

goal. The goal is good physical and mental health, which is likely to be fulfilled by teamwork, achieving reasonably tight glycemic control and total support.

We strongly agree with the authors' belief that "there is a need for new and innovative approaches to patient motivation in achieving healthful behaviors." We propose a format in which a weekly outpatient 4-day program is provided by a team of diabetologist, educator, dietitian, psychiatric nurse, and podiatrist (2). The program offers minimal didactic lectures and maximal individualized education plus diabetes monitoring, control, and treatment adjustments (2). The effect of this program on long-term metabolic control ( $HbA_{1c}$ ), cost of care, frequency of acute complications, and quality of life is under study.

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#### WHAT IS EDUCATION?

In response to the article about diabetic patient education by Bloomgarden et al. (1), I would like to make several observations. First, what is education? It is well known that the simple acquisition of information, if not applicable to the person's individual situation, will not cause a behavioral change. Most educators, including myself, would not consider the patient educated unless he/she would be able to apply the learning to his/her life-style and change behavior. In other words, even a perfect score on a posttest does not equal education. I therefore contest that the primary premise of this study, which assumes that a rise in score equals education, is false.

Second, I see no evidence that the patients were instructed in insulin dosage adjustment. I suggest that an intricate part of any appropriate diabetes education program that hopes to impact on metabolic status must include the ability to test blood sugars and respond to them by adjusting insulin dose.

Third, included in any educational program is the capacity of the person to learn and his/her previous experience with education. I would suggest that perhaps a population entirely of Blacks and Hispanics from a metropolitan area may not give a clear view of educational response in all people.

I believe that the standards that have recently been established by the American Diabetes Association are designed to avoid the pitfalls that it appears this group has fallen into, i.e., assuming that improvement on a test score equals education. True education equals behavioral change.

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#### DIABETIC PATIENT INFORMATION

We applaud the appearance of research related to the efficacy of diabetes patient education in *Diabetes Care*. We feel this is a demonstration of the American Diabetes Association's commitment to the furtherance of this timely dialogue, and we hope others will be encouraged to document potential benefits of patient education as a relevant factor affecting the patient's well-being and medical-cost savings.

However, we take exception to the article on diabetic patient education by Bloomgarden et al. (1). The premise for the study was based on an alleged "lack of scientific process" in previous efficacy studies that have been cited by proponents of implementation of national standards and third-party reimbursement. We suggest that this study also falls short of meeting those rigid scientific criteria. Our principle concerns are twofold: 1) drawing 1987 conclusions regarding efficacy based on 1980-1982 data and 2) failure to use the most timely accepted educational process. We are also concerned that the prominent position of this particular research study as a lead "Original Article" may add an additional bias regarding its perceived reliability and appropriateness. Indeed, its prominence in *Diabetes Care* will provide much ammunition to the insurance carriers who have historically opposed reimbursement for patient education and have used any piece of research that acknowledges the correctness of their position in this historical dialogue.

One of the most obvious shortcomings of the study is the use of data collected between 1980 and 1982 to draw 1987 conclusions. Medical therapeutics practiced in diabetes management during the early part of this decade fell short of today's more sophisticated therapeutic regimens of split-mixed doses of insulin, frequent blood glucose monitoring, use of insulin algorithms, use of second-generation oral hypoglycemics, more frequent use of human or purified insulins, more sophisticated nutritional recommendations, and implementation of these therapeutics through a team approach that places each person with diabetes at the center of the team intervention. Experts agree that increased knowledge and good compliance without an adequate treatment program may result in poor outcome with regard to improvement of metabolic status.

We must also take exception to the assumption by Bloomgarden et al. that what was offered at their facility resembled "traditional" diabetes educational programs, thus negating the need for "special educational programs" as defined by the National Standards for Diabetes Patient Education Programs. Those of us who have practiced in community hospitals struggling to keep ahead of cost-containment practices know that the resources available at the Mt. Sinai facility are not what is generally available to our diabetic clientele, i.e., teaching-hospital clinics that permit continuous follow-up and communication between patient and health-care team at modest cost. In some cases, what was available was much more sophisticated, but in most cases, resources for proper diabetes care have been sorely lacking.

In particular, we think it was inappropriate to suggest that in 1987 we should be making decisions regarding the metabolic and cost efficacies of patient education based on criteria of medical and educational interventions that existed in the 1980-1982 period. At that time there was hardly any access to blood glucose monitoring. Accordingly, there was not such aggressive intervention with regard to variable insulin dosing, mixing, splitting, and use of more purified, less antigenic insulins. Based on those earlier therapeutics, it is not appropriate to expect improved metabolic control even in a more motivated, highly educated clientele.

Patient education by definition means providing the knowledge and skills necessary to improve health and the development of supportive attitudes that reinforce health-sustaining behavior. Inherent in this process is assessment of the level of skill, knowledge, and motivation to learn. The effectiveness of patient education depends on the program quality. If an assessment of readiness to learn had been included by the authors, they probably would have discovered that their population group may have had many socioeconomic factors that interfered with their willingness to learn and application of what they learned; one of the greatest issues being: How does this population value health and intervention by the medical community? Beyond these basic issues, our knowledge of good instructional technique (the basis of which appears in the national stan-

dards) was only being discovered and discussed at educational symposiums and consensus forums in the earlier part of this decade. Many basic standards required for program certification appear to be missing from the Mt. Sinai study. Whereas a form of knowledge and skill assessment was done, individual readiness to learn appears not to have been a component. Psychosocial issues were not explored. Were community resources involved? Teaching process, including the use of the most appropriate teaching materials to the patient population involved, was not evaluated.

