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PRACTICAL APPROACH

Practical Guidance for Healthcare Providers on Collaborating with People with Type 2 Diabetes: Advancing Treatment and Initiating Injectable Therapy

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ABSTRACT

Type 2 diabetes (T2D) progresses over time, and to achieve and maintain adequate glucose control, many people eventually require injectable therapies such as insulin. However, there can be significant barriers to the initiation of these medications, both from people living with T2D and from healthcare practitioners (HCPs). Misconceptions and misinformation relating to the potential risks and benefits of injectable therapies are common and can contribute to negative perceptions regarding their use. Additionally, HCPs are often unaware of the emotional burden associated with T2D. In particular, diabetes distress is a key contributory factor that needs to be addressed to alleviate fears before diabetes education can be successful. The onus is often on the HCP to initiate effective, individualized communication with each patient and make that person feel an active and equal participant in the management of their T2D. Shared decision-making has been demonstrated to improve understanding of the pathophysiology and treatment options, to increase risk awareness, adherence, and persistence, and to improve self-management behaviors (e.g., exercise, self-care) and patient satisfaction. While therapeutic inertia can result from both patient and HCP, HCPs need to bear the responsibility for escalating therapy when necessary. A proactive approach by the HCP, combined with shared decision-making and a patient-centric approach, are important for optimal T2D management; therefore, an open and effective relationship between the HCP and the person living with T2D is essential. This article is written by a person with T2D, a nurse practitioner/Certified Diabetes Care and Education Specialist, and a clinical endocrinologist, with the goal of providing a holistic view of the management experience, exploring patient needs and expectations, recognizing and avoiding HCP and patient barriers, and providing practical advice to HCPs to empower patients who would benefit from injectable therapy.

Infographic and video abstract available for this article.

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PLAIN LANGUAGE SUMMARY

Type 2 diabetes can be managed with diet, exercise, and medicines. As type 2 diabetes progresses, the most effective treatment may change, and people may need to start taking insulin or other injections to manage their blood sugar. However, many people do not receive the information needed to understand why their type 2 diabetes has progressed or why they need to change treatment. Also, they may have received inaccurate information about the risks and benefits of insulin injections. The demands of managing type 2 diabetes can have an emotional impact (known as diabetes distress), which can lead to anxiety and make people reluctant to engage in their own care or start new medications. Healthcare professionals need to recognize the impact of diabetes distress so that they can help people with type 2 diabetes overcome these barriers. Understanding the factors driving the behaviors of people with type 2 diabetes and encouraging them to ask questions can help them overcome concerns about changing treatment. This is most likely to be achieved when people with diabetes are actively involved in treatment decisions. This article, written by a person with type 2 diabetes and two healthcare professionals, aims to provide practical guidance for healthcare professionals to recognize the emotional impact of diabetes, and to understand how this affects a person's ability to manage their condition. This article also provides advice on how to improve communication with patients and to provide effective diabetes education to meet the needs of people living with type 2 diabetes.

Keywords: Barriers; Communication; HCP; Insulin; Type 2 diabetes

Key Summary Points

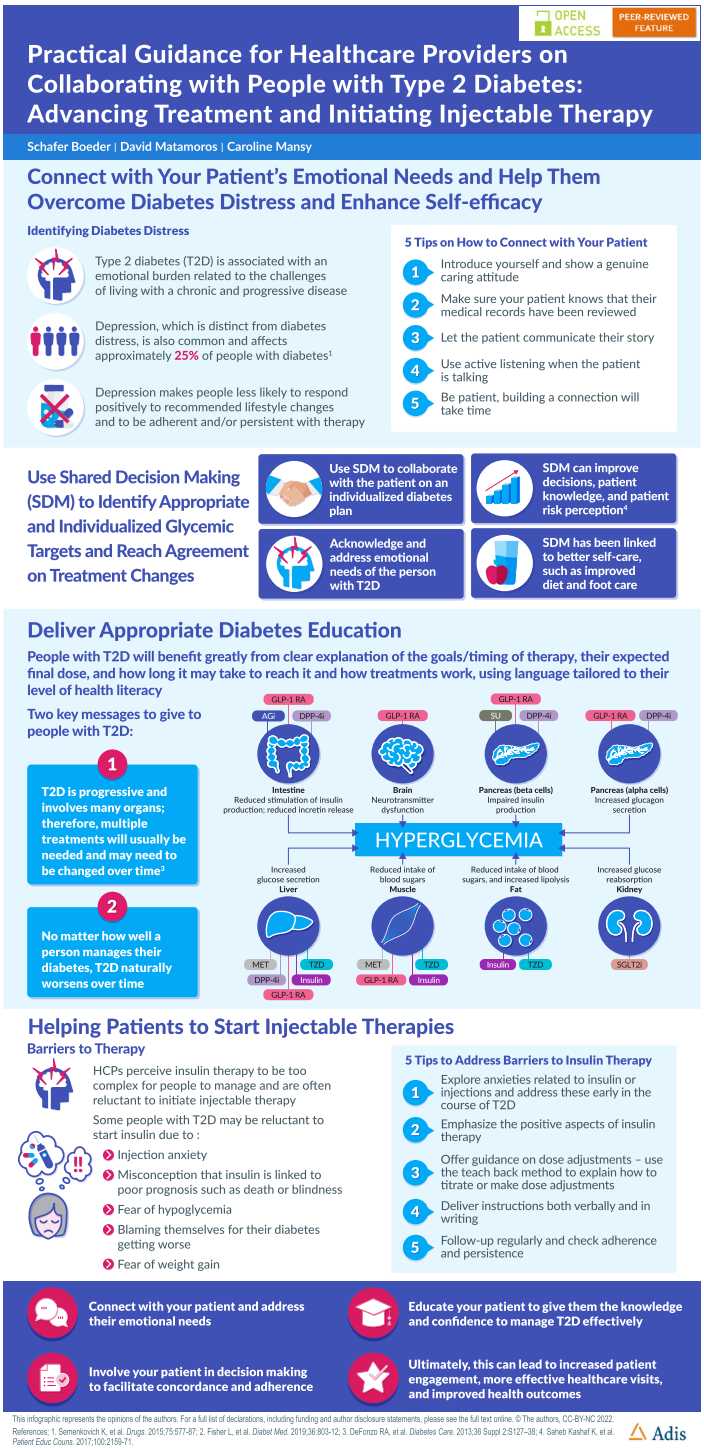
Type 2 diabetes (T2D) is a condition that naturally worsens over time, and to achieve and maintain adequate glycemic control, many people with T2D eventually require injectable therapies such as insulin.

