

# Queensland Clinical Guidelines

*Translating evidence into best clinical practice*

## Maternity and Neonatal **Clinical Guideline**

### Guideline supplement: Gestational diabetes mellitus (GDM)

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## 1 Introduction

This document is a supplement to the Queensland Clinical Guideline (QCG) *Gestational diabetes mellitus (GDM)*. It provides supplementary information regarding guideline development, makes summary recommendations, suggests measures to assist implementation and quality activities and summarises changes (if any) to the guideline since original publication. Refer to the guideline for abbreviations, acronyms, flow charts and acknowledgements.

### 1.1 Funding

The development of this guideline was funded by Healthcare Improvement Unit, Queensland Health. Consumer representatives were paid a standard fee. Other working party members participated on a voluntary basis.

### 1.2 Conflict of interest

Declarations of conflict of interest were sought from working party members as per the Queensland Clinical Guidelines [Conflict of Interest](#) statement. No conflict of interest was identified.

### 1.3 Review process

- A review of the guideline scope, clinical questions and current literature was undertaken in November 2019 to February 2020.
- The clinical leads were consulted and reviewed the previous version of the guideline.
- A peer review panel of expert clinicians and consumer representatives reviewed the guideline, supplement and other resources.
- The QCG steering committee and SMNCN re-endorsed the guideline and supplement.

## 1.4 Summary of changes

[Consider section break and landscape orientation]

Queensland clinical guidelines are reviewed every 5 years or earlier if significant new evidence emerges. Table 1 provides a summary of changes made to the guidelines since original publication.

Table 1. Summary of change

Publication date <i>Endorsed by:</i>	Identifier	Summary of major change
August 2015	MN15.33-V1-R20	First publication
<p><b>February 2021</b> <i>Statewide Maternity and Neonatal Clinical Network (Qld)</i></p>	MN21.33-V2-R26	<p>Peer review  <b>Definitions:</b> added prediabetes, postprandial syndrome and suspected fetal macrosomia  <b>Flowchart 1:</b>  <ul style="list-style-type: none"> <li>• Updated to include post-bariatric surgery women</li> </ul> <b>Flowchart 2:</b>  <ul style="list-style-type: none"> <li>• From: Intrapartum management for GDM requiring metformin and/or insulin</li> <li>• To: Intrapartum management of women with GDM requiring metformin and/or insulin</li> </ul> <b>Flowchart 3:</b>  <ul style="list-style-type: none"> <li>• From: Postpartum preprandial NGL target 7.0 mmol/L</li> <li>• To: Postpartum preprandial NGL target 8.0 mmol/L</li> <li>• Added: Contraception advice to discharge planning box</li> </ul> <b>Introduction:</b>  <ul style="list-style-type: none"> <li>• Reworded: Description of GDM</li> <li>• Updated: Statistics</li> </ul> <b>1.2 Diabetes classification</b>  <b>Type 1</b>                      Added: Associated autoimmune markers  <b>Type 2</b>                      Added: Need to cease non-insulin injectable hypoglycaemic agents  <b>1.3 Clinical standards</b>  <ul style="list-style-type: none"> <li>• Model of care reviewed</li> </ul>                     From <b>2.2 Risks of GDM</b> to <b>2.3 Risk from GDM</b>  <ul style="list-style-type: none"> <li>• Created separate tables for maternal and fetal/newborn risks</li> </ul>                     From <b>2.3 Risk reduction</b> to <b>2.2 Risk reduction</b>  <ul style="list-style-type: none"> <li>• From: Probiotics combined with dietary counselling improves glucose metabolism and insulin sensitivity in healthy women</li> </ul> </p>

<b>Publication date</b> <i>Endorsed by:</i>	<b>Identifier</b>	<b>Summary of major change</b>
		<ul style="list-style-type: none"> <li>• To: Probiotics have not shown any proven role in GDM prevention in pregnant women who are overweight or have obesity</li> <li>• Added: Supplementation advice for women with low vitamin D levels</li> <li><b>2.3.1 Maternal risk form GDM</b></li> <li>• Added: Data about risk of GDM in subsequent pregnancies</li> <li><b>2.3.2 Fetal/baby risks from GDM</b></li> <li>• Added: Additional risks to fetus and baby</li> <li>From <b>2.6 Diagnosis of GDM</b> and <b>2.7 Diagnosis of Diabetes in Pregnancy</b> to <b>3.3 Diagnosis of GDM or diabetes in pregnancy</b></li> <li>From <b>2.4 Diagnostic tests</b> to <b>3.1 Diagnostic tests</b></li> <li>• Added: Information about OGTT and outcomes</li> <li><b>Section 3 Diabetes diagnosis</b></li> <li><b>3.1 Diagnostic tests:</b></li> <li>• Added: Information about HbA1c limitations</li> <li>• Added: Alternative testing to OGTT when indicated</li> <li><b>3.2. Testing for GDM</b></li> <li>• Added: Information about testing women who have had bariatric surgery</li> <li><b>3.3 Diagnosis of GDM or diabetes in pregnancy:</b> Information combined into table</li> <li>From <b>Section 3 Antenatal care</b> to <b>4.1 Antenatal care</b></li> <li>• Added: Continuity of care model</li> <li>• Added: Antenatal schedule of care</li> <li>From:<b>3.1 Maternal surveillance</b> to <b>4.2 Maternal care</b></li> <li>• Deleted: Gestational weight gain from body of guideline and added to Appendix C Gestational weight gain</li> <li>• From: <b>Section 3 Antenatal care</b> to <b>4.3 Special considerations</b></li> <li><b>Breastfeeding preparation</b></li> <li>• Added: Information about breastfeeding benefits for women</li> <li>• Amended: Antenatal expression of milk</li> <li><b>Diabetes in pregnancy</b></li> <li>Added rational for testing for microalbuminaemia</li> <li><b>Post-bariatric surgery</b></li> <li>• Added: Information related to care of women</li> <li>From <b>3.2 Fetal surveillance</b> to <b>4.4 Fetal surveillance</b></li> <li>• Added: Information about fetal growth and wellbeing</li> <li>• Added: Information about fetal AC from SR</li> <li>• Added: Information about USS and estimated fetal weight</li> <li>From <b>3.5 Self-monitoring</b> to <b>4.6 Self-monitoring</b></li> <li>• Added: Information about flash monitoring and continuous monitoring</li> </ul>

