PROGRAM PROFILE

Expanding the Scope of Telemedicine in Gastroenterology

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A specialty outreach program relied on telemedicine to reach patients with gastrointestinal and liver diseases in a large service area.

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Access to specialized services has been a consistently complex problem for many integrated health care systems, including the Veterans Health Administration (VHA). About two-thirds of veterans experience significant barriers when trying to obtain medical care.[1] While these problems partly mirror difficulties that nonveterans face as well, there is a unique obligation toward those who put life and health at risk during their military service.[2]

To better meet demands, the VHA expanded personnel and clinic infrastructure with more providers and a network of community-based outpatient clinics (CBOC) that created more openings for clinic visits.[3] Yet regional variability remains a significant problem for primary and even more so for specialty medical services.

Recent data show that more than one-fifth of all veterans live in areas with low population density and shortages of health care providers.[4] The data point at a special problem in this context because these veterans often face long travel times to centers offering specialty services. The introduction of electronic consults functions as an alternative venue to obtain expert input but amounts to only 2% of total consult volume.[5] A more interactive approach with face-to-face teleconferencing, case discussions, and special training led by expert clinicians has further improved access in such underserved areas and played a key role in the success of the VHA hepatitis C treatment initiative.[6]

Despite its clearly proven role and success, these e-consults come with some conceptual shortcomings. A key caveat is the lack of direct patient involvement. Obtaining information from the source rather than relying on symptoms documented by a third person can be essential in approaching medical problems. Experts may be able to tease out the often essential details of a history when making a diagnosis. A direct contact adds an additional, perhaps less tangible, component to the interaction that relies on verbal and nonverbal components of personal interactions and plays an important role in treatment success. Prior studies strongly link credibility of and trust in a provider as well as the related treatment success to such aspects of communication.[7,8]

GASTROENTEROLOGY TELEMEDICINE SERVICES

The George E. Wahlen VA Medical Center in Salt Lake City, Utah, draws from a large catchment area that extends from the southern border of Utah to the neighboring states of Idaho, Wyoming, Nevada, and Montana. Large stretches of this territory are remote with population densities well below 5 persons per square mile. The authors therefore devised a specialty outreach program relying on telemedicine for patients with gastrointestinal and liver diseases and present the initial experience with the implementation of this program.

Phase 1: Finding the Champions

Prior studies clearly emphasized that most successful telemedicine clinics relied on key persons ("champions") promoting the idea and carrying the additional logistic and time issues required to start and maintain the new program.[9,10] Thus we created a small team that defined and refined goals,

identified target groups, and worked out the logistics. Based on prior experiences, we focused initially on veterans with more chronic and likely functional disorders, such as diarrhea, constipation, dyspepsia, or nausea. The team also planned to accept patients with chronic liver disorders or abnormal test results that required further clarification. By consensus, the group excluded acute problems and bleeding as well as disorders with pain as primary manifestations. The underlying assumption was that a direct physical examination was less critical in most of these cases.

TABLE 1 Presenting Problems or Disorders[a]

Problem/Disorder	No. (%)
Pain	
Chest	1 (0.8)
Abdomen	11 (8.9)
Esophageal	
Achalasia	4 (3.2)
Barrett esophagus with dysplasia	3 (2.4)
Eosinophilic esophagitis	2 (1.6)
Esophageal stricture	2 (1.6)
Gastroesophageal reflux	22 (17.7)
Globus sensation	2 (1.6)
Cough	3 (2.4)
Gastroduodenal	
Celiac disease	2 (2.4)
Cyclic vomiting syndrome	4 (3.2)
Gastroparesis	4 (3.2)
Gastric varices (isolated)	2 (1.6)
Dumping syndrome	3 (2.4)
Colorectal	
Anal fissure	3 (2.4)
Colorectal cancer screening	1 (0.8)
Familial polyposis syndrome	1 (0.8)
Irritable bowel syndrome	4 (3.2)
Fecal incontinence	2 (1.6)
Hepatobiliary	
Abnormal liver enzymes	6 (4.8)
Abnormal Imaging studies	3 (2.4)
NASH	4 (3.2)
Alcoholic liver disease	1 (0.8)
Pancreatic	
Chronic pancreatitis	1 (0.8)
Pancreatic cysts	2 (1.6)
Inflammatory Bowel Disease	
Crohn disease	4 (3.2)
Microscopic colitis	4 (3.2)
Ulcerative colitis	1 (0.8)
Other Symptoms/Complaints	
Iron deficiency anemia	3 (2.4)
Belching	2 (1.6)
Constipation	9 (7.3)
Diarrhea	21 (16.9)
Dyspepsia	10 (8.1)
Dysphagia	11 (8.9)
Flatulence	1 (0.8)
Nausea	1 (0.8)
Weight loss	1 (0.8)

Abbreviation: NASH, nonalcoholic steatohepatitis.
[a]Reasons for consult requests are organized based on symptoms or likely/known underlying disease. Patients could list more than 1 concern.

