

# Standard 7

*When insulin is required it should be initiated by trained health care professionals within a structured programme that, whenever possible, includes education in dose titration for the person with diabetes.*

## Key practice points

- Insulin is a lifelong requirement for people with type 1 diabetes.
- Starting insulin requires specialist knowledge and expertise, and insulin should only be initiated by suitably qualified practitioners.
- It takes time to assimilate the knowledge and skills required to manage insulin starts and sufficient numbers need to be performed on a regular basis in order to maintain competency.
- A structured programme for insulin initiation should include patient education about blood glucose monitoring and how to understand and use the results to support dose titration.
- Specialist management is needed to balance glycaemic control, hypoglycaemia and weight gain, taking into account individual circumstances.

Read this standard in conjunction with the equality and diversity section in the Introduction to the Toolkit.

## What the quality statement means for each audience

**Service providers** ensure adequate staff training in initiating and managing insulin therapy within a structured programme, and providing self-management education to people on insulin, including dose titration.

**Health care professionals** ensure they are competent in insulin initiation and ongoing insulin management within a structured programme by accessing training and are able to support people with diabetes in managing their treatment, including insulin titration.

**Planners and funders** ensure they commission services that provide training and assess ongoing competency of health care professionals for initiating and managing insulin therapy within a structured programme that includes education in insulin titration for people with diabetes.

**People with diabetes** who need insulin receive help and support from trained health care professionals, including help with starting on insulin and managing their treatment. This should include advice on adjusting the dose of insulin according to their blood glucose levels.



## Introduction

Because the pancreas produces very little or no insulin in people with type 1 diabetes, insulin for these people is a lifelong requirement.

According to the **Best Practice Advocacy Centre** (BPAC) New Zealand, 'Insulin should be considered in all people with type 2 diabetes who have unsatisfactory glycaemic control, despite lifestyle support and maximal oral hypoglycaemic agents. For a patient with significant hyperglycaemia who is already on maximal oral agents, the move to insulin should be immediate. The presence of diabetic complications and personal patient preference may also influence the decision to initiate insulin' (p 2). It has been suggested that insulin is not being initiated in line with treatment guidelines. The INSTIGATE study of people with type 2 being started in insulin in five European countries concluded that insulin was initiated only after HbA1c levels had been considerably higher than recommended guidelines for a considerable time (Jones et al 2009). BPAC (2012) notes that the HbA1c level at which insulin should be initiated differs by individual but that insulin should be viewed as just another step in the treatment ladder. Action in terms of starting and titrating insulin should be taken if the HbA1c level is unacceptable for a particular individual.

### Health care professionals

Initiating insulin is an increasing requirement of both secondary and primary care services but requires considerable knowledge, expertise and experience to manage safely. Research has demonstrated that many practitioners are wary of starting people on insulin and continue to apply other approaches and delay initiation. Diabetes nurse specialists are the key personnel in managing insulin starts and also providing education and supervision of other staff until they develop skills and proficiency to do insulin starts alone. An evaluation of the Wandsworth Insulin Start Programme (WISP), a course designed to educate and support GPs and practice nurses to initiate insulin in people with type 2 diabetes, was performed by Chadder (2013). The course provided 2.5 days of intensive training followed by supervision of between 3 and 10 starts over the following year. A GP and practice nurse from the same practice were encouraged to attend in order to develop a team approach to insulin starts in primary care. While feedback on the course was positive, its effectiveness over time could not be asserted due to variable numbers of starts being done and attendees not performing enough starts to develop the necessary skills and expertise. Chadder states that 'Practice nurses and GPs need to be carrying out insulin initiation on a regular basis in order to maintain skills and confidence and have the time available to cover every aspect of education involved in an insulin start' (2013, p 147).

