Abstract

In the words of Dr. Elliott Joslin, “The person with diabetes who knows the most lives the longest.” Despite the technological advances in medicine and health coupled with the successful efforts of the American Diabetes Association and numerous other organizations in raising public awareness of the HbA1c blood test, most people with diabetes still cannot name the test or state their current HbA1c level or target goals.

The amount of patient information needed to manage diabetes on a daily basis is often overwhelming. Providing daily diabetes management tips in a calendar format allows patients to digest self-management techniques one day at a time without causing information overload.

In conjunction with the Delmarva Foundation for Medical Care, the peer review organization that conducts quality improvement projects for Medicare and Medicaid in Maryland and the District of Columbia, I set forth to develop a unique information and education resource for Medicare recipients. We first distributed the daily, spiral-bound diabetes calendar logbook in 1997, after conducting focus groups and gathering feedback from Medicare recipients. From 1998–2001, 964 patients with diabetes received the calendars yearly. The initial survey conducted among calendar recipients after the first year of use revealed that 83% found the calendar helpful; 70% liked the reminders, advice, and encouragement; 83% learned about the importance of the HbA1c test; and 92% better understood the importance of a foot exam. Patients attributed the benefits of the calendar to its permanence, content, and inspirational messages.1

Our experience has shown that a daily calendar format that includes concise daily tips, information notes, and inspirational messages about diabetes may be more beneficial to patients than traditional educational materials designed for one-time use. This article presents some of the barriers to delivering optimal self-management training materials and reviews the ongoing process of developing this tool.

What Do Patients Know?

In the United States, it is estimated that the costs of diabetes total more than $100 billion each year.2 Despite technological and pharmacological advances, the burden of diabetes is increasing. The successful efforts of the American Diabetes Association (ADA) and numerous other national organizations have raised public awareness of the role of HbA1c in the development of diabetes-related complications. Yet most patients with the disease have never heard of the term HbA1c and do not know their current HbA1c level or target goals.3,4

Innovative approaches to helping patients understand and reach their diabetes treatment goals are needed.

Do Providers Need Help?

Seventy percent of patients with diabetes spend 15 min or less with their health care provider, and >90% of office visits for patients with diabetes are delivered by health care providers without specialty training in diabetes.5 The great challenge for health care providers is determining how best to deliver care to achieve the most effective behavior changes to meet individual patients’ needs. Given that health care professionals have only a few minutes to spend with their patients, it is critical that they employ innovative techniques that can help to ensure the best possible behavior-change outcomes.

Numerous studies6–15 underscore
the opportunities that health care providers miss to offer preventive diabetes counseling. Additionally, conventional methods of communicating health messages to patients via brochures, videos, and booklets are often ineffective.\textsuperscript{16–23} No standardized educational materials have demonstrated efficacy in improving diabetes outcomes. Conventional methods of communicating health messages to patients have often been ineffective. However, successful interventions, such as tailored messages, incentives, postcards, and telephoned reminders, have been developed and shown to enhance compliance with health screening recommendations.\textsuperscript{18–22} These interventions are often impractical, and many have been costly or labor-intensive to implement.

As health care professionals have less time to see more patients and preventive services are almost nonexistent in most practices, creative solutions are required to address the realities of modern health care delivery.

**Self-Management Training for Life**

To say that efforts to prevent complications in diabetes are cost-effective is an extreme understatement. Yet few health care systems in the United States truly embrace the concept of comprehensive, preventive diabetes care for life. In a technical review of diabetes self-management education for the ADA,\textsuperscript{24} Clement noted that few educational programs extended even to 1 year. Similar studies evaluating the impact of interventions aimed at providing patients with diabetes with components of care including nutrition, self-management training, and exercise programs, have been limited to an intervention period of 6 months or less.\textsuperscript{25–27}

Recent studies have demonstrated that diet and exercise are not only cornerstones of therapy for the treatment of type 2 diabetes, but also are associated with the prevention of diabetes.\textsuperscript{28} Unlike chronic diseases such as hypertension and coronary disease, for which medications-for-life is the rule, the main therapies for diabetes—nutrition therapy, exercise, and diabetes education—have never been viewed as a lifelong medical need. The recently published \textit{Healthy People 2010} reported that only half of all Americans with diabetes have ever received diabetes education.

**Mission: Sustaining the Message**

The goal of this project was to develop a tool that would help people with diabetes meet their daily challenges, 2) fill a need for educational materials that could be used daily rather than viewed once and then either thrown out or placed away from daily view, and 3) offer motivation, hope, encouragement, and empowerment to people with diabetes.

