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Paediatrics pain management

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Abstract Pain is one of the most common symptoms experienced the world over. It has always received the needed attention and care in the adult but not until recently among children. Several erroneous beliefs contributed to the inadequate attention among children such as assumption that children did not experience pain to the extent that adults do, because of the immature nervous system, or that children would not remember the pain. A paediatrician is expected to be knowledgeable about pediatric pain management principles, provide a calm environment for painful procedures, use appropriate assessment tools and techniques, anticipate painful experiences, use a multimo-

dal approach (pharmacologic, cognitive, behavioral, and physical) to pain management, use a multidisciplinary approach when possible and involve families in creating solutions for their child's pain. Studies have shown that the most common reason for unrelieved pain is failure to routinely assess pain and provide pain relief. The theories, pathways, transmission, regulations, classifications, assessment scales and the treatment of paediatric pain and practical issues that arise from the use of pharmacologic analgesic in the children were also reviewed and highlighted.

Keywords : Paediatrics, pain, management, Scales

Introduction

Pain is a ubiquitous aspect of human experience and epitomizes human suffering. Historically, we have done a poor job of addressing pain especially in children.

In 1979 IASP defined pain as "unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage." Pain from poena-latin means punishment.

Pain is an unpleasant feeling that is conveyed to the brain by sensory neurons. The discomfort signals actual or potential injury to the body. Perception gives information on the pain's location, intensity, and something about its nature.

Historical perspective: Several theories proposed
Straight channel theory: In 1644 Descartes proposed a theory of pain exits from the skin to the brain. During the 19th century, Von Frey theorized that pain pathways move from specialized receptors in body tissues to a pain center in the brain.

Specificity theory: Based on the presence of specialized peripheral receptors rather than a central mechanism of

pain in the brain. This does not explain the phenomenon of phantom limb pain when peripheral receptors no longer exist.

Pattern theory: Proposed in the late 19th century. Pain is the result of stimulation of certain nerve impulses that form a pattern, combine and then dumped into the spinal cord as a lump sum of pain, a process called central summation. However this theory does not account for other factors of pain perception, such as the effect of placebos on pain.

Gate control theory: In 1965, Melzack and Wall published the gate control theory of pain. A mechanism in the brain acts as a gate to increase or decrease the flow of nerve impulses from the peripheral fibres to the central nervous system. An "open" gate allows the flow of nerve impulses, and the brain can perceive pain. A "closed" gate does not allow flow of nerve impulses, decreasing the perception of pain. Although the gate control theory has been widely accepted since the 1970s, it leaves unanswered questions, including chronic pain issues, sex-based differences, stress effects, and the effects of previous pain experiences.

Neuromatrix theory: In 1999, Melzack and Wall presented a newer theory of pain, consistent with the idea of gate control that addresses some of these unanswered questions. This “new and improved” theory, the neuromatrix theory, says that each person has a genetically built-in network of neurons called the “body-self neuromatrix. Just as each person is unique in physical appearance, each person’s matrix of neurons is unique and is affected by all facets of the person’s physical, psychological, and cognitive makeup, as well as his or her experience. Thus, the pain experience does not reflect a simple one-to-one relationship between tissue damage and pain.

Pain Pathways and Transmission

Previously, pain pathways were seen as having three components:-

- A first order neurone (cell body in dorsal root ganglion) which transmits pain from a peripheral receptor.
- A second-order neurone in the dorsal horn of the spinal cord, which axon crosses the midline to ascend in the spinothalamic tract to the thalamus.
- A third-order neurone projects to the postcentral gyrus (via the internal capsule).

This scenario, while partially correct, is now known to be horribly over-simplified. The pathways that carry information about noxious stimuli to the brain, as might be expected for such an important and multifaceted system, are complex. The major pathways are summarized in the following figure which omits some of the less well understood subsidiary routes. Because projections from non-nociceptive temperature-sensitive neurons follow the same anatomical route, they are included in this description, even though they are not part of the pain system. Nociceptors, or pain receptors, are free nerve endings that respond to painful stimuli. Nociceptors are found throughout all tissues except the brain, and they transmit information to the brain. They are stimulated by biological, electrical, thermal, mechanical, and chemical stimuli. Pain perception occurs when these stimuli are transmitted to the spinal cord and then to the central areas of the brain. Pain impulses travel to the dorsal horn of the spine, where they synapse with dorsal horn neurons in the substantia gelatinosa and then ascend to the brain.