### Structured programme

The **National Institute for Health and Care Excellence** (NICE 2011) states that a structured programme for patients starting on insulin should include:

- structured education
- continuing telephone support
- frequent self-monitoring
- adjusting doses
- understanding diet
- managing hypoglycaemia
- managing acute changes in plasma glucose control values

- support from an appropriately trained and experienced health care professional
- injection technique including site selection and care
- managing sick days.

and should be:

- evidence-based
- quality assured
- built around a structured curriculum
- delivered by trained educators
- audited ([www.nice.org.uk/Guidance/QS6/chapter/quality-statement-6-insulin-therapy](http://www.nice.org.uk/Guidance/QS6/chapter/quality-statement-6-insulin-therapy)).

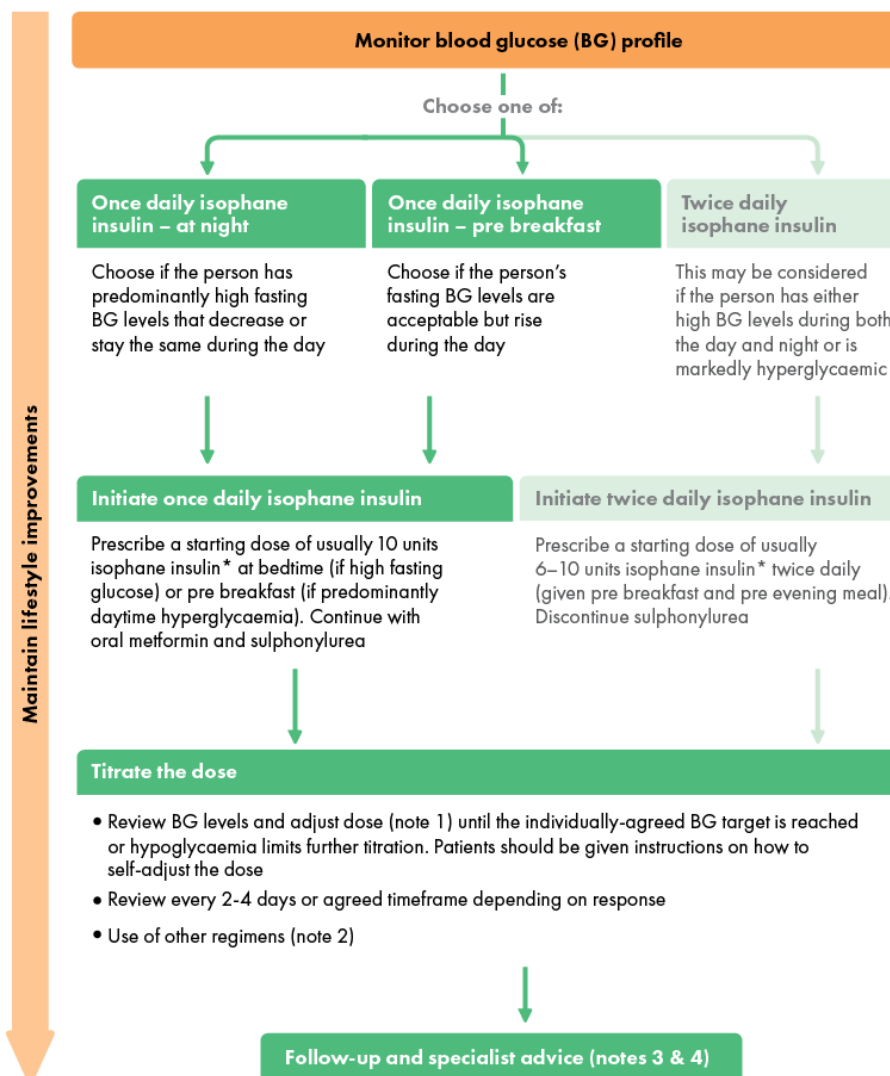


## Guidelines

The New Zealand **Best Practice Advocacy Centre (BPAC)** guidelines for initiating insulin can be found here: [www.bpac.org.nz/BPJ/2012/february/insulin.aspx](http://www.bpac.org.nz/BPJ/2012/february/insulin.aspx)

The **New Zealand Primary Care Handbook 2012** provides an algorithm for starting insulin on page 61.

### Initiation of insulin in primary care



\* Currently funded isophane insulin is Protaphane or Humulin NPH.