One reason a daily-calendar format was selected to pilot was the fact that calendars are generally kept and used daily throughout a year. It was also believed that a calendar model might be a unique venue for providing diabetes self-management tips in bite-sized doses on a daily basis. Patients often find the amount of knowledge needed to adequately manage diabetes to be overwhelming. Supplying daily tips in this nonthreatening format might allow patients to digest self-management techniques one day at a time.

The goal was to make the calendar generally useful to a wide audience. We partnered with Medicare because of its interest in having an effect on diabetes care provided to a broad, aging population including urban and minority populations with diabetes.

**Focus Group Testing**

In 1998, we provided Medicare recipients with mock-up calendars in a tear-off format (Figure 1) and then conducted one rural and three urban focus groups to evaluate the calendar from Medicare beneficiaries' perspective. Focus group participants were asked for their feedback on a variety of specific issues, such as most appealing colors, type size, and amount of information per page, as well as their overall impression of the usefulness of

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**Diabetes requires a slow and steady course. There are no shortcuts.**

Thomas Edison made more than 3000 attempts at the lightbulb before he succeeded. Expect diabetes to be the greatest challenge of your life and know that you can meet this challenge.

*Thomas Edison had diabetes and made his first public demonstration of the lightbulb on New Year's Eve in 1879.*

1998 December Thursday 31

**Figure 1.** The first calendar, published in 1998, was in a page-a-day tear-off format.
a calendar versus a brochure or book. The participants strongly supported the idea of a daily informational tool, but they also wanted the calendars to be more useful and made suggestions that were incorporated into the design of subsequent calendars (Figure 2). Four major changes were made after the initial focus group testing: 1) a spiral binding was added to make the calendar more permanent; 2) extra room was provided on each page for users to write in daily notes on their health; 3) calendars were made larger and more colorful; and 4) the text of the calendar was simplified.

Sources of Information
The calendars included not only diabetes education information, but also information on a variety of resources, historical notes, and fun facts. Sources for the diabetes-specific content were limited to widely accepted and published materials available through the ADA’s annual Clinical Practice Recommendations, the National Diabetes Education Program, the National Cholesterol Education Program, Healthy People 2000, the National Institutes of Health Consensus Statement on Physical Activity and Cardiovascular Health, and the Departments of Agriculture and Health and Human Services’ Dietary Guidelines for Americans. The educational messages were tested among patients for their appropriateness.

Distribution and Utilization
Calendars were mailed to 964 Medicare recipients annually from 1998 to 2001. They were included in an interventional information packet sent to Maryland Medicare beneficiaries whose primary care providers volunteered to participate in a quality improvement project with the Delmarva Foundation, the peer review organization conducting quality improvement projects for Medicare and Medicaid recipients in Maryland and the District of Columbia. A printed survey was included in the calendar asking questions about its usefulness in recipients’ daily life.

Feedback
The initial survey of 100 recipients (>10% of the population who received the calendars) conducted after the first year of use revealed that 83% of respondents found the calendar helpful; 70% liked the reminders, advice, and encouragement; 83% learned about the importance of the HbA1c test; and 92% gained a better understanding of the importance of a foot exam. The responses were overwhelmingly positive, with several recipients sending additional letters of support. One recipient stated that the calendar was second only to her Bible among important books, while others independently stated that it had become their Bible for diabetes care.

The survey and comments also yielded feedback on refinements recipients wanted, including a place to record blood glucose readings, more nutritional advice, practical tips for managing diabetes, patient testimonials, exercise tips for the sedentary, and more information about scientific advances. In response to this feedback, a weekly recipe page, daily grids for recording blood glucose results, and new content to meet readers’ needs and interests were added to subsequent calendars.

Theory Behind the Content
The need for a more effective strategy
Despite the critical role of diet and exercise in diabetes outcomes, there have been few effective strategies for developing printed materials that help patients with diabetes become more successful in achieving their diet and exercise goals. Health care professionals speak to patients about the potential complications of diabetes. But too often, communication breaks down when providers give patients general advice, such as “Start a diet,” rather than providing patients with information that can help them, if they are ready and motivated, to take concrete steps to improve their health status.

Although the calendar is designed to be used in conjunction with the guidelines set by recipients’ own health care professionals, it offers specific steps, recipes, and exercise and nutrition tips each day. For example, provided that a patient’s care provider is in agreement with initiation of an exercise regimen, the calendar delineates specific chair exercises and offers information about how to begin an exercise regimen if one has previously been sedentary.

Because of the often silent nature of diabetes, patients sometimes have difficulty accepting that it is a serious disease and making recommended lifestyle changes. Therefore, the calendar also encourages patients who may...
Behavior-change theories
During the content-development process, we evaluated the current theories of behavior change to better understand how we could develop a generalized tool such as a calendar that could lead to change in different types of patients. Recent theories of behavior change emphasize the centrality of the patient in diabetes management. This is in contrast to the prescriptive approach of the past, through which a health care professional dictated the terms of the treatment.

