# Postgraduate Diploma

## Nursing Care of the Pediatric Patient with Non-Malignant Hematologic Disorder

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## Nursing Care of the Pediatric Patient with Non-Malignant Hematologic Disorder

- Modality: **online**
- Duration: **6 months**
- Certificate: **TECH Global University**
- Credits: **24 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Website: **www.techtitute.com/us/nursing/postgraduate-diploma/postgraduate-diploma-nursing-care-pediatric-nonmalignant-hematologic-pathology**

# Index

01

# Introduction

The work of pediatric nurses is essential to ensure the medical care of children from birth to teaching. Currently, these professionals must provide an adequate response to the needs of each child patient they care for, ensuring that their wishes are met and their identity as a person is respected at all times. When specializing in the field of hematology, it is important to have professionals who know the biological principles of these conditions in the blood, as well as the normal development of a healthy child. This will help them to improve the care provided and identify possible errors that can be corrected. Therefore, having the program in Nursing Care of the Pediatric Patient with Non-Malignant Hematologic Disorder gives your professional career an essential boost.

*Acquire knowledge on fundamental aspects to improve your treatment of patients with non-malignant hematologic disorders"*

Non-malignant hematologic diseases in children are usually described as mild, benign abnormalities with spontaneous resolution in the first weeks of life. Therefore, it is essential to have professionals who are trained in these conditions and can provide the care they require to heal properly. It is also vitally important for nurses to understand that ongoing specialization will help them perform better in an area of work that continues to change and innovate.

Therefore, the Postgraduate Diploma in Nursing Care of the Pediatric Patient with Non-malignant Hematologic Disorder provides all the necessary and up-to-date information in this field. In the first module, students will be introduced to the basics of neonatal and pediatric hematology, where they will explore the biological principles of blood diseases in fetuses and newborns. On the other hand, they will contrast normal and abnormal development of children and adolescents for the development of a holistic view of diseases.

Moving forward in the course, they will learn about the different blood disorders, such as anemia and its different variants. The future graduates will also have the opportunity to learn about different newborn hemorrhagic diseases and all the clinical and etiological characteristics that accompany them. Near the end, they will be introduced to the Developmental and Family Centered Care Model, which will help train them to not only treat the patient, but to support family members who are also living with these illnesses.

The teaching team gathered for this Postgraduate Diploma is of recognized prestige and has extensive experience in international reference units in the treatment and care of newborns, children and adolescents with hematologic diseases. As it is a 100% online program, it provides the students with the ease of being able to study comfortably, wherever and whenever they want. All you need is a device with internet access to take your career one step further. A modality in keeping with the current times with all the guarantees to position the professional in a highly demanded sector.

This **Postgraduate Diploma in Nursing Care of the Pediatric Patient with Non-Malignant Hematologic Disorder** contains the most complete and up-to-date educational program on the market. The most important features include:

- The development of practical case studies presented by experts in Pediatric Hematology for Nursing
- 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.
- Practical exercises where the self-assessment process can be carried out to improve learning
- Its special emphasis on innovative methodologies
- 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

*Gain knowledge about the fundamentals of hemostasis, its control mechanisms and the laboratory tests necessary for its study"*

*Address the different hematologic diseases in newborns, children and adolescents and enhance your professional profile"*

*Learn about the Developmental and Family-Centered Models to provide care centered on the individual and family needs of the patient.*

*Acquire the knowledge on fundamental aspects of diagnostic and follow-up procedures in the newborn with a 100% online program.*

The program's teaching staff includes professionals from sector who contribute their work experience to this training program, as well as renowned specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive training programmed to train in real situations.

This program is designed around Problem-Based Learning, whereby the professionals must try to solve the different professional practice situations that arise throughout the program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

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# Objectives

The knowledge acquired in this Postgraduate Diploma allows the student to acquire the skills required to update in their profession, understanding the biological foundations of pediatric hematologic disorders and the impact they have on the patient's family at all times. As such, they will be able to develop their full capabilities in a field of medicine that continues to advance. Likewise, they will be able to identify the indispensable and necessary aspects in the adaptation of the Neonatology Unit to the NIDCAP Model. For this reason, TECH establishes a series of general and specific objectives to improve the satisfaction of the future graduates. These are the following.

*Acquire the knowledge on fundamental aspects of pathophysiology, clinical and treatment of hemoglobinopathies in pediatrics"*

## General Objectives

- Optimize the quality and care of pediatric patients with hematologic disorders, providing greater qualification to healthcare professionals.
- Acquire the essential skills to comprehensively care for children and adolescents with hematologic disorders and their families.
- Recognize and assess the physical, psychological, social and spiritual needs of children and adolescents with hematologic disorder and their families
- Achieve sufficient knowledge and skills to be able to develop the personal and professional attitudes required to treat children and adolescents with hematologic disorder
- Develop a comprehensive approach to the care of children and adolescents with hematologic disorders and their families, in order to promote their well-being, autonomy and dignity at all times.
- Develop problem-solving and evidence generation capabilities in the field of Pediatric Hematology to correct knowledge deficiencies and establish standards of excellence in practice.



