GESTATIONAL DIABETES (DIET/INSULIN/ METFORMIN) – ANTENATAL, INTRAPARTUM AND POSTNATAL CARE

DEFINITION

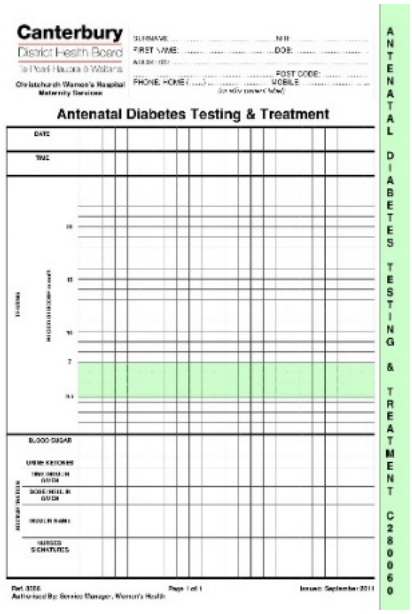
A disorder characterised by hyperglycaemia first recognised during pregnancy due to increased insulin resistance and relative insulin deficiency usually disappearing after birth.

ANTENATAL CARE – BETAMETHASONE ADMINISTRATION

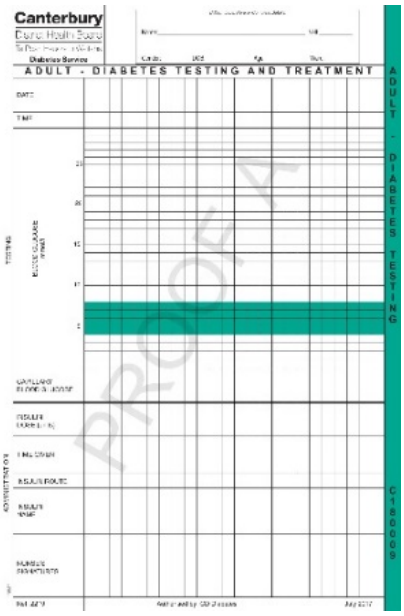
REFER TO: Insulin Infusion following Betamethasone Injections for Women with Diabetes in Pregnancy (Ref.6466)

MANAGEMENT FOR ALL ADMISSIONS

- Inform the Associate Charge Midwife Manager, Obstetric Team and Neonatal Registrar of the woman's diabetic status.
- Ensure all current medications, including Insulin is charted on MedChart.
- Commence documenting blood glucose levels on the Antenatal Diabetes and Treatment Testing Form (Ref.8566) or Diabetes Testing and Treatment Form (Ref.2219).



Antenatal use (Ref.8566)



Intrapartum and postnatal use (Ref.2219)

It is important that despite self-monitoring and/or self-medicating, that all blood glucose levels and insulin doses are documented.

- Perform admission CTG as there is an increased risk of fetal hypoxia during labour.

NOTE
For women taking Insulin glargine (Lantus®) or detemir (Levemir®) halve the dose:

a) If in spontaneous labour
b) On the day of an induction of labour until birthed
c) The evening prior to an elective caesarean section

ELECTIVE CAESEREAN SECTION

(See Appendix A)

NOTE
Women should be placed first on the theatre list.

- The normal evening insulin and/or metformin dose is given on the day prior to the elective caesarean section except for women on glargine (Lantus®) or detemir (Levemir®) where the dose should be halved the evening before.
- Withhold morning insulin and/or metformin on the day the woman is undergoing the elective caesarean section.
- Establish intravenous access and avoid giving glucose containing intravenous fluids except for Plasma-Lyte 148 + 5% glucose (obtain from supply not pharmacy).
- Monitor capillary blood glucose levels before surgery and then hourly and document on the Diabetes Testing and Treatment Form (Ref.2219).
- If capillary blood glucose < 4 mmol/L give Hypo-Fit (18 g carbohydrate), if able to drink, and commence intravenous Plasma-Lyte 148 + 5% glucose infusion at 125mL per hour with hourly blood glucose monitoring. Cease infusion when capillary blood glucose reading is above 5mmol/L and recheck capillary blood glucose at hourly intervals.
- 7 mmol/L commence intravenous Insulin/Plasma-Lyte 148 + 5% glucose infusion with hourly blood glucose monitoring (see Appendix C).

INDUCTION OF LABOUR (IOL) OR SPONTANEOUS LABOUR

(see Appendix B)

For information regarding the timing of Induction of Labour please see the Induction of Labour Guideline (GLM0035)

PRIOR TO LABOUR ESTABLISHING

- Continue usual insulin regime and/or metformin with meals until labour is established.
  For women taking insulin, glargine (Lantus®) or detemir (Levernir®) halve the dose on the day of the induction of labour and until birthed.
- Continue to monitor blood glucose levels and document on Antenatal Diabetes and Treatment Testing Form (Ref.8566).

