

Maternity Insulin Forms

*Insulin Subcutaneous (Maternity) Order and Blood Glucose Record v1
09/2019 (SW883)*

and

*Insulin Intravenous Infusion (Maternity) Order / Intrapartum Blood Glucose
Record v1 09/2019 (SW882)*

References:

Queensland Clinical Guideline: *Gestational Diabetes Mellitus; Insulin Subcutaneous (Maternity), Order and Blood Glucose Record*; and *Insulin Intravenous Infusion (Maternity) Order / Intrapartum Blood Glucose Record* are the primary references for this package.

Recommended citation:

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Disclaimer:

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

Feedback and contact details:

M: GPO Box 48 Brisbane QLD 4001 | **E:** guidelines@health.qld.gov.au | **URL:** www.health.qld.gov.au/qcg

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Learning outcomes

At the end of this session, the participant will:

- Understand the purpose of the Statewide maternity insulin forms
- Know how and when to use the Statewide maternity insulin forms in clinical practice

Background

The general adult insulin forms are not designed for glycaemic control of women with diabetes in pregnancy.

The maternity insulin forms provide maternity specific:

- Blood glucose level (BGL) reference ranges
- Guidance about:
 - Management
 - Escalation
 - Restarting diabetic management immediately postpartum

Purpose of the forms

- Assist clinicians better manage women with diabetes during pregnancy and in the immediate postpartum period
- Improve glycaemic management:
 - Easier recognition of off-target BGL
 - Appropriate escalation
 - Appropriate ordering of ketones
- Minimise hyper/hypoglycaemic events
- Support clear processes and easy visualisation of monitoring, prescribing and management
- Minimise insulin prescribing errors

When to use the forms

Forms suitable for:

- Maternity population with:
 - Type 1 Diabetes Mellitus (T1DM)
 - Type 2 Diabetes Mellitus (T2DM); or
 - Gestational Diabetes Mellitus (GDM)

Forms NOT suitable for:

- Diabetic Ketoacidosis (DKA)
- When using own continuous subcutaneous insulin infusion (CSII) pump

When to use the forms

Pregnancy and immediate postpartum:

- Use the *Insulin Subcutaneous (Maternity) Order and Blood Glucose Record*
- If IV Insulin—use the *Insulin Intravenous Infusion (Maternity) Order / Intrapartum Blood Glucose Record*

Intrapartum:

- Use the *Insulin Intravenous Infusion (Maternity) Order / Intrapartum Blood Glucose Record*

When to use the forms

Facilities using electronic medical records:

- Use one method (either digital or paper-based) for insulin orders and blood glucose monitoring to suit local context
 - Consider risks and implications of incomplete or inaccessible insulin records during antenatal, intrapartum and postpartum periods
- Queensland Health ieMR Maternity includes PowerPlans for Gestational Diabetes Mellitus, Type I Diabetes Mellitus, and Type II Diabetes Mellitus aligned to the maternity insulin forms.

How to complete Statewide Maternity Insulin Forms

Queensland Government
Insulin Subcutaneous (Maternity) Order and Blood Glucose Record

Facility: _____
 Ward: _____ (Affix identification label here)
 URN: _____
 Family name: _____
 Given name(s): _____
 Address: _____
 Date of birth: _____ Sex: M F I
 First Prescriber to Print Patient Name and Check Label Correct: _____

Monitoring record

| Alerts | BGL (mmol/L) | Time (24 hr) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-----------------|-----------------|--------------|---|---|---|---|---|---|---|---|---|----|----|----|
| Greater than 12 | Greater than 12 | | | | | | | | | | | | | |
| 8.1-12 | 8.1-12 | | | | | | | | | | | | | |
| 6.1-8 | 6.1-8 | | | | | | | | | | | | | |
| Less than 4 | Less than 4 | | | | | | | | | | | | | |

Administration record

| Name of routine insulin | Name of insulin (see above orders) | Name of insulin (supplemental orders) | Time given (24 hr) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-------------------------|------------------------------------|---------------------------------------|--------------------|---|---|---|---|---|---|---|---|---|----|----|----|
| | | | | | | | | | | | | | | | |

Diabetes treatment prior to admission:

Current diabetes treatment: T1DM T2DM GDM

Monitoring and treatment

Diabetes treatment prior to admission:

Diabetes type: T1DM T2DM GDM

Current diabetes treatment: Tick current treatment

Routine insulin orders - order for each day

Supplemental insulin orders - order each day

Stat / Phone insulin orders - also complete Administration record

Diabetes treatment review following treated hypoglycaemia

Abbreviations: BGL Blood glucose level IV Intravenous IM Intramuscular NBI Nil by Mouth Subcut Subcutaneous

