Master's Degree
Assisted Reproductive Nursing

tech global university

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Master's Degree
Assisted Reproductive Nursing

- Modality: **online**
- Duration: **12 months**
- Certificate: **TECH Global University**
- Credits: **60 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Website: **www.techtitute.com/us/nursing/master-degree/master-assisted-reproductive-nursing**

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01

Introduction

Assisted Reproduction is one of the fastest growing health services today. Teamwork and quality care from the nursing area are key to the success of the treatments. A need that has led to a great demand, both in the public and private sectors, for nursing professionals specialized in this field, and in which a specific and complete training is essential.

This program aims to provide these professionals with skills and abilities so that they can develop their work activities in a more competent manner and with the security of working with the necessary knowledge. A multidisciplinary approach based on the experience of different areas of work in Assisted Reproduction that will allow you to grow in your profession in the most effective way in the teaching market.

Acquire the necessary skills and competencies to work in nursing in the best Assisted Reproduction Units with a highly intensive academic Master's Degree"

This Master's Degree will take the student through several key aspects: anatomy of human reproduction, neuroendocrinology of reproduction, ovogenesis and spermatogenesis and other fundamental aspects.

Throughout the Master's Degree, the approach to the study of infertility in women will start from the basics. By means of the clinical history, the nursing student will begin by identifying the most important factors involved and will learn about the most relevant and frequent pathologies that affect women with infertility. Special emphasis will be placed on all those basic tests necessary for the initiation and continuation of treatment, finding out the fundamental role of the nursing service: assistance, management and education.

In addition, we will study the different techniques performed in the AR Laboratory, aimed at achieving pregnancy in patients with fertility problems both female and male, the characteristics of the surgical area and the work in it and the intervention of the nursing staff in preoperative, intraoperative and postoperative moments.

The final part of the Master's Degree will qualify students in the transcendental legal field of assisted reproduction, which will provide students with the ability to resolve multiple legal issues, both in questions related to legality, in the uses and limits of assisted reproduction techniques, as well as in any doubts about the use and approach of informed consents.

And of course, this very complete Master's Degree will place special emphasis on the need for collaborative and close work in Assisted Reproduction with the coordinated intervention of the areas of medicine, nursing and embryology.

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

- The latest technology in online teaching software
- A highly visual teaching system, supported by graphic and schematic contents that are easy to assimilate and understand
- Practical cases presented by practising experts
- State-of-the-art interactive video systems
- Teaching supported by telepractice
- Continuous updating and recycling systems
- Autonomous learning: full compatibility with other occupations
- Practical exercises for self-evaluation and learning verification
- Support groups and educational synergies: questions to the expert, debate and knowledge forums
- Communication with the teacher and individual reflection work
- Content that is accessible from any fixed or portable device with an Internet connection
- Supplementary documentation databases are permanently available, even after the program

With this Master's Degree, you will be able to combine high-intensity education with your personal and professional life, achieving your goals in a simple and real way"

A Master's Degree that will enable you to work in the field of Assisted Reproduction Nursing, with the solvency of a high-level professional"

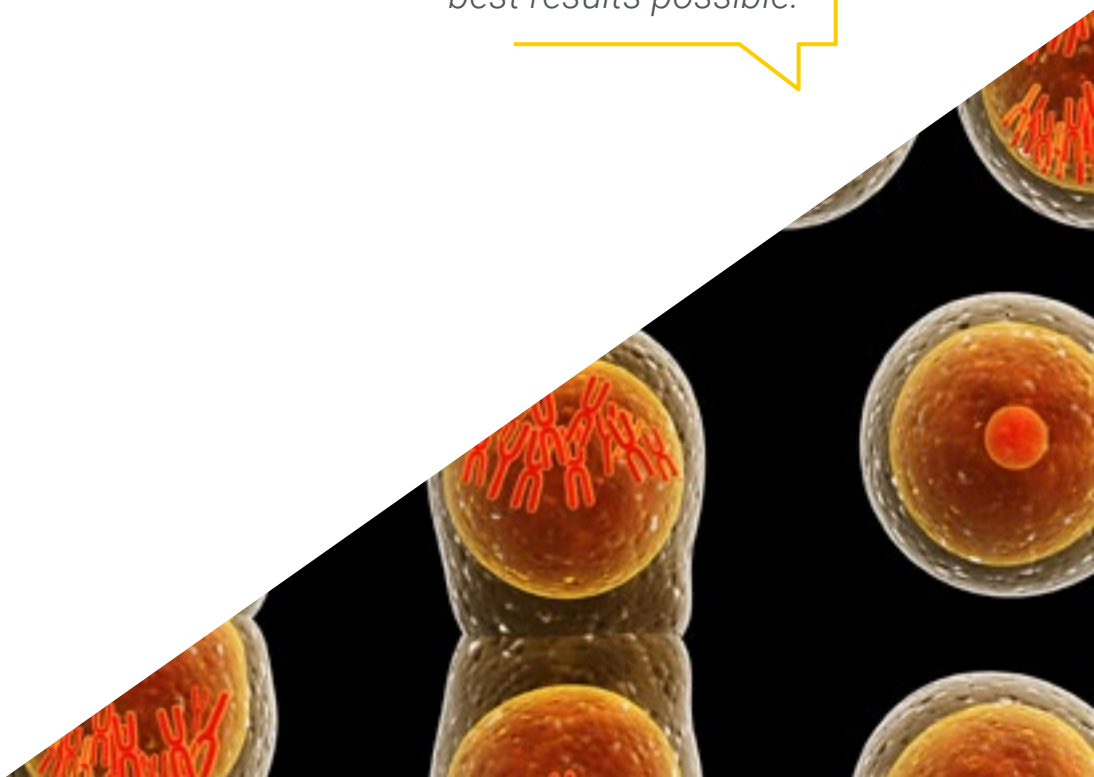
A program created and directed by professional experts in Assisted Reproduction that make this Master's Degree a unique opportunity for professional growth.

