

Strategies to Increase Adherence through Diabetes Technology

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Abstract

A variety of new technologies have been developed to assist patients with self-managing their diabetes and yet hemoglobin A1c has not changed dramatically over the last decade. Although more data available from these new diabetes technologies can be helpful, it is clear that an informed, motivated, and adherent patient is the key to success. This article focuses on increasing patient adherence through the use of motivational interviewing, an evidence-based behavior change counseling technique. Specific skills of motivational interviewing may help the provider assess what the patient already knows about the technology, explore the patient's motivation for using the technology, and, finally, assess the patient's barriers, importance, and confidence in using the technology, leading to better adherence.

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The ancient Greeks described three basic tools of medicine: the Herb (translates to the medications that we use today), the Knife (which translates to surgical interventions), and finally the Word. Although one would now have to add data (in large part augmented by technology) to this initial list, the word continues to be critical. The focus of this article examines the importance of the word and how *counseling style* can be used most effectively to foster behavior change. Despite a variety of new tools to treat diabetes, hemoglobin A1c has not changed dramatically over the last decade.¹ Diabetes education clearly impacts glucose control; however, the impact is typically to lower hemoglobin A1c 0.5–1.0.² Many studies that utilize new technologies for diabetes [e.g., continuous glucose monitoring (CGM)] indicate that these technologies benefit some, but not all, patients.³ It appears that although knowledge and data are critically important, they may not be sufficient to improve clinical outcomes.

This information needs to be translated into behavior change. Although many new technologies are on the horizon, none will likely be effective unless utilized properly to influence appropriate behavior adherence. Successful outcomes with diabetes technologies, such as CGM and insulin pumps, are dependent on appropriate patient behaviors, such as appropriate monitor calibrations, carbohydrate counting, bolus administration, and recordkeeping.

Health-threatening behaviors are now the leading cause of premature illness and death in the developed world.⁴ Patients with diabetes are faced with many choices in relation to their self-care, including medication, diet, exercise, and glucose monitoring. The literature is quite clear that a significant determinant of positive change in self-care behavior is clinician counseling style.^{5–7} Many providers are frustrated with noncompliant patients, and some of

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Abbreviations: (CGM) continuous glucose monitoring, (MI) motivational interviewing, (OARS) open-ended questions, affirm, reflection, summarize

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this may be addressed by a better understanding of effective counseling styles.

Our traditional counseling style is directive. The clinician functions as the expert advice giver, relaying information and providing advice. This approach, however, promotes a passive, uninvolved patient, and there is often a lack of fit between the agenda of the clinician and the agenda of the patient. Although most clinicians would agree that they are not as effective in changing patients' behavior as they would like to be, few are aware of alternative approaches. The traditional style involves two components: (1) information exchange, which is clearly necessary given the depth of knowledge that clinicians possess, and (2) persuasion. Persuasion can be problematic because it can often lead to resistance from the patient. Patients are often then labeled as "noncompliant," and a variety of strategies are tried, including scare tactics, badgering, and blaming patients with highly directive advice giving. Although these approaches may be effective in a small subset of patients, most patients tend to respond with resistance. An alternative approach that is more patient-centered and allows incorporation of negative patient values, goals, and agenda is more successful.^{8,9} One promising approach to behavior change counseling is motivational interviewing (MI).

Motivational interviewing is a directive, patient-centered counseling style for increasing intrinsic motivation by helping the patient explore and resolve ambivalence.^{10,11} The approach aims to avoid the "blame game" in which a patient's resistance is accorded to noncompliance. Motivational interviewing was originally developed for use in the substance abuse field where it has been quite successful and is now being expanded to a host of chronic conditions, including hypertension, smoking cessation, and diabetes. Central to the approach is elucidating ambivalence more clearly for the patient. Ambivalence is a normal and defining state of human experience, and most of us are ambivalent about most things most of the time. It is easy for many to imagine saying something like "Perhaps I should do something about this, I'm a little concerned but I don't think I'll do anything about it yet . . . and besides, it's not that bad. I'm happy enough for the moment—one day maybe." Complex motivational forces are often represented in simple speech such as "I really should check my blood sugars more often but I don't have the time." Motivational interviewing is the practice of disentangling competing and often obscure motives.