However, there can be significant barriers to the initiation of these medications, including misconceptions and misinformation relating to the potential risks and benefits of injectable therapies, arising both from people living with T2D and from healthcare practitioners (HCPs).

The emotional burden and other factors associated with T2D (such as diabetes distress), and how they contribute to reluctance of people with T2D to start injectable therapy, are often underestimated by HCPs.

It is vital that HCPs connect with patients and address their emotional needs, deliver effective diabetes education, and involve the patient to facilitate shared decisions on therapy and disease management.

Infographic:



DIGITAL FEATURES

This article is published with digital features, including a video abstract and infographic to facilitate understanding of the article. To view digital features for this article go to https://doi.org/10.6084/m9.figshare.21395112.

INTRODUCTION

Type 2 diabetes (T2D) is a progressive condition with a complex pathophysiology [5]. Despite advances in treatment, many people with T2D fail to achieve glycemic control, leaving them at increased risk of serious complications if they do not receive appropriate treatment [1]. Therapeutic inertia, which is defined as "the underuse of effective therapies in preventing serious clinical endpoints" [6] results from barriers that can arise from the patient, the healthcare providers (HCP), or the healthcare system [7]. As with most progressive conditions, living with T2D can have a significant emotional impact owing to the demands of managing a chronic disease. This is termed diabetes distress [2] and can result in fear, anxiety, depression, and psychological insulin resistance, all of which act as barriers to successful treatment, as well as timely therapeutic intensification [3, 4].

It is well known that the involvement of individuals in decisions about their health contributes to improved health outcomes [9]. Shared decision-making allows patients to play an active role in such decisions [12], which can enhance patient self-efficacy (the belief in one's capacity to manage their healthcare [13]). Shared decisions should be made based on the patient's medical history, their personal and social situation, and their values [14]. Using a patient-centered approach, HCPs can share information on different diagnostic and treatment options, including the potential benefits, harms and burden, and in return, the patient conveys what matters to them according to their values and preferences [15]. This can be supplemented with materials such as decision aids or web-based learning materials, which allows the person with T2D to process the information in their own time [12]. This approach has been demonstrated to improve both disease-state knowledge, and understanding of treatment options and associated risks, while increasing patient satisfaction [12]. Shared decision-making is particularly relevant to the setting of diabetes where there are often significant treatment demands on a patient's daily life [16]. Indeed, shared decision-making has been shown to be most effective in people with glycated hemoglobin A1C (A1C) values greater than 8.5% [17]. Unfortunately, this approach is not routinely adopted in clinical practice [15], and its use likely needs to be expanded throughout an entire healthcare system to most effectively change glycemic outcomes [18]. This may be in part because of the belief that shared decision-making takes too long; however, there is little evidence to support this idea [19]. Although further research is needed to define best practices [20], sufficient information is currently available for HCPs and patients to adopt this method [14].

While patient preference should guide treatment decisions, it is also necessary for HCPs to advance therapy when necessary to avoid therapeutic inertia. In addition to obstacles from those living with T2D, HCPs can be the source of barriers to timely treatment intensification. As a result, therapeutic inertia is prevalent, and intensification of treatment is often delayed [4, 21, 22]. One study revealed that after a median follow up of 4.2 years, failure to intensify treatment occurred in 26% of patients with A1C $\geq$ 7%, and in 18% of those with A1C $\geq$ 8% [22]. In turn, long-term glucose elevation can increase the risk of developing micro- and macrovascular complications [4, 8]. Early therapeutic inertia is also linked to a reduced likelihood of achieving A1C targets later in the course of T2D, as well as increased risk for morbidity and mortality, and reduced quality of life [4].

To prevent therapeutic inertia, HCPs must adopt a proactive approach towards patient management that is combined with shared decision-making and patient-centricity: a model of care delivery that invites the patient to partner in their own diabetes management. Therefore, an open and effective relationship between the HCP and the person living with T2D is essential. Additionally, HCPs need to effectively engage with their patients, to build

rapport and trust, and to respond to each person's emotional needs [10]. It is vital that the patient is viewed as an equal partner with the right to make informed decisions on the management of their own disease [11].

This article incorporates shared perspectives from a person living with T2D, a nurse practitioner/Certified Diabetes Care and Education Specialist, and a clinical endocrinologist. It aims to provide HCPs with guidance on optimizing rapport with their patients, talking to them effectively, and helping them overcome barriers linked to the effective management of their diabetes and initiating injectable therapy. Please refer to the video abstract in the online/HTML version of the manuscript or follow the digital features link under the abstract.

This article is based on previously conducted studies and does not contain any new studies with human participants or animals performed by any of the authors.

