



FACULTY OF PAIN MEDICINE

of the Royal College of Anaesthetists

Guidance on Competencies for Paediatric Pain Medicine

The management of pain in childhood critically depends on a thorough understanding of the developmental and environmental factors that influence nociceptive processing, pain perception and the response to treatment during maturation from infancy to adolescence.

Nociceptive pathways are functional at birth, and painful stimuli trigger physiological and behavioural responses at all ages. However, developmental changes in the structure, function and modulation of pain pathways impact on the response to injury and analgesia, and repeated or severe painful experiences in early life may alter sensory processing and responses to pain in later life.

Pain assessment and measurement is essential to optimise pain management, and validated tools are available for different ages and clinical contexts. These range from composite measures that incorporate physiological and behavioural responses in neonates and infants through to self-report tools in older children.

Safe and effective pharmacological management of acute and procedural pain in neonates, infants and early childhood requires understanding of age-related changes in both the pharmacokinetic and pharmacodynamic profile of analgesics. Evidence-based clinical practice guidelines incorporate both pharmacological and non-pharmacological techniques, that can have complementary roles in acute pain management. The knowledge, skills, and attitudes of paediatric pain physicians must be appropriate to the developmental stage and clinical state of the patient, and also encompass the role of parents and/or carers.

Recurrent, persistent and chronic pain is prevalent in childhood and adolescence. Most of these individuals can be, and are, managed effectively in primary and secondary care by general practitioners and paediatricians with appropriate training and experience in pain. Some patients develop complex pain presentations that can be very challenging to manage effectively, in addition children may also suffer from cancer pain, or require palliative care due to life-limiting medical conditions. These children and adolescents frequently require input from physicians with advanced pain medicine training. They will also usually require multidisciplinary input from other professionals – psychologists, physiotherapists, occupational therapists and nurses – to enable the effective management of their pain and other problems. Pain physicians

require the skills, knowledge, behaviour and attitudes to work within and lead multidisciplinary teams to enable effective management.

The Faculty of Pain Medicine of the Royal College of Anaesthetists is concerned with the professional standards of pain medicine specialists, so this document focuses on the pain medicine specialist's contribution to Paediatric Pain Medicine (PPM).

- This document sets out the core knowledge, skills and attitudes pertaining to PPM for anaesthetists specialising in pain medicine who may need to be involved with the PPM service. Whilst it is recognised that not all pain medicine specialists will provide services directly to children, all practitioners need to have an understanding of the principles of PPM.
- The document also sets out the more advanced knowledge, skills and attitudes required for pain specialists who will work in teams providing PPM services or lead transition care of adolescents to adult services.

GUIDELINES

A Core competencies for practitioners in Pain Medicine

Knowledge

- Knowledge of developmental neurobiology of pain: including mechanisms of nociception and hyperalgesia. Understanding of the long term neuro-physiological consequences of pain in infancy and early childhood.
- Knowledge of developmental, contextual and practical considerations in acute, procedural and chronic pain assessment in infants, children and adolescents.
- Knowledge of ethical and legal aspects of prescribing for children including marketing authorisation and off-label prescribing.
- Knowledge of evidence-base for effective treatments for pain in children of different ages and in different contexts.
- Knowledge of principles of pain pharmacotherapy and therapeutics in infants, children and adolescents.
- Understand the principles of multidisciplinary management of pain in children and adolescents.
- Understand the biopsychosocial aspects of pain management in children, including the role of the family (or carer) and society.
- Understand the organisational aspects of children's pain services including acute (postoperative and procedural) pain, cancer pain and palliative care, and complex pain.
- Knowledge of Child Protection risks and procedures.

Attitudes and behaviour

- Effective communication with children and families/ carers.
- Effective communication with other healthcare professionals in primary and secondary children's care.
- Appreciation of appropriate skills mix for multidisciplinary pain management in children of different ages, abilities and social and educational needs.

Skills

- Accurate assessment of acute and chronic pain in infants, children and adolescents.
- Safe and effective pharmacological management of acute and procedural pain in children.
- Safe and effective prescription of pharmacotherapy for complex pain conditions in childhood.

Appendix A

1. Basic sciences
 - a. Development of nociception.
 - b. Mechanisms of hyperalgesia during development.
 - c. Age related changes in body composition, pharmacokinetics and pharmacodynamics.
2. Pain assessment
 - a. Acute pain measurement in infants, children and adolescents.
 - b. Observational and behavioural methods of pain assessment.
 - c. Pain assessment and outcome measures for complex pain.
3. Prescribing and Pharmacology:-
 - a. 'Off-label' drug use in children
 - b. Effect of age on efficacy and safety, and appropriate use of analgesic drugs
 - c. Developmental pharmacology of non-opioid analgesics
 - d. Opioid pharmacology
 - e. Methods of analgesic delivery
4. Evidence base for effective treatments
 - a. Procedural pain
 - b. Acute pain
 - c. Complex pain management including neuropathic, visceral and musculoskeletal.
 - d. Cancer pain and palliative care:
 - e. Role of regional blocks and surgical interventions
5. Multidisciplinary management
 - a. Role of non-pharmacological techniques, including distraction and guided imagery in procedural and chronic pain
 - b. Role of physical therapy, including pacing in chronic pain
 - c. Role of psychological therapies, including cognitive-behavioural techniques in procedural and chronic pain.
 - d. Role of complementary and alternative medicine.
6. Biopsychosocial aspects
 - a. Appreciation of the role of parents and carers in children's pain
 - b. Child Protection procedures.

