Using Virtual Teams to Improve the Care of Chronically Ill Patients

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Abstract

Objective: To describe an interdisciplinary team approach to chronic disease management in the primary care outpatient setting.

Methods: Virtual Integrated Practice (VIP) relies on communications technology to link clinicians from different disciplines at different locations. VIP teams work together to develop explicit patient care goals in a specific clinical problem area. Four strategies are used: planned communications, process standardization, group activities, and patient self-management. The conditions currently being targeted in VIP are type 2 diabetes, chronic obstructive pulmonary disease, and urinary incontinence. To assess use of VIP strategies and patient satisfaction, a pilot study was conducted in 8 practices (4 intervention, 4 control).

Results: Use of strategies varied at the 4 intervention sites. All 4 practices used process standardization. Only 1 used group activities. Patients have provided positive feedback and patient satisfaction has not declined.

Conclusion: The VIP strategy can be successfully introduced into primary care practices.

For patients with chronic disease, interdisciplinary teams have been promoted as an effective approach to care [1-5]. It is challenging to convene interdisciplinary teams in the typical primary care setting. According to the American Medical Association’s 2003 profile of medical care practices, more than 60% of physicians work in groups of 4 physicians or fewer [6]. Many of these practices lack the resources or space to hire their own social worker or dietitian and may lack access to needed disciplines in the community.

Multinational industries with dispersed workforces also face challenges in implementing teams. Such companies are increasingly relying on so-called “virtual teams” for collaboration. The teams make use of voicemail, e-mail, video conferencing, fax machines, and other tools to work together effectively without ever meeting; in fact, many industries find that the time- and money-saving aspects of virtual teaming make face-to-face meetings obsolete [7].

Applying the concept of virtual teams to primary care can allow patients and their physicians to be linked with clinicians from other disciplines who do not necessarily work in the same location or organization. We call this approach to collaborative team management the Virtual Integrated Practice, or VIP. In this paper, we will describe the VIP model and provide specific examples of VIP in action.

The Virtual Integrated Practice

The VIP project is based at Rush University Medical Center, a 700-bed tertiary care hospital located just west of downtown Chicago. Among the over 900 active medical staff members, 131 are primary care physicians working throughout the Chicago area. VIP grew out of the Geriatric Interdisciplinary Team Training program (GITT) funded by the John A. Hartford Foundation, a philanthropy with a longstanding interest in the training and development of interdisciplinary teams. GITT began in 1995 with 4 goals: to enhance partnerships between academic institutions and health care providers, to develop well-tested curricula for geriatric interdisciplinary team training, to create a cadre of well-trained professionals competent in geriatrics and interdisciplinary teamwork, and to test staff development models for practicing health professionals. Thirty sites were invited to compete for 12 one-year planning grants, and in 1995 Rush was awarded one such grant, which led to a 4-year fully funded training program. During this time, the Rush team became concerned about the long-term sustainability of traditional teamwork in an environment of cost containment. Investigators approached the Foundation with a proposal for a model of teamwork that addresses the constraints imposed by limited time, space, and reimbursement and received a subsequent grant to develop VIP.

VIP teams work together to develop explicit patient care goals in a specific clinical problem area. Unlike the usual
referral process, in which the focus is on a single patient, VIP teams develop population-based goals for patients with the target condition. For example, a team may decide to increase the number of their diabetic patients with controlled blood pressure or reduce the number of patients who are nonadherent with their medication. In order to achieve team goals, 4 strategies are used: Planned Communications, Process Standardization, Group Activities, and Patient Self-Management. These strategies were developed at Rush based on generally accepted principles of interdisciplinary team care.