**Waitemata District Health Board (DHB)** produced a set of algorithms to optimise medication for people with type 2 diabetes. They include advice on treatment and insulin initiation ([www.waitematadhb.govt.nz/LinkClick.aspx?fileticket=ENo58lPEzSY%3D&tabid=93&mid=685](http://www.waitematadhb.govt.nz/LinkClick.aspx?fileticket=ENo58lPEzSY%3D&tabid=93&mid=685)).

The **Institute for Clinical Systems Improvement (ICSI)** provides a series of decision algorithms including one on the initiation of insulin ([https://www.icsi.org/\\_asset/3rrm36/Diabetes-Interactive0412.pdf](https://www.icsi.org/_asset/3rrm36/Diabetes-Interactive0412.pdf)).

In relation to the administration of insulin, there is no New Zealand or UK competency assessment or accreditation in place. However, the New Zealand **National Diabetes Nursing Knowledge and Skills Framework** provides the following list of competencies for specialist diabetes nurses, the only ones listed as being able to initiate insulin:

- demonstrate proficient knowledge of insulin and insulin regimens and act as a resource for the person with diabetes and their family/whānau, and health care professionals
- describe potential insulin regimens and when each could be prescribed
- explain how to manage missed or incorrect insulin dose
- assess the person with diabetes' educational needs and deliver appropriately
- provide care and education to assist with the safe transition from oral therapy to insulin therapy
- maintain contemporary knowledge of current practice and new developments (<http://nzssd.org.nz/documents/dnss/National%20Diabetes%20Nursing%20Knowledge%20and%20Skills%20Framework%202009.pdf>).

Similarly, an Integrated Career and Competency Framework for Diabetes Nursing was developed in the UK (TREND-UK 2011), which outlines the competencies for diabetes nurses at various levels. Insulin initiation is included at the 'expert/proficient' level requiring the following competencies, over and above those required of a 'competent' diabetes nurse:

- demonstrate a broad knowledge of different insulin types (ie, action, use in regimens)
- demonstrate a broad knowledge of GLP-1 receptor agonists (eg, drug type, action, side-effects)
- assess individual patients' self-management and educational needs and meet these needs or make appropriate referral
- support and encourage self-management wherever appropriate
- initiate insulin or GLP-1 receptor agonist therapy where clinically appropriate
- recognise when injection therapy needs to be adjusted
- recognise the potential psychological impact of insulin or GLP-1 receptor agonist therapies and offer support to the person with diabetes or their carer
- recognise signs of needle fear/needle phobia and offer strategies to help manage this ([www.diabetes.org.uk/Documents/Professionals/Competencies/An%20Integrated%20Career%20and%20Competency%20Framework%20for%20Diabetes%20Nursing\\_TREND\\_2011.pdf](http://www.diabetes.org.uk/Documents/Professionals/Competencies/An%20Integrated%20Career%20and%20Competency%20Framework%20for%20Diabetes%20Nursing_TREND_2011.pdf)).



## Implementation advice

The **New Zealand Primary Care Handbook 2012** provides the following implementation advice:

Prior to initiating insulin therapy, it is essential that the patient regularly self-monitors blood glucose levels to assist decision-making about an appropriate insulin regimen.

Assessing blood glucose profile: practice points.

- Educate the patient on how to measure blood glucose levels using a meter and how to record results using a log book (see Appendix J for an example) to determine their current blood glucose profile.
- Review recorded blood glucose results with the patient to identify their current blood glucose profile and 'problem' times of the day.
- Use their blood glucose profile to help you and the patient decide on an appropriate insulin regimen (see Appendix J, which includes a logbook interpretation as an example).

**Best Practice Advocacy Centre** (BPAC 2012) includes the following information:

General practitioners may be reluctant to begin insulin treatment due to:

- the complexity of the training required to educate the patient
- a lack of time and resources to perform adequate consultations and follow-up
- a lack of practice training and access to educators
- concerns that insulin increases the risk of hypoglycaemia
- concern that patients will view insulin as a 'shortcut' and become less compliant with oral hypoglycaemic medication and lifestyle changes
- the possibility of weight gain that is associated with insulin treatment.