ONCE LABOUR IS ESTABLISHED

- Discontinue subcutaneous insulin and/or metformin.
- Women with GDM can eat as usual.
- For women with diet controlled GDM or on metformin: IV access is not required unless needed for interventions.
- For women on insulin: establish intravenous access. Take bloods for group and hold and CBC.
- Avoid glucose containing intravenous fluids except for management of hypoglycaemia in an insulin treated woman.
- Women on diet alone or diet and metformin have no risk of hypoglycaemia and only very rarely require active management of hyperglycaemia in labour.
- Monitor capillary blood glucose levels two hourly and document on the Diabetes Testing and Treatment Form (Ref.2219).

If capillary blood glucose:

< 4 mmol/L – in a conscious patient this can be managed initially with Hypo-Fit (18 g carbohydrate). Give one sachet if weight < 90 kg or two sachets if weight ≥ 90 kg. Check capillary blood glucose after 10 minutes and repeat Hypo-fit treatment if required. If no response after 30 minutes commence intravenous Plasma-Lyte 148 + 5% glucose infusion at 125mL per hour. Cease infusion when capillary blood glucose reading is above 5mmol/L and recheck capillary blood glucose at hourly intervals.

> 7 mmol/L commence intravenous Insulin/Plasma-Lyte 148 + 5% glucose infusion with hourly blood glucose monitoring (see Appendix C).

- For women on insulin close fetal heart monitoring in labour is recommended.
- For women with diet controlled GDM or on metformin fetal heart monitoring should be individualised in discussion with the woman, LMC and medical team.

POSTNATAL MANAGEMENT

FOLLOWING BIRTH

- If an intravenous management protocol has been used, stop the infusions immediately following birth.
- Antenatal treatment should not be recommenced (insulin or metformin).
- If the woman has had her routine insulin injection shortly before birth she should eat as soon as possible after birth.
- If the woman has had recent insulin and cannot eat for any reason: continue to monitor capillary blood glucose levels hourly and document on the Diabetes Testing and Treatment Form (Ref.2219).

If capillary blood glucose:

< 4 mmol/L – in a conscious patient this can be managed initially with Hypo-Fit (18 g carbohydrate). Give one sachet if weight < 90 kg or two sachets if weight ≥ 90 kg. Check capillary blood glucose after 10 minutes and repeat Hypo-fit treatment if required.

If no response consider an intravenous Plasma-Lyte 148 + 5% glucose infusion commenced at a rate of 125 mL per hour (caution regarding fluid overload and electrolyte disturbances) and consult a physician.

- For women treated antenatally with metformin and or insulin monitor blood glucose levels and document on the Diabetes Testing and Treatment Form (Ref.2219) before breakfast and one hour after all meals for 24 hours
- If postpartum hyperglycaemia, fasting > 7 mmol/L and/or postprandial > 11.1 mmol/L), please advise physician before discharge as the woman may have Type 1 or Type 2 diabetes.

