

Gestational Diabetes Mellitus

Clinical Guideline Presentation v1.0



45 minutes

Towards your CPD Hours

References:

The Queensland Clinical Guideline *Gestational diabetes mellitus* is the primary reference for this package.

Recommended citation:

Queensland Clinical Guidelines. *Gestational diabetes mellitus* Clinical guideline education presentation E15.33-1-V1-R20 Queensland Health. 2015.

Disclaimer:

This presentation is an implementation tool and should be used in conjunction with the published guideline. This information does not supersede or replace the guideline. Consult the guideline for further information and references.

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Abbreviations

AC	Abdominal circumference
ADIPS	Australasian Diabetes in Pregnancy Society
BGL	Blood glucose level
BMI	Body mass index
CI	Confidence interval
CS	Caesarean section
GDM	Gestational diabetes mellitus
GI	Glycaemic Index
GWG	Gestational weight gain
IOL	Induction of labour
IOM	Institute of Medicine
LGA	Large for gestational age
MNT	Medical nutrition therapy
NDSS	National Diabetes services scheme
OGTT	Oral glucose tolerance test – 75 gram glucose load
USS	Ultrasound

Learning outcomes

At the end of this presentation the participant will be able to outline, in relation to GDM:

- Risk factors
- Appropriate screening and testing methods
- Classification of types of diabetes
- Risks for mother and fetus/baby
- Education and management
- Pharmacotherapy options
- Intrapartum care
- Post partum and discharge care

Introduction

- GDM is one of the most common medical complications of pregnancy
- Defined as any degree of glucose intolerance with onset or first recognition during pregnancy
- Usually resolves following birth



Increasing prevalence

- QLD incidence rose from 4.9% in 2006 to > 8% in 2013
- Aboriginal and Torres Strait Islander women are twice as likely to develop GDM
- In 2014 registrations with national GDM register increased 16% from previous year

Assess all women for risk factors early in pregnancy

Risk factors

Ethnicity	Previous perinatal loss
Age \geq 40 years	Multiple pregnancy
Previous elevated BGL	BMI $>$ 30kg/m ²
Previous GDM	Previous LGA baby (BW $>$ 4500 g or $>$ 90 th centile)
Family history of diabetes (1 st degree relative with diabetes or sister with GDM)	Medications (corticosteroids, antipsychotics)
Polycystic ovarian syndrome	

If risk factors identified

- Recommend fasting 75 g OGTT at first antenatal visit or entry to care
- Offer HbA1c (first trimester only)
 - If OGTT not tolerated
 - Opportunistic care required
 - OGTT not practical (clinical, geographical or logistical)

If no risk factors identified

- Recommend OGTT to all pregnant women at 24–28 weeks gestation
- Fast 8–14 hours prior
- Oral glucose challenge test not used for diagnosis of GDM
- 3 day high carbohydrate diet not required

Diagnosis of GDM

Time	Plasma glucose level (one or more)
Fasting	5.1–6.9 mmol/L
1 hour	≥ 10.0 mmol/L
2 hour	8.5–11.0 mmol/L
Hb1Ac	> 41 to < 48 mmol/mol may be sufficient to diagnose GDM

Diabetes in Pregnancy

- When the plasma glucose levels exceed the threshold for diagnosis of diabetes *outside of pregnancy*
- May indicate undiagnosed/pre-existing diabetes but a definitive diagnosis can only be made postpartum
- Additional management (beyond that required for GDM) is required

Diabetes in Pregnancy

Time	Plasma glucose level (one or more)
Fasting	≥ 7.0 mmol/L
1 hour	<i>A one hour level is not used</i>
2 hour	≥ 11.1 mmol/L
Random	≥ 11.1 mmol/L. Confirm diagnosis with additional standardised testing
Hb1Ac	≥ 48 mmol/mol

Maternal risks

Short term	Long term
Preeclampsia	Recurrent GDM
Induced labour	Increased risk of T2 diabetes
Operative birth	Cardiovascular disease
Hydramnios	
Post-partum haemorrhage	
Infection	

Newborn and fetal risks

Short term	Long term
Respiratory distress	Impaired glucose tolerance
Jaundice	Type 2 diabetes
Hypoglycaemia	Obesity
Premature birth	
Hypocalcaemia	
Polycythaemia	
Increased newborn weight and adiposity	
Macrosomia/associated risks	

Antenatal care

- Multidisciplinary team approach if possible
- Diabetes education and dietary advice within one week of diagnosis
- Individualise schedule of contact
- More frequent contact if BGLs are suboptimal or other complicating factors
- Diagnosis before 16 weeks may require increased surveillance

Initial education

- Give overview of GDM and effects for mother and baby
- Reduce maternal anxiety
- Provide correct information
- Encourage partner /support to attend
- Challenge of working within a limited time frame (diagnosis to birth)

Key components of education

- Overview of GDM
- Implications for mother and baby
- Self blood glucose monitoring (SBGM)
- Review by Dietitian
- Physical activity levels
- National Diabetes Services Scheme (NDSS)
- Can be group or individual session

