Identifying, treating pain in children with neurological impairment
by Julie Hauer M.D., FAAP

A mother brings her 3-year-old with a history of hypoxic ischemic encephalopathy to your office with concerns of crying and persistent agitation. The child has a complex history with various pain sources to consider. Common questions to tackle include: Is this pain? What sources should be considered? What tests should be completed if the exam is negative?

The new AAP clinical report *Pain Assessment and Treatment in Children With Significant Impairment of the Central Nervous System* provides a guide to this complex problem.

**Elevated frequency, severity**

Pain occurs frequently in children with impairment of the central nervous system (CNS). It is greatest in those with severe to profound intellectual disability and Gross Motor Function Classification System level 5, with many patients identified as having weekly to daily pain. This group, often referred to as children with severe neurological impairment (SNI), is the focus of the clinical report from the AAP Section on Hospice and Palliative Medicine and Council on Children With Disabilities. The report is available at [https://doi.org/10.1542/peds.2017-1002](https://doi.org/10.1542/peds.2017-1002) and will be published in the June issue of *Pediatrics*.

**Identifying pain**

Features that indicate pain in children with SNI, referred to as pain behaviors, are well-established. Pain assessment tools have been developed to assist with this process. Features noted on these tools include alterations in muscle tone and body position. It can be challenging to assess the child with spasticity and dystonia. The clinical report helps pediatricians consider when the associated intermittent muscle stiffening, movement and changes in position may be pain behaviors indicating an underlying chronic pain source.

**Causes of acute, chronic pain**

In a child with new onset pain, a comprehensive evaluation for a nociceptive pain source (i.e., pain due to tissue injury or inflammation) is warranted. Children with SNI may have a routine pain source, such as otitis media, as well as greater risk for certain sources, such as a fracture - given the high rate of osteoporosis in children who remain non-ambulatory throughout life.

Neuropathic pain is the other pain category to consider, indicating pain that is due to abnormal transmission of pain signals as a result of injury, dysfunction or altered excitability in the peripheral or CNS. Recurrent episodes in children with SNI may be due to alterations in the CNS, such as impairment of the spinothalamic tract or thalamus causing central neuropathic pain.

When symptoms persist, initial tests can identify when a nociceptive source exists and indicate the problem to treat. Alterations in the CNS that can result in recurrent pain episodes require empirical medication trials given the lack of tests to identify these problems. The clinical report provides guidance on this process, including when to consider a medication trial and thereby minimize excessive medical testing.

**Management**

A trial of gabapentin is a first-line consideration, given information about safety and efficacy. Detailed information about its use is included to guide pediatricians providing a medical home for children with SNI. The role of other medications is discussed.

Copyright © 2017 American Academy of Pediatrics
Hospice/Palliative Medicine, Neurologic Disorders, Neurology, News Articles, AAP Clinical Report

Breakthrough pain episodes should be anticipated given the inability to remove the symptoms generated by the impaired CNS, with guidelines for management provided. Also reviewed are steps to lessen triggers and the use of nonpharmacologic interventions.

To ensure improved comfort throughout life in this vulnerable group of children, the report assists pediatricians with how to do the following:

- recognize behaviors that indicate pain in children with CNS impairment;
- assess for nociceptive sources using history, physical examination and initial diagnostic studies;
- consider alterations in the CNS that can result in recurrent pain episodes;
- utilize an empirical medication trial when pain behaviors persist, following the initial evaluation for a nociceptive pain source;
- manage triggers that can worsen symptoms, including gastrointestinal tract distention;
- use nonpharmacologic strategies;
- develop home care plans that manage breakthrough symptoms; and
- utilize experts when symptoms persist after these initial steps.

Dr. Hauer, a member of the AAP Section on Hospice and Palliative Medicine Executive Committee, is a lead author of the clinical report.