



EARLY DIAGNOSIS OF CHILDHOOD CANCER



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Aproximando familias

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The earlier the cancer is diagnosed, the greater the chances of a cure. This statement applies to cancers in a general way, including those affecting children and adolescents. However, detecting the disease in this age group is often delayed for two reasons: the first signs are not so evident as to suggest a more serious problem; and symptoms are unspecific.

Another important aspect is that science has not yet figured out the causes of childhood cancer, so that, for the time being, we have no evidence to indicate its association with environmental factors, that is, there are no known ways for its prevention. Thus, the approach must be focused on the early diagnosis, a process that begins with basic care and requires prepared teams. This shows the importance of this book, which makes valuable content available for students and healthcare professionals on the topic.





The relevance of this work and the alignment of purposes make **amigo_h** (Amigos Einstein da Oncologia e Hematologia), which translates to "Friends of Einstein's Oncology and Hematology" renew the partnership with Ronald McDonald House Charities Brazil. The **amigo_h** is a non-governmental organization linked to Sociedade Beneficente Israelita Albert Einstein that is dedicated to raising funds to support and enable assistance, teaching, and research projects in the areas of Oncology and Hematology. In addition to the convergence of points of focus, this publication aligns with a key element that inspires Einstein: the promotion of health equity. Professional training is a form of contribute to reducing inequalities, allowing more patients to have access to better health care and more egalitarian quality standards.

The progress in the care of cancer in children and adolescents involves multiple dimensions: parental care and caregivers, trained professionals and appropriate diagnostic and treatment strategies, with total care, and agile and effective flows. This book is part of that effort. The contents of the following pages will help to disseminate knowledge that will become what we seek: increase in the chances of curing children and adolescents with cancer, in a more equitable way, benefiting patients from all regions of the country.

Sidney Klajner

President of the Sociedade Beneficente Israelita Brasileira Albert Einstein

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PRESENTATION

To promote health and well-being for children, adolescents and their family members, and contribute to increasing the chances of curing cancer in children and adolescents in Brazil. That is the mission of Ronald McDonald House Charities (RMHC) in the country, since 1999. Our programs seek to make the family journey more dignified and complete to face the disease that represents the leading cause of death in people within the age group from 1 to 19 years old in Brazil.

One of the strategies adopted by RMHC Brazil to increase the cure rate is promoting the dissemination of knowledge on the subject among healthcare professionals and students, as well as primary education professionals, through training and sensitization enabling them to suspect and know how to refer that child to be diagnosed. The early detection of childhood cancer is crucial to increase survival rates and improving the patients' quality of life.

In view of the complexity of the disease and the pressing need for rapid and accurate diagnosis, it is with great satisfaction that we present "The Early Diagnosis of Childhood Cancer - Quick Guide for Healthcare Professionals".

This guide has been carefully prepared to serve as a valuable supplement to the knowledge acquired in the classroom, providing detailed information regarding the main signs and symptoms of cancer in young patients. By using this book as a point of reference, students and healthcare professionals will be better prepared to recognize the initial signs of the disease and act effectively to provide quality service to their patients.

Our intention is to offer a reliable and accessible source of information regarding childhood cancer. With a clear and direct language, this guide seeks to demystify complex concepts, providing healthcare professionals with the necessary tools to act in an assertive and sensitive manner when dealing with cases of cancer in children and teenagers.

We hope that this guide will be a valuable source of guidance in their daily practices, helping to save lives and offer hope to those who face the challenge of cancer in children and adolescents.

Bianca Provedel

CEO of RMHC Brazil

IMPACT

RMHC Brazil is part of the global charitable system Ronald McDonald House Charities (RMHC), and it is present in more than 60 countries. Since its founding in Brazil, the purpose of RMHC Brazil is to raise the chances of curing cancer in children and adolescents at the same rates as that of high-income countries, which can reach 80%. Currently, in the country, the average chance of survival of the disease is of 64%.

The fight against childhood cancer is a journey filled with obstacles for the patient and their family. With the objective of changing this reality and facilitating the process before, during, and after treatment, RMHC Brazil, in addition to enabling actions and partnerships, works through the Early Diagnosis Program, Ronald McDonald House Program, Ronald McDonald Family Room and Total Care.

A non-profit social organization, RMHC exclusively relies on donations from companies and individuals. McDonald's is the founding partner of the RMHC mission. See below the impact of the programs and projects of RMHC Brazil:



Partnership with

108

Institutions (hospitals, support houses, and scientific societies)



We benefit more than

3 million

children and adolescents directly



We operate in

22

States + Federal District and we influence public policies



We invested approximately

BRL 378 million

in Brazilian pediatric oncology



We train approximately

35 thousand

healthcare professionals and students



We benefit more than





11 million

children and adolescents indirectly

FAMILY JOURNEY

Learn about the Family Journey through the four programs of RMHC Brazil:



BEFORE	DURING AND AFTER TREATMENT		
 <p>EARLY DIAGNOSIS OF CHILDHOOD CANCER</p>	 <p>RONALD McDONALD HOUSE</p>	 <p>RONALD McDONALD FAMILY ROOM</p>	 <p>TOTAL CARE PROGRAM</p>
<p>To train healthcare professionals and students and sensitize teachers from primary education to identify the signs and symptoms of cancer early on</p>	<p>For accommodation, food, and free transportation for patients and their families during treatment</p>	<p>To make the daily lives of the families less exhausting during oncology treatment</p>	<p>To promote quality treatment, psychosocial support, and dissemination of knowledge regarding the cause</p>

ABOUT CANCER

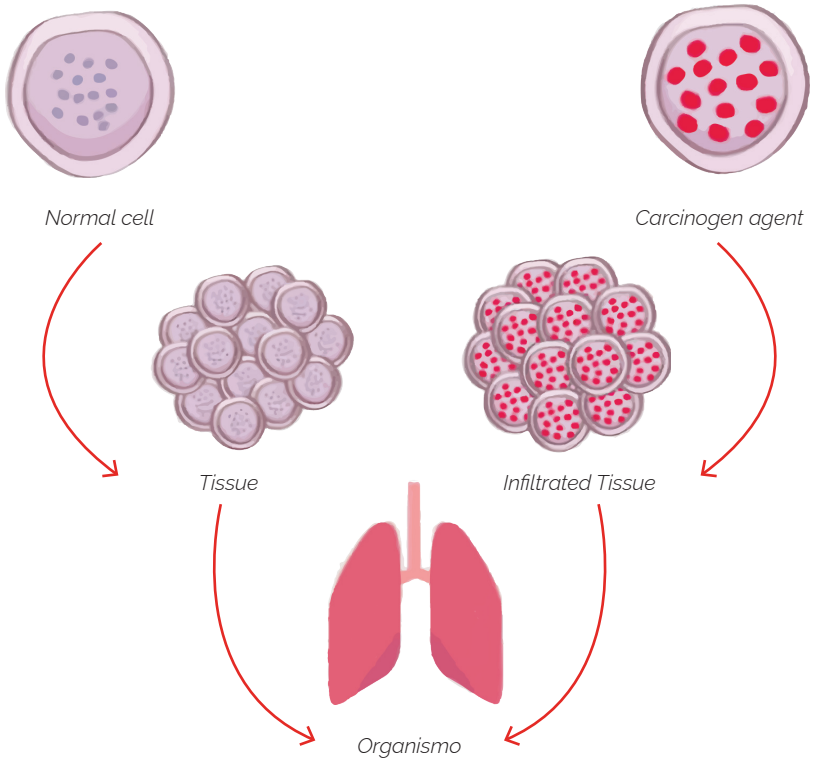
WHAT IS IT?