INITIAL ASSESSMENT OF THE PATIENT'S NEEDS AND EXPECTATIONS

For people with T2D to make decisions on their disease management, they need to be receptive to appropriate diabetes education. In turn, HCPs need to be aware of the emotional burden of diabetes, the health literacy and cultural health beliefs of the person with T2D, and the potential barriers to treatment intensification.

Understanding the Barriers to Initiating Injectable Therapy

Barriers to initiating injectable therapy can arise from both HCPs and those living with T2D, often resulting in delayed advancement to injectable therapy [3]. Barriers from patients include injection anxiety, concerns about insulin, misconceptions (often derived from misinformation) that insulin therapy is linked to a poor prognosis [23–26], cultural health beliefs, [27–30], and fear of hypoglycemia [24, 31]. Further, many are reluctant to start injectable therapies owing to fears of weight gain. Many persons with T2D perceive the need for injectable therapy as a personal failure to manage their disease, and/or because they fear the loss of control of their lifestyle [3, 32, 33]. In addition, comorbid depression can frequently reduce a patient's willingness or ability to initiate treatment [34–36], and can affect how individuals perceive the benefits of injectable therapy and how they participate in their own care. To ensure that the expectations of people with T2D include the potential future use of injectables as a beneficial tool in the management of T2D, HCPs should take the lead in starting discussion about initiation of injectable therapy. This conversation should occur early in the course of therapy, well in advance of the requirement for injectable therapy, and preferably at diagnosis. However, many HCPs perceive insulin therapy as complex and requiring a great deal of time and monitoring. In addition, they often assume such discussion will create fear and impede optimal management.

Assessment of Older Adults with T2D

Psychological insulin resistance (fear of or reservations regarding the use of insulin) may be a particularly important consideration for insulin initiation in older adults [37]. HCPs may also be more reluctant to initiate insulin therapy in older adults due to the perceived difficulty of managing hypoglycemia in this population. Assessment of comorbid depression using the Geriatric Depression Scale may be appropriate to identify patients who may benefit from a more holistic approach to therapy [38]. When treating older adults with T2D, to reduce the risk of hypoglycemia, it may be appropriate to de-intensify their treatment, for example through using a basal insulin/glucagon-like peptide-1 receptor agonist (GLP-1 RA) fixed-ratio combination (FRC) to remove the need for multiple insulin injections, or by using basal insulin in combination with other non-insulin regimens instead of prandial insulin. Additionally, individualized A1C targets may need to be reevaluated and relaxed. Some people with T2D may benefit from accessing

recommended resources for patients, such as diabetes.org [39], or from a referral to a diabetes educator or local support groups.

Diabetes Distress and Depression

Diabetes distress arises from the challenges faced by people in trying to manage a demanding chronic disease [40]. It is important that diabetes distress is not viewed as a comorbid disorder or condition, but is understood as a natural emotional response to having diabetes [40]. Common emotions associated with diabetes distress include feeling powerless, hopeless and helpless, fear of complications or hypoglycemia, and burnout due to the demands of managing T2D. However, the experience of diabetes distress is not the same for all people and can be influenced by age, gender, culture, diabetes type, insulin, and complications of diabetes [40].

Clinically significant depression is present in 25% of people with T2D, and there is a bidirectional interaction between depression and T2D, in which depression adversely impacts the course of T2D, and T2D complications increase the risk and/or severity of depression [36]. Depression is associated with lower adherence to oral diabetes medications, and with making patients less likely to follow HCP guidance concerning diet, exercise, smoking and alcohol restriction, glucose self-monitoring, and participation in education programs [34]. Depression and diabetes distress need to be regularly assessed, and if left untreated the person with T2D may struggle to participate or cooperate fully with their management plan. The two-item Patient Health Questionnaire-2 can be used as a first step in screening to indicate if major depressive disorder is likely [41], and the Patient Health Questionnaire-9 can be used to further evaluate those in whom depression is identified as likely to occur [42]. For evaluation of diabetes distress, the diabetes distress scale can be used to identify patients experiencing high levels of distress linked to diabetes through pinpointing their specific concerns [43]. Referral to an appropriate HCP or local support group may be indicated to provide individualized care for the patient to overcome these issues.

The Importance of Assessing Health Literacy

In preparing the delivery of diabetes education to enable shared decision-making, it is important to understand that health literacy (the ability to obtain, process, and understand basic health information) varies from person to person [44]. The American Diabetes Association (ADA) Standards of Care state that clinicians and diabetes care/education specialists should provide easy-to-understand information and reduce unnecessary complexity when developing care plans in collaboration with people with diabetes [44]. It is important to note, however, that matching the complexity of language used to a person's health literacy is associated with better understanding than the use of oversimplified language [45]. People benefit greatly from acknowledgment of their emotional needs as well as clear explanation of the goals of therapy and how treatments work, using language tailored to their level of health literacy. Consideration of language barriers and cultural health beliefs, such as beliefs in traditional folk remedies and health misconceptions, is vital [27–30].

The teach-back method is useful in discussing areas of self-management and has been shown to improve adherence and a person's ability to manage their T2D [46–48]. This method involves the HCP relaying information in a way that is simple to understand, then the person with T2D explaining the content back as they understand it [46–48]. This allows for any misunderstandings to be identified and resolved. The teach-back method may also allow for some cultural barriers to be overcome by ensuing directions are understood when language may be an issue [29].

HOW TO CONNECT, ASSESS, AND INVOLVE THE PATIENT IN DECISION-MAKING

Connect with the Patient's Emotional Needs

The management of diabetes is routinely focused on the clinical aspects of the disease involving lifestyle management and therapy; however, as previously discussed, diabetes is also associated with emotional and distress-related experiences that directly affect the behavior and quality of life of the people who live with it [40].