## Specific Objectives

**Module 1. Basis of Neonatal and Pediatric Hematology**

- Introduce the biological basis of fetal and postnatal hematopoiesis
- Get to know the main characteristics of the healthy newborn, child and adolescent
- Review in detail the composition of the blood, both the formed elements and the blood plasma
- 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 hematological reference values in the newborn

*Get to know and acquire the competence to carry out the administration and care of specific hemotherapy support in newborns"*

- Acquire knowledge on fundamental aspects of etiopathogenesis, 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 Newborns 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 immunodeficiencies (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 in detail Fanconi's Anemia, 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

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# Course Management

In order to provide a quality education, it is necessary to have a teaching staff that can provide all the theoretical and practical information that will help students to develop optimally in any work environment. In this way, TECH has a large specialized team in the care of pediatric patients with non-malignant hematologic disorders. As a result, students have the best tools to develop all their theoretical and practical skills in their profession. This is the best way to execute in a real environment all the knowledge acquired in this program.

*Learn with the best group of experts the most frequent procedures, techniques and care in the administration of drugs in hematologic patients"*

## Management

### Ms. Coronado Robles, Raquel

- Specialist Nurse in Pediatric Nursing
- Pediatric hematology/oncology unit, Vall d'Hebron Hospital, Barcelona.
- Associate Professor and coordinator of the Childhood Mention of the Nursing Degree at the Autonomous University of Barcelona (UAB)

## Professors

### Ms. Ariño Ariño, Ingrid

- Neonatology Unit Vall d'Hebron Barcelona Hospital Campus

### Ms. Bonfill Ralló, Marina

- Psycho-oncologist of the Pediatric hematology/oncology unit, Vall d'Hebron Barcelona Hospital Campus

### Ms. Bustelo Almeida, Eugenia

- Psycho-oncologist of the Pediatric hematology/oncology unit, Vall d'Hebron Barcelona Hospital Campus

### Ms. Congil Ortega, Jordana

- Neonatology Unit Vall d'Hebron Barcelona Hospital Campus

### Ms. Cuevas González, Cristina

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

### Mr. Díaz Martín, Gonzalo

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

### Ms. Fernández Angulo, Verónica

- Day Hospital Pediatric hematology/oncology unit, Vall d'Hebron Hospital, Barcelona

### Ms. Hladun Álvaro, Raquel

- Medical specialist and head of Clinical Trials at the Pediatric hematology/oncology unit, Vall d'Hebron Barcelona Hospital Campus

**Ms. Martínez González, Ester**

- Pediatric hematology/oncology unit, Vall d'Hebron Barcelona Hospital Campus

**Ms. Muñoz Blanco, Mª José**

- Supervisor of the pediatric intensive care unit (PICU). Vall d'Hebron Barcelona Hospital Campus

**Ms. Nogales Torres, Elena**

- Pediatric hematology/oncology unit, Vall d'Hebron Barcelona Hospital Campus

**Mr. Ortegón Delgadillo, Ramiro**

- Pediatric hematology/oncology unit, Vall d'Hebron Barcelona Hospital Campus Co-director of SEER (Emotional Health and Education).

**Ms. Pérez Cainzos, Laura**

- Pediatric Unit Vall d'Hebron Barcelona Hospital Campus

**Ms. Pérez Correa, Sónia**

- Pediatric hematology/oncology unit, Vall d'Hebron Barcelona Hospital Campus

**Ms. Ridao Manonellas, Saida**

- Specialist Nurse in Pediatric Nursing. Immunodeficiency nursing consultation

**Ms. Rodríguez Gil, Raquel**

- Specialist Nurse in Pediatric Nursing. Neonatology unit supervisor Vall d'Hebron Barcelona Hospital Campus

**Ms. Saló Rovira, Anna**

- Psycho-oncologist of the Pediatric hematology/oncology unit, Vall d'Hebron Barcelona Hospital Campus

**Mr. Toro Guzmán, Antonio**

- Pediatric hematology/oncology unit, Vall d'Hebron Hospital, Barcelona. Associate Professor of the Degree in Nursing at the Autonomous University of Barcelona (UAB)

**Ms. Vidal Laliena, Miriam**

- Cell biology, immunology and neuroscience at IDIBAPS-UB. Clinical Data Manager-study coordinator Pediatric hematology/oncology unit Vall d'Hebron Barcelona Hospital Campus (2016-2017). Currently: at CatSalut. Catalan Health Service

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# Structure and Content

In order to ensure that students meet the requirements of nursing applied to pediatric patients with non-malignant hematologic disorders, a syllabus has been developed whose modules offer a broad perspective of this field of action, allowing the student to describe and update the most common treatment modalities to address hematological problems in the newborn. From module 1, students will see their knowledge broadened, which will enable them to develop professionally, knowing that they can count on the support of a team of experts.

