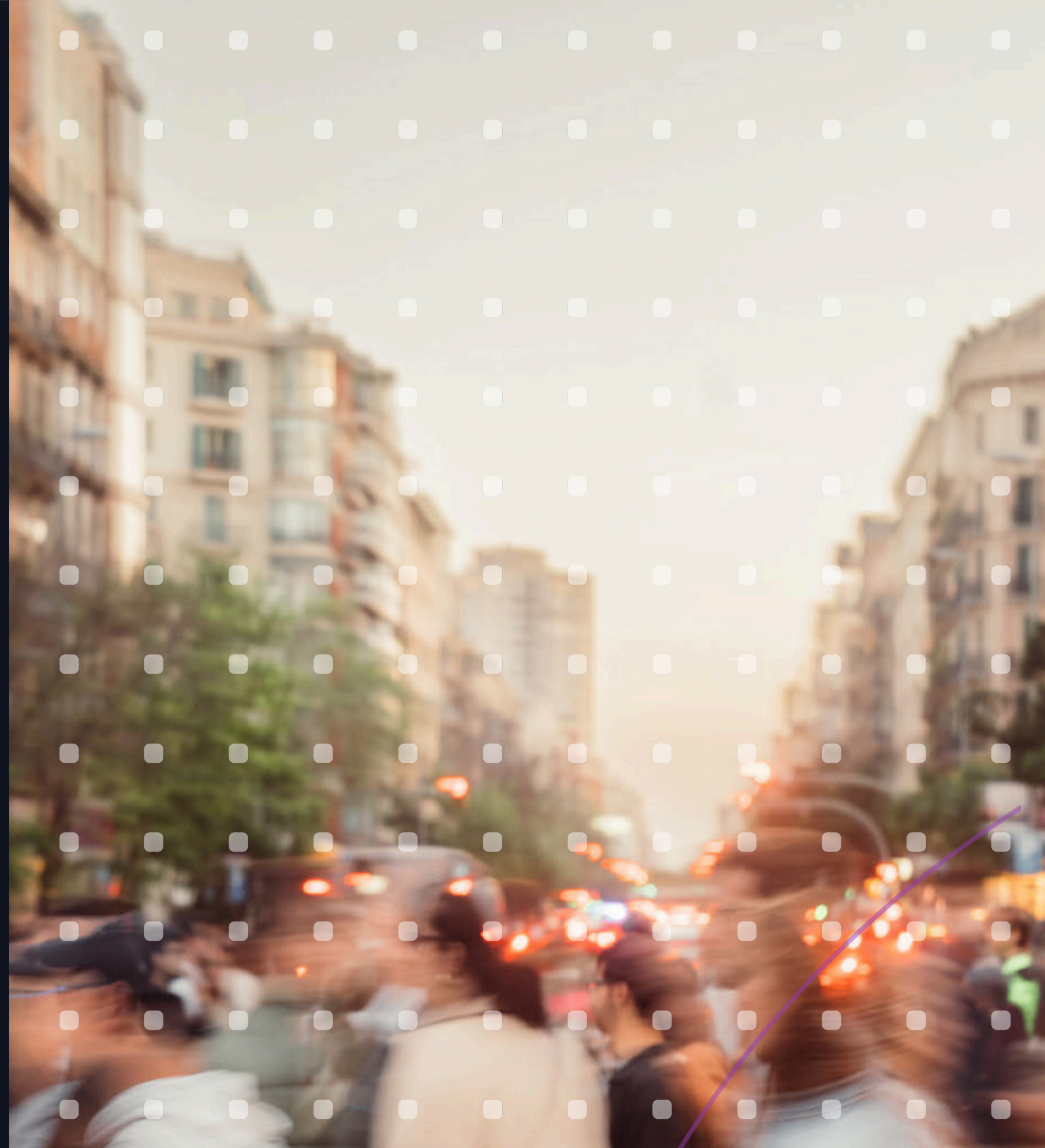


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# Non-Communicable Disease Screening

## The Growing Burden of Non-Communicable Diseases

Non-communicable diseases (NCDs) represent the leading cause of death and disability in Australia, accounting for approximately 89% of all deaths in 2022. The Australian Institute of Health and Welfare (AIHW) identifies cardiovascular disease, diabetes, chronic kidney disease, and cancer as priority conditions requiring enhanced prevention and early detection strategies.



