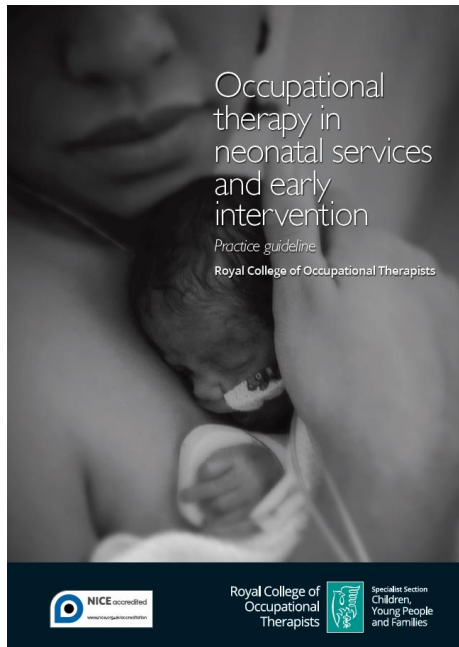




## Quick Reference Guide



The Quick Reference Guide provides a summary of the recommendations in the Royal College of Occupational Therapists practice guideline ***Occupational therapy in neonatal services and early intervention***.

It is intended to be used by practitioners as an easily accessible reminder of the recommendations for intervention. It should be used once the practitioner has read the full guideline document. This is important to ensure an appreciation and understanding of how the recommendations were developed and their context.

The full practice guideline together with implementation resources can be found on the Royal College of Occupational Therapists website:

<https://www.rcot.co.uk/practice-resources/rcot-practice-guidelines>

Royal College of Occupational Therapists (2017)  
*Occupational therapy in neonatal services and early intervention: practice guideline*. London: RCOT.

### 1. Introduction

The aim of this practice guideline is to define the best and most effective practice for occupational therapy for high-risk infants in neonatal and early intervention settings. The guideline aims to support the occupational therapist's decision-making and clinical reasoning but, being based on evidence, cannot cover all aspects of occupational therapy practice in neonatal services or early intervention. The recommendations are intended to be used alongside the therapist's clinical expertise and the practitioner is, therefore, ultimately responsible for the interpretation of this evidence-based guideline in the context of their specific circumstances, environment and the needs of infants and parents.

This resource provides a quick reference to the guideline recommendations, together with tables outlining the nature of the strength and quality grading categories of the recommendations. Extracts from the full guideline document and an overview of the occupational therapy role are also provided. Evidence-based recommendations are, however, not intended to be taken in isolation and must be considered in conjunction with the contextual information, and full guideline development methodology, described in the practice guideline document, together with current versions of professional practice documents, of which knowledge and adherence is assumed (RCOT 2017, p14).

The evidence from 85 studies used to develop the recommendations is summarised in the guideline document (Section 5), and in evidence tables (Practice guideline supplement). A total of 34% of the evidence from which the recommendations were developed was assessed as being high (Grade A), with 16% as moderate (Grade B) quality studies. A further 39% of the evidence was graded as low (C) and 11% as very low (D) quality. The overall grade of a recommendation is depicted in the guideline with a numerical, then alphabetical grade to reflect the strength of the recommendation and quality of the evidence (e.g. 1A – strong recommendation, high quality). Twenty-nine of the 31 recommendations are graded as strong.

## 2. Policy and service delivery context

Over 96,000 infants in the UK are born premature or ill each year, and often admitted to a neonatal unit, usually because of relatively minor problems with adaptation after birth or risk of serious illness (National Data Analysis Unit 2015, Bliss 2014). Many of these infants are surviving birth at younger gestational ages than in the past.

Neonatal care is divided into three types: special care (Level I), high-dependency care (Level II) and neonatal intensive care (Level III). Special care is for infants who need additional care, while high-dependency care is for infants requiring highly skilled staff, though with a lower nurse-to-patient ratio than a neonatal intensive care unit. Neonatal intensive care is for infants who are 'most unwell or unstable and have the greatest needs in relation to staff skills and staff to patient ratios' (British Association of Perinatal Medicine [BAPM] 2011, p3). It provides the full range of medical neonatal care. Finally, transitional care is where the mother cares for the infant with support from a midwife or healthcare professional who may not have specialist neonatal training (BAPM 2011).

Service delivery will be influenced by principles and frameworks and by national commissioning specifications, local policies and guidance. What all have in common is the idea that the family is the central element of care provision, and occupational therapists, as part of multidisciplinary teams, work towards that aim.

