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**Quick reference and implementation guide**

This guide provides a summary of the recommendations in the Royal College of Occupational Therapists practice guideline ***Occupational therapy in neonatal services and early intervention 2nd edition*** and suggestions for implementing the recommendations.

It is intended to be used by practitioners as an easily accessible reminder of the recommendations for intervention and implementation. 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 our website:

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

1. **Introduction**

The guideline objective is to provide evidence-based recommendations to inform occupational therapy in neonatal services and early intervention in the UK. It defines 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 therapist 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. They 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.

Additionally, this resource provides tips for implementing the guideline’s recommendations, acting as an aid to occupational therapists wishing to incorporate the knowledge and evidence base contained in the guideline into their practice.

\*‘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 (such as infants with neonatal hypoxic ischaemic encephalopathy, neonatal abstinence syndrome, congenital conditions or having undergone complex surgical procedures), infants receiving palliative care, and their parents. It is acknowledged that not all infants considered high risk at birth will develop developmental sequelae, but the term ‘high risk’ is used for brevity.

1. **Policy and service delivery context**

A large body of research highlights the impact of the increase in survival of infants born prematurely and provides clarity around the range of neurodevelopmental issues with which preterm infants commonly present. These include cognitive impairment, cerebral palsy, impairments in motor planning, visuo-spatial, sensorimotor and attention functions, behavioural issues, increased

incidence of autism spectrum disorders, neurosensory impairment, cognitive impairment and

delayed social-emotional competence (Johnson et al 2009, Marlow et al 2007, Larroque et al 2008, Delobel-Ayoub et al 2009, Johnson et al 2014, Guy et al 2015, Hee Chung et al 2020, Laverty et al 2021).

Additionally, infants born at term who experience complications such as hypoxic ischaemic encephalopathy will need ongoing developmental support and monitoring. Nearly half of these infants will experience adverse outcomes, such as cerebral palsy or motor/cognitive impairment (Pin et al 2009, Magai et al 2020). Furthermore, children who do not show signs of severe developmental outcomes initially may later experience subtle issues, such as learning difficulties (Pin et al 2009).

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, whilst 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).

1. **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. Occupational therapists bring to the multidisciplinary neonatal team knowledge of infant neurobehavioural and neuromotor development and an understanding of the impact of the physical/sensory/psychosocial environment on infant development and family-centred care. Inclusion of neonatal therapists (occupational therapists, physiotherapists and speech and language therapists) are essential components of a comprehensive preventive model of developmental care (Craig and Smith 2020).

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.

1. **Guideline recommendations and evidence overview**

The guideline recommendations are presented in eleven categories that loosely represent the stages of an infant’s journey through a neonatal admission and beyond.

The evidence from 138 studies used to develop the recommendations is summarised in the guideline document (Section 5), and in evidence tables (Practice guideline supplement). A total of 33% of the evidence from which the recommendations were developed was assessed as being high (Grade A), with 20% as moderate (Grade B) quality studies. A further 38% of the evidence was graded as low (C) and 9% 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). Thirty-three of the 35 recommendations are graded as strong.

####  Occupation-based assessment

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| 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.(Als et al 2003 [A]; Pineda et al 2020 [B]; El-Dib et al 2011 [C]; Allinson et al 2017 [D])[New evidence 2022] | 1A |
| 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.(Craciunoiu and Holsti et al 2017 [A]; Bartlett 2003 [C]; Sucharew et al 2012 [C]; Crowle et al 2015 [D]; Liu et al 2010 [D])[New evidence 2022] | 1A |
| 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.(Liu et al 2010 [D]) | 1D |

 **Developmentally supportive care**

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| 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.(Als et al 2003 [A]; McAnulty et al 2009 [A]; Symington and Pinelli 2006 [A]; Legendre et al 2011 [B]; McAnulty et al 2010 [B]; Oostlander et al 2019 [B]; Soleimani et al 2020 [B]; Wallin and Eriksson 2009 [B])[New evidence 2022] | 1A |
| 1. **It is recommended**that occupational therapists promote an appropriate developmental environment, based on the infant’s age and status and individual needs.