*Difference the multiple types of coagulation and hemostasis disorders in pediatrics, following the most up-to-date program on the market"*

## **Module 1.** Basis 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. Functions of the Blood
- 1.4.3. Blood Components
  - 1.4.3.1. Plasma
  - 1.4.3.2. Formal Elements
    - 1.4.3.2.1. Red 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. Composition of the Blood: Blood Plasma
- 1.5.1. Composition of Blood Plasma
  - 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. ABO Antigen Group
  - 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")

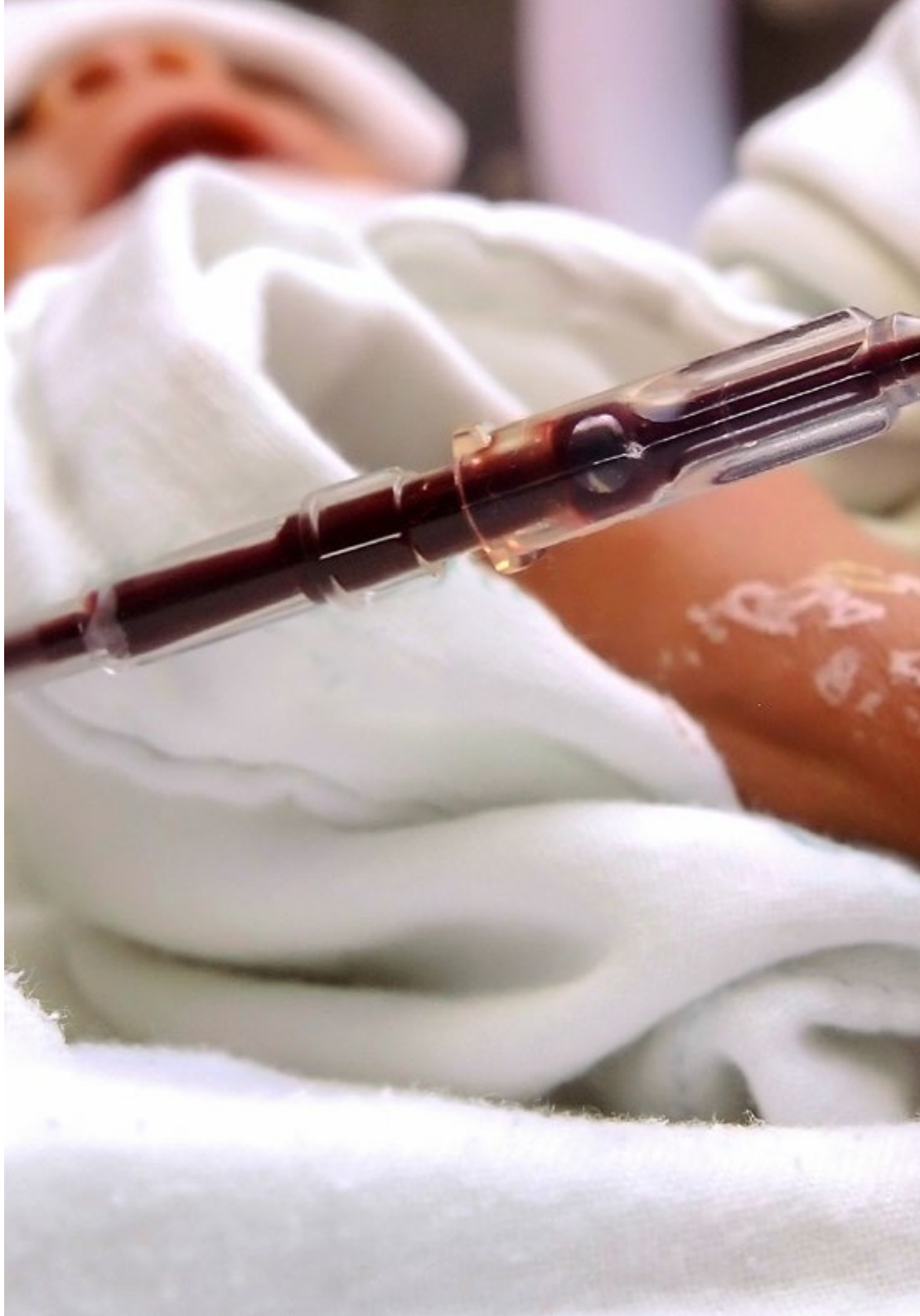
1.7. Immune System
- 1.7.1. General Concepts of Immunology
- 1.7.2. Immune System Functions
- 1.7.3. Immune System Organs
  - 1.7.3.1. Skin and Mucous Membranes
  - 1.7.3.2. Thymus
  - 1.7.3.3. Liver and Bone Marrow
  - 1.7.3.4. Bladder
  - 1.7.3.5. Lymph Nodes
- 1.7.4. The Innate or Non-Specific System
- 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
1.11.2.1.2.2. Anemia of Prematurity
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. Hemoglobinopathies
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. Leukemias
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. Reference Values in the Term Newborn's Blood Count
  - 2.1.2.1. Blood Count 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 Exploration
  - 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. Anemia of Prematurity
- 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 PTNB
  - 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 Anemias 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. General Aspects
  - 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 Anemias
    - 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 Anemias
    - 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: α2 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 Exploration

