Best Practice in Managing Diabetes:

The latest Guidelines

Jim Mann

UNIVERSITY of OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALAND

National, regional, and global trends in fasting plasma glucose and diabetes prevalence since 1980: systematic analysis of health examination surveys and epidemiological studies with 370 country-years and 2·7 million participants

Goodarz Danaei, Mariel M Finucane*, Yuan Lu, Gitanjali M Singh, Melanie J Cowan, Christopher J Paciorek, John K Lin, Farshad Farzadfar, Young-Ho Khang, Gretchen A Stevens, Mayuree Rao, Mohammed K Ali, Leanne M Riley, Carolyn A Robinson, Majid Ezzati, on behalf of the Global Burden of Metabolic Risk Factors of Chronic Diseases Collaborating Group (Blood Glucose)†*

'Of high-income countries, mean FPG and diabetes were highest in the USA, Greenland, Malta, New Zealand, and Spain, and lowest in the Netherlands and Austria…..'

Lancet 2011; 378: 31-40

THE LANCET

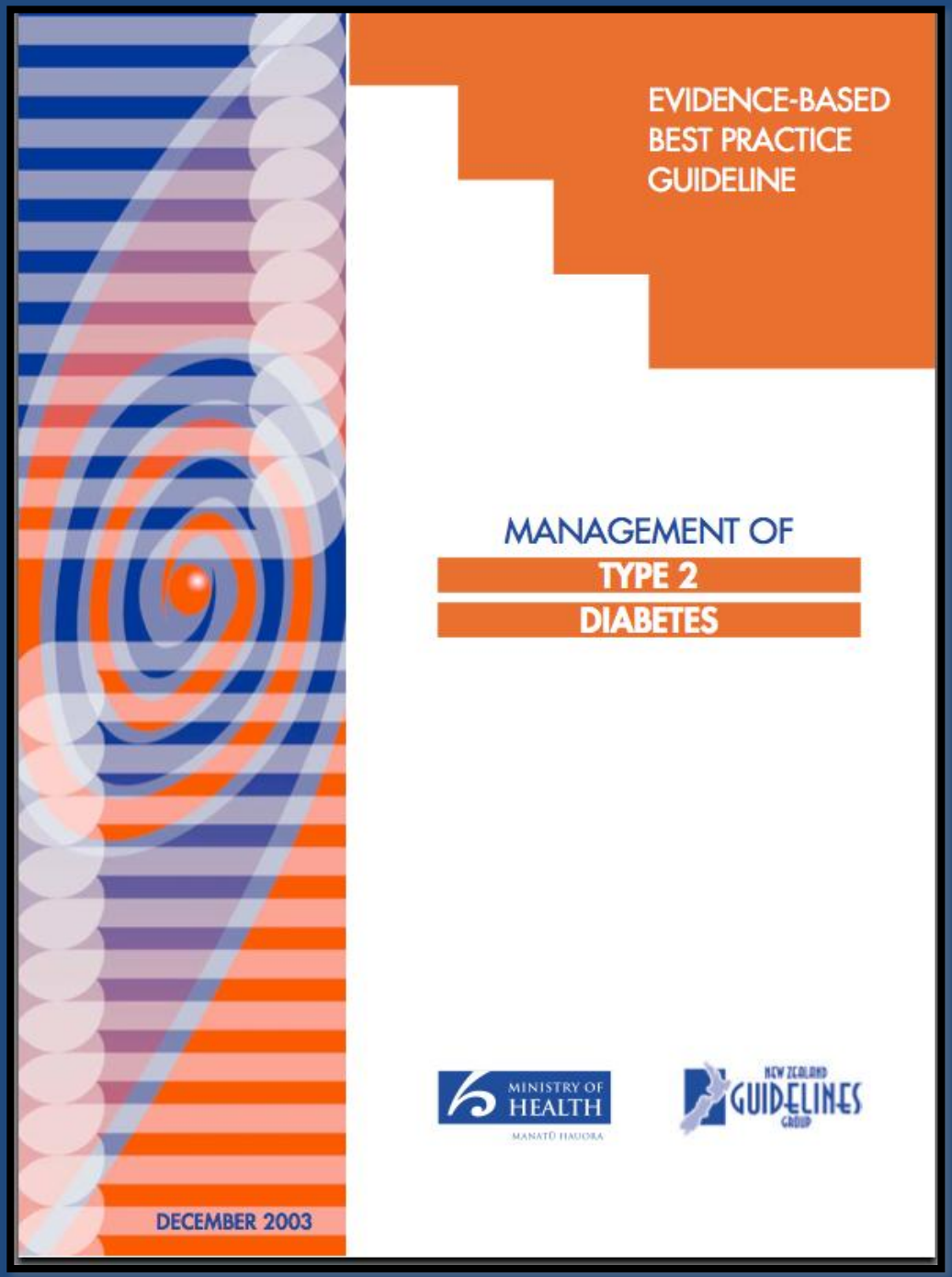
Volume 378 · Number 9786 · Pages 99–198 · July 9–15, 2011 www.thelancet.com

