

Management of Type 2 Diabetes

A primary care practitioner resource

June 2011

The information in this resource is taken from *Guidance on the Management of Type 2 Diabetes 2011* available online at www.nzgg.org.nz

Preventing complications

- Determining level of risk for macrovascular and microvascular complications is a key component of treatment planning and target setting for each individual with type 2 diabetes.
- Patients at moderate or high risk of developing diabetes-related complications (ie, 2 or 3 risk factors*) or with existing complications (eg, foot, eye, renal or cardiovascular disease) should be managed intensively.

* See Figure: Determining level of risk for diabetes-related complications in *Guidance on the Management of Type 2 Diabetes 2011* at www.nzgg.org.nz

- Treatment targets to address risk factors:
 - should be appropriate for and agreed with the individual patient
 - glycaemic control target: HbA1c 50–55 mmol/mol or as individually agreed
 - blood pressure target: <130/80 mm Hg. Evidence suggests a BP target <120 mm Hg may be harmful. Care should be taken to estimate likely treatment response for patients when BP approaches the target of <130 mm Hg
 - lipids target: triglycerides <1.7 mmol/L; total cholesterol <4.0 mmol/L.
- Lifestyle advice, including ABC smoking cessation advice and evidence-based advice on diet and exercise, is an important aspect of ongoing management. Dietitian advice should be sought if available.

Renal disease

- Patients with confirmed microalbuminuria should be treated with an ACE inhibitor or angiotensin 2 receptor blocker whether or not hypertension is present.
- Māori, Pacific Island and South Asian peoples are at higher risk of renal complications. More frequent monitoring of renal status is indicated.
- Any evidence of renal disease based on decreasing eGFR should be treated with urgency.

BP management

- Hypertension should be treated with lifestyle modification including dietary salt restriction and drug therapy.
- Drug therapy should be initiated if BP is above target for 3 months despite attempts at lifestyle modification.
- Intensive monthly follow-up and stepwise protocol adjustments to medication are advised until consistently below target.

Drug therapy for raised BP

Start ACE inhibitor (and titrate dose) or ARB if intolerant – note 1

↓ If above target

Add one of: CCB or thiazide type diuretic

↓ If above target

Add another of: thiazide type diuretic or CCB

↓ If above target

Add one of:

- alpha-blocker
- beta-blocker
- further diuretic therapy (potassium sparing)

↓ If above target

Add another of:

- alpha-blocker
- beta-blocker
- further diuretic therapy (potassium sparing)

Or refer to specialist

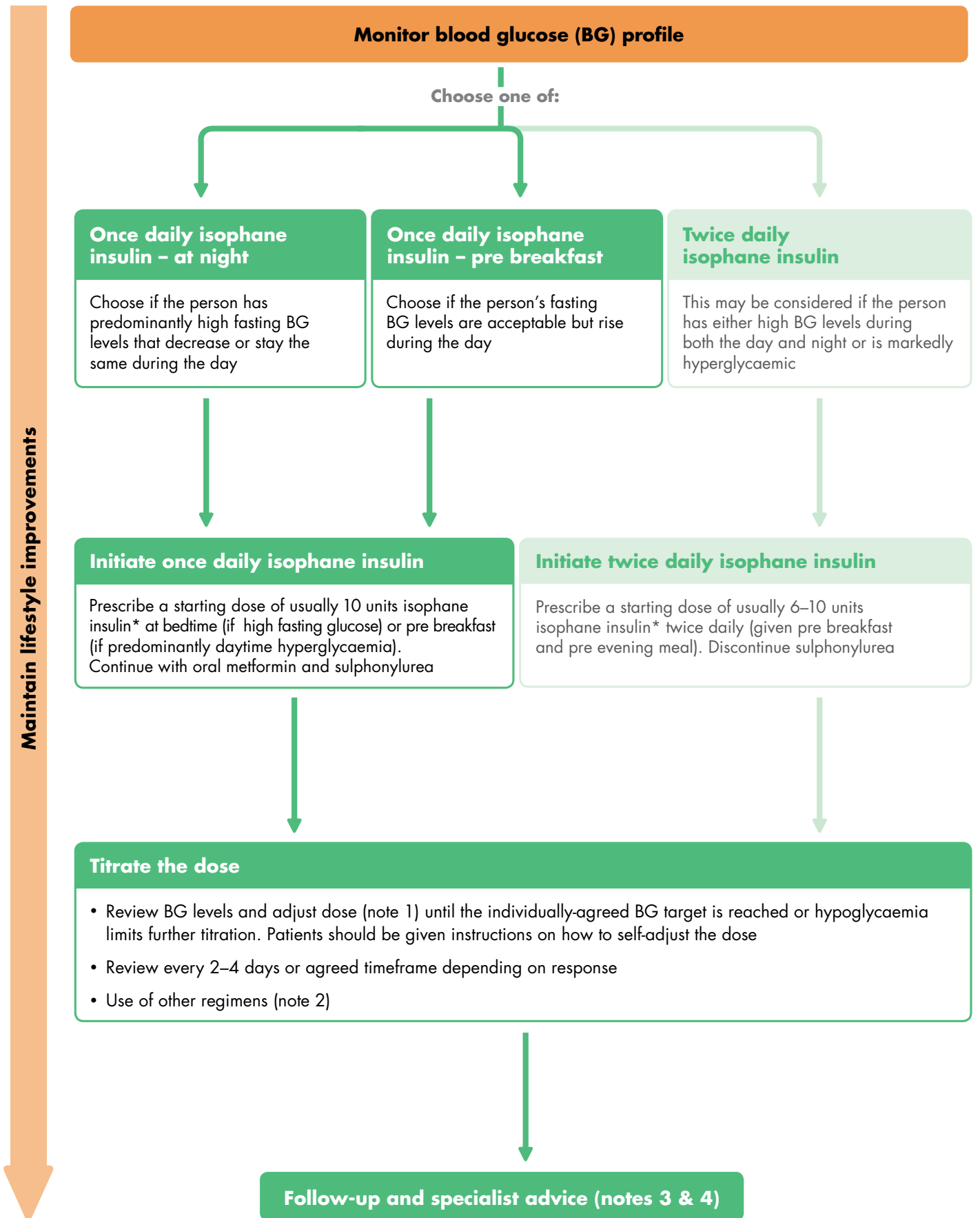
Note 1. ACE inhibitor or ARB medication are contraindicated in pregnancy.