The ability of HCPs to establish rapport with people with T2D when they first meet is vital in laying the groundwork for an effective partnership. For an initial consultation, a longer than normal appointment may be required to cover all necessary information with the patient, and to facilitate the formation of an effective relationship. It is possible that the patient may have had a bad experience with another HCP in the past, so the first step in connecting is to build trust [49]. Simple steps to achieve this include showing a genuine caring attitude, and making sure the person with T2D knows that their medical records have been reviewed, and that their diagnosis and pathology are understood [49]. It is important for the patient to have the chance to communicate their own story and goals, and for the HCP to listen without interrupting [49]. Active listening is an important skill in which the HCP listens to the patient, accurately interprets what is being said, and then responds in an appropriate manner [50]. To understand the needs and expectations of the patient, questions such as "What are your current concerns with your diabetes care and management?" and "Help me to understand your goals for therapy" can be asked. Data suggest that increased satisfaction with the HCP–patient relationship enhances outcomes [51–53].

For patients who have low health literacy, or where language is an issue, they may benefit by having someone close to them join them during consultation (with their agreement) to help facilitate information exchange.

Highlight the Importance of Shared Decision-Making

Shared decision-making works on the premise that both HCPs and people with T2D contribute towards a joint decision on the management and/or treatment of the condition. Approaches to shared decision-making include providing education to empower people to make decisions, cultivating the ability to voice a preference, and establishing emphatic conversation in which all parties discuss how to address the problems of living with diabetes [14]. This process builds confidence needed for improvements in self-efficacy. Shared decision-making has been associated with a better understanding of diabetes management and subsequent improvements in self-care including decisions on diet or foot care [54]. Decisions should be based on patient preference as well as clinical factors [12, 20]. For example, when deciding on an appropriate A1C target, information about A1C measures and how often it needs to be measured, can be used to reach a shared decision. Overall, shared decision-making is associated with improved treatment decisions, as well as patient awareness and understanding of the risks under varying treatment scenarios [20]. Cultural beliefs in traditional remedies can be explored as part of shared decision-making, and it may be possible to accommodate the use of traditional therapy alongside conventional therapy [29]. It should be noted that there are situations in which shared decision-making may be unfeasible, for example, for patients who have significant cognitive impairment. In such cases, it may be possible to include a family member to assist with shared decision-making with the consent of the patient with T2D.

Educate on the Importance of Individualized A1C Targets

It is important that people living with T2D understand the concept of A1C, it is a historical measurement, and the reasons for setting A1C targets. The ADA Standards of Care state that for many non-pregnant adults, an A1C target of

< 7% is appropriate [44]; however, they add that this should be adapted based on characteristics such as age, disease duration, and other illness. For example, for healthy older people with T2D (i.e., those with few coexisting chronic illnesses and intact cognitive function and functional status), A1C goals of between 7% and 7.5% are appropriate, while for those with limited life expectancy, or where the harms of treatment are greater than the benefit, less stringent A1C goals (for example, 8%) may be appropriate [44]. The ADA Standards of Care recommend that glycemic status is assessed twice a year for those with stable glycemia, whereas in people who have recently changed therapy and/or who are not meeting glycemic goals, it should be assessed more frequently, for example quarterly, or as needed [44].

As A1C is an indirect measure of glycemia over time, it is important to differentiate it from other blood glucose tests, such as fasting or postprandial tests, which are used to measure glucose levels at any one time point.

Advise the Use of Home Glucose Monitoring

People who actively manage their blood glucose can gain better control of their T2D compared with those who do not [55]. The use of self-monitored blood glucose (SMBG) or continuous glucose monitoring (CGM) can provide valuable information for many patients. The patient and the HCP should discuss patient preference regarding the frequency of testing and recommendations made thereafter. People with T2D need to be aware that the frequency of blood glucose monitoring varies according to treatment. For example, the usual recommendation for blood glucose monitoring when receiving basal insulin is before breakfast or bedtime, but this is increased for regimens that require multiple injections of insulin. The HCP should explain to the patient how these readings are used to interpret overall glycemic control and to assess for fasting and/or postprandial hyper- or hypoglycemia, and to guide dose adjustments and food choices. Use of SMBG/CGM provides an opportunity to enhance the HCP–patient relationship through information that can be used to support and educate the patient, and inform overall shared decision-making.

For SMBG to be successful, it is important that HCPs encourage and provide support to their patients. Results from a small longitudinal, 4-year study of people with T2D showed that use of SMBG decreased over time, with one reason cited by patients being a perceived lack of interest from their HCP about their meter readings [56]. For those who continued using SMGB, reassurance from their HCP was cited as a reason for doing so [56]. Therefore, it is important that HCPs are clear on whether a patient needs to use SMBG, how they should interpret results, and what action they should take. It is important to not make the patient feel at fault when readings do not match expectations, as people with T2D often feel shame or stigma around having T2D [57].

For some people, CGM systems may be more beneficial than SMBG; studies have demonstrated improved outcomes in people using CGM [58, 59]. CGM systems permit assessment of overall glycemic variability, and assessment of target time in range, defined as the amount of time the glucose level is between ≥ 70 and ≤ 180 mg/dL (Table 1) [60]. This provides more detailed information than A1C—which is a static, retrospective measure—allowing for timely management and insulin dose adjustment to avoid both hyper- and hypoglycemia. Increased time in range is associated with reduced risk of microvascular complications. Time below target (< 70 and < 54 mg/dL) and time above target (> 180 mg/dL) glucose concentrations are useful parameters for insulin dose adjustments and evaluation of treatment (Table 1) [14]. A CGM device is associated with less burden than frequent SMBG; it also removes the need for daily skin prick testing and permits close tracking of glucose levels. CGM results can be used to inform individuals about the effect of dietary choices and physical activity on their glucose levels. It is recommended that when prescribing CGM, the patient be given robust diabetes education, training, and support for ongoing use [14].

