

# Hybrid Master's Degree Pediatric Hematology Nursing





## Hybrid Master's Degree Pediatric Hematology Nursing

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Global University

60 + 5 ECTS Credits

Website: [www.techtitude.com/us/nursing/hybrid-master-degree/hybrid-master-degree-pediatric-hematology-nursing](http://www.techtitude.com/us/nursing/hybrid-master-degree/hybrid-master-degree-pediatric-hematology-nursing)

# Index

01

Introduction

---

p. 4

02

Why Study this Hybrid  
Master's Degree?

---

p. 8

03

Objectives

---

p. 12

04

Skills

---

p. 20

05

Course Management

---

p. 26

06

Educational Plan

---

p. 32

07

Clinical Internship

---

p. 54

08

Where Can I Do the Clinical  
Internship?

---

p. 60

09

Methodology

---

p. 64

10

Certificate

---

p. 72

# 01

# Introduction

In a very short period of time, pediatric hematology has evolved, requiring medical sciences to adjust therapeutic and diagnostic procedures. Nursing, in particular, has grown to the point that nursing professionals are now more involved in assessing patients, determining the therapeutic protocol and monitoring the patient's evolution. In response to the need for these skills, TECH has devised a revolutionary program of studies with two distinct stages. The program first develops the online and theoretical study of the most updated concepts. It then schedules a 3-week intensive face-to-face clinical internship. In it, the nurse will be linked to a renowned hospital center and will attend real cases together with the best experts.



“

*Enroll in this Hybrid Master's Degree and update all your skills to become a first level nurse in the care of pediatric patients with hemato-pathologies”*



Currently, Pediatric Hematology Services are constantly calling for the best healthcare personnel. In particular, nursing professionals attending these care units must be trained in accordance with the latest innovations and be up to date on how to assess and monitor the condition of patients. They are also expected to know the clinical manifestations of adverse reactions to specific drugs and to maintain prevention against infections in the case of pediatric patients who have undergone hematopoietic cell transplants.

Faced with this scenario, TECH presents this program that will allow nurses to develop their potential to the fullest, in relation to the latest scientific evidence. To this end, the program is structured in two well-defined parts, with the mission of delving into different aspects of learning within each of them. In the first instance, and in a 100% online format, the professional will acquire all the necessary knowledge to undertake the most up to date work protocols of the Pediatric Hematology Service. All this on an interactive platform with numerous multimedia resources, including infographics and videos, which will assist the graduate during 1,500 hours of study.

The second part of this Hybrid Master's Degree consists of a practical internship in a renowned hospital. This period of face-to-face training will last 3 weeks, from Monday to Friday with 8 consecutive hours of training. Through this didactic experience, the nursing professional will be able to deal with real patients always accompanied by a team made up of the best experts. They will be in charge of instructing you to be able to apply the latest and most effective procedures in the daily practice of your profession. The assimilation of this knowledge will be supervised by a highly qualified assistant tutor. Thus, graduates of this program will start working in an ever-changing sector with the guarantee of having the best update on the educational market.

This **Hybrid Master's Degree in Pediatric Hematology Nursing** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ Development of more than 100 clinical cases presented by nursing professionals
- ♦ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- ♦ Comprehensive systematized action plans for major pathologies
- ♦ An algorithm-based interactive learning system for decision-making in the clinical situations presented throughout the course
- ♦ Practical clinical guides on approaching different pathologies
- ♦ All this will be complemented by theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection
- ♦ In addition, you will be able to carry out a clinical internship in one of the best hospitals in the world

“*Incorporate into your daily practice the latest nursing strategies for the management of newborns, children and adolescents in anemic conditions*”

“

*Throughout the 120 hours of clinical practice proposed by TECH, you will acquire a holistic mastery of the protocols for recording and monitoring infections following hematopoietic cell transplantation”*

In this proposed Professional Master's Degree, of a professionalizing nature and blended learning modality, the program is aimed at updating nursing professionals who require a high level of qualification. The content is based on the latest scientific evidence and is organized in a didactic way to integrate theoretical knowledge into nursing practice. The theoretical-practical elements allow professionals to update their knowledge and help them to make the right decisions in patient care.

Thanks to their multimedia content developed with the latest educational technology, they will allow the Nursing professional to obtain situated and contextual learning, that is to say, a simulated environment that will provide immersive learning programmed to train in real situations. This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise throughout the program. For this purpose, students will be assisted by an innovative interactive video system developed by renowned experts.

*With this program, you will analyze in a theoretical way several simulated clinical cases, thus facilitating the development of new specific competencies for your daily work as a nurse.*

*Complete the clinical practice of this Hybrid Master's Degree with a multidisciplinary team of experts who will help you expand your skills.*



02

# Why Study this Hybrid Master's Degree?

This Hybrid Master's Degree is essential for nursing professionals who wish to update their knowledge in relation to the protocols and work devices within the Pediatric Hematology Service. Through this innovative program, devised by TECH, nurses will master the theoretical aspect of all the physiological manifestations of complex blood-related pathologies in children and adolescents. This program also includes a practical, on-site, international internship, which enables graduates to quickly and flexibly assimilate the knowledge most in demand in this field of work.





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*With TECH you will analyze the main therapeutic innovations in Pediatric Hematology and how the nursing staff assists in their proper implementation”*

### 1. Updating from the latest technology available

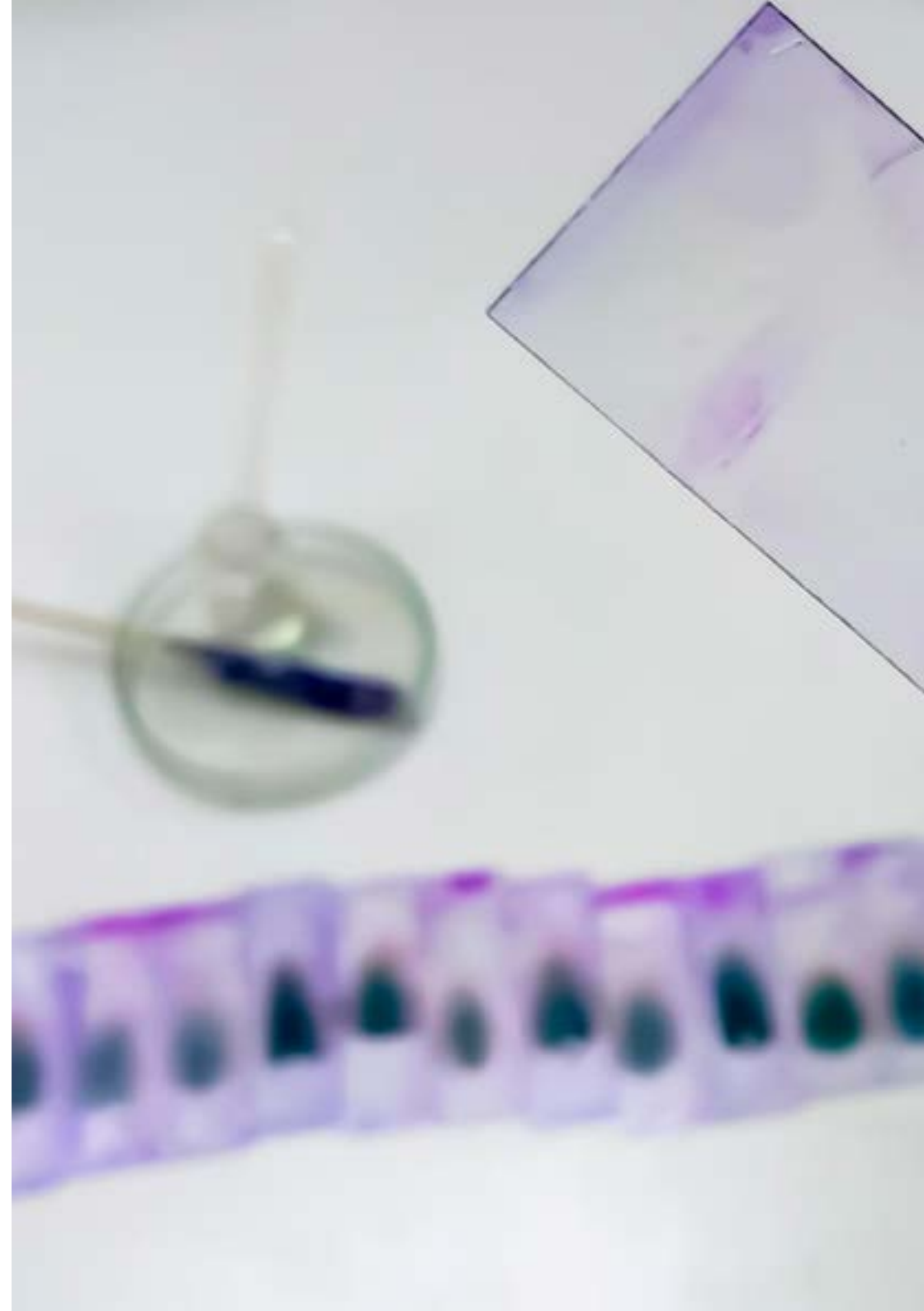
Throughout this program of studies, the nurse will delve into the latest techniques and tools for the intervention of hemorrhages, anemias and other hematological pathologies. In particular, it will examine the resources and devices needed to control bleeding, diagnose complications and prevent infections. This knowledge will be of great value in the immediate future, when graduates develop their daily professional practice.

### 2. Gaining In-Depth Knowledge from the Experience of Top Specialists

Throughout this training, students will have a team of excellent teachers who will provide them with personalized guidance at all times. These teachers have chosen the contents of the syllabus based on their daily practical experiences. Thus, the program provides an in-depth analysis of the most common problems for nurses in the Pediatric Hematology Service.

### 3. Entering First-Class Clinical Environments

In the second stage of this program, TECH has anticipated the needs of the nurse to handle more complex devices and protocols related to Pediatric Hematology. For this reason, it has planned a practical on-site stay where professionals will discuss procedures together with leading experts in renowned hospital facilities.





#### 4. Combining the Best Theory with State-of-the-Art Practice

Few programs of study manage to unify the theoretical field with practical activity. However, TECH has integrated a model where the nurse will master all the latest trends and techniques for the Pediatric Hematology Service in a holistic way. This is possible, among other variables, thanks to the face-to-face clinical practice that will allow the graduate access to a hospital center where he/she will apply everything he/she has learned.

#### 5. Expanding the Boundaries of Knowledge

This Hybrid Master's Degree enables the expansion of knowledge of nursing professionals from an international perspective. This is possible thanks to the breadth of contacts and collaborators within reach of TECH, the world's largest digital university.

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*You will have full practical immersion  
at the center of your choice”*

# 03

## Objectives

This program will allow the professional to update the diagnostic and therapeutic procedures related to the nursing performance in the Pediatric Hematology Service through innovative theoretical contents and a hospital stay designed with clinical and academic rigor. The entire educational process will be advised by experts of great prestige and, thanks to its innovative modality, each graduate will complete his or her studies with the necessary knowledge for the management of complex assistance devices.



“

*Don't miss this unique academic opportunity to raise your professional level as a nurse expert in the management of bleeding in children and adolescents”*





## General Objective

- The macro objectives of this Hybrid Master's Degree will allow the nursing professional to optimize the quality of their attention and care of pediatric patients with hematological pathologies. Through the program, they will be able to recognize and evaluate the physical, psychological and social condition of these patients and offer them personalized assistance together with their families. In turn, they will develop problem-solving skills, according to the evidence obtained, and in prior coordination with the responsible medical team



*This program will provide you with an immersive and comprehensive experience through which you will expand your nursing practice toward professional excellence"*





## Specific Objectives

### Module 1. Principles of Neonatal and Pediatric Hematology

- ♦ Cover the biological principles of fetal and postnatal hematopoiesis
- ♦ Get to know the main characteristics of the healthy newborn, child and adolescent
- ♦ Review the composition of the blood, both the formed elements and the blood plasma in detail
- ♦ Identify the characteristics of the different blood groups
- ♦ Review the general concepts, functions, organs and cells of the immune system
- ♦ Gain knowledge about the fundamentals of hemostasis, its control mechanisms and the laboratory tests necessary for its study
- ♦ Introduce the different hematologic diseases in the newborn, child and adolescent

### Module 2. Non-Malignant Hematologic Disorder in the Newborn

- ♦ Get to know the hematologic reference values in the newborn
- ♦ Acquire knowledge on fundamental aspects of etio-pathogenesis, diagnosis, treatment and complications of non-physiological neonatal jaundice and hemolytic disease of the newborn
- ♦ Gain knowledge about the definition, classification, epidemiology, pathophysiology, clinical manifestations, diagnosis and treatment of anemia of prematurity (AOP)
- ♦ Differentiate other anemias in newborns and infants, their causes and characteristics, as well as their diagnosis and different treatments
- ♦ Learn about the different hemorrhagic disorders in the newborn, their clinical manifestations, etiology, diagnosis and treatment
- ♦ Acquire knowledge on fundamental aspects of etiopathogenesis, clinical, diagnosis, treatment and prognosis of polycythemia in the newborn
- ♦ Differentiate the different types of thrombocytopenias in the newborn according to their etiology and type, as well as their clinical manifestations, diagnosis and treatment
- ♦ Conduct a presentation of the pathophysiological basis, types and risk factors and etiology of neonatal shock
- ♦ Recognize the clinical manifestations and diagnosis of neonatal shock and the necessary actions for its treatment

### Module 3. Specificities of Care in Neonates with Non-Malignant Hematologic Disorders

- ♦ Get to know the developmental and Family-Centered Care Model (NIDCAP), the synactive theory and the neurodevelopment on which it is based and main aspects
- ♦ Develop the most important aspects for the application of the NIDCAP Model
- ♦ Identify the indispensable and necessary aspects in the adaptation of the Neonatology Unit to the NIDCAP Model
- ♦ Learn and assess the importance of feeding and nutrition in newborns
- ♦ Acquire knowledge on fundamental aspects of diagnostic and follow-up procedures in the newborn
- ♦ Update knowledge that allows the student to distinguish the different types of vascular accesses in the newborn and get to know the management and care of each one of them
- ♦ Describe and update the most common treatment modalities to treat hematologic problems in the newborn
- ♦ Review the most frequent procedures, techniques and care in the administration of drugs and serum therapy in the newborn
- ♦ Acquire the knowledge necessary for specific nursing care in the treatment of the infant with non-physiological neonatal jaundice
- ♦ Get to know and acquire competence to carry out the administration and care of specific hemotherapy support in newborns

### Module 4. Non-Malignant Hematologic Disorder in Children

- ♦ Gain knowledge about the general concepts, physiopathology, classification, prevalence and incidence, and signs and symptoms of the different types of anemias that can affect children and adolescents
- ♦ Acquire knowledge on fundamental aspects of pathophysiology, clinical and treatment of hemoglobinopathies in pediatrics

- ♦ Differentiate the different types of coagulation and hemostasis disorders in pediatrics, as well as their etiology, clinic and treatment
- ♦ Acquire knowledge on fundamental aspects of epidemiology, clinical features, diagnosis and treatment of non-malignant granulocyte diseases in pediatrics
- ♦ Differentiate the different types of primary immune-deficiencies (PIDs) in pediatrics, as well as their clinical manifestations, diagnosis and treatment
- ♦ Gain knowledge about the general concepts and classification of congenital medullary insufficiencies (CMI)
- ♦ Explain Fanconi's Anemia in detail, differentiate it from the syndrome and study its characteristics, diagnosis, treatment and prognosis
- ♦ Review the factors that predispose to infections in children with hematologic disorders, how to prevent them and detail the most frequent ones

### **Module 5. Pediatric Malignant Hematologic Disorders**

- ♦ Situate epidemiologically the incidence and survival of hematologic cancer in childhood and adolescence
- ♦ Get to know the pathophysiology of hematologic cancer in childhood and adolescence
- ♦ Acquire knowledge about the most common childhood cancer, intermediate or standard risk B-cell ALL in pediatrics, its clinical manifestations, treatment and diagnosis
- ♦ Acquire knowledge on fundamental aspects of etiopathogenesis, clinical, diagnosis and treatment of high-risk B-ALL and T-ALL in pediatrics
- ♦ Differentiate infant-specific leukemia, its chromosomal alterations, clinical features, therapeutic approaches and survival
- ♦ Get to know the most relevant aspects and classification of childhood acute myeloid leukemias
- ♦ Describe the morphology, translocations, characteristic coagulopathy, treatment and controls of acute promyelocytic leukemia (APL) in pediatrics