## 3. The occupational therapy role

Occupational therapy is centred on promoting health and wellbeing through enabling engagement and participation in everyday occupations. It uses a framework which focuses on the relationship between the person, their environment and the occupations that they need or would like to do. When working with high-risk infants\*, occupational therapists promote optimal development of the child and work with families to support them to engage and participate in their role as parents/carers.

Occupational therapy services within neonatal settings are focused on supporting the development of the high-risk infant and their family. Occupational therapists work collaboratively with parents of high-risk infants to facilitate the infant's and parents' occupational roles, support the parent-infant relationship and ensure a successful transition from hospital to home and community. In addition, occupational therapists contribute to the provision and promotion of developmentally supportive care of high-risk infants. This approach serves to minimise the potential for harm of the neonatal unit environment on the infant's developing brain and support their growth and development in order to promote early engagement with their parents, including shared occupations such as nurturing touch and the introduction of feeding, bathing and handling. As the infant is discharged from the unit and grows older, ongoing intervention and/or guidance provides continued opportunities to support the development of infant occupations around self-care, learning and play. Through educating parents on strategies to support and engage their infant with appropriate sensory and motor experiences, occupational therapists can provide building blocks for developmental progression and parent-infant interaction.

The breadth of practice and degree of specialised care required in the neonatal unit require the occupational therapist to demonstrate advanced knowledge and skills in neonatal care in order to provide complex interventions to critically ill neonates and their families (Vergara et al 2006).

Although this guideline is focused on the provision of neonatal occupational therapy services, it is imperative that occupational therapists work collaboratively with other professionals in the neonatal unit and follow-up settings in order to promote the best outcomes for infants and their families, which support their mutual participation and enjoyment of occupations that align with their family values and priorities.

\* High-risk' has been used to describe the target population of this guideline, which includes all infants born preterm, high-risk infants born at term (e.g. infants with neonatal hypoxic ischaemic encephalopathy, neonatal abstinence syndrome, congenital conditions or having undergone complex surgical procedures), infants receiving palliative care, and their parents.

## 4. Guideline recommendations and evidence overview

The guideline recommendations are presented in ten categories that loosely represent the stages of an infant's journey through a neonatal admission and beyond. An evidence overview is provided for each recommendation statement.

### 4.1 Occupation-based assessment

1. **It is recommended** that occupational therapists safely and appropriately assess the neurobehavioural status of the high-risk infant, in order to plan/deliver developmentally supportive care. 1A

*(Als et al 2003 [A]; El-Dib et al 2011 [C])*

Occupational therapists can make a significant contribution to the delivery of developmentally supportive care in the neonatal unit. A key component of the delivery of developmental care is appropriate assessment of the infant's neurobehavioural status throughout the neonatal unit admission to support the implementation of an individualised plan that changes as the infant matures. The evidence supports the use of sensitive assessments that reflect the infant's fragility, and uses structured infant observation. The evidence supporting this recommendation consists of one well-structured randomised controlled trial and one cohort study, with an overall high level of evidence grading.

2. **It is recommended** that occupational therapists assess neurobehavioural and neurodevelopmental status to provide guidance and identify infants appropriate for developmental follow-up following discharge. 1C

*(Bartlett 2003 [C]; Crowle et al 2015 [D]; Liu et al 2010 [D]; Sucharew et al 2012 [C])*

A key component of the delivery of neonatal occupational therapy is appropriate assessment of the infant's neurobehavioural status throughout the neonatal unit admission and neurodevelopmental status in preparing for transition to home. Occupational therapists must select assessments with appropriate sensitivity and specificity. Supporting an infant's and family's transition to home via the provision of individualised guidance is essential, as is ensuring appropriate follow-up services for children identified as at risk of developmental sequelae. The evidence supports the use of appropriate assessments that reflect the infant's age and status, to gain a comprehensive understanding of the infant's strengths and vulnerabilities in order to provide ongoing support and management. The evidence supporting this recommendation consists of four cohort studies – two of which were considered low levels of evidence, and two considered very low levels of evidence.

3. **It is recommended** that occupational therapists liaise with community teams and assess neurodevelopmental status for high-risk infants in the first two years of life to provide guidance and implement early intervention services where indicated. 1D

*(Liu et al 2010 [D])*

High-risk infants are at increased risk for neurodevelopmental and functional sequelae that can impact on their participation in infant and child occupations. Occupational therapists can provide a significant contribution to monitoring the developmental outcomes of these infants to ensure early identification of concerns and appropriate referral to early intervention services where indicated. The evidence supports the use of neurodevelopmental assessments in identifying children at later risk of experiencing difficulties across a range of occupational domains. The evidence supporting this recommendation consists of one cohort study of very low-level evidence.