It is the name given to a set of more than 100 diseases that have in common the disordered growth of cells, which invades tissues and organs.

Unlike many cancers that occur in adults, childhood cancer is not strongly associated with lifestyle or factors of environmental risks, and cannot be subject to prevention.

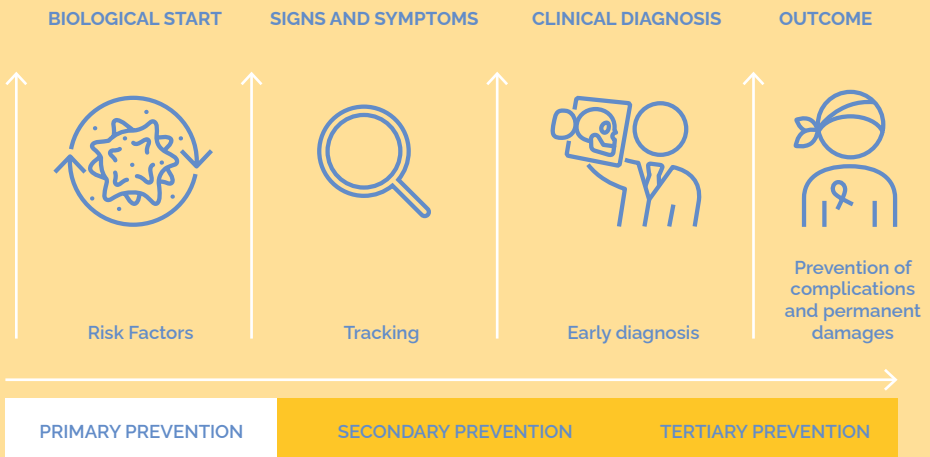
In children and adolescents, the early diagnosis as well as effective treatment in specialized centers are essential to increase the chances of a cure.

FOR EACH YEAR OF THE TRIENNIUM (2023 TO 2025), THERE IS AN ESTIMATE OF 7,930 NEW CASES OF CANCER IN CHILDREN AND ADOLESCENTS UP TO 19 INCOMPLETE YEARS OF AGE IT IS A POTENTIALLY CURABLE DISEASE



PREVENTION CATEGORIES

Since it is not a preventable disease in most cases, the role of risk factors regarding the development of cancer in children and adolescents is minimal. Likewise, because of the characteristics of the tumors in such age, the screening for cancer during childhood and adolescence was not effective in general, being suitable only for certain groups, such as carriers of genetic syndromes, and by the "little eye test" or "red reflection test" for early detection of retinoblastoma. To decrease cancer mortality rate in this age group, the early and accurate diagnosis is necessary, followed by effective treatment.



With the early diagnosis, the disease is discovered sooner and makes it possible to carry out less aggressive treatments, with a consequent reduction of complications during the treatment and of permanent damages. There is a considerable increase in the cure rate, with a reduction in morbidity and mortality rates by the disease, in addition to an improvement in the quality of life of the patient and their family.

THE SCENARIO IN BRAZIL AND IN THE WORLD

According to the World Health Organization, approximately 400,000 children and adolescents are diagnosed every year worldwide. In Brazil, the cancer incidence estimates published by the National Cancer Institute (INCA) indicate that 7,930 new cases are expected each year of the triennial period 2023-2025.

HIGH-INCOME COUNTRIES



LOW- AND MIDDLE-INCOME COUNTRIES



In high-income countries, **more than 80%** of children with cancer can be cured. In many low-income countries, on the other hand, less **than 30%** are cured

Currently, in Brazil, the average chance of curing cancer in **children and adolescents is 64%**

Cancer is the **leading cause** of death, by illness, in the age group from **1 to 19 years of age**

Cancer is the **second leading cause** of hospitalization of children and adolescents

In this context, it is important to mention that the early diagnosis is crucial for improving the cure rates associated with cancer in children and adolescents. Therefore, the awareness among parents, healthcare professionals, and of the general population regarding the cancer signs and symptoms in children is essential.

Each year **in the U.S. there are an estimated 15,780 children between the ages of birth and 19 years of age who are diagnosed with cancer.** Approximately 1 in 285 children in the U.S. will be diagnosed with cancer before their 20th birthday.

Globally there are more than 300,000 children diagnosed with cancer each year. Every 3 minutes, somewhere in the world, a family hears the devastating words that their child has been diagnosed with cancer. Over the past 40 years, the number of children diagnosed with leukemia has increased by about 35%. While survival rates for many types of childhood cancer have improved, for too many children, cancer will shorten their lives too soon. Cancer remains the most common cause of death by disease for children in America.

Cancer is treatable and curable for the vast majority of children and adolescents when essential diagnostic, therapeutic, and supportive care services are accessible. However, substantial inequalities exist across countries of the Americas in terms of individual access to health care and high-quality treatment and supportive care services.

<https://www.who.int/news-room/fact-sheets/detail/cancer-in-children>

WHY ARE WE NOT MAKING PROGRESS IN REDUCING THE MORTALITY RATE?

To reduce the mortality rate of children and adolescents with cancer, the main factors we need to advance in are:



To reduce the delay in the diagnosis



To expand the ability to obtain an accurate diagnosis



To enable access to appropriate therapy close to the patient's home



To ensure the patient's arrival



To expand appropriate structures to reduce the dropping of the treatment



To encourage treatment at specialized centers, to reduce death by toxicity and the cases of preventable relapse

WHY IS IT DIFFICULT TO DIAGNOSE CANCER IN CHILDREN AND ADOLESCENTS?

Some factors may be associated with the difficulty of diagnosing childhood cancer specially due to the fact that the initial signs and symptoms are common with those of other pediatric illnesses. In addition, two thoughts that are still very widespread contribute to the delay in the diagnosis: the first is that cancer would only appear in children and adolescents exposed to factors of risk; and the second is that childhood cancer would always be associated with a bad outcome.

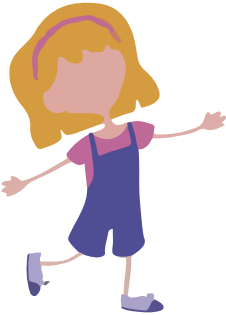
Both thoughts are mistaken, since only a small percentage of cases have identified the factors causing the disease, and most children can be cured and evolve with same conditions and opportunities as those who did not have cancer.

Learn about the main signs and symptoms of childhood cancer



PROLONGED FEVER WITH NO IDENTIFIED CAUSE

GROWTH OF THE EYE THAT MAY BE ACCOMPANIED BY A PURPLE COLORING ON THE SPOT

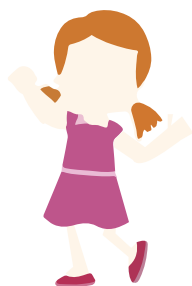


WEIGHT LOSS

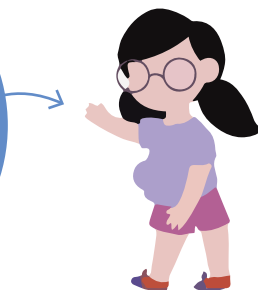
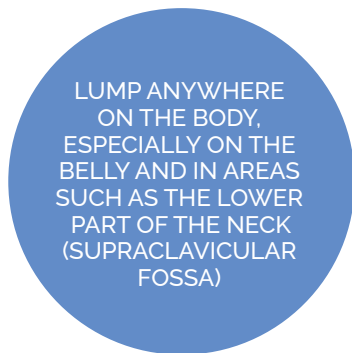
WHITE PUPILLARY REFLEX



