

PERSPECTIVE

Initiating insulin: How to help people with type 2 diabetes start and continue insulin successfully

Initiating insulin successfully

1 | INTRODUCTION

With the growing incidence of type 2 diabetes worldwide, health-care professionals (HCPs) find an increasing proportion of their time devoted to the management of diabetes. Because this condition is chronic and characterised by progressive decreases in insulin secretion and sensitivity, insulin therapy becomes necessary for a large number of persons with type 2 diabetes.¹ However, despite the efficacy of insulin treatment, patients and their HCPs continue to be challenged with reaching glycaemic goals and maintaining long-term insulin therapy. As many as 30%-50% of patients may remain above their glucose target 6 months after starting basal insulin.^{2,3} One key contributor is problematic patient adherence. In this paper, we consider what factors may be critical to encouraging successful insulin initiation and promoting long-term treatment maintenance, and we provide practical tips to help with this important transition, particularly in the current environment of limited time and resources.

2 | DEFINING THE PROBLEM

The lack of success with real-world insulin therapy is attributable to several factors including interruption and/or discontinuation of therapy. Recent estimates from claims databases in the USA, Japan and Germany found that 18%-26% of insulin naïve people with type 2 diabetes who started insulin discontinued therapy in the first year, and an additional 15%-62% had at least one interruption in that year.⁴⁻⁶ Many patients may be lost to follow-up or are reluctant to admit to poor adherence or discontinuation, thus the true extent of problematic insulin persistence is likely to be underestimated.

Although there is substantial literature on how to help patients overcome barriers to initiating insulin, there is less information on how to ensure that patients get off to a good start, maintain treatment and successfully reach their glycaemic targets. To provide HCPs with some practical advice on this problem, we summarise the best practices recommended by an international panel of clinicians who specialise in the care of persons with diabetes. The panel consisted of primary care physicians, diabetologists, clinical psychologists and diabetes nurse educators. Acknowledging that a large number of patients do

not persist with their insulin treatment, the panel was asked to draw from their clinical experience and (1) identify the main reasons behind insulin treatment interruption or discontinuation, and (2) share a list of strategies they employ to ensure their patients get off to a "good start" and prevent lapses or discontinuation of treatment.

3 | THE REASONS: WHY PEOPLE INTERRUPT OR DISCONTINUE INSULIN THERAPY

The panel identified multiple reasons for insulin interruption or discontinuation and allocated them in four general categories: perceived harm, inconvenience, no perceived benefit and difficult patient-HCP interactions.

3.1 | Perceived harm

Patients may view the need for insulin, along with the requisite dose titration, as a sign that their condition has worsened. Patients may also feel stigmatised and personally at fault when insulin is finally added to their regimen. They may attribute the severe complications of diabetes, such as amputations, visual impairment and even death, to the use of insulin. Thus, many patients may worry that insulin will do more harm than good.

Some patients may be worried that insulin treatment will adversely affect their current employment or future job opportunities. They may experience job discrimination related to keeping regularly scheduled treatment appointments or when needing to check their blood glucose (BG) at work. In some countries, employment restrictions may exist in such fields as the Armed Services, fire and police departments, as well as public transportation vehicles operated on land, in the air or by sea.

The belief that insulin may cause more harm than good is also closely linked to perceived adverse consequences, such as hypoglycaemia and weight gain. Interestingly, patients may discontinue insulin not only if they experience adverse consequences but also because they fear the occurrence of these outcomes, especially hypoglycaemia. Family members and friends may also influence a person's decision to discontinue insulin based on their personal beliefs and experiences.

Finally, some patients may experience significant financial hardship because of the cost of insulin as well as glucose testing supplies.

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3.2 | Inconvenience

Some patients may find that the lifestyle changes required by insulin therapy to be too inconvenient or burdensome. Work schedules that are either inflexible or rotating (shift work) can pose challenges such as changes in sleep patterns, meal times and injection times that patients and prescribers must accommodate. It is easy for patients to feel overwhelmed by all the tasks that come with the use of insulin. Others may feel self-conscious about injecting insulin in the presence of others, and also feel embarrassed when they have to leave to find a private place to inject. Some may find it too difficult to successfully inject insulin and follow titration algorithms because of low literacy and/or low numeracy issues. Travel away from home requires special planning for safe carriage and storage of supplies, including the need to anticipate additional supplies that will be required while away. Travel to different time zones may require patients to adjust the timing of their insulin administration.

