

# Psychological barriers to insulin use among Australians with type 2 diabetes and clinical strategies to reduce them

Elizabeth Holmes-Truscott and Jane Speight

**Treatment intensification among adults with type 2 diabetes is commonly delayed beyond the point at which clinical need is identified, particularly within primary care. Causes of this delay are multifaceted. In addition to models of care to reduce systemic and healthcare professional barriers to timely insulin prescription, strategies to reduce negative attitudes towards insulin (known as “psychological insulin resistance”) among individuals with type 2 diabetes are also needed. This module draws on recent evidence of the extent and nature of the problem of psychological insulin resistance within Australia. The influence of early clinical interactions and diabetes education on the development of illness perceptions and medication beliefs among people with type 2 diabetes are discussed, as are strategies to assist clinicians to identify and address concerns about insulin therapy.**

Providing clinical management of type 2 diabetes (T2D) within primary care fosters continuity of care throughout the person’s life with diabetes and within their broader health and socioeconomic context. Approximately half of adults with T2D in Australian primary care have glucose levels above recommended targets, suggesting that treatment intensification may be required (Swerissen et al, 2016). Insulin is an effective yet complex treatment for T2D. Approximately 260 000 Australians with T2D (24% of the total) currently use insulin therapy to manage their diabetes, twice the number of Australians living with type 1 diabetes (National Diabetes Services Scheme, 2017).

Insulin therapy is often delayed beyond clinical need within primary care (Shah et al, 2005; Blak et al, 2012). The reasons for delayed insulin initiation are multifaceted, with barriers reported by both healthcare professionals and people with T2D (Peyrot et al, 2005). To improve timely treatment intensification, healthcare professionals

need be equipped with the knowledge and skills to identify and address the psychological barriers to insulin experienced by people with T2D.

Australian healthcare professionals report both personal barriers (e.g. inadequate knowledge, skills and confidence to initiate and titrate insulin therapy) and systemic barriers (including time and resource constraints) to insulin initiation (Furler et al, 2011). Recent research has demonstrated that insulin-specific training programs for health professionals and multidisciplinary healthcare team support can facilitate timely insulin initiation within primary care (Dale et al, 2010; Furler et al, 2017). Healthcare professionals also report that people with T2D have negative attitudes and emotional reactions to insulin therapy that act as barriers to insulin initiation (Peyrot et al, 2005; Phillips 2007). Indeed, one-quarter of Australian adults with T2D for whom insulin is clinically indicated are “not at all willing” to commence insulin therapy if recommended by their healthcare professional (Holmes-Truscott et al, 2016a).

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## Learning objectives

After reading this article, the participant should be able to:

1. Identify causes of psychological insulin resistance.
2. Assess attitudes toward insulin use among people with type 2 diabetes.
3. Tailor conversations to the individual’s concerns and personal context, acknowledging the benefits of and barriers to insulin use.

## Key words

- Attitudes
- Insulin therapy
- Psychological insulin resistance
- Type 2 diabetes

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**Page points**

1. Psychological insulin resistance is characterised by the negative attitudes to, or beliefs about, insulin therapy; it is not a clinical diagnosis.
2. Attitudes towards insulin change over time
3. Education may play an important role in the development of illness perceptions and, consequently, medication beliefs and receptiveness to treatment progression.
4. Conversation is needed from diagnosis about the progressive nature of type 2 diabetes.

**Psychological insulin resistance**

Psychological insulin resistance (PIR) is characterised by the negative attitudes to, or beliefs about, insulin therapy held by people with T2D that may lead to delayed insulin initiation, intensification or omission of insulin therapy. Adults with T2D who are unwilling to commence insulin report significantly more negative insulin appraisals than those who are receptive to initiation (Holmes-Truscott et al, 2016a).

PIR is not a clinical diagnosis. Most people with T2D facing the decision to use insulin will report some concerns about treatment intensification, and the presence of concerns about insulin does not inevitably lead to refusal to use insulin therapy. Furthermore, PIR is not static. Attitudes toward insulin change over time (Hermanns et al, 2010; Holmes-Truscott et al, 2017a) and, with clinical support, those who initially refuse insulin may go on to initiate treatment (Khan et al, 2008). A minority of people with insulin-treated T2D, however, continue to report high levels of negative insulin appraisals (Holmes-Truscott et al, 2015) and new barriers to optimal insulin use may arise over time, e.g. in response to changes in lifestyle or insulin regimen.