Key tips for successful communication about glycemic control:

- Describe what happens with T2D and how it develops
- Explain A1C and what it measures
- Explain the difference between various measures of blood glucose (A1C/fasting/postprandial)
- Discuss and agree on a clear A1C target and strategy, and the time it will take to achieve
- Ensure that the value of both A1C monitoring and SMBG/CGM is understood to emphasize the importance of short, medium, and long-term glycemic control/goals
- Describe specific timepoints when patients should self-monitor blood glucose and how they should interpret readings
  - Provide clarification on individual readings vs patterns in blood glucose
- For patients for whom CGM is beneficial, provide comprehensive training and support for continued use
- Recommend the use of food logs to assist with interpretation of CGM data
- Provide feedback on progress as indicated by SMBG/CGM
- Anticipate and proactively respond to psychological and psychosocial stressors and variables

Educate on the Need for Treatment Intensification

An important element in helping people with T2D understand why new therapies or changes to existing therapies are needed is imparting knowledge about the complex nature of T2D. It is thus essential to advise that T2D is a progressive, multifactorial disease that has multiorgan involvement and several pathophysiologic abnormalities, referred to as "the ominous octet" (Fig. 1) [5]. It may help to explain that, by the time of diagnosis, approximately 50–80% of beta-cell function is lost [5], and that the management of multiple pathophysiological defects requires the concomitant use of multiple agents with differing mechanisms of action. Thus, treatment is focused not only on controlling plasma glucose, but also on reversing other pathological defects. The progressive nature of T2D means monotherapy is often effective for only a few years, after which additional medications are required to maintain target A1C levels [44]. To slow the progression of T2D and to prevent beta-cell failure and the development of micro- and macrovascular

complications, normoglycemia must be restored by using appropriate therapy as early as possible [1]. It is essential that HCPs anticipate and address any sentiments on the part of the patient that they have failed, or feelings of guilt and/or inadequacy regarding the need for intensification of therapy. Equally, language that may infer blame on the patient should be avoided. Shared decision-making should be used when recommending treatment intensification, with the choice of additional medications being based on the preferences and clinical characteristics of the person with T2D [44], although it is recognized that the final decision may also depend on health insurance and formulary limitations.

Key tips and messages for a successful consultation when discussing treatment intensification

- Use easy-to-understand language, free from technical jargon
- Match language to the patient's level of health literacy

Explain that:

- T2D naturally worsens over time; the pathophysiology of T2D involves many organs
- Treatment must be started early to slow the progression of T2D
- Different treatments work in different ways; treatments are chosen to address the underlying causes of the pathophysiology
- Multiple medications, used in combination, may be required to treat different aspects of T2D; the need for additional therapies is not a reflection of how well a person is managing their disease and change/intensification is common
- Treatments should be decided upon based on a shared approach according to individual clinical characteristics and personal preference
- Side effects may be experienced, but they can be managed if they are brought to the HCPs attention

Empathize:

- Reassure that the progression of T2D and a requirement for injectable therapy is not a reflection of failure on the patient's part
- Acknowledge possible fear
- Ensure that support is available when injectable therapy is initiated and titrated
- Reflect back possible unexpressed feelings/concerns

Table 1 Standardized CGM metrics for clinical care

1. Number of days CGM device is worn (recommend 14 days)	
2. Percentage of time CGM device is active (recommend 70% of data from 14 days)	
3. Mean glucose	
4. Glucose management indicator	
5. Glycemic variability (%CV) target $\leq$ 36%[a]	
6. TAR: % of readings and time > 250 mg/dL (> 13.9 mmol/L)	Level 2 hyperglycemia
7. TAR: % of readings and time 181–250 mg/dL (10.1–13.9 mmol/L)	Level 1 hyperglycemia
8. TIR: % of readings and time 70–180 mg/dL (3.9–10.0 mmol/L)	In range
9. TBR: % of readings and time 54–69 mg/dL (3.0–3.8 mmol/L)	Level 1 hypoglycemia
10. TBR: % of readings and time < 54 mg/dL (< 3.0 mmol/L)	Level 2 hypoglycemia

CGM continuous glucose monitoring, *CV* coefficient of variation, *TAR* time above range, *TBR* time below range, *TIR* time in range

[a]Some studies suggest that lower %CV targets (< 33%) provide additional protection against hypoglycemia for those receiving insulin or sulfonylureas. Adapted with permission from Battelino et al. [60]

HELPING PATIENTS TO START INJECTABLE THERAPIES

Any intensification to injectable therapy must be based on a shared decision between the HCP and person with T2D, ensuring that patient expectations are discussed, and any questions and concerns are addressed, in addition to upfront discussion on possible side effects. Common questions and expectations of people with T2D are summarized in Table 2, along with information that the HCP can provide in response. To enable effective discussion, a longer than normal appointment may be required.

The ADA Standards of Care recommend use of a GLP-1 RA before insulin, where possible. If insulin is required, the ADA recommends use in combination with a GLP-1 RA for greater efficiency and durability of treatment, with reduced weight gain and risk of hypoglycemia [44]. Patients who require both a GLP-1 RA and basal insulin may benefit from a once-daily FRC of these agents. There are currently two available FRCs, iGlarLixi (insulin glargine 100 U/mL and lixisenatide) and IDegLira (insulin degludec 100 U/mL and liraglutide). A recent study has shown that compared with separate injections of a GLP-1 RA and basal insulin (prescribed simultaneously or subsequently), the use of the FRC, iGlarLixi, was associated with improved persistence and adherence, and with reductions in outpatient and pharmacy visits, pharmacy-related costs, and diabetes-related total costs [61].