"The emphasis in type 2 diabetes should remain on tight control of lipids and blood pressure, with reasonable but not exaggerated efforts to control glycaemia."

See **Comment** page 103

£5.00 Registered as a newspaper · ISSN 0140-6736
Founded 1823 · Published weekly

2003


EVIDENCE-BASED
BEST PRACTICE
GUIDELINE
MANAGEMENT OF
TYPE 2
DIABETES
MINISTRY OF HEALTH
MANATŪ HAUORA
NEW ZEALAND GUIDELINES GROUP
DECEMBER 2003

2011

Introduction to guidance

Developed for use in primary care

Addresses 3 identified priority areas:

- Early identification of patients at high risk of diabetes-related complications
- Better management of raised blood pressure and microalbuminuria
- Improved glycaemic control (including insulin initiation)

MINISTRY OF HEALTH

New Zealand GUIDELINES GROUP

Introduction to guidance *cont.*

Draws on SIGN guideline 116 *Management of Diabetes* 2010 www.sign.ac.uk

Content developed by a Diabetes Advisory Group convened by NZGG

Best practice based on available evidence

Not intended to replace health practitioner's judgment in each individual case

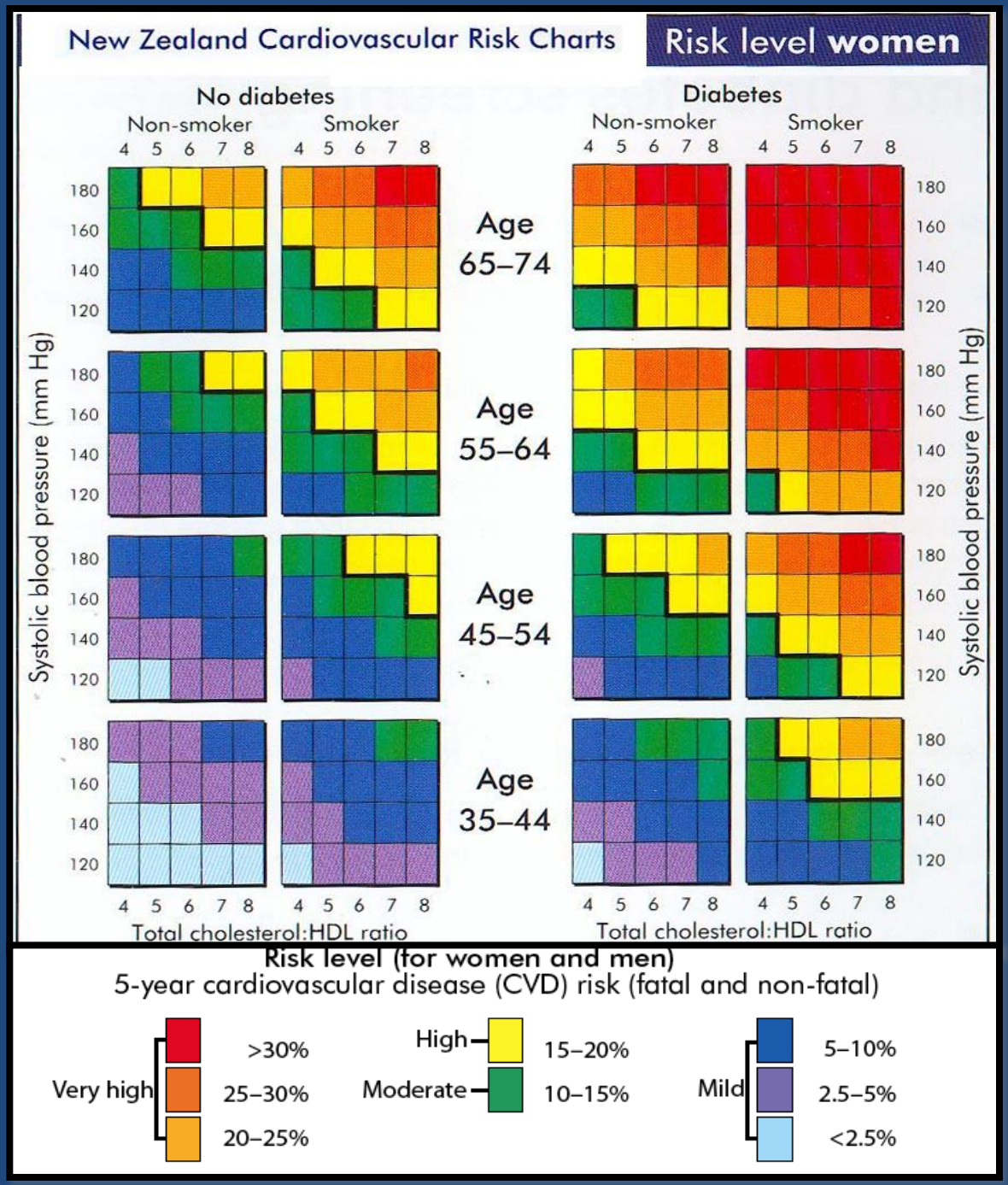
Members of the NZGG Diabetes Advisory Group

