

Observational Study

Establishing an integrated gastroenterology service between a medical center and the community

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order to enable improvements in patient management, an integrated gastroenterology service (IGS) was established.

METHODS: Referral patterns to specialist clinics were optimized; open access route for endoscopic procedures (including esophago-gastro-duodenoscopy, sigmoidoscopy and colonoscopy) was established; family physicians' knowledge and confidence were enhanced; direct communication lines between experts and primary care physicians were opened. Continuing education, guidelines and agreed instructions for referral were promoted by the IGS. Six quality indicators were developed by the Delphi method, rigorously designed and regularly monitored. Improvement was assessed by comparing 2010, 2011 and 2012 indicators.

RESULTS: An integrated delivery system in a specific medical field may provide a solution to a fragmented healthcare system impaired by a lack of coordination. In this paper we describe a new integrated gastroenterology service established in April 2010. Waiting time for procedures decreased: 3 mo in April 30th 2010 to 3 wk in April 30th 2011 and stayed between 1-3 wk till December 30th 2012. Average cost for patient's visit decreased from 691 to 638 NIS (a decrease of 7.6%). Six health indicators were improved significantly comparing 2010 to 2012, 2.5% to 67.5%: Bone densitometry for patients with inflammatory bowel disease, preventive medications for high risk patients on aspirin/NSAIDs, colonoscopy following positive fecal occult blood test, gastroscopy in Barrett's esophagus, documentation of family history of colorectal cancer, and colonoscopy in patients with a family history of colorectal cancer.

CONCLUSION: Establishment of an IGS was found to effectively improve quality of care, while being cost-effective.

Abstract

AIM: To combine community and hospital services in

Key words: Gastroenterology; Direct referral; Endoscopy; Community medicine; Open access endoscopy

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Core tip: We combined community and hospital services in order to improve patient management, and established an integrated gastroenterology service (IGS). Referral patterns to specialist clinics were optimized; open access route for endoscopic procedures was established; family physicians' knowledge was enhanced; direct communication lines between experts and primary care physicians were opened. Six quality indicators were developed and regularly monitored. Waiting time for procedures decreased significantly, the average cost for patient's visit decreased 7.6%. Six health indicators were improved significantly comparing, 2.5% to 67.5% of the goals. Establishment of an IGS was found to effectively improve quality of care, while being cost-effective.

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INTRODUCTION

Clalit Health Services (CHS) is a large health care provider for 4.6 million enrollees in Israel. This is the country's largest health organization with an annual budget of approximately 17 billion NIS. The organization has two major medical branches; a community based service divided into eight geographical districts, each with a separate budget and regional director, and a hospital division comprising 14 hospitals providing acute care, chronic care and psychiatric care. The administrative structure has undergone a series of changes in the last three decades, to improve the function of this large organization. Under this system each community-based regional branch of CHS purchases essential services from hospitals. In effect, there is economic conflict of interest between the hospitals and the regional districts, even though both form integral parts of the same organization. In addition, the districts also provide specialist services in the community similar to that provided by the hospitals. The regions are not bound, as consumers, to buy medical services from CHS-owned hospitals, and can use economic criteria as the basis for their decisions. Thus, the regions can sign contracts with governmental, municipal or private hospitals. As a result, there is some competition between hospitals,

although they belong to the same organization.

In most Western countries, the healthcare system is divided between family medicine and different levels of specialist medicine. Communication between various professionals is often ineffective, and there are often different patient files for different disciplines. Physicians are thus unable to obtain a comprehensive clinical picture for patients. This led to large healthcare organizations such as Kaiser Permanente to integrate patient care under one "umbrella" organization in order to provide all levels of patient care from family medicine to the most advanced hospital procedures. This framework allows for maximum coordination between various levels, usually using a computerized medical record. A program like this prevents the insured from obtaining non-essential treatment on the one hand, but provides all their real health needs on the other hand^[1].

In 2009 it was decided to establish an integrated gastroenterology service (IGS) for one of the 8 regions of CHS (Dan-Petach Tikva region) with Rabin Medical Center (RMC) comprising Beilinson and Sharon hospitals. The IGS has a single management structure to administer gastroenterology services for 340000 individuals insured by CHS, including three endoscopy units. A one-time fee based on service levels in 2008 was transferred by community region to RMC at the beginning of the budget year 2010, as payment for patient gastroenterology services for a year. The IGS undertook to streamline and improve the quality of services and provide readily available gastroenterology clinic consultations and endoscopic procedures in the different units. IGS has also provided a gradual increase in endoscopic procedures with a gradual transition from clinics to endoscopy, for example, colonoscopy for early detection of colon cancer in the community unit, and the increased use of surgical endoscopic procedures in hospitals^[2,3].