PURPLE SPOTS AND BLEEDING THROUGH THE BODY WITH NO BRUISES



← UNEXPLAINED
PALENESS



← BONE AND JOINT
PAIN WITH OR
WITHOUT SWELLING



LEUCEMIAS

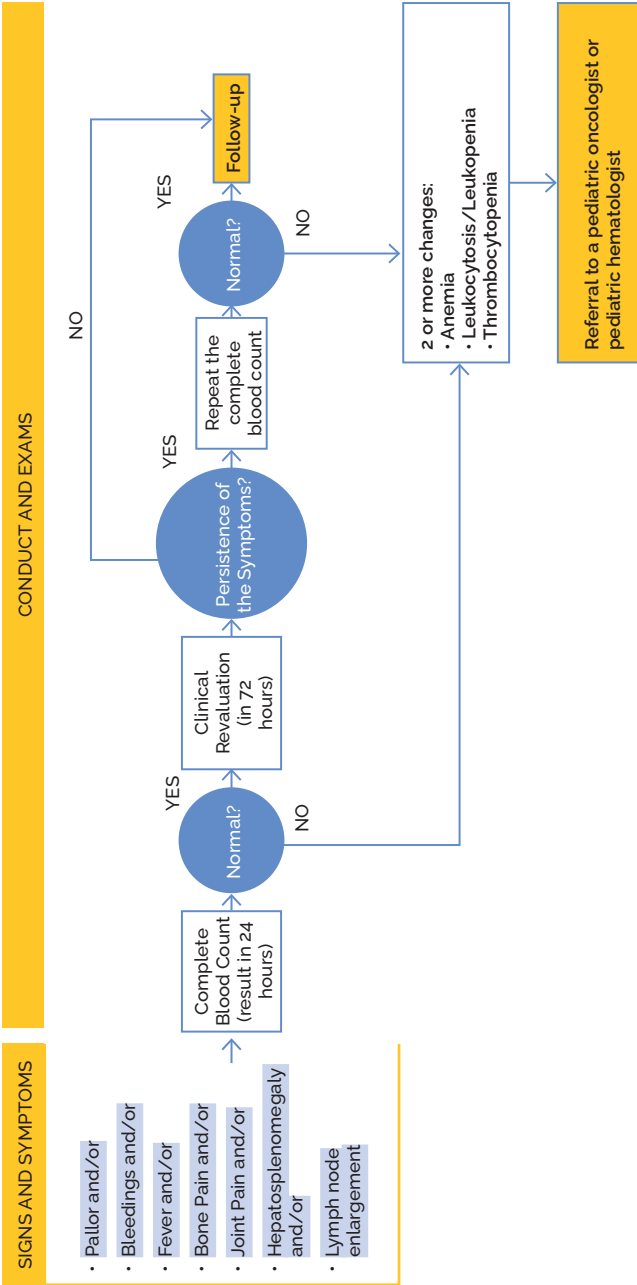
Leukemia is the main neoplasia affecting children and adolescents, with a peak of incidence from 1 to 4 years of age.

It affects the blood-producing cells in the bone marrow, leading to the replacement of normal cells by cancer cells. The signs and symptoms presented are due to this replacement and the lack of normal cell production.

WARNING SIGNS AND SYMPTOMS

- **Anemia**, caused by decreased red cell production and which causes cutaneous-mucous pallor, fatigue, etc.
- **Fever or infections**, due to the reduction of defense cells responsible for immunity
- **Abnormal bleeding** without a definite cause, due to the decrease in platelet production, which also causes **purple spots**, in addition to **petechiae**
- **Generalized bone or joint pain**, due to the risk of leukemia cells infiltrating other organs and tissues, such as bones, liver, and/or spleen - causing the latter two to enlarge (**hepatosplenomegaly**) - and lymph nodes, causing generalized **adenomegaly**
- They are less common, but there may also be infiltration of the testicles, brain, or the existence of an extramedullary mass (characterized as **chloroma**)
-

LEUKEMIAS



Emergency:

- Leukocytosis > 50,000/mm³
- Bleeding
- Platelets < 20,000/mm³
- Severe Anemia (hemoglobin < 6g/dL)

In cases of suspected Leukemia, it is necessary to request an URGENT COMPLETE BLOOD COUNT and, if there are changes in two or more series (red series, white series (leukocytes) and series of platelets, urgent contact must be made with the specialized service. The set of signs and symptoms must always be valued! An apparently normal complete blood count may not be sufficient to exclude the possibility of leukemia!

LINFOMAS

It is the second most common childhood tumor, less common in children under 1 year old. It is cancer of the lymph nodes, usually with ganglion enlargement, called adenomegaly or lymph node enlargement. During the evaluation of the lymph nodes, it is important to differentiate the characteristics that suggest a benign (inflammatory) or malignant suspicion, as indicated below:

WARNING SIGNS AND SYMPTOMS

Inflammatory lymph nodes

- Painful
- Movable
- Elastic fiber
- Regular and smooth surface
- Localized

Malignant lymph nodes

- Painless
- Adhering to deep planes
- Stony Consistency (hard)
- Uneven surface
- Larger than 2 cm
- Generalized, coalescing, in suspicious regions (supraclavicular)

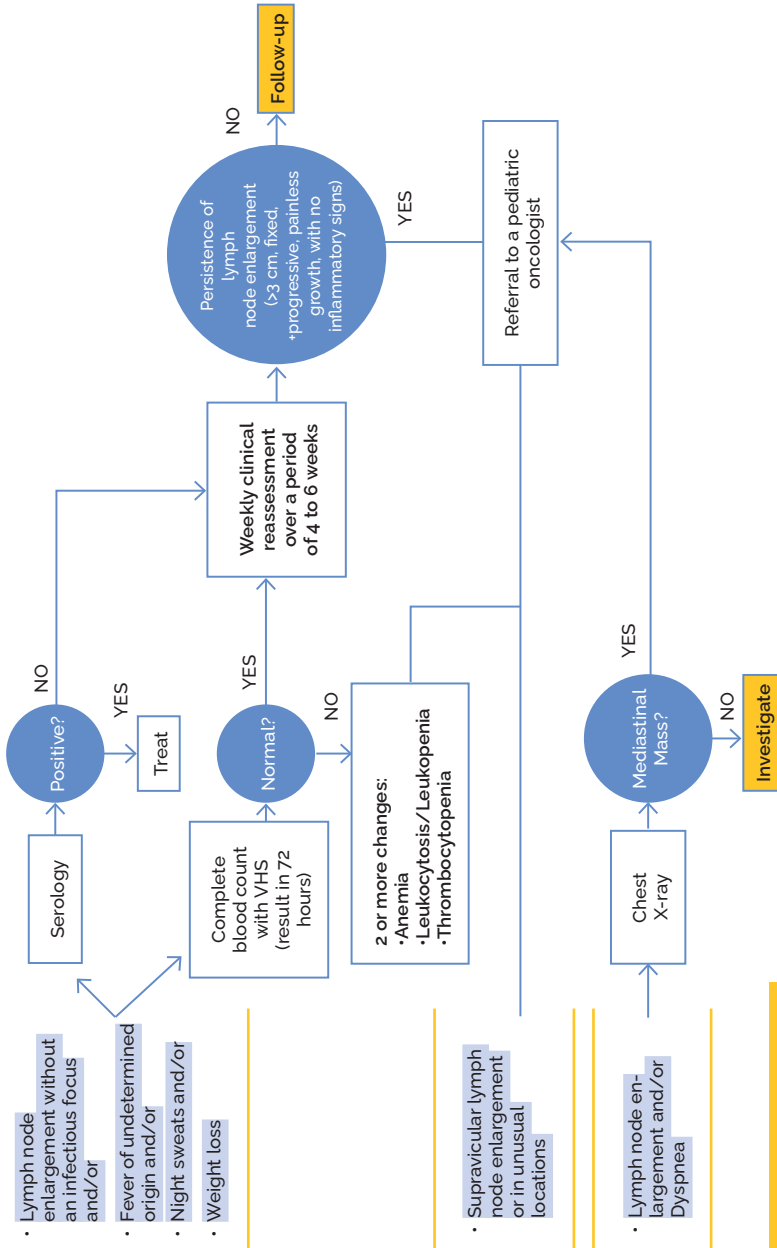
Other warning signs that should attract attention and indicate the need for referral with greater urgency are:

- Cough, shortness of breath
- Abdominal pain
- Palpable mass in the abdomen
- Enlargement of the liver and spleen
- Palpable mass in the jaw
- Lymph node enlargement (tongue)
- Dysphagia (difficulty swallowing)
- Wheezing (whistling sound in the chest)
- Collateral circulation (superior vena cava syndrome)

LYMPHOMAS

CONDUCT AND EXAMS

SIGNS AND SYMPTOMS



- Lymph node enlargement without an infectious focus and/or
- Fever of undetermined origin and/or
- Night sweats and/or
- Weight loss

- Supravicular lymph node enlargement or in unusual locations

- Lymph node enlargement and/or Dyspnea

- Emergency:
- Mediastinal mass

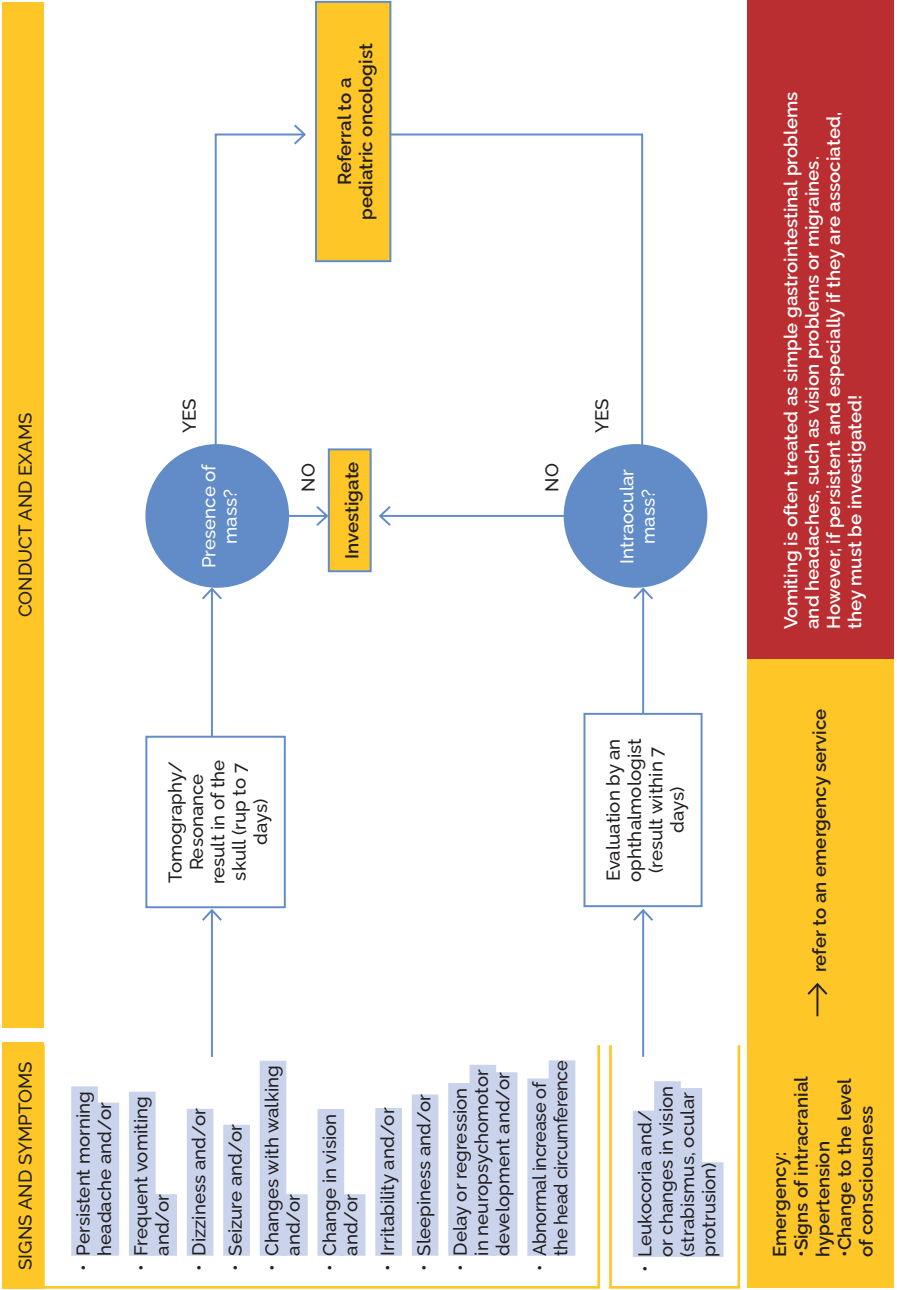
TUMORS IN THE CENTRAL NERVOUS SYSTEM

The third most common tumor in childhood, with a peak incidence in the age group from 1 to 4 years of age. Its clinical condition varies depending on the location, histological type, and growth rate of the tumor, and the child's age. Most tumors of this type are located in the area of the posterior fossa, causing obstruction in the circulation of the cerebrospinal fluid, which leads to hydrocephalus and increased intracranial pressure.

WARNING SIGNS AND SYMPTOMS

- Headache associated with morning vomiting or headaches that make the child wake up
- Change in headache pattern, with increased intensity and frequency
- Persistent vomiting, with increased frequency
- Papilledema
- Sleepiness
- Strabismus
- Abnormalities with walking, frequent falls, ataxia
- Delay or regression in neuropsychomotor development
- Sudden learning problems with no definite cause
- Changes in behavior and mood without definite cause

TUMORS IN THE CENTRAL NERVOUS SYSTEM



SOFT TISSUE (MUSCLE) TUMORS

They represent 5.4% of the total number of cancer in children and adolescents, with two peaks of incidence: between 1 and 4 years of age and later, between 12 and 19 years of age.

It is a heterogeneous group of malignant tumors, among which, the most common are sarcomas. Its origin occurs mainly in muscle tissue. The most common locations are the head and neck region, followed by genitourinary tract (mainly bladder and prostate) and extremities.

Signs and symptoms include the presence of a mass, nodule, or injury of soft tissue that occurs unexpectedly and with no explanation in any part of the body. Its main characteristics are mass attached to deep planes, the absence of pain on the location, progressive enlargement and, in general, nodules larger than 2 cm of diameter.