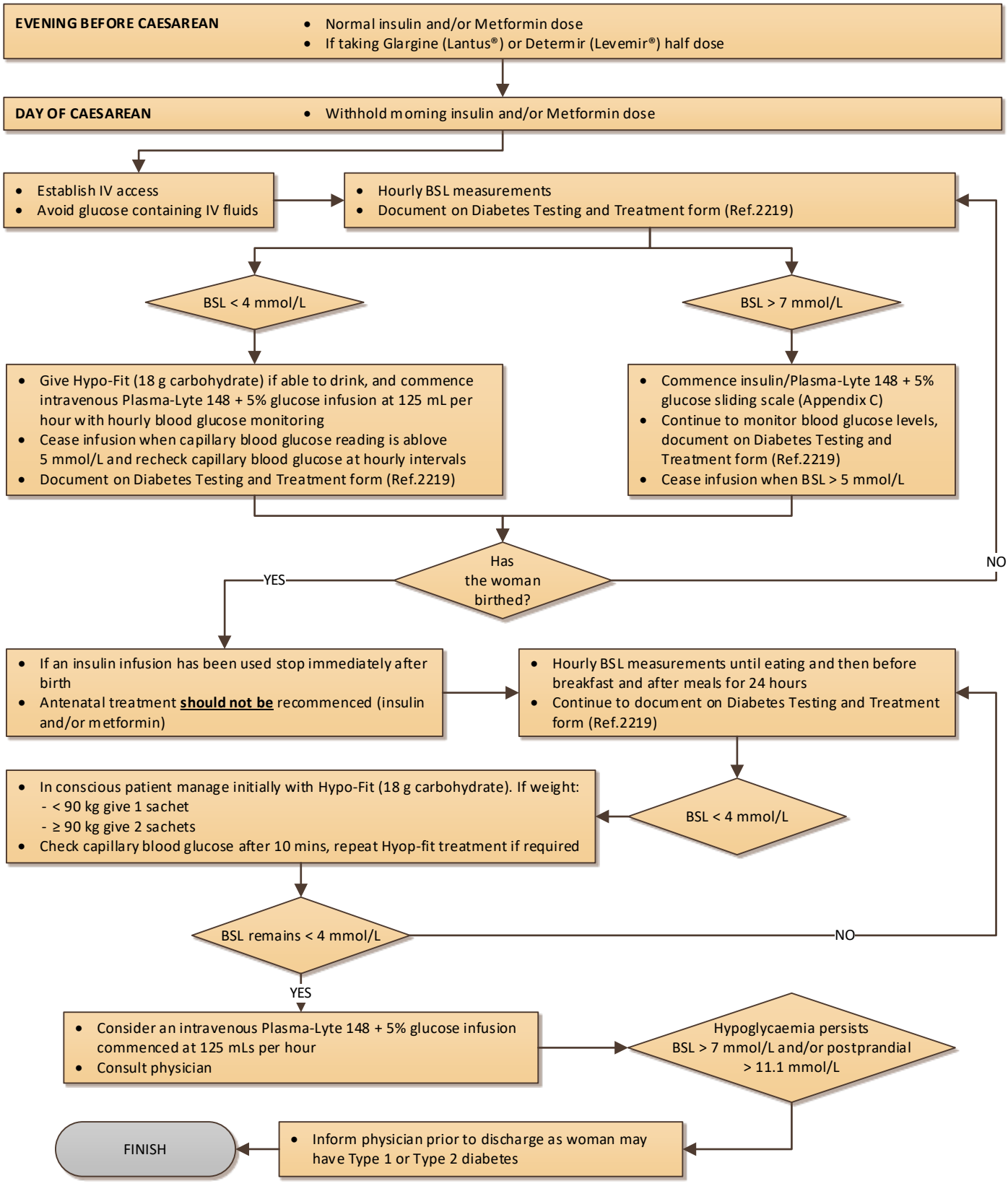
NOTE

All women with gestational diabetes should have postpartum screening for persisting impaired glucose tolerance or diabetes. It is recommended that women have serial **HbA1c** measurements beginning at **three months postpartum** and then **annually thereafter**, to be arranged by their general practitioner.