3.3 | No perceived benefit

Patients may not anticipate the benefits from insulin therapy or understand how insulin could play a role in helping them to feel better and achieve specific life goals and objectives. Many patients have not felt well for some time and do not believe that taking insulin and improving their glucose control will make a difference. Consequently, patients may reject insulin as a necessary treatment and adopt the view that its use is optional or best suited for others, or that no harm will be done if they miss a few doses. These feelings may also result in refill delays when their medication supplies run out.

Such beliefs are likely to be reinforced if patients remain on suboptimal doses of insulin and/or do not see improvements in their glucose readings. Patients may also doubt the effectiveness of insulin therapy if they miss a dose early in their titration phase and fail to see a significant worsening of their BG. Patients may not understand that diabetes is a chronic condition and that daily insulin treatment is needed to maintain glucose control. Sadly, some patients reach their glucose target and then stop their daily insulin assuming it is no longer needed.

Lastly, patients may become discouraged and stop their insulin if they have not been given specific instructions, individualised to their lifestyle and life circumstances, to assess their progress. Mutually agreed upon glucose targets can serve as concrete guideposts to reinforce positive behaviour changes.

3.4 | Problematic HCP-patient interactions

Because of demanding office schedules and time constraints, an effective and meaningful insulin initiation conversation between the patient and HCP may never occur. This may lead patients to feel that their concerns are not being sufficiently considered and that they have been given no voice in the decision to start insulin. Patients left with multiple unanswered questions or unresolved fears will find their insulin “journey” is on a shaky foundation. All patients new to insulin will require frequent contact and support, and it is important that they

understand who they should contact for questions or concerns, when they should make contact, and the best way to communicate with the office (by phone, email or fax). Without specific contact instructions, patients may feel alone or abandoned in the midst of their insulin journey. These issues are compounded if the HCP lacks the practical experience to confidently introduce and initiate insulin therapy in a sensitive way, collaborating with the patient in ways that make insulin initiation fit the patient’s lifestyle and wishes. The HCP’s lack of confidence and/or insensitivity to their patients’ needs will be apparent to the patient and may contribute to delaying basal insulin initiation, titration and maintenance of therapy.

4 | THE SOLUTIONS: A GOOD INSULIN START

The panel discussed ways to introduce insulin to patients that might not only enhance uptake but also minimise future interruptions or discontinuations. There was a strong consensus that helping patients get off to a good start with insulin is critical, and that this must be complemented by timely clinical support and follow-up over the first few months.

Below we describe specific insulin initiation strategies that can be easily implemented by the healthcare team. We group our solutions into four categories: effective insulin conversation, education including setting expectations, titration and follow-up support (see Section 5).

4.1 | Effective insulin conversation

Insulin initiation should be viewed as a normal part of the diabetes care continuum. In addition, it is recommended that HCPs start the initial insulin conversation and set appropriate patient expectations at, or shortly after, diagnosis. This allows the opportunity to frame insulin treatment in a positive way, which may prevent patients from feeling a sense of guilt or personal failure at the actual time of insulin initiation.

The first insulin conversation should focus on the patients’ lifestyle and daily routine, any concerns about insulin, and their short- and long-term goals living with diabetes. The HCP can ask open-ended questions to explore and address patient fears or needs. Having the right insulin conversation at the right time enables the HCP to obtain patient buy-in, a key component for achieving successful insulin initiation. In Table 1, we give steps, goals and examples of how to have a positive insulin conversation, while in Table 2 we list some common patient objections or concerns around insulin therapy, and suggested HCP responses.

4.2 | Education

Timely self-management education can assist patients in setting realistic expectations and feeling more in control of their disease and the methods of treatment. The more patients know and understand about their condition and insulin treatment, the greater their chance for success. It is important to assess how much the patient understands and provide access to education when needed. This may include an appointment with a diabetes educator or nutritionist when available.

