How Can Public Health Systems Best Support People with Diabetes?

Findings from the UCSF IDEALL Study

A. Overview

A new study published in *Diabetes Care* finds a patient-centered approach to diabetes management using health information technology much more effective than traditional approaches for underserved populations with communication barriers like limited literacy and limited English proficiency (1). This is one of four recent articles highlighting work from the UCSF Center for Vulnerable Populations at San Francisco General Hospital which determined that automated telephone support for diabetes management improves quality of care in public "safety-net" settings; reduces patients' symptom burden associated with diabetes; and is cost-effective (1-4). The study, directed by Dean Schillinger MD (UCSF Professor of Medicine, Director of the Center for Vulnerable Populations, and Chief of the California Diabetes Prevention and Control Program), shows that this innovation, a product of the *Improving Diabetes Efforts across Language and Literacy (IDEALL)* Project, holds promise as a means to reduce diabetes-related health disparities for vulnerable populations.

B. Background and Importance

Diabetes afflicts over 3 million Californians, meaning that 1 out of 10 adult Californians has diabetes. From 1998 to 2007, the prevalence of diagnosed diabetes in California rose from 5.5 to 7.6 percent, representing a 38 percent increase in one decade (5). Diabetes is a chronic illness that, if poorly controlled, significantly impairs quality of life and leads to premature death. Diabetes costs California over $24.5 billion in health care and related costs. Trends throughout the US are similar.

C. Diabetes and Underserved Populations

There are striking differences in diabetes rates by ethnicity and education level. Diabetes is much more common among those with less than a ninth-grade education (14 percent) compared with those with a college degree or higher (5 percent) (6). Those with less education are much more likely to have limited literacy skills (over one-third have limited literacy), which makes diabetes management in the home more challenging. Diabetes is also more common among ethnic minorities. Among Californians ages 50-64 years, 8 percent of non-Latino Whites have diagnosed diabetes, compared to 22 percent of Latinos, 18 percent of African Americans, 14 percent of American Indian/Alaskan Natives, and 13 percent of Asians (6). The rise of diabetes, coupled with the diverse representation of ethnicities and education levels within California, creates an urgent need for linguistically appropriate and cost-effective diabetes management tools accessible to individuals with limited literacy.

Diabetes prevalence is higher among those with a family income below the federal poverty level (6) and who lack health insurance. More than 205,000 Californians with diabetes do not have insurance, and another 245,000 have Medi-Cal (California's Medicaid program) (7). Many uninsured and Medi-Cal recipients receive their care at public hospitals which play a critical role in diabetes management, yet often lack vital resources for patient education, support, motivation and surveillance. Proper control and treatment of diabetes is critical to prevent serious complications—such as blindness, kidney failure, heart attack and amputations. Uninterrupted health insurance coverage, which provides access to health services, and a regular health care provider, who provides a connection to sources of health care, are key factors affecting whether people receive recommended diabetes-specific care. Diabetes requires patients to follow complex and expensive care regimens, communicate with providers, and manage the disease outside of the clinical environment (8-12).

D. The UCSF Center for Vulnerable Populations (CVP) at San Francisco General Hospital

The CVP is a pioneering center focused on improving health care for vulnerable populations, including those who lack health insurance, have limited English proficiency and limited literacy, and who face adverse social conditions like poverty and social isolation. A key focus of the CVP is to conduct and disseminate health communication and translational research like the IDEALL Project. This study compared alternate forms of diabetes support for an ethnically and socioeconomically diverse population in a large safety net clinic system. The project stemmed from a strategic initiative to improve chronic disease care in the Community Health Network of San Francisco, the integrated delivery system of the San Francisco Department of Public Health. The study was funded by the Agency for Health Research and Quality (AHRQ), the Commonwealth Fund, the California Endowment, and the California Healthcare Foundation.

E. The IDEALL Project Design

The IDEALL Study was a 9-month comparative effectiveness trial of two diabetes self-management support interventions compared to usual care, to determine their impact on a variety of diabetes outcomes, ranging from communication with health care providers, self-care behaviors, functional abilities, and patient safety. Over half of participants had limited English proficiency, over half had limited literacy, and half were uninsured.