Queensland Government
Insulin Intravenous Infusion (Maternity) Order / Intrapartum Blood Glucose Record

Facility: _____
 Ward / Unit: _____
 URN: _____
 Family name: _____
 Given name(s): _____
 Address: _____
 Date of birth: _____ Sex: M F I
 First Prescriber to Print Patient Name and Check Label Correct: _____

Monitoring record

| Alerts | BGL (mmol/L) | Time (24 hr) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-----------------|-----------------|--------------|---|---|---|---|---|---|---|---|---|----|----|----|
| Greater than 12 | Greater than 12 | | | | | | | | | | | | | |
| 8.1-12 | 8.1-12 | | | | | | | | | | | | | |
| 6.1-8 | 6.1-8 | | | | | | | | | | | | | |
| Less than 4 | Less than 4 | | | | | | | | | | | | | |

Administration record insulin infusion order

| Start time (24 hr) | End time (24 hr) | Initial infusion rate | Revised infusion rate | 2nd revised infusion rate | Suggested insulin infusion rate |
|--------------------|--------------------|-----------------------|-----------------------|---------------------------|---------------------------------|
| Less than 4 | 6:00 PM - 12:00 AM | unithour | unithour | unithour | 0 unithour |
| 4-6 | 6:00 PM - 12:00 AM | unithour | unithour | unithour | 1 unithour |
| 6-8 | 6:00 PM - 12:00 AM | unithour | unithour | unithour | 2 unithour |
| 8-10 | 6:00 PM - 12:00 AM | unithour | unithour | unithour | 3 unithour |
| 10-12 | 6:00 PM - 12:00 AM | unithour | unithour | unithour | 4 unithour |
| Greater than 12 | 6:00 PM - 12:00 AM | unithour | unithour | unithour | unithour |

Diabetes treatment review following treated hypoglycaemia

Abbreviations: BGL Blood glucose level IV Intravenous IM Intramuscular NBI Nil by Mouth Subcut Subcutaneous

Subcutaneous Insulin Order Form

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Queensland Government

Insulin Subcutaneous (Maternity) Order and Blood Glucose Record

Facility: _____ Ward: _____

URN: _____
 Family name: _____
 Given name(s): _____
 Address: _____
 Date of birth: _____ Sex: M F
 First Prescriber to Print Patient Name and Check Label Correct: _____

(Affix identification label here)

NOT A VALID PRESCRIPTION UNLESS IDENTIFIERS PRESENT

Applicable for all types of diabetes in pregnancy, including Type 1 Diabetes Mellitus (T1DM), Type 2 Diabetes Mellitus (T2DM), and Gestational Diabetes Mellitus (GDM)

Intrapartum: use Insulin Intravenous Infusion (Maternity) Order / Intrapartum Blood Glucose Record

Do not use this guide if:

- Diabetic ketoacidosis (DKA); OR
- Using own Continuous Subcutaneous Insulin Infusion (CSII) pump.

All types of diabetes

- Aim for blood glucose level (BGL) 4–7 mmol/L
- Escalating care

| Condition | Action |
|--|---|
| BGL Greater than or equal to 10.1 mmol/L | Notify doctor and check ketones |
| Two consecutive BGLs greater than or equal to 8.1 mmol/L | Notify doctor |
| Less than 4 mmol/L | Treat hypoglycaemia (refer to page 4) and notify doctor and midwifery team leader |
| Blood ketone greater than or equal to 0.6 mmol/L | Notify doctor |
| Urinary ketone greater than or equal to moderate, or greater than or equal to ++ | Notify doctor |
| Unwell, vomiting, abdominal pain (not labour pain) | Notify doctor and check ketones |

T1DM

- Managed by specialist obstetric medicine / endocrinology or local expert staff specialist
- Individualise care
- BGL at least 7 times per day (fasting, pre-main meals, and one or two hours post main meals as per local protocol)
- Consider blood or urine ketone level on admission
- Antenatal: Do not withhold insulin, high risk of DKA and fetal mortality**
- Notify specialist of admission and birth
- Postpartum:**
 - Do not recommence pharmacotherapy at pre-birth or pre-pregnancy dose—insulin requirements decrease rapidly after birth, high risk of hypoglycaemia
 - Specialist review prior to recommencing insulin
 - Suggested recommencement dose: When BGL greater than 10 mmol/L, recommence insulin at half pre-pregnancy dose
 - If no postnatal insulin prescribed, contact specialist