Jim Mann – Endocrinologist (chair)	
Stephen Allen, Maori Health Advocate	Pauline Giles, Diabetes Nurse Specialist
Chris Baty, President, Diabetes NZ	Greg Hamilton, Canterbury DHB
Bryan Betty, General Practitioner	Aniva Lawrence, General Practitioner
Tim Cundy, Endocrinologist	Rob Leikis, Endocrinologist
Rick Cutfield, Endocrinologist	Donna McArley, GP Co-ordinator
Sandy Dawson, General Practitioner	Graham McGeoch, General Practitioner
Paul Drury, Endocrinologist	Peter Moodie, GP & PHARMAC Director
Louise Farmer, Diabetes Nurse Specialist	Lorna Smeath, Whanau Ora Clinical Co-ordinator
Lucia Bercinskas, Brandon Orr-Walker (MoH)	

Early identification of risk

MINISTRY OF HEALTH
MANATŪ HAUORA

New Zealand GUIDELINES GROUP
Te Kāpū Aronga Tohutohu



Determining level of risk for diabetes-related complications

Low risk

- HbA1c 50–55 mmol/mol*
- BP <130/80 mm Hg*
- ACR <2.5 mg/mmol in men or <3.5 mg/mmol in women
- eGFR ≥60 ml/min/1.73m²*
- Lipids: triglycerides <1.7 mmol/L, total cholesterol <4.0 mmol/L
- Non-smoker
- Attends at least 6-monthly review of HbA1c and blood pressure; annual review of lipids, ACR, eGFR and foot check. Two-yearly retinal screening