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 Exploration

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 Exploration

2.8.4.3. Complementary Tests

2.8.5. Treatment of Neonatal Shock

## **Module 3.** Specificities of Care in Neonates 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-hours
- 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

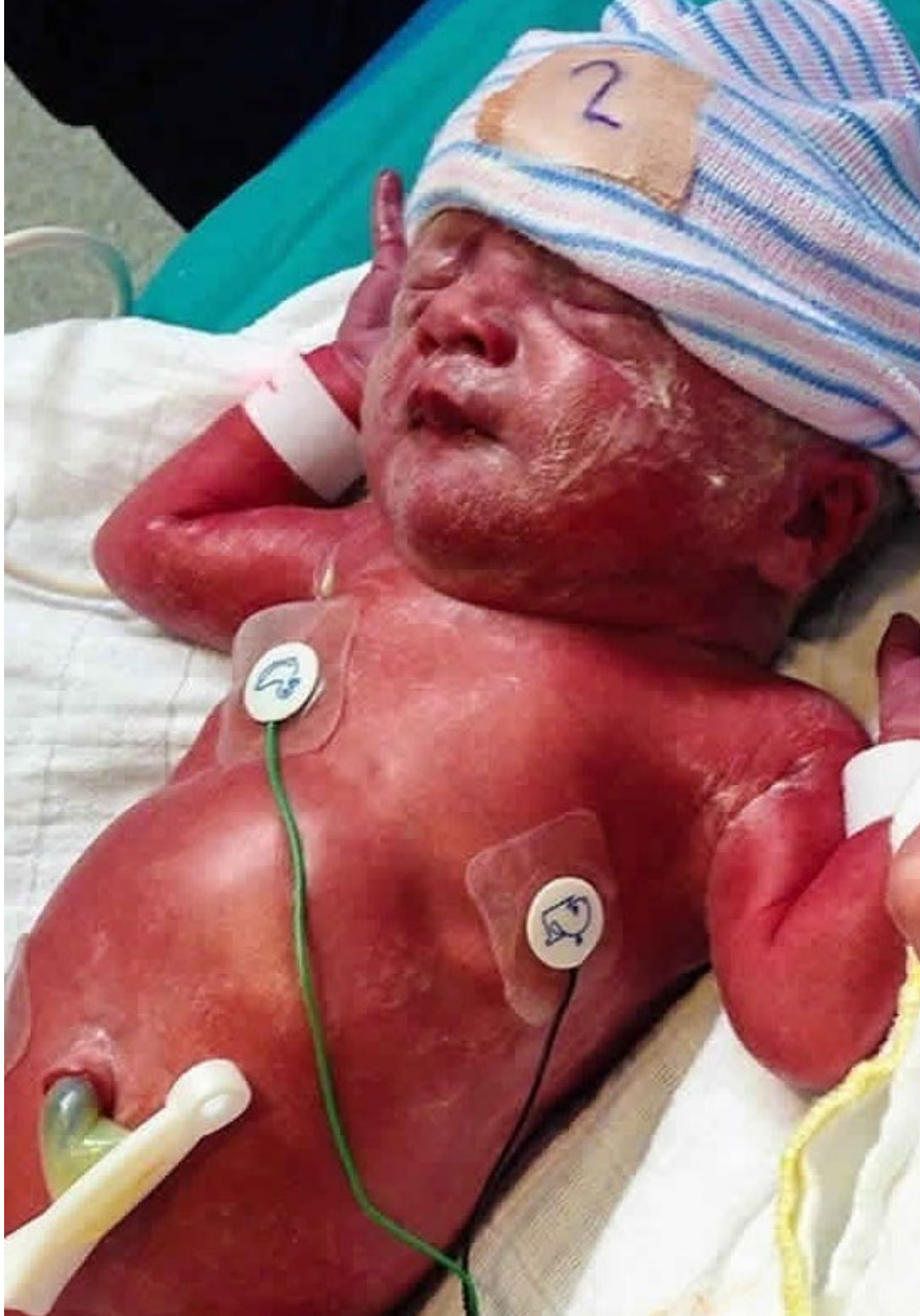
3.7. Most Frequent Treatments in the Newborn with Hematologic Disorder
- 3.7.1. Hemorrhagic Disease Prophylaxis
- 3.7.2. Phototherapy
- 3.7.3. Intravenous Immunoglobulins
- 3.7.4. Serum Albumin
- 3.7.5. Exchange Transfusion
- 3.7.6. Complementary Treatments
- 3.7.7 Metalloporphyrins