These issues need to be carefully considered and practice strategies put in place to address any barriers to providing treatment.

In addition, patients may be reluctant to begin insulin treatment due to:

- the fear of injections and the inconvenience of performing them
- the need for regular monitoring of blood glucose levels
- social discomfort surrounding the need for injections, or fear of loss of employment if their job involves driving
- a feeling that insulin initiation means that they have failed and are 'at the end of the line'
- concern over adverse effects such as weight gain and hypoglycaemia that are associated with insulin.

In order to allay concerns, it is important that patients understand that having type 2 diabetes means they have a progressive shortage of insulin to manage glucose levels over time and that medicine needs will change – beginning insulin does not mean that they have failed. Insulin types and delivery systems have improved over the years and injections now cause minimal discomfort while allowing discreet use. Many patients also report increased energy levels and wellbeing following insulin initiation.

It is usually beneficial to include the patient's partner or family in discussions about insulin initiation. If patients are particularly reluctant, a two-month trial period can also be suggested, after which point the patient can reassess their decision.

**Health Mentor Online** provides education and knowledge self-assessment on insulin and its initiation as well as other diabetes related topics. The resource is free for registered nurses employed as Practice Nurses and can be accessed by other health professionals by arrangement (<http://pro.healthmentoronline.com/>).

**NZ Guidelines Group:** The following advice on patient education associated with the initiation of insulin is provided by a NZGG Diabetes Advisory Group (2011).

Your patient will need education and advice on:

- self-monitoring of blood glucose
  - when to test, how to test, how to record in a log book style
  - test if they have symptoms of hypoglycaemia
  - increase frequency of testing if unwell
- insulin regimen
  - which insulin preparation
  - what the dose is, and when to administer it
  - how to use the insulin injection device
  - how to titrate the dose (if this is appropriate at this stage)
- how to administer insulin
- how to store the insulin and how to dispose of ‘sharps’
- dietary and lifestyle advice
  - maintaining a healthy body weight by healthy eating and exercise
  - the risk of hypoglycaemia with excess alcohol consumption
- managing hypoglycaemia
  - how to recognise the symptoms of hypoglycaemia
  - how to manage and prevent episodes of hypoglycaemia
- driving: legal and practical issues
  - ensure the patient understands their responsibility to maintain a reasonable level of glycaemic control while minimising their risk of hypoglycaemic episodes
  - if the patient is a vocational driver please refer for specialist advice
  - refer to the NZ Transport Agency Medical aspects of fitness to drive: A guide for medical practitioners (July 2009).

## **Dose titration**

BPAC (2012) states that:

Patients require adequate education and training before they begin SMBG and self-administering insulin. It should be made clear that the initial dose of insulin is merely a starting point from where titration will be based – a common error is to initiate but not to titrate the dose effectively. Patients can be safely taught to self-adjust insulin doses in response to blood glucose levels, however, follow-up is essential. The need for continued exercise to prevent weight gain should also be emphasised. Practice staff training patients with type 2 diabetes to self-administer insulin need to have a thorough working knowledge of all the practical aspects of insulin treatment. In some DHBs training programmes for health professionals are run by diabetes nurse educators. In some cases it may be necessary for practices to contact manufacturers for specific product training.

After the initiation of insulin, twice weekly phone calls to the patient are recommended in combination with face-to-face meetings as required, until satisfactory glycaemic control is achieved. From this point, regular contact between the patient and the practice should be maintained, as blood glucose levels may be affected by other illnesses and insulin dose adjustments may be required. A face-to-face meeting approximately one month after initiation is also recommended to assess the need for regimen adjustment.

It should be emphasised to all patients, before they begin taking insulin, that medication is not a substitute for a healthy lifestyle and that behavioural strategies such as exercise, healthy eating and smoking cessation should still continue. Alcohol consumption should be moderate as this increases the risk of hypoglycaemia in patients taking insulin (p 25).

A guide to dose titration following the initiation of insulin is provided on page 62 of the New Zealand Primary Care Handbook 2012.