One of the pertinent issues that might directly affect the outcome of the measurement of metabolic improvement involves the fact that these minimal educational interventions occurred over such an extended period. Measurements of metabolic improvement were apparently taken during the instruction period. The question must be raised: Can improvement in fasting blood glucose and hemoglobin A<sub>1c</sub> be expected over a 12- to 18-month period in which there is limited educational process occurring at a snail's pace? Thus, measurements of metabolic improvement were taken when education was incomplete, with little or no opportunity for feedback or evaluation of teaching-process effectiveness.

Finally, we take exception to the suggestion that people proposing patient education programs are suggesting that education alone will cause changes in metabolic status. Those of us engaged in patient education wholeheartedly endorse the team concept of management with the patient as the central component of the team. It is folly to suggest good results in diabetes control based only on educational intervention, just as it is foolish to suggest that patients can "pick up" the necessary self-management skills through routine visits to their doctor's office or clinic.

In the 7 yr since this study was completed, there have been many improvements and positive outcomes in diabetes education. Much of this knowledge and its application efficacy has not seen the "light of day" in the professional journals. We hope that the appearance of this study will stimulate investigators who have collected data in a responsible and timely manner and who have used the most innovative and demonstrated successful educational techniques to publish their work and to help demonstrate the many positive aspects of a good patient education program. Our combined goal in furthering access to quality patient education must continue to be to define a high-quality service (as defined by the national standards), prove its efficacies, and work for its recognition as a reimbursable item in pursuit of greater health and cost efficiencies in medical care.

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## AUTHORS' REPLY

In regard to our article on diabetic patient education (1), Anderson raises the question: "What is diabetes patient education?" and answers with a definition that is sufficiently broad to encompass much of what constitutes good patient care for any individual with a long-term illness. This is a crucial distinction that has not been adequately addressed by its advocates. Anderson further demonstrates this conceptual failing by describing the patients of the Mount Sinai Diabetes Clinic as "a group of patients already receiving patient education as a part of care." Their interaction with treating physicians and nurses is "individualized, one-on-one patient education." With such a baseline, he states, the negative results of our study of the effect of an education intervention "are hardly surprising." We do not disagree but draw a different conclusion.

Hunt et al., of the Capitol Association of Diabetes Educators, raise as their main point what is in essence a similar issue, although stated more aggressively. Such elements of therapy as "split-mixed . . . insulin, . . . blood glucose monitoring, insulin" are presented as reasons that a study of patient education carried out 5 yr ago is today irrelevant. We are forced to conclude that they consider these therapeutic modalities to be among the responsibilities of the diabetic patient educator.

Hunt et al. comment several times that diabetes education leads to "cost savings" and must be "reimbursable," while denying "that education, in and of itself, will make changes in metabolic status." Again, our basic point. The role of our randomized, controlled clinical trial was precisely to determine the effects of education "in and of itself." We were unable to demonstrate any metabolic or clinical benefits that might ultimately lead to cost savings.

Brackenridge offers an even more strongly worded critique of our article, comparing our efforts to those of a hypothetical pediatrician practicing brain surgery. Without wishing to offend any pediatricians, we are saddened at such a characterization of our intervention, which involved physicians, nutritionists, and nurse educators with extensive experience in the treatment of diabetes. Our study of diabetic patient education was

initiated to move from the realm of diatribe to that of scientific investigation.

Colette addresses three comments to our study. First, the point is made that "acquisition of information" without "behavioral change" does not constitute education. Although we agree in some ways and indeed set out with the goal of determining the efficacy of education, we object that such an argument could be used to state that any intervention that did not lead to objective improvement in patient status was not really education. Clearly, such a circular approach would allow the proponent of education to state that any negative study was, by virtue of being negative, not a fair test.

Second, Colette states that any "diabetes education program that hopes to impact on metabolic status" must include instruction in self-monitoring of blood glucose and insulin dose adjustment. This may or may not be the case. The dividing line between education and overall treatment of the patient, however, becomes vanishingly small when an "appropriate diabetes education program" must include these modalities, which are clearly therapeutic endeavors. We agree with Colette that similar studies in other populations would be of interest.

Aboutzick and O'Connor raise similar thoughts and appear to equate education with "teamwork achieving reasonably tight glycemic control and total support," with the team composed of a "diabetologist, educator, dietitian, psychiatric nurse, and podiatrist," involved in a program that "offers minimal didactic lectures and maximal individualized education plus diabetes monitoring, control, and treatment adjustments." In light of this, it is remarkable that they criticize our study as one with a "controlled intervention" at the "time of a second uncontrolled intervention (change in clinic procedures)." Furthermore, the change in clinic procedures were those necessary to assemble the data needed to determine the efficacy, or lack thereof, of the primary intervention. A true randomized controlled study, with adequate concurrent observation of both intervention and control subjects, is necessary to ascertain the effectiveness of any medical intervention.

Good patient care must not be equated with patient education. The former is our goal. The latter may or may not be an effective means to that end. We strongly support ongoing efforts to clarify the role of patient education in the management of diabetes, but we feel that the medical community must reserve judgment about its true efficacy.

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