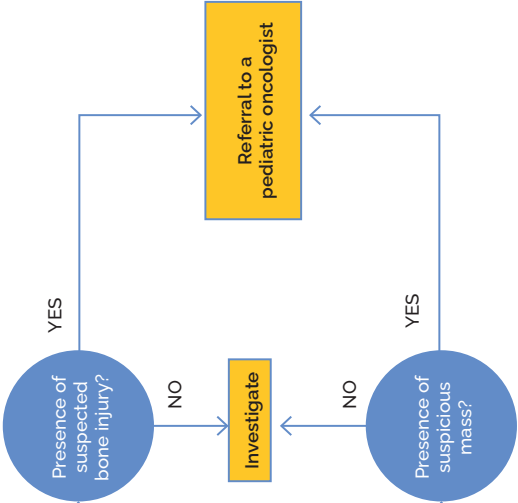
WARNING SIGNS AND SYMPTOMS

- Mass adhered to deep planes
- Absence of pain
- Progressive increase
- Nodules larger than 2 cm
- Proptosis - Forward projection of the eye
- Nasal obstruction
- Obstruction of the ear canal
- Vaginal discharge with bleeding
- Urinary retention (bladder and prostate), hematuria (blood in the urine)

SOFT TISSUE (MUSCLE) TUMORS

CONDUCT AND EXAMS

- SIGNS AND SYMPTOMS**
- Bone pain and/or
 - Increase in volume of the region affected with inflammatory signs



- Progressive increase in volume of soft tissue (mass or nodule)

Mass anywhere in the body can be cancer and should be investigated

BONE TUMORS

This group of neoplasia tends to affect adolescents more frequently. It is mainly represented by osteosarcoma and tumors from the Ewing family.

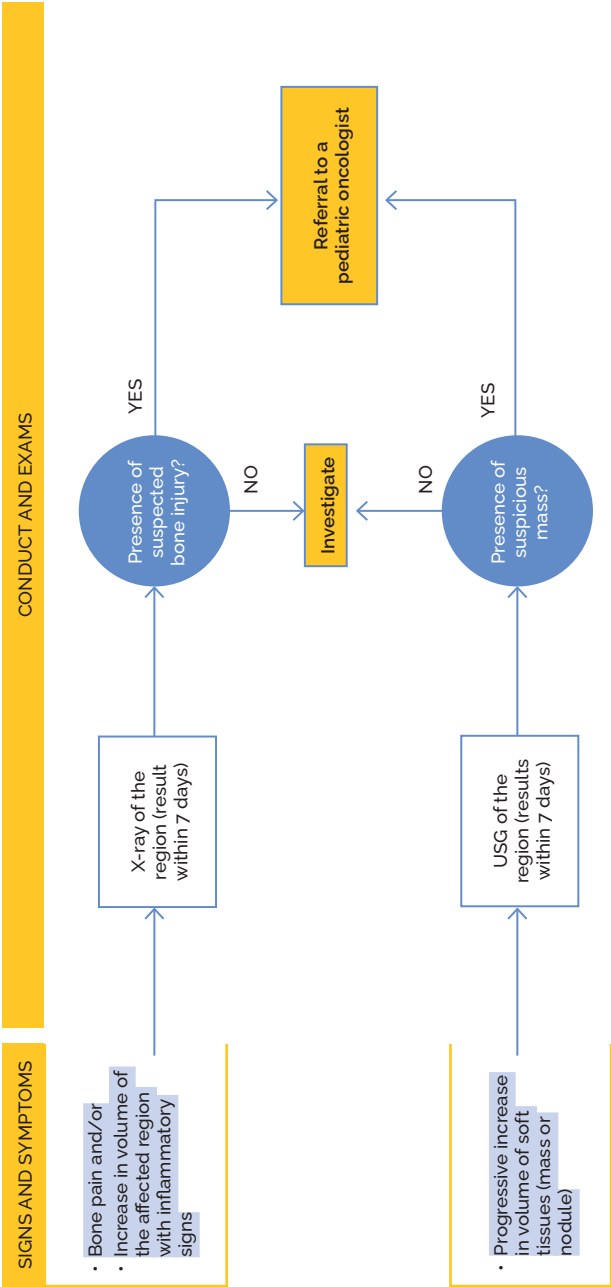
WARNING SIGNS AND SYMPTOMS

- Bone pain associated or not with trauma (trauma is never the cause of a bone tumor but is, usually, a consequence)
- Increase of local volume
- Decreased mobility of the affected limb
- Local inflammatory process (heat, hyperemia)
- There may be a pathological fracture present

If a case of bone tumor is suspected, an X-ray examination is indispensable. Among the changes that require immediate referral to the specialized service are:

- Signs of rarefaction and bone lysis: osteolytic lesions
- Periosteal reaction: thickening or rupture of the periosteal line

BONE TUMORS



GERM CELL TUMORS

They are a heterogeneous group of tumors with diverse histological locations and types.

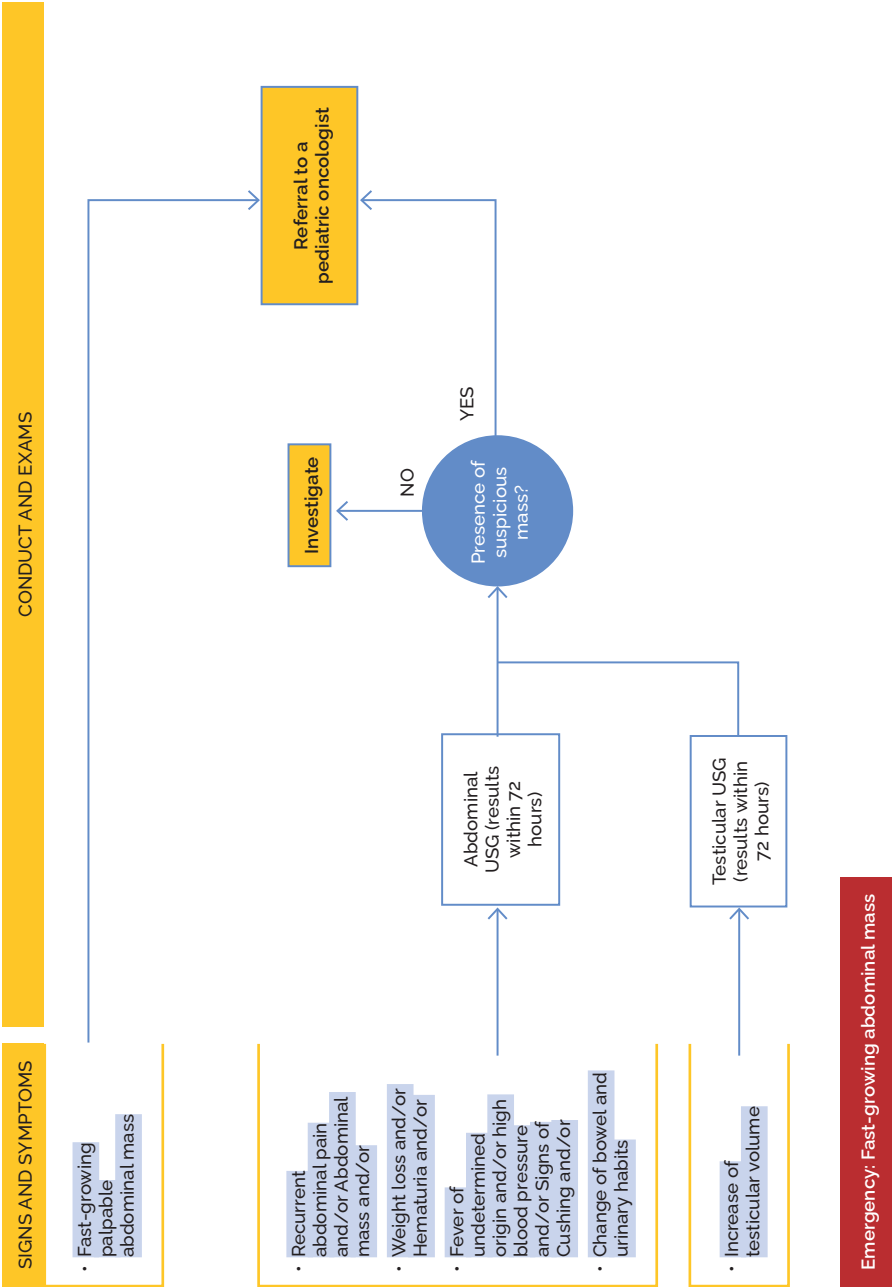
There are two peaks of incidence: in children under 5 years of age, with sacrococcygeal or abdominal tumor being the more common ones; and in people over 10 years of age/ adolescents, with tumors in the gonads (testicle and ovary) being the most common.