Phase 2: Outreach

Clinic managers and medical directors of the affiliated CBOC were informed of the planned telemedicine clinic. Also, we identified local champions who could function as point persons and assist in the organization of visits. One member of the team personally visited key sites to discuss needs and opportunities with CBOC personnel during a routine staff meeting. The goal was to introduce the program, the key personnel, to explain criteria for appropriate candidates that may benefit from telemedicine consults, and to agree on a referral pathway. Finally, we emphasized that the consultant would always defer to the referring provider or patient and honor their requests.

Phase 3: Identifying Appropriate Patients

The team planned for and has since used 4 different pathways to identify possible candidates for telemedicine visits. The consult triaging process with telemedicine is an option that is brought up with patients if their travel to the facility exceeds 100 miles. Similarly, the team reviews procedural requests to optimize diagnostic yields and limit patient burden. For example, if endoscopic testing is requested to address chronic abdominal pain or other concerns that had already prompted a similar request with negative results, then the team will ask for feedback and recommend a telemedicine consultation prior to performing the procedure. Telemedicine also is offered for follow-up encounters to veterans seen in the facility for clinical or procedural evaluations if they live ≥ 40 miles away. The 2 other pathways are requests from referring providers or patients that specifically ask for telemedicine visits.

Phase 4: Implementation

Since rolling out the program in November 2016, video visits have been used for more than 150 clinic encounters. Within the first 12 months, 124 patients were seen at least once using telemedicine links. Of 144 visits, 54 (38%) were follow-up visits; the rest constituted initial consultations. Focusing on initial encounters only, veterans specifically asked for a telemedicine visit in 16 cases (17.8%). One-third of these

TABLE 2 Recommended Tests or Interventions as Part of the Telemedicine Encounters[a]

Recommendations	No. (%)
Diagnostic tests	
Laboratory tests	21 (14.6)
Endoscopic procedures	24 (16.7)
Radiologic procedures	18 (12.5)
Fibroscan	1 (0.7)
Therapeutic suggestions	
Behavioral/psychological management	5 (3.5)
Dietary changes	44 (30.6)
Drug therapy	68 (47.2)
Endoscopic dilation/mucosal ablation	6 (4.2)
Lifestyle changes	12 (8.4)
Radiologic drainage procedure	1 (0.7)
Physical therapy	1 (0.7)
Surgical referral	2 (1.4)
Vaccination	3 (2.1)

[a]Recommendation could include several diagnostic/therapeutic modalities.

referrals was specifically marked as a telemedicine visit by the primary care provider. In the remaining cases, the triaging personnel brought up the possibility of a telemedicine interaction and requested feedback from the referring provider.

Veterans resided in many different areas within and outside of the facility's immediate referral area (Figure). The median distance between the CBOC and Salt Lake City was 164 miles (range 40-583 miles).

Abnormal bowel patterns, gastroesophageal reflux, and dyspepsia accounted for most concerns (Table 1). The team deviated from the initially defined case mix for telemedicine encounters largely based on patient or provider requests. In 14 cases, a telemedicine encounter was recommended to provide detailed explanations about possible diagnostic or therapeutic steps for newly made or likely diagnoses. This included 3 patients with dysplastic Barrett epithelium referred for ablative therapy, 3 persons with dysphagia and outside findings suggesting an esophageal motility disorder, and 1 veteran with an inherited polyposis syndrome. In addition, 2 patients were identified with newly recognized eosinophilic esophagitis and celiac disease, which require significant lifestyle changes as part of effective management. Five veterans had requested discussions with a specialist about abnormalities discovered by outside providers (iron deficiency, hiatal hernia in 2 cases, melanosis coli and Gilbert syndrome).

Beyond obtaining contextual data and information about the specific clinical manifestations, the rationale for these encounters was a detailed discussion of the problem and treatment options available. Ablative therapy in Barrett esophagus best exemplifies the potential relevance of such an encounter: Although conceptually appealing to decrease cancer risk, the approach requires a significant commitment typically involving repeated sessions of radiofrequency ablation followed by intense endoscopic surveillance. With travel distances of several hundred miles in these cases, these encounters provide relevant information to patients and the opportunity to make informed decisions without the burden and cost of a long trip.

A shift in telemedicine encounters will likely occur that will increasingly rely on access from home computers or handheld devices. However, the initial phase of this program relied on connections through a CBOC. Coordination between 2 sites adds a level of complexity to ensure availability of space and videoconferencing equipment. To limit the logistic burden and improve cost-effectiveness, the authors did not expect or request the presence of the primary or another independent provider. Instead, the team communicated with a locally designated point person who coordinated the remote encounters and assisted in implementing some of the suggested next steps. Prior site visits and communications with referring providers had established channels of communication to define concerns or highlight findings. The same channels also allowed the team to direct its attention to specific aspects of the physical examination to support or rule out a presumptive diagnosis.