<b>Publication date</b> <i>Endorsed by:</i>	<b>Identifier</b>	<b>Summary of major change</b>
		<ul style="list-style-type: none"> <li>• Added: Information about post-bariatric surgery regarding OGTT and management From <b>3.4 Psychosocial support</b> to <b>4.5 Psychosocial support and education</b></li> <li>• Added: Information about need for BGL monitoring of baby after birth and reference to QCG <i>Newborn Hypoglycaemia</i> guideline From <b>3.5 Medical nutrition therapy</b> to <b>4.7 Medical nutrition therapy</b></li> <li>• Added: Information about dietary interventions including adequate carbohydrate intake, vitamin D supplementation, bariatric surgery, schedule of dietician appointments From <b>Section 4 Pharmacological therapy</b> to <b>Section 5 Pharmacological therapy</b></li> <li><b>Metformin</b></li> <li>• Added: Additional contraindications</li> <li>• Added: Information about Category C drugs From <b>Section 4.2 Insulin therapy</b> to <b>Section 5.2 Insulin therapy</b></li> <li>• Added: Preference for rapid acting analogues From <b>Section 5 Birthing</b> to <b>Section 6 Birthing</b></li> <li><b>Considerations for birth</b></li> <li>• Added: Additional information about RANZCOG recommendation regarding IOL and fetal macrosomia; information about IOL regarding outcomes</li> <li>• Reworded and added :Information about communication with the woman (including risks and benefits of CS); reference to QCG <i>Standard care</i> guideline From <b>Section 5.1 Pharmacotherapy as birth approaches</b> to <b>Section 6.2 Pharmacotherapy as birth approaches</b></li> <li>• Added: Need to continue insulin if IV glucose being administered</li> <li><b>Metformin</b></li> <li>• From: Cease 24 hours prior to CS</li> <li>• To: Cease evening before CS</li> <li><b>Insulin</b></li> <li>• From: Fast from midnight</li> <li>• To: Fast for six hours</li> <li>• Added: Information about administration and monitoring considerations From <b>5.3 Intrapartum BGL management</b> to <b>5.4 Intrapartum BGL management</b></li> <li>• Added: Maintain BGL 4–7 mmol/L during labour From <b>5.4.1 Insulin infusion</b> to <b>6.4.1 Insulin infusion</b></li> <li>• Deleted: Brand names of insulin</li> <li>• Added: Insulin infusion rate in units From <b>Section 6 Postpartum care</b> to <b>Section 7 Postpartum care</b></li> <li>• Added: Continue BGL monitoring as clinically indicated</li> </ul>

Publication date <i>Endorsed by:</i>	Identifier	Summary of major change
		<p><b>Section 6.1 Newborn care</b> removed; added bullet point to <b>Section 7 Postpartum care</b> regarding referring to QCG <i>Neonatal hypoglycaemia</i> guideline</p> <p><b>Section 7 Postpartum care</b></p> <ul style="list-style-type: none"> <li>From: Postpartum preprandial target BGL less than or equal to 7.0 mmol/L</li> <li>To: 8.0 mmol/L</li> </ul> <p>From <b>6.2 Breastfeeding</b> to <b>7.1 Breastfeeding</b></p> <ul style="list-style-type: none"> <li>Added: Additional information about benefits for women with GDM and their babies; post-bariatric surgery</li> </ul> <p>From <b>6.3 Discharge planning</b> to <b>7.2 Discharge planning</b></p> <ul style="list-style-type: none"> <li>Added: Cardiovascular disease as a future risk requiring follow-up</li> <li>Added: Information about contraception; post-bariatric surgery</li> </ul> <p>From <b>Appendix A Antenatal schedule of care</b> to <b>Appendix B Antenatal schedule of care</b></p> <p><b>Appendix A Conversion table for HbA1c</b> new</p> <p>From <b>Appendix B Exercise and exertion</b> to <b>Appendix D Exercise and exertion</b></p> <p><b>Appendix C Gestational weight gain</b> new (removed from body of guideline)</p> <p>Formatting updated References updated</p>
<b>March 2021</b>	MN21.33-V3-R26	<p><b>Amendment: Table 8 Testing for GDM</b></p> <p><b>Post-bariatric surgery:</b> In first trimester consider:</p> <ul style="list-style-type: none"> <li>From: If HbA1c greater than or equal to 41 mmol/mol (5.9%), or fasting BGL is greater than or equal to 7.0 mmol/L treating woman as if has type 2 diabetes</li> <li>To: If HbA1c greater than or equal to 48 mmol/mol (6.5%), or fasting BGL is greater than or equal to 7.0 mmol/L treating woman as if has type 2 diabetes</li> </ul>
<b>May 2021</b>	MN21.33-V4-R26	<p><b>Amendment: Table 8 Testing for GDM</b></p> <p>The example of sleeve gastrectomy (GS) as a type of bariatric surgery</p> <ul style="list-style-type: none"> <li>Deleted FROM examples of malabsorptive bariatric surgeries</li> <li>Added TO examples of restrictive bariatric surgery (with laparoscopic gastric banding (LAGB))</li> </ul> <p><b>Re-paged</b> without change to content or flow (reduced from 48 to 46 pages)</p>
<b>July 2021</b>	MN21.33-V5-R26	<p><b>Amendment: Table 20 Metformin</b></p> <ul style="list-style-type: none"> <li>From: Maximum dose: 2500mg (SR) or 2000 g (XR) oral daily</li> <li>To: Maximum dose: 2500mg (SR) or 2000 mg (XR) oral daily</li> </ul>