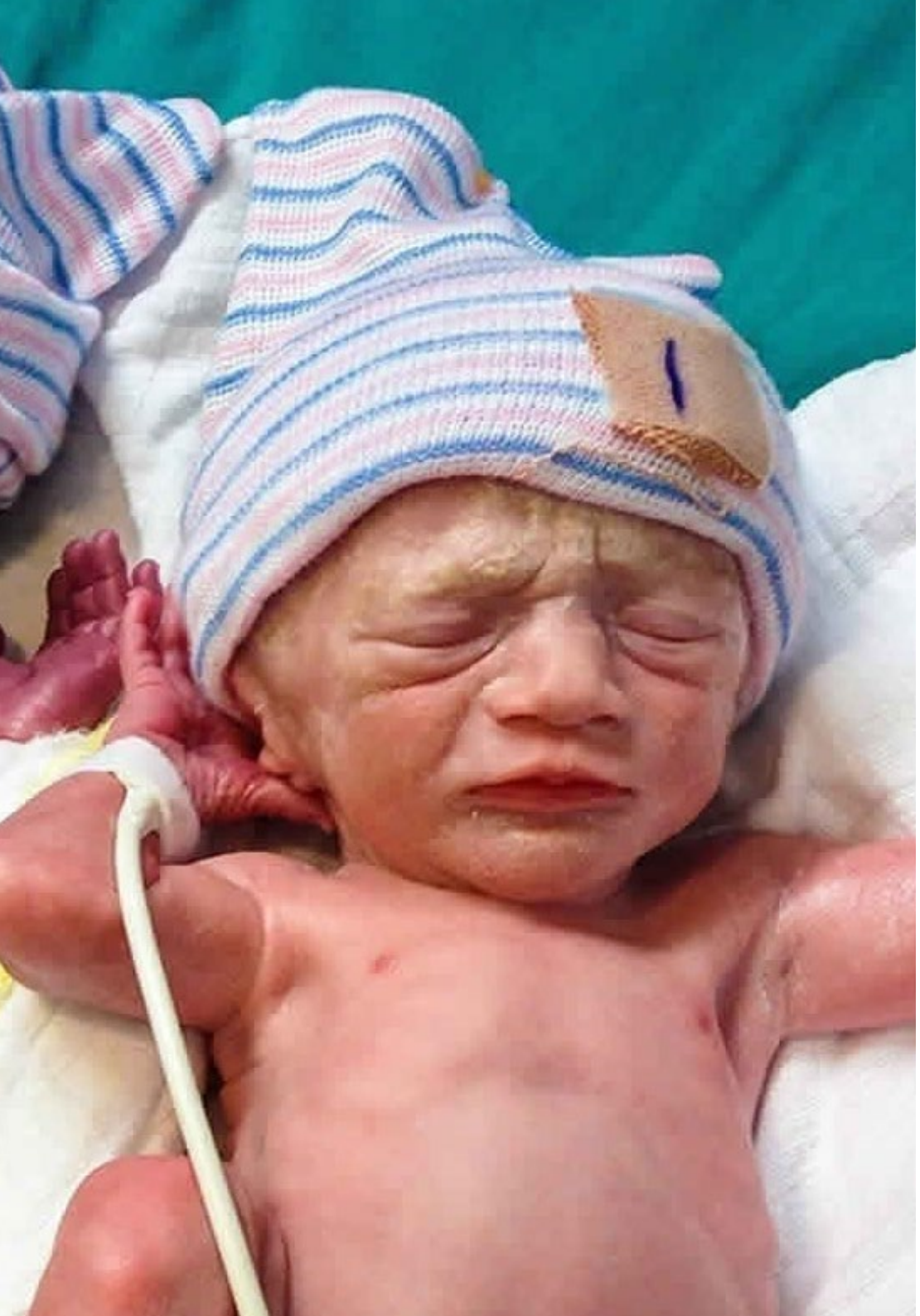
3.8. Specific Nursing Care in the Management of the Infant with Non-Physiologic Neonatal Jaundice
- 3.8.1. Theoretical Framework
  - 3.8.1.1. Nursing Care Based on the Model of Virginia Henderson
- 3.8.2. Nursing Care of Newborns with Non-Physiologic Neonatal Jaundice
  - 3.8.2.1. Nursing Care Related 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. Evaluation
  - 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. Morphological
  - 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 Anemias
  - 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. Hemoglobinopathies
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. Gene 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

*Develop your skills by taking a program that will allow you to broaden your holistic, tolerant and sensitive view of pediatric patients with hematologic diseases"*

