

# Integrative Health Coaching for Patients With Type 2 Diabetes

## A Randomized Clinical Trial

### Purpose

The purpose of this study was to evaluate the effectiveness of integrative health (IH) coaching on psychosocial factors, behavior change, and glycemic control in patients with type 2 diabetes.

### Methods

Fifty-six patients with type 2 diabetes were randomized to either 6 months of IH coaching or usual care (control group). Coaching was conducted by telephone for fourteen 30-minute sessions. Patients were guided in creating an individualized vision of health, and goals were self-chosen to align with personal values. The coaching agenda, discussion topics, and goals were those of the patient, not the provider. Preintervention and postintervention assessments measured medication adherence, exercise frequency, patient engagement, psychosocial variables, and A1C.

### Results

Perceived barriers to medication adherence decreased, while patient activation, perceived social support, and benefit finding all increased in the IH coaching group compared with those in the control group. Improvements in the coaching group alone were also observed for self-reported adherence, exercise frequency, stress, and perceived health status. Coaching participants with elevated baseline A1C ( $\geq 7\%$ ) significantly reduced their A1C.

R. Q. Wolever, PhD

M. Dreusicke, BS

J. Fikkan, PhD

T. V. Hawkins, BA

S. Yeung, BS

J. Wakefield, MA, LPC

L. Duda, MSW, CPCC

P. Flowers, MSPH

C. Cook, PharmD, PhD

E. Skinner, PharmD, RPh

From the Duke Integrative Medicine, Duke University Medical Center, Durham, North Carolina (Dr Wolever, Mr Dreusicke, Dr Fikkan, Ms Hawkins, Ms Yeung, Ms Wakefield, Ms Duda); Health Management Innovations, GlaxoSmithKline, Research Triangle Park, North Carolina (Ms Flowers, Dr Cook, Dr Skinner).

Correspondence to Ruth Q. Wolever, PhD, DUMC Box 102904, Durham, NC 27710 (ruth.wolever@duke.edu).

*Acknowledgments:* The authors gratefully acknowledge Justin Meunier, BS, for assistance compiling participant education materials; Daniel Webber, MS, for paper editing; Jinhee Park, MS, MA, for assistance with study methodology; and Duke Prospective Health for recruitment support. The study was funded by GlaxoSmithKline (GSK). Flowers, Cook, and Skinner are employed by GSK, the company that funded the research. However, academic freedom was ensured contractually, and no conflicts of interest existed.

DOI: 10.1177/0145721710371523

© 2010 The Author(s)

## Conclusions

A coaching intervention focused on patients' values and sense of purpose may provide added benefit to traditional diabetes education programs. Fundamentals of IH coaching may be applied by diabetes educators to improve patient self-efficacy, accountability, and clinical outcomes.

.....

**T**he health professional's role in managing patients with type 2 diabetes is evolving toward personalized treatment strategies, with recognition of the importance of patient preferences, readiness to change, and psychosocial variables. Patient education is critical; however, education-based interventions are by themselves insufficient.<sup>1</sup> Diabetes educators in particular may find themselves frustrated by how much time and effort are spent educating patients about the importance of self-management when many of these patients do not follow through on recommendations. In recognizing the motivational and interactive role required to manage a chronic illness, interventions have increasingly focused on the health care provider as "coach."

Coaches are used by many individuals—business executives, athletes, parents, couples, and students—to fulfill a variety of objectives and goals, from career development to relationship satisfaction. Drawing upon the roots of psychology, health management, and personal development, the coaching profession acknowledges that the client is ultimately responsible for his or her choices. A coach helps the client access the motivation needed to initiate and maintain change, offering a variety of perspectives and recognizing that numerous factors contribute to achieving goals. Because the coaching model aims to untangle complex psychosocial factors and lifestyle behaviors, it seems especially appropriate for managing patients with type 2 diabetes.

Treatment nonadherence rates for diabetes patients often exceed 50% and have been reported as high as 93%,<sup>2-4</sup> emphasizing the clear need for interventions focused on accountability and lasting behavior change. The adherence literature is full of potential interventions that range from simple and direct (monthly calls to ask patients if they are taking their medicines) to more complex (a detailed "lifestyle prescription" directing changes in nutrition, exercise, sleep, or stress).<sup>5</sup> While such

approaches have yielded some benefits, they also have limitations. The former undermines the ability to build a trusting relationship with the caller.<sup>4</sup> For the latter, the lifestyle prescription is seldom "filled" because patients do not know how to make behavior changes, and most providers are not trained to guide them. Coaches, on the other hand, are trained specifically to build trusting and growth-promoting relationships, elicit motivation, build self-efficacy, and facilitate the process of change.