**Canadian guidelines** can be found here:

(<http://guidelines.diabetes.ca/Browse/Appendices/Appendix3>).



## Implementation examples / innovations



### Hutt Valley DHB

Hutt Valley DHB has developed a collaborative venture between a local primary health organisation (PHO) and the specialist diabetes service. The 'Diabetes Action' programme aims to facilitate general practice teams to provide improved diabetes care through the provision of a two-day education programme for practice nurses. The programme is delivered by the specialist nursing team and nurses are then certified to provide care to people with type 2 diabetes. The practice is then funded to provide their patients with three additional visits to follow up on care planning, monitor progress and provide ongoing diabetes education. Multidisciplinary workshops on insulin management are provided by the endocrinologist and specialist nursing team, after which practice teams are encouraged to commence insulin in people with type 2 diabetes in collaboration with the specialist service. In particular, the practice nurses are supported by the local clinical nurse specialists through telephone liaison, joint consultations and yearly update sessions (Diabetes Care Workforce Service Review Team 2011).



### Capital & Coast DHB

Capital & Coast District Health Board has developed a similar practice model designed to take secondary care into the community in the form of upskilling and mentoring practice nurses to increase their support of people with diabetes and do insulin starts. Building on initial outreach work and diabetes services developed by the PHO and Compass Health with nurses and GPs in Newtown and Porirua, the 'Nursing Practice Partnership – a Diabetes Care Improvement Package' was trialled with Karori Medical Centre in 2011. At that point, the nurses provided diabetes annual reviews but no additional diabetes services, such as Care Plus, were run by GPs. A Diabetes Clinical Nurse Specialist (DCNS) from the Diabetes Specialist Service started by running specialist clinics in the practice and gradually developed the knowledge and skills of two Practice Nurses to enable them to take on the role of diabetes nurse 'champions'. This was achieved primarily by working alongside them to build confidence and competence. The online diabetes learning modules provided by Health Mentor Online

(<http://pro.healthmentoronline.com>) were also used to increase the nurses' knowledge. The DCNS has gradually reduced her personal involvement in the practice but supports the Practice Nurses who now run nurse-led diabetes clinics including insulin starts. The partnership model is currently being rolled out to 15 practices identified as having high numbers of patients with or at risk of developing diabetes, with the hope that all practices in the DHB will be included by next year. The package also involves working with GPs in practices, with endocrinologists holding peer and case reviews with practice teams, including virtual clinics for nurse champions and GPs to attend ([www.nursingreview.co.nz/issue/june-2014/close-to-home-better-nurse-led-diabetes-care-on-your-back-doorstep/#.U7iuLSwrjIU](http://www.nursingreview.co.nz/issue/june-2014/close-to-home-better-nurse-led-diabetes-care-on-your-back-doorstep/#.U7iuLSwrjIU)).



### **Bancroft et al (2013) longitudinal study**

Bancroft et al (2013) are currently running a longitudinal study of outcomes associated with a patient self-titration model of care involving the use of titration protocols. Initial three-month results based on 26 participants have found a mean increase in body weight of 2 kg and a mean drop in HbA1c of 1.6%. All participants attributed improved skills, knowledge and confidence in insulin dose adjustment and diabetes self-management to the Model of Care and all agreed or strongly agreed that the protocols were easy to use. Follow up will continue for a further 18 months to determine longer term outcomes.



### **Southern PHO**

Southern PHO has developed an insulin initiation programme for people with type 2 diabetes. It is based on the New Zealand Guidelines Group (2011) document pertaining to the management of type 2 diabetes. Details can be found here: ([http://southernpho.health.nz/downloads/complete\\_insulin\\_initiation\\_info\\_to\\_medtech\\_practices\\_27-09-11.pdf](http://southernpho.health.nz/downloads/complete_insulin_initiation_info_to_medtech_practices_27-09-11.pdf)).



### **Assessment tools**

**Best Practice Advocacy Centre (BPAC) NZ** provides a clinical audit for the initiation of insulin for people with type 2 diabetes who are on oral agents and have poor glycaemic control.