05

# Methodology

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

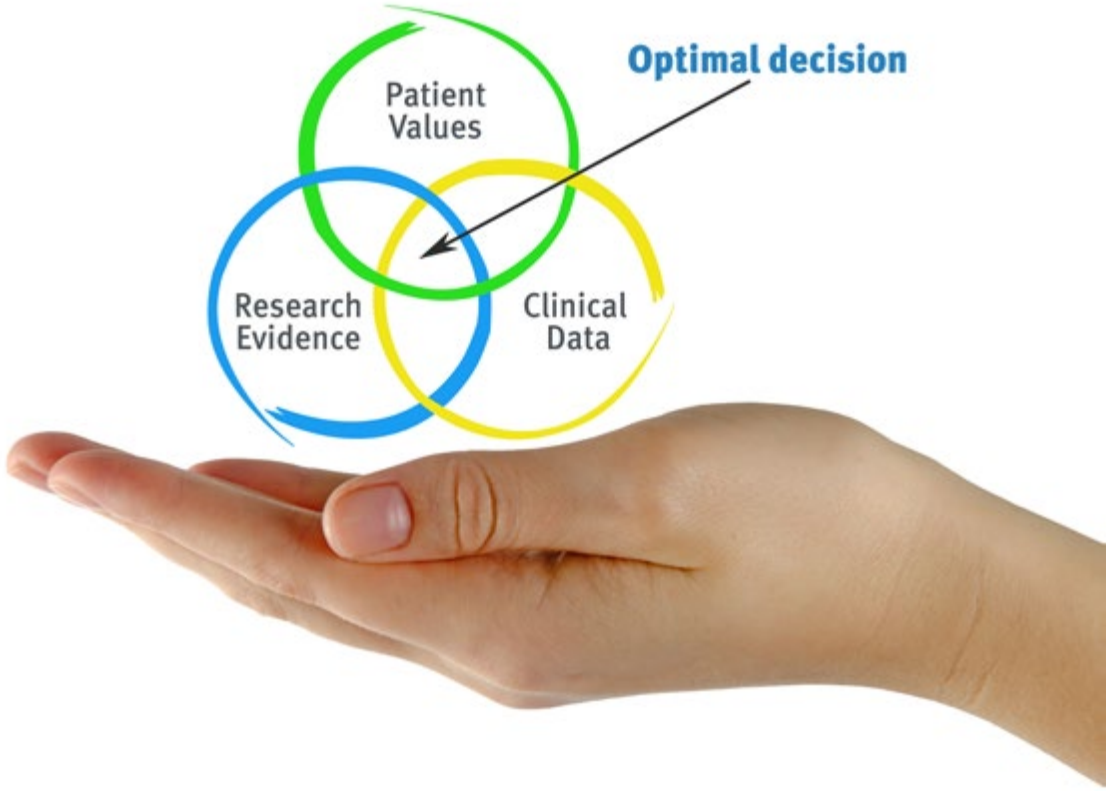
This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the ***New England Journal of Medicine*** have considered it to be one of the most effective.

*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.

*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:**

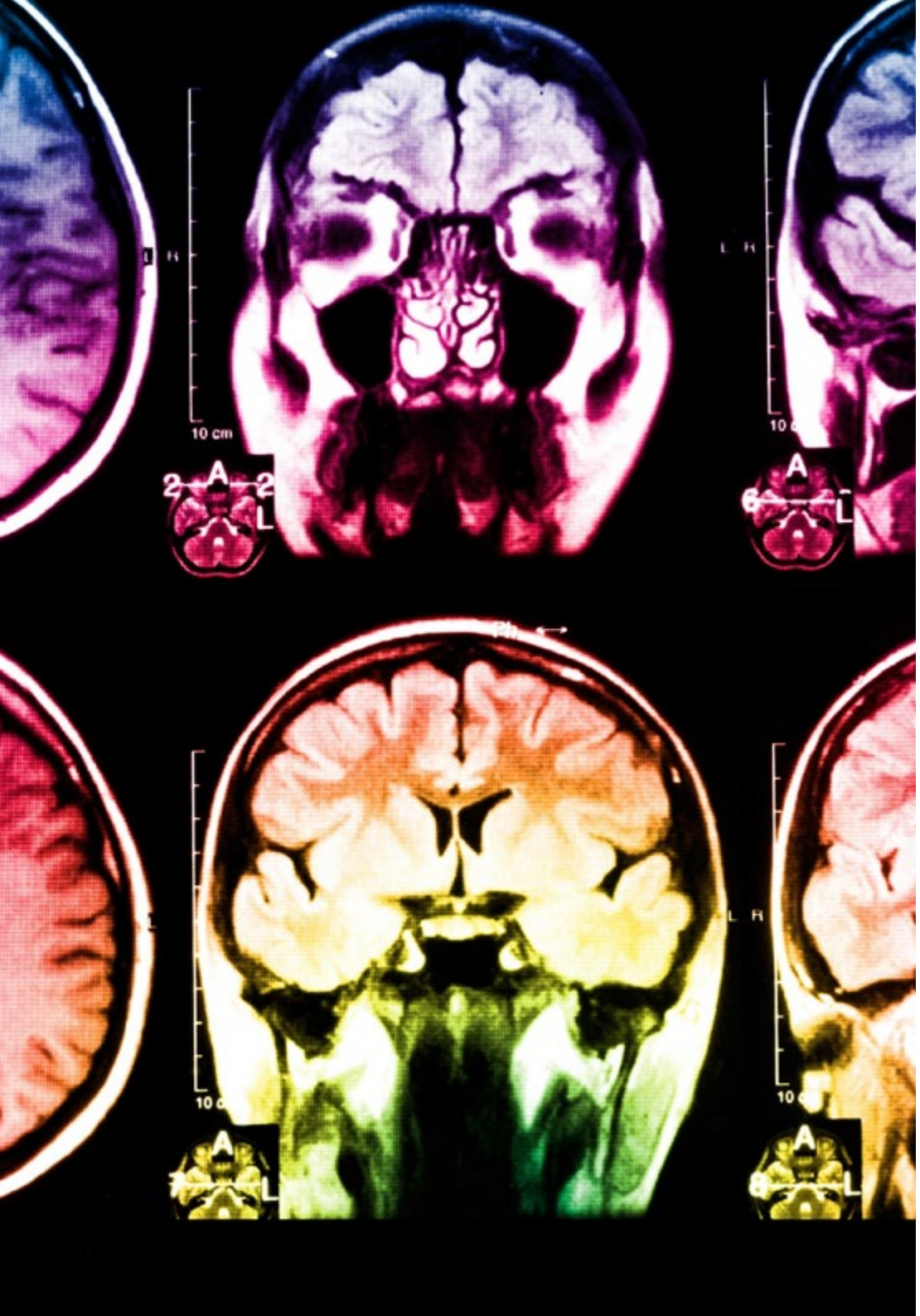
1. Nurses who follow this method not only grasp concepts, but also develop their mental capacity by evaluating real situations and applying their knowledge.
2. The learning process has a clear focus on practical skills that allow the nursing professional to better integrate knowledge acquisition into 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 Harvard 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. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