## 4.2 Developmentally supportive care

4. **It is recommended** that developmentally supportive care principles are implemented for high-risk infants admitted to neonatal units to enhance short term health and developmental outcomes. 1A

(Als et al 2003 [A]; Legendre et al 2011 [B]; McAnulty et al 2010 [B]; McAnulty et al 2009 [A]; Symington and Pinelli 2006 [A]; Wallin & Eriksson 2009 [B])

The evidence supporting the positive impact of developmentally supportive care interventions for high-risk infants is drawn from three systematic reviews, and two randomised controlled trials. It is recognised that due to factors that influence the design and methods when conducting studies in the NICU, there are weaknesses in the methods used within the primary studies and limitations in the transferability of the findings. The delivery of developmentally supportive care can lead to benefits for the infant and family, including improved infant neurodevelopmental and neurobehavioural outcomes, improved short-term growth and feeding development, decreased respiratory support, decreased length and cost of hospital stay, and improved parent confidence and stress levels. No specific risks were reported in any of the studies for the infants receiving developmental care intervention

5. **It is recommended** that occupational therapists promote an appropriate developmental environment, based on the infant's age and status and individual needs. 1A

(McAnulty et al 2010 [B]; Symington and Pinelli 2006 [A]; Symington and Pinelli 2002 [A])

The evidence supporting the positive impact of developmental care interventions, particularly when focusing on the creation of an individualised, developmentally appropriate environment for high-risk infants, is of high and moderate quality. It is recognised that due to factors that influence the design and methods when conducting studies in the NICU, there are limitations in the transferability of the findings. The delivery of these interventions can lead to benefits for the infant, including improved infant neurodevelopmental outcomes and decreased risk for moderate to severe respiratory and gastrointestinal complications of prematurity. Because of occupational therapy's focus on how the environment impacts on parent and infant roles, it is an important aspect of the occupational therapist's role to recommend how to create a supportive environment that promotes and supports infant occupational participation (e.g. supporting sleep, facilitating parent–infant interaction). Managing the neonatal unit sensory environment is a key part of individualised developmental care interventions. No specific risks were reported in any of the studies for the infants receiving developmental care interventions.

## 4.3 Pain management

6. **It is recommended** that occupational therapists promote and support parent provision of skin-to-skin care with their infant during appropriate, planned, painful caregiving procedures (e.g. heel lance). 1A

(Ferber & Makhoul 2008 [A]; Johnston et al 2011 [A]; Cong et al 2012 [B]; Kostandy et al 2008 [C])

The evidence supporting the provision of parental skin-to-skin care as a means of pain management during planned painful procedures such as heel lance is strong. The provision of skin-to-skin care during heel lance has been demonstrated to support infant neurobehavioural regulation, promote sleep and reduce infant pain behaviours. This recommendation is supported by three randomised controlled trials and a pilot crossover trial. Occupational therapists can promote parent engagement in skin-to-skin care as a means of pain management during planned painful procedures such as heel lance.