Moderate to high risk

High risk = 3 or more risk factors
Moderate risk = 2 risk factors

- HbA1c >55 mmol/mol.* Risk increases incrementally with increasing HbA1c
- BP ≥130/80 mm Hg*
- ACR ≥2.5 mg/mmol men, or ≥3.5 mg/mmol in women
- eGFR <60 ml/min/1.73m²*
- Lipids: triglycerides ≥1.7 mmol/L, total cholesterol ≥4.0 mmol/L
- Current smoker
- Ethnicity (Māori, Pacific Islander, South Asian)
- Moderate retinopathy (R3), mild maculopathy (M3) – in either eye
- More than one year since diabetes last reviewed or poor adherence or attendance

* Consider patient age. In younger people, tighter control should be considered given their higher lifetime risk of diabetes-related complications. Evidence suggests that a blood pressure 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.

Increasing risk for diabetes-related complications

Existing complications

These place the person at **high risk** of developing more severe and/or additional complications:

- previous cardiac event or stroke/TIA
- eGFR <45 ml/min/1.73m² and/or ACR >30 mg/mmol
- severe retinopathy (R4), moderate maculopathy (M4) – in either eye
- previous amputation/ulceration
- peripheral arterial disease or previous leg vascular surgery

Management of people at moderate to high risk of diabetes-related complications

- Urgent and intensive management is indicated to improve modifiable risk factors
- More frequent follow-up is recommended during treatment changes or if the parameter is much higher than target
- Management plan decisions should take into account patient preference, likely patient adherence and resource availability

Management of people at moderate to high risk of diabetes-related complications

Lifestyle advice

- Offer evidence-based dietary advice including **achievable** goals. Dietitian advice should be sought if available
- Offer evidence-based advice on exercise including **achievable** goals
- Offer ABC smoking cessation advice

Medication adjustment/ intensification

- Improve glycaemic control with adjustment of oral medication +/- insulin
- Control blood pressure through medication adjustment
- Improve lipid control with the use of statins

Ongoing clinical review

- Monitor blood pressure, HbA1c and eGFR 3 monthly
- Monitor ACR 6 monthly
- Review annually: weight, peripheral neurovascular status, cardiovascular status (clinical examination and cardiovascular risk calculation), feet. Review feet 3 monthly if at high risk for foot complications
- Screen retina 2 yearly as a minimum, at least annually if diabetic retinopathy present
- Seek specialist advice for newly-diagnosed complications or treatment resistance

Practice management

- Access long-term conditions funding to develop a wellness plan and promote regular follow-up
- Review nurse responsibilities and role in regular monitoring
- Set up computerised reminders to recall patients if these are not already in place
- Monitor patient risk profiles using a practice diabetes register

Priority area

Management: BP & microalbuminuria

- BP is measured frequently but BP targets set in clinical guidelines are not being consistently met
- Recent NZ reports indicate 53– 78% of people with type 2 diabetes have a BP above 130/80 mm Hg
- Key reasons are medication adherence by patients and clinical inertia ie, failure of health practitioners to initiate or intensify treatment when indicated
- The guidance assists stepwise intensification of treatment as appropriate to individual patients

MINISTRY OF HEALTH

New Zealand GUIDELINES GROUP

Blood pressure management

- Target BP <130/80 mm Hg
- Evidence suggests BP target <120 mm Hg may be harmful
- Care should be taken to estimate likely treatment response when BP approaches target of <130 mm Hg

MINISTRY OF HEALTH
MANATŪ HAUORA

New Zealand GUIDELINES GROUP
Te Ātapi Rarangi Tohutohu

Management of raised blood pressure

Target BP <130/80 mm Hg

Hypertension should be treated aggressively with lifestyle modification including dietary salt restriction and drug therapy. Evidence suggests a blood pressure 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.