TABLE 1 The insulin conversation

Steps	Goals	Suggestions
Ascertain how the patient feels about insulin	Ask questions up front about the patient's fears and concerns. Practice active listening. Take cues from the patient's responses.	How do you feel about insulin? Tell me what concerns you about insulin? Could you share the reasons you feel so strongly about not taking insulin?
Explain/educate	Help the patient understand why insulin is necessary. Explain "What's in it for them!": living a healthier life, feeling better, lowering the risk for complications later on.	Use analogies: when your car runs out of gas, you need to refill the tank - our bodies need insulin like a car needs gas. But always acknowledge and accept their fears and concerns before providing new information.
Problem-solve with the patient	Involve the patient in the insulin conversation. Ask questions related to their specific fears and concerns (such as lifestyle, side effects etc.)	What is the biggest problem facing you today? Are you having any problems at work related to your diabetes? What would you do if you felt your blood sugar was low? What would you do differently if that happens again?
Develop a plan together/shared decision-making	Collaborate to develop a shared action plan. Identify the right regimen based on patient input and lifestyle. Allow for patient choice. Ask patients to identify some short-term goals. Help them to see how improving control of their diabetes can help them reach their goals.	Tell me what a typical day for you would be like. Do you think you can make the time for one injection daily? When do you prefer to inject, am or pm? Can you think of a time where taking or remembering an injection might be difficult? How does this plan work for you? What are your future goals? (playing golf, seeing grandchildren grow up?) Let's make a plan to help you meet your goals.
Set expectations	Insulin treatment is a marathon, not a sprint. You will be a partner with them for the long haul to help them achieve their goals.	We are in this together. We're starting small, but your optimal dose may be much higher. Together, we will adjust your dose over time.

Alternatively, training may be done in the office by the HCP or other trained medical staff, such as medical assistants, who can use a structured diabetes education programme. It is strongly recommended that each HCP office assign a designated team member responsible for education on insulin use. Office protocols can be made to ensure that the key educational messages are covered. It is important that the HCP and office staff instill confidence in the patient regarding insulin use. Furthermore, the HCP can provide information to patients about community resources or hospitals that may be offering group classes.

Once insulin is started, the office can provide information on meal planning, exercise, self-monitoring of blood glucose (SMBG), BG targets, hypoglycaemia signs and treatment, sick day plans, proper injection technique and site rotation.⁷ We cover some of these topics in more detail below, and provide a stepwise approach to insulin-specific diabetes education in Table 3. Individualised patient education should be kept simple and focus on one topic at a time (during the appointment) for better retention. It is crucial for patients to be active partners in the insulin initiation process. Therefore, the HCP and healthcare team can help the patient to problem-solve independently when they have been adequately prepared with the skills and knowledge needed for successful self-management.

4.2.1 | Hypoglycaemia

A discussion with patients on the risks of hypoglycaemia is essential to prepare them to recognise the signs and symptoms as well

as appropriate treatment. It is important to proactively inform patients about the possibility of severe hypoglycaemic events (ie, events that need assistance by someone else), although the actual risk may be quite low. For example, a retrospective study of adults in the USA with well-controlled type 2 diabetes (n=31 542) found an overall unadjusted 2-year incidence of severe hypoglycaemia of 1.4%.⁸ Still, fear of hypoglycaemia is one of the most common reasons that patients refuse to start, or subsequently stop, insulin therapy.^{9,10} Ideally, the care team would address specific patient fears about low blood sugar during both initial and ongoing insulin conversations.

The risk for hypoglycaemic events may be higher and potentially more harmful in special populations like the frail, elderly, persons with end-stage renal disease, cardiovascular disease, autonomic neuropathy, dementia, hypoglycaemic unawareness and persons with comorbidities.¹¹ Elderly patients using sulfonylureas combined with insulin are especially vulnerable to developing hypoglycaemia if they miss meals or have an interrupted meal schedule such as during an acute illness or hospitalisation. For those with an elevated risk of hypoglycaemia, the HCP team in close collaboration with the patient, should frequently review glycaemic values (set appropriate BG targets for treating hypoglycaemia), consider reducing or eliminating sulfonylureas, and adjust insulin dose and timing if needed.

Although information will not entirely alleviate the fear of hypoglycaemia, patients may be able to manage their hypoglycaemic episodes