In this manuscript we describe the establishment of the IGS and evaluate its success. We hypothesized that by optimizing referral patterns to specialist clinics, establishing an open access route for endoscopic procedures, enhancing family physicians' knowledge by continuing education and guidelines promotion we improved the quality of the gastroenterology service. Six quality indicators were developed and monitored. Improvement was assessed by comparing 2010, 2011 and 2012 indicators.

MATERIALS AND METHODS

IGS - structure

On 04/22/2010 the IGS was officially established, together with a number of organizational changes. The IGS is the product of cooperation between the regional authority, the medical centers and the general

management of CHS. The project was encouraged by CHS's CEO and deputy CEOs for community health services and hospitals. The vision was to promote the quality of community and hospital gastroenterology care for individuals insured by the health fund. The added value offered by the IGS derives from the fact that the family doctor, gastroenterologists in the community and hospital gastroenterologists belong to the same organization and this enables a more integrated approach to patient care. For example, simpler endoscopic procedures take place in the community unit, whereas more complex procedures and procedures in high risk patients are performed in the hospitals. The Sharon Hospital provides regional health care services and Beilinson Hospital is a tertiary hospital in which the highest level of services is available.

Strengthening and promoting knowledge of family physicians

Clinical guidelines: In order to increasing the level of knowledge in gastroenterology among primary care physicians, simple clinical guidelines have been established in the IGS, covering the major topics in gastroenterology (*e.g.*, neurogastroenterology, gastroesophageal reflux, peptic disease, functional diseases, malignant diseases of the gastrointestinal tract, inflammatory bowel disease and liver diseases). The guidelines have been distributed to all family physicians and are attached to the patient electronic file.

Clinical guidelines conference: A clinical guidelines conference is held every three months to promote accepted clinical practice and strengthen the link between family physicians and the gastroenterologist. At each conference three or four central issues are presented and discussed.

Direct contact between family physicians and consultants: A gastroenterologist from the IGS has been attached to each of the large clinics in the district. Each month the family physicians in the clinic hold a joint meeting with the referent gastroenterologist, where cases are presented and a certain topic is discussed. This meeting can save many referrals for unnecessary testing which can be performed in the clinic in the community.

Internet-based consultations: The availability to exchange emails *via* the CHS e-mail system or in urgent cases the possibility of consulting by telephone has created a new dimension for interaction between family physicians and gastroenterologists. Each side became familiar with their counterpart and a combined approach leads to improved patient care.

Internet portal: An internet portal has been cr-

eated specifically for the IGS as an additional independent tool for use by gastroenterologists and family physicians in the district. There are sections for notifications, forms, presentations, articles, quality control, clinical guidelines and interactions between specialist clinic advisors and their primary care clinics (this was also used for the quality improvement assessment of referrals and answers to questions). Family physicians can print forms for patient referral, preparation for endoscopy, and open access endoscopy or complete them electronically and send them *via* the portal.

Uniformity of treatment in the district

Joint patient file: The units comprising the IGS, *i.e.*, hospital units and community based unit, all use a uniform electronic medical record ("Clicks" by Rosh Tov, Israel). Despite this, the program has been developed in different ways before the services were integrated. One of the first projects was establishing a unified format for electronic patient files in all of the units so that all the relevant information will be available no matter where the patient is seen.

Integration of the patient file into primary health care clinics

Family physicians use yet another version of the Clicks program and communication between the specialist and community version has been made possible. For example, a family physician is able to fill in a request for colonoscopy or a breath test for *Helicobacter pylori* and the form is received at the hospital.

Uniformity of instructions for endoscopy: It is important that instructions for endoscopy preparation and the relevant related forms be uniform to avoid confusion for family doctors and patients. These are the same no matter from which unit or primary clinic the patient receives them.

Open access for endoscopy

Direct referral by family physicians for endoscopy: A form has been designed for direct referral by family physicians for endoscopic procedures. The form includes the underlying medical problems, reason for referral and contraindications. The form has been approved by a risk management team, physicians' representatives and management. Family practitioners are authorized to refer patients directly for colonoscopy, sigmoidoscopy and gastroscopy but are also responsible for verifying the necessity of the procedure and excluding potential contraindications.