### Cardiovascular Disease:

- Affects 1.2 million Australians (4.8% of population)
- Leading cause of death, responsible for 43,708 deaths in 2022
- Economic burden exceeds \$12 billion annually



### Hypertension:

- Affects approximately 6 million Australians (23% of adults)
- Only 60% of cases are adequately controlled
- Major modifiable risk factor for stroke and heart disease



### Type 2 Diabetes:

- Affects 1.3 million Australians (5.3% of population)
- Incidence increasing by 4.4% annually
- Associated healthcare costs of \$2.5 billion per year



### Obesity:

- Affects 67% of Australian adults (BMI  $\geq 25$ )
- 31% are obese (BMI  $\geq 30$ )
- Contributing factor to multiple NCDs including diabetes, cardiovascular disease, and certain cancers

## The Role of Community Pharmacy

Community pharmacies are uniquely positioned to address this growing burden through accessible screening services. With over 5,800 community pharmacies across Australia and high patient contact frequency, pharmacists can play a crucial role in early detection and prevention of NCDs.





# Hypertension Screening



## Definition and Clinical Significance

Hypertension is defined as persistently elevated blood pressure  $\geq 140/90$  mmHg. It is often asymptomatic but significantly increases the risk of cardiovascular events, stroke, and kidney disease.



## Causes and Risk Factors

### Primary (Essential) Hypertension (90-95% of cases):

- Genetic predisposition
- Age-related arterial stiffening
- Lifestyle factors (diet, physical inactivity, obesity)
- Chronic stress

### Secondary Hypertension (5-10% of cases):

- Renal disease
- Endocrine disorders
- Sleep apnoea
- Medications (NSAIDs, oral contraceptives, corticosteroids)





# Screening Protocol

## Equipment Required:

- Validated automated blood pressure monitor
- Appropriate cuff sizes (small, regular, large)
- Calibration records up to date

## Procedure (Based on RACGP Guidelines):

1. Patient should be seated comfortably for 5 minutes before measurement
2. Feet flat on floor, back supported, arm at heart level
3. Use appropriately sized cuff (bladder width  $\geq 40\%$  of arm circumference)
4. Take 2-3 readings, 1-2 minutes apart
5. Record average of readings
6. Measure in both arms initially (use arm with higher reading for subsequent measurements)

## Risk Categories and Cut-offs

- **Normal:**  $<120/80$  mmHg
- **High-Normal:**  $120-139/80-89$  mmHg
- **Stage 1 Hypertension:**  $140-159/90-99$  mmHg
- **Stage 2 Hypertension:**  $160-179/100-109$  mmHg
- **Stage 3 Hypertension:**  $\geq 180/110$  mmHg

## When to recommend to GP

### Immediate Referral (Same Day):

- BP  $\geq 180/110$  mmHg
- Symptoms: chest pain, shortness of breath, severe headache, visual changes
- Signs of end-organ damage

### Routine Referral (Within 1-2 weeks):

- Consistently elevated BP  $\geq 140/90$  mmHg on multiple occasions
- High-normal BP with additional cardiovascular risk factors
- Secondary hypertension suspected



## Lifestyle advice



### Dietary Modifications:

- Reduce sodium intake to  $<2.3\text{g/day}$  (1 teaspoon salt)
- Increase potassium-rich foods (fruits, vegetables)
- Limit alcohol consumption ( $\leq 2$  standard drinks/day for men,  $\leq 1$  for women)
- Mediterranean-style diet patterns



### Weight Management:

- Achieve and maintain healthy BMI ( $18.5\text{-}24.9\text{ kg/m}^2$ )
- Even modest weight loss (5-10%) can significantly reduce BP



### Physical Activity:

- At least 150 minutes moderate-intensity aerobic activity per week
- Include resistance training 2-3 times per week
- Start gradually if sedentary



### Stress Management:

- Regular relaxation techniques
- Adequate sleep (7-9 hours per night)
- Consider meditation or yoga



# High Cholesterol Screening



## Definition and Clinical Significance

Dyslipidaemia refers to abnormal levels of blood lipids, particularly elevated low-density lipoprotein cholesterol (LDL-C), which is a major risk factor for atherosclerotic cardiovascular disease.



