Ph.D. in "Life Course Research" – Biomedical curriculum

Academic Year 2023-2024

Course: **Pediatrics**

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Objectives

The course aims to provide the students with a brief overview on the neonatology.

Starting from the characteristics of a preterm baby, the course will then illustrate the main physiological processes that allow the transition from intra to extrauterine life and the relative problematics that may occur in the perinatal period. It will be then described the main respiratory and cerebral pathologies and, finally, addressed the topic of the neuro-evolutive follow-up.

Program

Lesson 1

- Prematurity
  - Epidemiology
  - Causes of prematurity
  - Classification and somatic characteristics
  - Consequences of prematurity

- Pre-natal, peri-natal and post-natal assistence
  - Neonatal resuscitation
  - Management of umbilical cord after birth
  - Body temperature
  - Non invasive vs invasive respiratory support
  - Oxygen supplementation
  - Surfactant administration: INSURE vs LISA
  - Neonatal care
  - Pain in the newborn
  - Effect of noise in preterm
  - Circadian rithm in NICU
  - Maternal/Human milk

- Physiology of transition from intrauterine to extrauterine life

- Transient tachypnea of the newborn

- Neonatal Respiratory Distress Syndrome

Lesson 2

- Introduction

- White Matter Injury
  - The spectrum of the white matter disease
  - Intraventricolar haemorrhage (IVH) and cerebral infarction

- Identification of white matter injury
  - Cranial ultrasound
  - Brain MRI
  - Cerebral Function Monitoring (CFM)
  - NIRS
  - Biomarkers

- Prevention of white matter injury

Lesson 3

- The biological basis of neurosensory development and the environmental impact of NICU on preterm newborn
  - The development of the SNC
  - The development of the SNC and the role of the environment
  - The tactile function
  - The olfactory and taste function
  - The hearing function
  - NICU: protracted toxic confusion
  - The visual function
  - Sleep and CNS development
  - Developmental care

- Cerebral plasticity and the theoretical basis of functional recovery
  - Plasticity of central nervous system
  - Sprouting
  - Neural plasticity after central lesions
  - Reorganization of functional system
  - Cortical reorganization in humans through neurophysiological studies
  - Factors affecting the extent of recovery

- Trombosi neonatale
  - Introduction
  - Risk factors

- Type and location
- Clinical manifestation
- Renal vein thrombosis
- Right atrium thrombosis
- Catheter relates thrombosis
- Purpura fulminans
- Perinatal stroke
- Ischemic arterial stroke
- Acute ischemic arterial stroke
- Thrombosis venous sinuses
- Suspected perinatal stroke
- Therapy

- Neonatal seizures
- Causes
- Signs and symptoms
- Diagnosis
- Treatment
- Myoclonies vs tremors vs seizures

Suggested lecture: -

Requirements: -