**Planned Communications**
To avoid information overload, team members decide in advance what information is essential to each of them, and how and when this information should be communicated. Feedback among team members is then accomplished through the selective use of communications media. Urgent matters, or topics where there is a difference of opinion among team members, require real-time (or “synchronous”) communications such as telephone, conference calls, or instant messaging; more routine feedback such as progress reports or consultations are routed via “asynchronous” methods such as faxes, e-mails, or voice mail, which can be reviewed and responded to at the team members’ convenience. Having team members decide in advance how communication will occur reduces inappropriate interruptions by telephone calls or pages regarding matters that are not truly urgent; at the same time, physicians are assured that they will be notified promptly when their patient does have an urgent need.

**Process Standardization**
This strategy has each team analyze the process of patient care to determine each provider’s role and responsibility in delivering care that is adherent with evidence-based practice guidelines. In usual practice, a physician will decide when to initiate referrals and to whom to send the patient. In VIP, specific triggers are identified, and referrals can be initiated based on a standing order. For example, in an attempt to improve patient care for elderly persons with urinary incontinence, office nurses could be trained to ask every patient about any problems with control of urine. If the patient indicates that they have had such problems, the nurse would be empowered to collect a urine sample for analysis, order an ultrasound post-void residual urine, and refer the patient to a physical therapist for further assessment. In this way, there is a systematic, standardized team approach to the identification and evaluation of the problem. Flow sheets on the patient record are used to promote process standardization.

**Group Activities**
Team collaboration can be achieved by bringing together small groups of patients with a common diagnosis or health problem to receive direct care or education at the same time. Although this approach is not truly “virtual” since practitioners come together in the same time and place, it allows for an efficient use of team members since many patients are seen in a short time. Group medical appointments, such as those pioneered at Kaiser Health Plans [8] and elsewhere, are encouraged.

**Patient Self-Management**
Chronic diseases require patients to have more than knowledge; they must alter their behaviors to improve outcomes [9]. VIP facilitates and encourages patients to become part of the disease management process. By explicitly defining the goals for team care, the patient is made an active participant in achieving the clinical goals. VIP develops patient self-management tools such as a personal diabetic record, which allows patients to track their own outcomes such as blood pressure, hemoglobin A1c, lipids, as well as preventive interventions such as eye care, foot care, and vaccinations.

Additional details about the VIP approach can be found in a previously published paper [10].

**Pilot Study**
After developing the 4 VIP strategies, we conducted a pilot study of the VIP approach to chronic disease management in primary care. Specifically, we sought to determine whether primary care practices could modify their approach to chronic disease care using VIP and to examine the effect of VIP on patient satisfaction.

**Participants**
Four practices were selected to participate in the VIP pilot study. Intervention practices were drawn from the Rush primary care network and chosen based on their size (no more than 4 full-time physicians), stability, and the practice leaders’ willingness to participate in a demonstration project focused on chronic disease management. Practices also had to have a significant percentage of older adults and have significant numbers of patients with either type 2 diabetes, COPD, or urinary incontinence. These conditions were chosen for study because of their chronic nature and their morbidity and mortality in older adults. During the first year of the project, primary attention was given to the implementation of VIP for patients with diabetes.

The 4 practices that were selected were single-specialty practices ranging in size from solo practice to a 4-physician practice (Table 1). Dietitians, pharmacists, and social workers were recruited to collaborate with the 4 practices. The dietitians were recruited from the medical center’s outpatient dietetics department. A pharmacist affiliated with a large pharmacy chain in Chicago helped coordinate linkages to nearby pharmacies for each practice. Social workers for
Each team were recruited from the case management services of the local Area Agency on Aging and a sectarian social services organization. (One intervention site had its own full-time social worker.) Team members served voluntarily and did not receive compensation.

Four practices were approached to be control practices. They were chosen by the investigators based on prior knowledge of these practices as a result of the practices having previously served as training sites for the GITT program. All 4 practices invited agreed to participate. The practices were all single-specialty primary care groups located in the city that served a population that was roughly comparable demographically to that of the intervention practices.