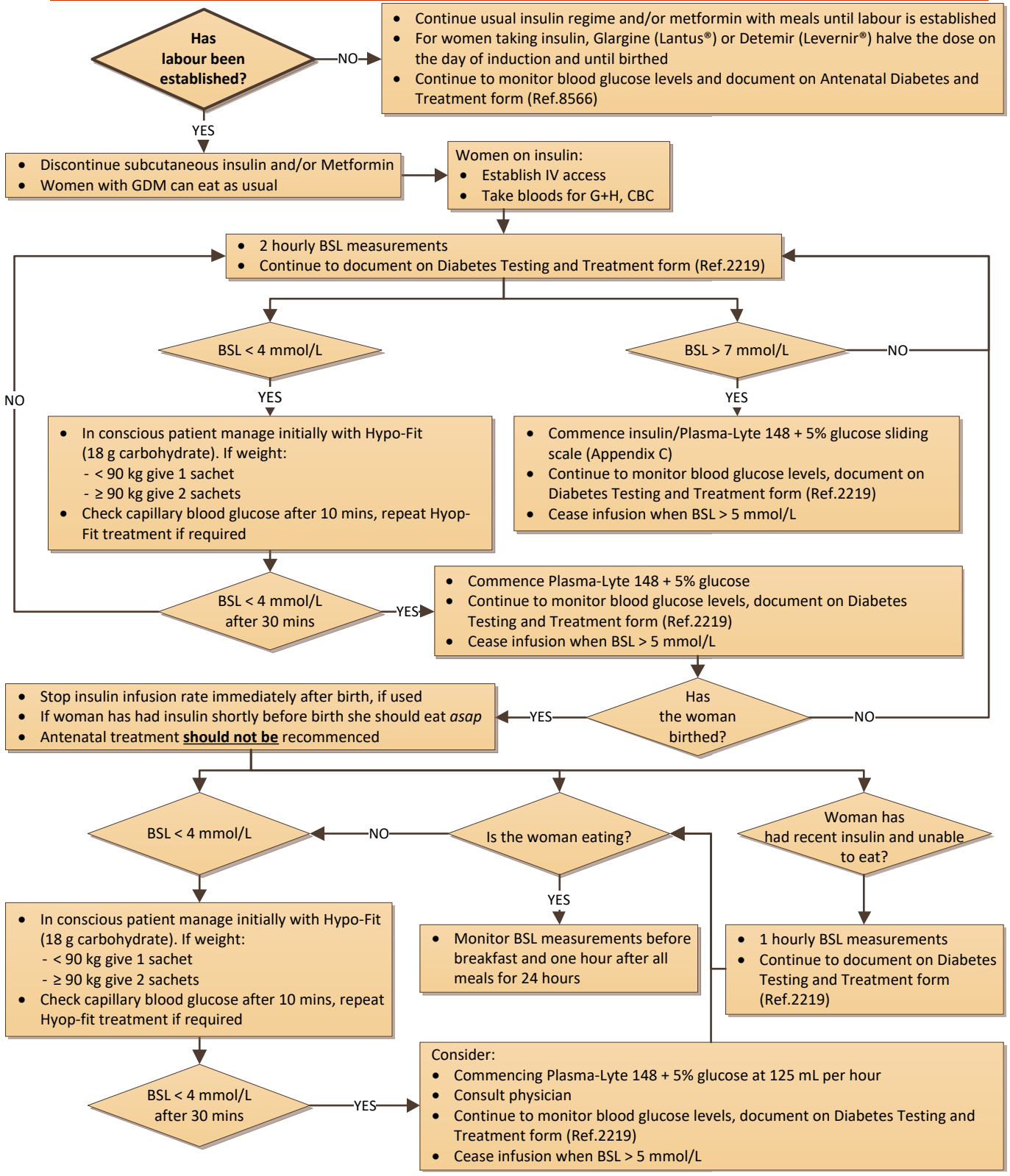
REFERENCES

1. National Institute for Health and Care Excellence (NICE) guideline (2011): CG63 Diabetes in pregnancy http://www.nice.org.uk/nicemedia/live/11946/41320/41320.pdf

APPENDIX A GESTATIONAL DIABETES MELLITUS – ELECTIVE CAESAREAN SECTION INTRAPARTUM AND POSTNATAL MANAGEMENT



APPENDIX B GESTATIONAL DIABETES MELLITUS – INDUCTION OF LABOUR/ SPONTANEOUS LABOUR AND POSTNATAL MANAGEMENT



NOTE: if hyperglycaemia persists (fasting > 7 mmol/L and/or postprandial > 11.1 mmol/L) please advise physician before discharge as the woman may have Type 1 or Type 2 diabetes.

APPENDIX C INSULIN/PLASMA-LYTE 148 + 5% GLUCOSE SLIDING SCALE

INSULIN/PLASMA-LYTE 148 + 5% GLUCOSE INFUSION SLIDING SCALE

- Two intravenous lines are to be sited. One for insulin/Plasma-Lyte 148 + 5% glucose infusion and one for oxytocin/anaesthetic/analgesic requirements.
- No glucose containing infusions, other than the fixed rate of Plasma-Lyte 148 + 5% glucose, should be administered.
- The intravenous line for the insulin/Plasma-Lyte 148 + 5% glucose infusion should be kept patent with a small amount of saline while the infusions are prepared.

PREPARE THE PRESCRIBED INSULIN/PLASMA-LYTE 148 + 5% GLUCOSE INFUSION AS FOLLOWS:

- The Plasma-Lyte 148 + 5% glucose is mainlined to the woman with the insulin infusion attached to the mainline via Y-site.
- Plasma-Lyte 148 + 5% glucose – main line
  - Run one litre of Plasma-Lyte 148 + 5% glucose at a rate of 125 mL per hour via an infusion pump. DO NOT ALTER.
- Insulin via Y-site on main line
  - Add 100 units Actrapid insulin using insulin syringe to 100 mL 0.9% sodium chloride and run via an infusion pump.
  - Run 10 mLs through the tubing before attaching to the mainline via the Y-site. This will prime the tubing and minimise subsequent binding of insulin to the plastic of the giving set.
  - The insulin is drawn up as directed by the Fluid and Medication Management Manual Volume 12 and checked by two midwives (one of whom must be intravenous certificated).
  - Run according to the Blood Glucose/Sliding Scale of Insulin Prior to Birth.
- Blood glucose should be checked immediately prior to starting the infusions and then hourly until the surgeon has directed the woman is ready to eat.
- Document blood glucose level on the Diabetes Testing and Treatment form (Ref.2219) and fluid input on the Fluid Balance 24-Hour Sheet (Ref.887).

Capillary Blood Glucose Level mmol/L	Infusion rate in mLs per hour (= units of Actrapid insulin per hour)
< 3.5	No insulin Increase the rate of Plasma-Lyte 148 + 5% glucose to 125mL/hour Check BSL every 15 minutes Call physician for advice
3.5 – 5.0	0.5
5.1 – 7.0	1
7.1 – 9.0	2
9.1 – 11.0	3
11.1 – 13.0	4
13.1 – 15.0	5 Stop the Plasma-Lyte 148 + 5% glucose
> 15.0	6 Stop the Plasma-Lyte 148 + 5% glucose Call physician for advice