AMERICAN ACADEMY OF PEDIATRICS

Committee on Psychosocial Aspects of Child and Family Health

AMERICAN PAIN SOCIETY

Task Force on Pain in Infants, Children, and Adolescents

The Assessment and Management of Acute Pain in Infants, Children, and Adolescents

ABSTRACT. Acute pain is one of the most common adverse stimuli experienced by children, occurring as a result of injury, illness, and necessary medical procedures. It is associated with increased anxiety, avoidance, somatic symptoms, and increased parent distress. Despite the magnitude of effects that acute pain can have on a child, it is often inadequately assessed and treated. Numerous myths, insufficient knowledge among caregivers, and inadequate application of knowledge contribute to the lack of effective management. The pediatric acute pain experience involves the interaction of physiologic, psychologic, behavioral, developmental, and situational factors. Pain is an inherently subjective multifactorial experience and should be assessed and treated as such. Pediatricians are responsible for eliminating or assuaging pain and suffering in children when possible. To accomplish this, pediatricians need to expand their knowledge, use appropriate assessment tools and techniques, anticipate painful experiences and intervene accordingly, use a multimodal approach to pain management, use a multidisciplinary approach when possible, involve families, and advocate for the use of effective pain management in children.

ABBREVIATIONS. AAP, American Academy of Pediatrics; APS, American Pain Society.

INTRODUCTION

An important responsibility of physicians who care for children is eliminating or assuaging pain and suffering when possible. It has been well documented, however, that in this regard a substantial percentage of children have been undertreated.[1] The most common type of pain experienced by children is acute pain resulting from injury, illness, or, in many cases, necessary medical procedures. There is extensive literature that describes how to evaluate and treat acute pain in children using low-cost, widely available, convenient, and safe methods; this information, however, has not been readily applied.

Although this statement focuses on acute pain, it is the obligation of primary care physicians, general pediatricians, pediatric surgeons, and pediatric subspecialists to recognize and address all types of pain, including acute pain, chronic pain, recurring pain, procedure-related pain, and pain associated with terminal illness. The American Academy of Pediatrics (AAP) and the American Pain Society (APS) jointly issue this statement to underscore the responsibility of pediatricians to take a leadership and advocacy role to ensure humane and competent treatment of pain and suffering in all infants, children, and adolescents.

A major aim of pain treatment is to eliminate pain-associated suffering. Pain is an inherently subjective experience and should be assessed and treated as such. Pain has sensory, emotional, cognitive, and behavioral components that are interrelated with environmental, developmental, sociocultural, and contextual factors. Suffering occurs when the pain leads the person to feel out of control, when the pain is overwhelming, when the source of the pain is unknown, when the meaning of the pain is perceived to be dire, and when the pain is chronic.[2] The concepts of pain and suffering go well beyond that of a simple sensory experience.

Barriers to the treatment of pain in children include the following: 1) the myth that children, especially infants, do not feel pain the way adults do, or if they do, there is no untoward consequence; 2) lack of assessment and reassessment for the presence of pain; 3) misunderstanding of how to conceptualize and quantify a subjective experience; 4) lack of knowledge of pain treatment; 5) the notion that addressing pain in children takes too much time and effort; and 6) fears of adverse effects of analgesic medications, including respiratory depression and addiction. Personal values and beliefs of health care professionals about the meaning and value of pain in the development of the child (eg, the belief that pain builds character) and about the treatment of pain cannot stand in the way of the optimal recognition and treatment of pain for all children.[3]

Although the AAP and the APS support the ethical mandate to treat appropriately all pediatric pain and suffering, this policy statement focuses on common acute pain experiences. Most acute pain experienced in medical settings can be prevented or substantially relieved. Comprehensive pediatric care considers all aspects of distress and also should address these aspects in a compassionate, effective, timely, and

The recommendations in this statement do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

PEDIATRICS (ISSN 0031 4005).

multidimensional manner. Anxieties that are experienced by children and other symptoms that contribute to suffering need to be considered in the treatment plan for pain. Effective pain management thus generally involves an interdisciplinary therapeutic approach with a combination of pharmacologic, cognitive-behavioral, psychologic, and physical treatments.