Training
All staff (clinicians and nonclinicians) in the 4 intervention practices and community team members met for three 90-minute orientation and training sessions. During sessions, team members were coached on how to set a common agenda and goals for patient care and were trained in the 4 VIP strategies. Reinforcement was provided through a nurse-coach who visited each practice and worked with key staff members to develop practice-specific implementation of VIP. Providers from all 4 practices met together once a year to discuss the project.

Assessment
To assess if the intervention practices made modifications to their approach to chronic disease care by the use of VIP, 2 of the researchers (SL and CC) made site visits on a quarterly basis. At these visits, researchers met with physicians, nurses, medical assistants and administrative support staff to review progress with VIP interventions, discuss and resolve any implementation barriers or other related issues, refine or develop alternate VIP protocols or communications tools and mechanisms for the practice and collaboration, and set ongoing objectives for VIP accomplishments. Debriefing interviews were also conducted with the nurse coaches to assess adoption of the VIP strategies.

Patient satisfaction is being assessed in 2 ways. Cross-sectional surveys were handed out by office receptionists and/or research assistants to all adult patients attending intervention and control practices during a 6-week period prior to VIP training and 1 year after implementation. The survey will be administered again at 2 years after implementation. The Picker Institute survey About Your Recent Office Visit (AYROV) (National Research Corporation, OP 2.0, ©1995) is being used.

In addition, a longitudinal cohort of older adult patients with one or more of the target conditions was recruited from each practice to assess patient satisfaction with VIP care. Satisfaction is being assessed using relevant portions of the Consumer Assessment of Health Plan Survey (CAHPS). Patients had to be older than age 45 with a recorded diagnosis of either diabetes mellitus, COPD, or urinary incontinence and been seen in the practice in the preceding year. These patients were approached by mail and in person at visits and given information about the study. Informed consent was obtained from 377 patients across the 8 practices (195 intervention, 182 control). 306 of these (81.2%; 161 intervention, 145 control) completed the satisfaction telephone survey at baseline. The 70 patients that did not complete the baseline survey were disenrolled from the study for the following reasons: refused (32), maximum attempts to be reached (20), telephone problems (9), language barrier (2), death (1), and other (6). Patients in the intervention and control groups were comparable in diagnosis and educational status (Table 2). Differences in ethnicity and language were attributable to one intervention practice that had a largely Hispanic population; differences in age were chiefly attributable to the geriatric practice in the intervention arm. Patients are contacted by telephone on a quarterly basis to complete the CAHPS survey and other assessments of health and function.

Results
Implementation of the VIP strategies was varied among the 4 practices. Only one practice used all 4 VIP strategies. The others used 2 or 3. Budget cuts unrelated to the project resulted in reductions in staff at 3 practices during the early stages.
of implementation. This created enormous stress on both physicians and staff in these practices as well as resistance to change by some physicians. Observations by research staff suggest that implementation was also affected by the unique workflow, “culture,” and other stressors within each practice. For example, some physicians believed that their patients would not accept the group visit approach. Self-management tools, including contracts with patients for certain health-related behaviors, were embraced in one practice that had already made extensive use of patient education handouts and contracting. In all 4 practices, however, nurses and support staff participated in the planning and implementation process, and this helped counter some of the resistance and promoted greater openness to the new approaches.

All of the intervention practices used Process Standardization. The practice using an electronic medical record integrated patient tracking and follow-up monitoring for needed referrals within the record. Another practice created a database of all diabetic patients and targeted additional referrals and closer monitoring for those patients who were identified as being at highest clinical risk. A third practice redesigned its office work patterns to include staff and patient signage to cue both patients and providers on VIP-related processes. This practice also developed a template for staff monitoring of patient self-management activities as well as processes for staff to follow in empowering patients to be more proactive in their disease management including the use of diabetic flow sheets and care plans. The fourth created color-coded charts for all diabetic patients that would cue practice staff to generate a consultation with the dietitian. This simple methodology dramatically increased referrals for nutrition education and counseling.