Call center for appointments: A joint call center for coordinating appointments for the IGS has been established. Patients can be given appointments for any one of the IGS units, depending on the nature

Table 1 Quality indicators developed for assessing the integrated gastroenterology service

Indicator	Denominator	Numerator
Bone densitometry for patients with IBD (6-11)	Patients > 20 years old with Crohn's disease or ulcerative colitis	Of those in the denominator, patients who underwent bone densitometry
Preventive medications for high risk patients on aspirin/NSAIDs (12-15)	High-risk patients (> 70 years old, underlying comorbidity ¹ or concomitant medications ²) on chronic aspirin/NSAIDs therapy	Of those in the denominator, patients who were purchased proton pump inhibitors
Colonoscopy following positive FOBT (16-18)	Patients with positive FOBT	Of those in the denominator, patients who underwent colonoscopy within 6 mo
EGD in Barrett's esophagus (19-22)	Patients with a diagnosis of Barrett's esophagus	Of those in the denominator, patients who underwent EGD within the last 3 yr
Documentation of family history of CRC (positive or negative) (23-27)	Documentation of family history of CRC	Patients with a positive family history of CRC
Colonoscopy in-patients with a family history of CRC (28-30)	Patients who underwent colonoscopy	Of those in the denominator, patients who had a family history of CRC

¹Peptic disease, ischemic heart disease, chronic renal failure, liver cirrhosis, rheumatoid arthritis; ²Corticosteroids, anticoagulants, other anti-platelet drugs (clopidogrel, ticlopidine). IBD: Inflammatory bowel disease; NSAIDs: Non-steroidal anti-inflammatory drugs; FOBT: Fecal occult blood test; EGD: Esophago-gastro-duodenoscopy; GERD: Gastro esophageal reflux disease; CRC: Colorectal cancer.

of the procedure and availability.

Quality indicators

In order to assess clinical quality and define whether the IGS archived the set targets in this area, the Chief Physician's Office for CHS organized a quality indicator conference for IGS staff, family physicians and district management. Delphi process with plenary sessions and discussion groups helped to define 6 quality indicators which included procedures, service measurements, outcomes and were considered accountable^[4,5]. Bone densitometry for patients with inflammatory bowel disease^[6-11], preventive medications for high risk patients on aspirin/NSAIDs^[12-15], colonoscopy following positive fecal occult blood test^[16-18], gastroscopy in Barrett's esophagus^[19-22], documentation of family history of colorectal cancer^[23-27], and colonoscopy in patients with a family history of colorectal cancer^[28-30] (Table 1). Special projects such as enhancing compliance of patients with a positive result of fecal occult blood test (FOBT) to undergo colonoscopy or screening for occult hepatitis C infection were performed.

Patient flow

Flow charts have been created to improve the movement of patients in clinics and endoscopy units in the IGS and also incorporating the family physicians and gastroenterologists. This allows increased and more efficient planning and utilization of services.

After-hours activity

During morning sessions, endoscopy rooms in the 3 units of the IGS are utilized by medical and nursing staff with the aim of maximizing availability and reduce waiting lists. However, it may be necessary from time to time to operate the service in the afternoons at the discretion of the Head of the IGS.

Quarterly report

A steering committee to oversee the operation of the IGS has been formed with hospital and district managers, medical directors and director of the IGS. This committee meets quarterly and receives a report including activity, productivity and budget. The committee is committed to promoting the processes and aims of the IGS.

RESULTS

The number of endoscopic procedures performed in the 11 endoscopy rooms of the IGS was 18229, 20579 and 23,394 in 2010, 2011 and 2012, respectively. In these periods consultations reached the number of 40300, 40253 and 43393. Thus, between the establishment year of the IGS in 2010 and 2012 there was a larger increase of 28.3% in endoscopic procedures than of 7.7% in the consultation numbers ($P < 0.001$). This outcome was well in line with our strategy to increase the number of endoscopic procedures and decrease the number of unnecessary consultations. While the number of consultations and procedures increased, the total cost decreased from 15030183 IS to 14235223 IS (-5.2%). The average individual cost decreased from 691 New Israeli Shekel (NIS) per endoscopic procedure to 638 NIS (-7.6%).

The waiting time for consultation and endoscopic procedure decreased from 2 and 3 month at the beginning of 2010, to 2 wk and 3 wk at the end of 2012, respectively.

Quality indicators monitored continuously are listed in Table 1. Modest improvements were seen in all six quality indicators (Figure 1). There were 5583, 6911, and 8201 entrances to the IGS portal on 2010, 2011 and 2012, respectively; an increase of 46.9% between 2010 and 2012.