Two types of fibers are involved in pain transmission: The large A delta fibers produce sharp well-defined pain, called “fast pain” or “first pain,” typically stimulated by a cut, an electrical shock, or a physical blow. Transmission through the A fibers is so fast that the body’s reflexes can actually respond faster than the pain stimulus, resulting in retraction of the affected body part even before the person perceives the pain.

After this first pain, the smaller C fibers transmit dull burning or aching sensations, known as “second pain.” The C fibers transmit pain more slowly than the A fibers do because the C fibers are smaller and lack a myelin

sheath. The C fibers are the ones that produce constant pain. According to the gate control theory, stimulation of the fibers that transmit non-painful stimuli can block pain impulses at the gate in the dorsal horn. For example, if touch receptors (A beta fibers) are stimulated, they dominate and close the gate. This ability to block pain impulses is the reason a person is prone to immediately grab and massage the foot when he or she stubs a toe. The touch blocks the transmission and duration of pain impulses. Since the mechanosensory pathway ascends ipsilaterally in the cord, a unilateral spinal lesion will produce sensory loss of touch, pressure, vibration, and proprioception below the lesion on the same side. The pathways for pain and temperature, however, cross the midline to ascend on the opposite side of the cord. This pattern is referred to as a dissociated sensory loss and (together with local dermatomal signs; helps define the level of the lesion.

Regulators of Pain

Chemical substances that modulate the transmission of pain are released into the extracellular tissue when tissue damage occurs. They activate the pain receptors by irritating nerve endings. These chemical mediators include histamine, substance P, bradykinin, acetylcholine, leukotrienes and prostaglandins. The mediators can produce other reactions at the site of injury, such as vasoconstriction, vasodilatation, or altered capillary permeability. For example, prostaglandins induce inflammation and potentiate other inflammatory mediators. Aspirin a non-steroidal anti inflammatory medications, and the new cyclooxygenase-2 (COX-2) inhibitors block cyclooxygenase-2, the enzyme needed for prostaglandin synthesis, thus reducing pain. Consequently, these medications are often prescribed for painful conditions due to inflammation.

Fibers in the dorsal horn, brain stem, and peripheral tissues release neuromodulators, known as endogenous opioids that inhibit the action of neurons that transmit pain impulses. β -endorphins and dynorphins are types of natural opioid-like substances released, and they are responsible for pain relief. Endorphins are the modulators that allow an athlete to continue an athletic event after sustaining an injury. Endorphin levels vary from person to person, so different persons experience different levels of pain. This endogenous opioid mechanism may play an important role in the placebo effect. A placebo is an inactive substance or treatment used for comparison with “real” treatment in controlled studies to determine the efficacy of the treatment under study. Despite the lack of any intrinsic value, placebos can and do produce an analgesic response in many persons. Placebo analgesia can affect nociceptive mechanisms in the cortex of the brain and descending pathways of the spinal cord.

Classification of Pain

Pain can be divided into (A) *nociceptive* (B) *neuropathic* (C) a *mixture* of these

two types. Pain can also be divided into *acute* or *chronic*.

Nociceptive pain: In this type of pain, so-called 'nociceptors' play a central role. Nociceptors are the receptors of sensory neurons that are located in the skin, mucosa or internal organs. Pain arises when these receptors are activated by a possibly damaging stimulus. Different types of nociceptors perceive different types of stimuli, and these include; *thermal* nociceptors activated by noxious heat or cold; *mechanical* nociceptors notice excess pressure or deformation; *chemical* nociceptors are sensitive to chemical substances.

Nociceptive pain can be further divided according to the part of the body into: Somatic pain which originates from bones, muscles, tendons or blood vessels and is often known as musculo-skeletal pain, usually sharp, well-localized can be reproduced by touching or moving the involved area usually of longer duration. Cutaneous pain is due to injury of the skin or the superficial tissues usually well-described, localised pain of short duration e.g. paper cut, minor burns. Visceral pain originates from the internal organs of the body's cavities such as thorax (heart and lungs), abdomen (liver, kidneys, spleen and bowels) and pelvis (ovaries, bladder and womb). Visceral pain is more aching, vague and often difficult to localise, usually of longer duration sometimes colicky or cramping such as gastro-intestinal spasms.