WARNING SIGNS AND SYMPTOMS

- Increase of the testicular volume
- Enlargement of the sacrococcygeal region
- Presence of abdominal mass

Any mass in the sacral region at birth or growth in the first year of life, one must think about cancer

In case of testicle enlargement, the possibility of cancer must be ruled out. If suspected, an inguinal surgical approach should be performed



ABDOMINAL MASSES

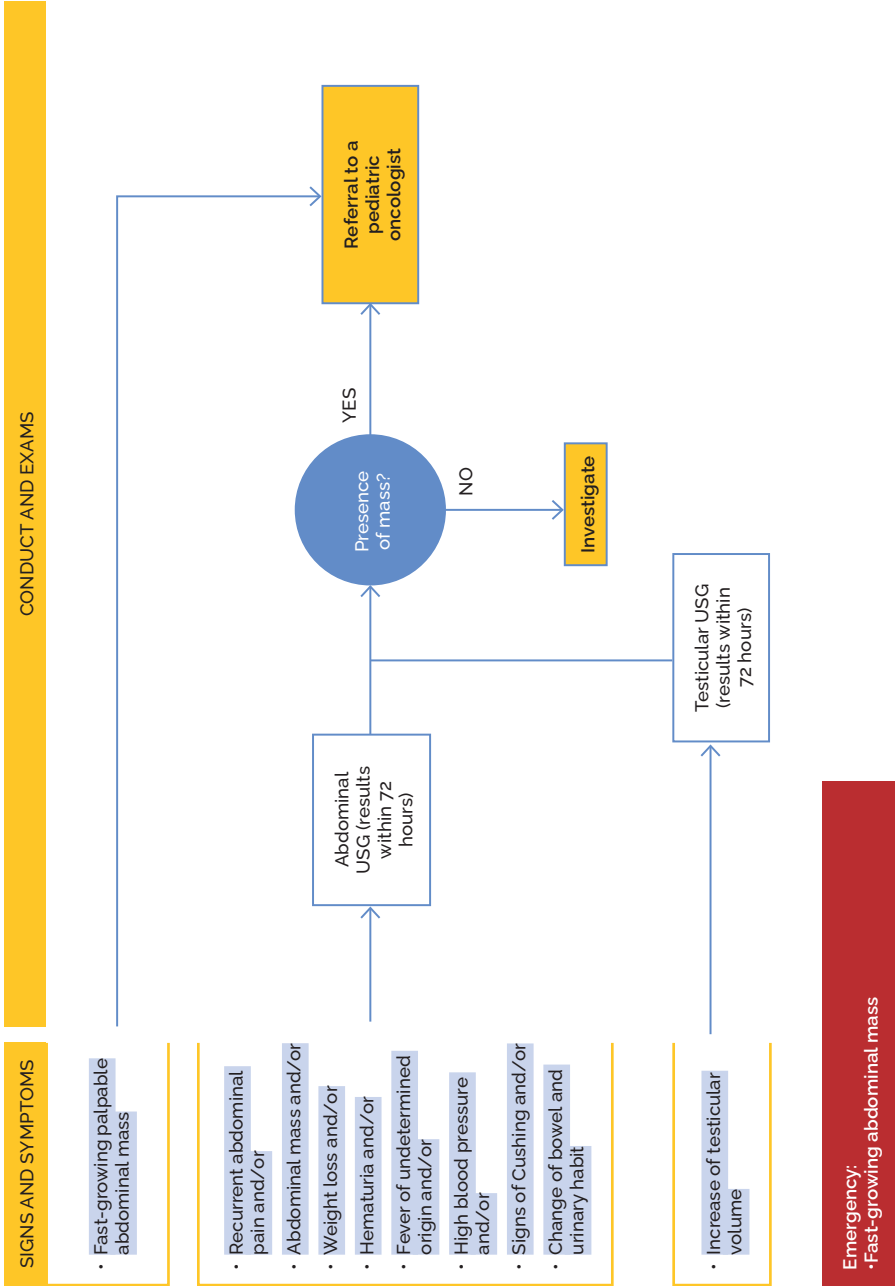
The presence of a palpable abdominal mass is one of the most common forms of clinical presentation of solid tumors in children. The main types are neuroblastomas, Wilms kidney tumors (nephroblastoma), non-Hodgkin lymphomas (mainly subtype Burkitt), hepatoblastomas, and germ cell tumors. The younger the child, the greater the chance that an abdominal mass does not represent a cancer. After 2 years of age, most of the abdominal masses found represent a tumor!

Abdominal tumors are mostly asymptomatic and are identified by parents during childcare or through routine examination. When symptomatology is present, the most typical ones are:

WARNING SIGNS AND SYMPTOMS

- Abdominal pain/discomfort
- Weight loss
- Poor general condition
- Anemia
- High blood pressure
- Abdominal mass
- Irritability
- Bone pain
- Signs of spinal cord compression
- Ataxia (lack of coordination of muscle movement)
- Purple spot on the Proptosis
- Eyelid ptosis
- Subcutaneous nodules

Any child whose body part is larger on one side than on the other side, absence of the iris or malformation in the genitourinary system, should do an ultrasound every three months until they reach 5 years of age, because they will have a greater chance of early diagnosing a kidney tumor



RETINOBLASTOMA

It is the most common malignant intraocular tumor in childhood. 80% of cases are diagnosed before 4 years of age. This tumor affects cells of the fundus of the eye (retina) and may be unilateral or bilateral.

WARNING SIGNS AND SYMPTOMS

- Leukocoria (cat's eye reflex)
- Appearance of strabismus
- Persistent eye irritation
- Changes in vision
- Proptosis or eye protrusion
- Headache and vomiting