Provide Training for Self-Injection

Correct administration of injectable therapy is essential to achieve optimal treatment benefit. For instance, incorrect insulin delivery techniques can result in complications such as lipodystrophy [62], incorrect dosing, increased pain [62, 63], and inability to achieve glycemic goals [63], as well as other consequences [65]. Often, HCPs are unaware when patients are using suboptimal injection techniques, which can include errors in preparations for injection, drawing up insulin (syringe users), priming (pen users), preparing correct doses, and injecting insulin [66]. When initiating injectable therapy, it is important to show patients how to inject their treatment using either a syringe or a prefilled pen, preferably via a face-to-face consultation. The HCP can ask the person with T2D to demonstrate their injection technique. Practice pens are available [26], although it is also possible to practice injection technique on an orange. It is important to emphasize to patients that the needles used for insulin injection are very short (typically being only 4–6 mm long) with a small gauge [64]. Extensive guidelines have been published on the best techniques for insulin injection [67].

Key topics for effective education on injectable therapies:

- Discuss with the person with T2D their beliefs, experiences, anxieties, and knowledge related to insulin use and/or injection
- A need for insulin therapy should never be used as a threat
- Emphasize that:
  - Insulin therapy can help control T2D
  - T2D progresses at different rates in different people, and some will require insulin at diagnosis
  - It is not the patient's failure that necessitates treatment intensification
- Discuss essential topics at initiation of therapy, and at least once a year thereafter. Essential topics include
  - Injection regimen, choice and management of devices used, choice and care/self-examination of injection sites, proper injection technique, injection complications and avoidance, injection site rotation, needle lengths and gauge, safe disposal of used sharps, and psychological hurdles and aids to overcome them
- Deliver instructions both orally and in writing
- Use the "teach back method" to ensure patient competence and confidence

Explain How Initial Insulin Dose is Calculated

Each person who requires insulin will have different insulin needs, so it is important to explain that the required insulin dose is not related to the severity of diabetes. The starting dose of basal insulin is recommended either as 10 units/day, or to be based on body weight (0.1–0.2 units/kg/day) and the risk of hyperglycemia; the dose is then titrated over time until the correct target fasting glucose level (usually between 80 and 130 mg/dL) is achieved. It is important to advise on the expected target dose and how long it is likely to take to reach that dose.

Ensure Effective Titration of Insulin

Insulin can be titrated using an evidence-based algorithm, such as increasing the dose by 2 units every 3 days to reach the fasting glucose target [44] or 1 unit a day for convenience (LixiLan OneCan). It is important for HCPs to be aware of the clinical signs of overbasalization, which are (1) a basal insulin dose greater than 0.5 units/kg; (2) a bedtime–morning glucose differential $\geq$ 50 mg/dL, hypoglycemia; (3) postprandial glucose values $>$ 180 mg/dl or A1C high while fasting plasma glucose is at goal; and

