



# PAIN

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## Why Children's Pain Matters

The first Global Day Against Pain on October 11, 2004, focused attention on the worldwide undertreatment of acute and chronic pain. It also called for pain control to be recognized as a major public health issue and human right (Bond and Breivik 2004; Brennan and Cousins 2004). This year, the IASP Global Day Against Pain in Children on October 17, 2005 will focus upon children's pain. There is an urgent need to improve children's pain treatment, both for humanitarian and ethical reasons and because pain affects not only children's health but potentially may contribute to their disability and suffering later in life (Walco et al. 2003; Franck 2002).

The United Nations Convention on Rights of the Child recognizes that children are a vulnerable segment of the population, and are entitled to special consideration in all respects, including health care. Despite this recognition, inadequate prevention and relief of children's pain is still widespread. This failure reflects shortcomings in recognizing children's ability to perceive, respond to, and be harmed by pain; exaggerated fears of the side effects of analgesics and anesthetics in children; and lack of resources to provide training for clinicians and treatments for children.

This issue of *Pain: Clinical Updates* discusses the imperative for the treatment of pain in childhood and provides a summary of some accessible guidelines and resources. It draws upon a Position Statement ([www.iasp-pain.org/GlobalDay-2005.htm](http://www.iasp-pain.org/GlobalDay-2005.htm)) prepared by the Council of the IASP Special Interest Group (SIG) for Pain in Childhood, and is intended to support a year-long effort by the IASP and the SIG to improve the global standard of children's pain management. Although a great deal is now known about the physiology and management of children's pain (McGrath 2005), many barriers hinder the application of that knowledge to clinical care. Research is urgently needed to clarify the many aspects of children's pain and its management that remain poorly understood.

## Children Suffer Pain from Many Causes

Few studies reliably document the prevalence of pain in children. Research on the neurobiology of pain in early development has shown that infants, and children of all ages, have the capacity to perceive pain (Fitzgerald 2005). We must therefore assume that any experience expected to be painful for an adult is likely to cause pain in infants and children. Indeed, many factors increase the impact of pain in children, who are also often exposed disproportionately to pain.

## UPCOMING ISSUES

Visceral Pain

WHO Analgesic Ladder

Pain and Aging

**Everyday pain.** Minor bumps and bruises are very common in children in the course of active play and sport (Fearon et al. 1996). They are usually not medically significant, nor can they all be reasonably avoided, but each episode provides an opportunity for learning about how to cope with pain, either magnifying or reducing the distress (Kuttner 1996; Zeltzer and Schlank 2005).

**Short-term pain** lasting minutes, hours, or days may be caused by illness, trauma, or medical procedures such as immunization, blood tests, and surgery (Finley and McGrath 2001). Equivalently intrusive events are reported to be more painful by younger than by older children (Goodenough et al. 1999). Children are generally unable either to refuse or to rationalize pain-

ful experiences, so they suffer especially from invasive diagnostic procedures. There have been improvements in management of acute pain in some pediatric hospitals and units (Young 2005), but pain management techniques in many centers around the world have not progressed in the past 20 years. Advances in health care, such as new knowledge of pain prevention strategies, have not been consistently translated into decreased prevalence or intensity of pain experienced by children in hospitals (Hain et al. 2001; Ellis 2002).

**Recurrent pain** in childhood arises from complex and multifaceted causes. Stomachaches, headaches, limb pain (“growing pains”), and chest or back pain are experienced occasionally to frequently by up to 30% of children (Perquin et al. 2000). Even