PAIN ASSESSMENT

Health care professionals should anticipate predictable painful experiences and monitor the condition of patients accordingly. To treat pain adequately, ongoing assessment of the presence and severity of pain and the child's response to treatment is essential. Reliable, valid, and clinically sensitive assessment tools are available for neonates through adolescents.[4] In a hospital setting, pain and response to treatment, including adverse effects, should be monitored routinely and documented clearly and in a visible place, such as on the vital sign sheet, to facilitate treatment and communication among health care professionals.

Pain can be assessed using self-report, behavioral observation, or physiologic measures, depending on the age of the child and his or her communication capabilities. Specific measures vary in their validity and usefulness. Accurate acute pain assessment requires consideration of the plasticity and complexity of children's pain perception, the influence of psychologic and developmental factors, and the appreciation of the potential severity and specific types of pain experienced.[5] Because pain is a subjective experience, individual self-report is often favored; however, it is important to be sure that children, particularly those between 3 and 7 years of age, are competent to provide information before their report of location, quality, intensity, and tolerability are accepted. Observation of behavior should be used to complement self-report and can be an acceptable alternative when valid self-report is not available.

When communication is difficult, personal assumption by health care professionals on the meaning of the behavior should be examined carefully. Pain expression reflects the physical and emotional state, coping style, and family and cultural expectations and can be misinterpreted by the health care professional. For example, stoic or depressed children with severe pain may not report or show expected behavioral evidence of the severity of the pain. Pain experienced by children with special health care needs or developmental disabilities may be particularly difficult to assess accurately. Careful and thorough assessments are necessary when communication with the patient may be problematic, as may be the case with children who are cognitively impaired, severely emotionally disturbed, or impaired in sensory or motor modalities. Cultural and language differences between the child and health care professional also require additional care in assessment. When such patients are unable to report pain, credible assessment usually can be obtained from the parent or another person who knows the child well. However, there is a relatively pervasive and systematic tendency for proxy judgments to underestimate the pain experience of others. Physiologic measures should be recognized as usually reflecting stress reactions during acute pain and usually are only tenuously correlated with self-report of pain.

PROCEDURE-RELATED PAIN

The key to managing procedure-related pain and distress is anticipation. The approach to procedural pain varies according to the anticipated intensity and duration of expected pain, the context and meaning as seen by the child and family, the coping style and temperament of the child, the type of procedure, the child's history of pain, and the family support system. Procedures should be performed by persons with sufficient technical expertise or who are directly supervised by individuals with technical expertise so that pain is minimized to the greatest extent possible. Children and parents should receive appropriate information about what to expect and appropriate preparation about how to minimize distress. It is advisable in appropriate situations to have parents present and prepared with specific ways of comforting their children.[6,7]

The treatment approach should be multimodal and meet the child's needs. Depending on the nature of the procedure and characteristics of the child, optimal pain control may be obtained with interventions ranging from deep sedation and anesthesia to strategies aimed at facilitating competent coping with the procedure in ways that enhance self-esteem with little or no pharmacologic support.[8] Cognitive behavioral strategies that involve the use of imagery, relaxation, and self-regulation can provide pain relief independently or in conjunction with other pain management modalities.[1,8] Other complementary approaches, such as massage or use of heat compresses, may be beneficial. Strategies that reduce distress and worry for parents and children have been associated with reductions in children's report of pain sensation and observations of their pain behavior. For each of these approaches, a quiet environment, calm adults, and clear, confident instructions increase the likelihood that the specific pain management strategy selected will be effective.