The rapidly emerging coaching profession has a natural fit with health care. Today, coaching has found application in hospitals, clinical practices, company wellness programs, retreat centers, and spas and is growing increasingly popular with individual consumers. In the larger picture, this represents an important shift toward individualized treatment strategies for health-related behavior change. Because lifestyle behaviors are considered the main contributor to chronic illness,<sup>6,7</sup> and the costs of treating these diseases are increasing dramatically,<sup>8</sup> interventions that target behavior change, emphasize patient accountability, and lower costs are imperative. Despite the need for such interventions, however, studies of coaching-related health outcomes are few in number, have not been well recognized, and lack methodological rigor.<sup>1,9</sup> In a recent review,<sup>9</sup> 9 studies met inclusion criteria for diabetes coaching; however, most of these trials were not designed to assess the effectiveness of a coaching intervention, and only one was a randomized controlled trial. Another challenge in interpreting these studies is that "coaching" is used to describe a heterogeneous set of interventions, making it difficult to replicate findings. The purpose of the present study, therefore, was to evaluate the effectiveness of integrative health (IH) coaching on psychosocial factors, behavior change, and glycemic control in patients with type 2 diabetes.

A randomized controlled design was used to assess whether 6 months of individual coaching could improve lifestyle behaviors, psychosocial functioning, and A1C. Randomly assigning participants to a control group, or usual care, allowed investigators to compare changes over time between controls and participants receiving the intervention. IH coaching is a personalized intervention that assists people in identifying their own values and vision of health.<sup>10,11</sup> Patients' values and personal vision are used to support behavior changes and achieve self-chosen goals. IH coaching is integrative in the sense that it applies a holistic approach to optimizing mental, physical, and social well-being rather than focusing on

symptoms and disease complications. It is distinct from other diabetes education strategies in that the patient sets the agenda and is encouraged to choose goals aligned with his or her values. It was hypothesized that by training participants to solve problems and pursue goals consistent with their values, IH coaching would facilitate behavior change (exercise and medication adherence), increase psychological functioning (measured by validated questionnaires), and improve glycemic control (A1C).

## Methods

### Subject Recruitment

Participants were recruited from flyers, newspaper and online advertisements, targeted mailings, and prior study pools.<sup>12</sup> The protocol was approved by the Duke University School of Medicine Institutional Review Board. Patients were required to be English speaking, at least 18 years of age, have a diagnosis of type 2 diabetes for at least 1 year, be taking oral diabetes medication for at least 1 year, and have medical and pharmacy benefits available to the study team (as part of a larger study). Diagnosis of type 2 diabetes was verified using pharmacy claims, and patients may or may not have been on insulin in addition to their oral medications. Exclusion criteria included dementia, Alzheimer disease, schizophrenia, or other cognitive impairment that would preclude informed consent.

### Procedure and Randomization

At the baseline visit, participants provided informed consent; filled out demographic, medical history, and psychosocial questionnaires; reported current medications; and had blood drawn. They were then randomized to either 6 months of IH coaching or the usual care (control) group. Following the 6-month intervention phase, participants attended a follow-up visit, and the same measures were obtained, including any changes in medication. Those randomized to the control group received no materials or correspondence during the 6-month period. Preassessments and postassessments were administered by blinded study staff. Participants were compensated \$75 upon completion of the study.

### Intervention: IH Coaching

Two coaches provided the IH coaching intervention. Both had substantial training in coaching methods as

well as masters-level degrees in social work or psychology. Coaches each had over 100 hours of experience of individualized coaching with type 2 diabetes patients and had previously facilitated diabetes coaching groups. Participants randomized to the coaching condition had an initial telephone session with their coach within 2 weeks of the baseline visit. They were then offered 30-minute coaching sessions by telephone (8 weekly calls, 4 biweekly calls, and a final call 1 month later) for a total of 14 sessions. Participants were paired with the same coach throughout the intervention. A detailed description of IH coaching is provided elsewhere,<sup>10</sup> but an overview is relevant here.

During the initial telephone call, participants were asked what was important to them in terms of diabetes care, how well they were managing their health, and what they perceived to be their challenges or areas of required support. Patients were guided in creating a vision of health, and long-term goals were discussed that aligned with that vision. A Wheel of Health<sup>11</sup> administered during the initial assessment visit was used to help guide this conversation, with participants reporting how successful or satisfied they were (0%-100%) in each domain (see Figure 1 for details). The Wheel of Health was not used as a research assessment but rather as a clinical tool to explore values, establish priorities, and set goals. Note that percentages are not meant to add up to 100%. For example, someone feeling dissatisfied with current relationships or stress management might rate these lower (10%-20%) while giving higher ratings (90%-100%) in areas they felt more successful. Identifying areas in which they felt less successful or satisfied, participants then chose areas on which to focus for coaching. IH coaches' questions for patients included "how will goals in this area support the bigger picture of your life?" "how will your life be better?" and "how will this enable you to meet your purpose, as you see it, in this world?" The coaching agenda, priorities, and specific goals were clearly those of the participant. Over the remaining coaching sessions, participants revisited the Wheel of Health and were encouraged to create realistic goals in the context of examining one's purpose in life, with these goals further broken down into small, realistic action steps. Although the coach regularly asked participants to assess themselves in terms of traditional diabetes self-care topics such as medication adherence, diet, and exercise, clients were allowed to select any goal for coaching support. For example, patients may have chosen