Start drug therapy — BP >130/80 mm Hg consistently for 3 months despite attempts at lifestyle modification

Maintain lifestyle improvements

Start
- ACE inhibitor (and titrate dose) or ARB if intolerant

If above target

Add one of
- CCB
- Thiazide type diuretic

If above target

Add another of
- Thiazide type diuretic
- 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

Management: microalbuminuria

- Microalbuminuria is confirmed if in absence of infection or overt proteinuria 2 of 3 specimens have an elevated ACR
- People with confirmed microalbuminuria should be treated with an ACE inhibitor or ARB *whether or not* hypertension present

MINISTRY OF HEALTH
MANATŪ HAUORA

New Zealand GUIDELINES GROUP
Te Aipu Arataki Tohutohu

More on renal disease

- 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

MINISTRY OF HEALTH
MANATŪ HAUORA

New Zealand GUIDELINES GROUP
Te Ātipi Haronga Tohutohu

More on renal disease

- Loop diuretics may be used *instead of or in combination with* thiazide diuretics in patients with significant renal impairment (eGFR <45 ml/min/1.73m^2)*

*Consensus of Diabetes Advisory Group

MINISTRY OF HEALTH

New Zealand GUIDELINES GROUP

Priority area
Glycaemic control

- Early and consistent management of glycaemic control is necessary to avoid microvascular and macrovascular complications
- Good glycaemic control is difficult to maintain over time as the condition progresses
- More intensive treatment is required over time to meet the treatment target
- The guidance provides strategies for optimal management of glycaemic control in primary care