Patients are usually expected to take ownership of the aspects of treatment they can control. Typically, patients act as an active filter for numerous types of written information, and health care professionals assume, not always correctly, that patients are ready and motivated to evaluate and incorporate all of this information. Patients frequently respond emotionally to medical information.

Secrets to success: readiness for change
Many state-of-the-art diabetes educational tools provide information on diabetes, medication, diet, and exercise. Pertinent information is presented to patients in hopes of stimulating changes in their behavior and integration of new skills into their daily life. This approach reasons that patients will sort and use the information provided based on its relevance to their own situations.

For example, a strategy for patients who are resistant to change may include raising doubts about the correctness of their perception of the risks and consequences of continuing their current behavior. Patients who are ready to change, however, may only need to be given a blueprint for action. Because patients may be ready to change one behavior but not another, developing strategies for encouraging behavior change is often challenging.

One approach to behavioral change, known as the stages of change method, is based on the transtheoretical model of behavioral change. In this model, acquisition of health-enhancing behaviors, such as changing diet and increasing exercise, is seen as a progression of patient readiness to change through five distinct stages: precontemplative, contemplative, preparation, action, and maintenance.

N oncompliance or N onexistent Systems for Understanding Diabetes?
The overwhelming challenge for diabetes care professionals has been to determine how best to deliver effective medical care and elicit changes that improve health and well-being. Health care professionals speak to patients about the potential complications of diabetes, but often they do not provide their patients with the objective measures that help patients track their own progress. Larmé and Pugh reported that among primary care physicians, diabetes was rated more difficult to treat than five other chronic diseases: hypertension, angina, congestive heart failure, arthritis, and hyperlipidemia.

Despite providers' complaints that patients are "noncompliant," often it is the provider who may not have the resources to teach and optimally deliver the necessary diabetes self-management training. The limited educational resources available to busy practitioners often limit the ability of primary care providers to optimize the delivery of preventive services and care.

Prevention is the Cure
We have the scientific know-how and data demonstrating our ability to reduce the rising rates of diabetes and its devastating complications. Yet, the current health care system in the United States provides a paucity of the preventive diabetes resources that are truly the lifelines for those with or at risk for this disease. Too often, both providers and patients are weighed down by conundrums posed by insurers that limit self-management resources and reimbursement for the delivery of a team approach to diabetes.

The basis of health care should be about preventing disease and providing people with the tools and skills to remain optimally healthy. In recent years in the United States, we have spent 40 cents of each dollar on hospitalization, yet only 3 cents on disease control and prevention and less than half of 1 cent on health education.

As we develop a strategic health plan for the 21st century, the critical research that identifies the genetic, physiological, and environmental determinants of disease must be accompanied by a greater emphasis on how these scientific advances can best be translated into cost-effective and practical steps that patients can take to improve their health. We must not only ensure that patients receive optimal medical care for an illness when it strikes, but also that they have the tools they need to understand their own important role in setting and achieving their health goals.

References
Acknowledgment: It Takes a Village

The Day-By-Day Diabetes Calendar has been a joint effort of many people and organizations that have aided in the development of powerful educational messages and tools to help push the diabetes community beyond patient empowerment and into personal health and vitality. When I first started working on modern tools for diabetes a decade ago, I found very few materials with the permanence and enthusiasm I wanted my patients and family members with diabetes to use.

I also heard over and over again from my colleagues that diabetes was a disease of noncompliance, and I just did not believe that. As I began to ask my patients and family members with diabetes about the barriers and obstacles they face, I found that sometimes it was simply the disease. Other times, it was the health care providers who did not understand the complexities and realities of living with diabetes. Even today, I learn more from patients about what it is really like to have diabetes than from any lecture, course, or book I have read on the subject.

I have focused my research on the importance and outcome benefits of the team approach to diabetes. Developing this calendar has taken a team similar to that needed for diabetes care. And also like diabetes, this project has encountered numerous setbacks that have paved the way for comebacks.

The original calendar team included my husband Larry Hochberger, who was instrumental in finding role models with diabetes, and my friend and endocrinology colleague Jacqueline Salas-Spiegel, who was a key writer for the first calendar. Karen Dawn, RN, CDE, has been the vital life force working on the calendar for the past 2 years.

After I had received rejection letters too numerous to count from nearly every diabetes organization and book and calendar publisher, Tom Masterson, MD, of International Medical Publishers, understood my vision and worked tirelessly on new designs and revisions based on feedback from people with diabetes and from the Delmarva Foundation. International Medical Publishers continues to donate copies of the calendar to the Delmarva Foundation in return for scientific feedback from people with diabetes. It also donates copies to nonprofit groups and to individuals in need of the calendar but without the means to pay for it.

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