Resources

- NDSS
 - Online DVD
 - Free meter programs
 - Testing strips
 - Free needles
- QH Brochures and booklets
 - Available in 13 languages



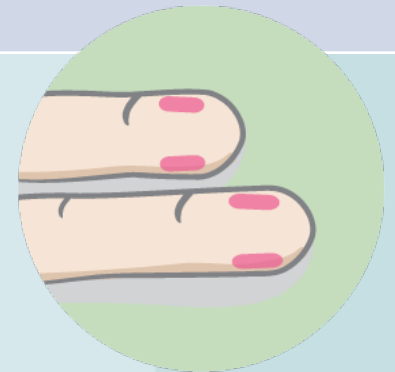
www.health.qld.gov.au/caru/networks/diabetes.asp



Self-blood glucose monitoring

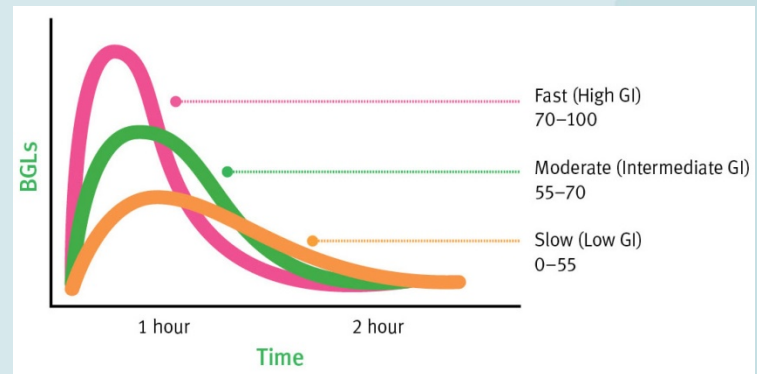
- Hand washing
- Meter use
- Testing times
- BGL targets
- Lancet device use
- Safe disposal of sharps
- Interpretation of results
- NDSS registration – Dr or CDE only

Target	BGL (mmol/L)
Fasting	< 5.0
1 hour post prandial	< 7.4
2 hours post prandial	< 6.7



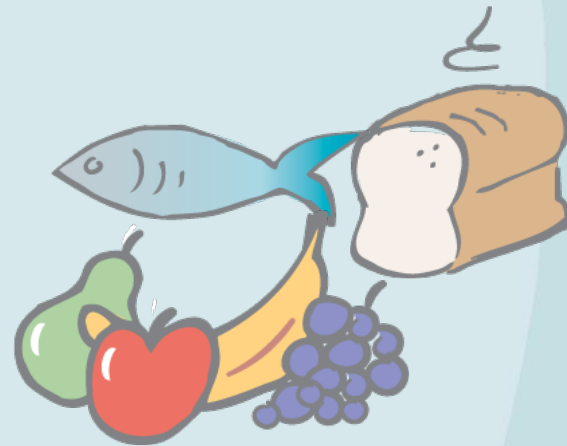
Medical nutrition therapy

- Consultation with dietitian
- Individualise eating plan
- Culturally appropriate
- Carbohydrate foods and influence on BGL
- Glycaemic index
- Portion size



Medical nutrition therapy

- Discuss gestational weight gain
- Weight loss not recommended
- Safe foods for pregnancy
- Label reading
- Food diary



Physical activity

- Helpful adjunctive therapy
- Assess current level of activity
- 30 minutes on most days of week
 - Aerobic exercise – walking, stationary cycle, swimming, other aquatic activities, prenatal exercise classes
- Consider exercise snacking – 10 minute periods

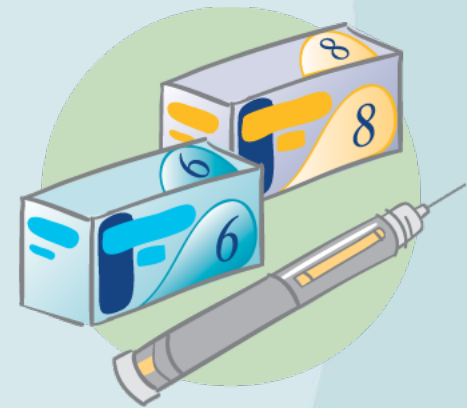
Physical activity

- Associated with health benefits
- Improves BGLs
- Advise:
 - Drink plenty of water during and after exercise
 - Wear loose light clothing
 - Record daily activity and duration
 - Contraindications
 - When to cease



Pharmacological therapy

- Metformin or Insulin if not achieving optimal BGLs with lifestyle modifications
- Decision to commence based on:
 - Degree and pattern of hyperglycaemia
 - Maternal choice
 - Gestational age
 - Fetal growth