MINISTRY OF HEALTH
MANATŪ HAUORA

New Zealand GUIDELINES GROUP
Te Aōpū Arataki Tohutohu

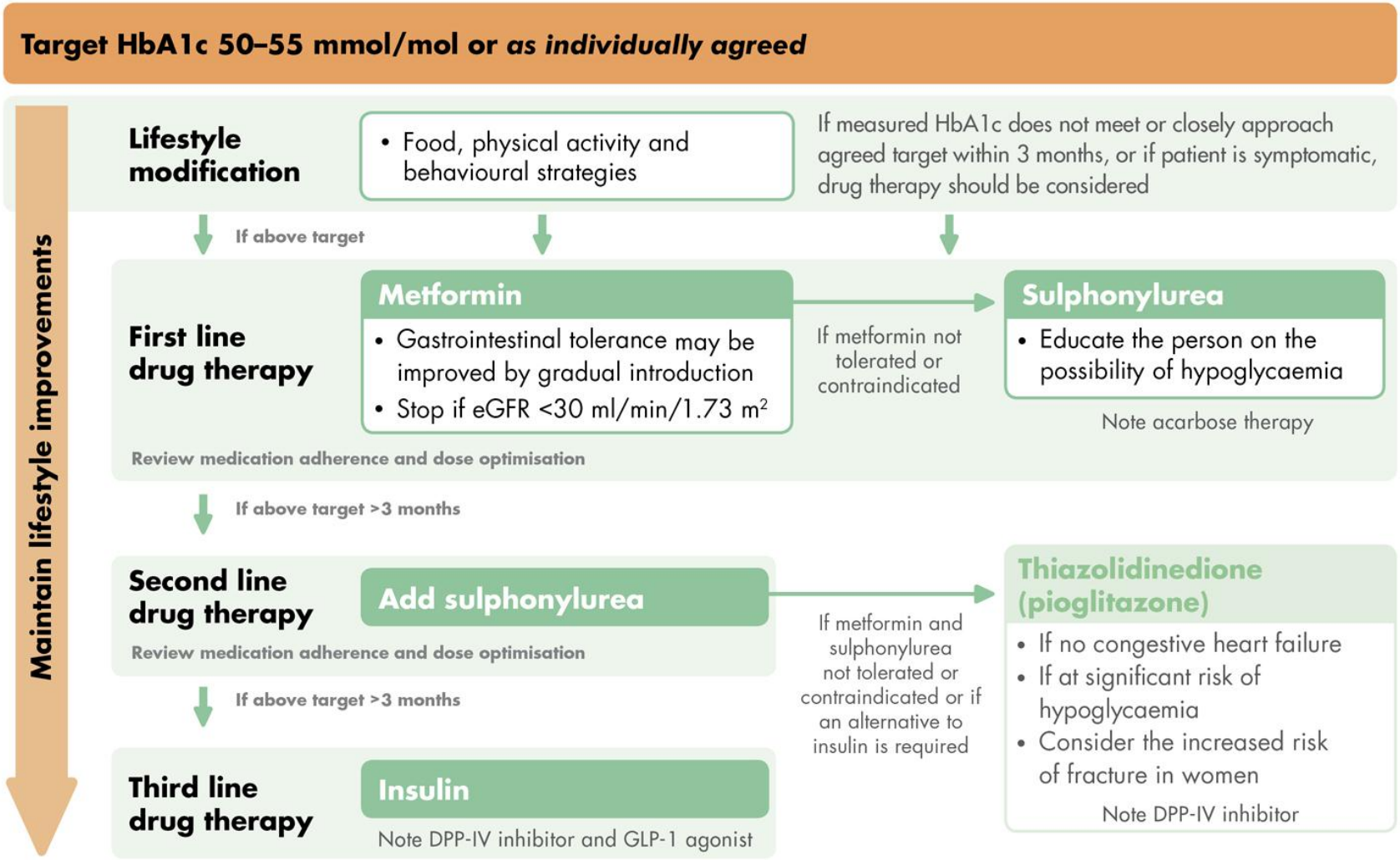
Management of glycaemic control

- Target HbA1c 50–55 mmol/mol or as *individually* agreed
- In younger people, tighter control should be considered given their higher lifetime risk of diabetes-related complications
- Any reduction in HbA1c is beneficial

MINISTRY OF HEALTH
MANATŪ HAUORA

New Zealand GUIDELINES GROUP
Te Aōpu Rarangi Tohutohu

Management of glycaemic control



When to consider insulin therapy

Consider if:

- unsatisfactory glycaemic control (measured HbA1c does not meet or closely approach agreed target) or
- signs & symptoms of hyperglycaemia

AND

Management has included:

- diet, physical exercise and behavioural strategies
- review of medication adherence & dose optimisation.

