Medicine Guideline

INSULIN DEXTROSE INFUSION for pregnancy

Health
South Eastern Sydney
Local Health District

INSULIN IS A HIGH-RISK MEDICINE **USE WITH CAUTION AND ENSURE THE DIRECTIONS WITHIN THIS PROTOCOL ARE FOLLOWED CAREFULLY**	
Areas where Protocol/Guideline applicable	Royal Hospital for Women
Authorised Prescribers:	Supervision/advice from the on-call endocrinology/obstetric medicine team is mandatory when considering an insulin/dextrose infusion
Important Safety Considerations	The half-life of IV insulin is only a few minutes, and a woman with type 1 Diabetes Mellitus (T1DM) needs to always have some insulin in her system - otherwise she is at risk of diabetic ketoacidosis. Most women will be receiving long-acting insulin (Protaphane®, Lantus® or Levemir®) which reduces these risks. Long-acting insulin should be given concurrently as a dosage prescribed by the endocrinology/obstetric medicine team. **Care must be taken not to accidentally disconnect the insulin or dextrose infusions. Where possible, the insulin should be given through a dedicated cannula, and the capillary Blood Glucose Level (BGL) should be collected from the opposite hand.**
Indication for use	Women with **type 1 diabetes mellitus during pregnancy, birth, and the immediate postpartum period** who require tighter blood glucose level (BGL) control and is not eating, when their usual subcutaneous insulin regime is not appropriate. *An insulin/dextrose infusion is only used in exceptional circumstances for woman with Type 2 Diabetes Mellitus (T2DM) or gestational diabetes mellitus (GDM). In that instance, this protocol may be used with consultation with the endocrinology/obstetric medicine team.* **THIS PROTOCOL IS NOT FOR A WOMAN WITH DIABETIC KETOACIDOSIS.**
Proposed Place in Therapy	When usual subcutaneous insulin regime is not appropriate.
Adjunctive Therapy	Long-acting insulin should be given concurrently as a dosage prescribed by the endocrinology/obstetric medicine team.

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<table>
<tr><td>Dosage</td><td>Insulin is administered intravenously at a variable rate.
Glucose (Dextrose) is infused intravenously at a fixed rate.
Confirm rates with Obstetrics Medicine / Endocrinology Team</td></tr>
<tr><td>Insulin</td><td>Determine the initial insulin infusion rate using the table below.
<table>
<tr><th colspan="3">Commencement Rate for Insulin Infusion</th></tr>
<tr><th>Capillary BGL (mmol/L)</th><th>mL/hour (= units insulin/hour)</th><th>Comments</th></tr>
<tr><td><4.0</td><td>No insulin.</td><td>Refer to Management of Hypoglycaemia.
Call a clinical review / rapid response.
Check BGL every 15 minutes.</td></tr>
<tr><td>4.0-5.0</td><td>Nil</td><td></td></tr>
<tr><td>5.1-7.0</td><td>1</td><td></td></tr>
<tr><td>7.1-9.0</td><td>2</td><td></td></tr>
<tr><td>9.1-11.0</td><td>3</td><td></td></tr>
<tr><td>11.1-13.0</td><td>4</td><td></td></tr>
<tr><td>≥ 13.1</td><td>Escalate</td><td>Call endocrinology/obstetric medicine team</td></tr>
</table></td></tr>
<tr><td>Glucose / Dextrose</td><td>Dextrose 5% intravenous infusion rate 75 – 125 mL/hr</td></tr>
<tr><td>Duration of therapy</td><td>Cease infusion as soon as possible after birth i.e., when the woman can eat and take her normal insulin.

