AA 6. In preterm infants what is the minimum glucose load (mg/kg/min) administered via IV infusion needed for maintenance of metabolic homeostasis or prevention of hypoglycaemia?

Source recommendation	Back to question list
Source guideline title and developer	NICE 2020 https://www.nice.org.uk/guidance/ng154/chapter/Recommendations#constituents-of-neonatal-parenteral-nutrition
Year published	2020
Search updated/assessment of new evidence	August 2025. No new evidence was identified.
Existing guidelines recommendation	For preterm and term babies, give glucose as follows: If starting parenteral nutrition in the first 4 days after birth: give a starting range of 6 to 9 g/kg/day gradually increase (for example, over 4 days) to a maintenance range of 9 to 16 g/kg/day. If starting parenteral nutrition more than 4 days after birth give a range of 9 to 16 g/kg/day.
Strength of recommendation	Conditional
GRADE certainty of evidence	Low
EtD and SoF available	Yes - https://www.nice.org.uk/guidance/ng154/evidence/d1-glucose-pdf-7083230945
Is the recommendation recent and credible	Yes (chosen over ESPGHAN 2018 as more recent and EtD/SoF available) AGREE II score: 88%
Assessment of suitability for adolopment	
Relevant to local setting?	Yes
Acceptable without modification?	Yes
Contextual factors different?	Yes

EtD Criterion	Summary of Local Evidence or Context	Judgement	Notes
Problem	Hypoglycaemia is common in preterm infants and associated with adverse neurodevelopmental outcomes.	Priority	Early intravenous glucose is a cornerstone of parenteral support.
Desirable effects	Maintains metabolic homeostasis, prevents neuroglycopenia, stabilises blood sugar levels.	Large	Standard practice and high clinical importance.
Undesirable effects	Risk of hyperglycaemia and glycosuria at higher infusion rates.	Small	Mitigated with careful monitoring and gradual increases.
Certainty of evidence	Recommendations based on expert consensus and practice norms; limited trial data.	Low	No clear RCT data on thresholds; values extrapolated from physiology.
Values and preferences	Clinicians prioritise glucose stability; parents value interventions that protect brain development.	Possibly major variability	Well accepted across neonatal units.
Balance of effects	Benefits clearly outweigh risks when infusion targets are adhered to.	Favours intervention	Supported by long-standing clinical practice.
Resources required	Minimal; glucose solutions readily available; part of routine care.	Trivial	No special equipment or infrastructure required.
Certainty of resource evidence	Costs well known and standardised; negligible impact on total cost.	High	Standard component of neonatal nutrition.

Cost-effectiveness	No studies identified	Favours intervention	Prevention of hypoglycaemia avoids costly long-term neurodisability.
Equity	Universal implementation contributes to equitable prevention of hypoglycaemia.	Increased	Reduces variation in management and access.
Acceptability	Likely acceptable to both clinicians and families.	Yes	Routine part of neonatal care protocols.
Feasibility	Easily implemented and widely feasible in all neonatal units.	Yes	Requires no additional capacity or staff time.

Judgement criteria for EtD	
Decision Type	☐ Adopted as is ☑ Adapted ☐ De novo recommendation required
Explanation of adaptation	Recommendation as per with NICE guidance. No local contextual changes required. Minimum glucose load added from our literature search ETD (link).
Final recommendation	
Recommendation statement (adopted)	The minimum glucose load (mg/kg/min) via IV infusion to maintain metabolic homeostasis or prevent hypoglycaemia is at least 4 to 8 mg/kg/minute
Strength	Conditional
Certainty of evidence	Low
Basis for decision	Based on widely adopted international guidance. NICE 2020 is based on a more recent literature review than ESPGHAN.
Subgroup Considerations	Extremely preterm infants may require lower initial rates and more gradual escalation due to immature glucose metabolism.
Implementation considerations	Protocols for standardised initiation and titration of glucose infusions should be in place; ensure glucose monitoring systems are available.
Monitoring and evaluation	Monitor glucose concentrations at least 4–6 hourly during the first 24–48 hours and audit incidence of hypoglycaemia.
Research priorities	High-quality trials comparing different glucose initiation strategies in the first 48 hours after birth in preterm infants.