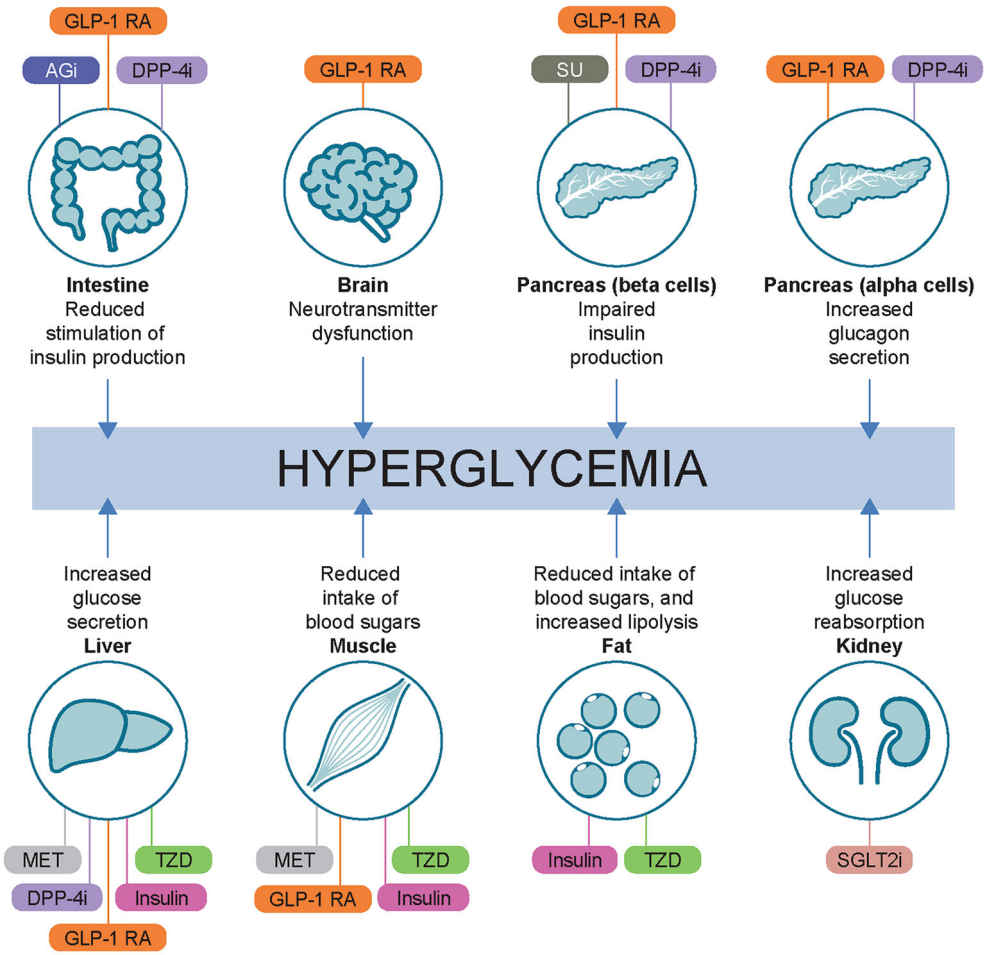


Fig. 1 Current treatment options for the different organs affected by type 2 diabetes [5]. *Agi* alpha-glucosidase inhibitor, *DPP-4i* dipeptidyl peptidase-4 inhibitor, *GLP-1 RA* glucagon-like peptide-1 receptor agonist, *MET* metformin, *SGLT2i* sodium-glucose cotransporter-2 inhibitor, *SU* sulfonylurea, *TZD* thiazolidinedione. Adapted with permission from DeFronzo et al. [5], American Diabetes Association, Practical Guidance for Healthcare Providers on Collaborating with People with Type 2 Diabetes: Advancing Treatment and Initiating Injectable Therapy. American Diabetes Association [2015]. Copyright and all rights reserved. Material from this publication has been used with the permission of American Diabetes Association

(4) a high variability in glucose levels, signs of which should prompt reevaluation to further individualize therapy [44]. It may be useful for patients to bring a logbook to their consultation so that dosing changes can be tracked, SMBG readings assessed, and any possible hypoglycemia events identified. CGM can be advantageous during titration as the HCP can use the information it provides to accurately assess progress.

Owing to the changes in insulin dose during titration, it is particularly important to educate the patient on the causes and symptoms of hypoglycemia, and on what to do if hypoglycemia does occur. Symptoms of hypoglycemia include sweating, feeling shaky and palpitations, sleepiness or tiredness, lack of

Table 2 Common patient questions and expectations with guidance on the information to provide

Questions	Response
How do I know my type 2 diabetes is being managed effectively?	
What is A1C?	A1C is glycated hemoglobin, a product of blood sugar (glucose) sticking to red blood cells. Red blood cells live for 2–3 months, so the A1C provides an estimate of your average blood glucose over the past 2–3 months. It is important to communicate that while A1C is important, it is not a replacement for routine blood glucose testing at home, which can capture high and low blood glucose levels and help guide medication adjustments. Additionally, conditions that affect red blood cell turnover (hemolytic and other anemias, glucose-6-phosphate dehydrogenase deficiency, recent blood transfusion, use of drugs that stimulate erythropoesis, end-stage kidney disease, and pregnancy) may result in discrepancies between the A1C result and your true mean glucose
What is my A1C now? What should my A1C be?	The A1C target can be individualized based on a number of factors. For otherwise healthy adults it is normally below 7%, but it will depend on age and other medical conditions
	A shared decision with the person with T2D should be used to decide upon an A1C target that is achievable, based upon the patients' individual needs
	It is useful to explain that if A1C is above target, complications caused by diabetes are more likely to occur, and that additional medications may be required to prevent this
	For patients using CGM, time-in-range, time below target (< 70 and < 54 mg/dL) and time above target (> 180 and > 250 mg/dL) are useful parameters for insulin dose adjustments and reevaluation of the treatment regimen
Why do I need a change in treatment?	
What is wrong with my current treatment?	Type 2 diabetes is a progressive disease; over time, diet and exercise, and the current treatment may become ineffective. This is true for everyone and does not mean the patient has been non-adherent
Why do I need an injectable therapy?	Emphasize injectable therapies are not a last resort, but an effective therapy that can slow or even prevent progression of type 2 diabetes
	A change in treatment to injectable therapy does not represent failure, make clear it is often necessary owing to the natural progression of diabetes
	For some patients, an FRC that contains basal insulin and a glucagon-like peptide-1 receptor agonist (GLP-1 RA) may be appropriate
How do I use my treatment?	
Can someone show me how to inject my therapy?	Provide training on insulin injection—it may be beneficial to provide a referral to a diabetes educator/nurse practitioner. It is possible to practice injection technique on an orange

Table 2 continued

Questions	Response
What dose will I start using; what will be my final dose?	Provide information on starting dose based on the patient's body weight; also provide an estimate of the likely final dose and explain how to titrate their insulin (see below) to reach the correct final dose
Titration—what is it, and what do I need to do?	When starting an injectable therapy such as insulin, the initial dose is small. To get to the correct dose, the dose is gradually increased over the course of a few weeks; this is called titration. To titrate to the correct dose, the starting dose will be adjusted based on fasting blood glucose measurements—this means that glucose readings will be needed at least once, maybe twice a day. Titration is a process in which all patients on injectable therapies engage
What can I expect from my treatment?	
How will my new treatment help me?	Provide an overview of the mechanism of action of treatments and provide information on why and how a change in treatment will help with glucose control
Will I achieve my A1C target?	Emphasize it is important that additional treatments needed to help achieve A1C targets are started without delay. The chances of achieving A1C targets are greatest if appropriate therapy is started early and titrated correctly. However, type 2 diabetes is progressive and has many different facets. This means that doses of therapies need to be adjusted, or additional therapies may be needed to achieve A1C and home glucose monitoring targets
Will I put on weight?	It is possible that weight gain will occur when taking insulin therapy. There is a paradox that uncontrolled hyperglycemia leads to weight loss, but restoration of normal glucose levels can lead to weight gain. Moderating the amount and types of food consumed can preempt weight gain associated with starting insulin therapy. Increasing exercise/physical activity can help with stopping or reducing weight gain [32]
	GLP-1 RAs have been shown to have a weight loss benefit [44]. Using an FRC that contains basal insulin and a GLP-1 RA may provide improved blood glucose control while mitigating potential weight gain
What is my treatment going to do to me? Are there any side effects?	GLP-1 RA therapy can cause gastrointestinal side effects such as nausea, vomiting, and diarrhea [69, 70], but these effects are usually mild and short-lived. If GLP-1 RA treatment is given with insulin in an FRC, the likelihood of experiencing nausea and/or diarrhea is reduced because the GLP-1 RA dose is gradually increased as the insulin dose is titrated [71]. GLP-1 RA therapy also causes weight loss so when taking an FRC any weight gain with insulin is mitigated by the GLP-1 RA [72, 73]