Metformin

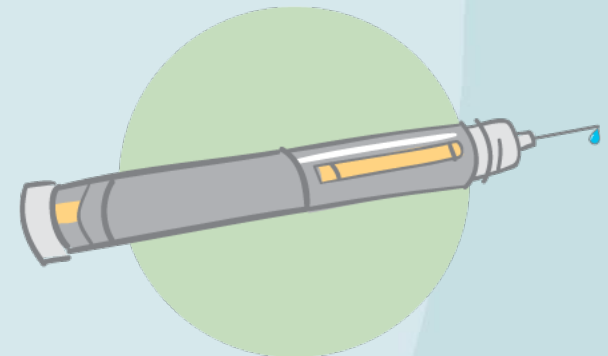
Improves insulin resistance

- Preferred by women
- May need insulin added
- Maximum dose – 2000mg SR or XR
- Titrate dose according to BGLs
- Review BGLs within 3 days of commencing

Insulin therapy

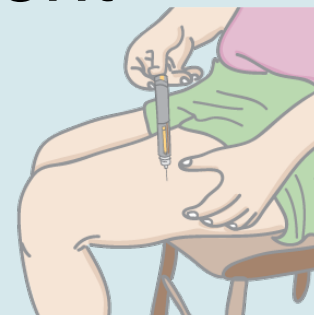
Indications:

- Hyperglycaemia above BGL targets
- Suboptimal BGLs with Metformin
- Maternal preference
- Metformin not tolerated
- Fetal macrosomia



Insulin therapy

- Consult with expert clinician re dose and type of Insulin
- Individualise Insulin regimen
- Education by clinician trained in teaching self administration of Insulin therapy
- Hypoglycaemia management
- Titrate Insulin every 2–3 days with increments of 2–4 units



No Pinch up = 4mm needle



Pinch up = 5mm needle or greater

Insulin type

Abnormality	Insulin type
Elevated fasting glucose	<ul style="list-style-type: none">• Single bedtime injection of intermediate-acting
Postprandial hyperglycaemia	<ul style="list-style-type: none">• Meal time rapid-acting
Fasting and postprandial hyperglycaemia	<ul style="list-style-type: none">• Basal-bolus Insulin regimen• Mealtime rapid-acting and bedtime intermediate-acting or• Twice daily mixed (if woman is reluctant to inject 4x per day)

Birthing

- Well managed GDM and no complications
 - ➔ Await spontaneous labour
- Suspected fetal macrosomia or other complications
 - ➔ Consider birth from 38–39 weeks
- Document birth plan
- Document pharmacotherapy plan

Metformin as birth approaches

Metformin	
Spontaneous onset	<ul style="list-style-type: none">• Cease when in established labour
IOL	<ul style="list-style-type: none">• Cease when in established labour
Caesarean section	<ul style="list-style-type: none">• Cease 24 hours prior to elective procedure

Insulin as birth approaches

Insulin

Spontaneous onset	<ul style="list-style-type: none">• Titrate insulin according to BGLs
IOL (morning)	<ul style="list-style-type: none">• Eat early morning breakfast• Usual rapid-acting Insulin with breakfast• Omit long or intermediate-acting Insulin in the morning• Cease Insulin when in established labour
Caesarean Section	<ul style="list-style-type: none">• Usual rapid and intermediate/long-acting Insulin the night before• Fast from midnight• Omit all Insulin on the morning of the CS

Intrapartum BGL monitoring

- Aim to maintain optimal BGL 4–7 mmol/L
- Seek medical review if outside parameters

BGL	Considerations
> 7.0mmol/L	<ul style="list-style-type: none">• Repeat BGL in 1 hour• Consider Insulin infusion
< 4.0mmol/L or symptomatic of hypoglycaemia	<ul style="list-style-type: none">• Cease Insulin therapy• Treat if symptomatic• Repeat BGL

Insulin infusion in labour

- Rarely needed for women with GDM
- Seek expert opinion before commencing
- Individualise as per clinical requirements

Postpartum care

Therapy	Recommendation
Non pharmacological	<ul style="list-style-type: none">• Cease BGLs
Pharmacological	<ul style="list-style-type: none">• Cease Metformin and Insulin immediately after birth• Continue BGLs for 24 hours<ul style="list-style-type: none">○ Pre prandial and before bed○ Cease BGL after 24 hours if all 4–7 mmol/L
If BGLs elevated	<ul style="list-style-type: none">• Seek medical review• Continue BGL monitoring• Insulin rarely needed - if indicated, lower dose than in pregnancy

Newborn care

- Keep warm (36.5–37.2 °C)
- Initiate early feeds 30–60 minutes of birth
- Encourage feeding at least 3 hourly or more frequently
- BGL monitoring as per Queensland Clinical Guideline: *Newborn hypoglycaemia*

Breastfeeding

- Encourage all women to breastfeed
- Increased evidence that breastfeeding has short and long term benefits for mothers with GDM
- Offer early additional skilled lactation support and assistance

Discharge planning

- Advise women:
 - 75 g OGTT 6–12 weeks postpartum
 - Increased risk of developing Type 2 diabetes
 - GDM and future pregnancy risk
 - Maintain healthy lifestyle, weight, eating patterns and physical activity
- Early testing in future pregnancy
- Lifelong screening for diabetes