6. Research implications

The Guideline Development Group (GDG) identified important knowledge gaps that need to be addressed through primary research. The research questions were prioritized by the GDG based on consideration of whether they would: (i) contribute to improvements in care and outcomes for preterm or low-birth-weight (LBW) infants; (ii) be likely to result in significant public health impacts; (iii) be answerable; (iv) inform a new recommendation or change an existing recommendation; (v) result in findings that would be feasible to implement; and (vi) be likely to promote equity. The full list of research gaps can be found in Web Annex B, but the prioritized research questions are listed below.

A.1 Kangaroo mother care (KMC)

A.1a Any KMC

- What is the effectiveness of KMC on longer-term (i.e. up to 2 years of age, school-age, adolescence) growth, neurodevelopment, behaviour, mental health and disability outcomes?
- What are the key components of an implementation model that achieves high population-level coverage of KMC for more than 8 hours per day in high-income countries?

A.1b Immediate KMC

- What is the effectiveness of immediate KMC in critically ill preterm or LBW infants, such as infants who are mechanically ventilated or on blood pressure support (e.g. vasopressors)?
- How can immediate KMC be scaled up in routine health systems?

A.2 Mother's own milk

- How can exclusive breastfeeding be promoted, supported and scaled up for preterm or LBW infants, especially those who are very preterm or very LBW?
- What are the most effective early feeding strategies for very preterm or very LBW infants, infants with illnesses (e.g. post-surgery), and infants with other conditions (e.g. doppler abnormalities, severe growth restriction)?

A.3 Donor human milk

- What is the effectiveness, safety and feasibility of human milk banks in low- and middle-income countries?

A.11 Probiotics

- What is the effectiveness and safety of probiotics in human-milk-fed infants?
- What is the effect of probiotics on immune function and gut microbiome in preterm or LBW infants?
- What are the most optimal probiotic compositions for preterm or LBW infants – that is, the optimal combination of genera, species and strains?
- What is the optimal probiotics regimen (dosage and duration) for preterm or LBW infants?
- What is the effectiveness of probiotics alone compared with a combination of probiotics and prebiotics for preterm or LBW infants?
- What is the role of probiotics in the prevention and management of postnatal growth restriction in preterm infants?

A.12 Emollients

- What is the effect of emollients on mortality, invasive infection, sepsis, growth and longer-term neurodevelopment in preterm or LBW infants in high-, middle- and low-income countries, especially in Africa?
- What is the effect of emollients on thermoprotection and the microbiome in preterm or LBW infants?
- Which emollients (which oils, which composition) are most effective and safe for preterm or LBW infants?
- What is the optimal regime (dose, frequency, duration) and mode of application (e.g. non-touch applications) for very or extremely preterm infants?

B.1 Continuous positive airway pressure (CPAP) for respiratory distress syndrome

- What is the effectiveness of CPAP compared with humidified high-flow nasal cannulae and other forms of non-invasive ventilation in preterm or LBW infants with respiratory distress syndrome?

C.1 Family involvement

- What strategies can be used to increase family participation in the care of their preterm or LBW infants in intensive and special care units, and in settings without dedicated newborn units?

C.2 Family support

- What is the most effective type of family support (including education, counselling, discharge preparation, peer support) for families of preterm or LBW infants?

C.3 Home visits

- What is the effectiveness of standard in-person home visits compared with digital home visits (e.g. online video, mobile application [app], mHealth) for post-discharge follow-up of preterm or LBW infants?
- What is the feasibility of digital home visits in low-, middle- and high-income countries?