

DRAWINGS OF MY PAIN



EDITED BY:

Clara Abadesso

AUTHORS:

Alexandra Oliveira

Ana Pedro

Ananda Fernandes

Catarina Melancia

Clara Abadesso

Daniel Lanzas

Elsa Santos

Luísa Marote

Rosa Amorim

DRAWINGS OF MY PAIN

Children of all ages feel pain.

*It's important
to treat pain in children!*



João Pedro Coelho Cruz, 10 years old

Preface

The pain of newborns, children and adolescents is a concern which applies across borders. Throughout the world, the multidisciplinary scientific and clinical practice community dedicated to the study and treatment of pediatric pain is growing.

However, despite the tremendous advances in the last 30 years, pediatric pain management is still insufficient and asymmetrical. Many practices still need to be changed to meet what scientific studies have already shown to be effective in the prevention and treatment of acute and chronic pain in children of all ages and conditions.

Therefore, we salute the initiative of the Portuguese Association for the Study of Pain (APED) for adding this publication to the exhibition “Drawings of My Pain”, contributing to the awareness and education of the public, children and parents, and encouraging the improvement of professionals dealing with children.

Ananda Fernandes

President of the Special Interest Group Pain in Childhood,
International Association for the Study of Pain (APED), Portugal.

TITLE:

Drawings of My Pain

EDITED BY:

Clara Abadesso, MD

AUTHORS:

Alexandra Oliveira

Ana Pedro

Ananda Fernandes

Catarina Melancia

Clara Abadesso

Daniel Lanzas

Elsa Santos

Luísa Marote

Rosa Amorim

PROJECT DIRECTOR:

M. Teresa Egídio Vilhena de Mendonça

SCIENTIFIC ILLUSTRATION:

Fernando Vilhena de Mendonça

LAYOUT AND GRAPHIC DESIGN:

Círculo Médico 2018



The contents of this work are the sole responsibility of the authors. No illustration may be used or reproduced without the express permission of the authors. No part of this publication may be reproduced without the express permission of the authors. This publication wouldn't have been possible without the support of:

bene
farmacêutica

LIFE IS MORE LIFE, WITHOUT PAIN

The opinions expressed in this book do not necessarily reflect the views of bene Pharmaceutical, but only those of the authors. Bene Pharmaceutical is not responsible for the up-to-dateness of the information, for any errors, omissions or inaccuracies.

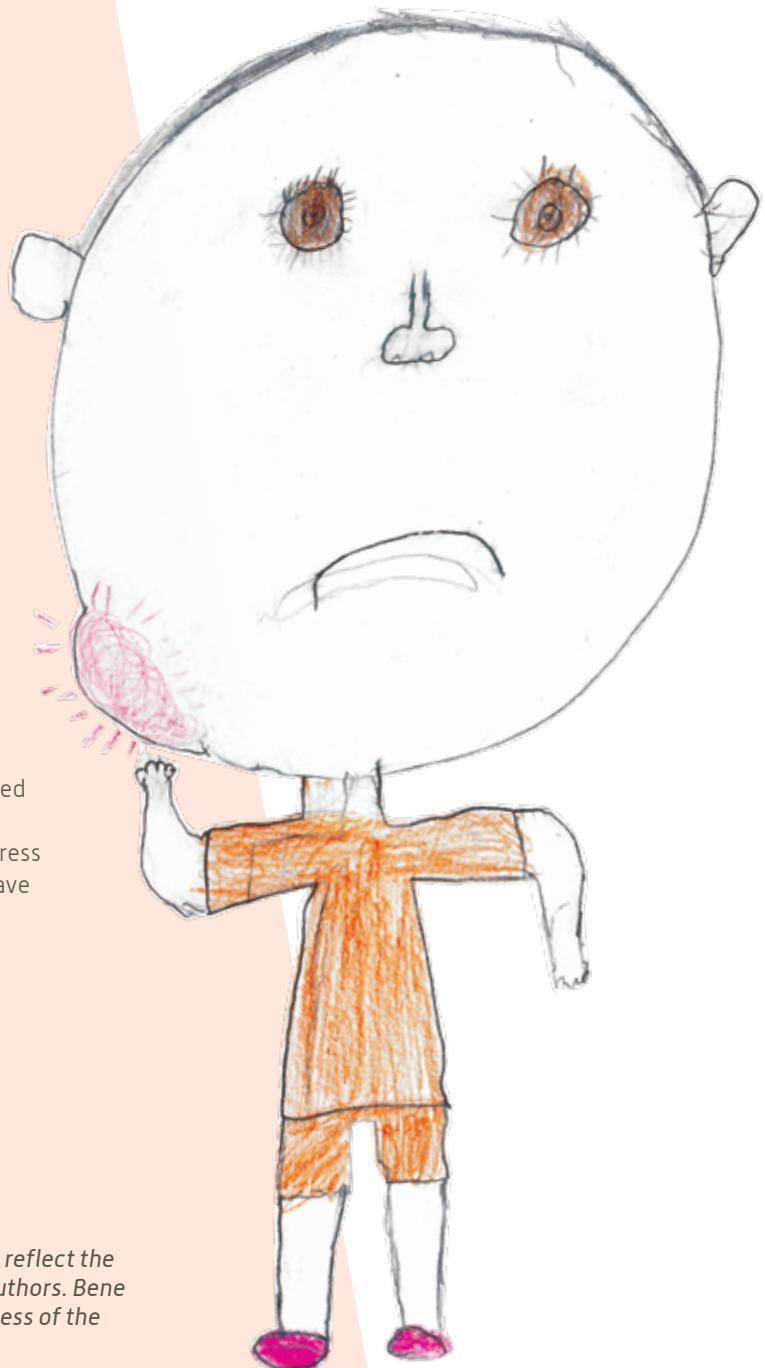
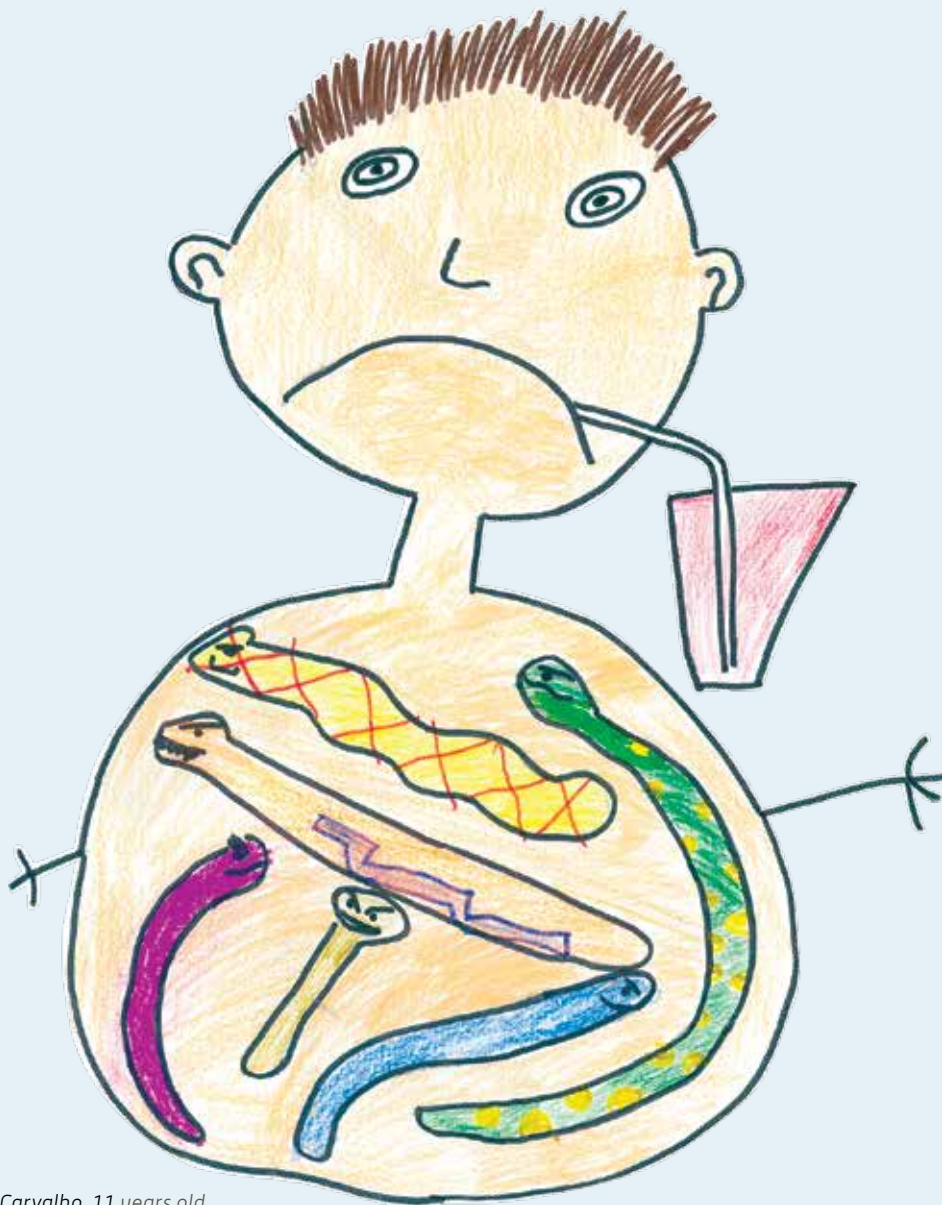


Table of Contents

■ Introduction	9
■ What is pain?	10
■ Physiology and types of pain	12
■ Rights of the children to the treatment of pain	14
■ Evolution of pediatric pain management	16
■ Pediatric pain management - evolution in Portugal	18
■ Behavioral responses to pain	20
■ Pain assessment in pediatrics	22
■ Non-pharmacological pain management - physical interventions	24
■ Non-pharmacological pain management - psychological interventions	26
■ Comfort positioning	28
■ Pharmacological treatment of pain	30
■ Treatment of pain during medical procedures	32
■ Pain during medical and surgical procedures - common situations	34
■ Pain in the newborn	36
■ Vaccination pain	38
■ Post-surgical pain	40
■ Pediatric Chronic Pain	42
■ The ideal pediatric pain unit	44
■ Myths and facts about pediatric pain	46
■ "I'm Going to Draw My Pain" contest	48
■ Excellence in pain education	50



DRAWINGS OF MY PAIN

Introduction

Pain relief is a children right, a duty of the health professionals and a quality indicator of the health services.

Over the past 30 years, scientific research has brought to light the long-term negative effects (biological, psychological and social) of under-treated pain in children. New therapeutic resources have emerged and the effectiveness of multiple interventions highlighting the multimodal approach to pain management has been demonstrated. Although knowledge in recognizing, preventing, and treating pain has evolved, its implementation is still very uneven, and as a result, children still suffer unnecessarily.

In this joint effort to share knowledge and training of professionals, the Portuguese Association for the Study of Pain (APED), has been promoting the study, teaching and awareness of pathophysiological mechanisms, prevention, diagnosis and therapy of pain, according to the parameters established by the International Association for the Study of Pain (IASP) and by the World Health Organization (WHO).

APED developed an exhibition about pain in childhood (“Drawings of My Pain”), integrating on it some children’s drawings from the APED contest “I’m Going to Draw My Pain”.

The exhibition combines an educational and informative component addressed to the general public and health professionals, in order to draw attention to the issue of pediatric pain.

The exhibition was launched in October 2017 (National Day Against Pain), has been running the hospitals of Portugal during 2018 (IASP Global Year for Excellence in Pain Education, centering public and professionals’ education) and will continue through 2019.

The correct approach to pain in children and adolescents is very important and involves evaluation, prevention and treatment, which includes much more than drugs. There are multiple non-pharmacological and pharmacological interventions that should be implemented day-to-day in health services to mitigate children’s pain.