Proactive detection projects of patients with a

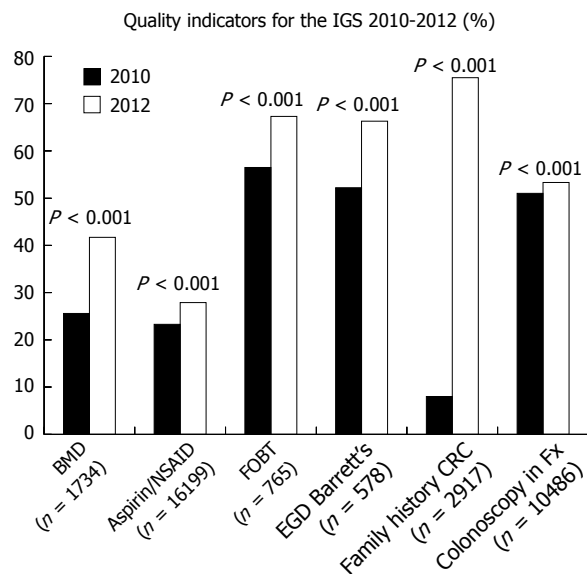


Figure 1 Quality indicators for the integrated gastroenterology service, comparing 2010 vs 2012. BMD: Bone mineral density for patients with inflammatory bowel disease; Aspirin/NSAID: Preventive medication for high risk patients; FOBT: Colonoscopy following positive fecal occult blood test; EGD Barrett's: Esophago-gastro-duodenoscopy in Barrett's patients; Family history CRC: Documentation of a family history of colorectal cancer; Colonoscopy in Fx: Colonoscopy in patients with a family history of colorectal cancer.

positive fecal occult blood test (FOBT) who refused colonoscopy, and patients with a positive serology for hepatitis C were established. Out of 1595 screenees with a positive FOBT on 2009, 570 (35.7%) did not undergo colonoscopy within 6 mo of getting the invitation. These patients were approached again by their family physician and by a gastroenterologist and referred again to the procedure. Two hundred and fifty eight asymptomatic patients with a positive serology to hepatitis C were diagnosed and referred to our liver clinic. Of these 159 (61.6%) had a positive PCR and were treated.

DISCUSSION

Inadequate access to specialty care is one of the main problems for utilization of specialty care, which cannot give answer to the rising number of referrals^[31,32]. Waiting time for appointments is very long and sometimes unacceptable^[33]. Routine follow-up care, such as appointment to receive biopsy results after endoscopic procedure, as well as unjustified referrals, may contribute to this problem^[34]. Implementation of eReferral, an electronic system, may help in this regard, but this is only small part of a comprehensive integrative solution, with participation of the experts and the primary care providers^[35]. Several solutions were suggested to shorten the waiting time for expert consultation or procedure: Increase personnel, strengthening primary care physician capacity *via* education, using telehealth technologies, improving communication between health providers, and

more^[35-44].

The IGS is the product of cooperation between CHS community district and Rabin Medical Center and was established in April 2010. The vision was to improve the quality of gastroenterology services in the community and hospitals for the benefit of the patients. Parameters to determine if the stated aims are being achieved are used to inform those involved as to their success.

Many efforts were directed toward the primary care physician, for performing better referrals and prevent unnecessary consultations and endoscopic procedures. Since the IGS establishment 7 conferences took place, dealing in depth with guidelines for diagnosis, treatment and referral patterns in the most prevalent gastroenterological diseases. In addition, very efficient communication pathways were established between the primary care physicians and the consultants, using e-mails, internet portal and telephone calls. In many cases the primary physician is consulting the expert before referral of the patients, and in many cases the message to the patients was: "I'm consulting with my specialist colleague to see what else we need to do, which may include sending you to the specialty clinic for a visit". This approach was previously tried successfully^[45].

After 3 years from the IGS establishment a significant improvement was observed in service availability. The average cost per procedure decreased even though the number of procedures increased. All quality indicators were improved.

In conclusion, an integrated gastroenterology service is important for quality improvement of the clinical service given to the population. Collaboration between the expert and the primary physician is the key factor for success of such a service. Continuous measuring quality of management will enable continuing improving our service while saving money and resources.

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COMMENTS

Background

In most Western countries, the healthcare system is divided between primary and specialist medicine. Communication between various professionals is often ineffective, and there are often different patient files for different disciplines. Physicians are thus unable to obtain a comprehensive clinical picture for patients.

Research frontiers

An integrated gastroenterology service (IGS) was established, to combine community and hospital services, in order to enable improvements in patient

management and treatment.

Innovations and breakthroughs

After 3 years IGS was found to effectively improve quality of care, while being cost-effective.

Applications

Establishing integrating professional service between hospitals and the community will improve communication, continuity of care, and patients' safety.

Terminology

Integrated Gastroenterology Service is a new professional modality, combined patient care in-hospital and in the community.

Peer review

This article assesses the effectiveness of integrated gastroenterology service and concluded that integrated gastroenterology service improves quality of care. This article is well written and informative. It is worth for publishing.

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