Quality Improvement in Diabetes Care Using Community Health Workers

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Community health centers take care of patients who are at high risk for adverse medical outcomes because of poverty, linguistic isolation, poor education, and poor health habits. Because of their population focus, health centers are positioned to implement systems-level changes affecting many patients. We report here on a successful quality improvement initiative focusing on patients with diabetes in Holyoke, Mass.

Holyoke Health Center (HHC) has two sites and serves ~ 20,000 patients, most of whom are Spanish speaking. At present, > 1,700 of the center's adult patients have diabetes, and this figure has been increasing rapidly. In 1999, HHC adopted an electronic registry to track these patients and their clinical data as part of a larger effort to implement an integrated approach to chronic disease management.[1] In 2003, community health workers (CHWs) were added to the diabetes care team to enhance the capability to engage and support patients who were not succeeding in managing their diabetes.

Interventions

The center's CHWs are patients with diabetes who have become good self-managers of their disease. The CHWs have had no previous training as medical personnel. They participate in a 3-day training using the Diabetes Education and Empowerment Curriculum developed by the Midwest Latino Research, Training, and Policy Center,[2] a 4-day training in Stanford's Chronic Disease Self-Management Training Program,[3] several sessions of training through the Outreach Worker Training Institute of Worcester, and several hours of training with the diabetes educator and nutritionist at HHC. CHWs are supervised by a nurse who meets with them every week to review caseload and patient interventions. The CHWs are members of the Holyoke community and reflect the demographic population of the community served by HHC.

In 2003, HHC began using a data registry to identify two groups of patients with diabetes who were at significantly increased risk for adverse outcomes. The first group includes all adults who have not seen their primary care provider for > 4 months. This is a simple way to identify patients who are missing appointments or otherwise disengaged from care. Each month, a list of these patients is generated and reviewed with clinical teams. Those who do not have pending appointments or who a clinician believes to be at risk are targeted by CHWs for phone outreach and, as needed, home visiting to assist them in reestablishing primary medical care.

These patients tend to fall into several general categories. Some have left HHC for a different medical provider or to have left the area entirely. Others are never found and are presumed to have moved away. The majority of patients contacted are in need of additional services to facilitate their ongoing medical care. Many have significant mental health or substance abuse problems and may require linkage to other community services to address these issues. Others need help with negotiating scheduling an appointment; for example, some patients do not know the name of their primary provider or are illiterate and innumerate. Problems with transportation, child care, and insurance coverage are also frequent barriers to care that CHWs can help patients negotiate.

The second group of patients identified for outreach includes those with poor glycemic control. The disease registry is periodically reviewed to identify patients with a recent hemoglobin A_{1c} (A1C) > 9.0%, and CHWs target them for more intensive intervention. Regardless of whether they have been seen in the health center within the previous 4 months, CHWs contact these patients to identify barriers to disease management, engage family or other community resources as needed, and assist patients in setting behavioral goals and solving problems. Typical issues include knowledge deficits related to medication use, family stressors and other social issues affecting patients' ability to manage their medical care, substance abuse and mental health issues, and other medical problems requiring attention. CHWs function as a link between patients and their primary nurse, medical provider, pharmacist, and other team members to help resolve such problems.

Outcomes

We are unable to report on the specific effects of these CHW-led interventions because many other additional services were added to HHC to support chronic disease management during the same time period. Overall, however, we noted substantial improvement in two key indicators that may partially reflect the effects of these interventions. First, the proportion of active patients with diabetes (i.e., those who had been seen within the previous 3 years but who had not had an appointment within the previous year) improved considerably. In January 2003, 28.2% of all patients with diabetes registered at HHC had not been seen for > 1 year. By January 2006, 3 years after HHC began using the disease registry to target patients for CHW interventions, this figure had decreased to 6.5%.

During the same time period, we also observed important improvements in glycemic control. In January 2003, the average A1C for all patients with diabetes at HHC was 8.4%, and the proportion of patients with A1C levels > 10% was 18.2%. By January 2006, the average A1C had decreased to 7.5%, and the proportion with A1C levels > 10% had declined to 10.8%.

Implications for Practice

The quality improvement initiatives described above were implemented at HHC as part of a larger effort to make institutional changes to implement the Chronic Care Model[4,5] and additional services to support patient self-management of chronic diseases.[6] Two key aspects of this program have been the adoption of an electronic registry and development of a CHW role in care.

The disease registry allows for a population focus on all of our patients with diabetes and provides a means to periodically identify those patients who are not succeeding in managing their illness and need more focused interventions. In the traditional medical model, interventions are initiated as a result of patient-provider interaction and tend to ignore patients who are not actively seeking services. In contrast, we are now able to identify and intervene with patients who have fallen out of regular care and are at particularly high risk for adverse outcomes.

CHWs have played an integral part in our efforts to improve care for patients with diabetes. In many settings, CHWs function principally as peer health educators and may recruit community members for screening tests or other services. In contrast, this project has demonstrated the utility of integrating CHWs into the primary care team, both to support ongoing medical care and to assist patients in overcoming barriers to adherence to their medical plan.

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Editor's comments

Liebman and Heffernan of the HHC describe an interesting model for improving the care of low-income patients with diabetes. Their program combines two key elements: an electronic patient registry and trained CHWs that together help to identify and engage patients who have been lost to routine follow-up or who manifest poor glycemic control. CHWs contact such patients, help them overcome barriers to care, and provide additional self-care training. These elements appear to have contributed, at least in part, to the improvements in glycemic control seen at HHC from 2003 to 2006.

A Cochrane review of 43 trials on the use of lay health workers for a variety of health issues found that they were generally effective, although they did not identify studies specifically on diabetes.[1] A recent trial found that a lay health worker intervention for Latinos with diabetes improved knowledge and glycemic control at 6 months.

One key aspect of such interventions is whether they are replicable and scalable. What training and supervision is required for the workers? How long can they be retained? How many patients can one lay worker or CHW be expected to assist? Are there sufficient numbers of potential lay health workers so that the program can be scaled up to serve all the patients in a particular health center or community?

We need further research to more rigorously measure the additional benefits of lay health worker–based programs compared with other models. If effective, we then need more work to test models for efficiently spreading this type of intervention.

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