MINISTRY OF HEALTH
MANATŪ HAUORA

New Zealand GUIDELINES GROUP
Te Aipo Rarangi Tohutohu

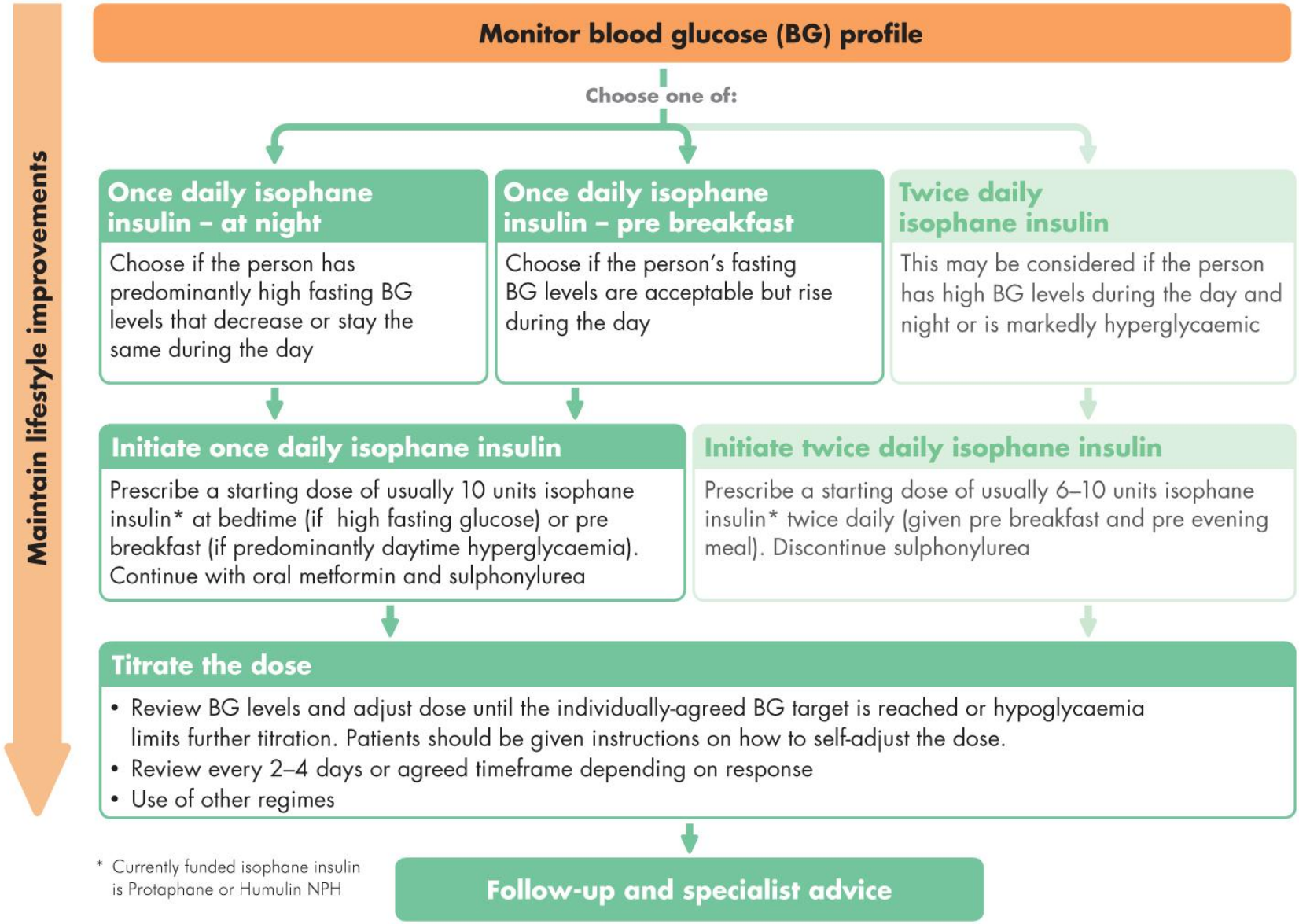
Initiating insulin in primary care

- Assess the individual's readiness for commencing insulin and address their concerns
- Start patient self-monitoring of blood glucose to assist decision-making about choice of insulin regimen
- Encourage the individual patient to take an active role in management