Beyond insulin initiation, PIR may impact on self-care behaviours, such as insulin omission, and willingness to intensify treatment (e.g. additional injections per day). Thus, it is important to consider the impact of negative attitudes toward, and experiences of, insulin therapy at all stages of clinical care, i.e. prior to and after insulin initiation.

Concerns, or negative attitudes, about insulin therapy typically surround:

- The necessity, effectiveness and side-effects of insulin.
- Anxiety about injections and glucose monitoring.
- Lack of practical skills and confidence in undertaking injections.
- Fears about the progression of T2D.
- Impact upon identity, self-perceptions and social consequences.

Religious, cultural and/or community norms and values concerning health, the healthcare system and medicines may also contribute to PIR

(e.g. Patel et al, 2012). The five most commonly endorsed negative attitudes toward insulin among Australian adults with T2D are given in *Table 1* (Holmes-Truscott et al, 2014). The most salient concerns about insulin, and their impact on the decision to commence treatment, will differ between individuals and needs to be assessed on a case-by-case basis.

**Early and ongoing care**

Education received at the diagnosis of T2D and reinforced thereafter may play an important role in the development of illness perceptions and, consequently, medication beliefs and receptiveness to treatment progression. One of the concerns most commonly reported by people with T2D is the belief that, if insulin is needed, it is because they have failed in terms of prior self-management efforts (see *Table 1*). This may be a consequence of broader illness perceptions that they themselves are to blame for their diagnosis or their subsequent inability to maintain optimal blood glucose levels (Browne et al, 2013).

Struggling to reach treatment goals can be frustrating and promote feelings of failure and self-blame. Such struggles can contribute to the negative and emotional reactions when insulin is recommended. In order to foster realistic illness perceptions without recourse to self-blame, proactive clinical conversation is needed from diagnosis about the progressive nature of T2D and the inevitable need for treatment intensification over time (Meneghini et al, 2010).

Among people with non-insulin-treated T2D, negative attitudes about insulin are positively associated with concerns about current diabetes medications, i.e. oral hypoglycaemic agents, and diabetes-specific distress (Holmes-Truscott et al, 2016b). Furthermore, both medication beliefs and diabetes-specific distress have been shown to be associated with medication-taking behaviours (Aikens and Piette, 2009; Aikens, 2012). Proactively identifying and addressing both thoughts and feelings from an early point in the person's journey with T2D is likely to improve their current medication-taking behaviours, as well as their receptiveness to further treatment intensification. Open-ended questions can be used to start a conversation and identify

**Table 1. Top five negative attitudes towards insulin among Australians with non-insulin-treated and insulin-treated type 2 diabetes (Holmes-Truscott et al, 2014).\***

Rank	Statement	Non-insulin-treated (n=499)	Rank	Statement	Insulin-treated (n=249)
1	Taking insulin means my diabetes has become much worse	80%	=1	Taking insulin means my diabetes has become much worse	51%
2	Taking insulin makes life less flexible	59%	=1	Insulin causes weight gain	51%
=3	Taking insulin means I have failed to manage my diabetes with diet and tablets	58%	3	Taking insulin means I have failed to manage my diabetes with diet and tablets	39%
=3	Being on insulin causes family and friends to be more concerned about me	58%	4	Taking insulin increases the risk of low blood glucose levels (hypoglycaemia)	36%
5	I'm afraid of injecting myself with a needle	48%	=5	Being on insulin causes family and friends to be more concerned about me	34%
			=5	Taking insulin makes me more dependent on my doctor	34%

\*Cited negative attitudes are selected statements from the Insulin Treatment Appraisal Scale (Snoek et al, 2007)

*“Several questionnaire tools to assess attitudes towards insulin therapy have been developed. The most widely used is the Insulin Treatment Appraisal Scale”*

underlying concerns. For example: “What is the most difficult part of living with diabetes for you?”, “Tell me about your experiences using your diabetes medication. How is it going?” (Hendrieckx et al, 2016).