<b>Publication date</b> <i>Endorsed by:</i>	<b>Identifier</b>	<b>Summary of major change</b>
<b>May 2022</b>	MN21.33-V6-R26	<p><b>Flowchart: Screening and diagnosis of GDM</b></p> <ul style="list-style-type: none"> <li>Added: information from guideline (Table 16 Self-monitoring) fasting BGL to commence self-monitoring and suggested target BGLs when self-monitoring</li> <li>From: 'evidence of fetal hyperinsulinaemia on growth USS'. To: 'evidence of excess fetal growth/adiposity on growth USS' (flowchart and Tables 8 Testing for GDM and 14 Fetal surveillance)</li> </ul> <p><b>Table 20 Metformin</b>                      From: Maximum dose: 2500mg (SR) To: Maximum dose: 2500mg (immediate release) (no dose change)</p> <p><b>Table 27 Pharmacotherapy as birth approaches</b>                      Added: Cease metformin evening before elective procedure (AFTER EVENING DOSE) (no recommendation change)</p>
<b>May 2022</b>	MN21.33-V7-R26	<p><b>Flowchart: Screening and diagnosis of GDM</b></p> <ul style="list-style-type: none"> <li>Added: information from guideline (Table 16 Self-monitoring) the fasting BGL when pre- and postprandial self-monitoring to commence</li> </ul>



## 2 Methodology

Queensland Clinical Guidelines (QCG) follows a rigorous process of guideline development. This process was endorsed by the Queensland Health Patient Safety and Quality Executive Committee in December 2009. The guidelines are best described as 'evidence informed consensus guidelines' and draw from the evidence base of existing national and international guidelines and the expert opinion of the working party.

### 2.1 Topic identification

The topic was identified as a priority by the Statewide Maternity and Neonatal Clinical Network at a forum in 2009.

### 2.2 Scope

The scope of the guideline was determined using the following framework.

Table 2. Scope framework

Scope framework	
<b>Population</b>	<ul style="list-style-type: none"> <li>• Testing—all pregnant women</li> <li>• Management—women diagnosed with GDM</li> </ul>
<b>Purpose</b>	Identify relevant evidence related to: Diagnosis, assessment and management of GDM
<b>Outcome</b>	Support: <ul style="list-style-type: none"> <li>• Early identification of GDM</li> <li>• Accurate assessment and correct diagnosis of GDM</li> </ul> Best practice management during pregnancy, labour and postpartum
<b>Exclusions</b>	<ul style="list-style-type: none"> <li>• Management of women with pre-existing diabetes mellitus</li> <li>• Usual or routine care of the woman</li> </ul> Management of a baby born to a woman with GDM

### 2.3 Clinical questions

The following clinical questions were generated to inform the guideline scope and purpose:

- How is GDM diagnosed in pregnancy?
- What antenatal care is indicated for a woman diagnosed with GDM?
- What care is required during the intrapartum period for a woman diagnosed with GDM?
- What care is indicated during the postpartum period for a woman who has had GDM?

## 2.4 Search strategy

A search of the literature was conducted during November 2019–February 2020. A further search was conducted in May 2020–July 2020. The QCG search strategy is an iterative process that is repeated and amended as guideline development occurs (e.g. if additional areas of interest emerge, areas of contention requiring more extensive review are identified or new evidence is identified). All guidelines are developed using a basic search strategy. This involves both a formal and informal approach.

Table 3. Basic search strategy

Step		Consideration
1.	Review clinical guidelines developed by other reputable groups relevant to the clinical speciality	<ul style="list-style-type: none"> <li>• This may include national and/or international guideline writers, professional organisations, government organisations, state based groups.</li> <li>• This assists the guideline writer to identify:               <ul style="list-style-type: none"> <li>○ The scope and breadth of what others have found useful for clinicians and informs the scope and clinical question development</li> <li>○ Identify resources commonly found in guidelines such as flowcharts, audit criteria and levels of evidence</li> <li>○ Identify common search and key terms</li> <li>○ Identify common and key references</li> </ul> </li> </ul>
2.	Undertake a foundation search using key search terms	<ul style="list-style-type: none"> <li>• Construct a search using common search and key terms identified during Step 1 above</li> <li>• Search the following databases               <ul style="list-style-type: none"> <li>○ PubMed</li> <li>○ CINAHL</li> <li>○ Medline</li> <li>○ Cochrane Central Register of Controlled Trials</li> <li>○ EBSCO</li> <li>○ Embase</li> </ul> </li> <li>• Studies published in English less than or equal to 5 years previous are reviewed in the first instance. Other years may be searched as are relevant to the topic</li> <li>• Save and document the search</li> <li>• Add other databases as relevant to the clinical area</li> </ul>
3.	Develop search word list for each clinical question	<ul style="list-style-type: none"> <li>• This may require the development of clinical sub-questions beyond those identified in the initial scope.</li> <li>• Using the foundation search performed at Step 2 as the baseline search framework, refine the search using the specific terms developed for the clinical question</li> <li>• Save and document the search strategy undertaken for each clinical question</li> </ul>
4.	Other search strategies	<ul style="list-style-type: none"> <li>• Search the reference lists of reports and articles for additional studies</li> <li>• Access other sources for relevant literature               <ul style="list-style-type: none"> <li>○ Known resource sites</li> <li>○ Internet search engines</li> <li>○ Relevant textbooks</li> </ul> </li> </ul>