The learning in this Master's Degree is developed through the most performed didactic methods in online teaching to guarantee that your efforts produce the best results possible.

Our teaching staff is made up of professionals from different fields related to this specialty. In this way, TECH ensures that it delivers the targeted capacitive update it intends. A multidisciplinary team of professionals trained and experienced in different environments, who will cover the theoretical knowledge in an efficient way, but, above all, will put the practical knowledge derived from their own experience: one of the differential qualities of this course.

This mastery of the subject is complemented by the effectiveness of the methodological design of this Master's Degree in Assisted Reproductive Nursing. Developed by a multidisciplinary team of experts, it integrates the latest advances in educational technology. In this way, you will be able to study with a range of comfortable and versatile multimedia tools that will give you the operability you need in your education.

The design of this program is based on Problem-Based Learning: an approach that conceives learning as an eminently practical process. To achieve this remotely, we will use telepractice: With the help of an innovative interactive video system, and Learning from an Expert you will be able to acquire the knowledge as if you were actually dealing with the scenario you are learning about. A concept that will allow you to integrate and fix learning in a more realistic and permanent way.



02

Objectives

The objective of this training is to provide nursing professionals with the necessary knowledge and skills to perform their activity in the field of Assisted Reproduction. This Master's Degree will progressively lead the student to acquire the skills that will propel him/her to a much higher professional level.

Become one of the most sought-after professionals of the moment, with this Master's Degree in Assisted Reproductive Nursing"

General objectives

- Broaden specific knowledge of each of the areas of work in assisted reproduction
- Enable students to be interdependent and problem solvers
- Facilitate good performance of nursing professionals in order to provide the best care throughout the process

A boost to your CV that will give you the competitiveness of the best-prepared professionals on the job market"

Specific objectives

Module 1. Anatomy and Physiology of Reproduction

- Update knowledge on the anatomy of the female and male genitalia to lay the foundations of reproduction
- Expand knowledge of neurophysiology and its relationship to ovogenesis and spermatogenesis
- Introduce nurses to a more biological approach to gametogenesis, emphasizing the importance of meiosis and gamete quality
- Understand the process of fertilization and the first steps of embryonic development in order to introduce nurses to the world of embryology
- Analyze the effect of advanced maternal and paternal age on human reproduction

Module 2. Study of Infertility in Women

- Know the importance of anamnesis to identify toxic habits, stress, sexual problems and hereditary antecedents related to infertility in women
- Understand the basic initial study of infertility to explain it to the patient in clear and simple terms
- Know the complementary tests to examine women in consultation depending on the specific alterations of each patient to individualize them according to the altered factors present
- Know the most frequent disorders in women with infertility

Module 3. Study of Male Infertility

- Understand the initial examination of males in consultation and the complementary explorations or genetic studies that may be requested
- Understand the importance of good semen handling practices
- Perform a complete seminogram of the male
- Process samples for Assisted Reproduction techniques
- Understand what sperm freezing consists of and be able to perform it without complications
- Perform semen washings for HIV, Hepatitis B and Hepatitis C seropositive males, as well as to understand the importance of semen washings and good management, and to know when to recommend them in consultation
- Know the basics of semen donation, both at the consultation and laboratory level
- Learn about three of the most widely used sperm selection techniques currently in use, magnetically labeled cell sorting (MACS), intracytoplasmic injection of morphologically selected spermatozoa (IMSI) and selection based on hyaluronic acid binding, and thus know when to recommend them in consultation
- Know the basics of antioxidant therapy and how to discern which antioxidants have proven efficacy and which do not