Participants were randomly assigned to one of the three arms listed below:

1) **The automated telephone self-management support system (ATSM)** was developed by CVP researchers who tailored this technology to the literacy and language needs for the target population. The ATSM system provided weekly calls in patients' native language (English, Spanish or Cantonese), regarding a number of issues including self-care (e.g., symptoms, taking medication as prescribed, diet, physical activity, self-monitoring of blood sugar, and smoking), psychological issues (e.g., coping and depressive symptoms), and referrals for preventive services (e.g., eye and foot care). Depending on their automated responses during the call, the patients then received automated health education messages and a 'live' telephone call back from a bilingual nurse care manager. The care manager helped patients problem-solve around disease management issues with a focus on collaborative goal setting and action plans. Patients randomized to ATSM also continued to receive their usual care with their primary care physician.

2) **The group medical visit support system (GMV)** organized language specific monthly groups (English, Spanish or Cantonese) for nine months involving 6-10 patients per group. Each group was led by both a physician and health educator who spoke the same language as the patients. The group model provided support, education, and diabetes self-management skill-building with a focus on goal setting and action plans. Patients randomized to GMV also continued to receive their usual care with their primary care physician.

3) Patients randomized to the **usual care** arm visited their primary care physicians for their diabetes care and received diabetes-management referrals and usual access to diabetes management resources (nutrition information, exercise resources, etc.). In comparison to the other arms, patients randomized to usual care did not receive an additional intervention to improve their diabetes management.

F. Main Findings:

Patients randomized to the ATSM arm had the following outcomes (1):

- Higher **levels of participation compared to** group medical visits**, especially among those with limited English proficiency and limited literacy** (2). Over 90% of participants actively engaged with the ATSM system
- **Better communication with providers** compared to usual care and group medical visits
- Significant **increases in diabetes-related behavior, including physical activity** (2 more hours per week related to physical activity) compared to usual care and group medical visits

- Greater improvements in **functional status** (degree to which an individual can carry out his or her daily activities) compared to usual care and group medical visits
- **Fewer days spent in bed due** to illness compared to usual care and group medical visits, reducing the burden of the disease on patient and family caregivers. Participants in ATSM, on average, spent 2 fewer sick days per month in bed due to diabetes compared to usual care and group medical visits participants
- The ATSM technology also promoted **patient safety through its surveillance function**(4):
    - The ATSM system identified and mitigated one or more unsafe events (e.g. hypoglycemia, medication problems, and urgent symptoms) in the majority of participants.
    - Primary care physicians were unaware of the occurrence of these events, and most of these events were deemed preventable and ameliorable.
- ATSM was found to be as cost-effective as other widely accepted diabetes interventions (e.g. cholesterol or glucose control and screening eye exams) targeted at preventing complications of diabetes. The investigators also calculated cost-effectiveness would further increase in a scaled-up ATSM program that served more people with diabetes (3).

G. Next Steps: Scaling It Up

After being alerted to these positive results, the San Francisco Health Plan (SFHP), an innovative managed care MediCal program that provides healthcare coverage for over 50,000 multi-lingual San Francisco residents, contacted CVP researchers about implementing the ATSM system with their members who have diabetes. With AHRQ funding, CVP investigators are currently partnering with SFHP to further demonstrate the ATSM systems' "real-world" applicability. AHRQ is also highlighting ATSM as a national health information technology innovation in their Health Care Innovations Exchange website, http://www.innovations.ahrq.gov/content.aspx?id=1863.

The current project, entitled "SMART-Steps" (Self-Management Automated and Real-Time Telephonic Support), scheduled to begin in May 2009, will evaluate a scaled-up versions of the ATSM system on both patient-centered and clinical outcomes. In addition to generating local benefits, the SMART-Steps Program is expected to have far-reaching implications for priority populations disproportionately affected by chronic disease and faced with formidable communication barriers that make disease management especially challenging.

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