**Figure 1.** Wheel of Health. Modified from an existing model,<sup>11</sup> the Wheel of Health emphasizes the interrelatedness of mind, body, and behavior in achieving one's personal vision of health. Pivotal to this model is the ability to consider one's thoughts, emotions, sensations, behaviors, and social circumstances with nonjudgmental self-awareness. At the baseline visit, participants were asked to rate how successful or satisfied they felt (0%-100%) in each of the domains. Note that percentages are not meant to add up to 100%. This was referenced throughout the intervention to establish priorities and develop specific goals.

to discuss particular sources of stress in their life, feelings of depression or loneliness, or relationship issues, with goals made accordingly.

To facilitate learning, participants randomized to IH coaching received a binder of educational materials at the initial assessment visit. Contents included materials from GlaxoSmithKline's Adherence Starts with Knowledge<sup>®</sup> (ASK-20) and Essential Connections<sup>®</sup> as well as information from Duke Integrative Medicine. These were referenced throughout the interactions of the study. The ASK-20 is a brief survey that helps practitioners quickly identify and target reasons patients may not be adhering to prescribed medication regimens. It is accompanied by materials on topics relevant to self-management such as symptom recognition, self-care, and disease risk factors. Duke Integrative Medicine provided information regarding nutrition, stress management, and tips on how to best utilize time with the coach. Additional materials came from Essential Connections (GlaxoSmithKline), a resource of tools for coaches to facilitate motivational

interviewing techniques and behavior change, linking topics of interest with patients' readiness to change and relevant education content.

## Outcome Variables

The following validated surveys were used as prestudy and poststudy assessments and have demonstrated adequate psychometric properties (see references for details): ASK-20,<sup>12</sup> Morisky Adherence Scale,<sup>13</sup> Patient Activation Measure (PAM-13),<sup>14</sup> Appraisal of Diabetes Scale,<sup>15</sup> Interpersonal Support Evaluation List (ISEL-12),<sup>16</sup> Perceived Stress Scale (PSS-4),<sup>17</sup> and Short-Form Health Survey (SF-12).<sup>18</sup> The Benefit-Finding Scale<sup>19</sup> was originally developed for women diagnosed with breast cancer but reworded for the present study with "diabetes" replacing "breast cancer." The survey assesses potential benefits from being diagnosed with and treated for diabetes. Respondents note how much they agree or disagree with statements such as "having type 2 diabetes has taught me to be patient" and ". . . has led me to deal better with stress and problems." The scale demonstrated high internal consistency reliability in this study (Cronbach  $\alpha = .96$ ). During prestudy and poststudy assessments, participants also answered the adherence question: "Have you missed a medication dose in the past week? (yes or no)." Exercise frequency over the previous month was obtained by asking participants how many times per week they had exercised for a minimum of 15 to 20 minutes. Blood work was analyzed for A1C at preintervention and postintervention visits.

## Data Analysis

Statistical analyses were performed using SPSS v.17 (Chicago, Illinois). Independent sample *t* tests and Fisher exact,  $\chi^2$ , and Mann-Whitney *U* tests were used to assess baseline similarities between groups. For normally distributed outcome data, time-by-group interaction effects were measured with repeated-measures ANOVA procedures using time as the within-subjects factor (preintervention vs postintervention) and group as the between-subjects factor (coaching vs control). Paired-sample *t* tests were used for normally distributed data to assess change over time for each group alone. Wilcoxon signed-rank tests were used for nonnormally distributed data. Responses to the adherence question "have you missed a medication dose in the past week?" were analyzed using the McNemar test. Statistical significance was set at .05 for each test.

Table 1

## Baseline Demographics, Intent-to-Treat Sample (n = 56)

		Intent-to-Treat (n = 56)	Integrative Health Coaching (n = 30)	Control (n = 26)	P
Age, y	Mean ± SD	53.0 ± 7.93	53.1 ± 8.29	52.8 ± 7.64	0.854
Gender, %	Male	23%	27%	19%	.545
	Female	77%	73%	81%	
Race, %	White	39%	33%	46%	.599
	Black	57%	63%	50%	
	Other	4%	3%	4%	
Marital status	Single/never married	20%	23%	15%	.858
	Married/living with partner	43%	43%	42%	
	Divorced/separated/ widowed	38%	33%	42%	
Household size	1 or 2	71%	67%	77%	.395
	3 or more	29%	33%	23%	
Household income	<\$50,000	55%	57%	54%	.716
	≥\$50,000	45%	43%	46%	
Education	Some college or less	59%	63%	54%	.331
	College or graduate school	41%	37%	46%	
Years diagnosed	Mean ± SD	11.2 ± 7.57	11.8 ± 8.50	10.6 ± 6.43	.562
A1C	Mean ± SD	8.0 ± 1.91	7.7 ± 1.94	8.2 ± 1.89	.388