- ♦ Gain knowledge about the clinical course and treatment of other leukemias: chronic myelogenous leukemia (CML) and juvenile myelomonocytic leukemia (JMML) and myelodysplastic syndromes in children and adolescents
- ♦ Acquire knowledge of the clinical, diagnostic and staging, treatment and prognosis of lymphomas in infancy and childhood
- ♦ Get to know the most relevant aspects and classification of malignant histiocytosis in pediatrics

### **Module 6. Pharmacological Treatment and Nursing Care of Children and Adolescents with Severe Hematologic Disorder**

- ♦ Update knowledge that will allow the student to distinguish the different types of vascular accesses in pediatric hematology and to know the management and care of each one of them
- ♦ Describe and update on the general principles of drug administration in pediatrics
- ♦ Analyze the different specific treatment modalities to treat hematological pathologies in childhood and adolescence
- ♦ Get to know and acquire competence to carry out the administration and care of hemotherapy support in children and adolescents

### **Module 7. Nursing Care of the Child/Adolescent with Severe Hematologic Disease and Their Family**

- ♦ Recognize and implement accompaniment as an essential part of the comprehensive care process
- ♦ Recognize the vulnerability of patients and their families and be aware of the ethical principles governing their care
- ♦ Update the necessary knowledge in the nursing care of pediatric patients, in order to increase the quality and safety of nursing practice in the pediatric hematology unit
- ♦ Acquire the knowledge and skills necessary to be able to develop the personal and professional attitudes required to care for children and adolescents with severe hematologic disease and their families at the onset of the disease

- ♦ Analyze the importance of active nursing observation for the detection of possible physical and/or emotional complications in the care of children and adolescents with severe hematologic disease and their families
- ♦ Establish the importance of comprehensive and continuous assessment of the needs of the child and family and identify the most frequent nursing diagnoses during the course of the disease
- ♦ Update knowledge in the control and management of symptoms in pediatric patients with hematologic disease
- ♦ Explain the importance of nutrition and skin care during the treatment of pediatric patients with oncohematological disease
- ♦ Update research knowledge in the care of children and adolescents with severe hematologic disease and their families

#### **Module 8. All Together as a Team**

- ♦ Provide the student with the knowledge and skills necessary for the recognition, management and initial stabilization of pediatric hematological patients who suffer a vital compromise derived from a complication of their underlying disease, an inter-current process or undesired consequences of their treatment, in an effective, safe and coordinated manner, and integrating their interventions with the rest of the health system services at the hospital level
- ♦ Expose the most frequent emergency situations in children and adolescents with severe hematologic disease
- ♦ Explain the most frequent situations in which children and adolescents with severe hematologic disease require intensive care
- ♦ Achieve sufficient knowledge and skills to be able to develop the personal and professional

attitudes necessary to care for children and adolescents with severe hematologic disease and their families during their stay in a PICU

- ♦ Detail and justify the importance of humanizing PICUs to promote the well-being, autonomy and dignity of children, adolescents and families at all times
- ♦ Broaden knowledge of the psychological care needs of children and adolescents with severe hematological disease and their families
- ♦ Discuss the importance of educational continuity for children and adolescents with severe hematologic disease
- ♦ Emphasize the importance of non-profit associations and volunteers in the comprehensive care of children with severe hematological disease and their families
- ♦ Describe the different digital teaching resources (ICT-E-health) that we can use and recommend to children and adolescents with severe hematologic disease and their families
- ♦ Learn about new technologies applied to care management and nursing visibility

#### **Module 9. Towards Healing: Allogeneic Hematopoietic Stem Cell Transplantation (HSCT) in Pediatrics**

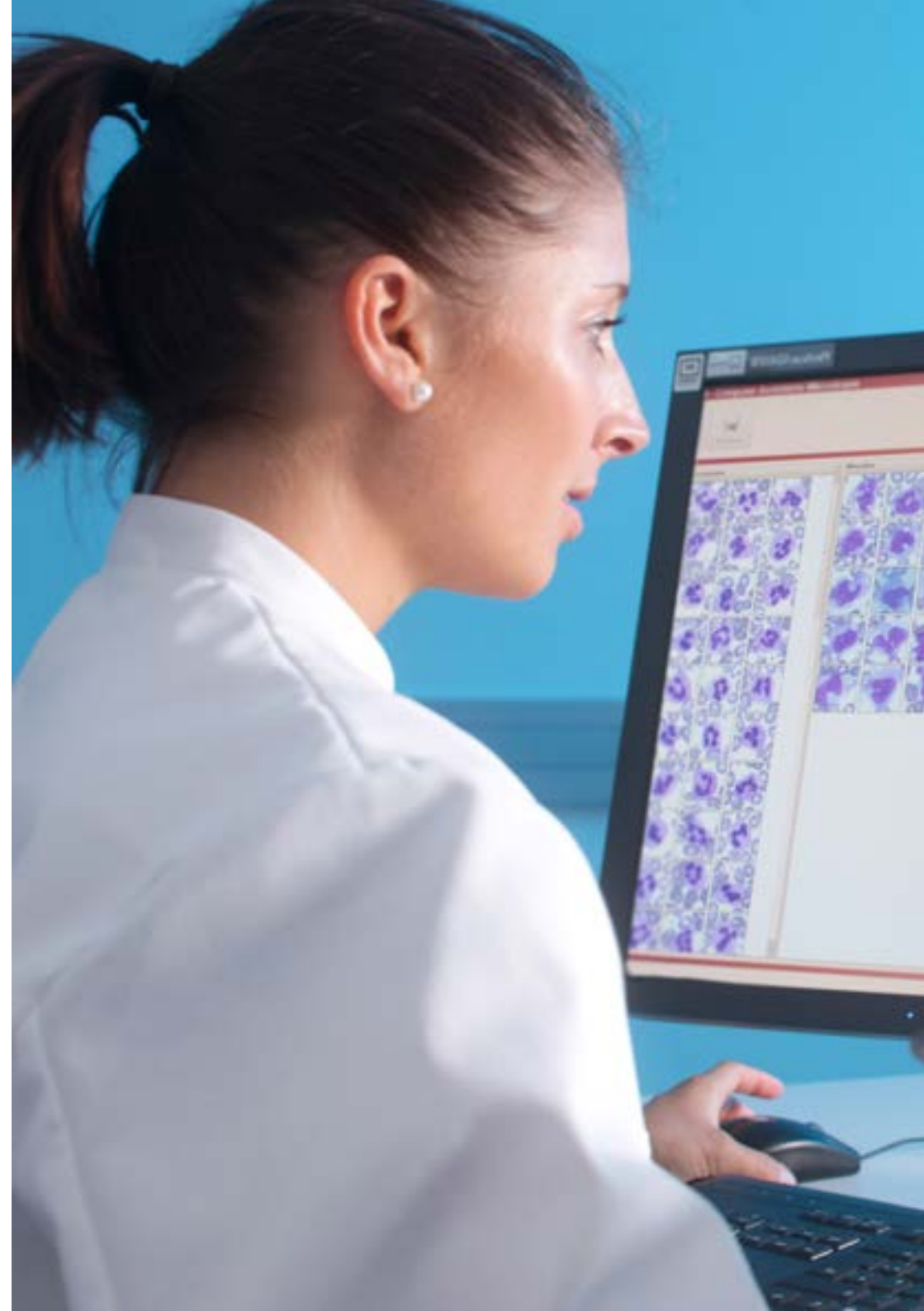
- ♦ Identify pediatric patients with hematologic disorders who are candidates for allogeneic hematopoietic stem cell transplantation (allo-HSCT)
- ♦ Explain the different phases from the donation of hematopoietic progenitors to the infusion of these progenitors to the patient
- ♦ Achieve sufficient knowledge and skills to be able to develop the personal and professional attitudes required for children and adolescents
- ♦ and their families who are to undergo allo-TPH
- ♦ Acquire the essential skills to comprehensively care for children and adolescents and their families during conditioning for allo-HSCT
- ♦ Gain knowledge and acquire competence to carry out the process of hematopoietic progenitor infusion, as well as to address and manage possible complications during this process



- ♦ Understand and develop competence in the approach and management of short, medium and long term complications in the hematopoietic stem cell transplanted patient
- ♦ Update knowledge in the treatment of acute graft-versus-host disease (GVHD) in post hematopoietic stem cell transplant patients
- ♦ Explain the most frequent emergency situations in children and adolescents transplanted with hematopoietic progenitors
- ♦ Describe the mid- and long-term nursing care of children and adolescents after hematopoietic stem cell transplantation
- ♦ Increase knowledge of the psychological care needs of children and adolescents undergoing allo-HSCT and their families

#### **Module 10. When the Response to Treatment is Not Adequate**

- ♦ Describe the concept of relapse, treatment options and the reception and accompaniment of children, adolescents and parents
- ♦ Identify the scientific and ethical basis of clinical trials in pediatric hematology
- ♦ Introduce the biologic-molecular basis of immunotherapy treatment
- ♦ Get to know the types and different phases of clinical trials in pediatric hematology
- ♦ Explain the practical aspects of conducting a clinical trial in pediatric hematology
- ♦ Identify the professionals involved and the role of nursing in clinical trials in pediatric hematology
- ♦ Describe the nursing care of the pediatric patient with hematologic disease included in a clinical trial
- ♦ Discuss expectations in the management of the pediatric patient with severe hematologic disease
- ♦ Conceptualize pediatric palliative care





- ♦ Acquire the essential skills to provide comprehensive care to children and adolescents in need of palliative care and their families
- ♦ Recognize the needs of pediatric patients in need of palliative care
- ♦ Gain knowledge about the fundamental aspects of symptom control in palliative care in pediatric hematology
- ♦ Carry out a comprehensive care plan for children with incurable diseases and their families
- ♦ Examine the ethical issues applicable to child health and their use in making difficult decisions in palliative care situations
- ♦ Discuss what is an appropriate end of life in symptom management and accompaniment, to promote and ensure well-being and dignity at all times

#### **Module 11. Fostering, Caring and Accompanying in Pediatric Hematology**

- ♦ Develop within nursing professionals the set of knowledge and skills for the comprehensive approach and management of children and adolescents with severe hematologic disorder and their families
- ♦ Identify the theoretical foundations of nursing that approach the comprehensive view of care
- ♦ Describe the facilitating role and emotional competency profile of pediatric hematology nurses
- ♦ Understand the importance of therapeutic communication in the care of children and adolescents with severe hematologic disorders and their families
- ♦ Identify the influence of the environment and surroundings on the experience of the disease
- ♦ Acquire skills in the accompaniment of the family system in pediatric hematology
- ♦ Achieve sufficient knowledge and skills to be able to develop the personal and professional attitudes necessary to care for children and adolescents with severe hematologic disorders and their families in the different stages of development



*You will combine theory and professional practice through a demanding and rewarding educational approach"*

# 04 Skills

This Hybrid Master's Degree will provide the nurse with the most up-to-date competencies for the care of pediatric patients in Hematology Services. The two stages that make up the program offer the professional an integration of theoretical and practical knowledge of his or her field of work, guaranteeing an immediate update.



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*Enroll in this program and don't miss the opportunity to expand your theoretical and practical skills in Pediatric Hematology Nursing with the most complete program in the educational market”*



## General Skills

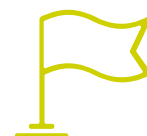
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- ♦ Master the essential skills to comprehensively care for children and adolescents with hematological pathologies and their families
- ♦ Apply the knowledge acquired in quality and pediatric patient care
- ♦ Be able to recognize and assess the physical, psychological, social and spiritual needs of the pediatric patient
- ♦ Develop sufficient skills to enable professionals to provide better medical care to their pediatric patients with hematologic disorders
- ♦ Be able to maintain a comprehensive vision of care for children and adolescents with hematologic disorders and their families, promoting their well-being and autonomy at all times
- ♦ Get to how to approach any work situation and generate evidence to correct knowledge deficiencies and improve standards of excellence in practice



*With this program you will expand your skills in the field of nursing on how to intervene bleeding in the pediatric patient"*





## Specific Skills

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- ♦ Work in a holistic, tolerant, non-judgmental, caring and sensitive manner, ensuring that the rights, beliefs and wishes of newborns, children and adolescents with hematologic disease and their families are not compromised, allowing them to express their concerns and interests, and that they are able to respond appropriately
- ♦ Manage nursing care aimed at satisfying the needs derived from the health problems of the newborn, child or adolescent with severe hematologic disorders and the prevention of complications, guaranteeing a safe and quality practice
- ♦ Assessing the impact of hospitalization and disease processes involving a loss or change of life of the newborn, child and adolescent with severe hematologic disorder and their family, establishing a therapeutic relationship that facilitates their adaptation to the unit, adequate coping and favors progressive involvement in care
- ♦ Examine, in a comprehensive and contextualized manner, the newborn, child and adolescent with severe hematologic disorder and their family, detecting any anomalies and possible deficits in their needs, making professional clinical judgments, planning interventions and autonomously solving the problems identified and/or referring to another professional, ensuring a shared and coordinated action
- ♦ Effectively and efficiently perform the different procedures, diagnostic tests and treatments derived from the different health problems in the newborn, child and adolescent, taking into account the different levels of care and ensuring a professional practice based on ethical, legal and clinical safety principles



- Provide comprehensive care to the newborn, child or adolescent with severe hematologic disorder and their family from an ethical and legal perspective, with respect, tolerance, without judgment, with sensitivity to cultural diversity, guaranteeing the right to privacy, confidentiality, information, participation, autonomy and informed consent in decision-making
- Consider emotional, physical and personal care, including meeting comfort, nutrition and personal hygiene needs, and enabling the maintenance of daily activities
- Manage nursing care of the newborn, child and adolescent with a hematologic process in an autonomous manner, allowing an adequate adaptation, experience and coping with the disease, its long evolutionary process, the intensive and specific therapy required, its side effects and the psycho-emotional and social repercussions for the child, adolescent and their family
- Educate, facilitate, support and encourage the well-being and comfort of newborns, children and adolescents with hematologic disease and their families
- Apply different health education strategies to the child or adolescent with severe hematologic disorder, in an autonomous manner, identifying learning needs, designing, planning and carrying out interventions to promote, foster and maintain the autonomy of the child and adolescent with hematologic disease and their family, to prevent risks and achieve the highest level of self-care possible
- Assess the newborn, child and adolescent with hematologic disease and their family and social environment, identifying their degree of dependence, the care they require, the resources and social support available, as well as the health services necessary to meet their needs
- Manage nursing care aimed at meeting the needs of the newborn with severe hematologic disease and their family, and the complications arising from a health problem requiring care in the emergency and neonatal intensive care units (NICU) taking into account the standards of quality and clinical safety and the NIDCAP Model





- ♦ Manage nursing care aimed at meeting the needs of the child and adolescent with severe hematologic disease and their family, and the complications arising from a health problem requiring care in the Pediatric Emergency and Intensive Care Units (PICU), taking into account the standards of quality and clinical safety
- ♦ Develop the ability to anticipate and act in situations that may endanger the life of the newborn, child and adolescent in critical condition, in a complex environment with constantly up-to-date diagnostic and therapeutic technology
- ♦ Provide the necessary emotional support in the face of the impact produced by the severity of the disease, admission to the ER, NICU or PICU, in order to reduce emotional stress, facilitate effective coping with the situation and favor adaptation to the unit or the experience of grief
- ♦ Maintain an effective communication with the team, with other professionals, institutions, and social groups, using available resources, facilitating the exchange of information and contributing to an improvement in the care provided in a climate of collaboration and to realize that the patient's well-being is achieved from the combination of resources and actions of the team members
- ♦ Analyze risk and actively promote the well-being and safety of all people in the work environment
- ♦ Base their clinical practice on the best available evidence to contribute to continuous improvement in the quality of care provided to the newborn, child and adolescent with severe hematologic disease and their families

05

# Course Management

TECH has integrated a teaching staff of excellence for this academic program. They have been in charge of shaping the educational syllabus and for this purpose they have reviewed their practical experiences and the most updated theoretical knowledge. This faculty has been in charge of the development of multimedia resources that will reinforce the assimilation of skills in the student and, in view of their face-to-face stay in hospital centers, will have provided them with a solid base of skills related to the practice of Nursing in the Pediatric Hematology Service.