TABLE 2 Responses to patient's questions about insulin

Patient says 	PCP/HCP response 
I am not sure about taking insulin	What concerns you about insulin?
My aunt took insulin and she lost her leg/became blind/had a heart attack	Insulin did not cause your aunt's problems; it is most likely that in your aunt's case the insulin was started too late. By starting insulin earlier and reducing your glucose we are reducing the risk that those complications will happen to you.
Insulin is a dangerous drug	Insulin is good for you: pure, natural (same as the body produces).
Taking insulin means that I must be a failure; my disease is very bad	Needing insulin is not your fault or a sign of failure - everyone needs insulin to survive. Supplemental Insulin is commonly needed to help patients make up for what body can't produce. So as your diabetes changes over time, you may not produce enough insulin on your own.
I failed with diet and exercise and pills; I don't know if anything will work for me	Let's find out for a few weeks— are you willing to give insulin a try and we'll see how it goes?
Will I have side effects?	You may experience hypoglycaemia; you may gain weight. We will discuss how to prevent or minimize the risk of these side effects.
Insulin will make me lose my job	There are only a few occupations where requiring insulin is prohibited. Certain occupations have guidelines and we can collaborate to facilitate work flexibility, increase awareness of diabetes, and provide a safe work environment. If necessary, the ADA has a legal advocacy group to assist you.
I'm afraid of needles	Lots of people feel that way. Let's you and I do an injection and you will see that it is nearly painless.
I cannot afford insulin and all these supplies	We will discuss some different options for you.
How long will I have to be on this?	Let's try this for 2-4 weeks and then evaluate how it's going.
It's a lot of work for a long term result	Yes, you are right. I think that you will feel better and will be in better control of your diabetes. Do you think it is worth a try so we can see?
There are a lot of new things to do.	Yes, there are. You may feel a little overwhelmed. Are there any questions I can answer now? Remember, we are going to do this together.
I don't know if I can remember all that	You don't have to remember everything at once. We will take this slowly together and make sure that you are comfortable with each step along the way.
I don't have time for breaks during my work day	Let's choose a regimen that fits your lifestyle.
I missed a dose and I felt fine.	It is important to take all of your doses even if you feel fine. We will try a regimen that is easier to remember.
I don't really understand what insulin does and why I need it.	Insulin is a hormone that your body makes naturally; it helps the body use and store glucose for energy. For someone with diabetes their insulin is no longer working the way it should. This is a hormonal replacement therapy.
Who do I call if I don't remember something or if I have a problem?	Here is our office number, so call any time. If it is after hours (define), then call this number.
What do I do if I have hypoglycaemia?	We will teach you how to identify, treat, and avoid hypoglycaemia – give us a call if you need to.
I feel so alone in this	Would it be helpful to have another meeting with your partner in the next week or so?

TABLE 3 Insulin education

Before the patient needs insulin	<ul style="list-style-type: none"> • What is type 2 diabetes? • Role of insulin (natural hormone) • Normal disease progression (possible future need for insulin) • Healthy eating and exercise as part of healthy lifestyle
At the time of initiation	<ul style="list-style-type: none"> • Benefits of insulin for people with type 2 diabetes • Injection technique (including when to take, how much, sharps disposal). First injection should be in clinic, and patient should be provided with simple and straightforward instructions to inject at home • Discuss possible hypoglycaemia, weight gain • Daily management (injections, SMBG, targets, titration, when to call)
Special topics: Hypoglycaemia	<ul style="list-style-type: none"> • Signs and symptoms: define low glucose level • Discuss hypoglycaemia treatment • When patients should call the office • How to prevent hypoglycaemia • Country-specific driving safety recommendations
First follow-up visit	<ul style="list-style-type: none"> • Discuss concerns/issues with treatment • Review SMBG log book, injection technique • Begin/continue titration • AADE 7 self-care behaviors*
Longer term follow-up	<ul style="list-style-type: none"> • Review SMBG log book • Continue to optimize insulin dose • Treatment options for postprandial elevations • Address patient questions, issues
Special populations	<ul style="list-style-type: none"> • Considerations for renal disease, CVD, depression, mental illness, elderly, cognitive or visual impairment • Patients at high risk for hypoglycaemia

*Healthy eating, physical activity, medication taking, monitoring, risk reduction, healthy coping, and problem solving [19]

well despite their fears. Patients are often encouraged by being allowed to express their fears out loud without the HCP attempting to provide a “fix”. A review of possible causes and prevention of hypoglycaemic episodes should be provided to the patient and the patient’s home support team as a resource*. They should be reminded that having an episode of hypoglycaemia is not a reason to stop taking their insulin therapy.

*Hypoglycaemia treatment recommendations for adults can be reviewed at the following links:
<http://www.diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/hypoglycemia-low-blood.html>,
<http://spectrum.diabetesjournals.org/content/diaspect/27/1/58.full.pdf>,
http://care.diabetesjournals.org/content/suppl/2015/12/21/39.Supplement_1.DC2/2016-Standards-of-Care.pdf

4.2.2 | Weight gain

Patients are often apprehensive about gaining weight once they start insulin. When such concerns are raised, they should be addressed early in the conversation. HCPs should acknowledge their patients' beliefs and fears and demonstrate their understanding by offering clear and concise explanations with possible solutions to mitigate concerns. Patients need to understand that insulin therapy is often associated with some weight gain as the body loses less glucose in the urine and begins to utilise and store glucose as an energy source. Patients should be reminded that what and how much they eat will also have an impact on the extent of weight gain. When available, a dietitian along with an exercise specialist or other trained personnel from the medical care team can help patients understand how to minimise weight gain by teaching and reinforcing healthy nutritional habits, portion control and the incorporation of increased amounts of physical activity in their daily lives.