Liaise with endocrinology/obstetric medicine team to create an individualised plan about when and how to cease infusion</td></tr>
</table>

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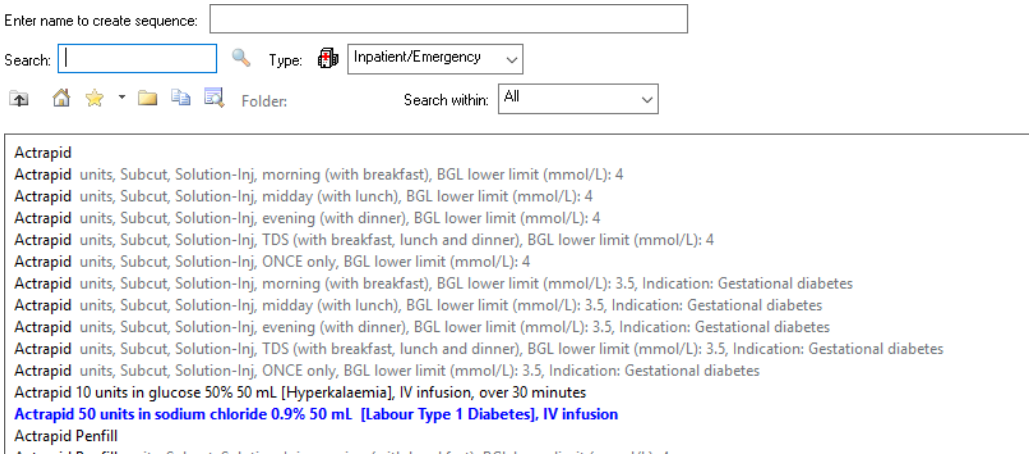
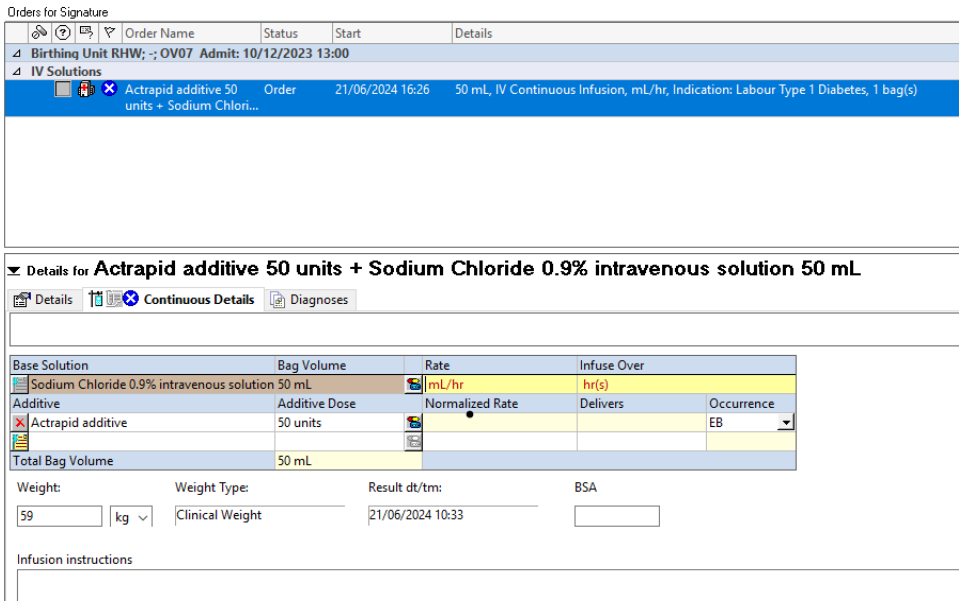
Prescribing Instructions

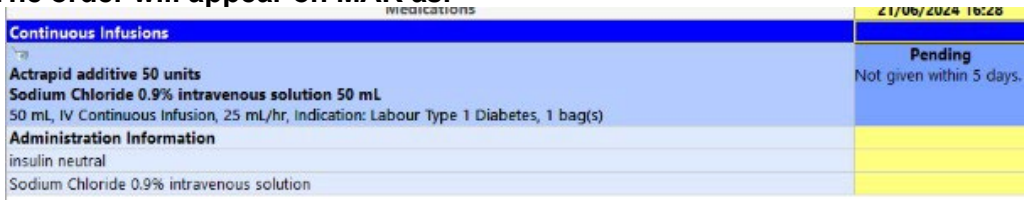
Prescribe in eFluids.
Search and Select:



Prescribe initial rate of insulin infusion.