ARB angiotensin 2 receptor blocker

CCB calcium channel blocker

This content on the management of type 2 diabetes has been developed for use in primary care by an advisory group convened by the New Zealand Guidelines Group, drawing on evidence in SIGN guideline 116 *Management of Diabetes* (2010). www.sign.ac.uk/guidelines/fulltext/116/index.html
See *Guidance on the Management of Type 2 Diabetes 2011* at www.nzgg.org.nz for further content.

Figure: Initiation of insulin in primary care



* Currently funded isophane insulin is Protaphane or Humulin NPH

Notes to figure on initiation of insulin in primary care

Note 1. Guide to dose adjustments for initial titration

Table 1. Once daily isophane insulin – at night

Pre breakfast (fasting) BG	Insulin dose increase
Usually >8 mmol/L and never less than 4 mmol/L	Increase dose by 4–6 units
Usually 6–8 mmol/L and never less than 4 mmol/L	Increase dose by 2–4 units
Once receiving >20 units daily 3 consecutive pre breakfast (fasting) BG results higher than agreed BG target AND BG never less than 4 mmol/L	Insulin dose can be increased by 10–20% of total daily dose

Table 2. Once daily isophane insulin – pre breakfast

Pre evening meal BG	Insulin dose increase
Usually >8 mmol/L and never less than 4 mmol/L	Increase dose by 4–6 units
Usually 7–8 mmol/L and never less than 4 mmol/L	Increase dose by 2–4 units
Once receiving >20 units daily 3 consecutive pre evening meal BG results higher than agreed BG target AND BG never less than 4 mmol/L	Insulin dose can be increased by 10–20% of total daily dose

Table 3. Twice daily isophane insulin

Pre breakfast (fasting) BG	Insulin dose increase
Usually >8 mmol/L and never less than 4 mmol/L	Increase night-time insulin dose by 4–5 units
Usually 6–8 mmol/L and never less than 4 mmol/L	Increase night-time insulin dose by 2–4 units
Pre evening meal BG	Insulin dose increase
Usually >8 mmol/L and never less than 4 mmol/L	Increase pre breakfast insulin dose by 4–5 units
Usually 7–8 mmol/L and never less than 4 mmol/L	Increase pre breakfast insulin dose by 2–4 units
Once receiving >20 units daily 3 consecutive BG results (either pre breakfast or pre evening meal) higher than agreed BG target AND BG never less than 4 mmol/L	Appropriate insulin dose can be increased by 10–20% of total daily dose

Note 2. Other regimens

- Basal insulin analogues should be considered if there are concerns regarding hypoglycaemia.
- Premixed insulin can be considered if post prandial levels are elevated and HbA1c target has not been met.
 - Seek specialist advice if instigating a premixed insulin regimen.
- The option of adding short-acting insulin relates to the intensification of insulin therapy and is not covered in this guidance.

Note 3. Follow-up

- Review BG levels every 2–4 days, depending on the individual and response.
- Once BG levels are stable, re-evaluate BG profile regularly (3–6 monthly) and change regimen if required.
- Check for risk of hypoglycaemia.
- Measure HbA1c 3–6 monthly, according to individual need.
- Monitor weight (if gaining weight, review lifestyle advice).