From the exhibition comes this book that retains, and underlines how much has to be done to improve pain management in child and to teach parents and caregivers how they can help and collaborate. It also intends to reinforce the need for the institutional commitment that must exist in order to ensure the conditions for a correct and complete approach to pain in children and adolescents in daily practice.

The English version of the book comes out in 2019, which is IASP Global Year Against Pain in the Most Vulnerable, working to reduce pain and needless suffering, for all children, as they are a vulnerable segment of the population.

Clara Abadesso
Coordinator of the Child and Adolescent Pain Working Group of the APED

**Children
of all ages
feel pain.**

**It’s important
to treat pain
in children.**

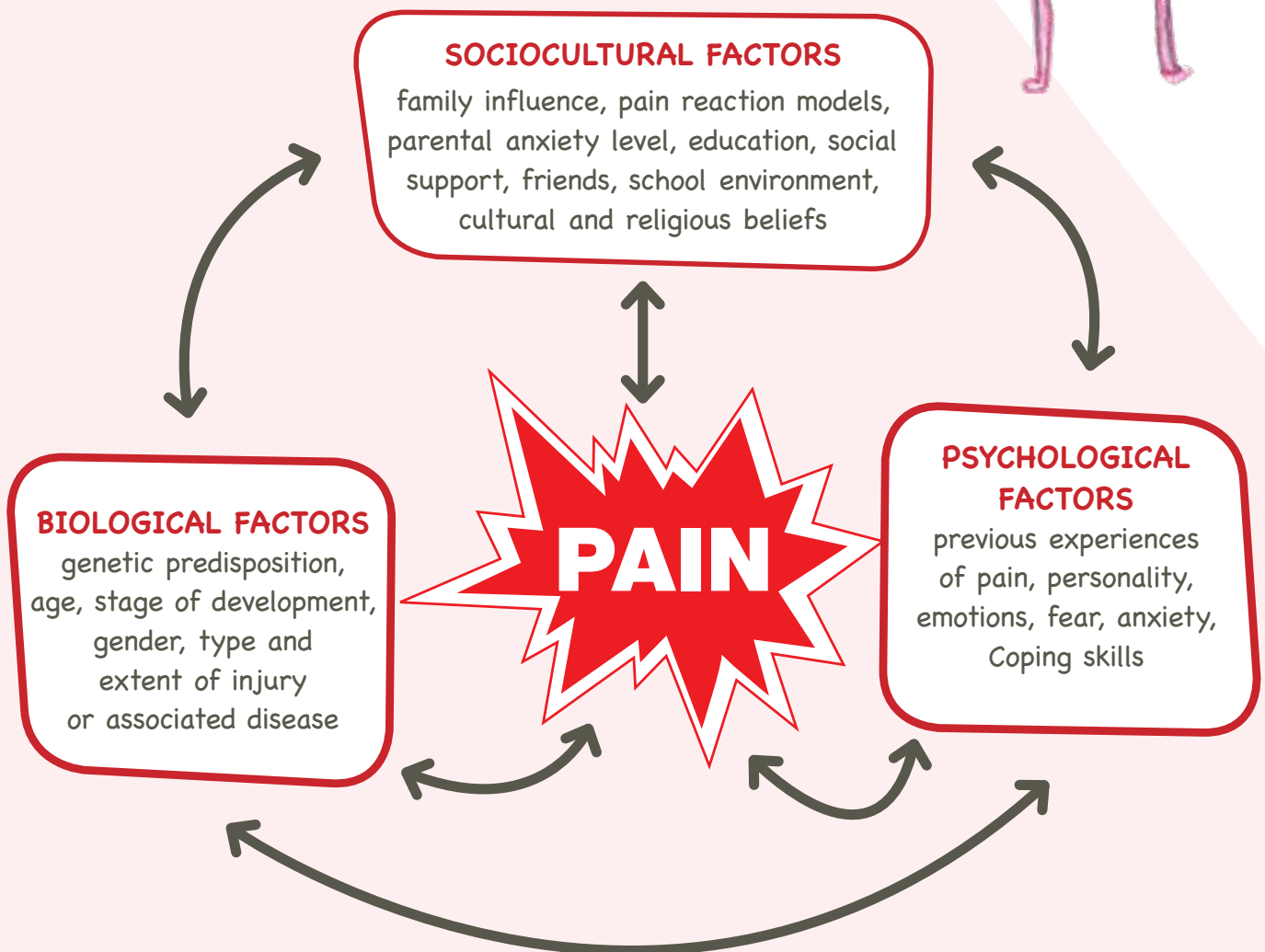
What is pain?



"Pain is an distressing experience associated with actual or potential tissue damage with sensory, emotional, cognitive and social components."

IASP (2016)

THE EXPERIENCE OF PAIN RESULTS FROM INTERACTION



Biopsychosocial Model of Pain

“Pain is whatever the experiencing person says it is, existing whenever the experiencing person says it does.”

McCaffery (1979)

- Pain is experienced in a different way in each moment and by each person, child or adult. In children, the approach must be different due to their cognitive, affective and language development.
- Repeated pain exposure changes pain pathways in children’s brain, making them more sensitive to future pain and increasing the risk of developing chronic pain in childhood and adulthood.



Ana Albertina Pereira Moreira, 10 years old



Ana Margarida Pinto da Rocha Santos, 9 years old



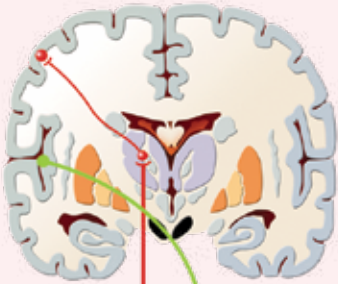
António Silva, 9 years old

We know that children feel pain and have memory of pain.

Untreated pain has short and long-term consequences in the child’s life.

Physiology and types of pain

Cerebral cortex



PERCEPTION

The impulse is integrated and perceived as pain

The painful impulse is received by nociceptors and transformed into action potential

TRANSDUCTION



Nociceptor

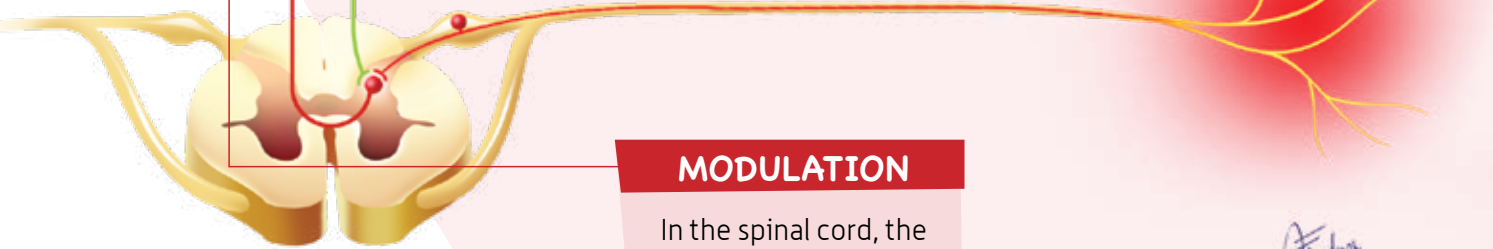
TRANSMISSION

The impulse is carried to the posterior horn of the spinal cord and from there to the brain

MODULATION

In the spinal cord, the impulse is modulated before reaching the upper levels of the Central Nervous System

Spinal cord



Andrew

WHAT TYPES OF PAIN CAN WE FEEL?

DAY-TO-DAY PAIN

Small wounds and bruises are very common in children arising from playing and sports practice. Usually, they are not serious, they cannot always be avoided, but each episode allows the child to learn how to cope with pain, increasing or reducing the distress.

ACUTE PAIN

Short-term pain that lasts minutes, hours or days, always lasting less than 3 months, associated with tissue trauma or inflammation.

CAUSED BY:

Mild illness, trauma, accidents, fractures, burns, diagnostic and therapeutic procedures such as vaccines or lab tests, surgical procedures or dental extraction.

Acute pain can have a protective effect and act as a warning sign in the diagnosis of various illnesses, for example, tummy ache from acute appendicitis.

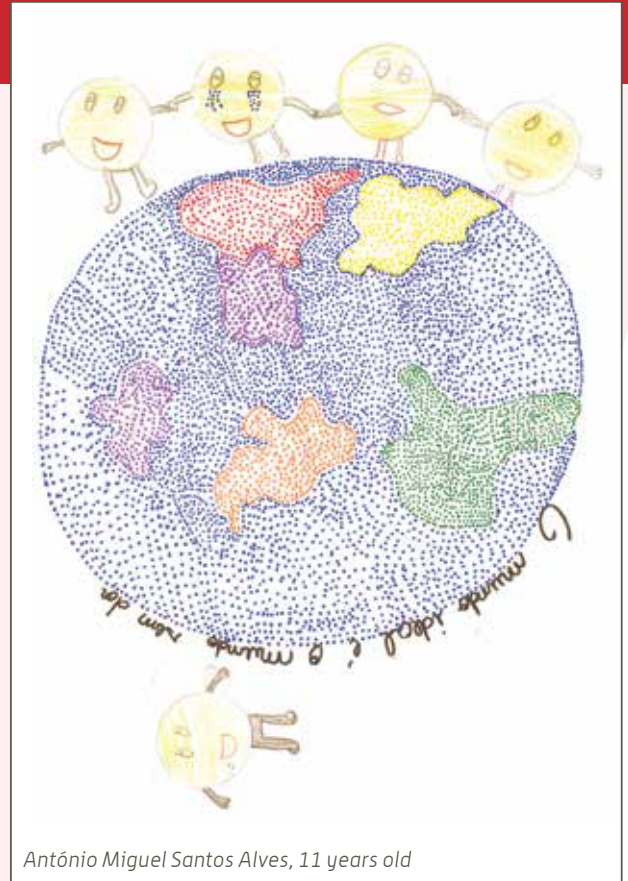
RECURRENT PAIN

Pain that occurs by episodes, e.g. headaches, tummy aches, limb pains.

CHRONIC PAIN

Pain that lasts **longer than 3-6 months** or extends beyond the expected time of healing, and therefore no longer has the alert function.

When the pain becomes chronic, it becomes a disease itself.



Antônio Miguel Santos Alves, 11 years old



Augusta Maria da Cruz Matias, 8 years old



Catarina Alexandra Ferreira Ribeiro, 8 years

Children's rights to the treatment of pain



**Pain relief
is a fundamental
human right.**

DECLARATION OF MONTREAL [IASP, 2010]

ARTICLE 1: The right of all people to have access to pain management without discrimination.

ARTICLE 2: The right of people in pain to acknowledgment of their pain and to be informed about how it can be assessed and managed.

ARTICLE 3: The right of all people with pain to have access to appropriate management of pain by adequately trained health care professionals.