### 2.4.1 Keywords

The following keywords were used in the basic search strategy: GDM, gestational diabetes mellitus, diabetes, BGL, blood glucose level, macrosomia, LGA, OGTT, HbA1c, insulin, metformin, hypoglycaemia, hyperglycaemia, bariatric.

Other keywords may have been used for specific aspects of the guideline.

## 2.5 Consultation

Major consultative and development processes occurred in October 2020. These are outlined in Table 4. Major guideline development processes

Table 4. Major guideline development processes

Process	Activity
<b>Original development</b>	<ul style="list-style-type: none"> <li>• Original consultative and development processes occurred between November 2014 and August 2015</li> <li>• This included formation of a working party and statewide consultation as per usual QCG process</li> <li>• A survey of clinician opinion was also conducted</li> </ul>
<b>Decision for peer review</b>	<ul style="list-style-type: none"> <li>• A review of the guideline scope, clinical questions and current literature was undertaken in November 2019. <ul style="list-style-type: none"> <li>○ Areas of clinical practice change were identified</li> </ul> </li> <li>• Clinical leads <ul style="list-style-type: none"> <li>○ Reviewed the previous scope and version of the guideline</li> <li>○ Reviewed identified areas of clinical practice change</li> <li>○ Confirmed aspects of the guideline for update and new inclusions</li> <li>○ Reached consensus agreement that a peer review process was appropriate</li> </ul> </li> </ul>
<b>Consultation</b>	<ul style="list-style-type: none"> <li>• Expert clinicians and a consumer representative were identified by the clinical leads and invited to peer review the updated guideline in October 2020</li> <li>• All invited members accepted</li> </ul>

## 2.6 Endorsement

The guideline was endorsed by the:

- Queensland Clinical Guidelines Steering Committee in February 2021
- Statewide Maternity and Neonatal Clinical Network (Queensland) in February 2021

## 2.7 Citation

The recommended citation of Queensland Clinical Guidelines is in the following format:

Queensland Clinical Guidelines. **[Insert Guideline Title]**. Guideline No. **[Insert Guideline Number]**. Queensland Health. **[Insert Year of Publication]**. Available from: [www.health.qld.gov.au/qcg](http://www.health.qld.gov.au/qcg).

### EXAMPLE:

Queensland Clinical Guidelines. Normal birth. Guideline No. MN17.25-V3-R22. Queensland Health 2017. Available from: [www.health.qld.gov.au/qcg](http://www.health.qld.gov.au/qcg).

### 3 Levels of evidence

The evidence grading system used by the American Diabetes Association<sup>1</sup> and Royal College of Obstetricians and Gynaecologists<sup>2</sup> was used to inform the summary recommendations. Definitions for grade of recommendation are outlined in Table 5. Grades of recommendations and Table 6. Type and level of evidence. Summary recommendations are outlined in Table 7. Summary recommendations. The assigned grades are derived from the grades of evidence provided in the source document or consensus recommendations of the working party and clinical lead as indicated.

Table 5. Grades of recommendations

Levels of evidence	
<b>A</b>	<ul style="list-style-type: none"> <li>• Clear evidence from well-conducted, generalizable RCTs that are adequately powered, including:               <ul style="list-style-type: none"> <li>○ Evidence from a well-conducted multicentre trial</li> <li>○ Evidence from a meta-analysis that incorporated quality ratings in the analysis</li> </ul> </li> <li>• Compelling nonexperimental evidence, i.e. “all or none” rule developed by the Centre for Evidence-Based Medicine at the University of Oxford</li> <li>• Supportive evidence from well-conducted RCTs that are adequately powered, including:               <ul style="list-style-type: none"> <li>○ Evidence from a well-conducted trial at one or more institutions</li> <li>○ Evidence from a meta-analysis that incorporated quality ratings in the analysis</li> </ul> </li> </ul>
<b>B</b>	<ul style="list-style-type: none"> <li>• Supportive evidence from well-conducted cohort studies               <ul style="list-style-type: none"> <li>○ Evidence from a well-conducted prospective cohort study or registry</li> <li>○ Evidence from a well-conducted meta-analysis of cohort studies</li> </ul> </li> <li>• Supportive evidence from a well-conducted case-control study</li> </ul>
<b>C</b>	<ul style="list-style-type: none"> <li>• Supportive evidence from poorly controlled or uncontrolled studies               <ul style="list-style-type: none"> <li>○ Evidence from randomized clinical trials with one or more major or three or more minor methodological flaws that could invalidate the results</li> <li>○ Evidence from observational studies with high potential for bias (such as case series with comparison with historical controls)</li> <li>○ Evidence from case series or case reports</li> </ul> </li> <li>• Conflicting evidence with the weight of evidence supporting the recommendation</li> </ul>
<b>Consensus*</b>	<ul style="list-style-type: none"> <li>• Opinions based on respected authorities, descriptive studies or reports of expert committees or clinical experience of the working party.</li> </ul>

