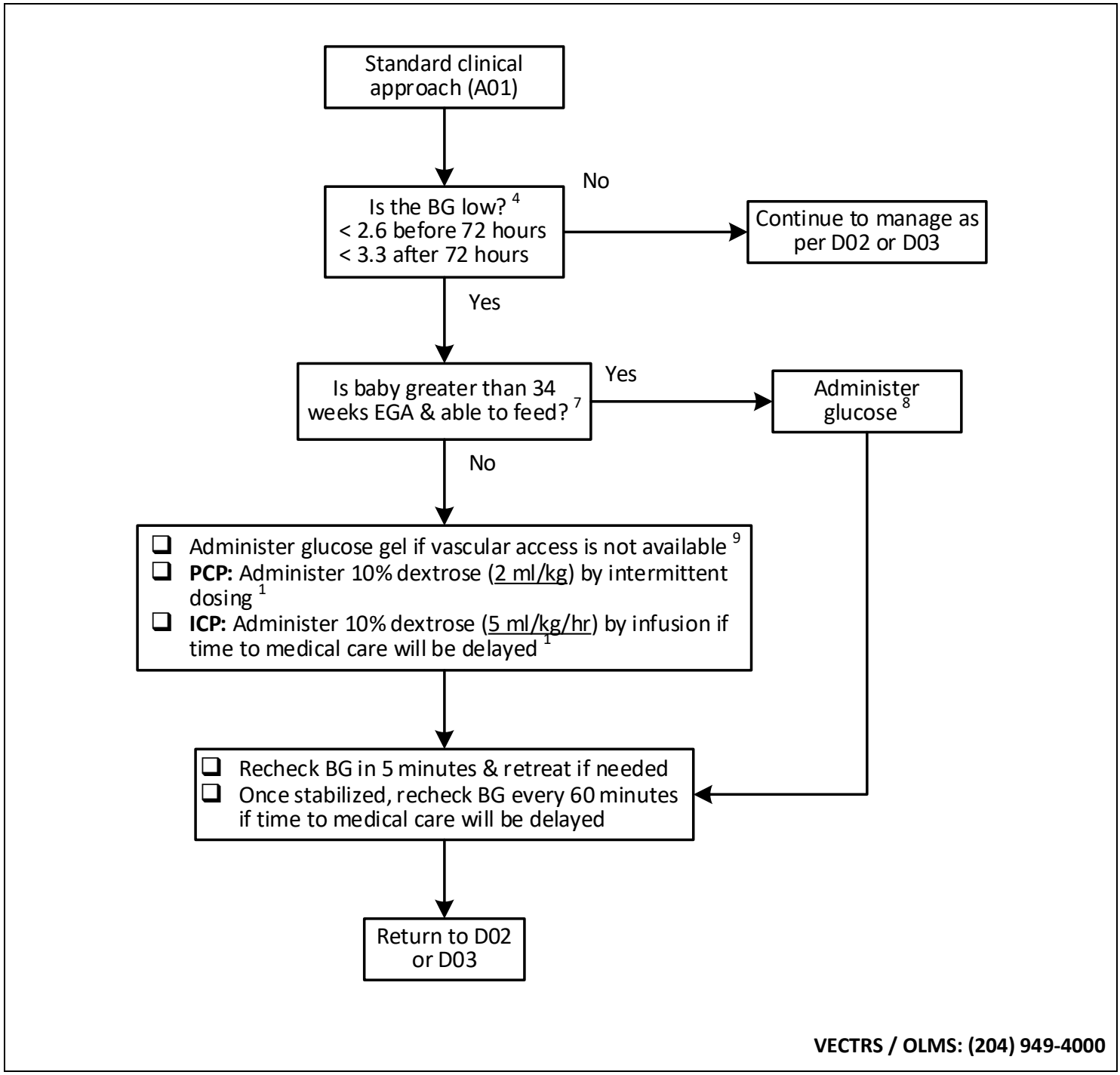
Shared health Soins communs Manitoba	D10 - NEONATAL HYPOGLYCEMIA (UP TO 5 DAYS OF AGE)	
	Version date: 2025-05-02	Effective date: 2024-05-02 (07:00)
PCP = PCP - ACP	ICP = ICP & ACP	ACP = ACP only	None = EMR - ACP



INDICATIONS
• Confirmed or suspected hypoglycemia, regardless of symptoms, in a newborn up to 5 days of age [4]

CONTRAINDICATIONS / CAUTIONS
• Not applicable

NOTES

1. Neonatal hypoglycemia is a critical and urgent situation. The administration of intravenous dextrose to a newborn is a high-risk procedure and dextrose is considered a high-risk medication (A03).

   Paramedics should have a low threshold to contact the Virtual Emergency Care & Transport Resource Service (VECTRS) and consult on line medical support (OLMS) with any questions about dextrose dosing or administration.