Neuropathic pain: This pain type follows damage to the central or peripheral nervous system. There are no specific receptors involved and pain is generated by nerve cell dysfunction. Chronic, often intractable pain due to injury to the peripheral nerves is known as neuropathic pain. According to Devor and Seltzer, this pain is a paradox. Injury to peripheral nerves should deaden sensation, much as cutting a telephone wire leaves the phone line dead, but the opposite occurs in neuropathic pain. Injury to the peripheral nerves can cause spontaneous paresthesias, numbness, pain with movement, tenderness of a partly denervated part and pain that is electric shock-like, burning, shooting, or tingling. Types of neuropathic pain include-

- **Peripheral neuropathy:** means that the peripheral nerves are not working properly. It is usually the result of an injury to or a disease process, such as diabetes associated with loss of function in the nerve. Often starts in the hand and feet, and tends to affect the body symmetrically.
- **Entrapment of nerve:** pinched or trapped nerve due to compression in the spine or elsewhere in the body, such as elbow, shoulder, wrist or foot.
- **Phantom limb pain:** sensation of pain from a limb that has been lost or from which no longer physical signals are being received, reported after amputation or in quadriplegics.
- After amputation of a limb, a patient may experience painful sensations in the missing limb. As many as 70% of amputees report this phantom limb pain, and usually within the first week after

amputation.

- **Chronic central neuropathic pain:** can follow traumatic spinal cord injury or diseases of the brain itself, like stroke.
- Other causes

Mixed pain: In this type of pain both nociceptive and neuropathic pain mechanisms are involved. For instance in cancer pain, the pain can be due to the tumour causing inflammation of tissue around the tumour (nociceptive) and causing entrapment of a nerve (neuropathic). Also chronic low back pain is often a combination of nociceptive and neuropathic pain. The back itself may hurt with a constant aching (nociceptive pain) and there may be additionally sudden burning and hurting sensations extending into the legs, which are called sciaticae and are of neuropathic origin.

Other classifications include

Acute Pain: Everyone have experienced acute pain. Bee stings, bumped knees, and bone fractures are simple examples. Most acute pain serves a clear purpose: some problem needs to be addressed It is practically automatic. Acute pain is characterized by help-seeking behavior. In most cases people cry out and move about in a very obvious manner. Physiologic responses to acute pain include tachycardia, tachypnea, and sweating due to discharge in the sympathetic nervous system. It is easy to recognize and empathize with acute pain. We wince if we see severe, acute pain and respond with our own "sympathetic" discharge.

Chronic Pain: Chronic pain is very different from acute pain. It serves no biological purpose. While the suffering engendered may be as great as is that in acute pain, it is subjectively experienced and objectively displayed in a very different way. For reasons not well understood, chronic pain is characterized by physical and mental withdrawal.

Pain in Children

Until the 1970s, pain in children was ignored in health care research. The common assumption was that children did not experience pain to the extent that adults do, because of the immature nervous system, or that children would not remember the pain. Consequently, children were often under-medicated or not medicated at all for pain. This practice continued until the late 1980s, when changes began to occur in pain management in infants and children as a result of research, consumer demands, and legislation to promote development of drugs for these patients. Substantial evidence now indicates not only that children experience pain but that the pain experience may have long-term adverse consequences perception. The misperception that infants have immature nervous systems and therefore do not feel pain is still common. All nerve pathways necessary for pain transmission and perception are present and functioning by 24 weeks' gestation. Research in both animal models and human newborns confirms that a lack of analgesia

for pain causes “rewiring” in the nerve pathways involved in the transmission of pain. Consequently, an infant or child who experiences pain once will have greater pain perception during later painful experiences. Taddio *et al* found that babies who did not receive analgesia or anesthesia during circumcision later had greater behavioral and physiological disturbances during immunization.

Another common myth is that children do not experience chronic pain. Indeed, children do experience chronic pain syndromes such as: complex regional pain syndrome, as well as acute forms of pain related to chronic conditions such as sickle cell anemia. They also experience various forms of recurrent pain, most commonly headache, abdominal pain, back pain, chest pain, and limb pain. Surgical interruption of a particular tract to abolish chronic pain is not usually effective; the pain, although initially alleviated, tends to return. Indeed, there is often no completely successful treatment for these unfortunate patients.