Table 6. Type and level of evidence

<b>Levels of evidence</b>	
<b>1++</b>	High-quality meta-analyses, systematic reviews of RCTs, or RCTs (including cluster RCTs) with a very low risk of bias
<b>1+</b>	Well-conducted meta-analyses, systematic reviews of RCTs, or RCTs (including cluster RCTs) with a low risk of bias
<b>1-</b>	Meta-analyses, systematic reviews of RCTs, or RCTs (including cluster RCTs) with a high risk of bias
<b>2++</b>	High-quality systematic reviews of these types of studies, or individual, non-RCTs, case-control studies, cohort studies, CBA studies, ITS, and correlation studies with a very low risk of confounding, bias or chance, and a high probability that the relationship is causal
<b>2+</b>	Well-conducted non-RCTs, case-control studies, cohort studies, CBA studies, ITS, and correlation studies with a low risk of confounding, bias or chance and a moderate probability that the relationship is causal
<b>2-</b>	Non-RCTs, case-control studies, cohort studies, CBA studies, ITS and correlation studies with a high risk—or chance—of confounding bias, and a significant risk that the relationship is not causal
<b>3</b>	Non-analytic studies (for example, case reports, case series)
<b>4</b>	Expert opinion, formal consensus

## 4 Summary recommendations

Summary recommendations and levels of evidence are outlined in Table 7. Summary recommendations.

Table 7. Summary recommendations

Recommendation		Grading of evidence
1	Test all women for GDM regardless of risk factors	<b>Consensus</b>
2	Screen for undiagnosed type 2 diabetes at the first prenatal visit in those with risk factors, using standard diagnostic criteria. <sup>1</sup>	<b>B</b>
3	Screen for GDM at 24–28 weeks of gestation in pregnant women not previously known to have diabetes. <sup>1</sup>	<b>A</b>
4	Use the classifications and diagnostic criteria in the Queensland Clinical Guideline <i>Gestational diabetes mellitus</i> so as to promote consistency of care and communications.	<b>Consensus</b>
5	Recommend BGL self-monitoring to women diagnosed with GDM	<b>Consensus</b>
6	Treat women diagnosed with GDM with medical nutrition therapy and when necessary, medication for both fetal and maternal benefit.	<b>A</b>
7	Provide dietary advice for macro-and micronutrient monitoring and supplementation during pregnancy. <sup>3</sup>	<b>2-, 2+ and 4</b>
8	Develop and document a peripartum plan of care for women diagnosed with GDM.	<b>Consensus</b>
9	Provide lifestyle intervention counselling to women with a history of GDM.	<b>Consensus</b>
10	Offer women with a history of GDM, lifelong screening for the development of diabetes or prediabetes at least every 3 years.	<b>B</b>
11	Recommend breastfeeding to all women including those with previous bariatric surgery <sup>3</sup>	<b>3</b>
12	Provide dietary advice for macro-and micronutrient monitoring and supplementation during lactation <sup>3</sup>	<b>3</b>

## 5 Implementation

This guideline is applicable to all Queensland public and private maternity facilities. It can be downloaded in Portable Document Format (PDF) from [www.health.qld.gov.au/qcg](http://www.health.qld.gov.au/qcg)

### 5.1 Guideline resources

The following guideline components are provided on the website as separate resources:

- Flowchart: Screening and diagnosis of GDM
- Flowchart: Intrapartum management of women with GDM requiring metformin and/or insulin
- Flowchart: Postpartum care of women with GDM
- Poster: Antenatal schedule of care
- Education resource: Gestational diabetes mellitus (GDM)
- Knowledge assessment: Gestational diabetes mellitus (GDM)
- Consumer information developed by Queensland Health Statewide Diabetes Network

### 5.2 Suggested resources

During the development process stakeholders identified additional resources with potential to complement and enhance guideline implementation and application. The following resources are suggested as complimentary to the guideline:

- Consumer information developed by Queensland Health Statewide Diabetes Network
- Insulin and blood glucose records for subcutaneous and intravenous insulin
- Education presentation: Maternity insulin forms

### 5.3 Implementation measures

Suggested activities to assist implementation of the guideline are outlined below.

#### 5.3.1 Implications for implementation

The following areas may have implications for local implementation of the guideline recommendations. It is suggested they be considered for successful guideline implementation.

- Economic considerations including opportunity costs
- Human resource requirements including clinician skill mix and scope of practice
- Clinician education and training
- Equipment and consumables purchase and maintenance
- Consumer acceptance
- Model of care and service delivery

#### 5.3.2 QCG measures

- Notify Chief Executive Officer and relevant stakeholders
- Monitor emerging new evidence to ensure guideline reflects contemporaneous practice
- Capture user feedback
- Record and manage change requests

#### 5.3.3 Hospital and Health Service measures

Initiate, promote and support local systems and processes to integrate the guideline into clinical practice, including:

- Hospital and Health Service (HHS) Executive endorse the guidelines and their use in the HHS and communicate this to staff
- Promote the introduction of the guideline to relevant health care professionals
- Support education and training opportunities relevant to the guideline and service capabilities
- Align clinical care with guideline recommendations
- Undertake relevant implementation activities as outlined in the *Guideline implementation checklist* available at [www.health.qld.gov.au/qcg](http://www.health.qld.gov.au/qcg)

## 6 Quality measures

Auditing of guideline recommendations and content assists with identifying quality of care issues and provides evidence of compliance with the National Safety and Quality Health Service (NSQHS) Standards<sup>4</sup> [Refer to Table 8. NSQHS Standard 1]. Suggested audit and quality measures are identified in Table 9. Clinical quality measures.