4.2.3 | Setting expectations

Healthcare professionals should ensure that patients receive training on SMBG, and work with their patients to develop realistic plans regarding frequency and timing of testing, target glucose goals, timing of injections and instructions on use of a simple insulin titration algorithm. Glycaemic targets should be set according to national or international guidelines (figure 1 in reference¹²). Furthermore, glycaemic targets may be individualised because of the following clinical considerations: patient ability, insulin sensitivity, comorbidities and the perceived risk of hypoglycaemia. During the titration period, patients should be encouraged to keep a glucose log and regularly check fasting glucose values and an occasional postprandial and bedtime glucose. Managing BG levels is a balancing act and patients should strive for progress rather than perfection. Glucose values are affected by many factors and patients must be informed that these variations are not the result of wrongdoing. If patients report that their BG tends to be low after certain activities or high after certain meals, it gives their care team an opportunity to discuss these effects and make treatment adjustments accordingly. SMBG values combined with an effective insulin titration algorithm can help patients assess their progress and provide them with positive reinforcement. SMBG analysis informs the HCP and the patient whether the insulin dose is adequate or needs to be further optimised. Lastly, structured SMBG allows patients to experience a "cause and effect" relationship between their glucose values, food intake, different levels of activity and insulin dosages.¹³

Diabetes management is a continuous process of learning and education and will empower patients with the knowledge they need to allow for confident self-management of their insulin therapy. Furthermore, it is imperative for patients to learn the benefits of organising their diabetes care in balance with the demands of daily life, which may include the consideration of the day's activities, meal timings, insulin storage, glucose monitoring and refilling prescriptions.

4.3 | Effective titration

Insulin titration can be done either by the patient or their healthcare team, depending on the patient's ability, willingness and motivation.¹⁴ Insulin titration is a necessary step in helping patients to reach their glycaemic goals, and patients have demonstrated in multiple studies that they can do this task as effectively as HCPs.^{15,16} Titration algorithms that are simple, safe and effective, and can be customised and individualised by the HCP based on clinical considerations, are highly recommended.¹² An example of an easy-to-use patient self-titration algorithm comes from the INSIGHT study¹⁷ where the dose of basal insulin is increased by 1 unit/day until the patient reaches target glucose values. When discussing the titration algorithm, it is helpful to involve and educate family members as well. Clear written instructions should be given to the patient and/or caregiver, and the patient or caregiver should be asked to repeat back to confirm understanding. In addition, we recommend that the diabetes care team provide hypothetical scenarios of BG values in the office so that the patient can practice calculating their insulin dose. If the patient is unable to calculate the appropriate dose, the next option is to consider simplified algorithms and supportive technology, if appropriate. If the patient is unable or unwilling to use a self-titration algorithm, then they must be given a simple insulin regimen to follow with instructions on when to call the office for dose adjustments. HCP access and availability is never more vital than during the early insulin initiation and titration phase.

5 | THE SOLUTIONS: THE IMPORTANCE OF FOLLOW-UP

Timely proactive follow-up is a critical success factor and can be fulfilled by the HCP or other members of the healthcare team. These contacts may occur through varied channels but should occur frequently in the initial weeks of insulin management. Appropriate feedback can help patients make the connection between their BG levels and how they are feeling (eg, tiredness, frequent urination, blurred vision, etc.). If patients fail to make these associations, the benefit of daily insulin supplementation—and potentially an improved sense of well-being—may be totally lost on those new to insulin therapy. Follow-up visits after insulin is started may vary from as soon as 1 day to 2 weeks at most. The specific channel of communication should be based on the patient's preference—phone, text, email, fax or face-to-face clinic visit. Pro-active contact is important so patients receive encouragement and appropriate guidance before problems arise; it is not helpful for office staff to wait for patients to make a contact before providing input. Routine office visits usually occur every 3 months once patients are stable on insulin treatment.

Blood glucose targets should be defined by the HCP and patients need to know when to call and report their glucose values. If patients are dissatisfied with how quickly their glucose levels are falling, they should be encouraged to call. The office should identify the person that will help to answer patient questions if the HCP is not available. Patients need

timely responses to insulin questions and the assurance that their care team will be there for them when they call spontaneously or as directed.