<p>7. <b>It is recommended</b> that occupational therapists promote the use of facilitated tucking by all caregivers (parents and practitioners) for pain management during relevant caregiving procedures (e.g. endotracheal suctioning).</p> <p><i>(Axelin et al 2006 [A]; Obeidat et al 2009 [B])</i></p> <p>There is strong evidence for the provision of facilitated tucking during caregiving procedures, such as endotracheal suctioning, as a means of alleviating infant pain behaviours, and promoting parent engagement in supporting their infant’s pain management. This recommendation is supported by one randomised crossover trial and a descriptive systematic review. Although the sample sizes in the individual studies are small, they demonstrate consistent findings in supporting infant outcomes relating to neurobehavioural/state regulation during painful caregiving procedures. Occupational therapists can promote the use of non-pharmacological pain management strategies during planned painful procedures such as heel lance.</p>	1A
<p>8. <b>It is recommended</b> that occupational therapists support parent understanding and facilitate engagement in appropriate pain management strategies to enable them to provide sensitive support to their infants and promote parent self-efficacy.</p> <p><i>(Franck et al 2012 [C]; Franck et al 2011 [A]; Axelin et al (2006)[A])</i></p> <p>There is strong evidence that parents who have received education and facilitation in how to support their infant during painful procedures feel more confident in their parental role, and overall satisfaction with the care they received (Franck et al 2012, Franck et al 2011). Parents also reported preferring engagement in pain management as an alternative to observing care (Thoyre 2007). This recommendation is supported by two randomised controlled trials and one qualitative study. In facilitating opportunities for the development of parenting occupations, occupational therapists can promote parent engagement in supporting their infant during painful caregiving procedures.</p>	1A
<p>9. <b>It is recommended</b> that occupational therapists work with the neonatal team to promote routine assessment of neonatal pain and identification of appropriate pain management strategies.</p> <p><i>(Gibbins et al 2015 [C])</i></p> <p>In acknowledging that neonatal care exposes the high-risk infant to painful procedures, the implementation of appropriate pharmacological and nonpharmacological pain management for infants is imperative. This involves routine assessment of infant pain behaviours in order to plan and provide individualised developmentally supportive care. Occupational therapists can promote the use of infant pain assessment tools as linked with their sensitive assessment of infant neurobehavioural regulation and stress cues. It has been demonstrated that neonatal practitioners recognise the complex issues in managing infant pain, including the challenges in ensuring appropriate pain assessment. This recommendation is supported by one low-level qualitatively driven mixed-methods study.</p>	1C

#### 4.4 Skin-to-skin (kangaroo) care

<p>10. <b>It is recommended</b> that occupational therapists collaborate with the neonatal team to facilitate parent engagement in skin-to-skin care for high-risk infants to promote breastfeeding, pain management, physiological regulation and parent self-efficacy.</p> <p><i>(Luddington-Hoe et al 2004 [A]; Morelius et al 2015 [A]; Chan et al 2016 [A]; Boo and Jamli 2007 [A]; Cong et al 2009 [A]; Gathwala et al 2008 [A]; Hake-Brooks and Anderson 2008 [A]; Cho et al 2016 [B]; Head 2014 [B]; Bloch-Salisbury et al 2014 [C]; Blomqvist et al 2013 [C]; Carbasse et al 2013 [C]; Kostandy et al 2008 [C])</i></p>	1A
--	----

The provision of skin-to-skin care for high-risk infants has been heavily researched, with a strong body of evidence demonstrating a range of positive impacts on infants and families. Skin-to-skin care during a neonatal unit admission has been shown to influence increased breastfeeding, as a way to support infants during painful procedures, to support an infant's physiological regulation, and to support parents' confidence in their parental role while their infant is in a neonatal unit. No specific risks were reported in any of the studies for the infants receiving skin-to-skin care.

## 4.5 Positioning

11. **It is recommended** that occupational therapists collaborate with the neonatal team to facilitate individualised positioning recommendations for infants that promote infant motor outcomes, self-regulatory behaviours and prevent respiratory compromise. 1C

(Gouna et al 2013 [C]; Grenier et al 2003 [C]; Liaw et al 2012 [C]; Nakano et al 2010 [C])

The goals of neonatal positioning with the preterm infant include promoting flexion, prevention of head flattening and external rotation of the hips, and promotion of midline orientation to prevent asymmetrical posture and movement. This position is also beneficial for supporting the infant's self-regulation. Occupational therapists can promote the use of individualised positioning recommendations for infants on the basis of neurobehavioural assessment. Individualised infant positioning has been demonstrated to promote infant motor outcomes, improve infant self-regulatory behaviours and prevent respiratory compromise. This recommendation is supported by four cohort studies, which are considered a low level of evidence.

12. **It is recommended** that occupational therapists review the selection and use of neonatal positioning aids for their ability to promote infant motor outcomes, the development of infant postural control and self-regulatory behaviours. 1B

(Madlinger-Lewis et al 2015 [B]; Zarem et al 2013 [C])

Infant positioning can be supported through the use of commercial and bespoke positioning equipment. At present, there is no definitive evidence promoting one type of positioning device over another. When developing positioning recommendations for high-risk infants, occupational therapists should ensure the individualisation of the recommendations in order to promote more symmetrical postures and improved self-regulation in infants. This recommendation is supported by one randomised controlled trial and one qualitative/questionnaire study, which collectively are considered a moderate level of evidence.

13. **It is recommended** that occupational therapists use a positioning assessment tool to support the education of the neonatal team and promote individualised positioning of high-risk infants in the neonatal unit. 1D

(Coughlin et al [D])

Infant positioning can be supported through the use of a positioning tool on a routine basis to facilitate staff education and the implementation of individualised positioning recommendations for infants. This recommendation is supported by one cohort study of low-quality evidence.