**Table 1.** Selected reviews of children’s pain<sup>a,b</sup>

Topic	Focus; Type of Review (Reference)
Comprehensive reviews	Acute Pain Management for Pediatric patients; Review of Levels of Evidence (National Health and Medical Research Council Australia 2005) Pain in Infants, Children, and Adolescents; comprehensive textbook (Schechter et al. 2003) Acute and Procedural Pain in Infants and Children; book of review chapters (Finley and McGrath 2001) Pain in Neonates; textbook (Anand et al. 2000)
Web-based resources	<a href="http://www.painsourcebook.ca/">www.painsourcebook.ca/</a> <a href="http://www.ich.ucl.ac.uk/cpap">www.ich.ucl.ac.uk/cpap</a> <a href="http://www.aboutkidshealth.ca/PNHome.asp">www.aboutkidshealth.ca/PNHome.asp</a> <a href="http://www.pediadol.org">www.pediadol.org</a> <a href="http://www.enfant-do.net/">www.enfant-do.net/</a> <a href="http://pediatric-pain.ca/links.html">pediatric-pain.ca/links.html</a> <a href="http://www.canadianpainsociety.ca/cont-ang/5liens-intro-page6.htm">www.canadianpainsociety.ca/cont-ang/5liens-intro-page6.htm</a>
Cognitive, behavioral, and physical interventions <sup>c</sup>	Children and adolescents, psychological interventions for chronic pain; critical review (McGrath and Holahan 2003) Children, bone marrow aspiration and lumbar puncture; critical review (Ellis and Spanos 1994) Children, distraction for medical procedures; systematic review (Kleiber and Harper 1999) Children, psychological treatments for procedural pain; systematic review (Powers 1999) Neonates, procedural pain; systematic reviews (Franck and Gilbert 2003; Ohlsson et al. 2000; Stevens et al. 2004) Children, disease-related pain: systematic review (Walco et al. 1999)
Analgesia <sup>c</sup>	Neonates, procedural pain; systematic reviews (Ohlsson et al. 2000; Shah and Ohlsson 2004; Stevens et al. 2004) Neonates, sedation; systematic review (Ng et al. 2003) Infants, regional vs. general anaesthesia for inguinal herniorrhaphy; systematic review (Craven et al. 2003) Infants and children, analgesia for circumcision; systematic reviews (Taddio et al. 2000; Cyna et al. 2003; Franck and Gilbert 2003) Children, analgesia; critical reviews (Berde and Sethna 2002; Howard 2003b; Howard 2003a) Children, pharmacological pain management; systematic review (Maikler 1998; Hollis et al. 2000) Adolescents, paracetamol with and without codeine for postoperative pain; systematic review (Moore et al. 2000) Children, hydromorphone for acute and chronic pain (Quigley 2003)
Specific conditions <sup>c</sup>	Children, laceration repair; systematic review (Farion et al. 2002) Children, psychological treatments for sickle cell disease pain; systematic review (Anie and Green 2002) Children, dietary, pharmacological and psychological treatment of recurrent abdominal pain; systematic reviews (Janicke and Finney 1999; Huertas-Ceballos et al. 2002a,b; Weydert et al. 2003) Children and adolescents, chronic pain; systematic reviews (Eccleston et al. 2002, 2003) Children, arthritis pain; critical review (Anthony and Schanberg 2003) Children, methotrexate for joint pain and mobility; systematic review (Takken et al. 2001) Children and adolescents, headache; review (McGrath and Hillier 2001) Children, palliative care; review (Galloway and Yaster 2000; McGrath and Brown 2003)

<sup>a</sup> Reviews published between 1995 and 2005.

<sup>b</sup> Adapted from Franck LS. Children’s pain: current evidence and future directions for research. *J Nurs Res* 2003; 8(3):330-353.

<sup>c</sup> In addition to reviews published within the comprehensive reviews above.