## Results

### Participants

A total of 114 participants were recruited and screened by telephone. Sixty-four were eligible and scheduled for a baseline visit; 56 attended this appointment (demographics in Table 1) and were randomized, 30 to the intervention and 26 to the control group. Groups were statistically similar at baseline. Mean age was  $53 \pm 7.9$  years, 77% were female, 57% were African American, 40% were married, 71% lived either alone or with one other person, 55% had a household income <\$50,000, and 59% had an education level below a college degree. Mean length of diabetes diagnosis was  $11 \pm 7.8$  years. Seven participants withdrew over the course of the study, with similar dropout rates between groups (3 coaching and 4 control). Reasons for withdrawal included lack of time (4 participants), one lack of interest, one changed

jobs and would be changing insurance, and one was lost to follow-up. Thus, 49 participants (27 coaching, 22 control) were available for outcome analyses. Twenty-five of the 27 coaching participants (93%) completed all 14 coaching sessions. Coaching calls averaged 29.9 minutes.

At baseline, half of the participants (28 of 56) were using insulin in addition to oral medication; groups were statistically similar at baseline (Fisher exact test,  $P = .422$ ) regarding insulin use. Medication changes (including insulin) occurred in 21 of the 49 study completers, with no significant difference between groups (Fisher,  $P = .779$ ) in the number of participants changing medications.

### Medication Adherence

Refer to Table 2 for survey scores and results. Following the 6-month IH coaching intervention, coaching participants experienced a significant reduction in perceived barriers to medication adherence as identified by the

Table 2

## Outcome Measures for Integrative Health (IH) Coaching Participants Versus Control Group

Measure	Group	Pre (Mean ± SD)	Post (Mean ± SD)	Change Over Time ( <i>P</i> )	Time × Group Interaction ( <i>P</i> )
ASK-20	IH coaching	42.9 ± 8.09	35.3 ± 7.9	.001	.036
	Control	43.6 ± 11.71	41.5 ± 8.20	NS	
Morisky	IH coaching	6.7 ± 0.96	7.2 ± 0.97	.004	NS
	Control	6.7 ± 1.25	6.9 ± 1.25	NS	
PAM-13	IH coaching	64.6 ± 19.54	79.3 ± 18.62	<.001	.012
	Control	64.5 ± 16.09	67.4 ± 14.41	NS	
ADS	IH coaching	17.4 ± 5.08	14.9 ± 3.76	.004	NS
	Control	19.1 ± 5.53	18.1 ± 5.07	NS	
BFS	IH coaching	50.8 ± 20.27	53.0 ± 21.5	NS	.039
	Control	46.4 ± 17.99	42.5 ± 21.4	NS	
ISEL-12	IH coaching	37.0 ± 8.47	40.8 ± 7.42	.003	.019
	Control	39.6 ± 7.20	39.4 ± 6.77	NS	
PSS-4	IH coaching	5.7 ± 3.21	4.6 ± 3.20	.013	NS
	Control	6.0 ± 2.69	5.7 ± 3.43	NS	
SF-12	IH coaching	89.9 ± 15.45	95.7 ± 16.30	.027	NS
	Control	92.2 ± 13.21	91.9 ± 16.72	NS	
Exercise	IH coaching	1.8 ± 1.12	2.2 ± 1.00	.026	—
	Control	1.7 ± 1.64	1.6 ± 0.90	NS	
A1C (all pts)	IH coaching	7.9 ± 1.98	7.5 ± 1.76	NS	NS
	Control	8.1 ± 1.92	8.2 ± 1.92	NS	
A1C (baseline ≥ 7.0)	IH coaching	8.9 ± 1.78	8.3 ± 1.76	.030	NS
	Control	8.8 ± 1.95	8.8 ± 1.99	NS	

NS, not significant; ASK-20, Adherence Starts with Knowledge; Morisky, Morisky Adherence Scale; PAM-13, Patient Activation Measure; ADS, Appraisal of Diabetes Scale; BFS, Benefit-Finding Scale; ISEL-12, Interpersonal Support Evaluation List; PSS-4, Perceived Stress Scale; SF-12, Short-Form Health Survey.

ASK-20 ( $t_{26} = 3.874$ ;  $P = .001$ ); the time-by-group interaction effect for the ASK-20 was significant ( $F_{1,47} = 4.64$ ;  $P = .036$ ) due to the reduction in the coaching group and no change in the control group. Scores on the Morisky Adherence Scale indicated that medication adherence improved in the IH coaching group ( $Z = -2.862$ ;  $P = .004$ ) but not the control group; however, the time-by-group

interaction effect was not significant. When asked if they had missed a dose of their diabetes medications in the past week, coaching participants demonstrated a significant improvement, with 51.9% reporting a missed dose at baseline and 7.4% (2 participants) reporting a missed dose at follow-up (McNemar test,  $P < .001$ ); no such reduction was observed in the control group.