## Causes and Risk Factors

### Primary Causes:

- Genetic factors (familial hypercholesterolaemia affects 1 in 250 Australians)
- Age and gender (risk increases with age, males at higher risk pre-menopause)

### Secondary Causes:

- Diet high in saturated and trans fats
- Physical inactivity
- Obesity
- Diabetes mellitus
- Hypothyroidism
- Medications (corticosteroids, thiazide diuretics)





## Screening Protocol

### Point-of-Care Testing:

- Use validated lipid testing devices
- It is preferable to have had the patient fasted for 9-12 hours (water allowed), but not likely in the case of population-based screening.
- Check device calibration and quality control
- Follow manufacturer's instructions precisely

### Parameters to Measure:

- Total cholesterol
- LDL cholesterol
- HDL cholesterol
- Triglycerides
- Calculate non-HDL cholesterol (Total cholesterol - HDL cholesterol)

### Risk Categories and Targets

#### Low Risk (No additional risk factors):

- Total cholesterol: <5.5 mmol/L
- LDL cholesterol: <3.5 mmol/L
- HDL cholesterol: >1.0 mmol/L (men), >1.3 mmol/L (women)

#### Moderate to High Risk:

- LDL cholesterol: <2.6 mmol/L
- Non-HDL cholesterol: <3.4 mmol/L

#### Very High Risk (established CVD or diabetes):

- LDL cholesterol: <1.8 mmol/L
- Non-HDL cholesterol: <2.6 mmol/L

### When to recommend to GP

#### Routine Referral:

- Any abnormal lipid levels requiring treatment consideration
- Total cholesterol >6.5 mmol/L
- LDL cholesterol >4.0 mmol/L
- Triglycerides >4.0 mmol/L
- HDL cholesterol <0.9 mmol/L
- Suspected familial hypercholesterolaemia

#### Consider Absolute Cardiovascular Risk Assessment:

- Use Australian absolute cardiovascular disease risk calculator
- Refer for comprehensive risk assessment if moderate to high risk



# Lifestyle advice



## Dietary Interventions:

- Reduce saturated fat to <10% of total energy intake
- Eliminate trans fats
- Include 2g plant stanols/sterols daily
- Increase soluble fibre (oats, beans, lentils, fruits)
- Mediterranean diet pattern
- Include nuts (30g/day) and fish (2-3 serves/week)



## Weight Management:

- Achieve healthy BMI and waist circumference
- Target 5-10% weight loss if overweight



## Physical Activity:

- Minimum 150 minutes moderate-intensity exercise weekly
- Include both aerobic and resistance training
- Higher intensity exercise may provide additional benefits



## Other modifications

- Smoking cessation
- Moderate alcohol consumption
- Stress management



# Obesity Assessment



## Definition and Clinical Significance

Obesity is defined as abnormal or excessive fat accumulation that presents a health risk. It significantly increases the risk of cardiovascular disease, type 2 diabetes, certain cancers, and premature mortality.



## Causes and Risk Factors

### Energy Balance Factors:

Excessive caloric intake relative to expenditure  
Ultra-processed food consumption  
Portion size increases  
Reduced physical activity levels

### Environmental and Social Factors:

Obesogenic environment  
Socioeconomic status  
Food accessibility and affordability  
Shift work and sleep deprivation

### Medical Factors:

Genetic predisposition  
Medications (antipsychotics, antidepressants, corticosteroids)  
Endocrine disorders (hypothyroidism, Cushing's syndrome)  
PCOS in women





## Assessment Protocol

### Anthropometric Measurements:

#### Body Mass Index (BMI):

- Weight (kg) ÷ Height (m)<sup>2</sup>
- Use calibrated scales
- Remove shoes and heavy clothing

#### Waist Circumference:

- Measure at midpoint between lowest rib and iliac crest
- Use non-stretch tape measure
- Measure at end of normal expiration
- Patient standing, arms relaxed at sides

### Risk Categories

#### BMI Categories:

- Underweight: <18.5 kg/m<sup>2</sup>
- Normal weight: 18.5-24.9 kg/m<sup>2</sup>
- Overweight: 25.0-29.9 kg/m<sup>2</sup>
- Obese Class I: 30.0-34.9 kg/m<sup>2</sup>
- Obese Class II: 35.0-39.9 kg/m<sup>2</sup>
- Obese Class III: ≥40.0 kg/m<sup>2</sup>

#### Waist Circumference Thresholds (Increased Risk):

- Men: >94 cm (substantially increased risk >102 cm)
- Women: >80 cm (substantially increased risk >88 cm)

### When to recommend to GP

#### Routine Referral:

- BMI ≥30 kg/m<sup>2</sup> (obese)
- BMI 25-29.9 kg/m<sup>2</sup> with comorbidities or increased waist circumference
- Suspected secondary causes of obesity
- Request for weight management medications
- Consideration for bariatric surgery (BMI ≥40 or ≥35 with comorbidities)