Local anesthetics and strategies to soothe and minimize distress should be considered even for simple procedures, such as venipuncture. Some common painful minor procedures, such as circumcision, do not always receive the warranted attention to comfort issues. Available research indicates that newborn circumcisions are a significant source of pain during the procedure and are associated with irritability and feeding disturbances during the days afterward.[9–11] Opportunities for alleviating pain exist before, during, and after the procedure, and many interventions are effective.[12–17]

For procedural pain that is predictably severe and for which local measures give inadequate relief, such as for bone marrow aspirations, the use of systemic agents is required to bring pain to acceptable levels. The use of anxiolytics or sedatives alone for painful procedures does not provide analgesia but makes a

child less able to communicate distress. The child still experiences pain during the procedure, and there are no data on the short- or long-term sequelae of this strategy. When it is necessary to use sedation and analgesia for painful procedures, the guidelines issued by the AAP[18,19] should be followed. These guidelines recommend that sedation be conducted in a monitored setting with resuscitative drugs and equipment available and that agents be administered by a competent person. The guidelines stipulate that one person is assigned to monitor the child's condition and another qualified person is present to respond to medical emergencies.

OPERATIVE PAIN AND TRAUMA-ASSOCIATED PAIN

The study of operative and postoperative pain has contributed enormously to the understanding of effective assessment and treatment of pain, and this knowledge can be applied to many other areas of pediatric pain management.[7] Data support the concept that morbidity and mortality can be reduced by good pain treatment.[20] Although there have been sophisticated technologic advances in postoperative pain treatment, such as epidural anesthesia[21–23] and patient-controlled analgesia,[24,25] most postoperative pain in children also can be treated effectively in a simple, cost-effective manner by the pediatrician and other health care professionals without advanced techniques.

Plans for postoperative pain management should be discussed with the family and generated before surgery.[7] Basic elements of pharmacologic treatment include type of analgesic, dose, timing, and routes of delivery. Postoperative pain management encompasses the use of different classes of drugs, including opioids and nonopioid analgesics. Opioids, such as fentanyl citrate, morphine sulfate, and hydromorphone hydrochloride, are indicated to manage moderate to severe postoperative pain. Meperidine hydrochloride, because of metabolic products and adverse effects, is not an opioid of choice for the management of pain.[7,26] The use of other analgesics, such as acetaminophen and nonsteroidal anti-inflammatory agents in combination with opioids, can reduce the amount of opioid required.

Starting doses of analgesics for children are provided in the Agency for Health Care Policy and Research[7] guidelines on acute pain management. Analgesic treatment should include proper dosing according to body weight, physiologic development, and the medical situation. The goal is to control the pain as rapidly as possible, and thus, the starting dose should be optimal and further doses should be titrated depending on patient response. Administration of multiple, small, ineffective doses of analgesic may result in the prolongation of pain, exacerbation of anxiety, and even severe adverse effects of the analgesic, such as respiratory depression.

Early effective treatment is safer and more efficacious than delayed treatment and results in improved patient comfort and possibly less total analgesic administered. Except in extenuating circumstances, medication should not be given intramuscularly, because it is painful and absorption can be variable. Oral administration is preferred for mild to moderate pain. When the child needs immediate pain relief, intravenous administration is indicated when regional routes are not appropriate or readily available. For moderate to severe pain expected to persist, continuous dosing or around-the-clock dosing at fixed intervals is recommended; there are few indications for an as-needed regimen used alone. Dosages and the interval between doses should be adjusted on the basis of assessment of the patient's response.

Addressing the adverse effects of opioid use, such as nausea, vomiting, and pruritus, is important to minimize distress and to ensure that adequate pain management is not compromised. Anticipated common adverse effects associated with prolonged opioid use (eg, constipation) should be prevented or promptly treated. The potential synergistic sedative effects of analgesics, anxiolytics, antiemetics, and antihistamines require ongoing assessment of sedation and analgesia. As the child recovers from painful surgery, the analgesic regimen is changed according to need but generally should not be stopped abruptly. Although there is an increasing trend toward same-day surgery or rapid discharge after surgery, quality research on the effects of these changes from surgical and pain management standpoints is lacking. Formal provisions, including communication with the family, must be made for adequate analgesia at home.