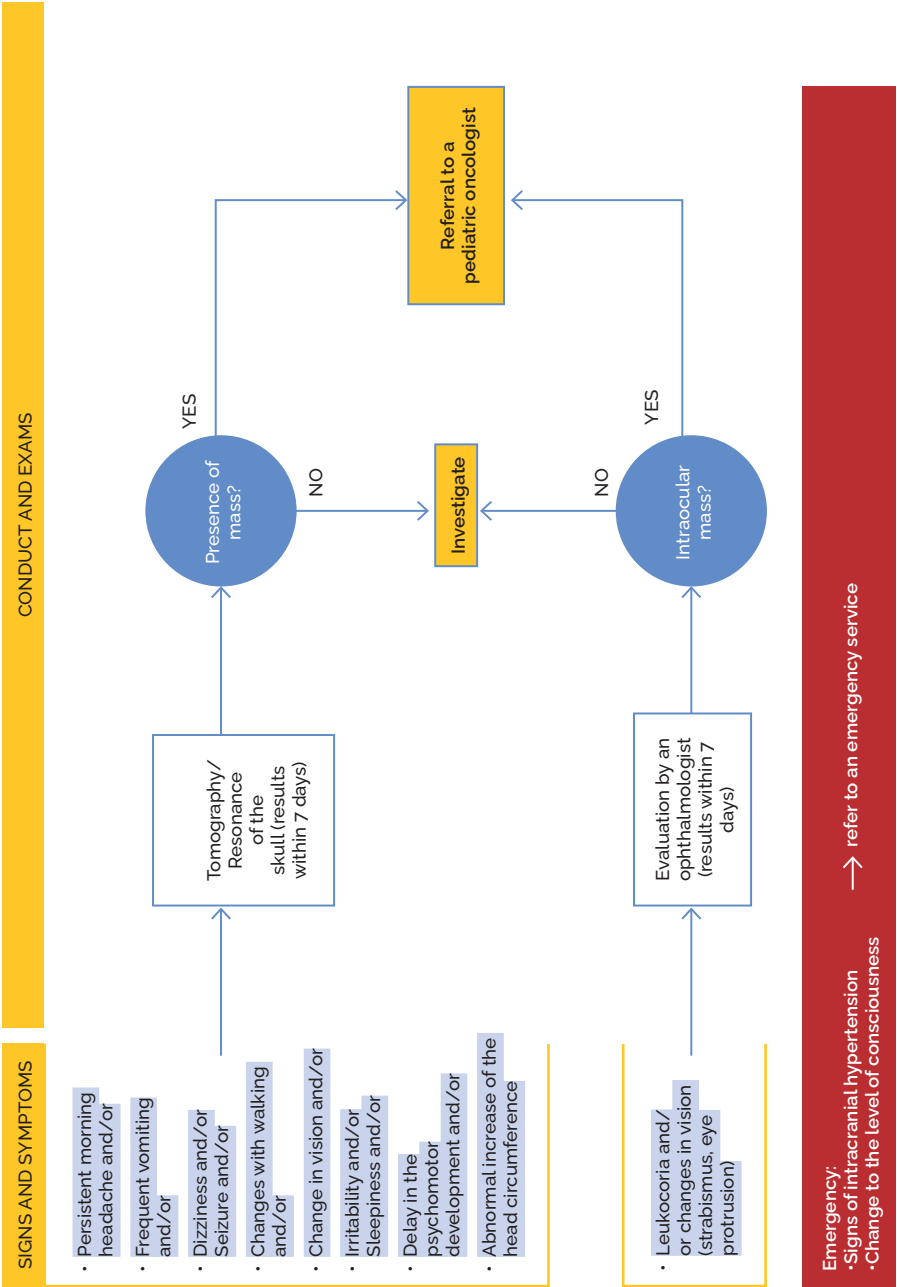
ATTENTION!!!

In the retinoblastoma hypothesis,
The exam of choice is fundoscopy with an ophthalmologist

Every child with enlargement of the eye and/or with a cat's eye reflex should be referred. Flash photos can help a lot with this recognition

Every child who is the sibling or daughter of a person who had retinoblastoma, especially in both eyes, shall be subject to a fundoscopy in the first month of life with an ophthalmologist and shall be checked regularly.

Successive ophthalmological evaluations are also advisable in children with a negative family history



GENETICSYNDROMESANDMALFORMATIONS

Children with some genetic syndromes have a higher risk of developing neoplasms, for example, greater association between leukemia and patients with Down syndrome or central nervous system tumors and neurofibromatosis. For this reason, specific tracking is advisable for these patients as described in the following table:

Syndrome	Associated cancer	Strategies for early diagnosis
Ataxia-telangiectasia	Lymphoma, lymphoblastic leukemia, breast	Attention to warning signs and symptoms
Beckwith-Wiedmann	Wilms tumor, hepatoblastoma, neuroblastoma, adrenocortical carcinoma	Abdominal ultrasound 3/3 months until 5 years of age, serum alpha-fetoprotein
Bloom	Leukemia, lymphoma, Wilms tumor, stomach, colon, breast, hepatocellular carcinoma, sarcoma, CNS tumors	Attention to warning signs and symptoms. Consider performing an abdominal ultrasound
Denys-Drash	Wilms tumor	Kidney ultrasound
Dow	Leukemia	Complete blood count in the neonatal period. Attention to warning signs and symptoms
Fanconi anemia	Leukemia, myelodysplastic syndrome, hepatocellular carcinoma, solid tumors (head and neck, gynecological)	Diagnosis: myelogram, iliac crest biopsy. Consider having a complete blood cell count every 6 months. Attention to warning signs and symptoms

GENETICSYNDROMESANDMALFORMATIONS

Syndrome	Associated cancer	Strategies for early diagnosis
Gardner	Hepatoblastoma, colon, and other gastrointestinal tract tumors	Serum alpha fetoprotein and abdominal ultrasound every 3 months, until 3 years of age. Colonoscopy starting at 10 years of age
Hemihypertrophy	Wilms tumor, hepatoblastoma, neuroblastoma, adrenocortical carcinoma	Similar to the Beckwith-Wiedmann syndrome
Klinefelter	Germ cell tumors, breast	Attention to warning signs and symptoms
Neurofibromatosis type 1	Medullary thyroid carcinoma, pheochromocytoma	Thyroid ultrasound
Multiple endocrine neoplasia type 2	Peripheral nerve sheath tumor, leukemia, sarcomas, CNS tumors	Attention to warning signs and symptoms
Peutz-Jeghers	Tumors of the gastrointestinal tract and reproductive system	Pelvic ultrasound, testicle exam, colonoscopy, and upper gastrointestinal endoscopy
WAGR	Wilms tumor	Kidney ultrasound
Xeroderma pigmentosum	Skin tumors, eye tumors, leukemia	Dermatological, ophthalmological examination
Familial adenomatous polyposis	Hepatoblastoma, colorectal carcinoma	Abdominal ultrasound, colonoscopy
Retinoblastoma	Retinoblastoma, osteosarcoma	Ophthalmological evaluation. Attention to warning signs and symptoms

CONDUCT OF SUSPECTED CASES

Always take it seriously

when caregivers, parents, or guardians report that the child is unwell, since they are, for the most part, the best observers of the health situation of the children.

Be available

to reevaluate your patients whenever necessary.

If a problem persists for a long time without a solution or if the condition does not improve according to the expected standard, it is recommended to seek the opinion of another professional



Interact

with the pediatric oncologist during all stages of the treatment, supporting the patient and their family members.

Assess

whether the child will require diagnostic investigation.

To do this, a well-done history, a detailed physical examination, and some laboratory and imaging tests may help to clarify the case.

CONDUCT OF SUSPECTED CASES**Refer**

the investigation without alarming the family members in advance but rather sharing with the parents the concern about the possibility of a more serious illness, so that they do not miss the necessary appointments and exams.

**In the phases of suspected diagnosis, interact**

with other professionals, such as other Basic Care professionals, teachers and psychologists, as well as doctors of various specialties, such as ophthalmologist, neurologist, neurosurgeon, and orthopedist. Discussing suspected cases directly with specialists can help indicate the need for an early referral.

Refer

the child with a suspected diagnosis of malignant neoplasm (cancer) for evaluation by a pediatrician (secondary health care service) or for a tertiary care service to health with specialists in pediatric oncology-hematology.