The audit is in two parts. Part 1 is designed to audit the trigger point for initiation of insulin in people using it, part 2 is designed to audit the escalation of treatment for people with type 2. Forms for recording data are provided.

#### **Part 1**

Auditing the current 'trigger point' for the initiation of insulin in patients with type 2 diabetes in your practice:

- Identify patients to audit
  - Step 1: Using the query builder in your Practice Management System (PMS), identify patients with type 2 diabetes who are already on insulin.
- Work out your 'current trigger point' for initiating insulin
  - Step 2: From the patient's notes record the HbA1c level at which treatment with insulin was initiated. (Use the data sheet to record your data).



- Identify any gaps in your practice
  - Step 3: Based on current evidence, identify an HbA1c level at which patients with type 2 diabetes in your practice should be initiated on insulin, this is your target ‘trigger point’.
  - Step 4: Using data from Step 2 above, calculate the average HbA1c at which treatment with insulin was initiated. What is the gap between this and your target ‘trigger point’?

## Part 2

Auditing the escalation of treatment for patients with type 2 diabetes in your practice:

- Identify patients to audit
  - Step 1: Using the query builder in your PMS, identify 20 patients with type 2 diabetes on metformin.
- Identify any gaps in your practice
  - Step 2: Identify patients from your sample with an HbA1c greater than or equal to 64 mmol/mol.
  - Step 3: Using the patient’s notes, establish whether the patient’s dose of metformin has been titrated to the maximum tolerated dose. (Use the data sheet in Appendix One to record your data)
  - Step 4: Use this data to:
    - a. calculate the proportion of these patients that are not on a maximum tolerated metformin dose
    - b. calculate the proportion of these patients that have an HbA1c greater than or equal to your target ‘trigger point’ for initiating insulin from Part 1 above.

Patients identified in step four above represent the gap between ‘ideal’ practice and your current practice. These patients should be reviewed with a view to escalating treatment or initiating insulin ([www.bpac.org.nz/resources/other/audits/bpac\\_insulin\\_audit\\_wv.pdf](http://www.bpac.org.nz/resources/other/audits/bpac_insulin_audit_wv.pdf)).

The **National Institute for Health and Care Excellence** (NICE 2011) provides the following quality measures.

### Process

The proportion of people with diabetes starting insulin therapy that is initiated by a trained health care professional.

Numerator	The number of people in the denominator starting insulin therapy initiated by a trained health care professional
Denominator	The number of people with diabetes requiring insulin therapy

The proportion of health care professionals initiating insulin therapy who have documented appropriate training for starting and managing insulin.

Numerator	The number of health care professionals in the denominator having documented appropriate training for starting and managing insulin
Denominator	The number of health care professionals initiating and managing insulin therapy

The proportion of people with diabetes who receive ongoing structured support to initiate and manage insulin therapy.

Numerator	The number of people in the denominator receiving ongoing support to initiate and manage insulin therapy
Denominator	The number of people with diabetes starting insulin therapy



## Resources

The following article (Levich 2011) reviews **the benefits of intensive glycaemic control** in type 2 diabetes, therapeutic goals and guidelines, advances in insulin therapy, and the contribution of nurses to overcoming barriers to insulin initiation and related aspects of diabetes care ([www.dovepress.com/diabetes-management-optimizing-roles-for-nurses-in-insulin-initiation-peer-reviewed-article-JMDH](http://www.dovepress.com/diabetes-management-optimizing-roles-for-nurses-in-insulin-initiation-peer-reviewed-article-JMDH)).

**Information for people with type 2 diabetes** who are starting insulin is provided by Waitemata DHB here:

[www.waitemataadhb.govt.nz/LinkClick.aspx?fileticket=rCjcrboKkoM%3D&tabid=124](http://www.waitemataadhb.govt.nz/LinkClick.aspx?fileticket=rCjcrboKkoM%3D&tabid=124). It covers the need for insulin and how it works, the different types, how to store it, how to administer it, blood glucose monitoring, hypo- and hyperglycaemia and how to manage them. It is also available in Chinese, Korean, Tongan and Samoan.



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