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*The teachers chosen for this Hybrid Master's Degree have extensive experience as nursing professionals related to Pediatric Hematology Services”*



## Management



### Ms. Coronado Robles, Raquel

- ♦ Pediatric Nurse Expert in Oncology
- ♦ Pediatric Nurse of the Pediatric Oncohematology Unit at Vall d'Hebron University Hospital
- ♦ Nurse at Centro Médico Teknon, part of the Quirónsalud Group
- ♦ Nurse for the Agencia Valenciana de Salud (Valencian Health Agency)
- ♦ Nurse for the Madrid Health Service
- ♦ Master's Degree in eHealth: Information Technologies and Healthcare Management by BCN La Salle
- ♦ Master' in Nursing Sciences, University of Almería
- ♦ Expert in Oncology Nursing by the Autonomous University of Barcelona

## Professors

### Ms. Saló Rovira, Anna

- ♦ Psycho-oncologist of the Pediatric Oncology and Hematology Unit at Vall d'Hebron University Hospital. Barcelona
- ♦ Degree in Psychology from the Faculty of Psychology, Education and Sport Sciences of the Blanquerna Foundation of the Universitat Ramon Llull
- ♦ Postgraduate Degree in Infant Observation and Early Childhood Care up to Three Years of Age at the University of Girona
- ♦ Professional Master's Degree in Psychoanalytic Psychotherapy at Fundació Vidal i Barraquer
- ♦ Professional Master's Degree in General Health Psychology from the Faculty of Psychology, Education and Sports Sciences of the Blanquerna Foundation of the Ramon Llull University
- ♦ Expert Program in Emergency and Catastrophe Psychology at COPC

### Ms. Ridao Manonellas, Saida

- ♦ Pediatric Nurse
- ♦ Nurse Specialist in Pediatrics at the Vall d'Hebron Campus Hospital
- ♦ Nurse of the Pediatric Infectious Pathology and Immunodeficiency Unit at the Vall d'Hebron Campus Hospital
- ♦ Nurse at the Hestia Palau Health and Social Care Center
- ♦ Member of the Board of the Catalan Association of Pediatric Nursing
- ♦ Postgraduate Certificate in Nursing from the Ramon Llull University
- ♦ Professional Master's Degree in Specialized Emergency Nursing Care by the University of Valencia



## Professors

### Ms. Bonfill Ralló, Marina

- ♦ Psychologist Specializing in the Clinical Care of Children and Adolescents
- ♦ Pediatric Psycho-oncologist at the Vall d'Hebron Hospital
- ♦ Pediatric Psycho-oncologist at the San Borja Arriarán Hospital
- ♦ Child and Adolescent Psychologist in private practice
- ♦ Psychologist of the Psycho-affective and Psychosocial Intervention Service associated with Learning at the Institut Trivium
- ♦ Degree in Psychology from the University of Barcelona
- ♦ Professional Master's Degree in Child and Adolescent Psychiatry and Clinical Psychology from the Autonomous University of Barcelona
- ♦ Professional Master's Degree in Psycho-Oncology and Palliative Care from the Complutense University of Madrid

### Ms. Martínez González, Esther

- ♦ Nurse at San Juan de Dios Hospital
- ♦ Author of the article: The importance of quality nursing management in the surgical process
- ♦ Teacher in university postgraduate studies in Nursing

### Ms. Muñoz Blanco, María José

- ♦ Specialist in Pediatric Nursing
- ♦ Supervisor of the Pediatric Intensive Care Nursing Unit at the Vall d'Hebron Barcelona Hospital Campus
- ♦ Professional Master's Degree in Pediatric Nursing from the University of Barcelona
- ♦ Professional Master's Degree in Emotional Care of the Hospitalized Child by the University of Barcelona

### Ms. Congil Ortega, Jordana

- ♦ Neonatal Intensive Care Unit Nurse
- ♦ Neonatal Intensive Care Unit Nurse at Vall d'Hebron Barcelona Hospital Campus
- ♦ Pediatric Emergency and NICU Nurse at Hospital Universitari Germans Trias i Pujol
- ♦ Nurse at the Hospital General de Catalunya
- ♦ Degree in Nursing at the University Schools Gimbernat and Tomas Cerda, attached to the UAB
- ♦ Master's Degree in Nursing Care Management and Leadership, Nursing Services Management by the European University Miguel de Cervantes
- ♦ Master's Degree in Neonatal and Pediatric Intensive Care Nursing from the Autonomous University of Barcelona
- ♦ Postgraduate Certificate in Updating in Intensive Care of Children and Adolescents in Nursing by the University of Barcelona
- ♦ Postgraduate Diploma in Advanced Practice in Breastfeeding, Maternal and Infant Nursing by the University Ramon Llull, Blanquerna

### Ms. Fernández Angulo, Verónica

- ♦ Nurse Expert in Oncology Care
- ♦ Nurse of the Pediatric Oncohematology Unit at Vall d'Hebron University Hospital
- ♦ Member of the Multidisciplinary Research Group in Nursing
- ♦ Consultant for pharmacological treatments for oncological disorders

**Mr. Ortégón Delgadillo, Ramiro**

- ♦ Nurse of the Children's Oncohematology Service at the Vall d'Hebron University Hospital
- ♦ Health and Emotional Education Partner
- ♦ Facilitator at EFA School
- ♦ Academic Director and Professor at UNIR
- ♦ Professor at the University of Barcelona
- ♦ Postgraduate Certificate in Nursing from the Autonomous University of Barcelona
- ♦ Master's Degree in Emotional Education and Well-being from the University of Barcelona
- ♦ Master's Degree in Health Education by the University of Lleida
- ♦ President of PDA Bullying
- ♦ Member of ACEESE, ACISE, PDA Bullying

**Dr. Hladun Álvaro, Raquel**

- ♦ Medical Specialist in Pediatric Oncology
- ♦ Specialist Physician and Head of Clinical Trials in the Pediatric Oncohematology Unit at Vall d'Hebron Barcelona Hospital Campus
- ♦ Researcher Specializing in Childhood Cancer and Hematological Diseases
- ♦ Author of several national and international specialized scientific articles

**Ms. Nogales Torres, Elena**

- ♦ Nursing Supervisor at the Vall d'Hebron Campus Hospital
- ♦ Pediatric Oncology Nurse at Vall d'Hebron Campus Hospital
- ♦ Lecturer in postgraduate nursing studies
- ♦ Postgraduate Certificate in Nursing
- ♦ Master's Degree in Child and Adolescent Nursing Care

**Ms. Rodríguez Gil, Raquel**

- ♦ Nurse Specialist in Pediatric Intensive Care Unit at Vall d'Hebron Barcelona Hospital Campus
- ♦ Program in Ultrasound-Guided Vascular Access for Nurses
- ♦ Program in Continuous Pediatric Extrarenal Depuration Techniques

**Mr. Toro Guzmán, Antonio**

- ♦ Nurse Specialist in the Pediatric Oncohematology Unit at Vall d'Hebron University Hospital
- ♦ Master's Degree in Advanced Pharmacology for Nurses from the University of Valencia
- ♦ Postgraduate in Pediatric Care in Primary Care by Ramon Llull University
- ♦ Postgraduate in Pediatric Care in Hospital Environment by Ramon Llull University
- ♦ Postgraduate Certificate in Nursing from the Faculty of Nursing at the University of Granada
- ♦ Teacher associated with programs in his or her specialty

**Dr. Vidal Laliena, Miriam**

- ♦ Technician in Pharmaceutical Services in the Catalan Health Service
- ♦ Clinical Research Associate in PRA Health Sciences
- ♦ Coordinator of Clinical Trials of the Pediatric Oncohematology Unit at the Vall d'Hebron University Hospital
- ♦ Laboratory Technician at the Hospital Clínic of Barcelona
- ♦ Dr. in Pharmacy from the University of Barcelona
- ♦ Master's Degree in Clinical Trial Monitoring from CoMB

**Ms. Ariño Ariño, Ingrid**

- ♦ Neonatology Unit Vall d'Hebron Barcelona Hospital Campus

**Ms. Bustelo Almeida, Eugenia**

- ♦ Psycho-oncologist Pediatric Oncohematology Unit Vall d'Hebron Barcelona Hospital Campus

**Ms. Cuevas González, Cristina**

- ♦ Nurse Specialist in Pediatric Nursing at Vall d'Hebron Barcelona Hospital Campus

**Mr. Díaz Martín, Gonzalo**

- ♦ Specialist Nurse in Pediatric Nursing. Vall d'Hebron Barcelona Hospital Campus

**Ms. Pérez Cainzos, Laura**

- ♦ Pediatric Unit Vall d'Hebron Barcelona Hospital Campus

**Ms. Pérez Correa, Sònia**

- ♦ Graduate Nurse, Vall d'Hebron University Hospital, In-child Hematopoietic Progenitor Transplant Service



*TECH faculty will provide you with personalized learning guidance with which you will meet all of your academic goals"*

# 06

## Educational Plan

This Hybrid Master's Degree delves into the latest trends in nursing for the care of pediatric patients with hematologic pathologies. Throughout the academic agenda, the most updated protocols of this professional field have been provided, emphasizing the best tools of the moment for this kind of tasks. Likewise, the program examines multidisciplinary work strategies within the Pediatric Hematology Service. All these contents will be accessible on an interactive and 100% online platform, designed by TECH to enhance learning with the assistance of innovative didactic methods such as Relearning.





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*The theoretical phase of this Hybrid Master's Degree is not subject to pre-established schedules or timetables so that you can self-manage your academic progress in a personalized way”*



## Module 1. Principles of Neonatal and Pediatric Hematology

- 1.1. Fetal Hematopoiesis
  - 1.1.1. Introduction to Prenatal Hematopoiesis
  - 1.1.2. Mesoblastic or Megaloblastic Hematopoiesis
  - 1.1.3. Hepatic Phase
  - 1.1.4. Splenic Phase
  - 1.1.5. Medullary or Myeloid Phase
- 1.2. Healthy Newborn
  - 1.2.1. Fetal Development
  - 1.2.2. Changes at Birth
  - 1.2.3. First Month of Life
- 1.3. Postnatal Hematopoiesis
  - 1.3.1. General Concepts of Postnatal Hematopoiesis
  - 1.3.2. Types of Hematopoietic Tissue
    - 1.3.2.1. Myeloid Tissue
    - 1.3.2.2. Lymphoid Tissue
  - 1.3.3. Regulation of Hematopoiesis. Stimulation and Inhibition
  - 1.3.4. Erythropoiesis
    - 1.3.4.1. Hemoglobin Synthesis
    - 1.3.4.2. Hemoglobin Disorders
  - 1.3.5. Granulocytopoiesis
  - 1.3.6. Monocytopoiesis
  - 1.3.7. Platelet Formation
- 1.4. Composition of the Blood: Formed Elements
  - 1.4.1. Introduction to Blood Cells and Blood Plasma
  - 1.4.2. Blood Functions
  - 1.4.3. Blood Components
    - 1.4.3.1. Plasma
    - 1.4.3.2. Formed Elements
      - 1.4.3.2.1. Red Blood Cells or Erythrocytes
      - 1.4.3.2.2. Leukocytes
        - 1.4.3.2.2.1. Granular (Neutrophils, Eosinophils, Basophils)
        - 1.4.3.2.2.2. Non-Granular (Lymphocytes, Monocytes)
- 1.5. Blood Composition: Blood Plasma
  - 1.5.1. Blood Plasma Composition
    - 1.5.1.1. Plasma Proteins
      - 1.5.1.1.1. Albumins
      - 1.5.1.1.2. Globulins
      - 1.5.1.1.3. Fibrinogen
      - 1.5.1.1.4. Others
  - 1.5.2. Plasma Functions
  - 1.5.3. Differences Between Plasma and Serum
- 1.6. Blood Groups
  - 1.6.1. Introduction
  - 1.6.2. A-B-O Antigen Group -A-B
    - 1.6.2.1. A and B Antigens: Agglutinogens
    - 1.6.2.2. Genetic Determination of Agglutinogens
    - 1.6.2.3. Agglutinin
    - 1.6.2.4. Agglutination Process in Transfusion Reactions
    - 1.6.2.5. Blood Typing
  - 1.6.3. Rh Blood Type
    - 1.6.3.1. Rh Antigens
    - 1.6.3.2. Rh Immune Response
    - 1.6.3.3. Erythroblastosis Fetalis ("Hemolytic Disease of the Newborn")
- 1.7. Immune System
  - 1.7.1. General Concepts of Immunology
  - 1.7.2. Immune System Functions
  - 1.7.3. Immune System Organs
    - 1.7.3.1. Skin and Mucous Membranes
    - 1.7.3.2. Thymus
    - 1.7.3.3. Liver and Bone Marrow
    - 1.7.3.4. Bladder
    - 1.7.3.5. Lymph Nodes
  - 1.7.4. The Innate or Non-Specific System
  - 1.7.5. The Adaptive or Specific System

- 1.7.6. Humoral Elements in the Immune Response
  - 1.7.6.1. T Lymphocytes
  - 1.7.6.2. Natural Killer Cells (NK)
  - 1.7.6.3. Antigen-Presenting Cells (HLA Antigen, Macrophages, Dendritic Cells, B Lymphocytes)
  - 1.7.6.4. Polymorphonuclear Cells: Neutrophils, Basophils and Eosinophils
- 1.8. Fundamentals of Hemostasis
  - 1.8.1. Introduction
  - 1.8.2. Primary Hemostasis
    - 1.8.2.1. Vessels, Endothelium and Platelets
    - 1.8.2.2. Physiology
      - 1.8.2.2.1. Initiation (Platelet Adhesion)
      - 1.8.2.2.2. Extension (Platelet Activation)
      - 1.8.2.2.3. Perpetuation (Platelet Aggregation and Procoagulant Activity)
  - 1.8.3. Secondary Hemostasis or Coagulation
    - 1.8.3.1. Coagulation Factors
    - 1.8.3.2. Physiology
      - 1.8.3.2.1. Extrinsic Pathway
      - 1.8.3.2.2. Intrinsic Pathway
  - 1.8.4. Control Mechanisms of the Coagulation Process
  - 1.8.5. Clot Removal and Fibrinolysis
  - 1.8.6. Laboratory Tests
    - 1.8.6.1. To Assess Primary Hemostasis
    - 1.8.6.2. To Assess Coagulation
- 1.9. Healthy Children
  - 1.9.1. Infant: 1- 24- months
  - 1.9.2. Pre-school Stage
  - 1.9.3. School Stage
- 1.10. Adolescent Stage
- 1.11. Introduction to Hematologic Diseases in Pediatrics
  - 1.11.1. Introduction
  - 1.11.2. Non-Malignant Hematologic Diseases
    - 1.11.2.1. In the Newborn
      - 1.11.2.1.1. Specificities
      - 1.11.2.1.2. Most Frequent Hematologic Disorders
        - 1.11.2.1.2.1. Non-Physiologic Neonatal Jaundice
        - 1.11.2.1.2.3. Other Types of Anemia in Newborns
        - 1.11.2.1.2.4. Hemorrhagic Disorders
        - 1.11.2.1.2.5. Polycythemia
        - 1.11.2.1.2.6. Neonatal Shock
    - 1.11.2.2. In the Child
      - 1.11.2.2.1. Specificities
      - 1.11.2.2.2. Most Common Pathologies
        - 1.11.2.2.2.1. Anemia in Pediatrics
        - 1.11.2.2.2.2. Haemoglobinopathies
        - 1.11.2.2.2.3. Alterations of Coagulation and Hemostasis
        - 1.11.2.2.2.4. Non-Malignant Granulocyte Diseases
        - 1.11.2.2.2.5. Primary Immunodeficiencies
        - 1.11.2.2.2.6. Congenital Spinal Cord Insufficiencies
        - 1.11.2.2.2.7. Most Frequent Infections
  - 1.11.3. Malignant Hematologic Diseases
    - 1.11.3.1. Leukaemias
    - 1.11.3.2. Lymphomas
      - 1.11.3.2.1. Hodgkin's Lymphomas
      - 1.11.3.2.2. Non-Hodgkin's Lymphomas