## Patient Engagement and Behavior

The time-by-group interaction for the PAM-13 was significant ( $F_{1,47} = 6.895$ ;  $P = .012$ ), suggesting coaching facilitated patients' knowledge, skills, and confidence for self-management; patient engagement increased significantly in the IH coaching group ( $t_{26} = -4.372$ ;  $P < .001$ ) with no change in the control group. In addition to improving self-efficacy, coaching participants reported actual behavior change in terms of exercise. When asked how frequently they had exercised in the past month (less than once per week, 1-2 times per week, 3-5 times per week, or >5 times per week), IH coaching participants reported a significant increase in exercise ( $Z = -2.230$ ;  $P = .026$ ). No changes were observed in the control participants.

## Perception of Illness

Findings on both the Benefit-Finding Scale and the Appraisal of Diabetes Scale suggested IH coaching helped patients reframe their perception of illness. There was a significant time-by-group interaction effect on the Benefit-Finding Scale ( $F_{1,47} = 4.522$ ;  $P = .039$ ), suggesting improvement in IH coaching participants' ability to perceive positive contributions from having diabetes (eg, "Having type 2 diabetes has taught me to be patient" or ". . . has led me to deal better with stress and problems"); however, neither group alone showed a significant change over time for this measure. Although there was no significant time-by-group interaction on the Appraisal of Diabetes Scale, coaching participants' scores showed that coaching mitigated the negative feelings associated with having diabetes ( $t_{26} = 3.157$ ;  $P = .004$ ).

## Psychosocial

Measures of perceived social support, stress, and quality of life improved with IH coaching. The time-by-group interaction effect for the ISEL-12 was significant ( $F_{1,47} = 5.939$ ;  $P = .019$ ); coaching participants perceived greater availability of social resources—someone to talk to about one's problems or do things with—after the intervention ( $t_{26} = -3.271$ ;  $P = .003$ ), and control participants experienced no such change. Although the time-by-group interaction effect for the PSS-4 was not significant, perceived stress decreased in IH coaching participants when analyzed alone ( $Z = -2.477$ ;  $P = .013$ ) but not among control participants. The SF-12 health survey, a widely used assessment of perceived health status and quality of life, revealed

no significant time-by-group interaction effect; however, there were increased scores for IH coaching participants ( $t_{26} = -2.341$ ;  $P = .027$ ), whereas controls showed no change.

## A1C

Average A1C at baseline was  $8.0\% \pm 1.91\%$  for all participants. Although there was no significant time-by-group interaction effects for A1C, IH coaching participants with elevated baseline A1C ( $\geq 7\%$ ,  $n = 16$ ) significantly reduced their A1C by 0.64% over 6 months, from  $8.9\% \pm 1.78\%$  at baseline to  $8.3\% \pm 1.76\%$  after 6 months of coaching ( $P = .030$ ; Cohen  $d$  effect size = .34). A1C for the total group of coaching participants was  $7.9\% \pm 1.98\%$  and  $7.5\% \pm 1.76\%$  at baseline and follow-up, respectively; this 6-month change was not statistically significant when analyzing all coaching participants, that is, including those with adequate glycemic control (Cohen  $d$  effect size = .21). Control participants' A1C remained unchanged.

## Discussion

To our knowledge, this is the first randomized controlled trial to analyze the effectiveness of an individualized diabetes coaching intervention that, in addition to providing education, targets internal motivation by linking behavioral goals to patients' values and personal vision of health. Improvements were observed in self-reported medication adherence, patient engagement and behavior, perception of illness, psychosocial measures, and A1C.

## Medication Adherence

Multiple assessments in the present study suggested that IH coaching helped improve medication nonadherence. Improved scores on the ASK-20 questionnaire, which identifies perceived barriers to medication adherence (eg, "I run out of medicine because I don't get refills on time" or "I have to take too many medicines a day"), have been shown to correlate with objective measures of adherence, including pharmacy claims-validated medication adherence.<sup>12,20</sup> Identifying barriers also largely facilitated the coaching process by gauging a starting point to discuss what gets in the way of taking medicines. IH coaching participants not only reported fewer barriers to medication adherence at the end of coaching, but adherence also improved according to the widely used Morisky

Adherence Scale. In addition, the number of participants who reported missing a medicine dose in the past week was significantly reduced.