Table 8. NSQHS Standard 1

NSQHS Standard 1: Clinical governance	
Clinical performance and effectiveness	
Criterion 1.27:	Actions required:
Evidence based care	a. Provide clinicians with ready access to best-practice guidelines, integrated care pathways, clinical pathways and decision support tools relevant to their clinical practice
	b. Support clinicians to use the best available evidence, including relevant clinical care standards developed by the Australian Commission on Safety and Quality in Health Care

The following clinical quality measures are suggested:

Table 9. Clinical quality measures

No	Audit criteria	Guideline Section
1.	Proportion of women who are screened for GDM	Section 3.2
2.	Proportion of pregnant women with risk factors, who are screened for GDM at the first antenatal contact with either the HbA1c or OGTT test	Section 3.2
3.	Proportion of women screened for GDM between 24–28 weeks gestation with OGTT	Section 3.2
4.	Proportion of women correctly classified as having GDM or diabetes in pregnancy according to the diagnostic criteria identified in the guideline	Section 1.2 Section 3.3
5.	Proportion of women with GDM who receive instruction on BGL self-monitoring from a clinician skilled in teaching BGL monitoring	Section 4.6
6.	Proportion of women with GDM who are referred to an accredited practising dietician within 1 week of diagnosis	Section 4.7
7.	Proportion of women with GDM who have a documented peripartum plan of care in the health care record	Section 6.1
8.	Proportion of women who are referred for persistent diabetes screening at 6–12 weeks postpartum	Section 7.2
9.	Proportion of women with GDM who receive lifestyle intervention counselling/information postpartum	Section 7.2

### 6.1 Areas for future research

During development the following areas were identified as having limited or poor quality evidence to inform clinical decision making. Further research in these areas may be useful.

- Alternative screening methods for GDM (other than OGTT)
- Screening and treatment for GDM in women who have had bariatric surgery
- Universal versus risk based screening
- Use of HbA1c for diagnosis, management and postpartum assessment of women who had hyperglycaemia during their pregnancy
- Effects from antenatal breastmilk expression on the woman's timing of birth and risk of NICU admission for the baby



## 6.2 Safety and quality

In conjunction with the Queensland Clinical Guideline *Standard care*<sup>5</sup>, implementation of this guideline provides evidence of compliance with the National Safety and Quality Health Service Standards and Australian Council on Healthcare Standards (ACHS) Evaluation and Quality Improvement Program (EQiP) National accreditation programs.<sup>4,6</sup>

Table 10. NSQHS/EQIP National Criteria

NSQHS/EQIP National Criteria	Actions required	☑ Evidence of compliance
<b>NSQHS Standard 1: Clinical governance</b>		
<p><b>Patient safety and quality systems</b> Safety and quality systems are integrated with governance processes to enable organisations to actively manage and improve the safety and quality of health care for patients.</p>	<p><b>Diversity and high risk groups</b> 1.15 The health service organisation: a. Identifies the diversity of the consumers using its services b. Identifies groups of patients using its services who are at higher risk of harm c. Incorporates information on the diversity of its consumers and higher-risk groups into the planning and delivery of care</p>	<ul style="list-style-type: none"> <li>☑ Assessment and care appropriate to the cohort of patients is identified in the guideline</li> <li>☑ High risk groups are identified in the guideline</li> <li>☑ The guideline is based on the best available evidence</li> </ul>
<p><b>Clinical performance and effectiveness</b> The workforce has the right qualifications, skills and supervision to provide safe, high-quality health care to patients.</p>	<p><b>Evidence based care</b> 1.27 The health service organisation has processes that: a. Provide clinicians with ready access to best-practice guidelines, integrated care pathways, clinical pathways and decision support tools relevant to their clinical practice b. Support clinicians to use the best available evidence, including relevant clinical care standards developed by the Australian Commission on Safety and Quality in Health Care</p>	<ul style="list-style-type: none"> <li>☑ Queensland Clinical Guidelines is funded by Queensland Health to develop clinical guidelines relevant to the service line to guide safe patient care across Queensland</li> <li>☑ The guideline provides evidence-based and best practice recommendations for care</li> <li>☑ The guideline is endorsed for use in Queensland Health facilities.</li> <li>☑ A desktop icon is available on every Queensland Health computer desktop to provide quick and easy access to the guideline</li> </ul>
	<p><b>Performance management</b> 1.22 The health service organisation has valid and reliable performance review processes that: a. Require members of the workforce to regularly take part in a review of their performance b. Identify needs for training and development in safety and quality c. Incorporate information on training requirements into the organisation's training system</p>	<ul style="list-style-type: none"> <li>☑ The guideline has accompanying educational resources to support ongoing safety and quality education for identified professional and personal development. The resources are freely available on the internet <a href="http://www.health.qld.gov.au/qcg">http://www.health.qld.gov.au/qcg</a></li> </ul>