THE RIGHT TO CONTROL PAIN IN CHILDREN

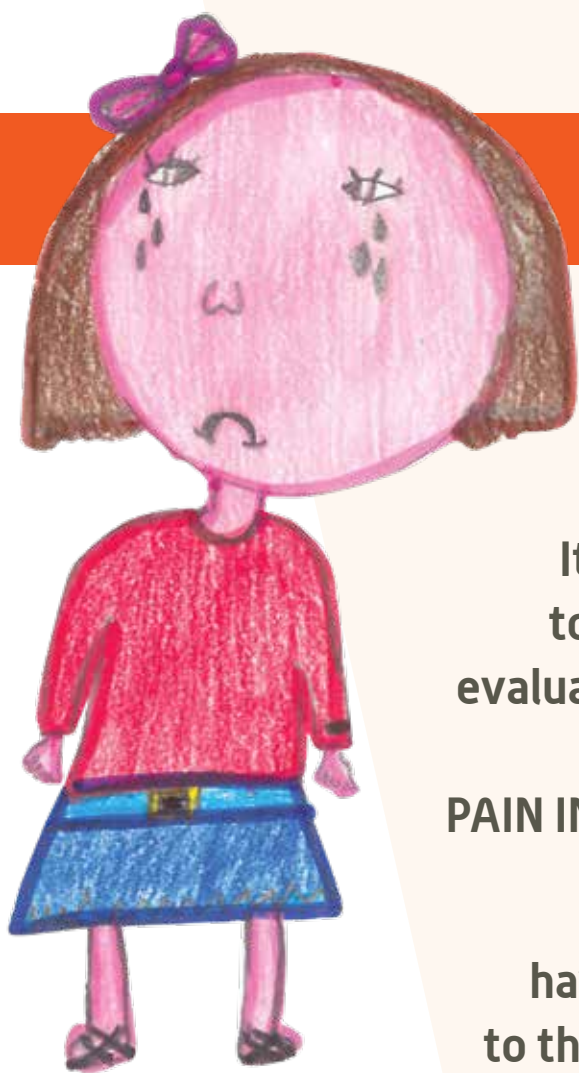
All children have the right to adequate pain control, whichever the cause may be, to avoid unnecessary suffering, and reduce the associated morbidity.

OTTAWA DECLARATION - Children's Rights in Health Care: "Every effort should be made to prevent or, if this is not possible, to minimize pain and suffering, and to mitigate the physical or emotional stress in the child."

CHARTER OF THE RIGHTS OF THE HOSPITALIZED CHILD: Steps should be taken to mitigate physical and emotional stress. Every child shall be protected from unnecessary medical treatment and investigation.

[Leyden, 1988]

**Pain relief in children
should be a top priority
for all health professionals!**



**It's essential
to recognize,
evaluate, prevent
and treat
PAIN IN CHILDREN**

**Children
have the right
to the best care.**

RIGHTS OF THE CHILD, UNITED NATIONS:

The child is a vulnerable human being entitled to special attention in all areas, including health care.

Provision of health care in accordance with the United Nations Convention on the Rights of the Child (WHO/UNICEF).

Child-Friendly-Healthcare-Initiative (WHO/UNICEF - Southall et al., 2000; Pediatrics, 106: 1054-1064):

- **Standard 6:** "need for standards and guidelines for the evaluation and control of pain and discomfort"
- **Standard 7:** "invasive procedures must be accompanied by adequate analgesia/sedation..."

All health professionals should adopt **strategies for the prevention and control of pain** of children in their care, contributing to their well-being and humanization of health care.

Particular attention should be made to prevent and control pain caused by diagnostic and therapeutic procedures.



Evolution of pediatric pain management



About 50 years ago people thought that children felt less pain than adults due to the possible immaturity of their Central Nervous System.

In 1968 it was said:

"Pediatric patients tolerate discomfort well and rarely need pain medication."¹

Later, in the 80's it was shown that from the 24th week of gestation the anatomical and physiological bases for the perception of pain are present, which forced a change in child pain management.²

In 1985, in the USA, Jill Lawson carried out a compelling public awareness campaign against the practice of surgeries and other procedures in children without the use of anesthesia or analgesia.

In 1987, The New York Times reported that the sensitivity of children to pain had finally been recognized.

In 1990, the Special Interest Group of Pain in Childhood of the International Association for the Study of Pain (IASP) was created.



Recognizing pain in children is very important!

1. LI Swafford, D Allen. Pain relief in pediatric patient. Med Clin N Am. 1968;52
2. Anand KJ [N Engl J Med. 1987;317:1321-9]

In the last 30 years the scientific knowledge and therapeutic resources for pain management in children had a HUGE evolution.

Global Year Against Children's Pain: 2005



International Association for the Study of Pain

IASP

Working together for pain relief

Children's Pain Matters!
Priority should be given to the recognition and treatment of pain in newborns, infants, children and adolescents.

However, there are studies that show that children get fewer analgesics than adults!

...there is still much to be done!!!



Paula Catarina Pimenta de Freitas, 13 years old



Daniel Silva Mesquita, 11 years old



Felisberta Manuel Mesquita, 10 years old

Pediatric pain management - evolution in Portugal

**Children's pain must become a priority
for all health care professionals!**

IN PORTUGAL

- 1991:** Foundation of APED - Portuguese Association for the Study of Pain
- 1999:** APED created the National Day Against Pain
- 2000:** National Survey and Conference of the Child Support Institute (IAC) - "Pain is whenever it is painful"
- 2001:** National Plan Against Pain
- 2002:** Established the "Operation Red Nose" in hospitals with children
- 2003:** Technical Guidance of General Health Division (DGS): PAIN - 5th vital sign - evaluation and regular registration of pain intensity in all health services
- 2008:** National Program for Pain Control (PNCDor) - DGS
- 2009:** Multidisciplinary Pediatric Pain Groups in public hospitals start to arise
- 2013:** National Strategic Plan for the Prevention and Control of Pain (PENPCDor) - DGS
- 2016:** 1st Multidisciplinary Pediatric Chronic Pain consultation: Maternal-infant center of the North, Porto
- 2017:** National Program for the Prevention and Control of Pain (PNPCDor)

APED HIGHLIGHT INITIATIVES

- 2012:** *APED Workshop: "Treatment of Chronic Pain in Children and Adolescents: where and by whom?"*
- 2013:** *APED Workshop: "Control of Acute Pain in Children and Adolescents: Protocols and Auditing"*
- 2017:** *Challenge to all health institutions to prevent, minimize and treat pain in children and adolescents in a systematic approach.*
- 2018:** *APED scientific support of the Workshops of Pediatric Hypnosis for pain and anxiety management (Dra Leora Kuttner)*

**The fight against
children's pain
should be a priority of
all health institutions!**

**It's an indicator
of the quality
of the health services!**

PUBLICATIONS IN PORTUGAL ABOUT PAIN IN CHILDREN

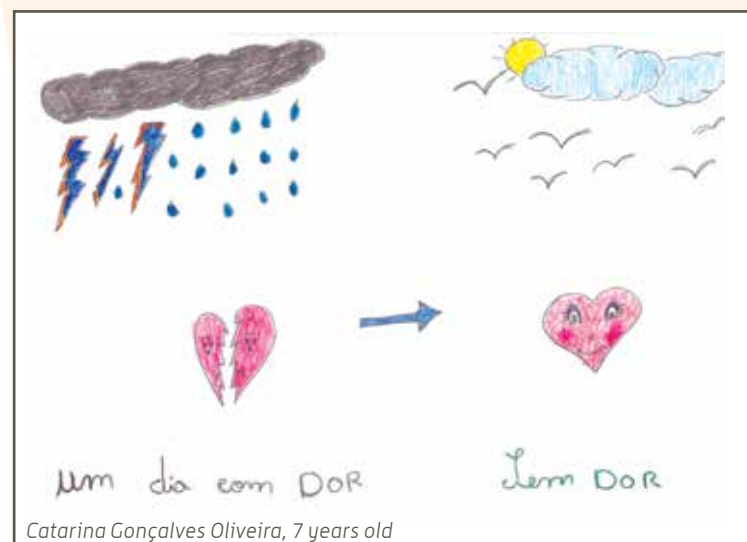
- 2001:** Publication of the book "Children with Pain", Quarteto Publishing House
- 2006:** Publication of the book "Pain in Children - Attitudes and Procedures Guide (IAC)"
- 2010:** Publication of the book "Pain in Pediatrics - Understanding to Change", Lidel Publishing House
- 2010:** Creation of APED Pediatric Pain Working Group+ National Commission for Pain Control of DGS:
Publication of National Guidelines:
 - Guideline 014/2010 - Technical guidelines on the evaluation of pain in children
 - Guideline 022/2012 - Technical guidelines on pain management in invasive procedures in children [1 month to 18 years]
 - Guideline 023/2012 - Technical guidelines on pain control in children with oncological disease
 - Guideline 024/2012 - Technical guidelines on pain management in newborns [0 to 28 days]
- 2013:** Publication of "Guidelines for Good Practice - Non-pharmacological strategies for pain management in children". Ordem dos Enfermeiros.



Rafael Dias Silva Cordeiro Oliveira, 6 years old



Ana Rute Silva Pereira, 8 years old



Catarina Gonçalves Oliveira, 7 years old

Behavioral responses to pain

The child's responses to pain depend on:

> age > developmental stage > personality > child's environment

HOW EXPRESS PAIN?

NEWBORNS AND INFANTS

"The body speaks":

- facial expression of discomfort
- intense crying
- body responses ("The body speaks")
- changes in behavior
- physical signs: increased heart and respiratory rates

HOW EXPRESS PAIN?

CHILDREN 1-3 YEARS OLD

Children between 1-3 years old manifest themselves mainly by shouting - "Scream age":

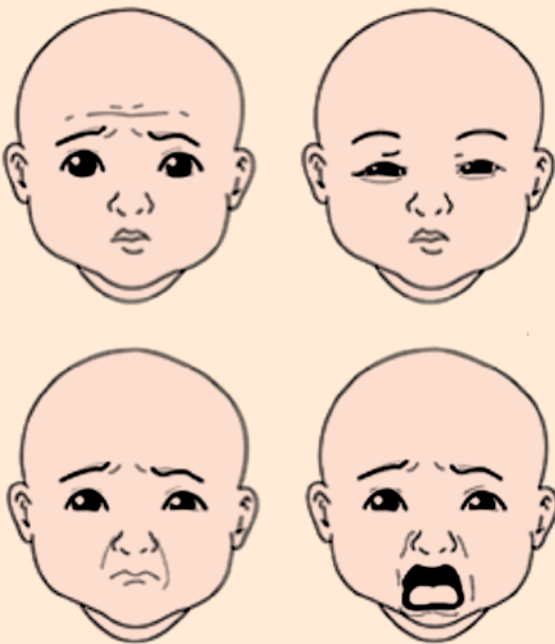
- crying and shouting
- high anxiety/stranger anxiety
- use words for pain (e.g., "owie", "boo boo", "hurt")
- facial expression
- body expression: agitation, aggression, protection of the painful area

HOW EXPRESS PAIN?

CHILDREN OF PRESCHOOL AGE (3-6 YEARS OLD)

Pre-school age children have "Magical thinking": mum's kiss makes the pain go away...

- can express pain
- demonstrate behavioral changes such as agitation and physical aggression
- fear bodily injury or mutilation (eg. when they have a wound), express fear of needles and medical procedures
- believe in pain as punishment
- mix real facts with fiction, show magical thinking about pain



HOW EXPRESS PAIN?

CHILDREN AT SCHOOL AGE

School age children are more demanding:
"I need you to explain!"

- can describe their pain
- can associate pain and cause
- appreciate and demand explanations about procedures
- body expression: immobility and stiffness, fetal position, protecting or touching the painful area, clenching fists, isolation
- behavioral expression: angry, sad, depressed or aggressive; change in the sleep pattern

HOW EXPRESS PAIN?

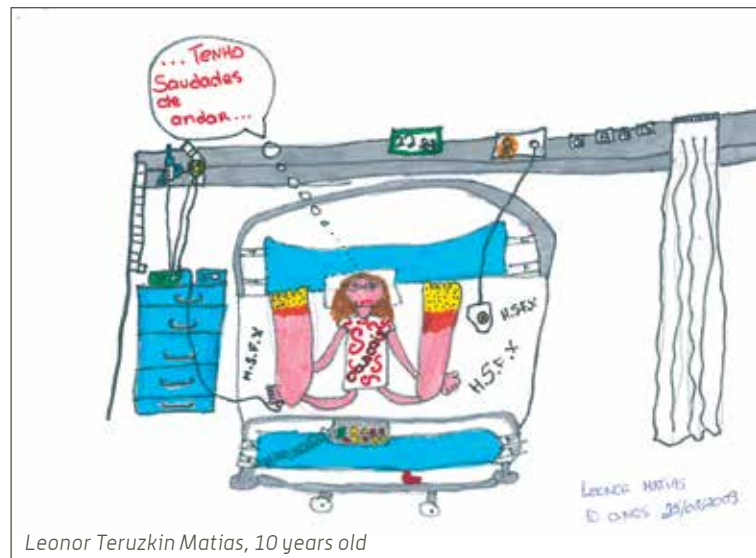
ADOLESCENTS

Teenagers question: "Why me?"