### Patient Engagement and Behavior

Perceived self-efficacy and coping skills have been emphasized in the literature as keys to self-management and accountability.<sup>21</sup> Using the PAM-13 to compare IH coaching participants to controls, only IH coaching participants showed significant improvement in the knowledge, skills, and confidence for self-management, a construct known as patient activation. Increased activation has been related to positive change in a variety of behaviors relevant to chronic disease.<sup>22</sup> Improving patient activation coincides with a fundamental aim of IH coaching, which is empowering patients to take ownership of their disease. In the current study, not only did IH coaching participants report increased activation, but this psychological shift occurred simultaneously with the self-reported behavior changes in medication adherence and exercise frequency. Further research would add to the understanding of the interrelationships of these variables and the mechanisms of change that occur through IH coaching.

### Perception of Illness

Although different in tone and approach, the Appraisal of Diabetes Scale and Benefit-Finding Scale both assess the perceived meaning, or influence, that diabetes has on a patient's life. The Appraisal of Diabetes Scale asks about negative aspects of disease ("How upsetting is having diabetes for you?" and "To what degree does diabetes get in the way of developing your life goals?"), while the Benefit-Finding Scale assesses potential benefits from being diagnosed with and treated for a chronic illness. Participants report to what extent they agree with statements like "having type 2 diabetes has taught me to be patient," ". . . has led me to deal better with stress and problems," and ". . . has helped me become more focused on priorities, with a deeper sense of purpose in life." To our knowledge, the current study represents the first time the Benefit-Finding Scale has been used in patients with type 2 diabetes. Positive psychological responses to illness have been linked to improved emotional, physical, and immunological outcomes.<sup>23,24</sup> Health care providers usually have little time to discuss with patients the benefits they have experienced from having diabetes;

however, this finding suggests that patients with type 2 diabetes who receive IH coaching may have a strong capacity for identifying and integrating positive aspects of their disease in the self-management process.

### Psychosocial

Socially isolated patients have difficulty managing their disease,<sup>21</sup> and poor social support has been linked to nonadherence,<sup>25</sup> depression,<sup>26</sup> and increased mortality.<sup>27</sup> Improved scores on perceived social support in the IH coaching group, but not controls, likely reflect IH coaches' emphasis on establishing support networks as well as accessing resources in the community. Reductions in perceived stress in the IH coaching group are also promising, given the potential negative impact of stress in glycemic control.<sup>28</sup> IH coaching, therefore, may help fortify support networks and improve patients' abilities to cope with psychosocial factors such as stress.

### A1C

Because the aforementioned measures relied on participant self-report, a more objective metric for lifestyle behavior change was A1C. More than one third of the IH coaching group (total group,  $n = 27$ ) had adequate glyce-mic control at baseline (A1C  $< 7\%$ ). Those with elevated baseline A1C ( $\geq 7\%$ ,  $n = 16$ ), however, significantly reduced their A1C by 0.64% over 6 months.

Limitations in the current study include small sample size, especially considering the number of IH coaching participants with nonelevated A1C at baseline. Another possible limitation is that all measures (except for A1C) were based on self-report, introducing possible bias in reporting of outcomes. Finally, the intention behind the study was to evaluate the role of IH coaching to help patients with type 2 diabetes better self-manage their condition. In practice, IH coaching is "integrative," amplifying other useful approaches (eg, education) that are necessary but not sufficient for self-management. While this allows easier implementation into existing self-management practices, it does preclude the ability of the current study to separate outcomes that are due to education versus those due to IH coaching.

A significant strength of the current study is the diversity of the patient sample. Treatments and interventions that are labeled "integrative" are sometimes thought to be



Table 3

## Principles of Integrative Health Coaching

The patient is the best source of information for personal behavior change strategies.
Education is provided when the patient is ready.
Goals are aligned with the patient's vision of health and personal values.
Emphasis is placed on <i>how</i> to change behavior, not <i>why</i> current behaviors exist.
Plans are established for how to deal with setbacks.
The coach reinforces accountability using the patient's own values and stories.
Only the patient is able to choose goals that are the most motivating.
Priorities are established balancing long-term vision and what is most salient in the patient's present life.
Patience and belief in the patient are critical to establish trust in the coaching relationship.
Coaches guide patients in linking behavior change to their life purpose.

affordable to and utilized by only well-educated upper-middle class white clients.<sup>29</sup> In this sample, however, more than half of the patients were African American, more than half had household incomes less than \$50,000, and more than half had an education level below a college degree. Not only was the intervention well received according to qualitative feedback, but adherence to the protocol was exceptional, with 93% of study completers participating in all 14 coaching sessions.