#### Consider Referral:

- BMI 25-29.9 kg/m<sup>2</sup> with additional cardiovascular risk factors
- Difficulty achieving weight loss despite lifestyle interventions
- Eating disorder suspected

# Lifestyle advice



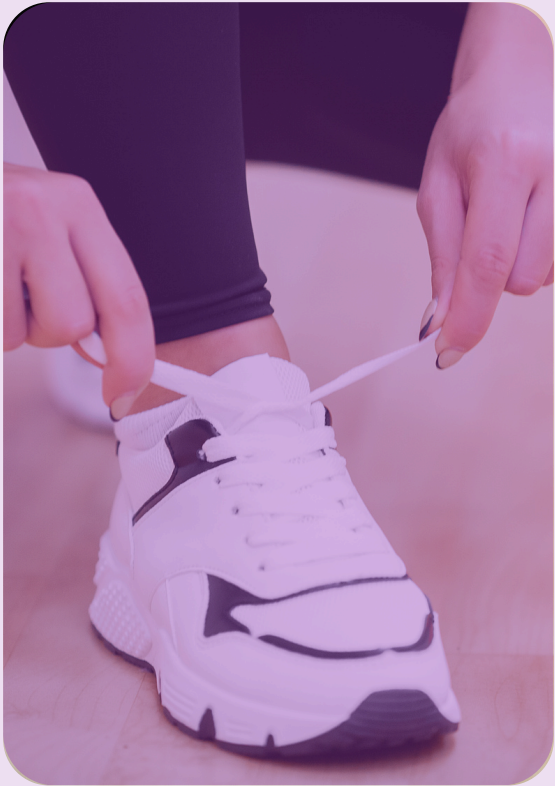
## Dietary Interventions:

- Create moderate caloric deficit (500-750 kcal/day)
- Emphasize whole foods, vegetables, fruits, lean proteins
- Reduce energy-dense, nutrient-poor foods
- Consider portion control strategies
- Regular meal patterns
- Adequate protein intake (1.2-1.6 g/kg body weight)



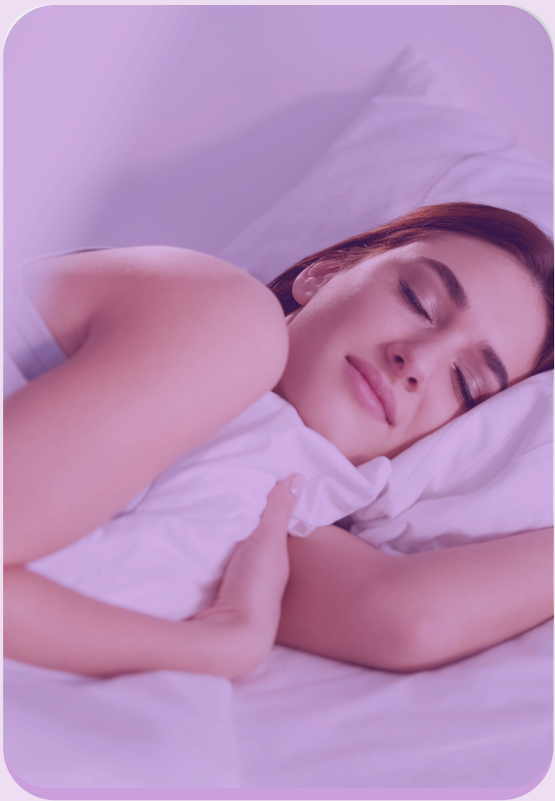
## Behavioural Strategies:

- Self-monitoring (food diaries, weight tracking)
- Goal setting (SMART goals)
- Problem-solving barriers to healthy behaviours
- Social support engagement
- Stress management techniques



## Physical Activity:

- Start with achievable goals (e.g., 10-15 minutes daily)
- Progress to 150-300 minutes moderate-intensity exercise weekly
- Include resistance training 2-3 times per week
- Increase incidental activity (stairs, walking, standing)



## Sleep and Lifestyle:

- Aim for 7-9 hours quality sleep nightly
- Regular sleep schedule
- Limit screen time before bed
- Manage stress through relaxation techniques



# Diabetes Screening



## Definition and Clinical Significance

Type 2 diabetes mellitus is a metabolic disorder characterised by chronic hyperglycaemia due to insulin resistance and progressive insulin deficiency. Early detection is crucial as approximately 280 Australians develop diabetes daily, and many cases remain undiagnosed.