- need to maintain self-esteem and control
- may not show pain behaviors out of shame - hard facial decoding
- benefit from teaching of pain control techniques
- the feeling of abandonment and depression may arise quickly



Rafael Correia Pinto Fonseca Amors, 10 years old



Leonor Teruzkin Matias, 10 years old



Erica Filipa Ribeiro Sale, 7 years old

Pain assessment in pediatrics

To treat well you must know how to assess pain in the child! Children’s pain can be difficult to recognize.

PAIN ASSESSMENT ALLOWS:

- identifying and recognizing the child with pain
- quantifying and assessing the pain
- establishing standards of communication within the health team, facilitating consistent decision making
- adapting personalized treatment of pain
- evaluating the efficacy of analgesia techniques
- establishing a relationship of trust with the child

NEWBORNS

For example, the NIPS (Neonatal Infant Pain Scale) is used for premature and full-term newborns. There are other scales.

CHILDREN UNDER 4 YEARS OLD OR CHILDREN UNABLE TO VERBALIZE

The FLACC scale (Face, Legs, Activity, Cry, Consolability) is one of the most used scales.

FROM THE AGE OF 4, IT CAN BE USED:

The Wong-Baker Faces Pain Rating Scale

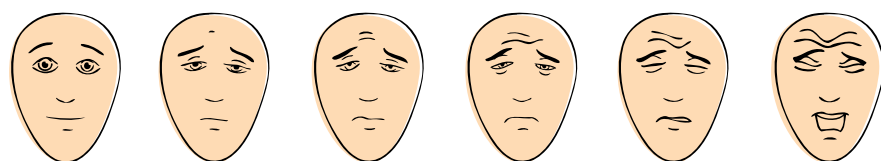


© 1983 Wong-Baker FACES Foundation. www.WongBakerFACES.org. Used with permission

HOW TO USE PAIN SCALES

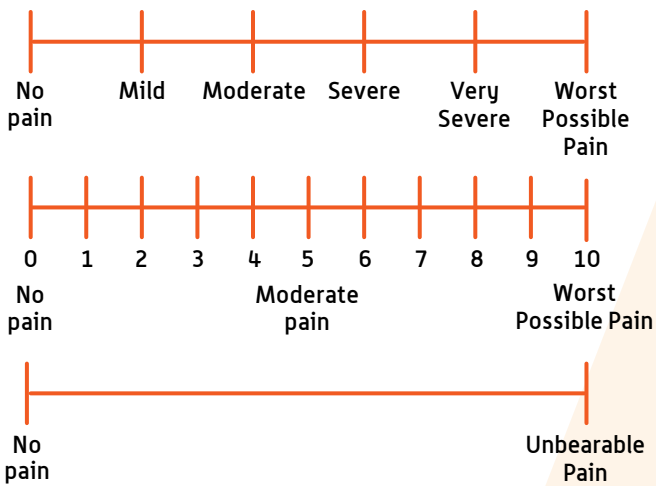
1. Explain: these faces show how much something can hurt.
2. This face (point to face on far left) shows no pain.
3. The faces show more and more pain [point to each from left to right] up to this one [point to face on far right] - it shows very much pain.
4. Ask the child: Point to the face that shows how much you hurt or it hurts [right now].

FPS-R Faces Pain Scale-Revised



FROM THE AGE OF 6:

The Visual Analogue Scale (VAS) and the Numerical Rating Scale (NRS)



THE CHILD WITH DISABILITY OR DEVELOPMENT PROBLEMS

Scales adapted to these children are: **FLACC-R Scale (Face, Legs, Activity, Cry, Consolability - Revised)**

OTHER PAIN ASSESSMENT TOOLS

Multidimensional pain assessment: **APPT (Adolescent Pediatric Pain Tool) Scale: assessment of acute or chronic pain**



Non-pharmacological pain management - physical interventions

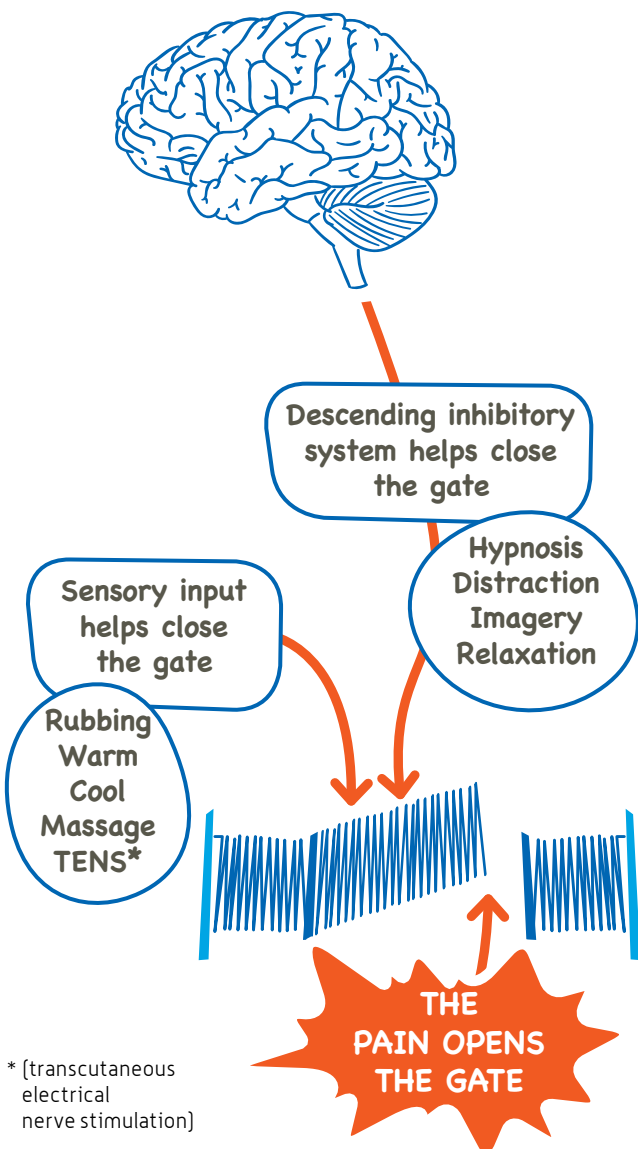
Pain can be prevented, treated or minimized by combining pharmacological, physical and psychological interventions.

Pharmacological measures should be combined with **non-pharmacological**, integrative and supportive interventions that activate the descending inhibitory pain pathways.

CONCEPT OF MULTIMODAL ANALGESIA:

Various agents, interventions, rehabilitation and therapy act synergistically for pain control.

It allows more effective treatment, with less side effects than just an analgesic monotherapy or a single therapeutic modality.



Swaddling and sucrose

NON-PHARMACOLOGICAL INTERVENTIONS FOR PAIN RELIEF

- are effective in mild pain and fast painful procedures
- may be used as a complement to analgesic medicines
- increase the feeling of controlling pain
- promote greater autonomy for the child and the family
- are safe, non-invasive, cheap
- the child and parents can learn to use them

CONTRIBUTE TO:

- reduce the perception of pain
- make pain more tolerable
- decrease anxiety and fear



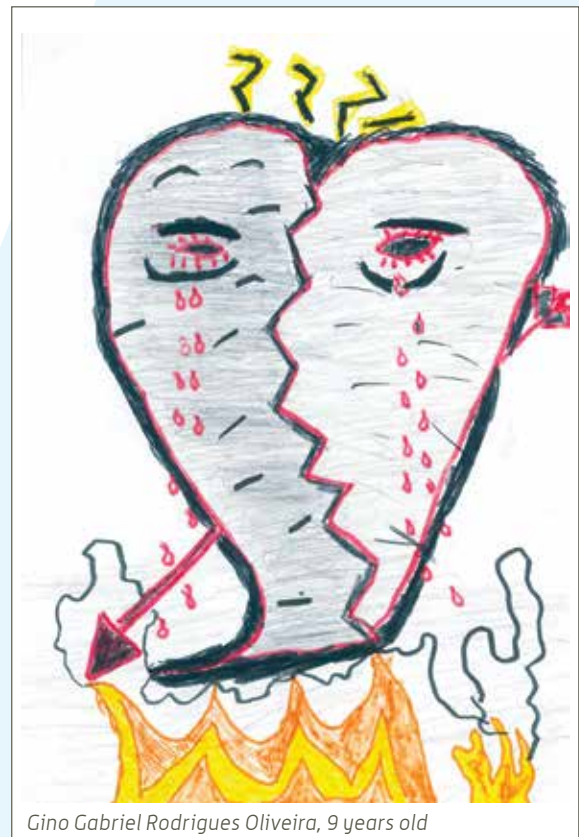
Vibration application (Buzzy®)



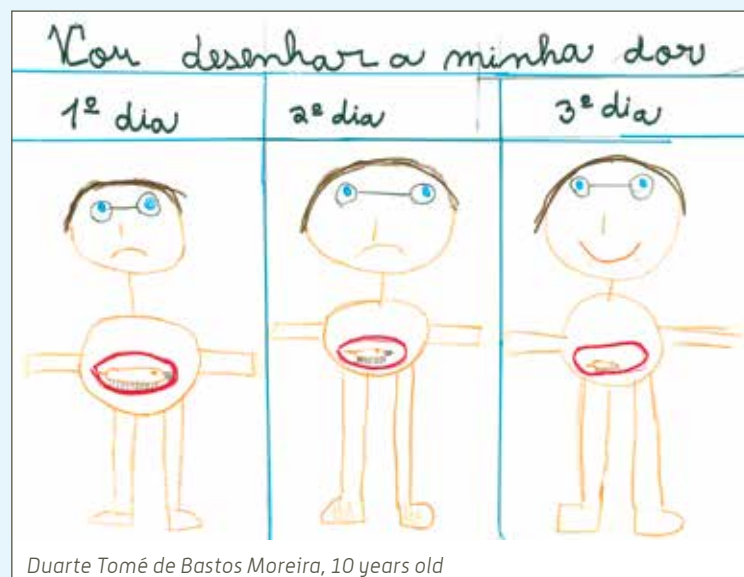
Comfort Positioning - Lap

PHYSICAL STRATEGIES

- massage or therapeutic touch
- comfort measures
- comfort positioning
- skin-to-skin contact in newborns and swaddling
- sucking and sucrose (<12 months)
- application of heat or cold
- vibration application (Buzzy®)
- acupuncture
- acupressure, reflexology, aromatherapy



Gino Gabriel Rodrigues Oliveira, 9 years old



Duarte Tomé de Bastos Moreira, 10 years old

Non-pharmacological pain management - psychological interventions

The presence of the parents is very important to reassure, distract, encourage and comfort the child.



DISTRACTION

Distraction helps redirect the child's attention away from the painful stimulus toward an alternative and pleasant focus.

Distraction techniques that are multi-sensorial and interactive work best. Considering the interests and choices of the child, you can use: music, cartoons, books/stories, dolls, blowing bubbles, pinwheels, counting backwards, songs, toys (interactive, with sound, light, vibration), etc.

STIMULATE IMAGINATION

Encourage the child to imagine or travel to his favorite place, favorite activity, tell stories with superheroes and positive thoughts.

PREPARATORY INFORMATION

Explain what will happen during the procedure (developmentally appropriate language).



The involvement and participation of the family collaborating with the health team, is very important for the application of non-pharmacological interventions to control pain.

RELAXATION TECHNIQUES

Progressive muscle relaxation; deep breathing (diaphragmatic or abdominal). In younger children, you can use soap bubbles, windmills, or imagine blowing a balloon or a candle.