Development of pain apparatus: The neural progression of pain transmission begins with the development of skin and mouth sensory neurons by the end of the first 2 wk of gestation. There is a progression in the growth of the neural apparatus involved in pain transmission throughout fetal development until the appearance of the beginning of the pain inhibitory apparatus, starting at approximately 32 week of gestation and continuing into the newborn period.

Sources of Pain: Repeated heelsticks, indwelling catheters, necrotizing enterocolitis, nerve injury, thrombophlebitis. Almost all children with a diagnosis of cancer will experience pain from illness or a procedure. More than 70% suffer from severe pain at some point in their illness experience.

Myths about pain in children

Infants cannot feel pain because their nervous system is immature. The true situation is that there is considerable maturation by 26 weeks of gestation; nociceptive pathways to the central nervous system are myelinated by about gestation 30 weeks. Descending inhibitory pathways develop later than afferent excitatory pathways. Extremely pre-term infants can localize and withdraw from noxious stimuli. Neonates exhibit behavioral, physiological and hormonal responses to pain.

An active or sleeping child is not in pain. The true situation is that pain may result in “exhausted” sleep. Children may read, play or watch TV to distract themselves from the pain. Children are particularly good at using distraction as coping mechanism.

Children always tell the truth about pain. This may not be true because children are scared of injections. Younger children may feel that pain is a punishment for doing something wrong. Onset of pain may be gradual so the child does not realize they have pain until it has

been alleviated. Fear of what will happen next.

Children cannot describe and locate their pain. McGrath reports children as young as 18 months being able to report their pain verbally and localize it. Children as young as three years old have used self-report tools to describe and locate their pain. Children can demonstrate on an outline of the body where they hurt without knowing the names of the body parts.

Clinical Assessment of Pain

Pain is both a sensory and an emotional experience. In older children, the character, location, quality, duration, frequency, and intensity of their pain can be assessed. Behavior and physiologic signs are useful, but can be misleading. A child who is experiencing significant chronic pain may play “normally” as a way to distract attention from pain. This coping behavior is sometimes misinterpreted as evidence of the child “faking” pain at other times. Investigators have devised a range of behavioral distress scales for infants and young children, mostly emphasizing the patient’s facial expressions, crying, and body movement. In assessing a child’s pain, a measuring tool must take into account: child’s age, cognitive level, type of pain, situation in which the pain is occurring, no single measure is useful for all children with all types of pain.

Behavioral Observational Scales

The primary method of pain assessment for infants, children aged less than three years, and developmentally disabled patients.

CRIES: Assesses Crying, Oxygen requirement, Increased vital signs, facial expression, Sleep

FLACC: Face, Legs, Activity, Crying, Consolability scale has been validated from two months to seven years. FLACC uses 0-10 scoring.

NIPS: Neonatal Infant Pain Scale

SUN: Scale for Use in Newborns

CHEOPS: Children’s Hospital of Eastern Ontario Scale. Intended for children aged one to seven years.

Faces: Children aged three years and above can rank their pain using one of several validated scales including the Wong-Baker Faces scale, Biering-Modified, and Oucher scale.

Self-report is the gold standard in the assessment of pain intensity.

Visual pain scale: This includes the colour and other analog scales: Horizontal or vertical ruler, on which increasing intensity of red signifies more pain. These scales are easy to use, are efficient, and offer values of pain intensity that can be statistically analyzed to determine the efficacy of a pain treatment intervention.

Several questionnaires have been developed for children with chronic or persistent pain. These include:

- Varni-Thompson Pediatric Pain Questionnaire.
- Children’s Comprehensive Pain Questionnaire.
- Autonomic measures (e.g., heart rate, blood pressure, heart rate spectral analyses).

- Hormonal-metabolic measures.

Interventions For Pain Management

These include non-pharmacological and pharmacological interventions.

Non-pharmacologic interventions: These approaches have excellent safety profiles and increasing evidence of effectiveness. Adopt a child-centered approach (listening to the needs of the child and family) rather than a procedure-focused “get-it-over-with” approach. Use the least invasive equipment where possible. Ensure that the person performing the procedure has appropriate technical expertise, or is closely supervised by someone who does. Optimize waiting time: too little time increases distress but too much time increases anticipatory anxiety. Time required for preparation is child-specific. Ensure that the development of anticipatory anxiety is prevented as far as possible by maximising the intervention to alleviate pain and distress for the first procedure.