## Causes and Risk Factors

### Non-Modifiable Risk Factors:

- Age  $\geq 45$  years
- Family history of diabetes
- Ethnicity (Aboriginal and Torres Strait Islander, Pacific Islander, Asian, Middle Eastern)
- Previous gestational diabetes
- Polycystic ovary syndrome

### Modifiable Risk Factors:

- Overweight/obesity (BMI  $\geq 25$  kg/m<sup>2</sup>)
- Central obesity (increased waist circumference)
- Physical inactivity
- Unhealthy diet patterns
- Hypertension
- Dyslipidaemia
- Smoking





## Screening Protocol

### AUSDRISK Assessment:

- Complete validated AUSDRISK questionnaire
- Scores risk of developing diabetes in next 5 years
- Takes 5-10 minutes to complete

### Point-of-Care Glucose Testing:

- Use validated glucose meters
- Ensure proper calibration and quality control
- Consider both fasting and random glucose measurements

### Screening Recommendations:

- All adults  $\geq 45$  years every 3 years
- Earlier and more frequent screening for high-risk individuals
- Annual screening for very high-risk individuals (AUSDRISK  $\geq 20$ )

### Diagnostic Criteria and Risk Categories

#### Normal Glucose Tolerance:

- Fasting glucose:  $< 5.6$  mmol/L
- Random glucose:  $< 7.8$  mmol/L

#### Impaired Glucose Tolerance (Pre-diabetes):

- Fasting glucose: 5.6-6.9 mmol/L
- Random glucose: 7.8-11.0 mmol/L

#### Diabetes:

- Fasting glucose:  $\geq 7.0$  mmol/L
- Random glucose:  $\geq 11.1$  mmol/L
- HbA1c:  $\geq 6.5\%$  (48 mmol/mol)

### AUSDRISK Score Interpretation:

- Low risk: 0-5 (screen every 3 years)
- Intermediate risk: 6-11 (screen every 3 years, lifestyle advice)
- High risk: 12-20 (annual screening, intensive lifestyle intervention)
- Very high risk:  $\geq 21$  (annual screening, consider metformin)

### When to recommend to GP

#### Urgent Referral (Same Day):

- Random glucose  $\geq 11.1$  mmol/L with symptoms
- Signs of diabetic ketoacidosis (nausea, vomiting, abdominal pain, altered consciousness)

#### Routine Referral (Within 1-2 weeks):

- Fasting glucose  $\geq 7.0$  mmol/L
- Random glucose  $\geq 11.1$  mmol/L (asymptomatic)
- Impaired glucose tolerance (pre-diabetes)
- AUSDRISK score  $\geq 12$

#### Consider Referral:

- AUSDRISK score 6-11 with additional risk factors
- Family history of early-onset diabetes
- Previous gestational diabetes



# Lifestyle advice



## Dietary Interventions:

- Achieve 5-10% weight loss if overweight
- Mediterranean or low-glycaemic index diet patterns
- Reduce refined carbohydrates and added sugars
- Include high-fibre foods
- Regular meal timing
- Portion control strategies
- Limit sugar-sweetened beverages



## Weight Management:

- Target healthy BMI (18.5-24.9 kg/m<sup>2</sup>)
- Waist circumference targets: <94 cm men, <80 cm women
- Structured weight loss programs for significant weight loss



## Physical Activity:

- Minimum 150 minutes moderate-intensity aerobic activity weekly
- Include resistance training 2-3 times per week
- Break up prolonged sitting time
- Post-meal walking can help glucose control



## Other Lifestyle Factors:

- Smoking cessation
- Moderate alcohol consumption
- Stress management
- Adequate sleep (7-9 hours)
- Regular foot care and eye examinations



# Red Flags Requiring Immediate Medical Attention



## **Cardiovascular:**

- Chest pain or discomfort
- Severe shortness of breath
- Severe headache with neurological symptoms
- Blood pressure  $\geq 180/110$  mmHg with symptoms



## **Metabolic:**

- Signs of diabetic ketoacidosis
- Severe dehydration
- Altered mental state
- Random glucose  $\geq 20$  mmol/L



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[sciana.health](https://sciana.health)

For healthier futures

## References

<sup>1</sup>[Australian Institute of Health and Welfare. Australia's Health 2022. AIHW, Australian Government.](#)

<sup>2</sup>[Australian Institute of Health and Welfare. Cardiovascular Disease Snapshot. AIHW, 2023.](#)

<sup>3</sup>[Australian Institute of Health and Welfare. Diabetes Snapshot. AIHW, 2023.](#)