## 4.6 Infant feeding

14. **It is recommended** that occupational therapists collaborate with the neonatal team to support parents in reading and responding to infant feeding readiness cues to promote the shared occupation of feeding in the neonatal unit and following transition to home. 1C

(Ross and Browne 2013 [B]; Brown and Pridham 2007 [C]; Caretto et al 2000 [C]; Swift and Scholten 2010 [C]; Ward et al 2000 [C]; Chrupcala et al 2015 [D]; Waitzman et al 2014 [D])

The body of evidence provides support for the benefits of focusing on the parent-infant relationship during feeding to improve parent understanding of infant feeding readiness, parent confidence, parent sensitivity and sensitive introduction of oral feeding for the infant. This recommendation is supported by low-quality evidence, drawn from one descriptive systematic review and six cohort studies. No specific risks were reported in any of the studies with regard to the adoption of a feeding readiness approach to the introduction of oral feeding.

15. **It is recommended** that occupational therapists promote an appropriate environment in the neonatal unit to support parent/infant participation in early feeding experiences. Environmental support factors may include space, seating, privacy, sensory environment and NICU culture. 1C

(Flacking and Dykes 2013 [C]; Pickler et al 2013 [C])

Two low-level studies highlight two important aspects by which the neonatal environment can influence parent-infant feeding occupations. First, that unit environment and design can impact on parents' involvement in feeding. The environment provides strong cues to parents in terms of their sense of place at their infant's cotside, which plays an important role in supporting involvement in breastfeeding. Second, an infant's ability to cope with sensory input will influence the success of their feeding. It is important to consider the wider environmental context when supporting parent-infant feeding development, and incorporate environmental modifications which support an infant's self-regulatory capacities.

## 4.7 Parent engagement

16. **It is recommended** that occupational therapists work with parents of high-risk infants to support parenting roles and relationships, and to provide sensitive and appropriate parent engagement in the infant's care in the neonatal unit. 1A

(Dudek-Shriber 2004 [C]; Ganadaki and Magill-Evans 2003 [D]; Gibbs et al 2015 [A]; Price and Miner 2009 [D])

Occupational therapists can make a significant contribution to the support of parents and their engagement in caregiving in the neonatal unit. A number of studies have been undertaken to explore the impact of the birth of a high-risk infant on parenting experiences, including their participation in activities/occupations that relate to their parental role. The studies have consistently identified that parents who experience the birth of a high-risk infant may find it difficult to adapt to their new role. The evidence supporting this recommendation consists of one well-structured qualitative meta-synthesis, two cohort studies and one qualitative study, ranging from high to very low levels of evidence.

17. **It is recommended** that occupational therapists facilitate the development of shared occupations of feeding, dressing and play activities of daily living with preterm and low-birthweight infants to ensure sensitive and appropriate caregiving and promote occupational performance of infants and parents. 1C

(Chiarello et al 2006 [C]; Kadlec et al 2005 [C]; Winston 2015 [D])

There are differences in how parents of children with emerging or ongoing developmental concerns interact with their children and promote optimal development. Parents report requiring additional support when their child has specific occupational performance concerns (e.g. participation in feeding). Children of parents/caregivers who are able to provide sensitive nurturing and appropriate facilitation of their child provide optimal conditions for supporting the development of early self-care, play and learning occupations. This recommendation is supported by evidence of low and very low quality.

18. **It is recommended** that occupational therapists working with families of high-risk infants build a positive therapeutic collaboration with parents to enhance parental learning about their infant both during and following the transition to home. 1C

(Harrison et al 2007 [C])

There is low-level evidence to support the association between a positive relationship between parents and providers and parent response to learning strategies that supported their child's development. The evidence for this recommendation is drawn from one qualitative study.

19. **It is suggested** that occupational therapists explore both traditional and innovative means (e.g. video-conferencing) of supporting families post-discharge from the neonatal unit as a means of promoting parent confidence and competence in caring for their infant following the transition to home. 2C

(Gund et al 2013 [C])

The potential and use of mobile health (m-Health, or the use of web-based and telephone communication) technologies in improving healthcare delivery and outcomes is of increasing interest. m-Health applications provide a novel way of delivering healthcare information to service users. There is low-level evidence from a single, small, randomised controlled trial to suggest that consideration of the use of m-Health applications as a means of providing support for families as they transition home from the neonatal unit supports parents' competence and confidence in caring for their infant.