The order will appear on MAR as:



Each order in eFluids corresponds to **ONE Syringe** only. Prescribers must ensure that new infusion orders are available in a timely manner, enabling nursing staff to continuously administer the drug infusion, where required. The number of syringes prescribed at any one time should be considered in the context of:

- Stability of dose at the time of prescribing
- Predicted duration of one bag

Note: Insulin infusions must be recharted and replaced at least every 24 hours.

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NSW GOVERNMENT

Administration Instructions	**MUST be administered by a category 1 or 3 accredited registered nurse (RN) or registered midwife (RM)** **Preparing infusions** • Determine the initial insulin infusion rate using Table *Commencement rate for Insulin Infusion* e.g. if the BGL is 5.2mmol/L, start the infusion at 1mL/hr (= 1 unit/hr). **Administration** • Requires one dedicated intravenous (IV) cannula to administer both infusions concurrently through an infusion pump. • Connect to the IV cannula with a 3-way tap.
Insulin	Load 50 units insulin in sodium chloride 0.9% made up to 50 mL total volume (1 unit of insulin/ mL) in a syringe driver
Glucose / Dextrose	Prepare bag of 5% dextrose solution to be run concurrently at a fixed rate of 75-125mL/hr as prescribed by the endocrinology/obstetric medicine team. Occasionally 10% dextrose will be substituted if fluid restriction is required.
Monitoring requirements	Provide 1:1 nursing/midwifery care **Nursing staff are responsible for:** 1. checking capillary ketones fourth-hourly using finger prick KetoStix®. Notify endocrinology/obstetric medicine team if ketones > 0.6 2. monitoring capillary BGL one hour after infusion commenced and then as frequency recommended below. Nursing staff **MUST** request a medical officer review if > 2 consecutive BGL levels > 8.0 mmol/L or BGL ≥ 15.1 mmol/L. 3. reviewing the insulin infusion rate every hour and adjusting accordingly. All infusion rate changes are to be checked by two RN/RMs. If the woman's blood glucose levels are not responding to increasing the insulin infusion, consider errors relating to: • the insulin infusion preparation • IV tubing • IV cannula • blood glucose monitor **Contact the endocrinology/obstetric medicine team if this occurs.** Nursing staff **MUST** document the administration of rate changes in MAR. If no adjustments are required, document this and other details relevant for the infusion in the progress notes. See Quick Reference Guide: Rate Change Documentation via MAR (Nurse Led Titration) **Notify endocrinology/obstetric medicine team immediately if the insulin infusion needs to be turned off for any reason.** Be aware insulin requirements decrease after the birth of the placenta, and the woman is at increased risk of hypoglycaemia postpartum. Target BGL of 5-10 mmol/L are adequate. **Check BGL every 30 minutes for the first two hours postpartum, and then hourly as usual.**

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Adjusting Insulin Infusion			
BGL (mmol/L)	Immediate action	Repeat capillary BGL	Next steps
< 4.0	1. Stop insulin infusion 2. Notify endocrinology/obstetric medicine team 3. Treat hypoglycaemia	every 15 mins until BGL > 4.0	Once BGL 4.0-6.0, leave insulin infusion off and repeat BGL in 1 hour. Once BGL > 6.0, recommence infusion at HALF the previous rate.
4.0 - 5.0	Halve insulin infusion rate	In 1 hour	
5.1 - 7.9	*If NO increase to insulin infusion rate in the last hour:* Maintain infusion rate	In 1 hour	
	If recent increase to insulin infusion rate in the last hour: Reduce insulin rate by 1 mL/hr	In 1 hour	
8.0 – 15.0	Increase insulin rate by 1 mL/hr every hour until < 8.0 mmol/L	In 1 hour	Check capillary ketones and notify endocrinology/obstetric medicine team if > 2 consecutive BGL levels > 8.0 mmol/L
≥ 15.1	1. Give 4 mL bolus of insulin stat. 2. Increase insulin infusion rate by 1 mL/ hr 3. Notify endocrinology/obstetric medicine team	In 1 hour	Check for capillary ketones