(Pineda et al 2017 [A]; Symington and Pinelli 2006 [A]; Symington and Pinelli 2002 [A]; McAnulty et al 2010 [B])[New evidence 2022] | 1A |

 **Pain management**

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| 6. **It is recommended**that occupational therapists promote the use of non-pharmacological pain management strategies (e.g. skin-to-skin care, facilitated tucking etc) by all caregivers (parents and practitioners) for pain management during appropriate, planned, painful caregiving procedures. (Axelin et al 2006 [A]; Ferber and Makhoul 2008 [A]; Zargham-Boroujeni et al 2017 [A]; Johnston et al 2011 [A]; Hatfield et al 2019 [B]; Obeidat et al 2009 [B]; Cong et al 2012 [B]; Kostandy et al 2008 [C])[New recommendation 2022] | 1A |
| 7. **It is recommended**that occupational therapists support parent understanding and engagement in appropriate pain management strategies to enable them to provide sensitive support to their infants and promote parent self-efficacy.(Axelin et al (2006) [A]; Franck et al 2011 [A]; Franck et al 2012 [C]; Richardson et al 2020 [C])[New evidence 2022] | 1A |
| 8. **It is recommended**that occupational therapists work with the neonatal team to promote routine assessment of neonatal pain and identification of appropriate pain management strategies.(Gibbins et al 2015 [C]; Orovec et al 2019 [C])[New evidence 2022] | 1C |

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|  **Skin-to-skin (kangaroo) care** |
| 9. **It is recommended**that occupational therapists collaborate with the neonatal team to facilitate parent engagement in skin-to-skin care for high-risk infants to promote pain management, physiological regulation and infant weight gain.(Luddington-Hoe et al 2004 [A]; Vittner et al 2018 [A]; Cunningham et al 2017 [A]; Boo and Jamli 2007 [A]; Cong et al 2019 [A]; Cho et al 2016 [B]; Head 2014 [B]; Bloch-Salisbury et al 2014 [C]; Carbasse et al 2013 [C]; Kostandy et al 2008 [C]) [Amended statement and new evidence 2022] | 1A |
| 10. **It is recommended** that occupational therapists collaborate with the neonatal team to facilitate parent engagement in skin-to-skin care for high-risk infants to promote breastmilk feeding, parent wellbeing and parent self-efficacy. (Morelius et al 2015 [A]; Vittner et al 2018 [A]; Mu et al 2020 [A]; Gathwala et al 2008 [A]; Hake-Brooks and Anderson 2008 [A]; Cho et al 2016 [B]; Vittner et al 2019 [B]; Blomqvist et al 2013 [C])[Amended statement and new evidence 2022] | 1A |

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|  **Touch** |
| 1. **It is recommended**that occupational therapists facilitate the provision of positive touch and infant massage\* by parents/primary caregiversto decrease infant stress and improve state and physiological regulation.

(Asadollahi et al 2016 [B]; Baniasadi and Hosseini et al 2019 [C]; Kim et al 2017 [C]; Elsagh et al 2019 [D]) [New recommendation 2022] | 1B |
| 1. **It is recommended**that occupational therapists facilitate the provision of positive touch and infant massage\* by parentsto decrease parent anxiety and promote parent mood and parent-infant relationship.