CLINICAL HYPNOSIS

Can be used to relieve acute and chronic pain

- the magic glove
- the favorite place
- the pain switch

POSITIVE REINFORCEMENT AND REWARDS

It includes praise and prizes/diplomas awards



Gonçalo Pereira Cipriano, 8 years old



Francisca de Sodrê Reis Graça, 11 years old

Comfort positioning

Comfort positioning offers parents the opportunity to reduce their children's pain and anxiety during medical procedures.

Collaboration between parents and health professionals should be in agreement to get the most of these techniques.

These positions can be adapted to the child and to the procedure.



Parent's lap and distraction techniques



Breastfeeding



Parent's lap and non-nutritive sucking



Swaddling

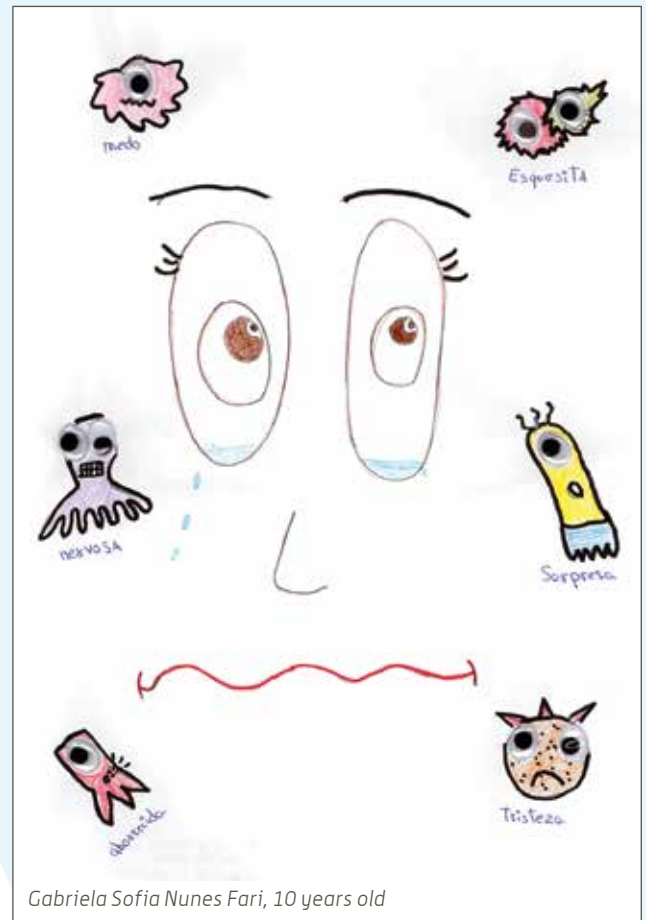
For infants 0-6 months;
 Associated with sucrose and non-nutritive sucking;
 Leave out limb for procedure;
 After the procedure, comfort hold/swaddle the infant to facilitate recovery and calmness.



Parent's lap

Parent's lap, supportive hug and upright positions promote a sense of control and safety.

Appropriate positioning increases comfort and minimizes pain of medical procedures which children in hospitals have to get through.



Gabriela Sofia Nunes Fari, 10 years old



Fábio Vieira Henrique, 10 years old

Pharmacological treatment of pain

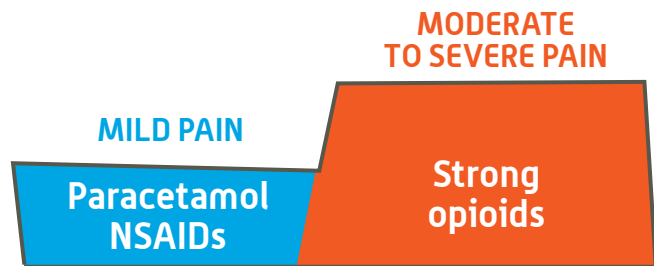
The selection of the most appropriate analgesic depends on the characteristics of each child his illness, and assessment of the intensity of the pain. Drugs should always be associated with non-pharmacological interventions.

BASIC PRINCIPLES OF ANALGESIC PRESCRIPTION

- choose the treatment according to the intensity of the pain
- administer the treatment by the least invasive route possible - oral
- administer the treatment on a regular schedule, BY THE CLOCK
- adjust the treatment to the result achieved, adapted to each individual child

MOST USED DRUGS

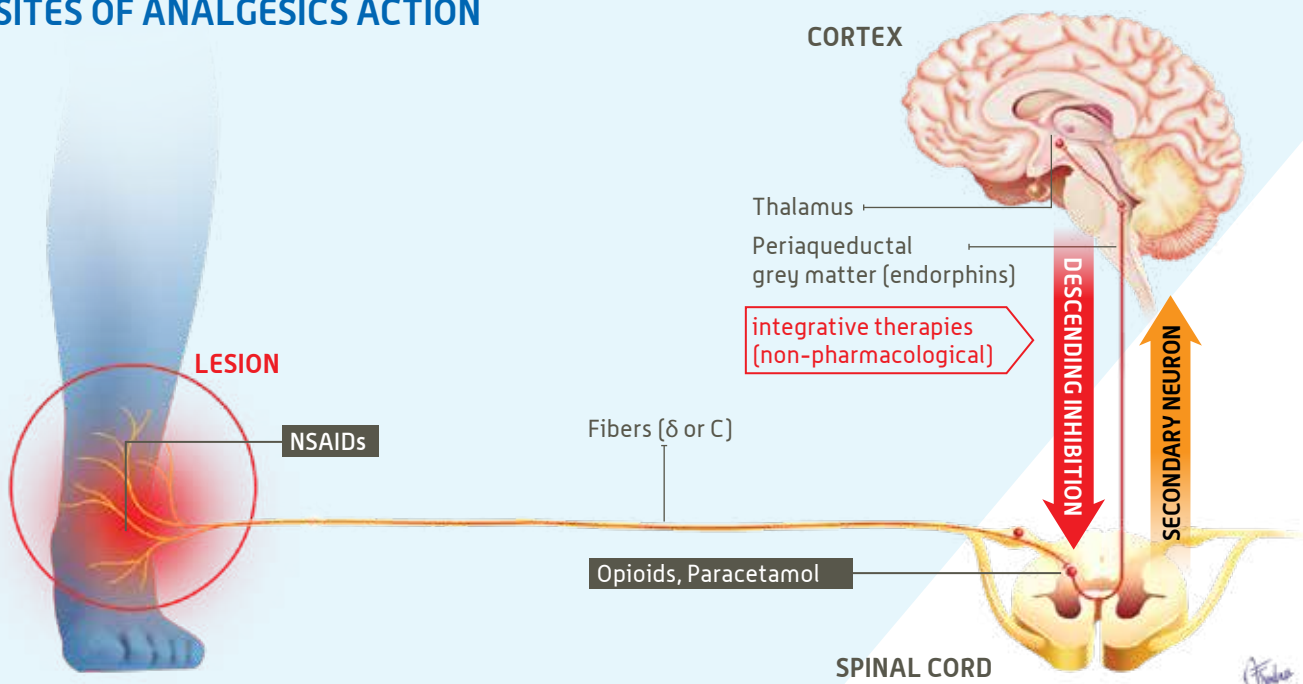
The WHO Analgesic Ladder, 2012, adapted to the treatment of persistent pain in children with medical illnesses.



Pediatric adjustment of the analgesic ladder from 3 to 2 steps. Adapted from WHO Analgesic Ladder Approach Adapted for Children.²

NSAIDs: non-steroidal anti-inflammatory drugs

PAIN PATHWAYS AND PRIMARY SITES OF ANALGESICS ACTION



NSAIDs: non-steroidal anti-inflammatory drugs

MILD-MODERATE PAIN

PARACETAMOL

- is the most widely used analgesic
- is effective in mild pain
- is used to lower fever
- has no anti-inflammatory effect

NON-STEROIDAL ANTI-INFLAMMATORY DRUGS (NSAIDS)

- used to control pain associated with inflammation of the tissues, e.g., during trauma or infection/inflammation
- the NSAIDs most commonly used are: ibuprofen, ketorolac and diclofenac

SEVERE PAIN

When the pain increases in intensity it is necessary to associate opioids and sometimes choose intravenous administration.

Morphine

- used in severe pain
- potent analgesic, group of opioids

When administered properly:

- does not cause dependency
- does not cause euphoria or delusion
- does not cause confusion
- does not cause respiratory depression

To obtain the necessary analgesic effect, the dose may be increased.

The ideal dose for each child is the dose that controls pain with as few side effects as possible.



Diogo Miguel Pires Pereira, 10 years old



Vânia Paula Mendes Gonçalves, 8 years old



Laura Isabel Gonçalves Figueira, 11 years old

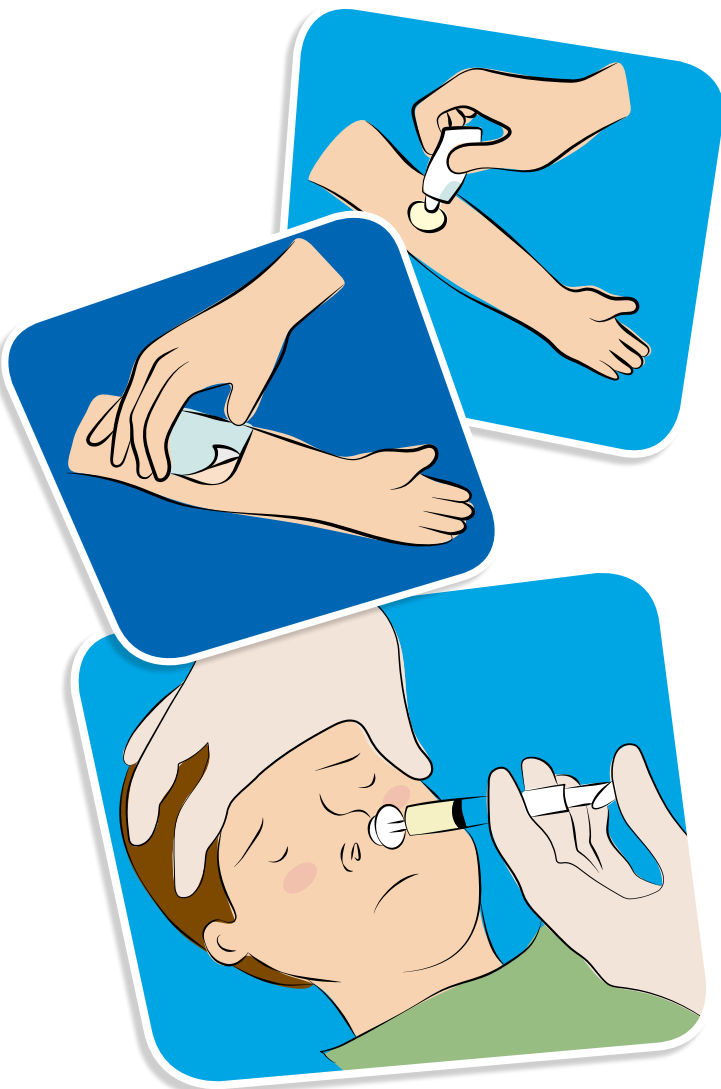
Pain treatment during - medical and surgical procedures

There are several techniques of analgesia and pain control that ensure the safety and effectiveness of procedures, and the comfort of the child.

When a child needs to undergo diagnostic or treatment procedures that cause discomfort, we must:

- prevent pain
- minimize anxiety and fear
- inform and promote the cooperation of parents and caregivers

The choice of drugs and the way they are administered depend on the type of pain and anxiety that the procedures cause, and whether or not the child needs to be immobilized. Depending on the procedure to be performed we can use:



LOCAL ANESTHESIA

Can be performed with:

- skin sprays (ethyl chloride)
- cream or patch with local anesthetic (lidocaine/prilocaine) - placed on the skin an hour before; can be used at any age
- intradermal/subcutaneous injection of lidocaine: sutures, punctures, superficial surgical or dermatological procedures
- lidocaine gel and spray

INTRANASAL SEDATION AND ANALGESIA

With the use of a nasal atomizer it is possible to administer analgesic and sedative drugs:

- fentanyl, ketamine, midazolam

SEDATION AND ANALGESIA BY INHALATION

Sedation and analgesia by inhalation with MEOPA - What is it?