Planned Communications were adopted by 3 practices. One site created a specific referral process for diabetic patients. A specially designed form was faxed to the dietitian when making a referral; this form included all of the data that the dietitians needed for consultation, including the patient’s BMI, recent lab data, and psychosocial data about family support and the patient’s readiness to change behavior. Because the physicians only wanted to know the recommended plan of care for their reinforcement of dietary changes, the dietitian’s reply form highlighted only this data and was faxed back to the physician within 24 hours of the consultation. Ongoing communication took place via fax and e-mail. Planned communications were also used with pharmacists in 2 practices. Another group created a process which eliminated a middle step by automatically sending a dietitian referral to the patient whenever their hemoglobin A1c was above 8.0.

Three of the practices made use of Patient Self-Management strategies. These strategies included a small flow chart that patients could carry in their wallet or purse, allowing them to monitor their own care, including blood pressure, hemoglobin A1c, and lipids, as well as preventive interventions such as eye care, foot care, and vaccinations. One practice developed preprinted diabetic contract forms that were used at each patient encounter to encourage goal setting, patient self-management, and utilization of team resources.

Only 1 practice used Group Activities. The other practices cited a variety of reasons for not employing group visits: limited space, time required for planning and logistics, and the perception that their patients would not care for such group encounters. The practice that made use of group visits reported that patients offered positive feedback about the model. Patients at the sites that did not use group visits were given access to group education classes by one of the VIP dietitians on a variety of health and nutrition topics.

Data collection from the 2 satisfaction surveys is still ongoing. Because VIP practices make greater use of pharmacists, dietitians, and others for patient education, there was concern that patient satisfaction might decline, especially if patients perceived a reduction in time with their physicians. Neither patients nor clinic staff are reporting this, and patients perceived a reduction in time with their physicians. Observations by research staff suggest that implementation was also affected by the unique workflow, “culture,” and other stressors within each practice. For example, some physicians believed that their patients would not accept the group visit approach. Self-management tools, including contracts with patients for certain health-related behaviors, were embraced in one practice that had already made extensive use of patient education handouts and contracting. In all 4 practices, however, nurses and support staff participated in the planning and implementation process, and this helped counter some of the resistance and promoted greater openness to the new approaches.

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<th>Table 2. Longitudinal Patient Cohorts</th>
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COPD = chronic obstructive pulmonary disease; NS = nonsignificant; SD = standard deviation.
VIRTUAL TEAMS

Discussion

Based on preliminary results from our pilot study, a chronic disease model such as VIP can be successfully introduced into primary care practices. Such an approach can increase focus on the management of chronic illness by the practices. Although a short-term intervention is unlikely to improve clinical outcomes, we anticipate an improvement in patient care processes such as adherence to practice guidelines. In time, this should result in improved clinical outcomes.

Many questions remain unanswered. Of particular concern is the impact of a VIP approach on the cost of care. We anticipate that in the short term, VIP will result in modest increases in health care costs due to increased utilization of other providers. However, we would anticipate reduced need for crisis intervention and acute care management, as both patients and providers focus on prevention of complications from chronic disease. Another portion of this study will examine utilization and health effects.

A key question still to be answered is determining which services are best provided by virtual team members as opposed to primary care providers. Our observations suggest that there can be synergy when patients receive coordinated messages about their care from both their primary care physicians and their pharmacists, nutritionists, and others.

A strength of the VIP model is that it can be readily implemented without special preconditions or practice characteristics. The VIP intervention practices did not have any special characteristics that made them well suited to structural change. In fact, for 2 of our intervention sites, intervention came at a time of high financial stress and staff turnover. Despite this, VIP was successfully adopted and implemented.

The management of chronic diseases will be a challenge to primary care practices for the foreseeable future. Innovative approaches such as VIP must continue to be tested and implemented if we are to improve outcomes for patients with chronic illness as well as reduce costs by preventing avoidable acute disease and disability.

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References


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