NSQHS/EQUIPNational Criteria	Actions required	☑ Evidence of compliance
<b>NSQHS Standard 1: Clinical governance</b>		
<p><b>Patient safety and quality systems</b> Safety and quality systems are integrated with governance processes to enable organisations to actively manage and improve the safety and quality of health care for patients.</p>	<p><b>Policies and procedures</b> 1.7 The health service organisation uses a risk management approach to: a. Set out, review, and maintain the currency and effectiveness of, policies, procedures and protocols b. Monitor and take action to improve adherence to policies, procedures and protocols c. Review compliance with legislation, regulation and jurisdictional requirements</p>	<ul style="list-style-type: none"> <li>☑ QCG has established processes to review and maintain all guidelines and associated resources</li> <li>☑ Change requests are managed to ensure currency of published guidelines</li> <li>☑ Implementation tools and checklist are provided to assist with adherence to guidelines</li> <li>☑ Suggested audit criteria are provided in guideline supplement</li> <li>☑ The guidelines comply with legislation, regulation and jurisdictional requirements</li> </ul>
<b>NSQHS Standard 2: Partnering with Consumers</b>		
<p><b>Health literacy</b> Health service organisations communicate with consumers in a way that supports effective partnerships.</p>	<p><b>Communication that supports effective partnerships</b> 2.8 The health service organisation uses communication mechanisms that are tailored to the diversity of the consumers who use its services and, where relevant, the diversity of the local community 2.9 Where information for patients, carers, families and consumers about health and health services is developed internally, the organisation involves consumers in its development and review 2.10 The health service organisation supports clinicians to communicate with patients, carers, families and consumers about health and health care so that: a. Information is provided in a way that meets the needs of patients, carers, families and consumers b. Information provided is easy to understand and use c. The clinical needs of patients are addressed while they are in the health service organisation d. Information needs for ongoing care are provided on discharge</p>	<ul style="list-style-type: none"> <li>☑ Consumer consultation was sought and obtained during the development of the guideline. Refer to the acknowledgement section of the guideline for details</li> <li>☑ Consumer information is developed to align with the guideline and included consumer involvement during development and review</li> <li>☑ The consumer information was developed using plain English and with attention to literacy and ease of reading needs of the consumer</li> </ul>
<p><b>Partnering with consumers in organisational design and governance</b> Consumers are partners in the design and governance of the organisation.</p>	<p><b>Partnerships in healthcare governance planning, design, measurement and evaluation</b> 2.11 The health service organisation: a. Involves consumers in partnerships in the governance of, and to design, measure and evaluate, health care b. Has processes so that the consumers involved in these partnerships reflect the diversity of consumers who use the service or, where relevant, the diversity of the local community 2.14 The health service organisation works in partnership with consumers to incorporate their views and experiences into training and education for the workforce</p>	<ul style="list-style-type: none"> <li>☑ Consumers are members of guideline working parties</li> <li>☑ The guideline is based on the best available evidence</li> <li>☑ The guidelines and consumer information are endorsed by the QCG and Queensland Statewide Maternity and Neonatal Clinical Network Steering Committees which includes consumer membership</li> </ul>

NSQHS/EQUIPNational Criteria	Actions required	<input checked="" type="checkbox"/> Evidence of compliance
<b>NSQHS Standard 4: Medication safety</b>		
<p><b>Clinical governance and quality improvement to support medication management</b>                      Organisation-wide systems are used to support and promote safety for procuring, supplying, storing, compounding, manufacturing, prescribing, dispensing, administering and monitoring the effects of medicines</p>	<p><b>Integrating clinical governance</b>                      4.1 Clinicians use the safety and quality systems from the Clinical Governance Standard when:                      a. Implementing policies and procedures for medication management                      b. Managing risks associated with medication management                      c. Identifying training requirements for medication management</p>	<p><input checked="" type="checkbox"/> The guideline provides current evidence based recommendations about medication</p>
<b>NSQHS Standard 5: Comprehensive care</b>		
<p><b>Clinical governance and quality improvement to support comprehensive care</b>                      Systems are in place to support clinicians to deliver comprehensive care</p>	<p><b>Integrating clinical governance</b>                      5.1 Clinicians use the safety and quality systems from the Clinical Governance Standard when:                      a. Implementing policies and procedures for comprehensive care                      b. Managing risks associated with comprehensive care                      c. Identifying training requirements to deliver comprehensive care  <b>Partnering with consumers</b>                      5.3 Clinicians use organisational processes from the Partnering with Consumers Standard when providing comprehensive care to:                      a. Actively involve patients in their own care                      b. Meet the patient's information needs                      c. Share decision-making</p>	<p><input checked="" type="checkbox"/> The guideline has accompanying educational resources to support ongoing safety and quality education for identified professional and personal development. The resources are freely available on the internet <a href="http://www.health.qld.gov.au/qcg">http://www.health.qld.gov.au/qcg</a></p> <p><input checked="" type="checkbox"/> The guideline provides evidence-based and best practice recommendations for care</p> <p><input checked="" type="checkbox"/> Consumer information is developed for the guideline</p>