T2DM requiring pharmacotherapy and GDM requiring pharmacotherapy

- BGL at least 4 times per day (fasting, and one or two hours post-main meals as per local protocol)
- Postpartum:**
 - Do not recommence pharmacotherapy at pre-birth or pre-pregnancy dose—insulin requirements decrease rapidly after birth, high risk of hypoglycaemia
 - GDM—cease pharmacotherapy
 - T2DM—review pharmacotherapy requirement prior to recommencing pharmacotherapy
 - Continue BGL pre-meals and 21:00 for 24 hours then review

T2DM diet controlled and GDM diet controlled

- BGL at least 4 times per day (fasting, and one or two hours post-main meals as per local protocol)
- Postpartum:**
 - GDM—cease BGL monitoring
 - T2DM—BGL pre-meals and 21:00 for 24 hours then review

INSULIN SUBCUTANEOUS (MATERNITY) ORDER AND BLOOD GLUCOSE RECORD

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Patient identification

When to use this form

General guidance for all types of diabetes

- Target BGL range
- Escalation triggers

Specific guidance for management of

- Type 1 Diabetes Mellitus
- Type 2 Diabetes Mellitus and GDM requiring pharmacotherapy
- Type 2 Diabetes Mellitus and GDM diet controlled

Subcutaneous Insulin Order Form

Page 2 and 3

Queensland Government
Insulin Subcutaneous (Maternity) Order and Blood Glucose Record

Facility: _____
 Ward: _____
 (Affix identification label here)

URN: _____
 Family name: _____
 Given name(s): _____
 Address: _____
 Date of birth: _____ Sex: M F

First Prescriber to Print Patient Name and Check Label Correct: _____

Monitoring record

| Diet | Stage | Date | Time (24 hr) | BGL (mmol/L) | Ketones (mmol/L) |
|---|---|--------------|--------------|--------------|------------------|
| <input type="checkbox"/> Antenatal <input type="checkbox"/> Postnatal | <input type="checkbox"/> Antenatal <input type="checkbox"/> Postnatal | DD / MM / YY | | | |

ALERTS

| Greater than 12 | 10.1-12 | 8.1-10 | 6.1-8 | 4-6 | Less than 4 |
|---------------------------------|---------------------------------|-----------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Check ketones and notify doctor | Check ketones and notify doctor | If two consecutive, notify doctor | Treat hypoglycaemia and notify doctor | Treat hypoglycaemia and notify doctor | Treat hypoglycaemia and notify doctor |

Administration record

| Name of routine insulin | Name of insulin (oral / phone order) | Name of insulin (supplemental order) | Time given (24 hr) | Midwife / Nurse 1 (initials) | Midwife / Nurse 2 (initials) | Comments |
|-------------------------|--------------------------------------|--------------------------------------|--------------------|------------------------------|------------------------------|----------|
| | | | | | | |

Routine insulin orders order each day

Supplemental insulin orders order each day

Stat / Phone insulin orders also complete Administration record

Monitoring and treatment

Diabetes treatment prior to admission:

Diabetes type: T1DM T2DM GDM

Current diabetes treatment: Tick current treatment

Insulin only Carbohydrate ratio:

Metformin only Insulin and metformin

Diet controlled Insulin sensitivity factor:

CSI pump:

Brand of pump: _____

Type of insulin: _____

Self dosing: (record dose in 'Routine orders')

Determining own dose and self administering

BGL frequency (doctor to specify): Tick monitoring frequency

QID fasting and one hour post main meals

QID fasting and two hours post main meals

QID pre-meals and 21:00 hours

Fasting, pre-meals, one hour post main meals and 21:00 hours

Fasting, pre-meals, two hours post main meals and 21:00 hours

Ketones frequency (blood or urine): Tick ketone frequency

On admission

Check / repeat if:

- BGL greater than or equal to 10.1 mmol/L
- Unwell, vomiting, abdominal pain (not labour pain)
- Nil by mouth greater than 6 hours

Pharmacy review

Date (DD/MM): / /

Initials: _____

Differentiation of Antenatal and Postnatal patient

Documentation and escalation:

- Note ketone measurement
- Administration record
- Monitoring and treatment orders

Routine Insulin orders
Note changes postpartum

Supplemental Insulin orders

Stat/phone insulin orders

Subcutaneous Insulin Order Form

Queensland Government

Insulin Subcutaneous (Maternity) Order and Blood Glucose Record

Guidelines for treating hypoglycaemia (BGL less than 4 mmol/L)

Fast-Acting Carbohydrate
Give one serve (15 grams) of one of the following as initial treatment.