## Module 2. Non-Malignant Hematologic Disorder in the Newborn

- 2.1. Hematologic Reference Values in the Newborn
  - 2.1.1. Introduction
  - 2.1.2. Blood Count Reference Values in the Term Newborn
    - 2.1.2.1. Red Blood Cell Reference Values in the Term Newborn
    - 2.1.2.2. White Cell Reference Values in the Term Newborn
  - 2.1.3. Biochemistry Reference Values in the Term Newborn
  - 2.1.4. Hemostasis Reference Values in the Term Newborn
  - 2.1.5. Blood Gas Analysis Reference Values in the Term Newborn
    - 2.1.5.1. Blood Gases at Birth
    - 2.1.5.2. Blood Gas at 24 Hours of Life
- 2.2. Non-Physiologic Neonatal Jaundice and Hemolytic Disease of the Newborn
  - 2.2.1. Introduction
  - 2.2.2. Basic Pathogenic Concepts
  - 2.2.3. Etiopathogenesis
    - 2.2.3.1. Physiologic Jaundice
    - 2.2.3.2. Non-Physiologic Jaundice
    - 2.2.3.3. Jaundice due to Rh Factor Incompatibility
      - 2.2.3.3.1. Hemolytic Disease of the Newborn
  - 2.2.4. Clinical Complications
    - 2.2.4.1. Acute Bilirubin Encephalopathy
    - 2.2.4.2. Chronic Encephalopathy or Kernicterus
  - 2.2.5. Diagnosis of the Newborn with Jaundice
    - 2.2.5.1. Medical History
    - 2.2.5.2. Physical Examination
    - 2.2.5.3. Laboratory Tests
  - 2.2.6. Treatment
    - 2.2.6.1. Phototherapy
    - 2.2.6.2. Exchange Transfusion
    - 2.2.6.3. Pharmacotherapy
- 2.3. Preterm Anemia
  - 2.3.1. Definition of Anemia of Prematurity (AOP)
    - 2.3.1.1. Anemia Considerations in the Preterm Newborn (PTNB)
    - 2.3.1.2. Features of a RNPT
    - 2.3.1.3. Hematologic Features of a PTNB
  - 2.3.2. Classification of Anemia by Weeks of Gestation and Corrected Weeks of Gestation
  - 2.3.3. Epidemiology of Anemia in the PTNB
  - 2.3.4. Pathophysiology and Most Common Causes of Anemia in Preterm Newborn
    - 2.3.4.1. Anemia Related to Decreased Erythrocyte Production
    - 2.3.4.2. Anemia Related to Increased Erythrocyte Destruction
    - 2.3.4.3. Anemia Related to Total Blood Volume Loss
  - 2.3.5. Clinical Symptoms
    - 2.3.5.1. Generalities
    - 2.3.5.2. Related to the Cause
    - 2.3.5.3. Gestational Age-Related
  - 2.3.6. Diagnosis
    - 2.3.6.1. Prenatal Diagnosis. Is it Possible?
    - 2.3.6.2. Differential Diagnosis
    - 2.3.6.3. Complementary Tests
      - 2.3.6.3.1. General Aspects
      - 2.3.6.3.2. How to Perform a Hemogram Correctly in a PTNB?
  - 2.3.7. Treatment
    - 2.3.7.1. Blood Transfusion Treatment
    - 2.3.7.2. Other Treatments of the Cause
      - 2.3.7.2.1. Erythropoietin Administration
      - 2.3.7.2.2. Autotransfusions
  - 2.3.8. Evolution and Prognosis of Anemia in the PTNB
- 2.4. Other Types of Anemia in Newborns and Infants
  - 2.4.1. Difference Between Physiologic and Non-Physiologic Anemia
  - 2.4.2. Most Important Pathophysiological Differences between PTNB and Term Newborns (TNB)
  - 2.4.3. Causes of Anemia in Newborns and Infants

- 2.4.3.1. Hemorrhagic
- 2.4.3.2. Hemolytic
- 2.4.3.3. Hypoplastic
- 2.4.4. Characteristics of Hypoplastic Anemias
  - 2.4.4.1. Physiological Hypoplastic Anemia
  - 2.4.4.2. Congenital Hypoplastic Anemia
    - 2.4.4.2.1. Diamond-Blackfan
    - 2.4.4.2.2. Fanconi's Anemia
    - 2.4.4.2.3. Dyserythropoietic
    - 2.4.4.2.4. Idiopathic Aplasia
    - 2.4.4.2.5. Estren-Dameshek
  - 2.4.4.3. Secondary Aplastic Anemia
    - 2.4.4.3.1. Congenital Leukemia
    - 2.4.4.3.2. Infections
    - 2.4.4.3.3. Post-Transfusion Anemia
    - 2.4.4.3.4. Others
- 2.4.5. Secondary Aplastic Anemia
- 2.4.6. Differential Diagnosis and Complementary Tests
- 2.4.7. Transfusion Treatments and Criteria According to Age (TNB/Infant)
- 2.4.8. Other Treatments: Exchange Transfusion
- 2.4.9. Considerations of Treatments. New Treatments
- 2.5. Hemorrhagic Disorders in the Newborn
  - 2.5.1. Introduction
  - 2.5.2. Clinical Symptoms
  - 2.5.3. Etiology of Hemorrhagic Disorders in the Newborn
    - 2.5.3.1. Acquired Causes
      - 2.5.3.1.1. Vitamin K Deficiency
      - 2.5.3.1.2. Disseminated Intravascular Coagulation (DIC)
      - 2.5.3.1.3. Hepatopathy or Liver Disease
      - 2.5.3.1.4. Extracorporeal Membrane Oxygenation (ECMO)
      - 2.5.3.1.5. Others:  $\alpha_2$  Antiplasmin Deficiency, Vascular Problems, Obstetric Trauma, Platelet Qualitative Disorders, Acquired Immune and Non-immune Thrombopenias
    - 2.5.3.2. Hereditary Causes

- 2.5.3.2.1. Congenital Deficiency of Clotting Factors: Hemophilia, von Willebrand's Disease
- 2.5.4. Diagnosis of the Newborn with Hemorrhage
  - 2.5.4.1. Medical History
  - 2.5.4.2. Physical Examination
  - 2.5.4.3. Laboratory Tests
- 2.5.5. Treatment of Hemorrhage in the Newborn
- 2.6. Polycythemia in the Newborn
  - 2.6.1. Introduction
  - 2.6.2. Etiopathogenesis
    - 2.6.2.1. Blood Transfusion (Hypervolemia)
    - 2.6.2.2. Increased Erythropoiesis (Normovolemia)
    - 2.6.2.3. Hemoconcentration due to Volume Depletion
    - 2.6.2.4. Others: Physiological, Beckwith-Wiedemann Syndrome
  - 2.6.3. Clinical Symptoms
    - 2.6.3.1. Neurological Manifestations
    - 2.6.3.2. Hematological Manifestations
    - 2.6.3.3. Cardiac Manifestations
    - 2.6.3.4. Respiratory Manifestations
    - 2.6.3.5. Gastrointestinal Manifestations
    - 2.6.3.6. Renal and Genitourinary Manifestations
    - 2.6.3.7. Dermatological Manifestations
    - 2.6.3.8. Metabolic Manifestations
  - 2.6.4. Diagnosis
  - 2.6.5. Treatment of Polycythemia in the Newborn
    - 2.6.5.1. General Measures
    - 2.6.5.2. Partial Exchange Transfusion
  - 2.6.6. Prognosis
- 2.7. Thrombocytopenia in the Newborn

- 2.7.1. Introduction
- 2.7.2. Clinical Symptoms
- 2.7.3. Etiology
  - 2.7.3.1. Acquired Thrombocytopenias
    - 2.7.3.1.1. Diseases: Hepatopathies, Intraventricular Hemorrhage
    - 2.7.3.1.2. Severe Jaundice
  - 2.7.3.2. Hereditary Thrombocytopenias
    - 2.7.3.2.1. Autosomal Recessive: Glanzmann Thrombasthenia, Bernard-Soulier Syndrome
    - 2.7.3.2.2. Autosomal Dominant: Platelet-Type von Willebrand's Disease, Quebec Platelet Syndrome
- 2.7.4. Classification According to the Type of Thrombocytopenia
  - 2.7.4.1. Immune Neonatal Thrombocytopenia: Alloimmune or Autoimmune
  - 2.7.4.2. Infectious Neonatal Thrombocytopenia
  - 2.7.4.3. Neonatal Thrombocytopenia of Genetic Origin
  - 2.7.4.4. Various Causes
- 2.7.5. Diagnosis of the Newborn with Hemorrhage
  - 2.7.5.1. Medical History
  - 2.7.5.2. Physical Examination
  - 2.7.5.3. Laboratory Tests
- 2.7.6. Treatment of Thrombocytopenia in the Newborn
- 2.8. Neonatal Shock
  - 2.8.1. Introduction
    - 2.8.1.1. Pathophysiological Bases
    - 2.8.1.2. Types of Shock
    - 2.8.1.3. Risk Factors Associated with Neonatal Shock
  - 2.8.2. Etiology of Neonatal Shock
  - 2.8.3. Clinical Symptoms of Neonatal Shock
  - 2.8.4. Diagnosis of Neonatal Shock
    - 2.8.4.1. Medical History
    - 2.8.4.2. Physical Examination
    - 2.8.4.3. Complementary Tests
  - 2.8.5. Treatment of Neonatal Shock

### Module 3. Specificities of Care in Newborns with Non-Malignant Hematologic Disorders

- 3.1. Developmental and Family-Centered Care Model NIDCAP
  - 3.1.1. Introduction to the Model
  - 3.1.2. Synactive Theory
  - 3.1.3. Newborn Neurodevelopment and Behaviors
  - 3.1.4. The Family as Primary Caregiver
  - 3.1.5. Teamwork
- 3.2. Application of NIDCAP in the Newborn
  - 3.2.1. Positioning and Manipulation
  - 3.2.2. Babysitting Method
  - 3.2.3. Painful Procedures
  - 3.2.4. Inclusion of the Family in Care
- 3.3. Adaptation of the Neonatal Unit According to the NIDCAP Model
  - 3.3.1. Lighting and Acoustic Control
  - 3.3.2. Doors Open 24-hour
  - 3.3.3. Grouping of Procedures and Manipulations
  - 3.3.4. Sibling Project
  - 3.3.5. Joint Hospitalization
  - 3.3.6. "With You Like at Home"
- 3.4. The Importance of Feeding and Nutrition in the Newborn
  - 3.4.1. Feeding of the Newborn with Non-Malignant Hematologic Disorder
  - 3.4.2. Breastfeeding
  - 3.4.3. Maternal Milk Bank
  - 3.4.4. Artificial Breastfeeding
- 3.5. Diagnostic and Monitoring Procedures in the Newborn
  - 3.5.1. Anamnesis and Detailed Examination
  - 3.5.2. Blood Group and Coombs Test
  - 3.5.3. Blood Analysis
  - 3.5.4. Transcutaneous Bilirubin
  - 3.5.5. Food Control and Elimination
  - 3.5.6. Other Procedures



- 3.6. Venous Access in the Newborn
  - 3.6.1. Umbilical Venous Catheter (UVC)
  - 3.6.2. Epicutaneo-Cava Catheter
  - 3.6.3. Broviac Type Tunneled Central Venous Catheter
  - 3.6.4. Central Femoral and Jugular Venous Lines
  - 3.6.5. Peripherally Inserted Central Venous Catheter (PICC)
  - 3.6.6. Peripheral Venous Route
- 3.7. Most Frequent Treatments in the Newborn with Hematologic Disorder
  - 3.7.1. Hemorrhagic Disease Prophylaxis
  - 3.7.2. Phototherapy
  - 3.7.3. Intravenous Immunoglobulins
  - 3.7.4. Serum Albumin
  - 3.7.5. Exchange Transfusion
  - 3.7.6. Complementary Treatments
  - 3.7.7. Metalloporphyrins
- 3.8. Specific Nursing Care in the Management of the Infant with Non-Physiologic Neonatal Jaundice
  - 3.8.1. Theoretical Framework
    - 3.8.1.1. Nursing Care Based on the Model of Virginia Henderson
  - 3.8.2. Nursing Care of Newborns with Non-Physiologic Neonatal Jaundice
    - 3.8.2.1. Nursing Care Related to Phototherapy
    - 3.8.2.2. Nursing Care Related to Exchange Transfusion
    - 3.8.2.3. Nursing Care Related to Pharmacological Treatment
  - 3.8.3. Phases of the Nursing Process
    - 3.8.3.1. Assessment
    - 3.8.3.2. Detection of Problems Diagnosis
    - 3.8.3.3. NOC Planning
    - 3.8.3.4. NIC Execution
    - 3.8.3.5. Assessment

#### Module 4. Non-Malignant Hematologic Disorder in Children

- 4.1. Anemia in Pediatrics (I)
  - 4.1.1. Introduction. Concepts
  - 4.1.2. General Pathophysiology of Anemia in Pediatrics
  - 4.1.3. Classification of Anemia
    - 4.1.3.1. Morfoligical
    - 4.1.3.2. Pathophysiological
    - 4.1.3.3. By Establishment
  - 4.1.4. Prevalence and Incidence of Anemia in Pediatrics
  - 4.1.5. General Signs and Symptoms
  - 4.1.6. Differential Diagnosis According to Type of Anemia
  - 4.1.7. Iron Deficiency Anemia
- 4.2. Anemia in Pediatrics (II)
  - 4.2.1. Microcytic Anemia
    - 4.2.1.1. Iron Deficiency
    - 4.2.1.2. Thalassemia
    - 4.2.1.3. Chronic Inflammatory Disease
    - 4.2.1.4. Others
      - 4.2.1.4.1. Copper Deficiency Anemia
      - 4.2.1.4.2. Anemia due to Intoxication
      - 4.2.1.4.3. Others
  - 4.2.2. Normocytic Anemia
    - 4.2.2.1. Definition and Possible Causes
      - 4.2.2.1.1. Bone Marrow Aplasia/Hypoplasia
      - 4.2.2.1.2. Hemophagocytic Syndrome
  - 4.2.3. Macrocytic Anemia
    - 4.2.3.1. Vitamin B12 Deficiency Anemia
    - 4.2.3.2. Folate Deficiency Anemia
    - 4.2.3.3. Lesch-Nyhan Syndrome
    - 4.2.3.4. Bone Marrow Failure

- 4.2.4. Hemolytic Disorders
  - 4.2.4.1. Haemoglobinopathies
  - 4.2.4.2. Enzymopathies
  - 4.2.4.3. Immune Hemolytic Anemia
  - 4.2.4.4. Extrinsic Factors
    - 4.2.4.4.1. Wilson's disease
    - 4.2.4.4.2. Hemolytic Uremic Syndrome
    - 4.2.4.4.3. Thrombotic Thrombocytopenic Purpura
    - 4.2.4.4.4. Disseminated Intravascular Coagulation
- 4.3. Hemoglobinopathies: Sickle Cell Disease and Thalassemias
  - 4.3.1. Quantitative Hemoglobinopathies: Thalassemias
    - 4.3.1.1. Definition
    - 4.3.1.2. Pathophysiology
    - 4.3.1.3. Clinical Symptoms of Thalassemia Major or Cooley's Anemia
    - 4.3.1.4. Treatment
      - 4.3.1.4.1. Hypertransfusion and Iron Chelators
      - 4.3.1.4.2. Allogeneic HSCT
  - 4.3.2. Qualitative Hemoglobinopathies: Sickle Cell Disease
    - 4.3.2.1. Definition
    - 4.3.2.2. Clinical Symptoms
      - 4.3.2.2.1. Hemolytic Anemia, Vasculopathy and Chronic Organ Damage
      - 4.3.2.2.2. Vaso-Occlusive Crises
      - 4.3.2.2.3. Infections
      - 4.3.2.2.4. Others
    - 4.3.2.3. Treatment
      - 4.3.2.3.1. From Pain
      - 4.3.2.3.2. Urgent
      - 4.3.2.3.3. Surgical Intervention
      - 4.3.2.3.4. Allogeneic HSCT
- 4.4. Alterations of Coagulation and Hemostasis in Pediatrics
  - 4.4.1. Thrombocytopenia
    - 4.4.1.1. Concept
    - 4.4.1.2. Primary Immune Thrombocytopenia (ITP)
      - 4.4.1.2.1. Definition
      - 4.4.1.2.2. Etiology
      - 4.4.1.2.3. Clinical Symptoms
      - 4.4.1.2.4. Treatment
        - 4.4.1.2.4.1. Intravenous Corticosteroids and Immunoglobulins
        - 4.4.1.2.4.2. IgG anti-D, Chrysotherapy
        - 4.4.1.2.4.3. Splenectomy, Thrombopoietin Receptor Agonists, Rituximab
        - 4.4.1.2.4.4. According to Acute or Chronic
  - 4.4.2. Hemophilia A and B
    - 4.4.2.1. Etiology
    - 4.4.2.2. Clinical Symptoms
    - 4.4.2.3. Treatment
      - 4.4.2.3.1. Inactivated or Recombinant Plasma Concentrate
      - 4.4.2.3.2. Desmopressin
      - 4.4.2.3.3. Vaccination and Sport Specificities
  - 4.4.3. Von Willebrand Disease (VWD)
    - 4.4.3.1. Definition
    - 4.4.3.2. Etiology
    - 4.4.3.3. Clinical Symptoms
    - 4.4.3.4. Treatment
- 4.5. Non-Malignant Granulocyte Diseases
  - 4.5.1. Neutropenia
    - 4.5.1.1. Classification
    - 4.5.1.2. Severe Congenital Neutropenia
      - 4.5.1.2.1. Signs and Symptoms
      - 4.5.1.2.2. Epidemiology
      - 4.5.1.2.3. Diagnosis
      - 4.5.1.2.4. Treatment
      - 4.5.1.2.5. Complications