There are some basic assumptions in the use of motivational interviewing. Patients talk themselves into changing and don't change just because we want them to or tell them to change. The process of changing may be accelerated—but may also be inhibited—by practitioners. Practitioners who understand the effects of ambivalence in their patients are more likely to influence behaviors. Overall, motivational interviewing has been described as "more like dancing than a wrestling match." Motivational interviewing can improve patient satisfaction significantly because the techniques foster a deeper understanding of the patient's intrinsic motivations. A meta-analysis of 72 randomized controlled trials of MI in a variety of chronic conditions has demonstrated a robust clinical impact.¹² Initial studies specific to diabetes have also demonstrated efficacy.¹³ Provider frustration with difficult patients is also reduced because the provider no longer feels as if they "own" the problem. Motivational interviewing has been applied increasingly to myriad chronic condition adherence areas and appears ideal for use with patients utilizing diabetes technologies that are so dependent on adherence. Motivational interviewing has the potential to help improve behavioral adherence that is needed to obtain optimal results from emerging diabetes technologies. Several core techniques for engaging in a behavioral discussion around diabetes technology are described here.

Basic Tenets of Motivational Interviewing for Behavior Change

One attraction to MI has been the ability to teach specific skills in a clear manner. Initially, one needs to shift gears during the clinical encounter from the traditional history and physical and acknowledge the setting with a comment such as "now that this is out of the way, can we take a few minutes to talk about other things that are affecting your diabetes?" Motivational interviewing incorporates a number of tools—two sets are discussed in this brief review: open-ended questions, affirm, reflection, summarize (OARS)(Table 1) and elicit—provide—elicit.

Open-Ended Questions

These allow us to better understand patients' motivations and permit them to respond to our questions more honestly. Imagine the different responses to the following two questions: "Do you always count carbohydrates when you take your pump boluses?" (closed question). Alternatively, "Tell me a little bit about how it's going with counting carbohydrates when you take your boluses?"

Table 1.
Open-Ended Questions, Affirm, Reflection,
Summarize Micro Skills of MI

Micro skill of MI	Example
Open-ended question	What has been the hardest thing about wearing your continuous glucose monitor (CGM)?
Affirmation	That is great that you are actively following the trends on your CGM and using that information to adjust your basal insulin rates. Not everyone is able to understand their trends so soon after starting on a CGM.
Reflection	It sounds like you have been getting frustrated with being able to see your blood sugar on the rise but not having insulin that can react fast enough.
Summarize	So overall, it has not been as much of a nuisance to wear the sensor and it seems like you are doing well with understanding your trends; the only issue has been not having insulin that peaks fast enough. Did I miss anything?

(open-ended question). One may also consider an alternative approach when the clinician strongly suspects adherence issues and would like to address them more directly—“Many people find it challenging to count carbohydrates daily—how’s it going for you?” Normalizing open-ended questions can be an effective means to explore patient motivation; however, the best open questions are ones for which the answers are *change talk*. Change talk draws out the patients’ reasons and intentions for changing. Outward verbalization of these motives can be an effective means of guiding the individual toward an appropriate change in behavior. Questions for which the answer is resistance, i.e., the commitment to maintain things as they are, are less optimal. Examples of better questions would include “how do you think it might be helpful if you counted carbohydrates” or “what do you think is the value of looking at your blood glucose trends?” Less optimal questions might be “why don’t you check your blood sugar four times a day” or “why don’t you look at your continuous glucose monitor more often to be able to make appropriate adjustments?”

Affirm

Behavior change literature suggests two key factors to determine whether an individual is ready to make a change: *importance* of the change and *confidence* in his/her ability to undertake that behavior change. Building a patient’s self-confidence (self-efficacy) is helping that patient make a behavior change. Affirming something positive about the patient’s behavior helps facilitate that increase

in confidence. Affirmation should be made verbally explicit and needs to be genuine. Indicating “that’s great that you have been calibrating your continuous glucose monitor on a regular basis” may lead to an easier discussion of looking at trends and making insulin adjustments. It is important that the affirmation is framed as “appreciation” as opposed to “approval.” It is best for the provider not to be viewed as providing approval for the behavior because failures to maintain the behavior change may not be conveyed honestly by the patient for fears of disappointing their provider. Alternatively, giving appreciation and stating how the patient must be proud of their efforts are more likely to foster greater self-confidence in their ability to change. Sometimes the only positive aspect of a patient’s self-management may be that they have taken the time to show up for their appointment.

Reflection

A central feature to MI is frequent reflections of what the patient has said. This is an excellent follow-up to an open-ended question and provides permission and encouragement for the patient to better describe their ambivalence on a specific behavior change. As skill advances, the reflection can be more selective and allow the provider to accentuate positive statements by the patient through reflection. Sentence stems for reflection can include “it sounds like you . . .,” “you mean that . . .,” “so you feel . . .,” or “your feelings . . .”

Summarize

A frequent summary by the provider indicates attentiveness on the part of the interviewer and allows patient statements to be further clarified, consolidated, and reinforced. One can summarize in a way to build discrepancy [i.e., indicate that, on the one hand . . . (reasons for staying the same) and on the other . . . (reasons for change)]. This summary then allows the patient to reflect more deeply and deal with the presented ambivalence. Summaries can also be an opportunity for the provider to shift conversation when resistance is beginning to develop or when the discussion is getting off track (i.e., tangential digression by the patient on subjects not pertinent to the current behavior discussion).