| | |
|--|---|
| 100mL Lucozade™ | 1 serve Polyjoule™ as per directions |
| 150mL lemonade or other soft drink | 10 Glucodin™ tablets |
| 3 teaspoons/sachets sugar dissolved in 7 small or 4 large glucose jellybeans | 150mL orange juice |
| 30mL cordial (not diet) mixed with 150mL water | 1 tub pre prepared thickened cordial (not diet) |
| 3 individual serves of jam (not diet) | 150mL orange juice |
| 30mL cordial (not diet) mixed with 150mL water | 1 tub purced fruit |
| | 1 serve thickened milk drink |
| | 150mL enteral feed |

Slow-Acting Carbohydrate
Give one serve (15 grams) of one of the following as follow-up treatment.

| | |
|------------|----------------------|
| 250mL milk | 1 tub (200g) yoghurt |
|------------|----------------------|

Normal Diet

Thickened Diet (if at risk)

PEG or Nasogastric Tube Feed (via feeding tube)

Reproduced from: National subcutaneous insulin chart v1 05/2015, Australian Commission on Safety and Quality in Healthcare

Diabetes treatment review following treated hypoglycaemia

- If eating normally, do not withhold subsequent mealtime or basal insulin
- Review diabetes management for causes of hypoglycaemia:
 - Correct avoidable causes (adjusting the insulin infusion is generally not required unless hypoglycaemia reoccurs).
 - If cause not identified or cannot be corrected:
 - If hypoglycaemia within 4 hours after mealtime insulin, reduce the dose of that mealtime insulin by 20% the following day;
 - Otherwise, reduce basal insulin dose by 20%

Abbreviations: BGL Blood glucose level IV Intravenous IM Intramuscular NBM Nil by Mouth Subcut Subcutaneous

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Guidelines for treating hypoglycaemia (less than 4 mmol/L)

Slow and fast acting carbohydrate treatments

Diabetes treatment review following treated hypoglycaemia

IV Insulin Order Form / Intrapartum BGL record

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Queensland Government

Insulin Intravenous Infusion (Maternity) Order / Intrapartum Blood Glucose Record

Facility: _____ Ward / Unit: _____

Diabetes type: T1DM T2DM GDM

Target BGL range: _____ mmol/L (generally 4-7 mmol/L)

BGL frequency: After change to infusion rate or change to IV fluids, check BGL hourly

1 Hourly
 2 Hourly (only if BGL is within target range for at least 6 hours)

Special instructions: _____

Reverse IV insulin once oral intake commences, resume on new page

Notify: Doctor _____ or Ward doctor _____

Monitoring record

| Write BGL in corresponding range box | Date (DD/MM) | Time (24 hr) | | | | | | | | | | | | | | | | | | |
|---|--------------|--------------|-----------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| ALERTS | | | | | | | | | | | | | | | | | | | | |
| Check ketones and notify doctor | | | Greater than 12 | | | | | | | | | | | | | | | | | |
| Check ketones and notify doctor | | | 10.1-12 | | | | | | | | | | | | | | | | | |
| If two consecutive, notify doctor | | | 8.1-10 | | | | | | | | | | | | | | | | | |
| | | | 6.1-8 | | | | | | | | | | | | | | | | | |
| | | | 4-6 | | | | | | | | | | | | | | | | | |
| Treat hypoglycaemia and notify doctor | | | Less than 4 | | | | | | | | | | | | | | | | | |
| Insulin infusion rate (units per hour) | | | | | | | | | | | | | | | | | | | | |
| Meal / Snack bolus (units) | | | | | | | | | | | | | | | | | | | | |
| Refer to subcutaneous insulin order form | | | | | | | | | | | | | | | | | | | | |
| Notify doctor if ketones: Blood: 0.6 mmol/L and above | | | | | | | | | | | | | | | | | | | | |
| Urinary: moderate/++ and above | | | | | | | | | | | | | | | | | | | | |
| Doctor notified | | | | | | | | | | | | | | | | | | | | |
| Midwife / Nurse 1 (initials) | | | | | | | | | | | | | | | | | | | | |
| Midwife / Nurse 2 (initials) | | | | | | | | | | | | | | | | | | | | |

Important information about ordering insulin

- All patients on IV insulin must have a continuous IV glucose infusion unless specified otherwise
- Run IV insulin and IV glucose through the same line
- If ketacidosis, hyperosmolar hyperglycaemic state (HHS), or IV insulin for greater than 24 hours, consider subcutaneous insulin
- If stopping IV insulin and slow acting subcutaneous insulin required, give slow acting subcutaneous insulin at least 2 hours before stopping IV insulin
- Order meal / bolus dose using Insulin Subcutaneous (Maternity) Order and Blood Glucose Record