2. Neonatal hypoglycemia is common, occurring in one out of five births. For most healthy babies this is a temporary phenomenon and a normal physiological part of the transition to extrauterine life. *Early initiation of feeding (breast milk or formula) is crucial for all infants. Paramedics should encourage skin-to-skin contact with the mother and early breastfeeding.*

   The fetus depends upon placental blood flow to continuously supply glucose to meet its energy needs in utero. When the umbilical cord is cut that source suddenly vanishes and is replaced by feeding and mobilization of the neonate's own limited glycogen stores. The blood glucose (BG) will begin to drop over the next two hours, but tends to normalize by the first 48 hours.

   A low BG after the first 48 hours is suspicious for an underlying pathological cause, such as hyperinsulinism, but is not usually an issue in the prehospital setting.

3. Untreated neonatal hypoglycemia can cause seizures, coma, and even death. Survivors are often left with irreversible neurological damage.

   Some studies suggest that even infants with asymptomatic hypoglycemia can develop long-term neurological sequelae, which is the rationale behind screening of asymptomatic at-risk newborns.

   Paramedics will check the BG on <u>all</u> newborns as soon as possible. Newborns with signs of hypoglycemia need <u>immediate</u> BG testing. [5]

4. There is no clear consensus on the normal BG value for a newborn. However, the Canadian Pediatric Society recommends that the minimum safe BG level to prevent neurological sequelae is 2.6 mmol/L from birth up to 72 hours and 3.3 mmol/L for those older than 72 hours.

5. Sign of hypoglycemia in the neonate are variable and nonspecific, and include any of the following:
   - Irritability
   - Jitteriness s or tremors
   - Weak or high-pitched cry
   - Poor suck or feeding difficulties
   - Sweating
   - Hypotonia

- Cyanosis or pallor
- Apnea or tachypnea
- Bradycardia
- Hypothermia
- Altered level of consciousness (lethargy / stupor)

6. Risk factors (appendix A) for hypoglycemia include prematurity, intrauterine growth restriction, and small size or low birth weight, resulting in decreased glycogen stores and adipose tissue.

   Infants of diabetic mothers and those who are post-term or “large-for-dates” are also at increased risk, due to increased fetal insulin levels.

   Perinatal stresses cause increased metabolic demand, as well as depleting the infant’s glycogen stores.

7. Babies do not normally learn to coordinate the sucking, swallowing and breathing necessary for feeding until about 34 weeks gestational age. They cannot swallow glucose solution, so require parenteral dextrose or intrabuccal glucose gel for treatment.

8. Five per cent glucose in water provides 2500 mg of glucose in 50 ml, is commercially available, and can be administered to infants who can feed.

   One-half ml/kg of 40% glucose gel is equivalent to a parenteral bolus of 2 ml/kg of 10% dextrose (table 1). Dry the inside of both cheeks with gauze, then massage half the dose into each buccal mucosa.

9. If the time to medical care will be delayed, those with risk factors need their BG measured again at two hours post-delivery irrespective of symptoms or having fed. [6]

TABLE 1: GLUCOSE GEL DOSING

NEWBORN WEIGHT	VOLUME	DOSE
2 kg or less	1 ml	400 mg
2.1 to 3 kg	1.5 ml	600 mg
3.1 to 4 kg	2 ml	800 mg
4.1 to 5 kg	2.5 ml	1000 mg
5.1 to 6 kg	3 ml	1200 mg

FIGURE 1: GLUCOSE 5%

LINKS

- A01 - Standard Clinical Approach
- A03 - High Alert Medications
- D02 - Prehospital Delivery
- D03 - Newborn Care & Neonatal Resuscitation
- M06.1 - Glucose
- M06.2 - Dextrose

APPROVED BY	
	
EMS Medical Director	EMS Associate Medical Director

VERSION CHANGES (refer to X04 for change tracking)
• Correction of misplaced “yes” and “no” at second box in flow chart

VERSION CHANGES (refer to X04 for change tracking)
• New

APPENDIX A: RISK FACTORS FOR NEONATAL HYPOGLYCEMIA
• Perinatal stress (e.g. fetal distress, prolonged or difficult labor, pre-eclampsia / eclampsia, hypothermia, sepsis) • Prematurity (under 37 weeks) • Small for gestational age (“small for dates”) • Low birth weight (less than 2500 gram) • Intrauterine growth restriction • Post maturity (greater than 42 weeks) • Large for gestational age (“large for dates”) • Maternal diabetes (gestational or pre-existing) • In utero exposure to oral hypoglycemic medications, beta blockers, beta-adrenergic tocolytics, valproic acid) • Antenatal corticosteroid therapy for fetal lung maturation) • Congenital syndromes (inborn errors of metabolism)