## Implications and Relevance

Health care providers, and diabetes educators in particular, may find principles of IH coaching helpful in their practice (Table 3). In IH coaching, patients are considered the most knowledgeable, capable, and reliable resource of information regarding personal strategies for behavior change. This differs somewhat from traditional diabetes education, where the educator, by definition, is the expert who provides information. In coaching,

education is provided at the patient's pace, that is, when information will be meaningful in the context of the patient's goals and purpose. Coaches elicit ideas and resourcefulness from patients, encouraging them to learn about their disease in the framework of their own lives. A coach may ask, "What aspects of controlling your blood sugar are most confusing to you? What have you heard? Where would you normally go to find this information?" The coach always asks permission before offering education, reinforcing the idea that the patient is in control. Regarding behavior change, patients learn the most when the coach takes the position of curious supporter: "What, from your experience, works for you and doesn't work for you? What have you heard works for others? Let's experiment and see what we learn and go from there." Patients have no need to defend unhealthy behaviors because coaches are not exploring *why* a person behaves (or does not behave) in a certain way. Rather, coaches explore *what* the patient wants to change and *how* to make changes successfully so as to move toward their stated goals.

In addition to the role of curious partner, the coach remains focused on helping the patient sustain motivation, commitment, and accountability. In conventional medicine, accountability can be confusing when the provider's role is to "fix" the patient. Diabetes educators feel pressure and are even offered incentives for having their patients achieve certain A1C levels; however, an A1C of 7% may seem arbitrary and meaningless to the patient in the scope of his or her life priorities and values. Who, then, is held accountable if no progress is made? IH coaches clarify this at the start of coaching by asking patients how they prefer situations be handled when they do not follow through on a commitment. Some patients prefer to be asked direct questions to figure out what went wrong, some want support, while others want to be reminded of a particularly relevant personal story. For example, a patient may share that his uncle had both legs amputated last year from diabetes complications. He may also state that what is most important to him is to be healthy enough to walk his daughter down the aisle at her wedding one day. Thus the coach's role can be to remind him of this when he does not follow through on his goals, helping him to reconcile his day-to-day decisions with his larger vision. In IH coaching, patient accountability is best reinforced using the patient's own stories and personal values.

These same stories and values are also used to elicit motivation. In IH coaching, goals are aligned with the patient's agenda—with what the patient most cares about and is ready to tackle. While health care providers undergo extensive education and training to learn “what is best” for patients, they are often unable to choose the goals that are most motivating. Patients must do this for themselves. This requires patience and understanding from the provider, yet it is crucial in establishing a sense of empowerment and intrinsic motivation for the patient. Additionally, the patient must be trusted to communicate what is the most salient problem, issue, frustration, or challenge in the current snapshot of his or her life. For example, patients may not consider immediate stressors such as demands at work or the recent death of a relative as relevant in the context of elevated blood glucose levels. Yet, from an integrative health perspective, developing coping strategies and lowering stress may improve metabolic control, free up time for exercise, and perhaps lead to a greater sense of empowerment and self-confidence in the ability to adopt other healthy behaviors.

Health care providers who push for lifestyle behavior change before clients are ready run a high risk of undermining the coach-patient relationship. Patients who try to change when they are not ready may feel like failures or even feel shame because they have disappointed their coach. This introduces a feeling of vulnerability that reduces the chance they will try again in the future. When there are discrepancies in the patients' stated goals and their behavior, the coach carefully points it out while also communicating: “You're really capable. You have the resources within you. You may benefit from learning new skills, taking another approach, or exploring another perspective. I'm here to support you in the process. What do you need?” It is indeed a challenge for the coach not to become discouraged or impatient. It is vital, however, for coaches to retain a nonjudgmental perspective and engage patients in self-discovery in creating their own personal vision of their health and life. By gaining clarity around their life purpose and values, patients learn to connect their health goals and lifestyle to this bigger picture, which is a critical step in developing the best strategies for lasting behavior change.

### Training Programs

Training programs in coaching have emerged for health care professionals and would be appropriate for

diabetes educators. The International Coaching Federation ([www.coachfederation.org](http://www.coachfederation.org)) approves a range of coach training and certification options. For example, a 5-weekend fundamentals program offers the opportunity for coaching techniques to be learned and practiced. Actual certification programs are generally more intensive. Programs that are tailored for providers working with health and wellness issues are offered by Wellcoaches ([www.wellcoaches.com](http://www.wellcoaches.com)), Duke Integrative Medicine ([www.dukeintegrativemedicine.org](http://www.dukeintegrativemedicine.org)), and the Coaches Training Institute ([www.thecoaches.com](http://www.thecoaches.com)). The IH coaching program most aligned with the intervention used in the current study is offered through Duke Integrative Medicine ([www.dukeintegrativemedicine.org](http://www.dukeintegrativemedicine.org)).