If additional testing was suggested, Telemedicine Services generally ordered the appropriate assessments unless veterans requested relying on local resources better known to personnel at the remote site. The most common diagnostic steps recommended were laboratory tests (n = 21; 14.6%), endoscopic procedures (n = 18; 12.5%), and radiologic studies (n = 17; 11.8%) (Table 2). An additional 6 endoscopies were therapeutic procedures to treat achalasia, peptic strictures, or Barrett esophagus with confirmed dysplasia. One patient was referred to radiology for drainage of a pancreatic pseudocyst.

Most of the treatment changes focused on medication and dietary management,

followed by lifestyle modifications and behavioral or psychological interventions. Some treatments, such as ablation of dysplastic epithelium in patients with Barrett esophagus or pneumatic dilation of achalasia required traveling to the George E. Wahlen VAMC. Nonetheless, the number of trips were limited as the team could assess appropriateness, explain approaches, and evaluate symptomatic outcomes with the initial or subsequent remote encounters. Most of the follow-up involved the primary care providers (n = 62; 43.1%), while repeat remote encounters were suggested in 31 visits (21.5%) and an in-person clinic follow-up in 7 cases (n = 4.9%). In the remaining cases, veterans were asked to contact the team directly or through their primary care provider if additional input was needed.

DISCUSSION

The initial implementation of a specialty telemedicine clinic taught us several lessons that will not only guide this program expansion, but also may be relevant for others introducing telemedicine into their specialty clinics. At first glance, videoconferencing with patients resembles more conventional clinic encounters. However, it adds another angle as many steps from scheduling a visit to implementing recommendations rely on different members at the remote site. Thus, the success of such a program depends on establishing a true partnership with the teams at the various satellite sites. It also requires ongoing feedback from all team members and fine-tuning to effectively integrate it into the routine operations of both sites.

Feedback about the program has been very positive with comments often asking for an expansion beyond gastroenterology. Concerns largely were limited to scheduling problems that may become less relevant if the new telehealth initiative moves forward and enables health care providers to directly connect with computers or handheld devices at the patient's home. Prior studies demonstrated that most individuals have access to such technology and accept it as a viable or even attractive option for medical encounters.[11,12]

FIGURE Area Covered by Telemedicine Services

For some, remaining in the comfort of their own home is not only more convenient, but also adds a sense of security, further adding to its appeal.[13] As suggested by the economist Richard Thaler, simple nudges may be required to increase use and perhaps utility of telemedicine or e-consults.[14] At this stage, it is the active choice of the referral or triaging provider to consider telemedicine as an option. To facilitate deviation from the established routine, we plan to revise the consult requests by using a drop-down menu option that brings up e-consult, telemedicine, or clinic visit as alternatives and requires an active choice rather than defaulting to conventional face-to-face visits.

Despite an overall successful launch of the specialty telemedicine clinic, several conceptual questions require additional in-depth assessments. While video visits indeed include the literal face time that characterizes normal clinic visits, does this translate into the "face value" that may contribute to treatment success? If detailed information about

physical findings is needed, remote encounters require a third person at the distant site to complete this step, which may not only be a logistic burden, but also could influence the perceived utility and affect outcomes.

Previously published studies have demonstrated the effectiveness of video-based interactions and allow providers to address these points to some degree. Remote encounters have established roles in mental healthcare that is less dependent on physical findings.[15] Distance monitoring of devices or biomarkers, such as blood sugar levels or blood pressure, are becoming routine and often are combined with corrective interventions.[16-18]

Recently completed trials showed satisfaction did not differ from conventional clinic encounters when telemedicine encounters were used to manage chronic headaches or provide postoperative follow-up after urologic surgery.[19,20] For gastroenterology, telemedicine outreach after hospitalizations not only improved care, but also lowered rates of testing after discharge.[21] In patients with inflammatory bowel disease, a group that was not targeted during this initial phase, proactive and close follow-up with remote technology can decrease the need for hospitalization.[22]

These data are consistent with encouraging feedback received. Nonetheless, it is important to assess whether this approach is superior to established and cheaper alternatives, most notably simple telephone interactions. Video-linkage obviously allows nonverbal elements of communication, which play an important role in patient preference and satisfaction, treatment implementation, and impact.[7,8,23-25] Providers described patients as more focused and engaged compared with telephone interactions and valued the ability to incorporate body language in their assessment.[26]

Telemedicine clinics offered by specialty providers may not improve access as defined by wait times only, which would require adding more clinical time and personnel. However, it can lower barriers to care imposed by long distances between rural areas and facilities with specialized expertise. Even if a remote encounter concludes with the recommendation to visit the clinic for more detailed testing or treatment, explaining the need for such steps and involving the patient in the decision-making process may affect adherence.

CONCLUSION

Although the experiences of the team at George E. Wahlen VA Medical Center support the use of telemedicine in specialty clinics, the next phase of the project needs to address the utility of this approach and define the perceived value and potential problems of telemedicine. Obtaining this insight will require complex data sets with feedback from patients and referring and consulting providers. As trade-offs will likely vary between different diseases or symptoms, such studies will provide a better definition of clinical scenarios best suited for remote encounters. In addition, they may provide approximate values for distance or efforts that may make the cost of a direct clinic visit worth it, thereby defining boundary-condition.

Author disclosures

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Disclaimer

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