It is a mixture of two gases: oxygen and nitrous oxide



What is it for?

It allows slight sedation and analgesia, for procedures generating high anxiety and short-term mild to moderate pain:

- placing catheters, blood tests, wound suturing and dressing, lumbar puncture, etc.

The child becomes relaxed, has less pain and becomes less anxious. It is particularly effective and potentiated by non-pharmacological interventions such as breathing, imagery or hypnosis.

How is it used?

The child must breathe through a nasobuccal mask. It is most effective from 3 years of age, when the child is able to collaborate.

INTRAVENOUS SEDATION AND ANALGESIA

Most used drugs

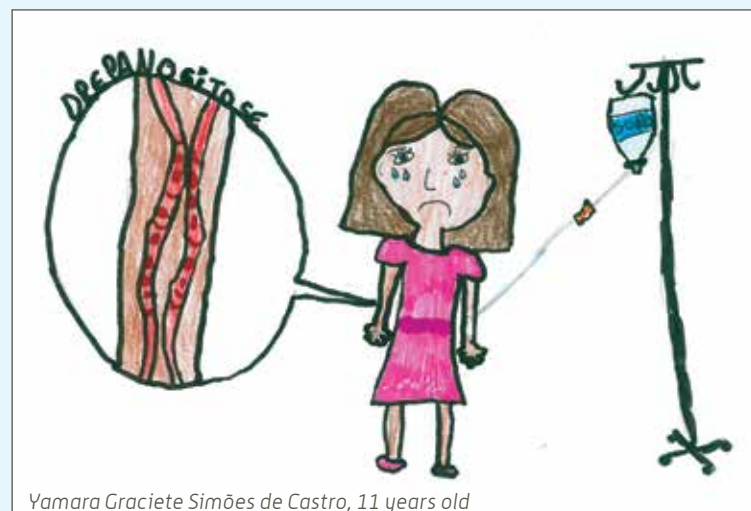
- opioids: alfentanil, fentanyl, morphine
- other drugs: ketamine, midazolam, propofol

The sedation and analgesia obtained with these drugs is not a general anesthesia, if under the recommended safety and efficacy conditions.

When general anesthesia is indicated, it can be done at the Operating Room or in more differentiated units.



Bruno Miguel Vieira dos Reis, 12 years old



Yamara Graciete Simões de Castro, 11 years old

Pain during procedures - common situations

It doesn't have to hurt!

It's possible to prevent and minimize pain through non-pharmacological and pharmacological interventions.



The pain caused by procedures can have emotional and psychological implications in children.

Going to the hospital, doing a diagnostic test or a therapeutic procedure, even if a little invasive method, may be experienced with great anxiety by the little ones.

What children most fear when going to the hospital or seeing a doctor?... the needles and the pricks!!!

THE MOST FREQUENT PROCEDURES ARE:

- Blood draws
- Obtaining IV access
- Suture and wound cleaning
- Wound dressings



Marco Agostinho da Silva, 8 years

TALKING TO CHILDREN MUST CREATE A PEACEFUL AND RELIABLE ENVIRONMENT:

- use a calm voice
- be honest, don't lie (e.g. do not say "it does not hurt at all")
- do not threaten (e.g. "if you behave badly you'll get a shot"; "if you behave badly, mom will leave")
- avoid words that directs attention to the procedure: "pain", "shot", "injection", "sting"
- avoid words related to security: "it will end quickly", "you will be fine"
- avoid empathic phrases or apologies: "sorry, you have to go through this", "I know it hurts"
- promote the child's involvement in the distraction

DO NOT FORGET SIMPLE MEASURES SUCH AS:

Breastfeeding or sucrose

- in newborns and infants (0-12 months)

Comfort positioning

- forced restraint should not be used

Distraction - direct the child's attention away from the painful stimuli

- **babies** - toys with sound/light/color, pacifier
- **small children** - interactive toys/books, kaleidoscopes, blowing bubbles, songs/music, singing, puppets
- **school children** - toys, stories, videos/television, books, playing, counting, deep breathing, blowing bubbles, pinwheels, hypnosis, imagery
- **teenagers** - games, videos, books, jokes, music, talk about something not related to the procedure, deep breathing, anti-stress balls, imagery, favorite place

Topical or local anesthetic

- for example cream (lidocaine/prilocaine)



Tiago Miguel Mestrinho Sousa, 10 years old



Susana Raquel Domingues Silva Moreira
11 years old



Sofia Nunes Fonseca, 7 years old

Pain in the newborn

Even premature babies feel pain.

The ascending nerve pathways required for the experience of pain are present in fetal life from the **20th gestational week** and are fully developed about the **28th gestational week**. On the other hand, the descending control pathways are still immature, which results in a hypersensitivity to painful stimuli, in preterm newborns.

Early and repeated pain experiences in the neonatal period seem to have influence on later pain experiences, both in terms of pain sensibility and in dealing with stress.

Kangaroo mother care



Swaddling and sucrose



Non-nutritive sucking



Breastfeeding

BABIES SHOW THEIR PAIN IN MANY WAYS

- facial expression
- crying
- restlessness
- increased heartbeat

IN THE NEONATAL UNITS IT IS POSSIBLE TO PREVENT BABIES STRESS AND PAIN THROUGH:

- quiet environment with little noise and controlled light
- comfort positioning
- parents contact with the baby
- minimum handling

The pain related with the most frequent procedures can be reduced with: (non-pharmacological treatment)

- breastfeeding
- skin-to-skin contact
- sucrose (sugar water)
- pacifier
- swaddling

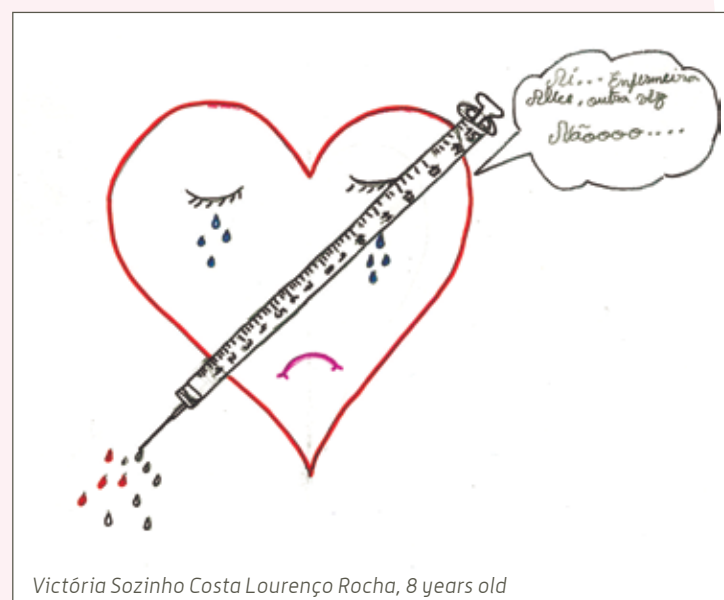
Infants' pain can be assessed through their behavior (facial expression, motor activity, crying, consolability, sleep) with the help of appropriate scales.

The presence of the parents contributes to pain control.

Persistent pain, more painful procedures, and surgical pain can be alleviated with appropriate medication.



Tiago Maurício Frias, 4 years old



Victória Sozinho Costa Lourenço Rocha, 8 years old

Vaccination pain



Vaccination does not have to hurt!

Vaccines help keep children healthy by protecting them from serious infections.

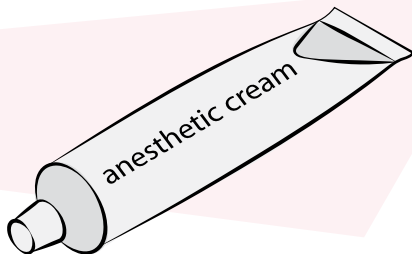
However, vaccines can be painful and can cause stress and anxiety in children and their parents.

Some techniques can help reduce fear of injections and pain during vaccines.

REDUCE PAIN OF VACCINATION IN BABIES

How to do it?

- **Topical anesthetic cream:** an hour before, apply the anesthetic cream stickers where the injections will be given; this cream numbs the skin a bit and reduces the pain of the vaccine.

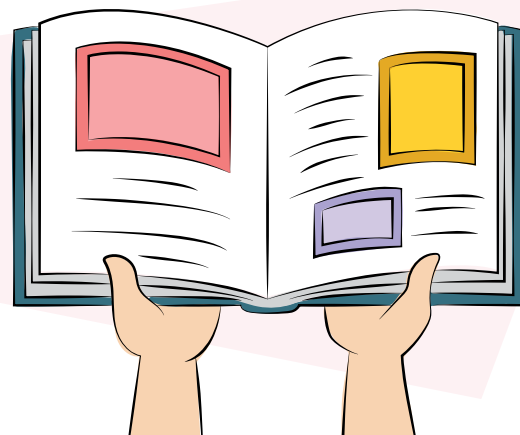


- **Positioning:** keep the baby on the mother's lap in an upright position; safe and comforting contact helps reduce pain and keeps the baby calmer.

- **Distracting:** singing a song, with toys (with sound, light, vibration), puppets, blowing bubbles, etc. Maintain a calm attitude, speak with a normal and positive voice; this will help the baby feel calm.

- **Provide sucrose and non-nutritive sucking** (pacifier) to infants up to 12 months of age who are not breastfeeding.

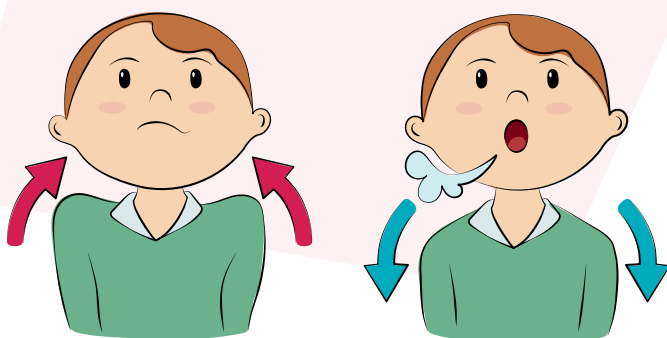
- **Breastfeeding:** if the baby is breastfeeding, nursing the baby before, during and after vaccination is the best way to reduce pain and provide comfort.



REDUCE PAIN OF VACCINATION IN OLDER CHILDREN

How to do it?

- **Topical anesthetic cream:** an hour before, apply the anesthetic cream stickers where the injections will be given.
- **Prepare the child before vaccination:** give an honest explanation of the procedure.
- **Comfort positioning:** on the parent's lap (with a comforting embrace) or sitting on the couch in an upright position (give a choice in older children).
- **Distracting:** use an age-appropriate distraction shifting the child's attention away from the needle.



- **Use relaxation techniques:** encourage deep and slow breathing, lead the child to travel to his/her favorite place.

The more involved the child is in distraction, the better it will work.

Do not forget that praising and offering a reward after vaccines can help kids and teens of all ages!



Samuel Castro Vieira, 12 years old



João Guilherme Baptista Vieira, 9 years old

Post-surgical pain

Post-surgical pain should be prevented and treated before it happens!

The year 2017 was designated as the **Global Year Against Pain After Surgery** due to the high occurrence of situations in which post-surgical pain is not well controlled, situation that still needs to be improved.



POST-SURGICAL ANALGESIA IN PEDIATRICS

The postoperative pain should have a multimodal approach: we must combine several techniques and medications, to obtain greater efficacy and with less adverse effects.