Note 4. Specialist advice

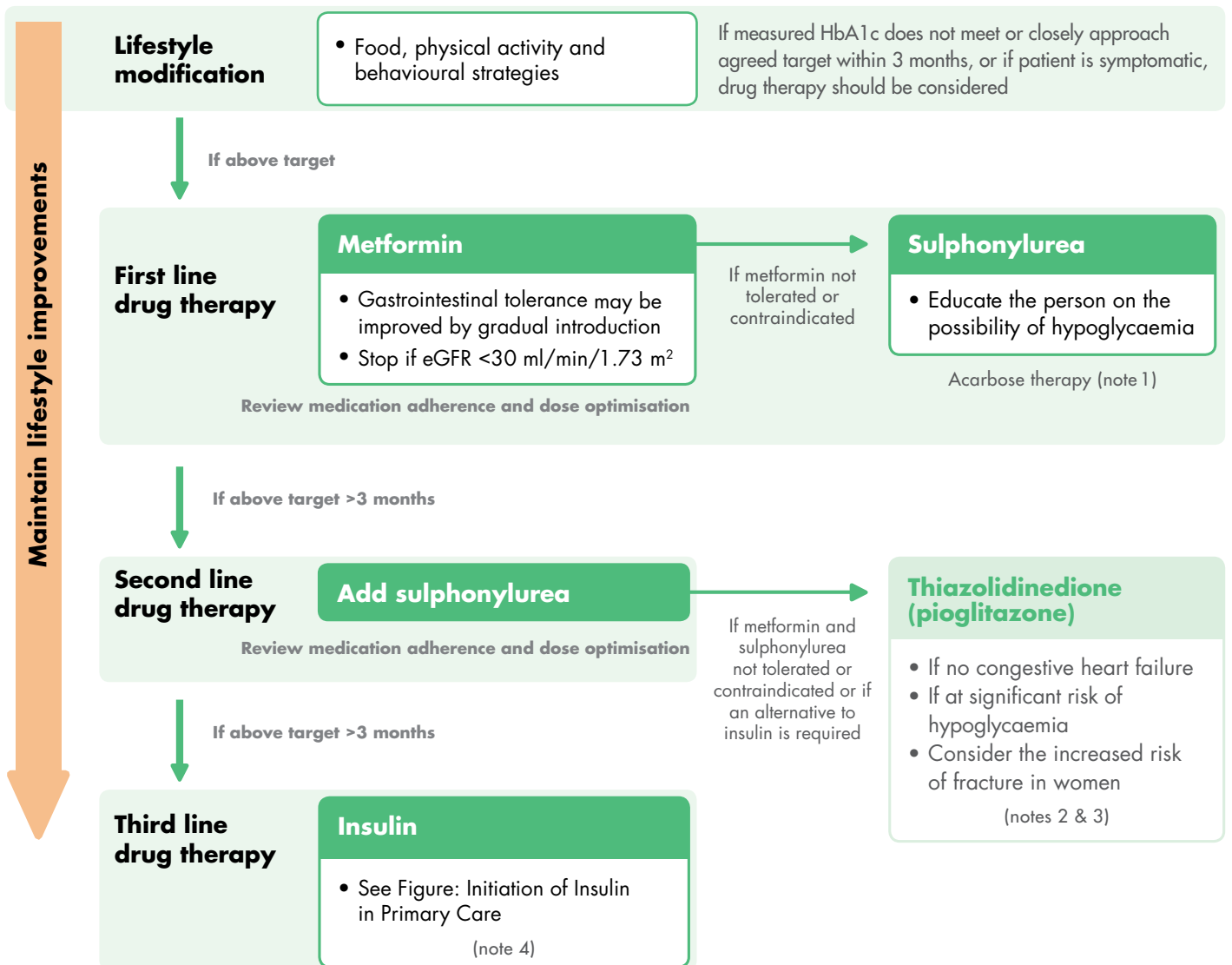
Seek specialist advice when:

- patient is very lean or has experienced rapid weight loss
- HbA1c persistently above individual target despite initiation of insulin, titration, and review of lifestyle modification
- patient has recurrent hypoglycaemia
- patient is an adolescent or child with type 2 diabetes
- patient is a vocational driver.

More detail on insulin initiation is provided in *Guidance on the Management of Type 2 Diabetes 2011* at www.nzgg.org.nz

Figure: Management of glycaemic control

Target HbA1c 50–55 mmol/mol or as individually agreed



Notes

- Note 1.** Acarbose can also be used as a first line drug therapy, if tolerated.
- Note 2.** Medsafe is currently monitoring the safety of pioglitazone following reports of increased adverse effects. See www.medsafe.govt.nz for latest updates. Special authority for pioglitazone may be sought if: i) patient has not achieved glycaemic control on maximum dose of metformin or sulphonylurea or where either or both are contraindicated or not tolerated; or ii) patient is on insulin.
- Note 3.** DPP-IV inhibitor may be an alternative agent if patient is at significant risk of hypoglycaemia or weight gain is a concern. At time of publication (2011), DPP-IV inhibitors are not subsidised.
- Note 4.** DPP-IV inhibitor and GLP-1 agonist are possible alternatives. GLP-1 agonists may be used if BMI >30 kg/m² or there is a desire to lose weight. At time of publication (2011), neither DPP-IV inhibitors nor GLP-1 agonists are subsidised.