*(Shogi et al 2018 [B]; Lotfalipour et al 2019 [C]; Afand et al 2016 [C]; Kim et al 2017 [C])*[New recommendation 2022]\* NB: Please see information in section 5.5.1 of the full guideline regarding the requirement for specialist training/certification to facilitate parent-delivered infant massage with high-risk infants in the neonatal unit setting. | 1B |  |

 **Postural Support**

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| 13. **It is recommended**that occupational therapists collaborate with the neonatal team to facilitate individualised postural support recommendations for infants that promote infant motor outcomes, self-regulatory behaviours and prevent respiratory compromise.(Lai et al 2016 [A]; Santos et al 2017 [B]; Kochan et al 2018 [B]; Gouna et al 2013 [C]; Grenier et al 2003 [C]; Liaw et al 2012 [C]; Nakano et al 2010 [C]) [Statement amended and new evidence 2022]  | 1C |
| 14. **It is recommended** that occupational therapists review the selection and use of neonatal postural support aids for their ability to promote infant motor outcomes, the development of infant postural control and self-regulatory behaviours. (Madlinger-Lewis et al 2015 [B]; Zarem et al 2013 [C]) [Statement amended 2022] | 1B |
| 15. **It is recommended** that occupational therapists use a postural support assessment tool to support the education of the neonatal team and promote individualised positioning of high-risk infants in the neonatal unit. (Coughlin et al 2010 [D]) [Statement amended 2022] | 1D |

 **Infant feeding**

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| 16. **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 co-occupation of feeding in the neonatal unit and following transition to home.(Ross and Browne 2013 [B]; Brown and Pridham 2007 [C]; Caretto et al 2000 [C]; Mitha et al 2019 [C]; Maguire et al 2018 [C]; Swift and Scholten 2010 [C]; Ward et al 2000 [C]; Chrupcala et al 2015 [D]; Waitzman et al 2014 [D]) [New evidence and statement amended 2022] | 1C |
| 17. **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. (Flacking and Dykes 2013 [C]; Pickler et al 2013 [C]) | 1C |

 **Parent engagement**

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| 18. **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.(Ding et al 2017 [A], Gibbs et al 2015 [A]; O’Brien et al 2018 [A]; Backe et al 2020 [C]; Dudek-Shriber 2004 [C]; Gibbs et al 2016 [C]; Pineda et al 2018 [C]; Gustafson et al 2018 [C]; Ganadaki and Magill-Evans 2003 [D]; Price and Miner 2009 [D]; Skene et al 2019 [D]) [New evidence 2022] | 1A |
| 19. **It is recommended**that occupational therapists facilitate the development of co-occupations related to activities of daily living (including, but not limited to, feeding, bathing, nappy changing, 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.(Chiarello et al 2006 [C]; Kadlec et al 2005 [C]; Winston 2015 [D]) [Statement amended 2022] | 1C  |
| 20. **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.(Aydon et al 2018 [B]; Fucile et al 2020 [C]; Harrison et al 2007 [C]; Ingram et al 2016 [C]) [New evidence 2022] | 1B  |
| 21. **It is suggested**that occupational therapists explore both traditional and innovative methods (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. (Gund et al 2013 [C]) | 2C |

 **Parent support**

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| 22. **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.(Evans et al 2014 [A]; Månsson et al 2019 [A]; Matricardi et al 2013 [B]; Melnyk et al 2006 [A]; Milgrom et al 2019 [A]; O’Brien et al 2018 [A]; Thomson et al 2020 [A]; White-Traut et al 2013 [A]; Zelkowitz et al 2011 [A]; Backe et al 2020 [C]; Nassaf et al 2020 [C]; Suarez et al 2018 [C])[New evidence 2022] | 1A |
| 23. **It is recommended**that occupational therapists employ parent-focused interventions that incorporate parental attunement 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.(Als et al 2003 [A]; Benzies et al 2013 [A]; Melnyk et al 2001 [A]; Nordhov et al 2010 [A]; Askary Kachoosangy et al 2020 [B]; Kraljevic and Warnock 2013 [B])[New evidence 2022] | 1A |
| 24. **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.(Dur et al 2018 [B]; Mouradian et al 2013 [C])[New evidence 2022] | 2B |
| 25.**It is recommended** that occupational therapists consider the use of e-health interventions (e.g. web-based platforms, mobile apps, video-conferencing etc) to support parent engagement, particularly when parent presence may be interrupted. (Dol et al 2017 [A])[New recommendation 2022] | 1A |
| 26.**It is recommended** that occupational therapists employ the use of parent-focused psychosocial interventions to decrease parent stress and anxiety and promote parent coping, confidence and early parent-infant relationships.  (Kasparian et al 2019 [A]; Gramszlo et al 2019 [B]; Petteys & Adoumie 2018 [B])[New recommendation 2022] | 1A |