Area of emphasis for intervention:

Neonate/ infant- Sensory	Toddler-Sensory
Preschooler-Sensory/ Behavioral	School Age-
Sensory/ Behavioral/ Cognitive	
Adolescent-Sensory/ Behavioral/ Cognitive	

- **Techniques:** Neonate/ infant: Positioning, swaddling, rocking/ cuddling, touch/ massage, dim lighting, visual distraction, sucking and sucrose/ water solution on pacifier.
- **Toddler:** Distraction devices (toys/ music/ videos, security object (blanket/ toy/ stuffed animal), pacifier, touch/ massage, hugging/ holding, Imagery, play, positioning, heat/ cold application.
- **School age:** Heat/ cold application, touch/ massage, play therapy, humour, distraction devices (music/ videos/breathing techniques), positioning, exercise, hugging/ holding, imagery.
- **Adolescent:** Hypnotherapy, heat/ cold application, relaxation techniques, humour, breathing techniques, prayers, distraction (especially music/ videos), yoga.

Pharmacological Management: The general principles of newborn physiology and its effects on the pharmacology should be taken into consideration. Most analgesics are conjugated in the liver hepatic enzyme systems, which mature at varying rates over the first one to six months of life. The glomerular filtration rates are diminished in the first week of life, and newborns have a higher percentage of body weight as water and less as fat compared with older patients. Newborns, and especially premature infants, have diminished ventilatory responses to hypoxemia and hypercarbia.

Pain management with pharmacological intervention involves understanding of the pediatric doses, use of the analgesic ladder, keep the approach simple and consistent, use the oral and sublingual route in most cases, work with the child and the family to choose medication

to ensure compliance.

Commonly used analgesics include acetaminophen, NSAID (e.g. diclofenac, ibuprofen), codeine, pentazocine and morphine.

Acetaminophen 10–15 mg/kg per oral q4 hourly. Has anti-inflammatory action; no antiplatelet or gastric effects; toxic dosing can produce hepatic failure.

Aspirin 10–15 mg/kg per oral q4 hourly. Anti-inflammatory effects; prolonged antiplatelet effects; can cause gastritis; risk of Reye syndrome.

Opioids are administered for moderate and severe pain.

Routes: oral, rectal, oral transmucosal, transdermal, intranasal, intravenous, epidural, intrathecal, subcutaneous, or intramuscular route.

Practical Aspects of Prescribing Opioids: Morphine is typically regarded as the first choice for severe pain. The right dose is the dose that relieves pain with a good margin of safety. Dosing should be titrated and individualized. There is no “right” dose for everyone. Anticipate and treat peripheral side effects, including constipation, nausea, and itching. Give doses at sufficient frequency to prevent the return of severe pain before the next dose. After opioid dosing for more than one week, it should be tapered gradually to avoid withdrawal symptoms.

Tolerance: refers to decreasing effect on continued administration of a drug or the need for increased dosing to achieve the same effect.

Dependence: refers to the need for continued opioid dosing to prevent withdrawal symptoms (irritability, agitation, autonomic arousal, nasal congestion, piloerection, diarrhea and/or jitteriness; and in neonates yawning).

Addiction: refers to psychological craving with compulsive drug-seeking behavior. Opioid under-dosing does not prevent addiction and may increase drug-seeking behavior for relief of pain; good pain relief takes the focus off opioids.

PRN versus Regular dosing: It has been shown that when analgesic medications are given regularly on a schedule, the cumulative dose of analgesia required is less than that required when pain medications are given prn. The reason is that by the time the patient asks for the medication, a higher dose is required to alleviate the pain.

Patient controlled analgesia (PCA)/ Nurse controlled analgesia (NCA): Children as young as six to seven years of age can independently use the PCA pump to provide good pain relief. Patient controlled analgesia refers to intravenous administration of analgesia, using a programmed pump. The pump may be programmed to give continuous medication with the ability for the patient to self-administer bolus increases, or it may be programmed only for bolus administrations. It is programmed to permit a maximum dose, so as not to cause

over sedation.