**Table 2.** Clinical practice guidelines for children's pain<sup>a,b</sup>

Topic	Reference
General	Pain assessment and management (National Association of Neonatal Nurses 2000) Prevention and management of pain and stress in the neonate (American Academy of Pediatrics and Canadian Paediatric Society 2000) Pain assessment and management standards (Joint Commission on Accreditation of Healthcare Organizations 1999) The assessment and management of acute pain in infants, children, and adolescents (American Academy of Pediatrics and American Pain Society 2001) Acute pain management (National Health and Medical Research Council Australia 2005)
Assessment	Recognition and assessment of acute pain in children (Royal College of Nursing 1999) Recognition and assessment of acute pain in children (Royal College of Paediatrics and Child Health 2001)
Analgesia	Safe sedation of children undergoing diagnostic and therapeutic procedures (Scottish Intercollegiate Guidelines Network 2004)
Specific conditions	Acute and chronic pain in sickle cell disease (Benjamin et al. 1999) Chronic abdominal pain (AAP 2005) Guidelines for assistance to terminally ill children with cancer (International Society for Pediatric Oncology 1999) Use of pediatric sedation and analgesia in accident and emergency (American College of Emergency Physicians 1997) Pain in children with cancer (World Health Organization 1998) Cancer, burn dressing change (National Health and Medical Research Council Australia 2005) Pain in osteoarthritis, rheumatoid arthritis, and juvenile arthritis (American Pain Society 2002)
Organizations	Children's National Service Framework (Department of Health 2003) Recognition and assessment of acute pain in children: Audit protocol (Royal College of Nursing 2002) Pain management services, good practice (Royal College of Anaesthetists and the Pain Society 2003) Services for patients with pain (Clinical Standards Advisory Group 2000) Core Curriculum for Professional Education in Pain (Charlton 2005)

<sup>a</sup> Guidelines published between 1995 and 2005.

<sup>b</sup> Adapted from Franck LS. Children's pain: current evidence and future directions for research. *J Nurs Res* 2003; 8(3):330-353.

when such pain seems relatively minor in intensity, it may interfere with school and family life, causing both emotional and financial stress (Hunfeldt 2001). So-called "functional" pains that lack an obvious pathological basis may be caused by subtle neurophysiological dysfunctions that are not easily characterized by everyday medical investigations, and thus are frequently minimized by clinicians (AAP 2005).

**Disease-related and chronic pain.** Pain is the initial symptom of many childhood diseases. Cancer pain is a well-recognized concern in developed countries, and much of the focus of non-governmental organizations worldwide has been in this area (WHO 1998). Many children in the world live in developing countries and suffer an additional burden of pain from malaria, HIV/AIDS, sickle cell disease, and other conditions endemic in poorer countries with inadequate health care resources (Finley and Forgeron, in press). For example, available options to manage sickle cell pain vary significantly from country to country (Gbadoé et al. 1999; Chakravorty et al. 2004).

Some children have diseases such as juvenile arthritis, migraine, and inflammatory bowel disease that cause chronic daily or near-daily pain (McGrath and Finley 1999). Children, like adults, can suffer neuropathic pain from complex regional pain syndrome or peripheral nerve or spinal cord injury.

Children with chronic pain experience high levels of pain-associated disability (Bursch et al. 1998). We still do not fully understand the risk factors for development of chronic pain in childhood, but prior untreated pain must be regarded as a likely candidate. Children's chronic pain affects and is influenced by family factors (McGrath and Hillier 2003). Children with chronic pain may be at higher risk for chronic pain in adulthood (McGrath 1999).

Children with terminal illness experience pain from the cumulative effects of progressive disease, invasive procedures, treatment, and psychological distress. Special challenges arise in managing their pain and the side effects of pain treatment in the home setting (WHO 1998; McGrath and Brown 2003; Galloy and Yaster 2000).