At the first visit after starting insulin, HCPs can evaluate the adequacy of the insulin dose as well as the patient's ability to follow their treatment plan. This visit also provides an opportunity to assess the patient's insulin administration technique and address any follow-up questions or concerns. The HCP can use the following suggestions for assessing a patient's situation: Is the plan working for this patient? Does the patient understand how and what they are doing? Is the patient on the right insulin? Does the insulin need to be adjusted? Are they calling in reports as instructed and getting the feedback they need? Is it time to try something different?

6 | ADDITIONAL RECOMMENDATIONS: THE IMPORTANCE OF THE TEAM

A multidisciplinary care team may include the physician, diabetes educator, dietitian, pharmacist, social worker and any interested family member or friend when appropriate. This group should focus on the patient's needs and concerns and provide the necessary reinforcement and support. The solutions described above, including the insulin conversation, education, titration and follow-up, can be distributed among one or more members of a multidisciplinary medical team. The office staff can play an active role in patient management by sending appointment reminders, downloading devices, integrating glucose data into the medical record, communicating insulin dosing changes to patients and inviting family members to be part of the care team. Office staff should schedule longer appointments for patients starting on insulin or making their first follow-up appointments. Non-licensed personnel, such as a medical assistants or community health workers, may be able to teach patients how to use an insulin pen, how to inject properly, how to dispose of sharps containers and BG monitoring. An activated office staff will feel more involved and rewarded if they function as part of the care team, while alleviating some of the HCP's workload.

When implementing a team approach for insulin initiation is not practical, partnering with existing community resources such as local hospital diabetes programmes, advocacy groups and pharmacist-led diabetes programmes can be a good alternative.

7 | CONCLUDING THOUGHTS

Patients may interrupt or discontinue their insulin therapy more frequently than expected. In this review, we highlight the major components of effective insulin initiation, so that patients can get off to a good start and will be more likely to stay on their treatment. It is anticipated that patients will achieve better glycaemic control, decrease long-term complications and reduce healthcare utilisation if we improve both the insulin conversation and the initiation process. As an example, shared decision-making may positively affect patients' initiation experience and insulin adherence.¹⁸ Because lack of medication adherence is common to many chronic conditions,^{18,19} we hope

that the practical tips provided in this manuscript may be helpful in a broader clinical setting.

Videos related to the manuscript are available at <http://www.medscape.com/infosite/236530.1/public> and also on the journal's YouTube site https://www.youtube.com/watch?v=nnbUSRCvgGo&list=PLOhknkU6YqOQnp_5ukBwNBA3UBSn8s23H.

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I.H., R.D.P. and M.P-N. conceived and designed the study and drafted the manuscript. R.P. contributed to the content and edited the manuscript. W.H.P., J.A., L.F., P.K., E.M.M., T.L.P., M.T., S.H., H.J. and B-M.S. contributed to the content and critically revised the manuscript. All authors approved the final version to be published.

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William H. Polonsky^{1,2}
 Joyce Arsenault³
 Lawrence Fisher⁴
 Pamela Kushner⁵
 Eden M. Miller⁶
 Teresa L. Pearson⁷
 Mariusz Tracz⁸
 Stewart Harris⁹
 Norbert Hermanns¹⁰
 Bernd-M. Scholz¹¹
 Robyn K. Pollom¹²
 Magaly Perez-Nieves¹²
 Roy Daniel Pollom¹²
 Irene Hadjiyianni¹² 

¹Behavioral Diabetes Institute, San Diego, CA, USA

²Department of Psychiatry, University of California San Diego, San Diego, CA, USA

³CIUSSS-Jewish General Hospital Endocrinology, Montreal, QC, Canada

⁴Family and Community Medicine, University of California School of Medicine, San Francisco, CA, USA

⁵Family Medicine, University of California School of Medicine, Irvine, CA, USA

⁶High Lakes Health Care, Bend, OR, USA

⁷Innovative Health Care Designs, Minneapolis, MN, USA

⁸Department of Diabetology and Internal Medicine, Warsaw Medical University, Warsaw, Poland

⁹Western Center For Public Health and Family Medicine, Western

University, London, ON, Canada

¹⁰Research Institute of Diabetes Academy Mergentheim (FIDAM), Bad
Mergentheim, Germany

¹¹Diabetologische Schwerpunktpraxis, Hamburg, Germany

¹²Eli Lilly and Company, Indianapolis, IN, USA

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