- 4.5.2. Congenital Defects of Phagocyte Function
    - 4.5.2.1. Clinical Characteristics
    - 4.5.2.2. Prevalence
    - 4.5.2.3. Genetic Diagnosis and Advice
    - 4.5.2.4. Treatment
  - 4.6. Primary Immunodeficiencies
    - 4.6.1. Introduction to Primary Immunodeficiencies (PID)
    - 4.6.2. PID Clinic
    - 4.6.3. Diagnosis of PID
    - 4.6.4. Types of PID
    - 4.6.5. PID Treatment
  - 4.7. Congenital Medullary Insufficiencies (CMI)
    - 4.7.1. Concept
    - 4.7.2. Classification
      - 4.7.2.1. Global Medullary Insufficiencies
        - 4.7.2.1.1. Definition
        - 4.7.2.1.2. Fanconi's Anemia
        - 4.7.2.1.3. Shwachman-Diamond Syndrome
          - 4.7.2.1.3.1. Introduction
          - 4.7.2.1.3.2. Clinical Symptoms
          - 4.7.2.1.3.3. Treatment
      - 4.7.2.2. Isolated Medullary Insufficiencies
        - 4.7.2.2.1. Blackfan-Diamond Anemia
          - 4.7.2.2.1.1. Definition
          - 4.7.2.2.1.2. Clinical Symptoms
          - 4.7.2.2.1.3. Treatment
  - 4.8. Congenital Medullary Insufficiencies: Fanconi's Anemia
    - 4.8.1. Definition
    - 4.8.2. Differentiation Between Fanconi's Anemia and Fanconi's Syndrome
    - 4.8.3. Characteristics of Fanconi's Anemia
    - 4.8.4. Diagnosis
      - 4.8.4.1. Diagnostic suspicion
        - 4.8.4.1.1. For Sibling Diagnosed with Fanconi's Anemia
        - 4.8.4.1.2. Due to the Appearance of Aplastic Anemia or Bone Marrow Failure
        - 4.8.4.1.3. For the Appearance of Myelodysplasia or Leukemia
  - 4.8.4.2. Tests
    - 4.8.4.2.1. Prenatal Diagnosis
    - 4.8.4.2.2. Ultrasound
    - 4.8.4.2.3. Flow Cytometry Analysis
    - 4.8.4.2.4. Blood Count
    - 4.8.4.2.5. Bone Marrow Aspirate (BMA) and Bone Marrow Biopsy
    - 4.8.4.2.6. Others
  - 4.8.5. Treatment
    - 4.8.5.1. Support
      - 4.8.5.1.1. Androgen Derivatives
      - 4.8.5.1.2. Growth Factors
      - 4.8.5.1.3. Blood Transfusions
    - 4.8.5.2. Curative
      - 4.8.5.2.1. Allogeneic Hematopoietic Progenitor Transplantation
      - 4.8.5.2.2. Genetic Therapy
  - 4.8.6. Prognosis
- 4.9. Most Frequent Infections in Pediatric Patient with Hematologic Disorder
    - 4.9.1. Infection Predisposing Factors
    - 4.9.2. Infection Prevention
    - 4.9.3. Most Frequent Infections
      - 4.9.3.1. Febrile Neutropenia
      - 4.9.3.2. Bacteremia
      - 4.9.3.3. Sepsis and Septic Shock
      - 4.9.3.4. Respiratory Infections
      - 4.9.3.5. Digestive Infections
      - 4.9.3.6. CNS Infections
      - 4.9.3.7. Infections by Multi-Resistant Organisms
      - 4.9.3.8. Viral Infections

## Module 5. Malignant Hematologic Disorder in Pediatrics

- 5.1. Epidemiology and Pathophysiology of Hematologic Cancer in Pediatrics
  - 5.1.1. Epidemiology of Hematologic Cancer in Pediatrics
    - 5.1.1.1. General Aspects
    - 5.1.1.2. Acute Lymphoblastic Leukemia
    - 5.1.1.3. Hodgkin's Lymphomas
    - 5.1.1.4. Non-Hodgkin's Lymphomas
  - 5.1.2. Pathophysiology of Cancer in Pediatrics
    - 5.1.2.1. Unlimited Replication Potential
    - 5.1.2.2. Clonal Expansion
    - 5.1.2.3. Aberrant Differentiation
    - 5.1.2.4. Avoidance of Apoptosis
- 5.2. Standard or Intermediate-risk B-Cell Acute Lymphoblastic Leukemia (B-ALL) in Pediatrics
  - 5.2.1. Introduction
  - 5.2.2. Clinical Symptoms
  - 5.2.3. Diagnosis
  - 5.2.4. Treatment
- 5.3. High-Risk B-ALL and T-ALL in Pediatrics
  - 5.3.1. High Risk B-ALL
    - 5.3.1.1. Introduction
    - 5.3.1.2. Clinical Symptoms
    - 5.3.1.3. Diagnosis
    - 5.3.1.4. Treatment
  - 5.3.2. T-ALL
    - 5.3.2.1. Introduction
    - 5.3.2.2. Clinical Symptoms
    - 5.3.2.3. Diagnosis
    - 5.3.2.4. Treatment
- 5.4. Leukemia in Infants (Infantile Leukemia)
  - 5.4.1. Introduction
  - 5.4.2. Chromosomal Alterations
  - 5.4.3. Clinical Characteristics
  - 5.4.5. Therapeutic Approaches
  - 5.4.6. Survival
- 5.5. Acute Myeloid Leukemia Infantile
  - 5.5.1. Acute Myeloid Leukemia in Pediatrics
    - 5.5.1.1. Association to Syndromes
    - 5.5.1.2. Stratification by Risk Groups
  - 5.5.2. Acute Promyelocytic Leukemia in Pediatrics (ALL or AML L3)
    - 5.5.2.1. Morfoligical
    - 5.5.2.2. Translocations
    - 5.5.2.3. Characteristic Coagulopathy
    - 5.5.2.4. Treatment
    - 5.5.2.5. Controls
- 5.6. Others Leukemias and Myelodysplastic Syndromes in Pediatrics
  - 5.6.1. Chronic Myeloid Leukemia
    - 5.6.1.1. Clinical Symptoms
    - 5.6.1.2. Treatment
  - 5.6.2. Juvenile Myelomonocytic Leukemia (JMML)
    - 5.6.2.1. Definition
    - 5.6.2.2. Clinical Symptoms
    - 5.6.2.3. Treatment
    - 5.6.2.4. New Therapies
    - 5.6.2.5. Myelodysplastic Syndromes
- 5.7. Hodgkin's Lymphoma in Pediatrics
  - 5.7.1. Introduction
  - 5.7.2. Clinical Symptoms
  - 5.7.3. Diagnosis and Staging
  - 5.7.4. Treatment
  - 5.7.5. Prognosis
- 5.8. Non-Hodgkin's Lymphoma in Pediatrics
  - 5.8.1. Introduction
  - 5.8.2. Classification
  - 5.8.3. Clinical Symptoms
  - 5.8.4. Diagnosis and Staging
  - 5.8.5. Treatment

- 5.9. Burkitt Lymphoma
  - 5.9.1. Specific Characteristics
  - 5.9.2. Ways It Presents Itself
  - 5.9.3. Clinical Symptoms
  - 5.9.4. Diagnosis
  - 5.9.5. Treatment
- 5.10. Malignant Histiocytosis
  - 5.10.1. Langerhans Cell Histiocytosis (LCH)
    - 5.10.1.1. Clinical Symptoms
    - 5.10.1.2. Diagnosis
    - 5.10.1.3. Treatment
  - 5.10.2. Hemophagocytic Lymphohistiocytosis
    - 5.10.2.1. Diagnosis
    - 5.10.2.2. Treatment

## Module 6. Pharmacological Treatment and Nursing Care of Children with Hematologic Disorder

- 6.1. Central and Peripheral Venous Catheters. Nursing Care
  - 6.1.1. Introduction
  - 6.1.2. Choice of Catheter
  - 6.1.3. Peripheral Venous Accesses
  - 6.1.4. Central Venous Accesses
- 6.2. The Great Ally: Subcutaneous Reservoir. Most Important Aspects of Its Care
  - 6.2.1. Introduction
  - 6.2.2. Placement Indications
  - 6.2.3. Advantages and Disadvantages
  - 6.2.4. Implementation
  - 6.2.5. Withdrawal
- 6.3. General Principles of Drug Administration in Pediatrics
  - 6.3.1. Safety in the Administration of Drugs in Pediatric Hematology
  - 6.3.2. Routes of Administration and Care
  - 6.3.3. Recording of Drug Administration
  - 6.3.4. Main Drugs to Support Treatment
- 6.4. Most Relevant Treatments in Patients with Immunodeficiencies
  - 6.4.1. General Measures
  - 6.4.2. Prophylactic and/or Symptomatic Treatment
  - 6.4.3. Replacement Therapy
  - 6.4.4. Curative Treatment
- 6.5. Antineoplastic Treatment (I)
  - 6.5.1. Chemotherapy Fundamentals
  - 6.5.2. Indications of Chemotherapy
  - 6.5.3. Criteria of Response to Treatment
  - 6.5.4. Drug Resistance
  - 6.5.6. Forms of Chemotherapy Administration
  - 6.5.7. Interaction of Chemotherapy with Other Drugs
  - 6.5.8. Chemotherapy Regimens
  - 6.5.9. Dose Intensity
- 6.6. Antineoplastic Treatment (II)
  - 6.6.1. Most Commonly Used Antineoplastic Agents in Pediatric Hematology
  - 6.6.2. Chemoprotective Agents
  - 6.6.3. Short- and Medium-Term Side Effects
- 6.7. Administration of Antineoplastic Drugs. Most Important Care
  - 6.7.1. General Measures in the Administration of Cytostatics
  - 6.7.2. Risk Prevention in the Administration of Cytostatics
    - 6.7.2.1. Safety Circuit
    - 6.7.2.2. Drug Reception and Storage
    - 6.7.2.3. Dual Validation of Pharmacological and Non-Pharmacological Measures Prior to Drug Infusion
    - 6.7.2.4. Double Validation of the Antineoplastic Drug
    - 6.7.2.5. Personal Protective Equipment (PPE)
    - 6.7.2.6. Drug Corroboration at the Bedside
  - 6.7.3. Nursing Care by Route of Administration
    - 6.7.3.1. Nursing Care in Oral Administration
    - 6.7.3.2. Nursing Care in Intramuscular Administration
    - 6.7.3.3. Nursing Care in Intrathecal Administration
    - 6.7.3.4. Nursing Care in Intra-Arterial Administration
  - 6.7.4. Nursing Action in the Event of a Cytostatic Spill



- 6.8. Administration of Antineoplastic Drugs. Most Important Care
  - 6.8.1. Agents with Irritant Capacity and Toxicity of Antineoplastic Agents
  - 6.8.2. Pre-, During and Post-Administration Care
  - 6.8.3. Action in case of Complications
- 6.9. Hemotherapy Support in Pediatrics. Most Important Care
  - 6.9.1. Blood Products
    - 6.9.1.1. Whole Blood
    - 6.9.1.2. Red Blood Cell Concentrate
    - 6.9.1.3. Platelet Concentrate
    - 6.9.1.4. Fresh Plasma
  - 6.9.2. Irradiation and Washing of Products
  - 6.9.3. Transfusion Indications and Dosage
  - 6.9.4. Request
    - 6.9.4.1. Documentation
    - 6.9.4.2. Crossmatch Sample
  - 6.9.5. Administration of Blood Derivatives
  - 6.9.6. Adverse Reactions
  - 6.9.7. Transfusion Safety

## Module 7. Nursing Care of the Child/Adolescent with Severe Hematologic Disease and Their Family

- 7.1. "Careful Care" for the Child/Adolescent and Their Family
  - 7.1.1. Fragility and Vulnerability:
    - 7.1.1.1. For the People We Care For
    - 7.1.1.2. For Nursing Professionals
  - 7.1.2. Sympathy, Empathy and Compassion:
    - 7.1.2.1. For the People We Care For
    - 7.1.2.2. For Nursing Professionals
- 7.1.3. Bioethics and Pediatrics
  - 7.1.3.1. Paternalism in Pediatrics
  - 7.1.3.2. The Problem of Autonomy in Minors
  - 7.1.3.3. Assent and Informed Consent in Minors
  - 7.1.3.4. Autonomy in Adolescence and the Mature Child
  - 7.1.3.5. Legal Capacity of the Minor
  - 7.1.3.6. Parental Access to Medical Records
  - 7.1.3.7. Care Ethics Committee (CEA)
  - 7.1.3.8. Nursing as an Ethical Guarantee
- 7.2. Safety as a Priority in Pediatric Hematology
  - 7.2.1. Why and What For?
  - 7.2.2. Professionals Involved
  - 7.2.3. Safety Priorities
  - 7.2.4. Care Based on Scientific Evidence
  - 7.2.5. Safety in the Pediatric Hematology Unit
- 7.3. Child/Adolescent and Family Reception at the Onset of Severe Hematologic Disease
  - 7.3.1. The Onset of the Child and Adolescent with Severe Hematologic Disease
  - 7.3.2. Care in the Pediatric Emergencies Unit
  - 7.3.3. Care in the Hospitalization Unit
- 7.4. Observation and Active Nursing Listening in Pediatric Hematology
  - 7.4.1. Differences Between Seeing, Looking and Observing
  - 7.4.2. Objectives of Active Observation
  - 7.4.3. Moments of Observation in Pediatric Hematology
    - 7.4.3.1. Observation of the Child
    - 7.4.3.2. Observation of the Family
  - 7.4.4. Obstacles and Difficulties
- 7.5. Nursing Assessment and Diagnosis in Pediatric Hematology
  - 7.5.1. Basis of Nursing Assessment
    - 7.5.1.1. Process, Planned, Systematic, Continuous, Deliberate
    - 7.5.1.2. Assessment Objectives
    - 7.5.1.3. Types of Assessment According to Objectives
    - 7.5.1.4. Overall Assessment
    - 7.5.1.5. Focused Assessment