PHARMACOLOGICAL THERAPY

The choice of drugs and of the route of administration depends on the type of surgery, the type of injury and the child's age.

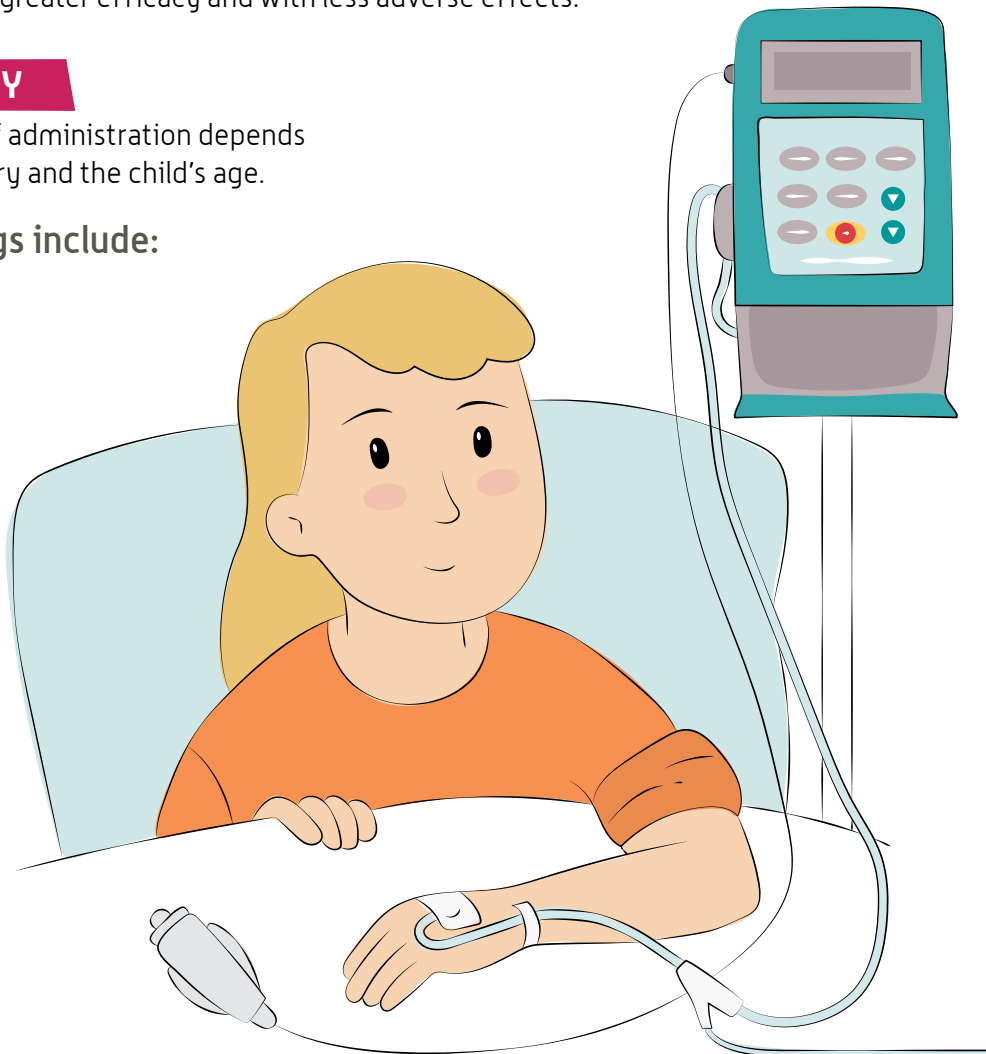
The most commonly used drugs include:

- paracetamol
- non-steroidal anti-inflammatory
- opioids: fentanyl, morphine
- other drugs: ketamine

ROUTES OF ADMINISTRATION

Analgesic drugs can be used orally or intravenously.

The intravenous route may be used, especially for analgesics such as morphine, through a perfusion pump in which the patient himself may trigger the administration of successive doses, within intervals established by the doctors (PCA-patient controlled analgesia device).



REGIONAL AND LOCAL TECHNIQUES

Regional anesthesia and analgesia techniques allow analgesia or anesthesia only in the region of the body that will undergo surgery: for example a finger, an arm or a leg. With these techniques, local anesthetics will act through the blockage of nerves.

- **Infiltration of the surgical wound:** it consists on the injection of local anesthetic at the site of the surgical incision.
- **Peripheral nerve block and plexus block (set of nerves):** usually used for limb surgery, it can be used during or after surgery, it decreases the consumption of analgesics needed to relieve pain.
- **Neuroaxial block (subarachnoid and epidural)** are used for surgery of the thorax, abdomen or lower limbs. They allow excellent analgesic quality and minor side effects, with a reduction of administration of drugs by other routes.



Sônia Beatriz Abreu Faria, 9 years old



Vânia Paula Mendes Gonçalves, 11 years old

NON-PHARMACOLOGICAL INTERVENTIONS (PSYCHOLOGICAL AND PHYSICAL)

These interventions are very important, they are also inexpensive and safe!

The role of parents:

- care for their child, comfort and calm them
- provide distraction, support and comfort
- collaborate with health care providers



Maria Marques Guarda, 8 years old

Pediatric Chronic Pain



Children and adolescents suffer from chronic pain that affects their quality of life.

WHAT IS CHRONIC PAIN?

The pain becomes chronic when persists for **more than 3 months** or exceeds the predictable time of healing of the initial injury, no longer acting as a warning and protective sign of the body.

The pain itself becomes an independent and autonomous phenomenon in relation to its origin, no longer being a simple symptom.

CHRONIC PAIN IN PEDIATRICS

Chronic pain in pediatrics is associated with multiple pathologies, has an important impact on the daily life activities of the child and families. Chronic pain in pediatrics leads to increase sensibility to pain in adulthood.

Currently, chronic pain in pediatrics remains:

- underdiagnosed
- undertreated
- has an unknown exact incidence (prevalence between 6-37%)
- under-recognized

WHAT IS THE IMPACT OF CHRONIC PAIN IN CHILDREN?

Chronic pain will interfere in all areas of the child's and family's life, leading to situations of great disability and family dysfunction, such as:

- school absence, decrease school performance
- sleep disturbances, psychological impact, isolation
- functional impairment (e.g. gait lost)
- limited participation in normal physical and social activities for their age
- development delay or regression
- loss of quality of life

WHAT ARE THE MAIN CAUSES OF CHRONIC PAIN IN CHILDREN?

Pain can arise in different contexts, but the most frequent situations are:

- recurrent headaches
- abdominal pain
- back pain
- complex regional pain syndrome
- localized or diffuse musculoskeletal pain
- pain in chronic diseases: neurologic, rheumatologic, genetic, hematologic diseases
- pain in oncologic disease

WHAT IS THE MOST APPROPRIATE TREATMENT?

The treatment should be **multimodal**, including different areas of intervention, through a **multidisciplinary team**, in order to maximize its efficiency.

Drugs are not the only answer! They're used when needed.

4 IMPORTANT STRATEGIES:

1. REHABILITATION (physical therapy, physical exercise, occupational therapy)
2. PSYCHOTHERAPY - managing stress, anxiety, emotions; sometimes family therapy
3. DISTRACTION AND RELAXATION TECHNIQUES (mind-body techniques): deep breathing, progressive muscle relaxation, biofeedback, hypnosis (favorite place, pain switch), etc.
4. RETURN TO NORMAL LIFE - social, school and family life.



Diana Raquel Alvito Venâncio, 10 years old



Karina Gonçalves Lopes da Rosa, 11 years old

ROLE OF PARENT

Parents and caregivers play a role of major importance: they are the ones who best understand the most subtle signs of pain in their child.

They also play a key role in implementing rules and strategies that allow the child to return to his/her usual activities as early as possible.

The *ideal* pediatric pain unit

In the pain unit, therapeutic programs are individualized and adjusted to each child or adolescent, and family.

Intervention in chronic pain should focus on recovering the child's functionality and not just on treating pain.

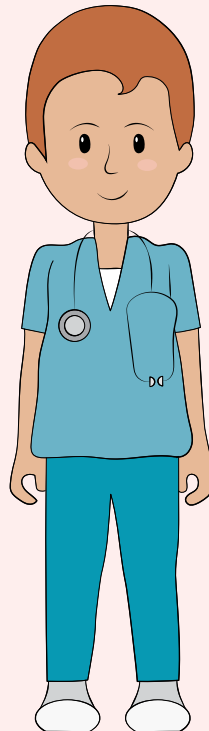
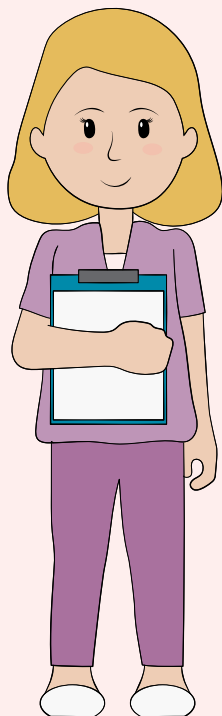
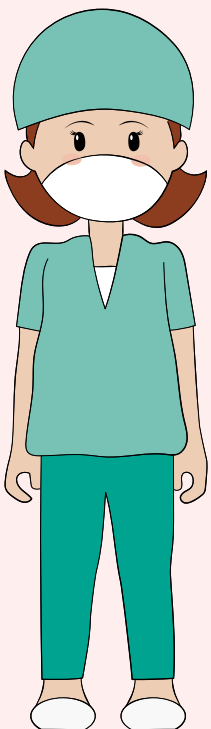
The current recommendations for the treatment of chronic pain includes a multidisciplinary team approach organized in a functional unit that allows the improvement of the functional capacity and return to the previous activities of the child or adolescent.

In the pain units, the multidisciplinary programs can be:

- on outpatient basis
- in day hospital
- hospitalization

The multidisciplinary team consists of professionals specialized in chronic pain and pediatric care:

- Physicians (Pediatrician, Anesthesiologist, Neuropediatrician, Physiatrist, Pedopsychiatrist)
- Psychologists
- Nurses
- Physiotherapists
- Occupational therapists
- Social workers
- Others



The therapeutic approach consists in combining various treatment modalities:

- **PHARMACOLOGICAL:** medication under medical supervision and adjusted on a case-to-case basis, whenever required.
- **REHABILITATION:** specific programs for chronic pain that have as main purpose improving functional capacity and the returning to previous activities besides reducing the pain, which include physiotherapy, occupational therapy, and physical exercise.
- **PSYCHOLOGICAL:** interventions to reduce anxiety and negative feelings in children and their families, such as cognitive-behavioral therapy. Teaching of distraction and relaxation techniques: diaphragmatic breathing, progressive muscle relaxation, biofeedback, etc.
- **COMPLEMENTARY AND INTEGRATIVE THERAPIES:** acupuncture, hypnosis, music therapy, massage, art therapy, meditation and mindfulness, etc.