### Identifying attitudes toward insulin

Several questionnaire tools to assess attitudes towards insulin therapy have been developed (and reviewed elsewhere; Holmes-Truscott et al, 2017b). The most widely used is the Insulin Treatment Appraisal Scale (ITAS; Snoek et al, 2007), which is suitable for use before and after insulin initiation and has been validated for use in Australia (English; Holmes-Truscott et al, 2014). Neither the ITAS nor other existing tools have been widely translated or culturally validated to date. The ITAS, or a similar tool, can be used clinically to tailor discussion of insulin therapy to the individual’s concerns.

The use of any single questionnaire, however, may limit discussion to the barriers included in that specific measure. Furthermore, PIR questionnaires do not quantify the strength of the concern. For example, a preference to avoid insulin injections and the associated pain is endorsed by many, but a small minority may be experiencing needle phobia. In addition,

PIR questionnaires do not qualify the concern or negative attitude within the broader needs and context of the individual with T2D. For example, the perceived impact of the inflexibility of insulin treatment may differ by life stage and lifestyle. Indeed, adults with insulin-treated T2D who are younger and employed report more negative insulin appraisals (Holmes-Truscott et al, 2015), and greater insulin omission (O’Neil et al, 2014; Browne et al, 2015), perhaps due to the additional competing demands on their time.

We recommended that health professionals ask open-ended questions to begin the conversation, or to supplement the use of validated questionnaires, in order to understand the extent of an individual’s specific concerns, misconceptions and expectations. Responses to open-ended questions can be used to tailor clinical discussion and intervention.

### Insulin initiation: a clinical conversation

Several commentaries on PIR and recommendations to reduce negative attitudes and guide the clinical conversation about insulin therapy have been published (e.g. Polonsky and Jackson, 2004; Meneghini et al, 2010). Most recently, the National Diabetes Services Scheme

**Page points**

1. A balanced understanding of insulin is needed to facilitate informed decision making and foster realistic expectations about treatment.
2. Rather than focusing only on the individual's concerns about insulin, begin with discussing the advantages and disadvantages of the current treatment.
3. Targeted use of glucose self-monitoring can improve a person's understanding of hyperglycaemia.

published *Diabetes and Emotional Health*, an evidence-based, clinically-informed, practical handbook to support healthcare professionals in meeting the emotional and mental health needs of adults living with diabetes (Hendrieckx et al, 2016). A chapter is dedicated to psychological barriers to insulin therapy, including a step-wise practical approach to assessing and addressing this within clinical care. A free copy of this handbook can be accessed online ([www.ndss.com.au](http://www.ndss.com.au)), alongside tools to support clinical care, including the ITAS questionnaire and a brief factsheet focused on psychological barriers to insulin to give to the person with T2D.

Some techniques to identify negative insulin appraisals and support the person with T2D in the decision to initiate insulin therapy are described below. Note that, while informed by research and clinical experience, the effectiveness of the proposed techniques in the specific context of reducing PIR and increasing insulin uptake is largely unknown. Indeed, few interventions have been designed specifically to improve attitudes toward insulin and none has been tested empirically.

### **A balanced approach to information provision**

People with T2D who do not fill their first insulin prescription are significantly more likely to report misconceptions about insulin therapy and that the risks and benefits of insulin therapy were not well explained to them (Karter et al, 2010). To facilitate informed decision making and foster realistic expectations about treatment, a balanced understanding of insulin therapy is needed, highlighting potential benefits and disadvantages of the treatment (both physical and psychological). A “decisional balancing” approach can be used to identify the individual's beliefs and concerns, and guide discussion of their treatment options. In using this approach, the clinician invites the person with T2D to list their top three perceived disadvantages and advantages of continuing with their current treatment and then to do the same about initiating insulin therapy. Their responses can be used as the basis for a conversation, to guide further information provision and potential strategies to overcome concerns.

Rather than starting with their concerns about insulin, begin with the advantages of their current treatment and then move onto the disadvantages. The next step is to explore how insulin might overcome these disadvantages, thereby eliciting the advantages of insulin. Then, the disadvantages of using insulin can be explored by asking the person which disadvantage would be the easiest for them to overcome. It is important to appreciate that the “pros” and “cons” may differ in their importance to the individual.