 **Identifying developmental concerns**

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| 27. **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, to support the development of the infant’s occupations, with referral to early intervention services as indicated. (Maitra et al 2014 [A]; Magill-Evans et al 2002 [C]; Pineda et al 2015 [C]; Sajaniemi et al 2001 [C]) | 1A |
| 28. **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, to support the development of the infant’s occupations, with referral to early intervention services as indicated. (Maitra et al 2014 [A]; Bigsby et al 2011 [B]; Watkins et al 2014 [C]; Fewell and Claussen 2000 [C]) | 1A |
| 29. **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, to support the development of the infant’s occupations, with referral for early intervention services as indicated.(Broring et al 2017 [A]; Witt Mitchell et al 2015 [B]; Crozier et al 2016 [C]) [New evidence 2022] | 1A  |

 **Early intervention**

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| 30. **It is recommended**that occupational therapists provide early developmental intervention programmes for preterm infants to promote improved cognitive performance through the preschool years.(Orton et al 2009 [A]; Spittle et al 2015 [A]; Spittle et al 2007 [A]) | 1A |
| 31. **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. (Spencer-Smith et al 2012 [A]) | 1A |
| 32. **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).(Lekskulchai and Cole 2001 [A]; Hughes et al 2016 [A]; Duncan et al 2020 [B])[New evidence 2022] | 1A |
| 33. **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. (Hwang et al 2013 [B]) | 1B |
| 34. **It is recommended**that occupational therapists be routinely referred preterm infants with the following co-morbidities: septicaemia, extremely low birthweight (ELBW), chronic lung disease, periventricular leukomalacia (PVL) or intraventricular haemorrhage (IVH) (grade III–IV), for early intervention.(Hintz et al 2008 [C]) | 1C |
| 35. **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 multiagency providers, supporting family social/emotional needs in addition to infant developmental concerns, and consistency of service provision.(Ideishi et al 2010 [D]) | 1D |

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 2020).

1. **Guideline implementation**

In addition to the full guideline document, there are implementation resources available to aid translation into practice, including a CPD resource and an audit tool. Some key tips to consider are outlined in the table below.

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| **Key tips**  |
| 1. Look for opportunities to **promote** the practice guideline with colleagues and multidisciplinary team members: include on the agenda of relevant meetings.
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| 1. Present and discuss the evidence-based recommendations with colleagues – preferably with the multidisciplinary team. A Continuing Professional Development (CPD) **PowerPoint** resource is available with information already prepared and which can be tailored for your local use.
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| 1. Use the guideline **audit form** to benchmark your service/practice and assist in identifying actions to progress implementation of recommendations. The audit form is available to download and evaluate your service against the recommendations, and kick-start an action plan.
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| 1. Gather evidence of **outcomes** using standardised assessments and measures. Visit: https://www.rcot.co.uk/practice-resources/occupational-therapy-topics/assessments-and-outcome-measures
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| 1. Use the guideline evidence and recommendations to support the case for occupational therapy as part of your **business planning and commissioning activities**.
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| 6. Write an **implementation case study** to demonstrate how your service has translated the guideline recommendations into the workplace. Provide supporting performance/outcome data and feedback from people who access services to demonstrate the difference you are making the quality of services, cost-effectiveness and people who access services.  |
| **To access the implementation tools visit:** [**https://www.rcot.co.uk/practice-resources/rcot-practice-guidelines**](https://www.rcot.co.uk/practice-resources/rcot-practice-guidelines) |

1. **Evidence References**

The full reference list for the evidence supporting the 35 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>

1. **References**

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