### Developmental Consequences of Early Pain Experience

Pain experience very early in life may influence nociceptive processing over the rest of the lifespan (Fitzgerald 2005). Very low birth-weight infants may spend months in the neonatal intensive care unit, and they are particularly vulnerable to pain from recurring procedures due to the immaturity of their central nervous system and the rapid brain development occurring in the last trimester of fetal life (Anand 2000). Clinical studies suggest that prolonged untreated pain suffered early in life,

independent of morphine exposure, may have long-lasting effects on the individual pattern of stress hormone responses in vulnerable infants (Grunau 2004). These effects may extend to persistent changes in nociceptive processing, with implications for future pain experience (Grunau 2002; Andrews and Fitzgerald 2002; Peters 2005; Schmelzle-Lubiecki et al. 2005). One of the very few studies of the long-term consequences of critical care admission on children found more medical fears and a greater prevalence of symptoms suggestive of post-traumatic stress responses among children who had received a greater number of invasive procedures in the pediatric intensive care unit (Rennick et al. 2002). Infants and children receiving critical care are also at risk for severe abstinence symptoms when analgesics are tapered too abruptly (Franck et al. 2004).

### Detecting When Children Are in Pain

Children’s pain can be difficult to recognize. Children may lack the cognitive ability or vocabulary to relate or describe their pain in a way that their caregivers easily understand. Children use many coping strategies to deal with pain, including play and sleep, that can mislead the untrained observer to falsely conclude the child is not in pain. We have now learned how best to ask young children about their pain, in ways that encourage them to describe what they are feeling and reduce their fear of being subject to more pain such as injections as a result of their disclosure. Many developmentally appropriate pain self-report tools are available for children 4 years of age

and older. Specific assessment tools have been developed to infer pain from behaviors or physical signs in very young or disabled children unable to report their own pain (Finley and McGrath 1998; Franck et al. 2000; Breau et al. 2001; Hunt et al. 2004). If these proven methods of asking children or observing pain signs were used routinely, much of children’s pain could be promptly recognized and effectively treated.

### Treating Children’s Pain

Most pain can be prevented, treated, or at least reduced using inexpensive pharmacological, psychological, and physical techniques (see Table 1). Yet even in developed countries, deficiencies in children’s pain management persist (Ellis 2002; Jacob and Puntillo 2000; Johnston 2005), and it is certain that most children in the developing world receive inadequate pain care.

A substantial body of research shows the effectiveness of cognitive and behavioral techniques, such as information giving, paced breathing, progressive muscle relaxation, hypnosis, and imagery for reducing children’s pain and distress from invasive procedures (Kuttner and Culbert 2003). Despite this evidence, few children and parents are taught anxiety-reducing skills to prevent or reduce pain during and after procedures.

There is broad clinical experience and considerable research on pharmacological treatment for children’s acute pain in pediatric specialty settings in developed countries, although data on chronic pain is sparse. However, this knowledge is

**Table 3.** Suggested priorities for action in the Global Year Against Children’s Pain

Level	Action
Global	Extend educational opportunities for health care providers in under-resourced areas. Where pain relief is limited by drug availability, advocate for improved funding and for reduction of regulatory barriers.
National	Where pain relief is limited by drug availability, advocate for improved funding and for reduction of regulatory barriers. Provide awards to local health care providers who make significant contributions to relief of children’s pain. Encourage public education on pediatric pain. Challenge incorrect public information on pain treatment.
Locally	Adopt policies and standards for pain prevention and relief. Make pain assessment and treatment protocols for best practice accessible to all (see Table 2). Provide distraction supplies (toys, music, videos) together with training in their use in all settings where children undergo painful procedures. Work toward the establishment of interdisciplinary acute and chronic pediatric pain services or access to specialist expertise within all acute medical care settings to provide direct services, expert consultation, and education.
Individually	Ensure regular, developmentally appropriate pain assessment. Ensure a quick response to reports of pain. Provide written and/or pictorial information about pain management to children and parents. Provide training for parents to show them how they can best support their child’s pain relief. Consistently provide behavioral, cognitive, and physical interventions to help children cope with procedural pain. Minimize needle procedures (avoid or combine blood sampling whenever possible). Commit to the use of pain-free routes for giving medication. Whenever possible, administer topical anesthetics for intravenous placement or injection.

applied inconsistently in North America, Europe, and other developed countries, and hardly at all in many low and middle-income countries of the developing world (Forgeron et al. in press).

