtyCareForCalifUninsuredReport.pdf>.
- Hollingsworth JM, Saint S, Hayward RA, Rogers MA, Zhang L, Miller DC. Specialty care and the patient-centered medical home. *Med Care*. 2011;49(1):4-9.
- Laine C. Welcome to the patient-centered medical neighborhood. *Ann Intern Med*. 2011;154(1):60.
- Chen AH, Murphy EJ, Yee HF Jr. eReferral--a new model for integrated care. *N Engl J Med*. 2013;368(26):2450-2453.
- Nair R, Aggarwal R, Khanna D. Methods of formal consensus in classification/diagnostic criteria and guideline development. *Semin Arthritis Rheum*. 2011;41(2):95-105.
- Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)--a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009;42(2):377-381.
- Glasgow RE, Chambers D. Developing robust, sustainable, implementation systems using rigorous, rapid and relevant science. *Clin Transl Sci*. 2012;5(1):48-55.
- Forrest CB. A typology of specialists' clinical roles. *Arch Intern Med*. 2009;169(11):1062-1068.
- Marinopoulos SS, Dorman T, Ratanawongsa N, et al. Effectiveness of continuing medical education. *Evid Rep Technol Assess (Full Rep)*. 2007;149:1-69.
- Mahnke CB, Jordan CP, Bergvall E, Person DA, Pinsker JE. The Pacific Asynchronous TeleHealth (PATH) system: review of 1,000 pediatric teleconsultations. *Telemed J E Health*. 2011;17(1):35-39.
- Reeve H, Baxter K, Newton P, Burkey Y, Black M, Roland M. Long-term follow-up in outpatient clinics: 1: the view from general practice. *Fam Pract*. 1997;14(1):24-28.
- Turner AM, Dalay SK, Talwar A, Snelson C, Mukherjee R. Reforming respiratory outpatient services: a before-and-after observational study assessing the impact of a quality improvement project applying British Thoracic Society criteria to the discharge of patients to primary care. *Prim Care Respir J*. 2013;22(1):72-78.
- Jones C, Roderick P, Harris S, Rogerson M. An evaluation of a shared primary and secondary care nephrology service for managing patients with moderate to advanced CKD. *Am J Kidney Dis*. 2006;47(1):103-114.
- Burkey Y, Black M, Reeve H. Patients' views on their discharge from follow up in outpatient clinics: qualitative study. *BMJ*. 1997;315(7116):1138-1141.
- Brez S, Rowan M, Malcolm J, et al. Transition from specialist to primary diabetes care: a qualitative study of perspectives of primary care physicians. *BMC Fam Pract*. 2009;10:39.
- Gandhi TK, Sittig DF, Franklin M, Sussman AJ, Fairchild DG, Bates DW. Communication breakdown in the outpatient referral process. *J Gen Intern Med*. 2000;15(9):626-631.
- O'Malley AS, Reschovsky JD. Referral and consultation communication between primary care and specialist physicians: finding common ground. *Arch Intern Med*. 2011;171(1):56-65.
- Chen AH, Kushel MB, Grumbach K, Yee HF Jr. Practice profile. a safety-net system gains efficiencies through 'eReferrals' to specialists. *Health Aff (Millwood)*. 2010;29(5):969-971.
- Landon BE, Roberts DH. Reenvisioning specialty care and payment under global payment systems. *JAMA*. 2013;310(4):371-372.
- Fisher ES. Building a medical neighborhood for the medical home. *N Engl J Med*. 2008;359(12):1202-1205.
- Pham HH. Good neighbors: how will the patient-centered medical home relate to the rest of the health-care delivery system? *J Gen Intern Med*. 2010;25(6):630-634.
- Chan BT, Austin PC. Patient, physician, and community factors affecting referrals to specialists in Ontario, Canada: a population-based, multi-level modelling approach. *Med Care*. 2003;41(4):500-511.
- Forrest CB, Nutting PA, von Schrader S, Rohde C, Starfield B. Primary care physician specialty referral decision making: patient, physician, and health care system determinants. *Med Decis Making*. 2006;26(1):76-85.
- Carrier E, Dowling MK, Pham HH. Care coordination agreements: barriers, facilitators, and lessons learned. *Am J Manag Care*. 2012;18(11):e398-e404.
- Yam CH, Wong EL, Cheung AW, Chan FW, Wong FY, Yeoh EK. Framework and components for effective discharge planning system: a Delphi methodology. *BMC Health Serv Res*. 2012;12:396.
- Clyne W, White S, McLachlan S. Developing consensus-based policy solutions for medicines adherence for Europe: a Delphi study. *BMC Health Serv Res*. 2012;12:425. ■