## 4.8 Parent support

20. **It is recommended** that occupational therapists support engagement in parenting occupations in the neonatal unit and following discharge (including, but not limited to reading infant cues, guided participation in care, skin-to-skin, positive touch and holding) to promote decreased parent stress and positive improvements in parent-infant relationship and self-efficacy. 1A

(Evans et al 2014 [A]; Matricardi et al 2013 [B]; Melnyk et al 2006 [A]; White-Traut et al 2013 [A]; Zolkowitz et al 2011 [A])

The evidence that supports the relationship between supporting parent engagement in parenting occupations (decreases in parent stress and improvements in parent-infant relationship) and parent self-efficacy is strong. Although there is some inconsistency across the findings of individual studies, it is clear that an approach that includes parent-directed interventions and engagement is a key attribute of success. The evidence for this recommendation is drawn from one systematic review and three randomised controlled trials which are of high quality, and a further randomised controlled trial of moderate quality.



21. **It is recommended** that occupational therapists employ parent-focused interventions that incorporate parental sensitivity elements (e.g. reading infant cues and responding in developmentally appropriate ways) in order to reduce the psychosocial impact of delivering a high-risk infant, foster sensitive nurturing behaviour and promote the cognitive development of preterm infants. 1A

(Als et al 2003 [A]; Benzies et al 2013 [A]; Kraljevic and Warnock 2013 [B]; Melnyk et al 2001 [A]; Nordhov et al 2010 [A])

The evidence supporting the relationship between the provision of parent-focused interventions incorporating maternal sensitivity elements and the experience of psychosocial impacts resulting from the delivery of a high-risk infant is strong. Providing parent-focused interventions that incorporate strategies to support the development of parent sensitivity has also been demonstrated as an effective way to reduce psychosocial impacts (such as anxiety and depression) of the birth of a high-risk infant on parents, and foster sensitive nurturing behaviour. These types of interventions have also been demonstrated to promote the cognitive development of preterm infants. This recommendation is supported by one systematic review and three randomised controlled trials of high quality, and a further systematic review of moderate quality.

22. **It is suggested** that occupational therapists engage parents in brief activity-based interventions during their infant's admission to the neonatal unit and that this can have a short-term effect in lowering parent anxiety. 2C

(Mouradian et al 2013 [C])

Providing opportunities for parents to engage in occupation-based activity in the neonatal unit (e.g. scrapbooking) has been demonstrated as an effective way to achieve short-term stress reduction. This has been included as a conditional suggestion as it is recognised that staff and material resources across neonatal units may influence the process of implementing this suggestion into practice. However, it contributes to an overall recommendation that occupational therapists utilise an occupation-based framework for practice in the neonatal unit that, in addition to supporting the development of the infant, also works to support sensitive and appropriate parent engagement in caregiving. The evidence for this suggestion is drawn from one quasi-experimental study of low quality.

## 4.9 Identifying developmental concerns

23. **It is recommended** that occupational therapists should be involved in the screening and assessment of high-risk infants for problems related to cognitive performance and social interaction, in order to support the development of the infant's occupations, with referral to early intervention services as indicated. 1A

(Maitra et al 2014 [A]; Magill-Evans et al 2002 [C]; Pineda et al 2015 [C]; Sajaniemi et al 2001 [C])

A number of studies have been undertaken to explore the impact of the birth of a high-risk infant on later cognitive and social interaction function. The studies, while not all high quality, have consistently identified an association between high-risk infants and later cognitive and social-emotional functions that are important in the performance of childhood occupations. It is recommended that occupational therapists routinely provide screening and assessment of high-risk infants in this area in order to support the development of infant occupations, and/or provide referral to early intervention services as needed. The evidence for this recommendation is drawn from one high-level and three low-level quality studies.

24. **It is recommended** that occupational therapists should be involved in the screening and assessment of high-risk infants for problems related to functional motor skills, in order to support the development of the infant's occupations, with referral to early intervention services as indicated. 1A

*(Maitra et al 2014 [A]; Bigsby et al 2011 [B]; Watkins et al 2014 [C]; Fewell and Claussen 2000 [C])*

A number of studies have been undertaken to explore the impact of the birth of a high-risk infant on functional motor outcomes. The studies vary in quality but identify an association between high-risk infants and functional motor skills that are important in the performance of childhood occupations. It is recommended that occupational therapists routinely provide screening and assessment of high-risk infants in this area in order to support the development of infant occupations, and/or provide referral to early intervention services as needed. The evidence for this recommendation is drawn from one high-level, one moderate-level and two low-level evidence sources.