Table 2 continued

Questions	Response
Will I get hypoglycemia?	The risk of hypoglycemia in people with type 2 diabetes is relatively low, with most cases considered mild or moderate [74]. However, the risk is higher with certain therapies such as sulfonylureas and insulin. With insulin, the risk for hypoglycemia is greatest during the titration period [75]. However, newer insulins have a longer action in the body and have lower risk than older insulins [76, 77]. If insulin therapy is taken with GLP-1 RA therapy, the risk of hypoglycemia could be reduced compared with more complex insulin regimens that require multiple daily insulin injections [78]
How long will it take before I see an improvement?	After starting treatment, it will take about 3 months to see improvements in blood glucose reflected in the A1C, although home glucose checks can detect changes much sooner. Emphasize the need to monitor blood glucose every day, or as instructed, to ensure that medications are working appropriately, and they are at the most appropriate dose. Emphasize that HCP, patient, and nurse practitioner/Certified Diabetes Care and Education Specialist are a team, and that together the team can design a plan and goals that are best for each individual
Are there any other treatment or tools that may benefit me?	
How many injectables will I need?	The most important thing is to control blood glucose; if this takes more than one type of treatment, this is not unusual
If I am on insulin and a GLP-1 RA, will I benefit from an FRC?	An FRC may be appropriate for people who are on a GLP-1 RA and need basal insulin, for those who are already on both, and for those who have an A1C $\geq$ 9%. FRCs can potentially lead to less cost and certainly mean fewer injections compared with separate injectable therapies
What is continuous glucose monitoring?	A CGM is a device with a small electrode placed under the skin that is used for monitoring blood glucose on a continuous basis throughout the day and night. Use of a CGM has the benefit of not having to do routine finger prick testing
	The type of CGM should be chosen according to individual needs and insurance coverage. Insurance may cover CGM for a 30-day use if full-time use in patients on insulin is not covered. A referral to a diabetes nurse practitioner may be needed to get a CGM
	CGM provides a measurement of time in range

A1C glycated hemoglobin, *CGM* continuous glucose monitor, *FRC* fixed-ratio combination, *GLP-1 RA* glucagon-like peptide-1 receptor agonist, *HCP* healthcare provider

coordination, being anxious or moody, pallor, irritability, hunger, and being teary. If symptoms are present, the person with T2D should check blood glucose, and if it is low, consume 15 g of a fast-acting carbohydrate (e.g., orange juice) and wait 15 min and recheck. If the glucose level does not return to the normal range, these actions should be repeated until blood glucose is normal (70 mg/dL or higher). HCPs should advise that hypoglycemia risk arising from insulin therapy is at its highest during the titration phase, and to avoid hypoglycemia, it is best if blood glucose is checked at least twice a day, particularly before bed.

Communicate the Importance of Continuing Therapy to Maintain Glycemic Control

Achieving optimal outcomes with T2D therapy is reliant on the people using them being adherent and persistent with treatment [24]. A study by Donnelly et al. suggests that over a third of patients with T2D are poorly adherent to their therapy, and that this is linked to suboptimal glycemic control [68]. Reasons for poor adherence are multifactorial and include lifestyle limitations (i.e., being too busy, traveling), stress and emotional issues, dissatisfaction with

Key tips to help communicate effectively to people with T2D about insulin dose and titration:

- Reassure the person with T2D that insulin dose does not reflect the severity of T2D
- Explain that insulin is started at a low dose and increased over time; this is called titration
- Explain the expected optimal dose and how long it will take to achieve
- Advise on the target fasting glucose concentration, and the timing of this measure
- Offer guidance on dose adjustments; if a person is unsure about an adjustment, make sure that they know they can reach out for advice
- Educate people with T2D on the causes and symptoms of hypoglycemia, and what to do if it occurs
- Use the “teach-back” method – have the person with T2D repeat back information provided to them to check whether it has been understood
- Provide the patient with a diabetes “glossary” with key terms that may be encountered during their independent research and/or discussed with HCPs (e.g., titration, needle gauge, A1C, postprandial glucose, fasting plasma glucose, injection site reaction)

Key topics for encouraging treatment persistence and adherence:

- Check adherence: to confirm adherence ask to see needles, insulin, and/or pen devices from the last prescription
- If possible, assess each injection site visually and by palpation at each visit but at a minimum of once a year
- Anticipate questions and encourage patients to share their concerns
- Acknowledge and reinforce successes

the burden of daily injections, and fears linked to complications such as weight gain or hypoglycemia [24]. Therefore, it is essential to check adherence to therapy while acknowledging that high adherence is difficult to achieve. Patients should be encouraged to anticipate and share their concerns so they can be addressed. Acknowledging and reinforcing successes will help people see that their therapies are working and give them encouragement to continue taking them.

SUMMARY

This article provides advice for the adoption of a collaborative approach between people with T2D and their HCPs. We believe that being able to connect with patients by building trust and addressing their emotional needs will allow education on T2D to be effectively received by those living with this condition, giving them the knowledge and confidence to manage their T2D and to have their expectations met. Ultimately, this can lead to increased engagement between HCPs and people with T2D, more effective healthcare visits, and improved health outcomes.

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