Specific Challenges Introduced by Technology

Although clinicians have always had occasional suspicions about erroneous patient-gathered data (i.e., home glucose records that seem “too perfect”), it has been difficult to be certain and sometimes confront the discrepancy. Glucose monitoring log sheets written neatly with the

same pen with similar ending digits that are discrepant with hemoglobin A1c values can now be validated from downloaded glucose meter values. The availability of subcutaneous pumps and continuous monitors with downloadable memory will only heighten the number of such awkward moments. There are numerous examples of patients with diabetes not taking insulin boluses or counting carbohydrates to match correction boluses that can now be readily identified easier after downloading data from devices. Soon, as physical activity monitors become more widely available and new prototypes for assessing food intake become available, discussion of nonadherence will be yet more common. Availability of such objective data can lead to an awkward position whereby the provider must address these inconsistencies.

The goal for outlining these discrepancies with objective data should be to help understand patient motives and ultimately to problem-solve solutions. It is key, therefore, not to be accusatory or judgmental but simply present the facts. This can be best accomplished in a very non-judgmental, curious tone, asking the patient to “help me understand” whatever dilemma is at issue. Normalizing problems with adherence by citing how common these issues are may also help diffuse the situation and allow the patient to discuss barriers for problem solving more honestly.

This article is a brief introduction to motivational interviewing and behavior change counseling. A great deal more information is available from a variety of sources. An excellent guide has been written,¹¹ and the Motivationalinterviewing.org Web site has numerous other resources. Motivational interviewing is capturing the imagination of many who deal with chronic diseases, including diabetes, and early experiences with incorporation into medical school curriculum have been positive. Vigorous studies are underway to evaluate its impact in diabetes.^{14–16}

Using skills such as elicit–provide–elicit may help the provider gain a better understanding of (1) what patients know about the technology they are using to manage their diabetes and how to interpret results and (2) what the patient thinks about using the technology and the results they see. The elicit–provide–elicit technique goes as follows: The first “elicit” is when the provider may ask the patient what they already know about a specific topic. Based on the patient’s response, the provider may then “provide” or fill in any missing information needed by the patient to further understand the subject. The provider then does another check in or “elicits” from the patient their

understanding and thoughts about the information given. **Table 2** is an example of a provider using elicit–provide–elicit with a patient who is on a continuous glucose monitor.

Table 2.
Elicit–Provide–Elicit

Skill	Provider	Patient
Elicit	What is your understanding of what information the continuous glucose monitor can give you to help you manage your diabetes?	I know it can graph how my glucose is running at certain times of the day.
Provide	That is correct; it can also tell you if it is trending too low or too high. It can let you know your average blood sugars at different meals. Here are your graphs.	
Elicit	What are the benefits of monitoring your blood sugar trends?	I can learn more about how to adjust my insulin dosages during the day and it looks like I could definitely use that information for my lunch time bolus.
Elicit	What trends do you notice in your graphs? How do you feel in seeing that trend?	I see that most of the days my lunch time bolus is not enough. I am disappointed and I think that I may need to either relook at my carbohydrate intake at lunch or increase my insulin that time of the day since I am at work and stressed at that time.
Provide–elicit	That is true; stress may definitely contribute to high blood glucoses. You had mentioned two possible reasons for your high blood sugar at lunch, which one would you like to pursue?	I think I will keep a food log for 1 week of what I eat at breakfast to be sure I am not deviating from my meal plan. (Behavior change goal)

How best to get started? One might initially try elements of the OARS and elicit–provide–elicit. Learning MI takes time. The skills associated with MI are not mastered readily from merely reading about them. The recommended approach to learning MI is through workshops or classes led by an experienced trainer, who can be identified through Motivational Interviewing Network of Trainers at <http://www.motivationalinterviewing.org/training/trainers.html>. The greatest learning comes from reviewing one’s own experiences from taped recordings or by individualized feedback on tapes reviewed by an expert trainer. Obtaining consent to tape a patient’s visit

is an excellent opportunity to evaluate how frequently close-ended questions are used or how effectively reflections and summaries are utilized. It is often difficult otherwise to get a true sense of how one's counseling style is presented.

Technology continues to offer profound opportunities to improve patient health; however, in the absence of a complete closed-loop system, it will still be important for patients to incorporate data and knowledge into some form of behavior change. The clinician's counseling style is a key determinant of positive behavior change, and motivational interviewing provides a structured framework to approach behavior change discussions with patients. As clinicians, we all must be more attentive to understanding optimal approaches to foster behavior change in order for diabetes technology advances to have the largest clinical impact.

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