25. **It is recommended** that occupational therapists should be involved in the screening and assessment of high-risk infants for problems related to sensory processing difficulties, in order to support the development of the infant's occupations, with referral for early intervention services as indicated. 1B

*(Witt Mitchell et al 2015 [B]; Crozier et al 2016 [C])*

Two studies have been undertaken to explore the impact of the birth of a high-risk infant on the development of atypical sensory processing performance. The studies clearly identify an association between high-risk infants and sensory processing difficulties that may influence the development of play, social participation, education, and self-care occupations. It is recommended that occupational therapists routinely provide screening and assessment of high-risk infants in this area in order to support the development of infant occupations, and/or provide referral to early intervention services as needed. The evidence for this recommendation is supported by one moderate-level systematic review and one low-level cohort study.

## 4.10 Early intervention

26. **It is recommended** that occupational therapists provide early developmental intervention programmes for preterm infants to promote improved cognitive performance through the preschool years. 1A

*(Orton et al 2009 [A]; Spittle et al 2015 [A]; Spittle et al 2007 [A])*

The evidence supporting the positive impact of the provision of early intervention to promote cognitive development through to preschool age in high-risk infants is strong. For those infants with identified developmental concerns, early intervention programmes that begin following the infant's discharge from hospital have been shown to benefit cognitive development/learning. The impact of these interventions in infancy and early childhood is a key finding supporting the proactive provision of early intervention services, rather than delaying until children present with difficulties at preschool or school age. The evidence for this recommendation is drawn from two high-quality systematic reviews (one of which has undergone updating/review). No specific risks were reported in any of the studies for the infants receiving early developmental interventions.

27. **It is recommended** that occupational therapists provide home-based early intervention programmes for infants born <30 weeks gestation in the first year of life as this may result in decreasing parent anxiety. 1A

*(Spencer-Smith et al 2012 [A])*

There is strong evidence that the delivery of targeted early intervention offered in a preventative/health promotion model for high-risk infants can have positive impacts on parent mental health. In acknowledging the ongoing stress and anxiety that parents can experience following the birth of a high-risk infant who is either at increased risk for, or displaying, emerging developmental concerns, it is important that early intervention services are structured in a way that supports the promotion of parent mental health in addition to, and in support of, optimising infant development. The evidence for this recommendation is drawn from one high-level randomised controlled trial.

28. **It is recommended** that occupational therapists facilitate individualised functional motor interventions for high-risk infants and young children to promote engagement in early occupations such as play, exploration and participating in personal care (activities of daily living). 1A

*(Lekskulchai and Cole 2001 [A])*

There is good evidence that the provision of early intervention programmes for high-risk infants in the first months following discharge from the neonatal unit can promote positive outcomes in the acquisition of functional motor skills. No specific risks were reported in the study for the infants receiving early motor developmental interventions. The evidence for this recommendation is drawn from one high-quality randomised controlled trial.

29. **It is recommended** that occupational therapists incorporate home routine/occupation-based approaches in early intervention programmes for children at risk for developmental delay as a means of promoting occupational performance. 1B

*(Hwang et al 2013 [B])*

There is moderate-quality evidence that the provision of an early intervention model that focuses on the child's participation in family routines and activities shows improved attainment of functional skills for children at risk of, or with, developmental delay when compared with a traditional early intervention home visiting model. While both RBEI and traditional home-visiting early intervention models supported the children's developmental progress, the RBEI was more effective in promoting functional outcomes and reaching family-centred goals.

30. **It is recommended** that occupational therapists be routinely referred preterm infants with the following co-morbidities: septicaemia, extremely low birth weight (ELBW), chronic lung disease, periventricular leukomalacia (PVL) or intraventricular haemorrhage (IVH) (grade III-IV), for early intervention. 1C

*(Hintz et al 2008 [C])*

The evidence for the identification of high-risk infants who ultimately require provision of specialist outpatient services is low. However, the study involves a large, comprehensive cohort of extremely preterm infants. This study indicates that the prevalence of the need for access to specialist outpatient services for this group of infants is high. Infants who are considered high risk as a result of prematurity or other health factors may experience ongoing developmental concerns that can impact on their participation in infant and child occupations. It is therefore recommended that infants born with specific medical issues such as sepsis, ELBW, BPD chronic lung disease, PVL or IVH (grade III-IV) are routinely referred for specialist outpatient services, including occupational therapy.