Psychotropic Medications in Pain Management:

Children and adolescents with chronic pain with no identified cause, as well as those with identified medical causes of pain, have significantly more psychiatric disorders than healthy children. These include depression, sleep anxiety disorders, including generalized anxiety disorder, separation anxiety, post-traumatic stress disorder and panic disorder. This increase in co-morbid psychiatric disorders may be explained by the disruption of the serotonergic and noradrenergic systems that are the common pathways in both pain disorders and psychiatric disorders. Psychotropic medications should be used with caution. Allow the child to participate effectively in therapies and return to normal activity as soon as possible. Side effects should be specifically addressed

Antidepressant Medications: Useful in adults with chronic pain, including neuropathic pain, headaches, and rheumatoid arthritis. However, limited clinical trials have been done in children. Tricyclic anti-depressants (TCAs) have been most studied with relation to chronic pain in children and have been found effective in pain relief for symptoms including neuropathic pain, functional abdominal pain, and migraine prophylaxis. It is effective in the treatment of sleep disorders, which frequently accompany pediatric pain syndromes.

Side effects: Cardiotoxicity, discontinuation syndrome including agitation, sleep disturbances, appetite changes, and gastrointestinal symptoms. These medications should be tapered slowly.

Serotonin Reuptake Inhibitors (SSRIs): Have demonstrated modest improvement in the treatment of a variety of pain syndromes in adults, leading to a supposition that noradrenergic pathways are more significant in the treatment of pain than serotonergic pathways. SSRIs are indicated when symptoms of depressive or anxiety disorders are prominent. These medications have a less severe side effect profile than TCAs, with common side effects largely transient. These include gastrointestinal symptoms. They should also be tapered over a week course.

Anticonvulsants: Traditional anticonvulsants, such as carbamazepine and valproic acid, are believed to relieve chronic pain by blocking calcium channels at the cellular level and suppressing the hypersensitive sensory fibers without affecting normal nerve conduction. Anticonvulsants are useful in patients with mood disorders and neuropathic pain.

Benzodiazepines: Benzodiazepines are anxiolytic medications that have anticonvulsant and muscle relaxant effects. Clonazepam, a long-acting benzodiazepine, has demonstrated efficacy in neuropathic pain. These medications are most appropriate in acute situations because dependence, tolerance, and withdrawal may occur with prolonged use. These medications are most appropriate in acute situations because dependence, tolerance, and withdrawal may occur with prolonged use.

Antipsychotics: Low doses of antipsychotic medications are often used to address the severe anxiety and agitation frequently associated with chronic pain in youth. Adverse events associated may be severe.

Responsibility of the Paediatrician

Become knowledgeable about pediatric pain management principles.

- Provide a calm environment for painful procedures.
- Use appropriate assessment tools and techniques.
- Anticipate painful experiences.
- Use a multimodal approach (pharmacologic, cognitive, behavioral, and physical) to pain management.
- Use a multidisciplinary approach when possible.
- Involve families in creating solutions for their child's pain.

Institutional Responsibilities: The institutional process of acute pain management begins with the affirmation that children should have access to the best level of pain relief that may be safely provided.

Pain relief, a privilege or a right?

The fundamental principle of responsible medical care is not "do not hurt" but "do no harm". Harm occurs when the amount of hurt or suffering is greater than necessary to achieve the intended benefit.

The assessment and treatment of pain in children are important parts of pediatric practice, and failure to provide adequate control of pain amounts to substandard and unethical medical practice.

Nursing Management of Pain

Pain is an unpleasant sensory or emotional experience associated with actual or potential tissue damage, or described in terms of such damage. Pain is always subjective. It helps a child avoid more injury by warning him of the presence of a harmful thing.

Signs and symptoms of pains: Pain may be known by observing behavioral changes, expression by verbal or visible discomfort such as crying, agitation, tachycardia, hypertension, and tachypnea. Not changing position very often to avoid the pain or positioning ones' body in a way that it will not hurt. Weight loss may occur due to poor feeding, restlessness, they are not comfortable, and move around a lot due to pain. The child tends to pull the part of his body that is hurting away from touch or gets upset at being touched. Sleeps more or sleeps less than usual. Self focusing and touches, tugs, rubs, or massages the part of his body that is painful. There is educed interaction with other siblings and people. Hyperthermia or hypothermia

Pain scale: These include

Body outline tool: A child marks an X or colors the painful area on a drawing of a child's body. Different

colors can be used to quantify the pain.