- 7.5.2. Stages of the Process of Nursing Assessment
  - 7.5.2.1. Obtaining Results
  - 7.5.2.2. Assessment of Information
  - 7.5.2.3. Standardized Assessment in Pediatric Hematology
- 7.5.3. Detection of Problems in Pediatric Hematology
- 7.5.4. Interdependent Problems in Pediatric Hematology
- 7.5.5. Most frequent Nursing Diagnoses in Pediatric Hematology According to the Situation
- 7.6. Nursing Care in Symptom Control in Pediatric Hematology
  - 7.6.1. General Principles of Symptom Control
  - 7.6.2. Assessment of Symptoms
  - 7.6.3. Variable Emotional Attitude
  - 7.6.4. Irritability
  - 7.6.5. Physical Pain
  - 7.6.6. Myelosuppression Derivatives
  - 7.6.7. Anorexia
  - 7.6.8. Nausea and Vomiting
  - 7.6.9. Digestive System
  - 7.6.10. Alopecia
  - 7.6.11. Cushing's Syndrome
  - 7.6.12. Hemorrhagic Cystitis
  - 7.6.13. Pneumonitis
  - 7.6.14. Ocular and Other Sensory Organ Disorders
  - 7.6.15. Neurological Alterations:
- 7.7. Skin Care in Pediatric Patient with Severe Hematologic Disease
  - 7.7.1. Introduction
  - 7.7.2. General Skin Care
    - 7.7.2.1. Sun Exposure
    - 7.7.2.2. Clothing
    - 7.7.2.3. Hygiene and Hydration
    - 7.7.2.4. Nails
    - 7.7.2.5. Postural Changes
- 7.7.3. Most Common Alterations. Prevention, Assessment, Treatment
  - 7.7.3.1. Alopecia
  - 7.7.3.2. Hirsutism
  - 7.7.3.3. Exfoliative Dermatitis or Palmo-Plantar Erythrodysesthesia
  - 7.7.3.4. Pruritus
  - 7.7.3.5. Stretch Marks
  - 7.7.3.6. Ulcerations
  - 7.7.3.7. Perianal and Genital Dermatoses
  - 7.7.3.8. Mucositis
  - 7.7.3.9. Related to Therapeutic Devices
- 7.8. Feeding of Children with Malignant Hematologic Disorder
  - 7.8.1. Importance of Nutrition in Childhood
  - 7.8.2. Special Needs of the Child with Severe Hematologic Disorder
  - 7.8.3. Side Effects of Treatment in Children with Severe Hematologic Disorder
  - 7.8.4. Adaptation of Diet in Children with Severe Hematologic Disorder
  - 7.8.5. Nutritional Support
  - 7.8.6. Adaptation of the Diet in Complications
  - 7.8.7. Other Combination Nutritional Therapies
  - 7.8.8. Adapted Recipes/Tips to Make Food More Appetising
- 7.9. Carrying Out Diagnostic Tests. Nursing Care
  - 7.9.1. Patient and Family Information
  - 7.9.2. Professional Coordination
  - 7.9.3. Patient Preparation
  - 7.9.4. Care During the Test
  - 7.9.5. Patient Reception
  - 7.9.6. Specific Care During the Following Hours
- 7.10. Nursing Consultation of the Pediatric Patient with Non-malignant Hematologic Disease. Specific Care
  - 7.10.1. Introduction
  - 7.10.2. Diagnostic Support
  - 7.10.3. Socio-Family Assessment and Quality of Life
  - 7.10.4. Education Preventive Measures
  - 7.10.5. Adherence to Treatment
  - 7.10.6. Transition to the Adult Unit

- 7.11. Research in Pediatric Hematology Care
  - 7.11.1. Evidence-Based Nursing (EBN)
    - 7.11.1.1. EBN Pillars
    - 7.11.1.2. EBN Phases and Models
    - 7.11.1.3. Formulation of Questions
    - 7.11.1.4. Search for Evidence
    - 7.11.1.5. Critical Reading
    - 7.11.1.6. Implementation and Assessment
  - 7.11.2. Research Methodology
  - 7.11.3. Innovation in Care
  - 7.11.4. Where Are We Heading?

## Module 8. All Together as a Team

- 8.1. Emergency Nursing Care in the Pediatric Patient with Hematologic Disorder
  - 8.1.1. Definition of Emergency in Children with Severe Hematologic Disorder
  - 8.1.2. Most Common Emergencies in Children with Severe Hematologic Disorder
    - 8.1.2.1. According to Etiology
    - 8.1.2.2. According to Affected Organs
  - 8.1.3. Most Frequent Reasons for Admission to the Emergency Department in Children with Severe Hematologic Disorders
  - 8.1.4. Performance in the Most Common Emergencies
    - 8.1.4.1. Hyperleukocytosis
    - 8.1.4.2. Febrile Neutropenia
    - 8.1.4.3. Immune Reconstitution Inflammatory Syndrome (IRIS)
    - 8.1.4.4. Cytokine Release Syndrome
    - 8.1.4.5. Severe Pain
    - 8.1.4.6. Acute Methotrexate Toxicity
    - 8.1.4.7. Transfusion Reactions
    - 8.1.4.8. Extravasations
    - 8.1.4.9. Intrathecal Chemotherapy Side Effects
  - 8.1.5. Management of Oxygen Therapy, Fluid Therapy, Main Drugs and Electromedical Devices and Administration of Own Drugs
  - 8.1.6. Emergency response
  - 8.1.7. Crash Cart Defibrillator
  - 8.1.8. Training of the Assistance Team
  - 8.1.9. Communication with the Family and the Child/Adolescent
- 8.2. Nursing Care of Pediatric Patients with Hematologic Disease and Their Family, Admitted to the PICU (I)
  - 8.2.1. Initial Assessment of the Patient in PICU
  - 8.2.2. Common Complications Requiring Intensive Care
    - 8.2.2.1. Complications Related to the Underlying Disease and its Treatment
      - 8.2.2.1.1. Respiratory Failure
      - 8.2.2.1.2. Cardiac Disorders
      - 8.2.2.1.3. Hematological System Disorder
      - 8.2.2.1.4. Acute Kidney Failure
      - 8.2.2.1.5. Metabolic Alterations
      - 8.2.2.1.6. Hepatotoxicity
    - 8.2.2.2. Complications Related to the Postoperative Period in Neurosurgery
  - 8.2.3. Basic Nursing Care in the Pediatric Patient Admitted to the PICU
  - 8.2.4. Nutritional Aspects of the Patient in PICU
  - 8.2.5. Special Situations in the Oncology Patient
    - 8.2.5.1. Patient Requiring Continuous Renal Replacement Therapy (CRRT)
    - 8.2.5.2. Patient Subjected to High Frequency Mechanical Ventilation (HFMV)
- 8.3. Nursing Care of Pediatric Patients with Hematologic Disease and Their Family, Admitted to the PICU (II)
  - 8.3.1. Initial Comprehensive Care for the Family of the Hematologic Patient Admitted to the PICU
  - 8.3.2. Psychological Aspects in Children with Hematologic Pathology Requiring Intensive Care
    - 8.3.2.1. Pain Management
    - 8.3.2.2. Treatment Anxiety
    - 8.3.2.3. Fear of Death
  - 8.3.3. Grief in the Oncologic Patient Admitted to the PICU
  - 8.3.4. Special Situations in the Oncologic Patient Admitted to the PICU
    - 8.3.4.1. Communication with the Oncology Patient Subjected to Mechanical Ventilation
    - 8.3.4.2. Rehabilitation (Respiratory and Motor Physiotherapy)
  - 8.3.5. Medical Information and Care Team-Family Unit Communication
  - 8.3.6. End-of-Life Care for Oncology Patients

- 8.4. Pediatric Intensive Care Unit (PICU). Humanization Projects
  - 8.4.1. General Criteria for Admission of Hematologic Patients to the PICU
  - 8.4.2. Family Repercussions of Admission to the PICU
  - 8.4.3. Humanistic Vision of Critical Care
  - 8.4.4. Care Model: Family-Centered Care
    - 8.4.4.1. Family Empowerment
    - 8.4.4.2. Emotional Well-Being
  - 8.4.5. Characteristics of the Care Team in a Humanistic PICU
  - 8.4.6. Humanizing Strategies in an Open-Door PICU
- 8.5. Psychological Support of the Child with Severe Hematologic Disorder
  - 8.5.1. Developmental Stage of Childhood
  - 8.5.2. The Child with Severe Hematologic Disease
    - 8.5.2.1. Specific Characteristics
    - 8.5.2.2. Psychological Care for Children and Their Family
      - 8.5.2.2.1. General Aspects
      - 8.5.2.2.2. According to the Stage of the Disease
  - 8.5.3. Survivors of Malignant Hematologic Disease in Childhood and Quality of Life
  - 8.5.4. Death in Childhood
    - 8.5.4.1. Palliative Care
    - 8.5.4.2. Grief
- 8.6. Psychological Support of the Adolescent During the Process of Living of Severe Hematologic Disease
  - 8.6.1. Adolescent Developmental Stage
  - 8.6.2. The Adolescent with Severe Hematologic Disease
    - 8.6.2.1. Specific Characteristics of the Adolescent with Severe Hematologic Disease
    - 8.6.2.2. Psychological Care in the Phases of the Disease
      - 8.6.2.2.1. Diagnosis
      - 8.6.2.2.2. Treatment
      - 8.6.2.2.3. Post-Treatment
  - 8.6.3. Survivors in Adolescence and Quality of Life
  - 8.6.4. Death in Adolescence
- 8.7. Foundations and Associations of Parents of Children with Hematologic Disorder and other NGOs
  - 8.7.1. Volunteering in Pediatric Hematology-Oncology Units
    - 8.7.1.1. The Importance and Coordination of Volunteering
    - 8.7.1.2. Lines of Volunteering in Pediatric Oncology
    - 8.7.1.3. Volunteer Training
- 8.8. Educational Continuity in Children and Adolescents with Hematologic Disorder
  - 8.8.1. Educational Care as a Right; Principles of Educational Care for Students with Disease
  - 8.8.2. Requirements and Procedures
  - 8.8.3. Educational Coverage During the Disease Process
    - 8.8.3.1. In-Hospital. Hospital Classrooms
    - 8.8.3.2. Home-Based Educational Support Service
- 8.9. Information and Communication Technologies (ICT) and Humanization
  - 8.9.1. Use of ICT and E-health for Parents
    - 8.9.1.1. Decalogue for the Good Use of ICTs
    - 8.9.1.2. ICTs as a Method of Distraction and Relief of Pain and Anxiety in Children and Adolescents
    - 8.9.1.3. ICTs as a Method of Communication and Learning
  - 8.9.2. Use of ICT and E-health for Parents
    - 8.9.2.1. Information Needs
    - 8.9.2.2. Communication Needs
    - 8.9.2.3. Development and Prescription of Apps and Websites in Pediatric Oncology
    - 8.9.2.4. Use of Social Networks
  - 8.9.3. Use of ICT and E-health for Health Professionals
    - 8.9.3.1. New Technologies and New Challenges for the Nursing Professional
    - 8.9.3.2. Application of New Technologies in Healthcare
    - 8.9.3.3. Useful Applications for Pediatric Hematology Nurses
    - 8.9.3.4. ICT Applications in the Healthcare of the Future

## Module 9. Towards Healing: Allogeneic Hematopoietic Stem Cell Transplantation (HSCT) in Pediatrics

- 9.1. Introduction and Indications for Allogeneic Hematopoietic Progenitor Transplantation
  - 9.1.1. Hematopoietic Progenitors Cells (HPCs) and HSCT
  - 9.1.2. The Histocompatibility System (HLA or MHC)
  - 9.1.3. The History Hematopoietic Progenitor Transplantation
  - 9.1.4. Types of Hematopoietic Progenitor Transplantation
    - 9.1.4.1. According to the Donor
    - 9.1.4.2. According to the Source of the Hematopoietic Progenitors
  - 9.1.5. Indications for Allogeneic HSCT
    - 9.1.5.1. Patients with Hematologic Malignancies
      - 9.1.5.1.1. Leukaemias
      - 9.1.5.1.2. Myelodysplastic Syndromes
      - 9.1.5.1.3. Lymphomas
    - 9.1.5.2. Patients with Non-Malignant Diseases
      - 9.1.5.2.1. Erythrocyte Disorders
      - 9.1.5.2.2. Primary Immunodeficiencies
      - 9.1.5.2.3. Congenital Medullary Insufficiencies
      - 9.1.5.2.4. Others
- 9.2. From Donor Selection to Infusion of Hematopoietic Progenitors
  - 9.2.1. Donor Selection
    - 9.2.1.1. Related Donors
    - 9.2.1.2. Search for Unrelated Donors
    - 9.2.1.3. Choice of Donor
  - 9.2.2. HPC Collection Techniques
    - 9.2.2.1. Cord Blood Progenitor Cell Procurement and Management
    - 9.2.2.2. Mobilization and Collection of Peripheral Blood Progenitor Cells
    - 9.2.2.3. Bone Marrow Progenitor Cell Collection by Direct Aspiration
  - 9.2.3. Transportation of PHs (From Hospital of Origin to Receiving Hospital)
    - 9.2.3.1. Bag Labeling
    - 9.2.3.2. Container Labeling
    - 9.2.3.3. Documentation
    - 9.2.3.4. Temperature
  - 9.2.4. HPC Management and Preservation
    - 9.2.4.1. Quality Control of Cell Processing
    - 9.2.4.2. Handling Prior to Cryopreservation
    - 9.2.4.3. Cryopreservation
    - 9.2.4.4. Defrosting
    - 9.2.4.5. Transport to the Hospital HPT Unit to be Infused
- 9.3. Nursing During the Conditioning of the Child/Adolescent Undergoing allo-HSCT
  - 9.3.1. Patient and Family Reception
  - 9.3.2. Patient Assessment
  - 9.3.3. Conditioning Regimes
    - 9.3.3.1. Total Body Irradiance (TBI)
    - 9.3.3.2. Chemotherapy
  - 9.3.4. Prophylaxis of Graft-Versus-Host Disease (GVHD)
    - 9.3.4.1. Methotrexate
    - 9.3.4.2. Infliximab and Rituximab
    - 9.3.4.3. Cyclosporine
    - 9.3.4.4. Mycophenolate
    - 9.3.4.5. Gene Transfer Agents (GTAs)
    - 9.3.4.6. Cyclophosphamide
    - 9.3.4.7. Corticoids
    - 9.3.4.8. Non-specific Immunoglobulins
  - 9.3.5. Prophylaxis of Sinusoidal Obstructive Syndrome (SOS)
  - 9.3.6. Infection Prophylaxis
    - 9.3.6.1. Protective Environment (PE) Rooms
    - 9.3.6.2. Low Bacterial Diet
    - 9.3.6.3. Pharmacological Prophylaxis
  - 9.3.7. Patient and Family Accompaniment
- 9.4. Day 0. Infusion of Hematopoietic Progenitors
  - 9.4.1. Day 0
  - 9.4.2. Patient Preparation
  - 9.4.3. Progenitors Reception
  - 9.4.4. Infusion of Progenitors
  - 9.4.5. Potential Complications
  - 9.4.6. Post Infusion Care of Progenitors
    - 9.4.6.1. Care of the Patient
    - 9.4.6.2. Care of the Family