31. **It is recommended** that occupational therapists working in early intervention settings with high-risk infants consider key elements when building a therapeutic collaboration with parents – promoting effective collaboration amongst multi-agency providers, supporting family social/emotional needs in addition to infant developmental concerns, and consistency of service provision. 1D

(Ideishi et al 2010 [D])

The quality of the evidence for the impact of collaborative parent–therapist partnerships is low. This study identifies the likelihood that high-risk infants with emerging developmental concerns may be referred to a range of early intervention providers, with potential for inconsistency between service models and approaches. This leaves parents needing to navigate and advocate for services that comprehensively support their child’s and family’s ongoing developmental needs. Therefore, it is recommended that therapists working in early intervention services should acknowledge the role that parents play in managing their contacts with multiple service providers, ensuring clear communication across agencies and supporting the child and family as a whole.

It is additionally recommended that occupational therapists use the audit tool that is available to support this guideline to undertake audit against the above recommendations. Recommendations, for which there is a transdisciplinary component, may be usefully audited jointly with other members of the multidisciplinary team. Likewise, the occupational therapist may be involved in audits related to other frameworks, such as the Bliss Baby Charter Standards and audit tool (Bliss 2015).

## 5. Recommendation Grade Guide

**Strength of grade** (after Guyatt et al 2008)

Strength	Grade	Benefits and risks	Implications
<b>Strong</b>	1 'It is recommended...'	Benefits appear to outweigh the risks (or vice versa) for the majority of the target group.	Most service users would want or <i>should</i> receive this course of intervention or action.
<b>Conditional</b>	2 'It is suggested...'	Risks and benefits are more closely balanced, or there is more uncertainty in likely patient values and preferences.	The majority of service users would want this intervention, but not all, and therefore they should be supported to arrive at a decision for intervention consistent with the benefits and their values and preferences.

**GRADE quality of evidence grading** (after GRADE Working Group 2004)

Quality of evidence	Grading	Characteristics	Confidence
<b>High</b>	A	Based on consistent results from well-performed randomised controlled trials, or overwhelming evidence of an alternative source, e.g. well-executed observational studies with strong effects.	True effect lies close to that of the estimate of the effect. Further research very unlikely to change confidence in the estimate of the effect.

Quality of evidence	Grading	Characteristics	Confidence
<b>Moderate</b>	B	Based on randomised controlled trials where there are serious flaws in conduct, inconsistency, indirectness, imprecise estimates, reporting bias or some other combination of these limitations, or from other study designs with special strengths.	True effect likely to be close to the estimate of the effect but there could be a substantial difference. Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
<b>Low</b>	C	Based on observational evidence, or from controlled trials with several very serious limitations.	True effect may be substantially different from the estimate of the effect. Further research is very likely to have an important impact on confidence in the estimate of the effect and is likely to change the estimate.
<b>Very low</b>	D	Based on case studies or expert opinion.	Any estimate of effect is very uncertain and may be far from the true effect.

## Evidence References

The full reference list for the evidence supporting the 31 recommendations, together with the full evidence tables, can be found in the Occupational therapy in neonatal services and early intervention Practice guideline supplement Evidence tables.

The supplement is available at: <https://www.rcot.co.uk/practice-resources/rcot-practice-guidelines>

## Supporting information references

Bliss (2015) *Bliss Family Friendly Accreditation Scheme*. London: Bliss. Available at: <http://www.bliss.org.uk/the-bliss-baby-charter-guide>

Bliss (2014) *Bliss family handbook*. London: Bliss. Available at: <http://www.bliss.org.uk/information-for-parents>

British Association of Perinatal Medicine (2011) *Categories of care 2011*. London: BAPM.

National Data Analysis Unit (2015) *NDAU 2015 report*. London: Imperial College. Available at: <https://www1.imperial.ac.uk/resources/69CED33F-CF8D-4727-BC05-94A4885B8699/ndau2015reportv1.4.pdf>

Thoyre SM (2007) Feeding outcomes of extremely premature infants after neonatal care. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, 36(4), 366–375.

Vergara E, Anzalone M, Bigsby R, Gorga D, Holloway E, Hunter J . . . Strzyzewski S (2006) Specialized knowledge and skills for occupational therapy practice in the neonatal intensive care unit. *The American Journal of Occupational Therapy*, 60(6), 659–668.

All websites in these references were accessed on 08.08.17.