Colored analog scale: Colors are assigned for most or worst hurt, a little less hurt, or no hurt. A number can also be placed on each color.

Facial Expression Pain Scale: This scale consists of 5 to 9 faces, ranging from happy or neutral (no pain) to sad or distressed. Scales may vary in the number of faces, but six faces are usually used. A child may tell how much pain he has by pointing on the face he chooses. Scores are easily compared to a visual analog pain scale.

Oucher scale: A vertical numerical scale from 10 to 100 for children who can count. The numbers have a corresponding vertical picture scale of expression of no hurt to worse hurt.

Poker chip tool: Four poker chips are used. One chip represents a little hurt and four chips is the most hurt a child could experience.

Visual analog pain scale: This is a 10 centimeter line scale with one end marked no pain and the other end worst pain. This method may be used in children as young as seven years old.

The Children's Hospital of Eastern Ontario Pain Scale (CHEOPS): Is based on observation of child behavior by physicians or nurse. The scale assigns a point score to 6 categories of behavior and the total score is supposed to correlate with pain. It's not too reliable. Note: crying can be caused by pain, hunger, frustration, restraints or anxiety.

The objective pain scale combines physiologic and behavioral parameter. The ability to calm the child is important when using this scale.

Pain Management

Pharmacologic

Non-Steroidal Anti Inflammatory Drugs (NSAIDs) eg acetaminophen, ibuprofen: It is used for mild to moderate pain control, such as pain coming from a pulled tooth. It may also be used in controlling pain after surgery.

Opioid Analgesics: These medicines may include oral liquid morphine. It may be taken every 4 to 6 hours (including break through dose) for mild to moderate pain. Morphine is given to provide longer control of pain.

Anesthesia: Anesthesia is numbing medicine to control pain and make the child comfortable. This works by blocking the pain signals from the nerves eg xylocaine in scorpion bites.

Patient controlled analgesia (PCA): A device is used to give a child pain medicine e.g. in SCD. This device has an electric pump connected by a tube to an IV line.

The IV tube is placed in a child's vein usually in the arm. The child receives medicine from the pump through the tube when he is in pain.

Non Pharmacologic Intervention: A few of the most useful methods in children are:

Use of heat or cold compress, distraction (music, video games, TV, stories, blowing bubbles, puzzles), relaxation (breathing exercises, rocking chair), massage (bed bath, gentle back rub, lotion), rest (dimming lights and reducing noise, encouraging sleep), changing position (use of pillows, sitting up), imagination (creating stories and drawing pictures).

Gathering information about the pain can provide information about the extent of the pain. Assess for signs and symptoms associated with pain such as fatigue, decreased appetite, weight loss, changes in body posture, sleep pattern disturbance, anxiety, irritability, restlessness, or depression. Perform a comprehensive assessment of pain to include location, characteristics, onset, duration, frequency, quality, intensity or severity, and precipitating factors of pain. Consider cultural influences on pain response (e.g., cultural beliefs about pain may result in a stoic attitude). Reduce or eliminate factors that precipitate or increase pain experience (e.g.fear, fatigue, monotony, and lack of knowledge).

Teach the use of non pharmacologic techniques (e.g., relaxation, guided imagery, music therapy, distraction, and massage) before, after, and if possible during painful activities; before pain occurs or increases; and along with other pain relief measures. This can increase the release of endorphins and enhance the therapeutic effects of pain relief medication. Simple relaxation therapy is ingenious with nurses to produce relaxation such as yawning, deep breathing, abdominal breathing. Individualize the content of relaxation by asking the child what the child loves to do when relaxing.

Research shows that the most common reason for unrelieved pain is failure to routinely assess pain and pain relief. Evaluate the effectiveness of analgesic at regular, frequent intervals after each administration and especially after the initial doses. Ongoing evaluation will assist in making necessary adjustments for effective pain management. Observe for any signs and symptoms of adverse reaction effects (e.g., respiratory depression, nausea and vomiting, dry mouth, and constipation). Documentation facilitates pain management by communicating effective and non effective pain management strategies to the entire health care team.

Ensure as a nurse that the drug is the: right drug, right route, right dosage, right client, right frequency.

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