

A.7 RESPONSIVE AND SCHEDULED FEEDING

Recommendation and remarks

RECOMMENDATION A.7 (UPDATED)

In health-care facilities, scheduled feeding may be considered rather than responsive feeding for preterm infants born before 34 weeks' gestation, until the infant is discharged. (Conditional recommendation, low-certainty evidence)

Remarks

- The recommendation is conditional on shared decision-making with parents; this includes informing parents about the benefits and risks and the need for further research.
- In making this decision, the GDG considered that the harms from responsive feeding (i.e. poor weight gain) outweighed the benefits (i.e. decreased length of hospital stay).
- Most data were about infants born before 34 weeks' gestation, so recommendations could not be made for infants born at or after 34 weeks' gestation.
- The included trials used a range of different feeding schedules and it was not possible to recommend a particular schedule. The GDG suggests 2–3 hourly scheduled feeding may be used for infants born before 34 weeks' gestation as this is a commonly used and feasible schedule.
- All studies were in hospitalized infants, so the GDG could not make a recommendation on feeding outside the hospital.
- Nurturing care and responsive caregiving are critical to the well-being of every preterm and LBW infant and should be implemented regardless of the type of feeding regime.

Background and definitions

Responsive feeding is often defined as feeding in response to infant visual and auditory cues (or signals) of hunger and satiety (87–89). Infant cues include crying, hand–mouth motions, suckling and awakesness. Scheduled feeding is defined in many studies as enteral feeding at regularly timed intervals, irrespective of infant cues (87–89). A 2016 Cochrane review suggested that responsive feeding led to

slower weight gain, but decreased the transition time from enteral tube to oral feeding (90). However, another systematic review reported that responsive feeding decreased the length of hospitalization and increased weight gain in infants (91). In 2011, WHO recommended that LBW infants who are orally fed but not breastfed should be fed based on infants' hunger cues, except when the infant remains asleep beyond three hours since the last feed (19).

Summary of the evidence

OVERVIEW	A.7 Responsive and scheduled feeding
PICO	<p>Population – Preterm or LBW infants who receive any enteral feeding</p> <p>Intervention – Responsive feeding based on infant cues</p> <p>Comparator – Scheduled feeding</p> <p>Outcomes – All-cause mortality, morbidity, growth, neurodevelopment at latest follow-up</p>
Timing, setting, subgroups	<p>Timing of the intervention – Birth to 6 months of age</p> <p>Setting – Health-care facility or home in any country or setting</p> <p>Subgroups</p> <ul style="list-style-type: none"> • Gestational age at birth (< 32 weeks, ≥ 32 weeks) • Birth weight (< 1.5 kg, ≥ 1.5 kg)

Effectiveness: Comparison – Responsive feeding versus scheduled feeding

Sources and characteristics of the evidence

The effectiveness evidence was derived from a systematic review of eight RCTs reporting on 455 preterm or LBW infants from four countries (Canada, the Islamic Republic of Iran, Israel and the USA) (92). The studies were all conducted in NICUs and the responsive feeding was provided by health staff and not by families – that is, the health workers directly implemented a protocol of scheduled or responsive feeding regardless of whether a family member was present. The scheduled feeding regimes were mostly 2- to 3-hourly and the feeding volumes ranged from 120 to 180 ml/kg per day. The studies implemented the intervention for variable durations, with the minimum being 3 days and the maximum lasting until hospital discharge. Only one study recruited very preterm infants (< 32 weeks' gestation) while the remainder recruited preterm infants.

Critical outcomes

For responsive feeding compared with scheduled feeding for preterm or LBW infants, seven studies assessed growth outcomes (7 reported weight gain, 3 weight). No studies assessed mortality, morbidity or neurodevelopment outcomes. (Full details are provided in GRADE Table A.7, in the Web Supplement.)

- **Growth:** low-certainty evidence from two trials totalling 213 participants suggests a decrease in weight (in grams per day) by hospital discharge (MD -2.8, 95% CI -3.39 to -2.22). Low-certainty evidence from three trials totalling 183 participants suggests little to no effect on weight (in grams) by hospital discharge (MD -22.21, 95% CI -130.63 to 86.21). Very-low-certainty evidence from five trials totalling 372 participants suggests little to no effect on weight gain (in grams per kg per day) by hospital discharge (MD -0.99, 95% CI -2.45 to 0.46).

Other outcomes

Very-low-certainty evidence from three trials totalling 342 participants suggests a decrease in duration of hospitalization (days to discharge) (MD -1.42, 95% CI -5.43 to 2.59).

Subgroup analyses

The effect of gestational age and birth weight could not be assessed as there were insufficient studies.

Values and acceptability

The systematic review about what matters to families about the care of the preterm or LBW infant (see Table 1.1) reported that families want to be involved in delivering care to infants, including supporting nutrition, and want to take an active role in deciding what interventions are given to infants, including what and how they are fed (14). No other specific evidence was located about whether families value responsive feeding more than scheduled feeding for their preterm or LBW baby or whether they find it more or less acceptable.

Resources required and implementation considerations

Organization of care

In facilities, infants born before 34 weeks' gestation can be fed every 2–3 hours. Infants born at 34 weeks' gestation or more can be fed every 3–4 hours or by responsive feeding. At home, there is no recommended scheduling; families and health workers can decide together, depending on clinical judgement and their preferences.

Infrastructure, equipment and supplies

National or local guidance for health-care facilities should be used.

Workforce, training, supervision and monitoring

Health workers at all levels can support mothers and families. Standardized packages are needed for training, supervision and monitoring.

Feasibility and equity

Administration of scheduled feeds for preterm and LBW babies varies markedly but common scheduling is 2- to 3-hourly feeding with volumes of 80–200 ml/kg per day for babies born before 34 weeks' gestation. Responsive feeding requires sensitivity and careful observation of the baby's behaviour and is more commonly implemented in settings with well staffed special care nurseries and NICUs (87). There was no specific evidence on the feasibility and equity of responsive and scheduled feeding for preterm or LBW infants.

Summary of judgements

Comparison: Responsive feeding vs scheduled feeding (A.7)

Justification	In trials where most participants are hospitalized infants born < 34 weeks' gestation: <ul style="list-style-type: none">• Evidence of small benefits from responsive feeding: decreased length of hospital stay (<i>very-low-certainty evidence</i>) in trials of infants born < 34 weeks' gestation• Evidence of small harms from responsive feeding: decreased weight gain velocity in grams per day, and grams per kilogram per day (<i>low- to very-low-certainty evidence</i>), decreased weight gain in grams at discharge (<i>very-low-certainty evidence</i>)• No evidence on other critical outcomes
----------------------	---

Evidence-to-Decision summary

Benefits	Benefits of responsive feeding are trivial to none
Harms	Harms of responsive feeding are small
Certainty	Very low to low
Balance	Probably does not favour responsive feeding, probably favours scheduled feeding
Values	Uncertainty or variability about outcomes
Acceptability	Acceptability of responsive feeding and scheduled feeding varies
Resources	Resources needed for responsive feeding and scheduled feeding vary
Feasibility	Feasibility of responsive feeding and scheduled feeding varies
Equity	Equity of responsive feeding and scheduled feeding varies