Programs should be child - and family-centered and include:

- EDUCATION (on chronic pain, measures for sleep hygiene and nutrition advice)
- STRATEGIES FOR DEALING WITH PAIN (distraction, exercise)
- FAMILY THERAPY
- INCLUSION IN THERAPEUTIC GROUPS

THE SPACE AND LOCAL OF THE PAIN UNIT

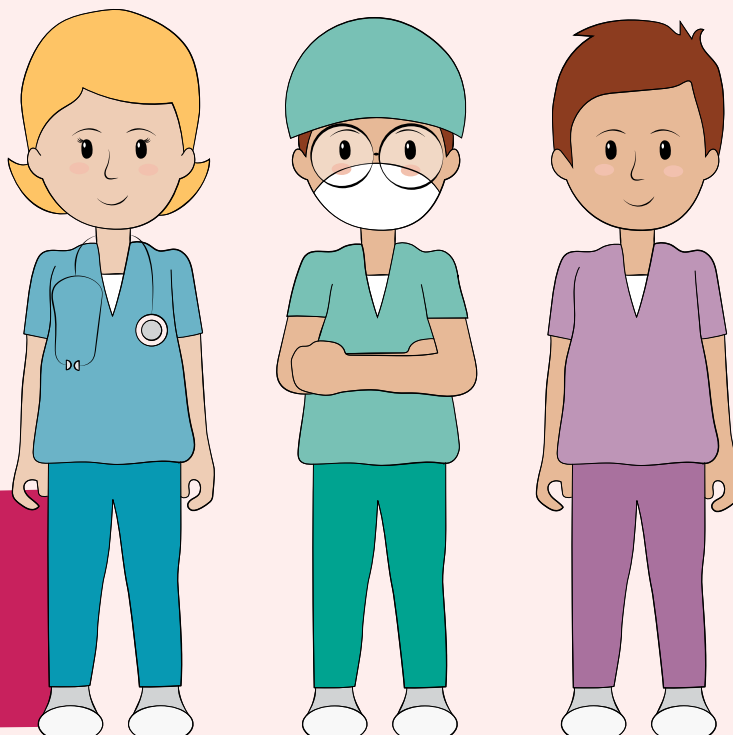
It should be a space adapted to children and adolescents - warm, inviting and fun.



Sara Catarina Luciano Caixeiro, 12 years old



Diana Raquel Alvito Venâncio, 9 years old



Myths and facts about pediatric pain

MYTHS: barriers to effective pain management in children

FACTS: what is observed in the children's reality

MYTH

Younger children do not feel pain. The child's nervous system is immature and unable to perceive an experience of pain in the same way as an adult.

FACT

Still in the mother's womb, at 24 weeks of gestation, the central nervous system already has the anatomical and neurochemical capabilities that allow the baby to feel pain.

MYTH

Children tolerate pain better than adults.

FACT

On the opposite, younger children experience higher levels of pain than older children. Only with age the tolerance to pain increases.

MYTH

Children are unable to tell where they feel pain..

FACT

Children may not express their pain in the same way as adults, but they are able to indicate the area in their body where it hurts. They can also explain how much it hurts using appropriate scales, and even express by a drawing the type of pain they have.

MYTH

Children will get used to pain or painful procedures.

FACT

On the opposite, repeated exposure to painful procedures increases their anxiety and the perception of pain, untreated ongoing pain may cause long-term changes in the child's nervous system.

MYTH

Children always say when they feel pain.

FACT

Children often do not complain of pain because they are afraid of painful administration of analgesics (injection) or are afraid of returning to the hospital.

MYTH
Morphine is a very strong analgesic and should be avoided in children.

FACT
Morphine (and other opioids) can and should be given to children with moderate to severe pain under medical supervision. These strong analgesics, when indicated for the treatment of very young children do not interfere with their neurodevelopment. Even if there are side effects they are often transient and manageable by the attending physicians.

MYTH
If the child can be distracted, the child is not in pain.

FACT
Momentary distraction does not exclude the existence of pain. It means that the child uses his cognitive abilities focus the attention away from the pain.

MYTH
The child will easily become addicted to opioids.

FACT
Scientific research shows that when opioids are used properly and under surveillance they do not create addiction.



Tomás Barreiro Pereira, 12 years old



Ricardo Francisco Soares Lima, 9 years old

“I’m Going to Draw My Pain” contest

Since 2005, APED – Portuguese Association for the Study of Pain promotes the contest “I’m Going to Draw My Pain”.

The contest “I’m Going to Draw My Pain” annually evaluates the works done by hospitalized children in Portugal, which reveal their personal perspectives on pain.

The contest is intended for all children up to 12 years of age who are hospitalized in national health facilities or being treated in day hospitals. Three children are awarded in each of the three age groups: children under 6; from 6 to 8; from 9 to 12 years old.

With this initiative, APED, currently supported by bene Pharmaceutical, intends to raise awareness for the importance of valuing the complaints of the little ones and treating them properly.



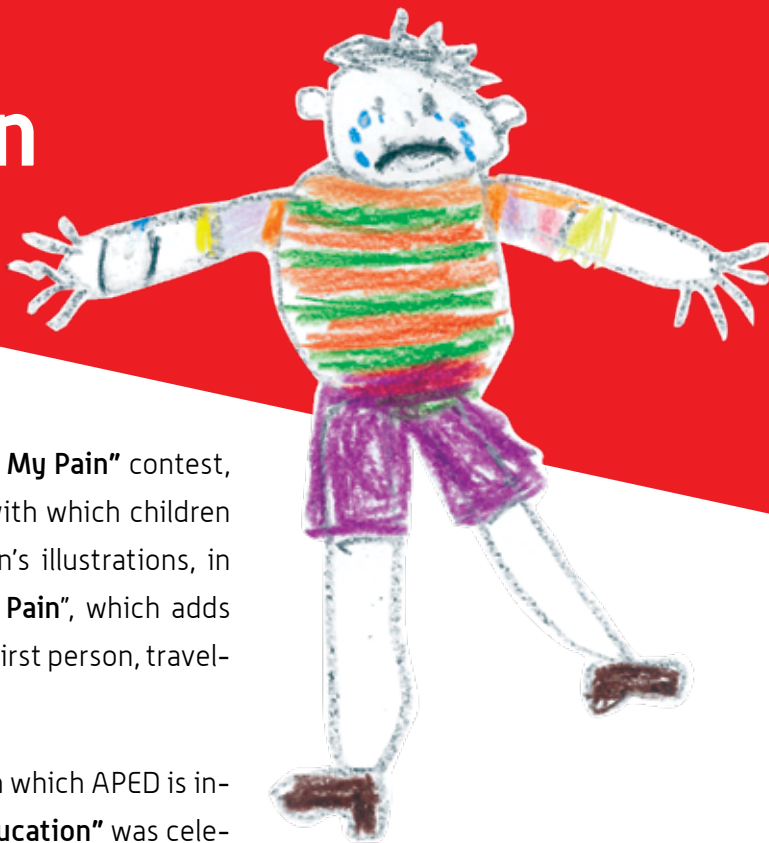
Raissa Luiana Camueje, 9 years old



HOSPITAL LEIRIA



Excellence in pain education



Throughout the 13 years of the **"I'm Going to Draw My Pain"** contest, it was impossible to be indifferent to the candor with which children draw their experience of pain. With these children's illustrations, in 2017 we created the exhibition **"Drawings of My Pain"**, which adds scientific knowledge to the experience lived in the first person, traveling through Portugal hospitals.

In 2018, in a concerted initiative of IASP and EFIC, in which APED is integrated, the **"Global Year for Excellence in Pain Education"** was celebrated, with the mission of filling the existing gap between knowledge and practice.

Integrated in this Global Year, which motto was **"Teaching better, learning better and doing better"**, the book **"Drawings of My Pain"** presented itself as a training and educational tool for the pediatric pain approach, suitable for professionals, patients and caregivers, equipping them with knowledge and strategies about the management of pain in this age group.

2019 will be the **"Global Year Against Pain in the Most Vulnerable"**, which undoubtedly integrate children, keeping this book as an important tool in the pursuit of the proposed goals.

I am confident that this book maintains its interest in our daily practice.

Ana Pedro

President of APED, January 2019.





BIBLIOGRAPHY

- Kuttner L (2010). *A child in Pain – What Health Professionals Can Do to Help*. CownHouse Publishing Ltd.
- Batalha L. (2010). *Dor em Pediatria: compreender para mudar*. Lisboa, Lidel
- *Dor em Pediatria*. Revista Dor APED 2009; 17[2]
- Instituto de Apoio à Criança. *Carta da Criança Hospitalizada*. Leiden 1988
- Direção Geral de Saúde - Orientação nº014/2010 - Orientações técnicas sobre a avaliação da dor nas crianças
- Direção Geral de Saúde - Orientação nº022/2012 - Orientações técnicas sobre o controlo da dor em procedimentos invasivos nas crianças (1 mês a 18 anos)
- Direção Geral de Saúde - Orientação nº024/2012 - Orientações técnicas sobre o controlo da dor nos recém-nascidos (0 a 28 dias)
- Direção Geral de Saúde (2012). *Plano estratégico nacional de prevenção e controlo da dor (PENPCDor)*
- Ordem dos Enfermeiros (2013). *Guia Orientador de Boa Prática – Estratégias não farmacológicas no controlo da dor na criança*. Cadernos OE, série I, n.º6
- Taddio A. et al. Reducing pain during vaccine injections: clinical practice guideline. *CMAJ* 2015. DOI:10.1503 /cmaj.150391
- How to Reduce Vaccine Injection Pain in Children. <http://www.cmaj.ca/content/suppl/2010/11/22/cmaj.101720.DC1/pain-long-taddio-app1.pdf>
- World Health Organization 2012: *WHO Guidelines on the Pharmacological Treatment of Persisting Pain in Children with Medical Illnesses*
- Stinson J, Yamada J, Dickson A, Lamba j, Stevens B. Review of systematic reviews on acute procedural pain in children in the hospital setting. *Pain Res Manag*. 2008 Jan-Feb; 13(1): 51–57
- Uman LS, Chambers CT, McGrath PJ, Kisely SR. Psychological interventions for needle-related procedural pain and distress in children and adolescents [Review] *Cochrane Database of Systematic Reviews* 2013, Issue 10
- *Pain: Clinical Updates IASP Volume XIII, No. 4 September 2005*
- Brown ML, Rojas E, Gouda S. A Mind–Body Approach to Pediatric Pain Management. *Children* 2017, 4, 50; doi:10.3390/children4060050
- Riddell RP et al. Non-pharmacological management of infant and young child procedural pain. *Cochrane Database of Systematic Reviews* 2015, Issue 12
- Stevens B, Yamada J, Ohlsson A, Haliburton S, Shorkey A. Sucrose for analgesia in newborn infants undergoing painful procedures. *Cochrane Database of Systematic Reviews* 2016, Issue 7
- Schwaller F, Fitzgerald M. The consequences of pain in early life: injury-induced plasticity in developing pain pathways. *European Journal of Neuroscience*, 2014;39:344–352
- Weisman SJ, Bernstein B, Schechter NL: Consequences of inadequate analgesia during painful procedures in children. *Arch Pediatr Adolesc Med* 1998. 152:147-9
- *Pain After Surgery in Children and Infants*. Fact Sheet Nº7 (<https://www.iasp-pain.org/files/2017GlobalYear/FactSheets/7.%20Pediatric%20Pain.Finley-EE.pdf>)
- Davidson F, Snow S, Hayden JA, Chorney J. Psychological interventions in managing postoperative pain in children: a systematic review. *Pain*. 2016;157(9):1872-86
- Friedrichsdorf F et al. *Chronic Pain in Children and Adolescents: Diagnosis and Treatment of Primary Pain Disorders in Head, Abdomen, Muscles and Joints*. *Children* 2016, 3, 42; doi:10.3390/children3040042
- Eccleston C, Palermo TM, Williams ACDC, Lewandowski Holley A, Morley S, Fisher E, Law E. Psychological therapies for the management of chronic and recurrent pain in children and adolescents (Review). *Cochrane Database of Systematic Reviews* 2014, Issue 5
- Miró, Jordi; McGrath, Patrick J.; Finley, G. Allen; Walco, Gary A. Pediatric chronic pain programs: current and ideal practice. *PAIN Reports: September/October 2017 - Volume 2 - Issue 5 - pe613*
- <http://www.aped-dor.org/index.php/a-aped/declaracao-de-montreal>
- Williams AC, Craig K. Updating the definition of pain. *Pain* 2016, 157: 2420-2423
- “Children’s Pain Matters! Priority on Pain in Infants, Children and Adolescents” – A statement from the IASP Special Interest Group (SIG) on Pain in Childhood. <http://childpain.org>