The “decisional balancing” approach is described in full elsewhere (Hendrieckx et al, 2016).

### **Engagement with idea of type 2 diabetes as a progressive condition**

As shown in *Table 2*, most people with T2D report a basic understanding of the benefits of long-term insulin therapy (Holmes-Truscott et al, 2014). However, knowledge and personal salience are two different things. Experience of hyperglycaemia (and diabetes-related complications) is a facilitator of insulin receptiveness (Phillips, 2007; Jenkins et al, 2010).

While clinicians should definitely not wait for complications to develop to convince the person with T2D of the need to use insulin, targeted use of glucose self-monitoring can improve a person's understanding of and appreciation that they are experiencing persistent hyperglycaemia. The Australian government has recently restricted the use of glucose strips among people with non-insulin-treated T2D, which may lead healthcare professionals to believe that glucose monitoring is unwarranted in this group (Speight et al, 2015). Brief intervention with “structured” glucose monitoring, however, provides an opportunity for “experiential learning” and “discovery”. Randomised trials have shown “structured” monitoring to increase insulin uptake and reduce HbA<sub>1c</sub> compared to usual glucose monitoring (Polonsky et al, 2011).

The practical use of this approach has been discussed elsewhere (Furler et al, 2016).

### **An insulin trial**

Insulin uptake may be an effective intervention to reduce PIR in and of itself. People with T2D commonly, but not exclusively, report

**Table 2. Perceived benefits of insulin use among Australians with non-insulin-treated and insulin-treated type 2 diabetes (Holmes-Truscott et al, 2014).\***

Statement	Non-insulin-treated (n=499)	Insulin-treated (n=249)
Taking insulin helps to prevent complications of diabetes	76%	77%
Taking insulin helps to improve my health	68%	76%
Taking insulin helps to maintain good control of my blood glucose	75%	79%
Taking insulin helps to improve my energy levels	31%	31%

\*Cited benefits are selected statements from the Insulin Treatment Appraisal Scale (Snoek et al, 2007)

relief after injecting insulin for the first time and longitudinal research suggests that negative attitudes toward insulin reduce following insulin initiation (Khan et al, 2008; Hermanns et al, 2010; Holmes-Truscott et al, 2017a). Thus, as suggested by Polonsky and Jackson (2004), one way to improve attitudes towards insulin therapy may be an “insulin trial”. This involves the individual trying an injection in the safety of the clinic or using insulin at home for a predefined short period of time. This approach is clearly limited, however, by the fact that the person with T2D must be willing to trial/use insulin therapy.

### Conclusion

The phenomenon of PIR has been investigated globally and, recently, in the Australian context (Holmes-Truscott et al, 2014; 2015; 2016a; 2016b; 2017a). Many strategies have been proposed to assist healthcare professionals in identifying and addressing barriers to insulin use among people with T2D and promote timely insulin uptake. The National Diabetes Services Scheme *Diabetes and Emotional Health* handbook includes a chapter about identifying and addressing psychological barriers to insulin in clinical practice (Hendrieckx et al, 2016). A key research gap is the need to empirically test the effectiveness of these strategies for reducing PIR and improving timely insulin uptake.

In addition to assessing and addressing PIR at the time of insulin initiation, assessment of concerns about diabetes and its treatment need to be addressed throughout the progression of T2D and may help improve receptiveness to future treatment intensification, optimal medication-taking behaviours and adjustment to T2D. ■

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Participants should read the preceding article before answering the multiple choice questions below. There is ONE correct answer to each question. After submitting your answers online, you will be immediately notified of your score. A pass mark of 70% is required to obtain a certificate of successful participation; however, it is possible to take the test a maximum of three times. A short explanation of the correct answer is provided. Before accessing your certificate, you will be given the opportunity to evaluate the activity and reflect on the module, stating how you will use what you have learnt in practice. The CPD centre keeps a record of your CPD activities and provides the option to add items to an action plan, which will help you to collate evidence for your annual appraisal.