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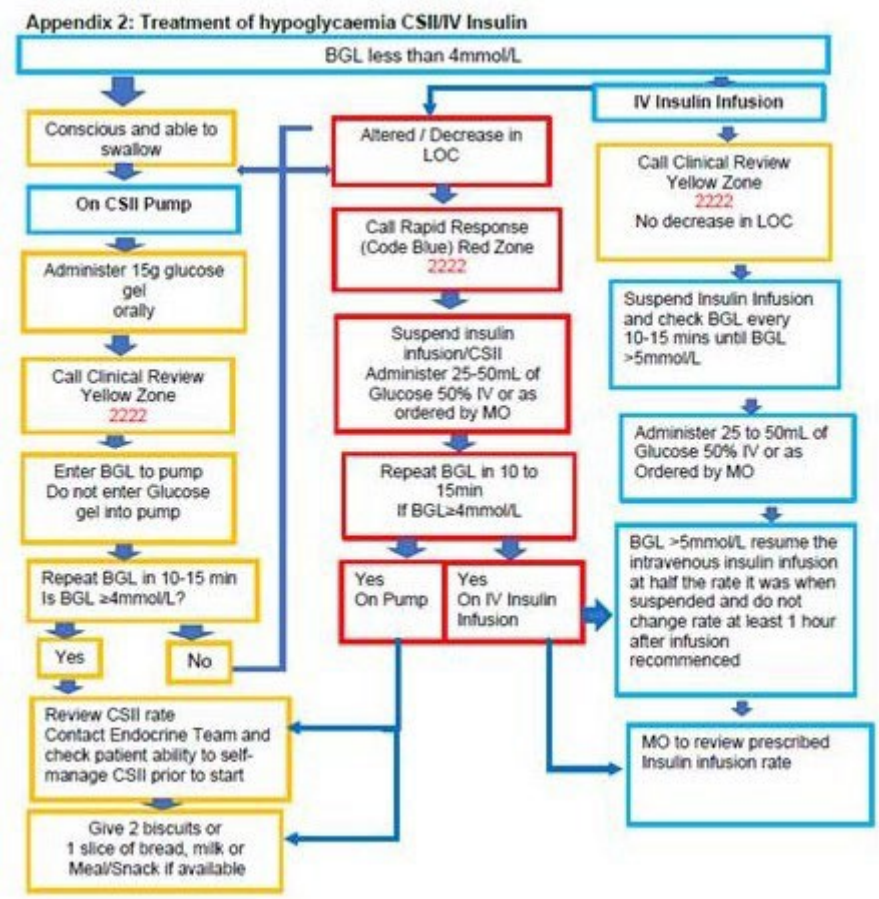
Management of Hypoglycaemia	
Basis of Protocol/Guideline:	• Diabetes - Management of Pre-gestational Diabetes in Pregnancy Policy SESLHDGL/116 • Diabetes - Gestational Diabetes Mellitus (GDM) Screening and Management Policy SESLHDGL/117 • Australian Commission on Safety and Quality in Health Care User guide to the National Subcutaneous Insulin Chart: acute facilities. Sydney: ACSQHC; 2017 Guidelines for Treating Hypoglycaemia
Groups consulted in development of this guideline	Royal Hospital for Women Medication Safety Committee Royal Hospital for Women Maternity Clinical Business Rule Committee

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GOVERNANCE	
Enactment date *Reviewed* (Version 2) *Reviewed* (Version 3)	July 2024 May 2025
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Chairperson, DTC Committee	Dr John Shephard
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