- 9.5. Phase of Medullary Aplasia. Nursing Care
  - 9.5.1. Duration of the Spinal Cord Aplasia Phase
  - 9.5.2. Potential Complications of the Spinal Cord Aplasia Phase
    - 9.5.2.1. Directly Derived from the Conditioning Treatment
    - 9.5.2.2. Produced by the Situation of Aplasia
      - 9.5.2.2.1. Infections
      - 9.5.2.2.2. Nausea and Vomiting
      - 9.5.2.2.3. Diarrhea
      - 9.5.2.2.4. Mucositis
      - 9.5.2.2.5. Hemorrhages
      - 9.5.2.2.6. Respiratory Problems
  - 9.5.3. Nursing Assessment and Interventions
- 9.6. Mid-Term Nursing Care of the Transplanted Child/Adolescent and Their Family
  - 9.6.1. Duration of the Post-Transplant Phase in the Medium Term
  - 9.6.2. Potential Complications of the Post-Transplant Phase in the Medium Term
    - 9.6.2.1. Infections
    - 9.6.2.2. Graft Versus Host Disease
    - 9.6.2.3. Implant and Pre-Implant Syndrome
    - 9.6.2.4. Implant/Graft Failure
    - 9.6.2.5. Other Complications
      - 9.6.2.5.1. Hemorrhagic Cystitis
      - 9.6.2.5.2. Renal Dysfunction
      - 9.6.2.5.3. Thrombotic Microangiopathy
      - 9.6.2.5.4. Idiopathic Pneumonia Syndrome (IPS)
      - 9.6.2.5.5. Diffuse Alveolar Hemorrhage
  - 9.6.3. Nursing Assessment and Interventions
- 9.7. Most Relevant Emergencies in Post-Transplant Patients
  - 9.7.1. Introduction
  - 9.7.2. Sepsis and Septic Shock
  - 9.7.3. Mucositis Grade III-IV
  - 9.7.4. Implant Syndrome
  - 9.7.5. Capillary Leakage Syndrome (CLS)
  - 9.7.6. Acute GVHD and Chronic GVHD
  - 9.7.7. Hemorrhagic Cystitis
  - 9.7.8. Sinusoidal Obstructive Syndrome of the Liver (SOS)
  - 9.7.9. Posterior Reversible Encephalopathy Syndrome (PRES)
  - 9.7.10. Acute Kidney Failure
  - 9.7.11. Respiratory Failure Post-HPT
    - 9.7.11.1. Idiopathic Pneumonia Syndrome (IPS)
    - 9.7.11.2. Diffuse Alveolar Hemorrhage (DAH)
    - 9.7.11.3. Cryptogenic Organizing Pneumonia (COP)
    - 9.7.11.4. Bronchiolitis Obliterans Syndrome (BOS)
  - 9.7.12. Post-HPT Thrombotic Microangiopathy (TMA)
  - 9.7.13. Cardiac Toxicity
  - 9.7.14. Multiorgan Dysfunction Syndrome (MODS)
  - 9.7.15. Transfer to Intensive Care Unit
- 9.8. Follow-Up HPT Nursing Consultation
  - 9.8.1. HPT Nursing Consultation
  - 9.8.2. Nursing Care in the Pre-Transplant Consultation for Hematopoietic Progenitors
    - 9.8.2.1. Information About the Process
    - 9.8.2.2. Reception at the HPT Unit and Basic Operational Recommendations
    - 9.8.2.3. Anthropometric Measurements and Vital Signs
    - 9.8.2.4. Peripheral Blood Test Pre-HPT
    - 9.8.2.5. Introduction of the Multidisciplinary Team
    - 9.8.2.6. Emotional Support to the Patient and Family
    - 9.8.2.7. Resolving Doubts
  - 9.8.3. Nursing Care in Post-HPT Follow-Up Consultations
    - 9.8.3.1. Short-Term
      - 9.8.3.1.1. Review of Information Provided at Discharge from Hospitalization
      - 9.8.3.1.2. Surveillance Signs and Symptoms, Information on Warning Signs, Early Detection of Complications
      - 9.8.3.1.3. Information on Measures to Avoid Infection: Avoid Contact with People with Flu-like Symptoms, Avoid Crowded Indoor Spaces
      - 9.8.3.1.4. Dietary and Nutritional Recommendations
      - 9.8.3.1.5. Vascular Access Care and Follow-Up: Pulmonary Artery Catheter (PAC), Peripherally Inserted Central Catheter (PICC)



- 9.8.3.1.6. Nasogastric (NG) Tube, Gastrostomy Button
- 9.8.3.1.7. Pain Assessment
- 9.8.3.1.8. Assessment of Activity
- 9.8.3.1.9. Health education
- 9.8.3.1.10. Information about Circuits in Day Hospital
- 9.8.3.1.11. Emotional Support to the Patient and Family
- 9.8.3.2. In the Long Term
  - 9.8.3.2.1. Surveillance Signs and Symptoms
  - 9.8.3.2.2. Early Detection of Toxicity Complications
  - 9.8.3.2.3. Coordination with Other Specialists: Cardiology, Endocrinology, Traumatology
  - 9.8.3.2.4. Chronic Monitoring: Symptomatic Treatments, Emotional Support, Adherence to Treatment
  - 9.8.3.2.5. Follow-up Immunizations Post-HPT
  - 9.8.3.2.6. Health Education on Healthy Habits for Children and Adolescents
- 9.9. New Therapies for Treating Post Allo-HSCT Complications
  - 9.9.1. Donor CD34+ Progenitor Infusion for the Treatment of Implant Failure Secondary to Allo-HSCT
    - 9.9.1.1. Candidate Patients
    - 9.9.1.2. Procedure
  - 9.9.2. Extracorporeal Photopheresis for the Treatment of GVHD
    - 9.9.2.1. Candidate Patients
    - 9.9.2.2. Procedure
  - 9.9.3. Mesenchymal Stem Cell Infusion for the Treatment of GVHD
    - 9.9.3.1. Candidate Patients
    - 9.9.3.2. Procedure
  - 9.9.4. Donor Lymphocyte Infusion. Immunotherapy in Patients Relapsing after Allogeneic HSCT
    - 9.9.4.1. Candidate Patients
    - 9.9.4.2. Procedure

## Module 10. When the Response to Treatment is Not Adequate

- 10.1. Introduction
  - 10.1.1. Response to Disease
  - 10.1.2. Definition of Survival
  - 10.1.3. Definition of Recurrence
  - 10.1.4. Diseases or Situations with Higher Probability of Recurrences
  - 10.1.5. Treatment Options
  - 10.1.6. Reception and Accompaniment in the Relapse of the Disease
    - 10.1.6.1. Parents
      - 10.1.6.1.1. Emotional Reactions
      - 10.1.6.1.2. Coping
    - 10.1.6.2. Emotional Reactions and Coping with Relapse in Children and Adolescents
- 10.2. Concept, Rationale and Need for Clinical Trials in Pediatric Hematology
  - 10.2.1. What is a Clinical Trial?
  - 10.2.2. Historical Background, Legislation and Ethics of Experimentation with Drugs
    - 10.2.2.1. "The Canon of Medicine". Avicenna (Ibn Sina)
    - 10.2.2.2. First Clinical Trial in History. James Lind
    - 10.2.2.3. Experiments on Children in the Auschwitz Concentration Camp (Josef Mengele)
    - 10.2.2.4. Nuremberg Code (1946)
    - 10.2.2.5. Ethically Questionable Clinical Trials after the Nuremberg Code
    - 10.2.2.6. Declaration of Helsinki (1964)
    - 10.2.2.7. Good Clinical Practice Guidelines (1995) Why are Clinical Trials Necessary in Pediatric Hematology?
  - 10.2.3. Why are Clinical Trials Necessary in Pediatric Hematology?
    - 10.2.3.1. Increase Overall Survival of Patients with Poor Prognosis
    - 10.2.3.2. Decrease Long-Term Sequelae
- 10.3. Design, Preparation and Implementation of a Clinical Trial
  - 10.3.1. Design of a Clinical Trial
  - 10.3.2. Clinical Trials Phases
  - 10.3.3. Identification and Selection of Participating Centers
  - 10.3.4. Medication and Hospital Pharmacy Service
  - 10.3.5. Sample Analysis Laboratories
  - 10.3.6. Economic Aspects of the Clinical Trial
  - 10.3.7. Archive

- 10.4. Development of an Open Clinical Trial in a Center and Professionals involved
  - 10.4.1. Initiation Visit
  - 10.4.2. Monitoring Visit
  - 10.4.3. Closing Visit
  - 10.4.4. Investigators File
  - 10.4.5. Management of Adverse Events
  - 10.4.6. Trial Medication
  - 10.4.7. Inclusion of Patients
  - 10.4.8. Trial Drug Administration, Disease Assessment and Follow-Up
  - 10.4.9. Professionals Involved in a Clinical Trial
    - 10.4.9.1. Professionals in the Hospital Setting
    - 10.4.9.2. Pharmaceutical Company Professionals
- 10.5. The Role of Nursing Professionals in Pediatric Hematology Clinical Trials
  - 10.5.1. Nurse in the Pediatric Hematology/Oncology Clinical Trial Team
  - 10.5.2. Specific Training Requirements
    - 10.5.2.1. Training in Good Clinical Practice
    - 10.5.2.2. Training in Handling and Shipment of Biohazard Samples
    - 10.5.2.3. Specific Training for Each Clinical Trial
  - 10.5.3. Responsibilities
  - 10.5.4. Delegated Clinical Trial Activities
    - 10.5.4.1. Inventory Management
      - 10.5.4.1.1. Perishable Material
      - 10.5.4.1.2. Non-Perishable Material
    - 10.5.4.2. Management of Local Laboratory Samples
    - 10.5.4.3. Management of Central Laboratory Samples
    - 10.5.4.4. Nursing Techniques
    - 10.5.4.5. Drug Administration
    - 10.5.4.6. Source Records
    - 10.5.4.7. Electronic Data Collection Notebooks
  - 10.5.5. Nursing Care
    - 10.5.5.1. Basic Needs Care
    - 10.5.5.2. Accompaniment
- 10.6. Current and Future Situation of Pediatric Hematology. Personalized Medicine
  - 10.6.1. Sciences and Omics
  - 10.6.2. Fundamentals of Translational Research
  - 10.6.3. Definition of Personalized Medicine
  - 10.6.4. High-Performance Sequencing Techniques
  - 10.6.5. Analysis of Data
  - 10.6.6. Biomarkers
  - 10.6.7. Preclinical Models
- 10.7. Introduction, Objectives and Stages of the Therapeutic Approach in Pediatric Palliative Care
  - 10.7.1. History of Palliative Care
  - 10.7.2. Difficulties in the Application of Palliative Care in the Pediatric Population
    - The Challenge of Pediatric Palliative Care
  - 10.7.3. Definition of Pediatric Palliative Care
  - 10.7.4. Pediatric Palliative Care Groups
  - 10.7.5. Peculiarities of Pediatric Palliative Care
  - 10.7.6. Universal Principles of Palliative Care
  - 10.7.7. Objectives of the Palliative Approach
  - 10.7.8. Advanced Disease Situation. Turning Point
  - 10.7.9. Stages of the Therapeutic Approach
  - 10.7.10. Place of Care: Hospital vs. Hospitalization
- 10.8. Symptom Control in Pediatric Hematology Palliative Care (Includes Pain)
  - 10.8.1. Diagnosis and Assessment of Symptoms
  - 10.8.2. General Principles of Symptom Control
  - 10.8.3. Symptoms to Palliate
    - 10.8.3.1. Main Symptom to Palliate: Pain
    - 10.8.3.2. General Symptoms
    - 10.8.3.3. Constitutional Symptoms
    - 10.8.3.4. Respiratory symptoms
    - 10.8.3.5. Digestive Symptoms
    - 10.8.3.6. Neurological Symptoms
    - 10.8.3.7. Other Symptoms
  - 10.8.4. Prevention and Treatment
    - 10.8.4.1. Non-pharmacological methods
    - 10.8.4.2. Pharmacological Methods

10.9. Total Pain and Ethical Issues in Pediatric Palliative Care

10.9.1. Total Pain

10.9.1.1. Cicely Saunders

10.9.1.2. Concept of Total Pain

10.9.1.3. Pain Threshold

10.9.1.4. Basic Principles of Total Pain Relief

10.9.1.5. Pain, Suffering and Death

10.9.1.6. Barriers in the treatment of total pain in pediatric oncohematology

10.9.1.7. Dying with Dignity

10.10. Nursing Care During Terminal Phase and Last Days Situation in Pediatric Palliative Care

10.10.1. Diagnostic Principles of the Terminal Phase

10.10.2. Agony Phase or Last Days Situation (LDS)

10.10.2.1. Concept

10.10.2.2. Signs and Symptoms of the Agony Phase

10.10.2.3. Therapeutic Objectives

10.10.2.4. Symptom Control

10.10.2.5. Family Care

10.10.2.6. Palliative Sedation

10.10.2.7. Adjustment of Pharmacological Treatment

10.10.3. Palliative Sedation

**Module 11. Fostering, Caring and Accompanying in Pediatric Hematology**

11.1. Comprehensive View of the Care of Children with Hematologic Disorder and Their Family

11.1.1. Comprehensive View of Human Health

11.1.1.1. Physical Health

11.1.1.2. Mental Health

11.1.1.3. Emotional Health

11.1.1.4. Social Health

11.1.1.5. Spiritual Health

11.1.2. The Nurse's View

11.1.2.1. Emotions, Beliefs and Professional Development

11.1.2.2. Fostering, Caring and Accompanying

11.1.2.3. Biomedical Model

11.1.2.4. Salutogenic Model

11.1.3. Systemic View of Care

11.1.3.1. Consistency of the Person

11.1.3.2. System Consistency

11.1.3.3. Consistency of the "Soul"

11.1.4. Fostering, Caring and Accompanying in a Comprehensive Way

11.1.4.1. Nursing Roles and Competencies

11.1.4.2. The Interdisciplinary Work of Professionals

11.1.4.3. Transdisciplinary Challenges of the Nursing Professional

11.2. Theories and Models That Approach the Comprehensive Vision of Nursing

11.2.1. The Salutogenic Model Applied to Care

11.2.1.1. Well-Being Assets

11.2.1.2. Personal Asset Development

11.2.1.3. System Asset Development

11.2.1.4. Institutional Asset Development

11.2.2. Personal Asset Development

11.2.3. Helping Relationship Model: Hildegard Peplau

11.2.4. Health Promotion Model: Nola Pender

11.2.5. Diversity Theory and the Universality of Care: Madeleine Leininger

11.2.6. Theory of Human Care: Jean Watson

11.2.7. Comfort Theory: Katharine Kolcaba

11.2.8. Marie Françoise Collière. Promoting Life

11.3. The Facilitating Role of Nursing in Pediatric Hematology

11.3.1. Facilitating Role

11.3.2. Nursing Perspective

11.3.3. Facilitating Care from the Different Nursing Roles

11.3.4. Humanization of Care

11.3.5. Support Orders

11.4. Emotional Skills Profile for Pediatric Hematology Nursing

11.4.1. The Need to Promote the Social-Emotional Development of the Nursing Professional

11.4.2. Emotional Competency Model for Nursing

11.4.3. Everything that Can Be Done with an Emotion

11.4.4. Health in Pediatric Hematology Nursing

- 11.5. Therapeutic Communication in Pediatric Hematology
  - 11.5.1. Specific Skills for Effective and Affective Communication
  - 11.5.2. Key Ideas in Relation to the Child and the Family
  - 11.5.3. Key Ideas in Relation to Times of the Disease
  - 11.5.4. Key Ideas in Relation to Intra- and Interprofessional Practice
- 11.6. The Influence of the Environment and Surroundings when Accompanying Children with Hematologic Pathology
  - 11.6.1. Occupational Health and Work Teams
  - 11.6.2. Architecture of Spaces
  - 11.6.3. Responsible Environment with a Rights Perspective
  - 11.6.4. The Significance of Spaces
- 11.7. Accompaniment for the Family System in Pediatric Hematology
  - 11.7.1. Family as a System
  - 11.7.2. Caring for the Caregiver
  - 11.7.3. Accompanying Processes of High Emotional Impact
  - 11.7.4. Parenting Support
  - 11.7.5. Barriers to Care
  - 11.7.6. Coping With the Disease
  - 11.7.7. Systemic Support
- 11.8. Psychomotor and Affective Development of Infants and Preschoolers with Hematologic Disorders
  - 11.8.1. Accompany the Specific Characteristics in the Infant
  - 11.8.2. Accompany the Specific Characteristics in the Preeschool Children
  - 11.8.3. Psychomotor and Emotional Development During the Disease
    - 11.8.3.1. Psychomotor Development (Physical Health)
    - 11.8.3.2. Language and Emotional Comfort (Mental and Emotional Health)
    - 11.8.3.3. Socialization (Social Health)
    - 11.8.3.4. Meaning of Life
      - 11.8.3.4.1. Love and Contact
      - 11.8.3.4.2. Growing Up Playing
- 11.9. Emotion, Storytelling, and Meaningful Playtime in School-Aged Children with Hematologic Disorder
  - 11.9.1. Accompany the Specific Characteristics of the School-Age Child
  - 11.9.2. Personality Development During Disease
    - 11.9.2.1. Coping (Emotional Health)
    - 11.9.2.2. The Importance of Storytelling (Mental Health)
    - 11.9.2.3. Socialization (Social Health)
  - 11.9.3. Meaning of Life
    - 11.9.3.1. Self-Esteem, Self-Image and Self-Concept
    - 11.9.3.2. Educational Support
    - 11.9.3.3. Meaningful Play
- 11.10. Emotion, Storytelling and Socialization in Adolescents with Hematologic Disorder
  - 11.10.1. Accompany the Specific Characteristics of the Adolescent
  - 11.10.2. Personality Development During Disease
    - 11.10.2.1. Coping (Emotional Health)
    - 11.10.2.2. The Importance of Storytelling (Mental Health)
    - 11.10.2.3. Socialization (Social Health)
  - 11.10.3. Meaning of Life
    - 11.10.3.1. Self-Esteem, Self-Image and Self-Concept
    - 11.10.3.2. Educational and Social Support
    - 11.10.3.3. Affective-Sexual Development



*With multimedia resources such as infographics and videos, this Hybrid Master's Degree will bring you up to date in a fast and flexible way about the role of the nurse in Pediatric Hematology Services"*

07

# Clinical Internship

The program concludes with a rigorous and intensive clinical internship in a hospital of international prestige. From this entity, the nurse will be able to apply directly and in real patients, all the knowledge acquired in the previous phase of this program.