Health care providers and parents often worry that pain medication will be dangerous for children. In fact, developmental concerns with analgesic treatment are minimal once the neonatal period is past, other than dosing appropriate for the size of the child. There is no evidence that children become addicted to strong opioids that are prescribed appropriately for pain treatment.

### **We Do Have the Ability to Treat or Prevent Most Pain: Why Don't We Do So?**

Proper prevention and management of children's pain are prevented by inadequate education of health professionals and parents about children's pain management, and by a lack of experts to provide consultation and specialist treatment. Research and drug development aimed at improving children's analgesia are limited. In some countries, inexpensive pain drugs are unavailable because of importation or distribution restrictions (Joranson), or else they are not provided in suitable formats. For example, morphine may be supplied only as 30-mg sustained-release tablets, which are generally unsuitable for small children. In other cases, the drugs are available but are used only for cancer pain or palliative care, or only in adults. Pharmaceutical companies must provide suitable pediatric drug preparations, such as topical creams, oral or intranasal sprays, and better-tasting liquids.

### **What Do We Need to Do?**

Children's pain must become a priority for all health care professionals. Health professionals must be trained in pain measurement and treatment techniques that are suitable for infants and children. Individual clinicians caring for children have a responsibility to access and apply currently available research and best clinical practice. Most importantly, consumers (children and their parents) should expect that pain will be assessed and managed. Models of national and institution-wide commitment to pain prevention and management do exist (JCAHO 1999; Weisman 2001), and Table 2 provides references to relevant clinical practice guidelines. Table 3 includes suggestions for individual and institutional action. Health services officials must commit their institutions to prevent and relieve pain whenever possible, wherever it occurs. They must initiate programs to ensure that appropriate medications and nonpharmacological measures are available and that pain is assessed, prevented, and treated. Governments around the world must affirm that children have the right to the best pain management possible, and they must put into place mechanisms to see that this right is realized. They must provide greater funding for research on children's pain, along with systems and resources to translate research findings into practice.

*Children's pain matters—for the child,  
for the family, and for society.*

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*G. Allen Finley, MD, FRCPC, FAAP*  
*Departments of Anesthesia and Psychology*  
*Dalhousie University*  
*IWK Health Centre, 5850 University Avenue*  
*Halifax, NS B3K 6R8*  
*Canada*  
*E-mail: allen.finley@dal.ca*

*Linda S. Franck, RN, PhD, FRCPCH, FAAN*  
*Centre for Nursing and Allied Health Professions Research*  
*Institute of Child Health*  
*Great Ormond Street Hospital*  
*London WC1N 3JH*  
*United Kingdom*  
*E-mail: l.franck@ich.ucl.ac.uk*

*Ruth E. Grunau, PhD, RPsych*  
*Centre for Community Child Health Research*  
*Department of Pediatrics, University of British Columbia*  
*4480 Oak Street*  
*Vancouver, BC V6H 3V4*  
*Canada*  
*E-mail: rgrunau@cw.bc.ca*

*Carl L. von Baeyer, PhD*  
*Departments of Psychology and Pediatrics*  
*University of Saskatchewan*  
*Saskatoon, SK S7N 5A5*  
*Canada*  
*E-mail: carl.vonbaeyer@usask.ca*

**2005**  
**IASP GLOBAL DAY AGAINST PAIN**  
**October 17, 2005 Theme: Pain in Children**

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International Association for the Study of Pain, 909 NE 43rd St., Suite 306, Seattle, WA 98105-6020 USA  
 Tel: 206-547-6409; Fax: 206-547-1703; email: [iaspdesk@iasp-pain.org](mailto:iaspdesk@iasp-pain.org); Internet: [www.iasp-pain.org](http://www.iasp-pain.org) and [www.painbooks.org](http://www.painbooks.org)  
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