*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 adapted in 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 the videos as many times as you like.

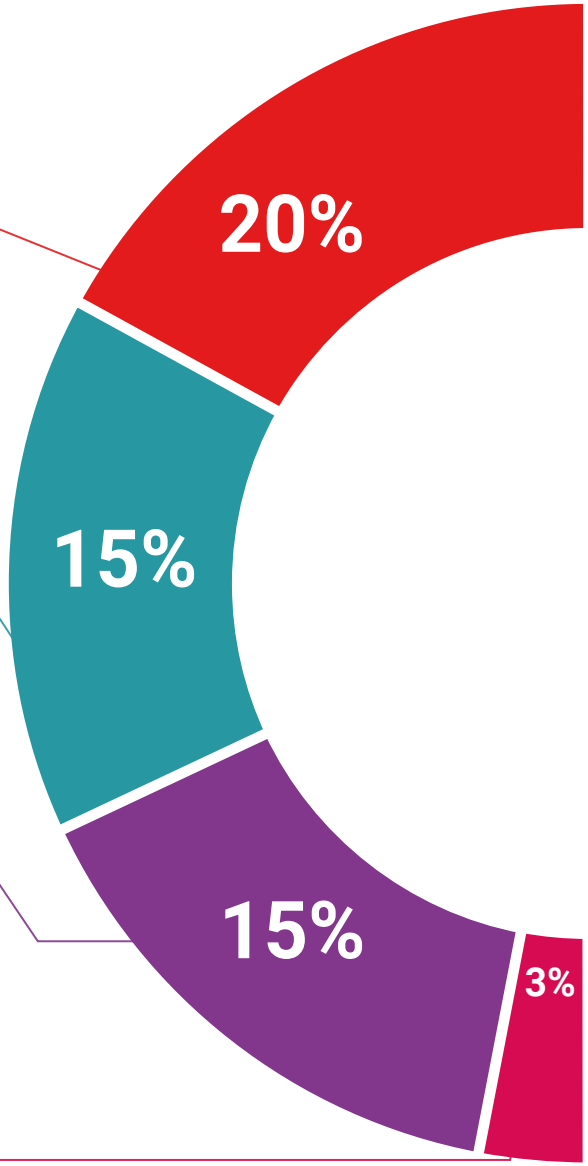
### Interactive Summaries

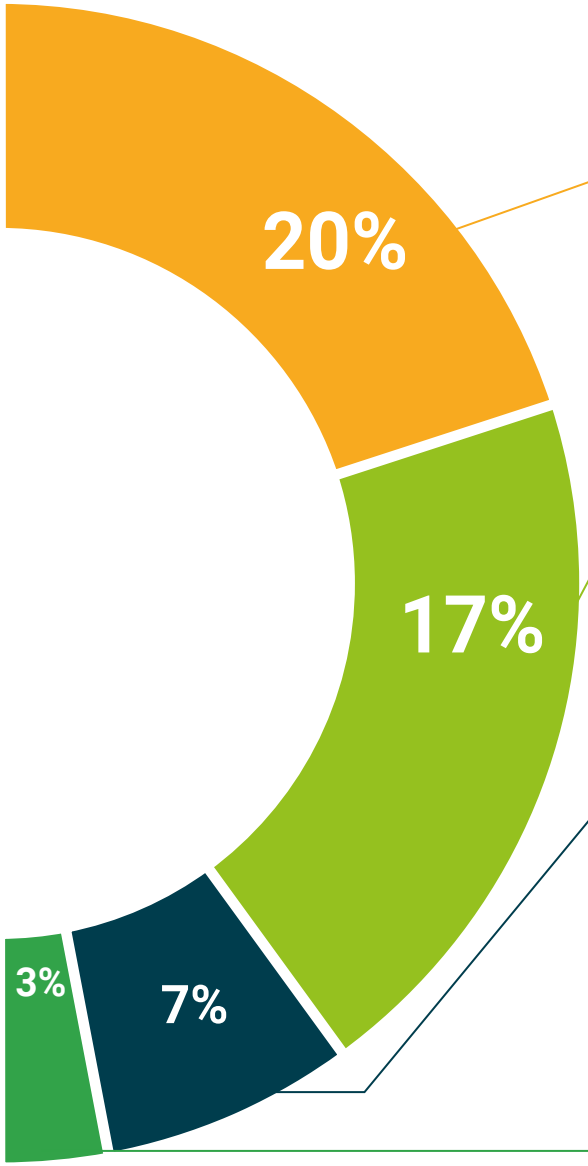
The TECH team presents the contents in an attractive and dynamic way in multimedia packages that include audio, videos, images, diagrams and concept maps in order to reinforce knowledge.

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

### Additional Reading

Recent articles, consensus documents, international guides... in TECH's virtual library the student will have access to everything they need to complete their training.






### Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.

### Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.

### Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

### Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.

06

# Certificate

The Postgraduate Diploma in Nursing Care of the Pediatric Patient with Non-Malignant Hematologic Disorder guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.

*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 **Postgraduate Diploma in Nursing Care of the Pediatric Patient with Non-Malignant Hematologic Disorder** 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.