### References

1. Lindner H, Menzies D, Kelly J, Taylor S, Shearer M. Coaching for behaviour change in chronic disease: a review of the literature and the implications for coaching as a self-management intervention. *Aust J Prim Health*. 2003;9(2/3):177-185.
2. Cramer JA. A systematic review of adherence with medications for diabetes. *Diabetes Care*. 2004;27(5):1218-1224.
3. Haynes RB, McDonald H, Garg AX, Montague P. Interventions for helping patients to follow prescriptions for medications. *Cochrane Database Syst Rev*. 2002;2:CD000011.
4. McDonald HP, Garg AX, Haynes RB. Interventions to enhance patient adherence to medication prescriptions: scientific review. *JAMA*. 2002;288(22):2868-2879.
5. Kripalani S, Yao X, Haynes RB. Interventions to enhance medication adherence in chronic medical conditions: a systematic review. *Arch Intern Med*. 2007;167(6):540-550.
6. Woolf SH. A closer look at the economic argument for disease prevention. *JAMA*. 2009;301(5):536-538.
7. Hoerger TJ, Hicks KA, Sorensen SW, et al. Cost-effectiveness of screening for pre-diabetes among overweight and obese US adults. *Diabetes Care*. 2007;30(11):2874-2879.
8. Grosse SD. Assessing cost-effectiveness in healthcare: history of the \$50,000 per QALY threshold. *Expert Rev Pharmacoecon Outcomes Res*. 2008;8(2):165-178.
9. Newnham-Kanas C, Gorczynski P, Morrow D, Irwin JD. Annotated bibliography of life coaching and health research. *Int J Evid Based Coaching Mentoring*. 2009;7(1):39-103.
10. Wolever RQ, Caldwell KL, Wakefield JP, et al. Integrative Health Coaching: An Organizational Case Study. *EXPLORE: The Journal of Science and Healing*. In press.
11. Liebowitz R, Smith L, eds. *The Duke Encyclopedia of New Medicine: Conventional and Alternative Medicine for All Ages*. London, UK: Rodale Books International; 2006.
12. Matza LS, Yu-Isenberg KS, Coyne KS, et al. Further testing of the reliability and validity of the ASK-20 adherence barrier questionnaire in a medical center outpatient population. *Curr Med Res Opin*. 2008;24(11):3197-3206.

13. Morisky DE, Green LW, Levine DM. Concurrent and predictive validity of a self-reported measure of medication adherence. *Med Care*. 1986;24(1):67-74.
14. Hibbard JH, Mahoney ER, Stockard J, Tusler M. Development and testing of a short form of the patient activation measure. *Health Serv Res*. 2005;40(6 Pt 1):1918-1930.
15. Carey MP, Jorgensen RS, Weinstock RS, et al. Reliability and validity of the appraisal of diabetes scale. *J Behav Med*. 1991;14(1): 43-51.
16. Cohen S, Mermelstein R, Kamarck T, Hoberman H. Measuring the functional components of social support. In: IG Sarason, & BR Sarason, eds. *Social Support: Theory, Research and Applications*. The Hague: Martinus Nijhoff; 1985:73-94.
17. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav*. 1983;24(4):385-396.
18. Ware JE Jr, Kosinski M, Keller SD. A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. *Med Care*. 1996;34(3):220-233.
19. Tomich PL, Helgeson VS. Is finding something good in the bad always good? Benefit finding among women with breast cancer. *Health Psychol*. 2004;23(1):16-23.
20. Matza LS, Park J, Coyne KS, Skinner EP, Malley KG, Wolever RQ. Derivation and validation of the ASK-12 adherence barrier survey. *Ann Pharmacother*. 2009;43(10):1621-1630.
21. Steinhart MA, Mamerow MM, Brown SA, Jolly CA. A resilience intervention in African American adults with type 2 diabetes: a pilot study of efficacy. *Diabetes Educ*. 2009;35(2):274-284.
22. Hibbard JH, Mahoney ER, Stock R, Tusler M. Do increases in patient activation result in improved self-management behaviors? *Health Serv Res*. 2007;42(4):1443-1463.
23. Folkman S, Moskowitz JT. Positive affect and the other side of coping. *Am Psychol*. 2000;55(6):647-654.
24. Kiecolt-Glaser JK, McGuire L, Robles TF, Glaser R. Psychoneuroimmunology: psychological influences on immune function and health. *J Consult Clin Psychol*. 2002;70(3): 537-547.
25. DiMatteo M. Social support and patient adherence to medical treatment: a meta-analysis. *Health Psychol*. 2004;23:207-218.
26. Sacco WP, Yanover T. Diabetes and depression: the role of social support and medical symptoms. *J Behav Med*. 2006;29(6):523-531.
27. Zhang X, Norris SL, Gregg EW, Beckles G. Social support and mortality among older persons with diabetes. *Diabetes Educ*. 2007;33(2):273-281.
28. Surwit RS, van Tilburg MAL, Zucker N, et al. Stress management improves long-term glycemic control in type 2 diabetes. *Diabetes Care*. 2002;25(1):30-34.
29. Astin JA. Why patients use alternative medicine results of a national study. *JAMA*. 1998;279(19):1548-1553.

For reprints and permission queries, please visit SAGE's Web site at <http://www.sagepub.com/journalsPermissions.nav>.