**Dealing with the fear**

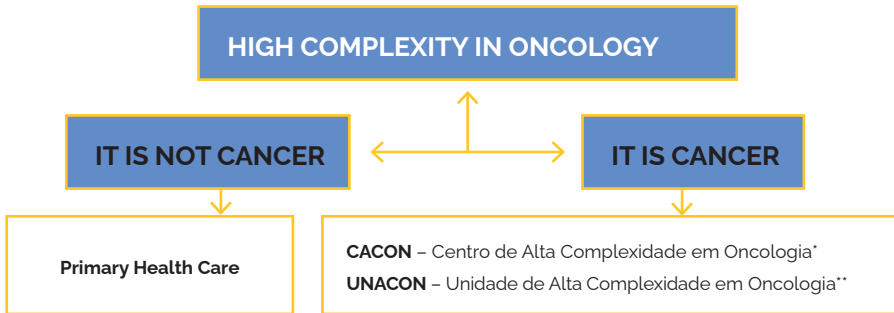
of the diagnosis and with the "cancer taboo". Some parents will want to take some tests to rule out the possibility of cancer. Others will not want to bring it up. The doctor may also often feel uncomfortable talking about the subject. This can create great anxiety in parents and a need for many visits to several pediatricians.

WHAT TO DO WHEN THERE IS A SUSPICION OF CANCER?

Children and adolescents with a strong suspicion of cancer should be referred to hospitals in their location for confirmation of the diagnosis.

Children with cancer must be treated in hospitals qualified in Pediatric Oncology by the Ministry of Health and/or accredited by local managers for service in pediatric oncology. These services are known in Brazil as High Complexity Oncology Units or High Complexity Oncology Centers, and should offer general, specialized, and Total Care for patients with cancer, acting in the diagnosis and treatment of the patient.

FLOWCHART FOR REFERRAL



* *High-Complexity Cancer Care Center (CACON)* It refers to specialized centers that provide comprehensive, high-complexity cancer care, including diagnosis and treatment, either in public or private healthcare facilities in Brazil.

** *High-Complexity Cancer Care Unit (UNACON)* which refers to healthcare units offering specialized oncology care, focusing on the comprehensive treatment of cancer patients.

LAW NO. 14.758, OF DECEMBER 19, 2023

Establishes the National Policy for the Prevention and Control of Cancer within the scope of the Unified Health System (SUS) and the Brazilian Navigation Program for a Person with a Cancer Diagnosis; and amends Law No. 8.080, dated of September 19, 1990 (Organic Health Law)



See SAES/MS
Ordinance N° 688,
dated August 28, 2023,
of the Ministry of Health



It is important that there is interaction between the healthcare team of the basic network and the hospital responsible for treating the patient for alignment of well-defined and individualized information and guidelines regarding each patient.

TREATMENT AND RISK FACTORS

Due to the fact that the patient being treated for cancer is considered to be immunosuppressed, it is not possible to apply all available vaccines, as shown in the following table:

LIST OF THE VACCINES FOR CHILDREN AND ADOLESCENTS UNDERGOING TREATMENT FOR CANCER

VACCINES APPROVED	VACCINES UNDER CONSULTATION	PROHIBITED VACCINES
<ul style="list-style-type: none"> ➤ Triple vaccine (DPT - diphtheria, pertussis (whooping cough), and tetanus) ➤ Acellular triple vaccine (DTaP - diphtheria, tetanus, and acellular pertussis (whooping cough)) ➤ Hepatitis ➤ Hepatitis B ➤ Influenza (flu) 	<ul style="list-style-type: none"> ➤ Pneumococcus ➤ Haemophilus influenzae type B ➤ Hib (pneumonia and meningitis) ➤ Meningococcus (meningitis) ➤ Typhoid fever ➤ Rabies ➤ HPV 	<ul style="list-style-type: none"> ➤ Poliomyelitis ➤ BCG ➤ MMR (measles, mumps, and rubella) ➤ Varicella ➤ Yellow fever

MULTIDISCIPLINARY TEAM

The complexity of pediatric cancer treatment requires a multidisciplinary team, that is, professionals from different areas of activity and responsibilities that will assist the patient and their family with the objective of obtaining the best result. This team must see each child and adolescent as a unique being, who, at the moment, has a serious illness.

The team will look after this individual at all aspects: physical, mental, spiritual, and psychosocial. For such, interdisciplinary work requires supplementation of knowledge and sharing of responsibilities, so that differentiated demands are resolved on a joint basis.

TREATMENT AND RISK FACTORS

The treatment for cancer in childhood and adolescence is mainly based on chemotherapy. In some cases, surgery or associated radiation therapy is recommended.

The purpose of treatment with chemotherapy is to stop cell division, preventing the multiplication of the cancer cells. However, these medications do not produce specific effects, exclusively on cancer cells, but rather on all cells in cell division. Because of this, the main side effects arise.

The most serious side effect is transient myelosuppression, that is, stoppage of production of normal bone marrow cells. This way, the patient may have anemia, with the need for a red blood cell transfusion; they may present a drop in the number of platelets, with the risk of bleedings and may require platelet transfusion; in addition to substantial decrease of the defense cells, being more susceptible to infections.

Thus, fever is a very important warning sign for patients undergoing chemotherapy and, whenever it happens, it is important to remember the **golden hour**: goal for carrying out broad spectrum antibiotic therapy within the first hour of having a fever.

The Golden Hour project aims to administer the first venous antibiotic dose in less than 60 minutes in patients who arrive at the hospital with a fever or who start to have a fever during the waiting period that is equal to or higher than 37.8° C.

THE FIRST HOUR AFTER
HAVING A FEVER IS
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GOLDEN HOUR. THIS IS
THE IDEAL PERIOD FOR
TAKING THE FIRST DOSE
OF ANTIBIOTIC.

TREATMENT AND RISK FACTORS



The most common side effects are related to nausea, vomiting, alopecia (hair loss), immunosuppression (decreased immunity), and infections.



During chemotherapy, exposure to the sun should be avoided and the use of sunscreen should be encouraged.



Hair loss occurs due to hair follicle atrophy. The effect is temporary, and the hair regrows approximately two months after discontinuation of the chemotherapy treatment.



Nail polishes can be used, but cuticles shall not be removed.



Fever in children with cancer is an emergency and treatment should be initiated immediately.



Self-care should be encouraged, that is, the patient should be encouraged to take care of their own body, which is now undergoing changes.



The team must strictly monitor the vaccination schedule for children and adolescents and their siblings to instruct the family and also schedule the vaccines that must be taken or avoided.



Infections are the most common and most serious complication associated with cancer patients. It is the leading cause of the death.

THE IMPACT OF THE DISEASE AND TREATMENT ON THE LIVES OF THE FAMILIES OF CHILDREN AND ADOLESCENTS WITH CANCER

The routine of the parents and of the family members changes in the same proportion as the life of a child or adolescent with cancer is affected. The parents and/or guardians of the patient undergoing treatment, in addition to following the painful process of the child, they have to deal with more responsibilities and manage the treatment requirements. The changes inherent to the diagnosis and treatment impact the family life as a whole, resulting in low self-esteem, social and economic problems, frailty, fear of imminent death and/or relapse of the disease and stress. The family is considered a second patient.

In locations with specialized pediatric oncology services, children and young people are more likely to have access to a multiprofessional team. However, in areas with limited resources, access to these teams is more restricted. For this reason, it is important that the health systems, governments, and child and adolescent health support organizations work to expand access to multiprofessional teams in all regions of the country, in order to guarantee the necessary support.



Children and adolescents have endless possibilities when cancer is discovered early on, and the treatment is carried out in specialized centers. The early diagnosis and appropriate treatment have been the gold standard for healing!

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