Pain assessment in children

Katherine Brand
Benjamin Thorpe

Abstract

Acute pain in children can occur following trauma and injury or secondary to medical and surgical intervention. Before acute pain can be effectively treated, it must be accurately assessed. In spite of many years of research to enhance our understanding of pain, the assessment of pain in children continues to be a challenge and is often inconsistent and suboptimal in many organizations. Pain and its perception are multi-factorial, hence an approach to pain assessment and treatment must also be multi-faceted and multidisciplinary. Painful experiences are dynamic, with huge inter- and intra-individual variation; therefore pain assessment tools must be adaptable, reproducible and accurate to accommodate such variation. This article outlines the different tools available for pain assessment in infants and children (excluding neonates).

Keywords Acute pain assessment; assessment tools; children; pain

Royal College of Anaesthetists CPD Matrix: 1D01, 1D02, 2D05, 2D02

Learning objectives

After reading this article, you should be able to:

- recognize the importance of assessing acute pain in children
- identify the adverse effects of pain in children
- determine the most appropriate pain assessment tool to assess acute pain in an infant or child of any age and stage of development

Pain is defined as 'an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage' (International Association for the Study of Pain, www.iasp-pain.org). This definition was subsequently modified to encompass those who may have difficulty communicating such pain, and now includes the statement that 'the inability to communicate in no way negates the possibility that an individual is experiencing pain and is in need of appropriate pain-relieving treatment'.

Pain is a highly complex and personal experience that has numerous influencing factors, such as previous experience of pain, culture, and social support network. Hence pain is a fluctuating, dynamic experience that has both inter- and intra-individual variance. As a result, children may have trouble in understanding, expressing and communicating about their pain, and their level of emotional and cognitive development can dramatically influence this.

Pain can have both psychological and physiological adverse effects that can occur during the acute phase, with long-term consequences if not appropriately managed. It is of paramount importance to accurately assess and treat pain so as to minimize such potential detrimental adverse effects. It is difficult to treat a modality that is not clearly defined; therefore accurate assessment of pain is crucial to the effective treatment. The effectiveness and adverse effects of treatment must be evaluated at regular intervals, modified as required, and documented.

Assessment of pain

The accurate assessment of pain is multi-factorial and requires a systematic approach. One approach that is recommended is called QUESTT:

Question the child
Use the age and developmentally appropriate pain-rating scales
Evaluate behaviour and physiological changes
Secure parental involvement
Take the cause of pain into account
Take action and evaluate results

QUESTT initiates a structured approach to pain assessment and is self-explanatory, although a few points should be noted. In the ideal situation the child should be questioned before the painful episode occurs to establish the child's expectations, perceptions and previous experiences of pain. This is obviously only possible in the elective scenario and only applies to children of appropriate age and development. This enables the clinician to get an idea of at what level the child thinks they will need pain medications. Furthermore it allows familiarization with specific words that they use for describing pain. The most appropriate pain assessment tool can be determined and explained to the child and parent(s), prior to the painful experience. Involving the family is of great importance, as too are having some knowledge of the child's condition and an understanding of how stressful the whole experience can be for all those involved.

Measurement of pain

Three components of pain assessment in children are self-report, behavioural observation and physiological measures. The most reliable indicator of pain is a combination of all three, known as a multi-dimensional pain assessment.

Self-report is sometimes referred to as the gold standard of assessment as it is the only direct measure of pain.[1] Many self-report pain assessment tools are available (Table 1) and each has advantages and disadvantages. Self-report pain assessment tools should be: appropriate for the child's age and developmental level; practical for use in the clinical setting; reproducible; reliable; valid; transferable between assessors and chosen in

Katherine Brand *MBBS BSc FRCA is a Consultant Paediatric Anaesthetist at the Evelina London Children's Hospital, London, UK. Conflicts of interest: none declared.*

Benjamin Thorpe *MBBS FRCA is a Specialist Registrar in Anaesthesia at the Evelina London Children's Hospital, London, UK. Conflicts of interest: none declared.*