NSQHS/EQUIPNational Criteria	Actions required	<input checked="" type="checkbox"/> Evidence of compliance
<b>NSQHS Standard 6: Communicating for safety</b>		
<p><b>Clinical governance and quality improvement to support effective communication</b> Systems are in place for effective and coordinated communication that supports the delivery of continuous and safe care for patients.</p>	<p><b>Integrating clinical governance</b> 6.1 Clinicians use the safety and quality systems from the Clinical Governance Standard when: a. Implementing policies and procedures to support effective clinical communication b. Managing risks associated with clinical communication c. Identifying training requirements for effective and coordinated clinical communication</p> <p><b>Partnering with consumers</b> 6.3 Clinicians use organisational processes from the Partnering with Consumers Standard to effectively communicate with patients, carers and families during high-risk situations to: a. Actively involve patients in their own care b. Meet the patient’s information needs c. Share decision-making</p> <p><b>Organisational processes to support effective communication</b> 6.4 The health service organisation has clinical communications processes to support effective communication when: a. Identification and procedure matching should occur b. All or part of a patient’s care is transferred within the organisation, between multidisciplinary teams, between clinicians or between organisations; and on discharge c. Critical information about a patient’s care, including information on risks, emerges or changes</p>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Requirements for effective clinical communication by clinicians are identified</li> <li><input checked="" type="checkbox"/> The guideline provides evidence-based and best practice recommendations for communication between clinicians</li> <li><input checked="" type="checkbox"/> The guideline provides evidence-based and best practice recommendations for communication with patients, carers and families</li> <li><input checked="" type="checkbox"/> The guideline provides evidence-based and best practice recommendations for discharge planning and follow –up care</li> </ul>
<p><b>Communication of critical information</b> Systems to effectively communicate critical information and risks when they emerge or change are used to ensure safe patient care.</p>	<p><b>Communicating critical information</b> 6.9 Clinicians and multidisciplinary teams use clinical communication processes to effectively communicate critical information, alerts and risks, in a timely way, when they emerge or change to: a. Clinicians who can make decisions about care b. Patients, carers and families, in accordance with the wishes of the patient</p> <p>6.10 The health service organisation ensures that there are communication processes for patients, carers and families to directly communicate critical information and risks about care to clinicians</p>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Requirements for effective clinical communication of critical information are identified</li> <li><input checked="" type="checkbox"/> Requirements for escalation of care are identified</li> </ul>

NSQHS/EQUIPNational Criteria	Actions required	<input checked="" type="checkbox"/> Evidence of compliance
<b>NSQHS Standard 6: Communicating for safety (continued)</b>		
<p><b>Correct identification and procedure matching</b> Systems to maintain the identity of the patient are used to ensure that the patient receives the care intended for them.</p>	<p><b>Correct identification and procedure matching</b> 6.5 The health service organisation: a. Defines approved identifiers for patients according to best-practice guidelines b. Requires at least three approved identifiers on registration and admission; when care, medication, therapy and other services are provided; and when clinical handover, transfer or discharge documentation is generated</p>	<p><input checked="" type="checkbox"/> Requirements for safe and for correct patient identification are identified</p>
<p><b>Communicating at clinical handover</b> Processes for structured clinical handover are used to effectively communicate about the health care of patients.</p>	<p><b>Clinical handover</b> 6.7 The health service organisation, in collaboration with clinicians, defines the: a. Minimum information content to be communicated at clinical handover, based on best-practice guidelines b. Risks relevant to the service context and the particular needs of patients, carers and families c. Clinicians who are involved in the clinical handover 6.8 Clinicians use structured clinical handover processes that include: a. Preparing and scheduling clinical handover b. Having the relevant information at clinical handover c. Organising relevant clinicians and others to participate in clinical handover d. Being aware of the patient's goals and preferences e. Supporting patients, carers and families to be involved in clinical handover, in accordance with the wishes of the patient f. Ensuring that clinical handover results in the transfer of responsibility and accountability for care</p>	<p><input checked="" type="checkbox"/> The guideline acknowledges the need for local protocols to support transfer of information, professional responsibility and accountability for some or all aspects of care</p>

NSQHS/EQUIPNational Criteria	Actions required	<input checked="" type="checkbox"/> Evidence of compliance
<b>NSQHS Standard 8: Recognising and responding to acute deterioration</b>		
<p><b>Clinical governance and quality improvement to support recognition and response systems</b>                      Organisation-wide systems are used to support and promote detection and recognition of acute deterioration, and the response to patients whose condition acutely deteriorates.</p>	<p><b>Integrating clinical governance</b>                      8.1 Clinicians use the safety and quality systems from the Clinical Governance Standard when:                      a. Implementing policies and procedures for recognising and responding to acute deterioration                      b. Managing risks associated with recognising and responding to acute deterioration                      c. Identifying training requirements for recognising and responding to acute deterioration</p> <p><b>Partnering with consumers</b>                      8.3 Clinicians use organisational processes from the Partnering with Consumers Standard when recognising and responding to acute deterioration to:                      a. Actively involve patients in their own care                      b. Meet the patient’s information needs                      c. Share decision-making</p> <p><b>Recognising acute deterioration</b>                      8.4 The health service organisation has processes for clinicians to detect acute physiological deterioration that require clinicians to:                      a. Document individualised vital sign monitoring plans                      b. Monitor patients as required by their individualised monitoring plan                      c. Graphically document and track changes in agreed observations to detect acute deterioration over time, as appropriate for the patient</p>	<p><input checked="" type="checkbox"/> The guideline is consistent with National Consensus statements recommendations  <input checked="" type="checkbox"/> The guideline recommends use of tools consistent with the principles of recognising and responding to clinical deterioration  <input checked="" type="checkbox"/> Consumer information is developed for the guideline</p>
<b>EQUIP Standard 12 Provision of care</b>		
<p><b>Criterion 1: Assessment and care planning</b>                      12.1 Ensuring assessment is comprehensive and based upon current professional standards and evidence based practice</p>	<p>12.1.1 Guidelines are available and accessible by staff to assess physical, spiritual, cultural, physiological and social health promotion needs</p>	<p><input checked="" type="checkbox"/> Assessment and care appropriate to the cohort of patients is identified in the guideline  <input checked="" type="checkbox"/> The guideline is based on the best available evidence</p>

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