Intravenous Actrapid® insulin infusion order

| BGL range (mmol/L) | Initial infusion rate | Revised infusion rate | 2nd revised infusion rate | Suggested insulin infusion rate |
|--------------------|---|-----------------------|---------------------------|---------------------------------|
| Less than 4 | SUSPEND insulin infusion, continue glucose infusion and notify doctor. Treat hypoglycaemia refer to page 5. Recheck BGL after 15 minutes. | | | 0 units/hour |
| 4-6 | | units/hour | units/hour | 1 units/hour |
| 6.1-8 | | units/hour | units/hour | 2 units/hour |
| 8.1-10 | | units/hour | units/hour | |
| 10.1-12 | | units/hour | units/hour | |
| Greater than 12 | | units/hour | units/hour | |

Suggested IV glucose regimen:
Glucose 5% at 60-100mL/hour,
OR
Glucose 4% and Sodium Chloride 0.18% at 60-100 mL/hour

Prescriber name (print): _____
Prescriber signature: _____
Confirm concurrent glucose ordered on IV fluid chart: IV glucose ordered IV glucose ordered IV glucose ordered

Administration record insulin IV infusion

| Insulin (units) and sodium chloride 0.9% (mL) | Date (DD / MM) | Start time (24 hr) | Midwife / Nurse 1 | Midwife / Nurse 2 | Time stop (24 hr) | Volume infused (mL) |
|--|----------------|--------------------|-------------------|-------------------|-------------------|---------------------|
| 50 units Actrapid® Insulin and 49.5mL Sodium Chloride 0.9% | / / | | | | | |
| 50 units Actrapid® Insulin and 49.5mL Sodium Chloride 0.9% | / / | | | | | |

Patient identification

Instructions

- Type of Diabetes
- Target BGL range and frequency
- Special instructions – free text box
- Notification details

Documentation and escalation

- Record ketone measurement

Important information about ordering

- Intravenous infusion orders
- Suggested infusion rate
- Suggested IV Glucose regime

Administration record insulin IV infusion

IV Insulin Order Form / Intrapartum BGL record

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Queensland Government

**Insulin Intravenous Infusion (Maternity) Order /
Intrapartum Blood Glucose Record**

Guidelines for treating hypoglycaemia (BGL less than 4 mmol/L)

Fast-Acting Carbohydrate
Give one serve (15 grams) of one of the following as initial treatment:

| | |
|---|--|
| 100mL Lucozade™ | 1 serve Polyjoule™ |
| 150mL lemonade | 10 Glucodine™ |
| 3 teaspoons/scoops of jam | 7 small or 4 large soft-serve jellybeans |
| 150mL orange juice | 30mL cordial (not diet) mixed with 150mL water |
| 1 tub prepared thickened cordial (not diet) | 1 individual serve of jam (not diet) |

Slow-Acting Carbohydrate
Give one serve (15 grams) of one of the following as follow-up treatment:

| | |
|--|----------------------|
| 250mL milk | 1 tub (200g) yoghurt |
| Next meal (if being served within 30 mins) | 1 tub pureed fruit |
| 1 serve thickened milk drink | 150mL enteral feed |

Normal Diet

| | |
|--|--------------------------------------|
| 100mL Lucozade™ | 1 serve Polyjoule™ as per directions |
| 150mL orange juice | 150mL orange juice |
| 30mL cordial (not diet) mixed with 150mL water | |

Thickened Diet (if thick)

| | |
|--|--------------------------------------|
| 100mL Lucozade™ | 1 serve Polyjoule™ as per directions |
| 150mL orange juice | 150mL orange juice |
| 30mL cordial (not diet) mixed with 150mL water | |

PEG or Nasogastric Tube Feed (in feeding tube)

| | |
|--|--------------------------------------|
| 100mL Lucozade™ | 1 serve Polyjoule™ as per directions |
| 150mL orange juice | 150mL orange juice |
| 30mL cordial (not diet) mixed with 150mL water | |

Diabetes treatment review following treated hypoglycaemia

- If eating normally, do not withhold subsequent mealtime or basal insulin
- Review diabetes management for causes of hypoglycaemia:
 - Correct avoidable causes (adjusting the insulin infusion is generally not)
 - If cause not identified or cannot be corrected:
 - If hypoglycaemia within 4 hours after mealtime insulin, reduce the dose of that mealtime insulin by 20% the following day;
 - Otherwise, reduce basal insulin dose by 20%

Abbreviations: BGL Blood glucose level IV Intravenous IM Intramuscular NBM Nil by Mouth Subcut Subcutaneous

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Guidelines for treating hypoglycaemia (less than 4 mmol/L)

Slow and fast acting carbohydrate treatments

Diabetes treatment review following treated hypoglycaemia