Characteristics of frequently used self-reporting pain assessment tools

Scale	Components	Age range (years)	Pros	Cons	Comments
Wong–Baker FACES	Six faces (0–5), value 0–10	3–18	Easy, quick	Confusion with 'happiness'	Requires paper scale[a]
Faces pain scale revised	Six mature faces (0–5), value 0–10	4–12	Easy, quick	Confusion with 'happiness'	Requires paper scale[a]
Pieces of hurt	Five stones or poker chips	3–8	Simple	Time consuming	Requires pieces[a]
Multiple-sized poker chip	Four poker chips increasing in size	4–6	Simple	Time consuming	Requires chips[a]
Numerical analogue	Verbal scale 0–5 or 0–10	8–18	Easy, quick	Requires numeracy	No props required
Visual analogue	10 cm line, scale 0–5 or 0–10	8–18	Easy, quick, versatile	Requires proportionality	Requires pen & paper[a]
Adolescent paediatric pain tool	Body map drawing and word graphic scale	8–18	Detailed	Time consuming	Requires pen & paper[a]

[a] Adjuncts may have cost, time and infection control implications.

Table 1

collaboration with both the child and the parent/caregiver. Self-report pain assessment tools can be used in children aged 3 years and older. The self-report assessment tool and how to use it should be explained to the child in language that they can understand. If the FACES pain assessment tool is used (Figure 1) you must explain to the child what each face represents (for example point to the smiling face and say that this is a happy face because he/she has no pain or it isn't hurting at all). The child should then be asked to point to the face that best describes how they are feeling at that time. A similar technique can be used to explain the numerical analogue score, however pain assessment involving numbers is more reliable in children who have an understanding of numerical order and value, which is thought to be present at around 8 years of age. Furthermore, during pain assessment the characteristics of the pain must also be sought, such as location, radiation, alleviating and aggravating factors. It is also of value to establish what the child's comfort and functional goals are, so that it is possible for them to perform activities of daily living.

Despite the availability of numerous self-report pain assessment tools there is some debate as to whether they can truly be classified as 'evidence-based'. However, since there are no other pain assessment tools available and because many studies[2,3] have proven the validity, reliability and clinical utility of such tools, their use in paediatric clinical practice should be continued. One criticism of pain assessment tools is that many have not been validated in clinical practice to determine whether they are psychometrically sound. Therefore when utilizing such assessment tools, it should be remembered that all self-report pain assessment tools are highly complex and have numerous intricate psychometric properties.[2]

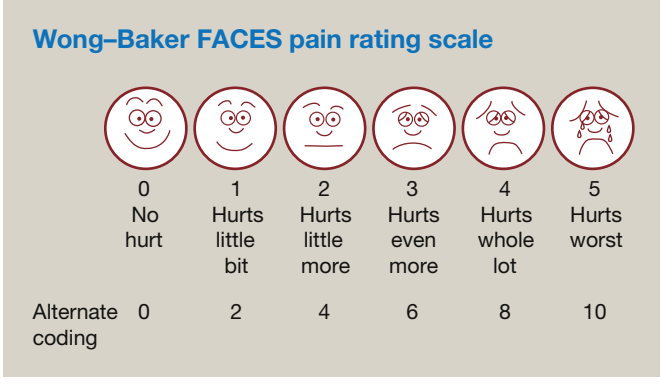

Figure 1

Behavioural observation pain assessment tools are available for use with preverbal or non-verbal children (e.g. PIPP, Premature Infant Pain Profile; NIPS, Neonatal/Infant Pain Scale; CHEOPS, Children's Hospital of Eastern Ontario Pain Scale). **F**ace, **L**egs, **A**ctivity, **C**ry, **C**onsolability (FLACC) is a commonly used observational pain score that assesses five different aspects of the child's behaviour. Each category is ranked on a three-point scale (0–2), resulting in a summary score of 0–10 (Table 2).

The Non-Communicating Children's Pain Checklist-Revised (NCCPC-R) and the Paediatric Pain Profile (PPP) have been developed to aid the assessment and monitoring of pain in children with severe neurological impairment. Children that are unable to communicate their pain via speech are dependent upon their carers for the interpretation of their signs of pain. Such tools have been designed to pick up behaviours that are important indicators of pain. The PPP consists of a 20-item behaviour rating scale each rated on a four-point scale, leading to a score out of 60. A score greater than 14 is associated with moderate-to-severe pain. The NCCPC-R scale observes the child over a 2-hour period and scores 30 behavioural traits, within seven categories, and a sub score greater than seven indicates pain. A specific post-operative version of the NCCPC-R is available.

Much information can be gained from general behavioural observation and should be a component of assessing pain in all age groups and of all neurological ability. It should include body posture, activity, facial expression, consolability and general