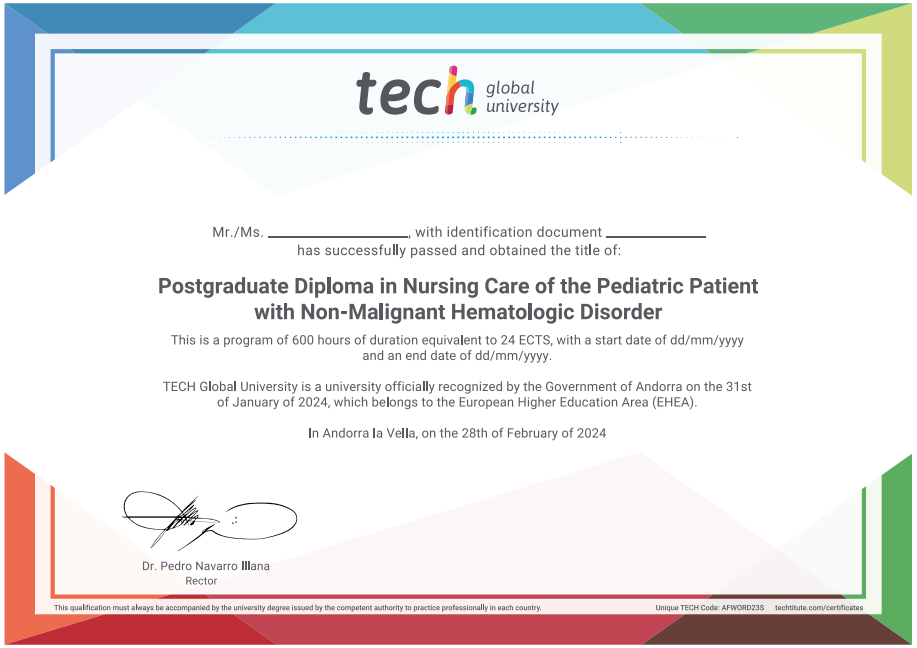
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Diploma in Nursing Care of the Pediatric Patient with Non-Malignant Hematologic Disorder**

Modality: **online**

Duration: **6 months**

Credits: **24 ECTS**


tech global university

Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

**Postgraduate Diploma in Nursing Care of the Pediatric Patient with Non-Malignant Hematologic Disorder**

This is a program of 600 hours of duration equivalent to 24 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Rector

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country. Unique TECH Code: AFWORD23S techtitute.com/certificates

*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University will make the necessary arrangements to obtain it, at an additional cost.

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# Postgraduate Diploma

## Nursing Care of the Pediatric Patient with Non-Malignant Hematologic Disorder

- Modality: **online**
- Duration: **6 months**
- Certificate: **TECH Global University**
- Credits: **24 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

# Postgraduate Diploma

## Nursing Care of the Pediatric Patient with Non-Malignant Hematologic Disorder

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