- What proportion of Australians with type 2 diabetes (T2D), who would clinically benefit from insulin initiation, report being “not at all willing” to commence insulin therapy?  
Select **ONE** option only.
  - 1 in 10
  - 1 in 5
  - 1 in 4
  - 1 in 2
  - 2 in 3
- Approximately how many Australians with T2D are currently using insulin therapy to manage their diabetes?  
Select **ONE** option only.
  - 540 000
  - 260 000
  - 118 000
  - 37 400
  - 26 000
- Which of the following statements about psychological insulin resistance (PIR) is **FALSE**? Select **ONE** option only.
  - PIR is characterised by the negative attitudes to, or beliefs about, insulin therapy.
  - PIR inevitably leads to refusal of insulin therapy.
  - Attitudes to insulin therapy are amenable to change.
  - PIR may lead to delayed insulin initiation, intensification or omission of insulin therapy.
  - PIR is not a clinical diagnosis.
- When do negative attitudes to, or beliefs about, insulin develop?  
Select **ONE** option only.
  - Before diabetes diagnosis.
  - Soon after diagnosis during initial diabetes education.
  - At first clinical discussion of insulin therapy.
  - After insulin initiation or change in insulin dose regimen.
  - All of the above.

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5. Which of the following statements about existing questionnaires measuring psychological insulin resistance is **FALSE**? Select **ONE** option only.
- A. They are widely translated and culturally validated, allowing for broad use in multicultural Australia.
  - B. They can be used to identify an individual's concerns and tailor the clinical discussion accordingly.
  - C. Questionnaires do not qualify the concern within the broader needs and context of the individual with T2D.
  - D. Questionnaires do not quantify the strength or salience of the concern to the individual.
  - E. One questionnaire has been validated for use among English-speaking Australians with T2D.
6. Which of the following is the **MOST COMMON** negative attitude or concern about insulin reported by Australians with non-insulin treated T2D? Select **ONE** option only.
- A. I'm afraid of injecting myself with a needle.
  - B. Taking insulin means I have failed to manage my diabetes with diet and tablets.
  - C. Taking insulin increases the risk of low blood glucose levels.
  - D. Insulin causes weight gain.
  - E. Injecting insulin is embarrassing.
7. A clinical conversation about commencing insulin therapy should **NOT** (select **ONE** option only):
- A. Include discussion of the risks and side-effects of insulin therapy.
  - B. Focus on the benefits of insulin use and downplay the risks or side-effects.
  - C. Involve open-ended questions to identify an individual's concerns, misconceptions and expectations about insulin.
  - D. Involve the use of a validated questionnaire.
  - E. None of the above.
8. Some people with T2D who use insulin therapy report (select **ONE** option only):
- A. Feeling relief after injecting for the first time.
  - B. Taking insulin helps to improve or maintain their blood glucose levels.
  - C. That being on insulin causes family and friends to be more concerned about them.
  - D. That taking insulin makes them feel like they have failed to manage their diabetes.
  - E. All of the above.
9. Which of the following statements is **FALSE**? Select **ONE** option only.
- A. 76% of people with non-insulin-treated T2D agree that insulin helps to prevent complications of diabetes.
  - B. Adults with insulin-treated T2D who are younger and employed report more negative insulin appraisals.
  - C. 48% of people with non-insulin-treated T2D have needle phobia.
  - D. Negative attitudes about insulin are positively associated with concerns about oral diabetes medications.
  - E. 77% of people with insulin-treated T2D agree that insulin helps to prevent complications of diabetes.
10. Which of the following is **NOT** a suitable technique to increase timely insulin initiation in primary care? Select **ONE** option only.
- A. Use the clinical conversation as an opportunity to foster realistic expectations about diabetes and treatment progression.
  - B. Organise additional insulin-specific training for yourself and your health professional colleagues.
  - C. Encourage structured, meaningful, blood glucose monitoring to help the person with diabetes to recognise out-of-target blood glucose and the need for insulin.
  - D. Propose an insulin trial involving an insulin injection in the safety of the clinic, or using insulin for a predefined short period of time.
  - E. Avoid discussing insulin therapy until absolutely necessary to avoid upsetting the person with diabetes.