As part of the comprehensive assessment and management of trauma necessitating emergency treatment, pain should be addressed in the emergency department with provisions made for pain management at home. Severe trauma may lead to hospitalization in an intensive care unit, and the management of pain may risk being compromised because of the primary emphasis on life-supporting critical care interventions. In severe trauma, the psychologic effect of the injury and the intensive care unit experience necessitate the optimal treatment of pain to reduce the total burden of suffering. Pain may be attributable to a variety of causes, including the trauma, surgical procedures, restricted movement, underlying disease, and the presence of lines, tubes, and drains.[27] Because of the diversity and complexity of the clinical issues present, pain treatment, including choice of drug, dosage, route, and mode (continuous vs intermittent) of administration, must be tailored to the individual patient and analgesics given in the overall context of what is best for the patient. Communication among caregivers and an interdisciplinary approach are helpful. Attention should be paid to optimizing sleep-wake cycles, because sufficient sleep will enable the child to cope better when awake. Prolonged pain may require use of opioids for an extended duration.[28] Dosages should be adjusted to compensate for the development of physical tolerance, and weaning strategies should be used to minimize or obviate withdrawal symptoms.[29]

ACUTE ILLNESS

Pain associated with acute illness, such as otitis media, pharyngitis, meningitis (headaches), and pelvic inflammatory disease (pelvic pain), also should be addressed. Types of treatment are determined by the severity of the pain and by the particular illness and situation. Pharmacologic intervention may include the use of acetaminophen, nonsteroidal anti-inflammatory drugs, opioids, and locally applied medications. As with other situations that involve pain, nonpharmacologic treatment, such as distraction, relaxation, and physical therapies, also can be used effectively in conjunction with medications.

CONCLUSION

Ample knowledge about pediatric pain exists to treat children humanely and effectively, but it is not universally applied. Multiple sources of information are available, and it is important that pediatricians expand their knowledge base and advocate for the appropriate treatment of pain in children. This may include the institution of and adherence to educational requirements and quality improvement guidelines for the treatment of pediatric pain. Pediatricians are encouraged to advocate for and facilitate the use of services offered through child life programs that can have a dramatic effect in improving psychologic and physical comfort. In many treatment centers, pain is a continuous quality improvement measure and included as a fifth vital sign.

There is need for more research to elucidate further the strategies for optimal pain management and the effect of the pain experience. It is unacceptable that almost no potent analgesics have received approval from the Food and Drug Administration for use in children. Children deserve the benefit of systematic research on the clinical efficacy and adverse effects of such medications.

Treatment of children will improve as pain management education expands and as the issue of pediatric pain is brought into greater public awareness. Education of parents and others in the community who deal with children in pain is an important pediatric issue. When pediatricians consistently make comfort a priority for their patients and help others to treat pain more effectively, the treatment of pain in children will improve.

RECOMMENDATIONS

Opportunities exist for improving pediatric pain management. Pediatricians can facilitate the comfort of their patients by using the following strategies:

1. Expand knowledge about pediatric pain and pediatric pain management principles and techniques.
2. Provide a calm environment for procedures that reduces distress-producing stimulation.
3. Use appropriate pain assessment tools and techniques.
4. Anticipate predictable painful experiences, intervene, and monitor accordingly.
5. Use a multimodal (pharmacologic, cognitive behavioral, and physical) approach to pain management and use a multidisciplinary approach when possible.
6. Involve families and tailor interventions to the individual child.
7. Advocate for child-specific research in pain management and Food and Drug Administration evaluation of analgesics for children.
8. Advocate for the effective use of pain medication for children to ensure compassionate and competent management of their pain.

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Pediatrics 2001;108;793
DOI: 10.1542/peds.108.3.793

PEDIATRICS®
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