B Competencies for practitioners in pain medicine who are involved in a paediatric pain service or lead transition of adolescents to adult services.

Knowledge

- Detailed knowledge of developmental neurobiology of pain: including mechanisms of nociception and hyperalgesia. The ontogeny of neuropathic and visceral pain. Knowledge of the mechanisms and significance of the long term neurophysiological consequences of pain in infancy and early childhood.
- Knowledge of developmental, contextual and practical considerations in acute, procedural and complex pain assessment in infants, including premature neonates, infants, children and adolescents.
- Knowledge of ethical and legal aspects of prescribing for children including marketing authorisation and off-label prescribing.
- Detailed knowledge of evidence-base for effective treatments for pain in children of different ages and in different contexts
- Detailed knowledge of pain pharmacotherapy and therapeutics in neonates, infants, children and adolescents
- Understand the biopsychosocial aspects of pain management in children: e.g. the role of the family/ carers and society in children's pain.
- Understand the provision of health, educational and social services for children and an appreciation of effective multidisciplinary working.
- Understand the organisational aspects of children's pain services including acute (postoperative and procedural) pain, cancer pain and palliative care, and complex pain.
- Understand the principles and practicalities of Pain Management Programmes for children and adolescents.
- Knowledge of Child Protection risks and procedures.

Attitudes and behaviour

- Effective communication with children and families/ carers.
- Effective communication with other healthcare professionals in primary and secondary children's care.
- Effective communication and liaison with social, educational and community paediatric services.
- Appreciation of appropriate skills mix for multidisciplinary pain management in children of different ages, abilities and social and educational needs.
- Ability to take effective leadership role in children's pain management.

Skills

- Accurate assessment of pain in neonates, infants, children and adolescents including the premature neonate and child with neuro-developmental delay.
- Safe and effective pharmacological management of acute and procedural pain for all ages including the premature neonate.
- Safe and effective pharmacological management of complex pain conditions in childhood.
- Ability to participate in multidisciplinary management of complex and cancer pain in children.
- Ability to perform necessary practical procedures for safe, effective evidence-based practice.
- Ability to manage transition from paediatric to adult health and social services where appropriate.
- Ability to recognise and make appropriate referral of children, adolescents and families with associated problems e.g. eating disorders, suicidal ideation, concerns of fabricated illness.
- Ability to initiate and take appropriate (including leading) role in Child Protection process.

Appendix B

1. Basic sciences
 - a. Development of nociception
 - b. Mechanisms of hyperalgesia in development
 - c. Age related changes in body composition, pharmacokinetics and pharmacodynamics.
 - d. Age related changes in response to injury and potential for long term changes.
 - e. Ontogeny of neuropathic and visceral pain.
2. Pain assessment
 - a. Acute pain measurement in neonates, infants, children and adolescents
 - b. Observational and behavioural methods of pain assessment
 - c. Validation of pain assessment tools and the influence of age and context
 - d. Pain assessment in the premature neonate.
 - e. Pain assessment in children with neurodevelopmental delay.
 - f. Pain assessment and outcome measures for complex pain.
3. Prescribing and Pharmacology:-
 - a. 'Off-label' drug use in children
 - b. The Paediatric Rule and PIP (Paediatric Investigation Plan)
 - c. Effect of age on efficacy and safety, and appropriate use of analgesic drugs
 - d. Developmental pharmacology of non-opioid analgesics and adjuvant drugs
 - e. Opioid pharmacology
 - f. Methods of analgesic delivery
4. Evidence base for effective treatments
 - a. Procedural pain
 - b. Acute pain
 - c. Complex pain management including neuropathic, visceral and musculoskeletal.
 - d. Cancer pain and palliative care:
5. Multidisciplinary management
 - a. Role of regional blocks and surgical interventions
 - b. Role of non-pharmacological techniques, including distraction and guided imagery in procedural and chronic pain
 - c. Role of physical therapy, including pacing, desensitisation, TENS and acupuncture in chronic pain
 - d. Role of psychological therapies, including cognitive-behavioural techniques, hypnosis and family therapy in procedural and chronic pain
 - e. Role of complementary and alternative medicine
6. Biopsychosocial aspects
 - a. Appreciation of the role of parents and carers in children's pain
 - b. The child in society
 - c. Provision of health, education and social services
 - d. Child Protection procedures, including leading role.
7. Organisational aspects: Provision of pain services for children
 - a. Acute, postoperative and procedural pain
 - b. Cancer pain and palliative care
 - c. Complex pain

- d. Pain management programs for children and adolescents
 - e. Transition of adolescents to adult services
8. Audit and research
- a. Audit should be supported by pain medicine specialists so that clinicians delivering PMM are able to collect data regarding indications for treatment, effectiveness of therapy and adverse events
 - b. Understand developmental models in laboratory research
 - c. Design of developmentally-appropriate clinical studies
 - d. Evaluation of clinical research evidence.