MINISTRY OF HEALTH
MANATŪ HAUORA

New Zealand GUIDELINES GROUP
Te Aōpu Rārangi Tohutohu

Initiation of insulin in primary care



Management of Type 2 Diabetes

A primary care practitioner resource

June 2011

Note 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

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

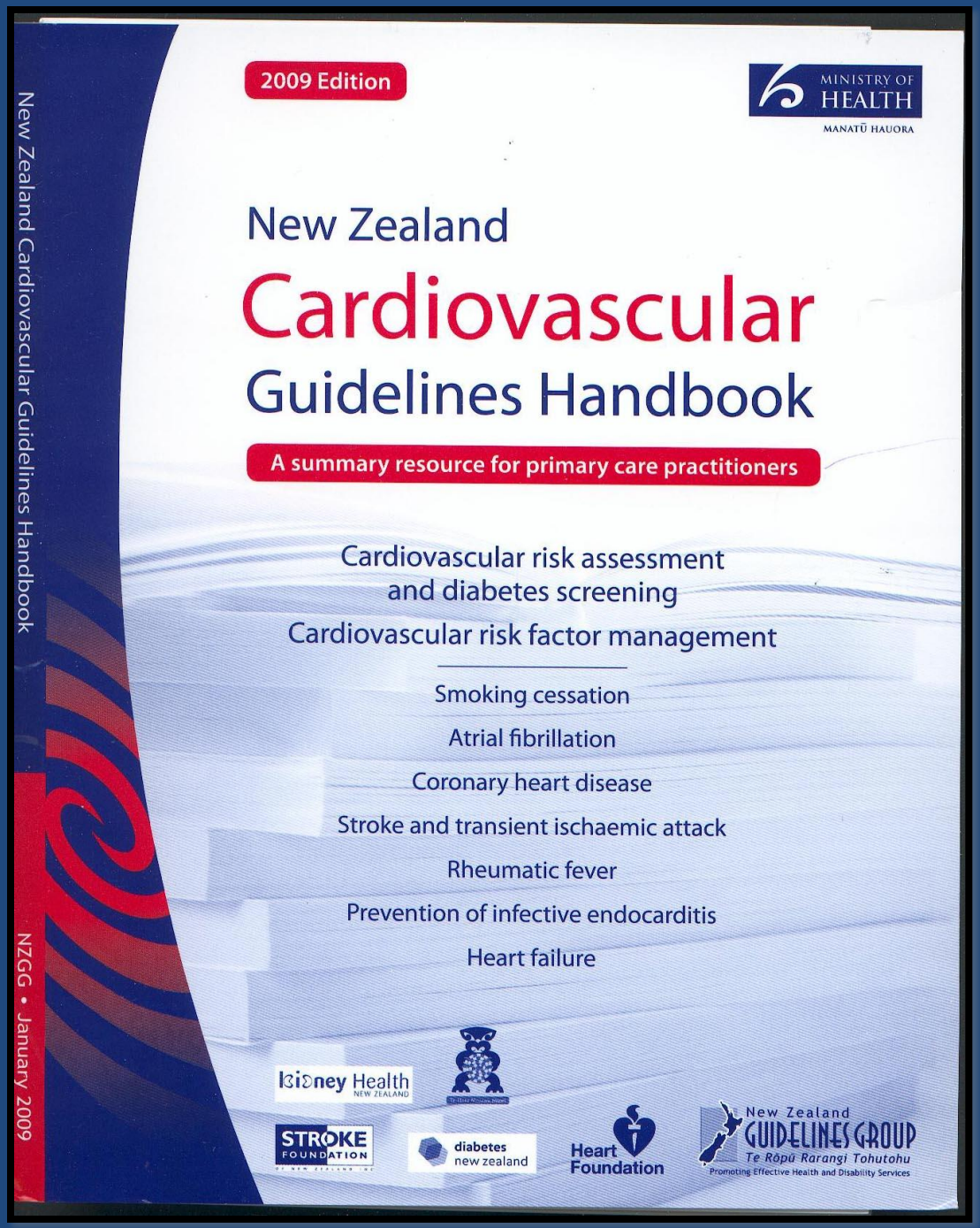
- Review BG levels every 2–4 days, depending on the individual and response.
- Once BG levels are stable, re-evaluate BG profile regularly (3–6 monthly) and change regimen if required.
- Check for risk of hypoglycaemia.
- Measure HbA1c 3–6 monthly, according to individual need.
- Monitor weight (if gaining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

2009


New Zealand Cardiovascular Guidelines Handbook
NZGG • January 2009
2009 Edition
MINISTRY OF HEALTH
MANATŪ HAUORA
New Zealand
Cardiovascular
Guidelines Handbook
A summary resource for primary care practitioners
Cardiovascular risk assessment and diabetes screening
Cardiovascular risk factor management
Smoking cessation
Atrial fibrillation
Coronary heart disease
Stroke and transient ischaemic attack
Rheumatic fever
Prevention of infective endocarditis
Heart failure
Kidney Health NEW ZEALAND
STROKE FOUNDATION
diabetes new zealand
Heart Foundation
New Zealand GUIDELINES GROUP
Te Rōpū Rarangi Tohutohu
Promoting Effective Health and Disability Services