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*Advance in the mastery of the working tools of Nursing in the Pediatric Hematology Service through the clinical practice of this Hybrid Master's Degree”*



The clinical practice that is part of this Hybrid Master's Degree will last 3 weeks, which will be distributed in days of 8 consecutive hours, from Monday to Friday. Throughout this period, the nursing professional will have the most modern devices and procedures related to the Pediatric Hematology Service in their hands. They will be able to update their skills directly and will have the opportunity to assist real patients through them.

They will also discuss intervention strategies with experts with extensive experience in the field of nursing. In turn, an assistant tutor will help them become familiar with the new dynamics of this field of work, providing dynamic tasks and increasingly complex assignments. Upon completion of all this practical study, the graduate will be ready to implement the best protocols in their daily work practice.

The practical education will be carried out with the active participation of the student performing the activities and procedures of each area of competence (learning to learn and learning to do), with the accompaniment and guidance of the professors and other training partners that facilitate teamwork and multidisciplinary integration as transversal competencies for the practice of Nursing (learning to be and learning to relate).

The procedures described below will be the basis of the practical part of the training, and their implementation will be subject to the center's own availability and workload, the proposed activities being the following:



| Module                                                                                                   | Practical Activity                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>New nursing trends in the development of coagulation and diagnostic tests in pediatric hematology</b> | Collect blood and other tissue samples as needed, following safety protocols and ensuring proper identification                                           |
|                                                                                                          | Transport samples to clinical laboratories and ensure that they arrive in a suitable condition for analysis                                               |
|                                                                                                          | Develop a record of coagulation tests and test results and follow up with the physician                                                                   |
|                                                                                                          | Provide information to the pediatric patient and family about coagulation tests and their importance in the diagnosis of hematologic diseases             |
| <b>Nursing action protocols in pediatric hematopoietic cell transplantation</b>                          | Educate the pediatric patient about the transplantation process and prepare them for the transplant                                                       |
|                                                                                                          | Administer medications necessary to prevent complications and maintain the health of the pediatric patient                                                |
|                                                                                                          | Identify and treat infections that may occur during the transplantation process                                                                           |
|                                                                                                          | Teach the pediatric patient and family how to manage the disease and prevent complications                                                                |
| <b>Latest nursing strategies for the therapeutic approach to hematologic diseases in pediatrics</b>      | Maintain a record of symptoms and changes in the pediatric patient's condition and inform the physician if needed                                         |
|                                                                                                          | Work in collaboration with physicians, therapists and other healthcare professionals to provide comprehensive care for patients with hematologic diseases |
|                                                                                                          | Participate in clinical trials and other research to advance knowledge of hematological diseases and improve treatment                                    |
| <b>Nursing procedures for the main bleeding disorders in pediatrics</b>                                  | Assist in patient assessment and identification of bleeding disorders                                                                                     |
|                                                                                                          | Apply measures to stop bleeding and prevent complications                                                                                                 |
|                                                                                                          | Follow up and monitor the patient's evolution after treatment                                                                                             |

## Civil Liability Insurance

This institution's main concern is to guarantee the safety of the trainees and other collaborating agents involved in the internship process at the company. Among the measures dedicated to achieving this is the response to any incident that may occur during the entire teaching-learning process.

To this end, this educational entity undertakes to take out civil liability insurance to cover any eventuality that may arise during the stay at the internship center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the practical training period. In this way, the professional will not have to worry in case he/she has to face an unexpected situation and will be covered until the end of the practical program at the center.



## General Conditions of the Internship Program

The general terms and conditions of the internship agreement for the program are as follows:

- 1. TUTOR:** During the Hybrid Master's Degree, students will be assigned with two tutors who will accompany them throughout the process, answering any doubts and questions that may arise. On the one hand, there will be a professional tutor belonging to the internship center who will have the purpose of guiding and supporting the student at all times. On the other hand, they will also be assigned with an academic tutor whose mission will be to coordinate and help the students during the whole process, solving doubts and facilitating everything they may need. In this way, the student will be accompanied and will be able to discuss any doubts that may arise, both clinical and academic.
- 2. DURATION:** The internship program will have a duration of three continuous weeks, in 8-hour days, 5 days a week. The days of attendance and the schedule will be the responsibility of the center and the professional will be informed well in advance so that they can make the appropriate arrangements.
- 3. ABSENCE:** If the students does not show up on the start date of the Hybrid Master's Degree, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship. Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.
- 4. CERTIFICATION:** Professionals who pass the Hybrid Master's Degree will receive a certificate accrediting their stay at the center.
- 5. EMPLOYMENT RELATIONSHIP:** the Hybrid Master's Degree shall not constitute an employment relationship of any kind.
- 6. PRIOR EDUCATION:** Some centers may require a certificate of prior education for the Hybrid Master's Degree. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.
- 7. DOES NOT INCLUDE:** The Hybrid Master's Degree will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed

However, students may consult with their academic tutor for any questions or recommendations in this regard. The academic tutor will provide the student with all the necessary information to facilitate the procedures in any case.

08

# Where Can I Do the Clinical Internship?

This Hybrid Master's Degree program includes a face-to-face stay in a prestigious clinical center where the nursing professional will put into practice all the theory learned, accompanied by the best experts in the sector. In addition, TECH offers a unique opportunity to take internships in centers with different geographical locations, providing the graduate with an education of higher quality and excellence, in accordance with the latest scientific evidence.







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*Complement your theoretical learning  
with the best practical stay in the field of  
Nursing, in only 3 weeks”*



## tech 62 | Where Can I Do the Clinical Internship?



The student will be able to take the practical part of this Hybrid Master's Degree in the following centers:



Nursing

### Hospital HM Montepíncipe

|         |        |
|---------|--------|
| Country | City   |
| Spain   | Madrid |

Address: Av. de Montepíncipe, 25, 28660,  
Boadilla del Monte, Madrid

Network of private clinics, hospitals and specialized centers  
distributed throughout Spain.

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#### Related internship programs:

- Palliative Care
- Aesthetic Medicine



Nursing

### HM CIOCC - Centro Integral Oncológico Clara Campal

|         |        |
|---------|--------|
| Country | City   |
| Spain   | Madrid |

Address: Calle de Oña, 10, 28050, Madrid

Network of private clinics, hospitals and specialized centers  
distributed throughout Spain.

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#### Related internship programs:

- Gynecologic Oncology
- Clinical Ophthalmology





Nursing

**HM CIOCC Barcelona**

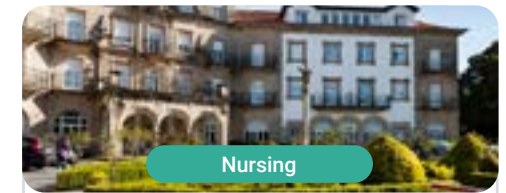
|         |           |
|---------|-----------|
| Country | City      |
| Spain   | Barcelona |

Address: Avenida de Vallcarca, 151,  
08023, Barcelona

Network of private clinics, hospitals and specialized centers  
distributed  
Spanish democracy

**Related internship programs:**

- Advances in Hematology and Hemotherapy  
Oncology Nursing



Nursing

**HM CIOCC Galicia**

|         |           |
|---------|-----------|
| Country | City      |
| Spain   | La Coruña |

Address: Avenida das Burgas, 2, 15705,  
Santiago de Compostela

Network of private clinics, hospitals and specialized centers  
distributed throughout Spain.

**Related internship programs:**

- Gynecologic Oncology  
- Clinical Ophthalmology



09

# Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.



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*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

## At TECH Nursing School we use the Case Method

In a given situation, what should a professional do? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Nurses learn better, faster, and more sustainably over time.

*With TECH, nurses can experience a learning methodology that is shaking the foundations of traditional universities around the world.*



According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, in an attempt to recreate the real conditions in professional nursing practice.

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*Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”*

The effectiveness of the method is justified by four fundamental achievements:

1. Nurses who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. The learning process has a clear focus on practical skills that allow the nursing professional to better integrate knowledge acquisition into the hospital setting or primary care.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.





## Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine case studies with a 100% online learning system based on repetition combining a minimum of 8 different elements in each lesson, which is a real revolution compared to the simple study and analysis of cases.

*The nurse will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.*



At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology we have trained more than 175,000 nurses with unprecedented success in all specialities regardless of practical workload. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

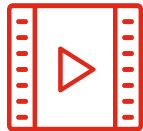
*Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.



This program offers the best educational material, prepared with professionals in mind:



#### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is really specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



#### Nursing Techniques and Procedures on Video

We introduce you to the latest techniques, to the latest educational advances, to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch them as many times as you want.



#### Interactive Summaries

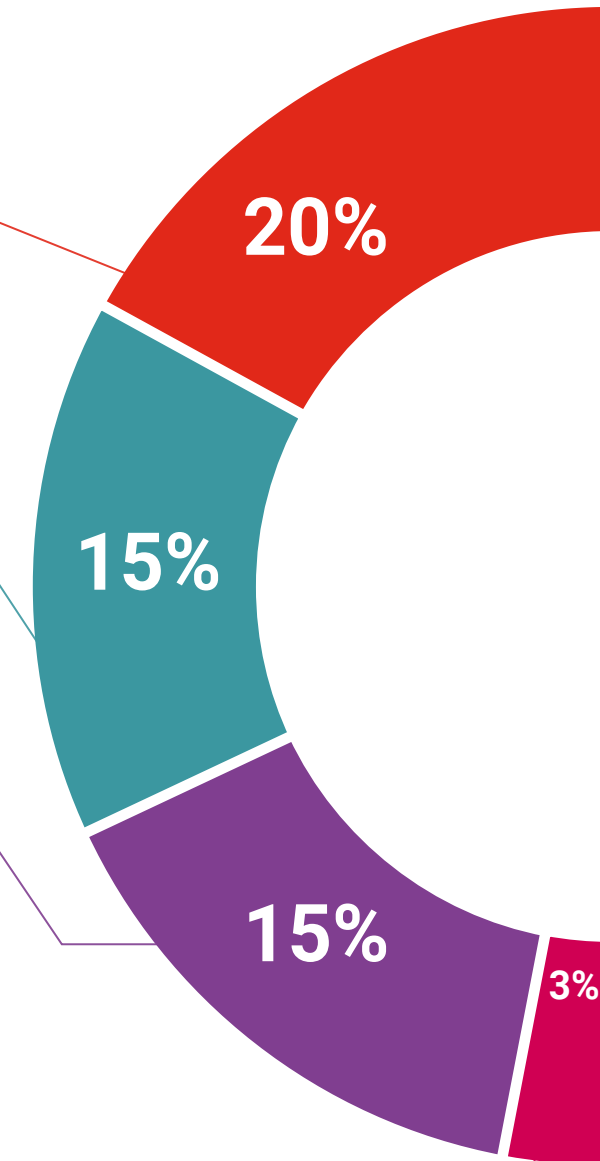
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

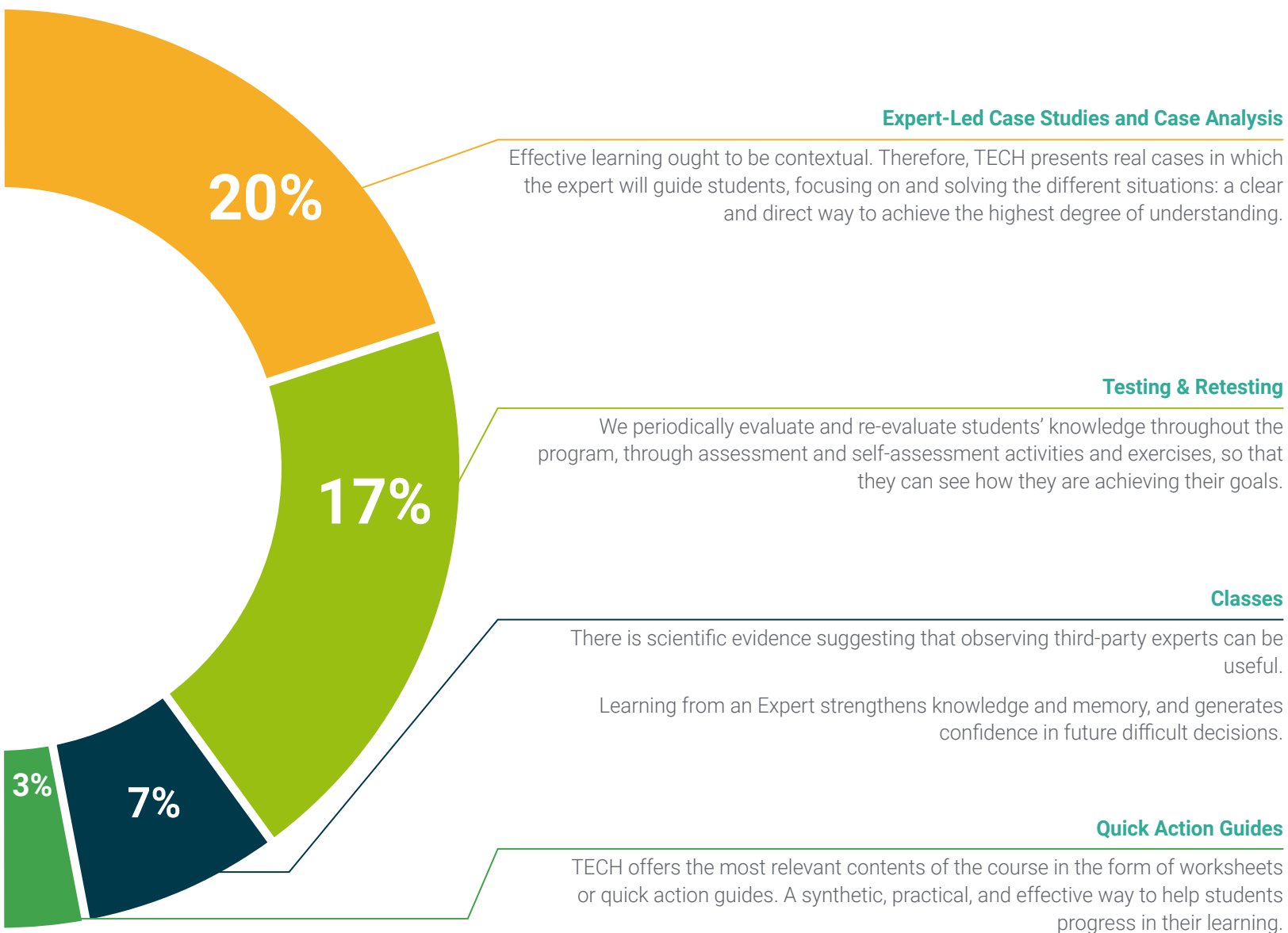
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.







# 10 Certificate

The Hybrid Master's Degree in Pediatric Hematology Nursing guarantees students, in addition to the most rigorous and up-to-date education, access to a Hybrid Master's Degree diploma issued by TECH Global University.





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*Successfully complete this program  
and receive your university qualification  
without having to travel or fill out  
laborious paperwork"*

This program will allow you to obtain your **Hybrid Master's Degree diploma** in **Pediatric Hematology Nursing** endorsed by **TECH Global University**, the world's largest online university.

**TECH Global University** is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.



This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Hybrid Master's Degree in Pediatric Hematology Nursing**

Course Modality: **Hybrid (Online + Clinical Internship)**

Duration: **12 months**

Certificate: **TECH Global University**

Recognition: **60 + 5 ECTS Credits**





## Hybrid Master's Degree Pediatric Hematology Nursing

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Global University

60 + 5 ECTS Credits

# Hybrid Master's Degree Pediatric Hematology Nursing