Module 4. Genetics and Immunology of Reproduction

- Reinforce basic genetic concepts
- Know the karyotype and its uses
- Broaden knowledge of molecular genetics
- Understand the origin and etiology of genetic factors influencing human fertility
- Discover the different preimplantation genetic diagnosis tests
- Discuss the most current topics in genetics such as nuclear transfer or epigenetics
- Master the immunological factors affecting Assisted Reproduction
- Distinguish the different origins of immunological problems in reproduction and possible treatments

Module 5. Assisted Reproduction Consultation and the Donor Bank

- Providing continuous care throughout treatment
- Transmit truthful and reassuring information to the patient and learn to coordinate teams
- Ability to transmit emotional support, as we are aware of how hard and long this process can be
- Health education
- Carry out certain delegated activities such as checking serologies, hormone profiles, medical record updates, etc.
- Facilitate practice management: materials used in a practice, analysis and tests, and cycle coordination
- Learn the functionality of SIRHA

Module 6. Pharmacology

- Know which are the main folliculogenesis inducers, what are the advantages and disadvantages of each one of them and which are the most widely used at present
- Acquire knowledge about the types of gonadotropins that exist and how treatment results
- Develop knowledge on the management of ovulation inducers
- Acquire a broad knowledge of the hormonal treatments that exist, which are the most commonly used and which are the most effective
- Conduct good health education to teach self-administration of drugs at home
- Know and develop the consequences of ovarian stimulation, and explain ovarian hyperstimulation syndrome
- Study the handling and routes of administration of drugs used in Assisted Reproduction
- Promote the participation of nursing personnel during Assisted Reproduction treatments
- Explain clomiphene citrate, when it is used and how it is administered
- Develop what is an aromatase inhibitor and discern its advantages and disadvantages
- Study when gonadotropin analogues are used and in which cases they are used
- Pain management and control after puncture

Module 7. Assisted Reproduction Techniques

- Know the treatments that currently exist in AR and that are appropriate for each patient according to their infertility diagnosis
- Learn from the most basic techniques (AI) to the most complex techniques (IVF/ICSI) to obtain quality embryos that result in pregnancy
- Discover complementary techniques that help improve fertilization rates and facilitate embryo selection to transfer the best embryo to the patient
- Differentiate between freezing and vitrification, and the possibilities of donation
- Understand traceability as an indispensable tool to avoid errors in the laboratory
- Know other techniques that can help in the diagnosis of the patient

Module 8. The Operating Room and the Assisted Reproduction Laboratory

- Know the role of nursing in Assisted Reproduction units, and the surgical areas involved
- Explain the phases of surgery: preoperative, intraoperative and postoperative
- Acquire knowledge about follicular puncture and oocyte retrieval Become familiar with the technique and equipment required and the main nursing activity involved
- Learn how to obtain spermatozoa in patients with azoospermia
- Know the different surgical treatments performed in fertility and which are the most used techniques nowadays

- Know what an Assisted Reproduction laboratory is like, which parts form it and what techniques are performed in each one of them
- Know what the appropriate environmental conditions of an AR laboratory are
- Have knowledge of the hygiene and clothing of laboratory personnel, the cleanliness of the laboratory and know the mechanisms of risk prevention
- Discover the equipment in the laboratory, as well as its function and care
- Know the quality and cleanliness controls of an AR laboratory
- Know the working times of the laboratory in order to understand which are the most favorable needs for the techniques, and thus perform them at the optimal time, improving teamwork between the operating room and the laboratory, and thus obtain the best results

Module 9. Psychological Support and Special Situations in Assisted Reproduction

- Understand the psychological, social, cognitive and behavioral aspects of infertility
- Detect psychological or emotional alterations derived from infertility diagnoses and/or derived from reproduction treatment
- Provide emotional support to the patient throughout the process of Assisted Reproduction
- Develop communication skills to enable a comprehensive approach to infertility counseling and treatment
- Take into consideration special health situations of the beneficiaries of reproductive treatments, which entails the acquisition of different knowledge and therapeutic skills by nursing professionals
- Know how to manage bereavement and to provide support
- Become familiar with nutritional advice and follow-up in Assisted Reproduction consultation

Module 10. Legal and Ethical Aspects in Assisted Reproduction

- Detail in the portfolio of common services provided by the national health system on Assisted Reproduction issues
- Know how to interpret and use correctly each of the consents used in Assisted Reproduction: Who will deliver them? How should they be explained? What should they contain? Using many practical examples to do so
- Explain the rights of users undergoing Assisted Reproduction techniques, including gamete donors
- Study the ethical principles in order to apply them later to multiple situations that may arise in the field of Assisted Reproduction
- Address and discuss from an ethical and scientific point of view current issues such as surrogacy, post-mortem maternity, advanced maternal age and the influence that religious or cultural beliefs may have on users of Assisted Reproduction techniques
- Generate a debate on access to Assisted Reproduction treatments in private centers: Commercialization of a right?

03

Skills

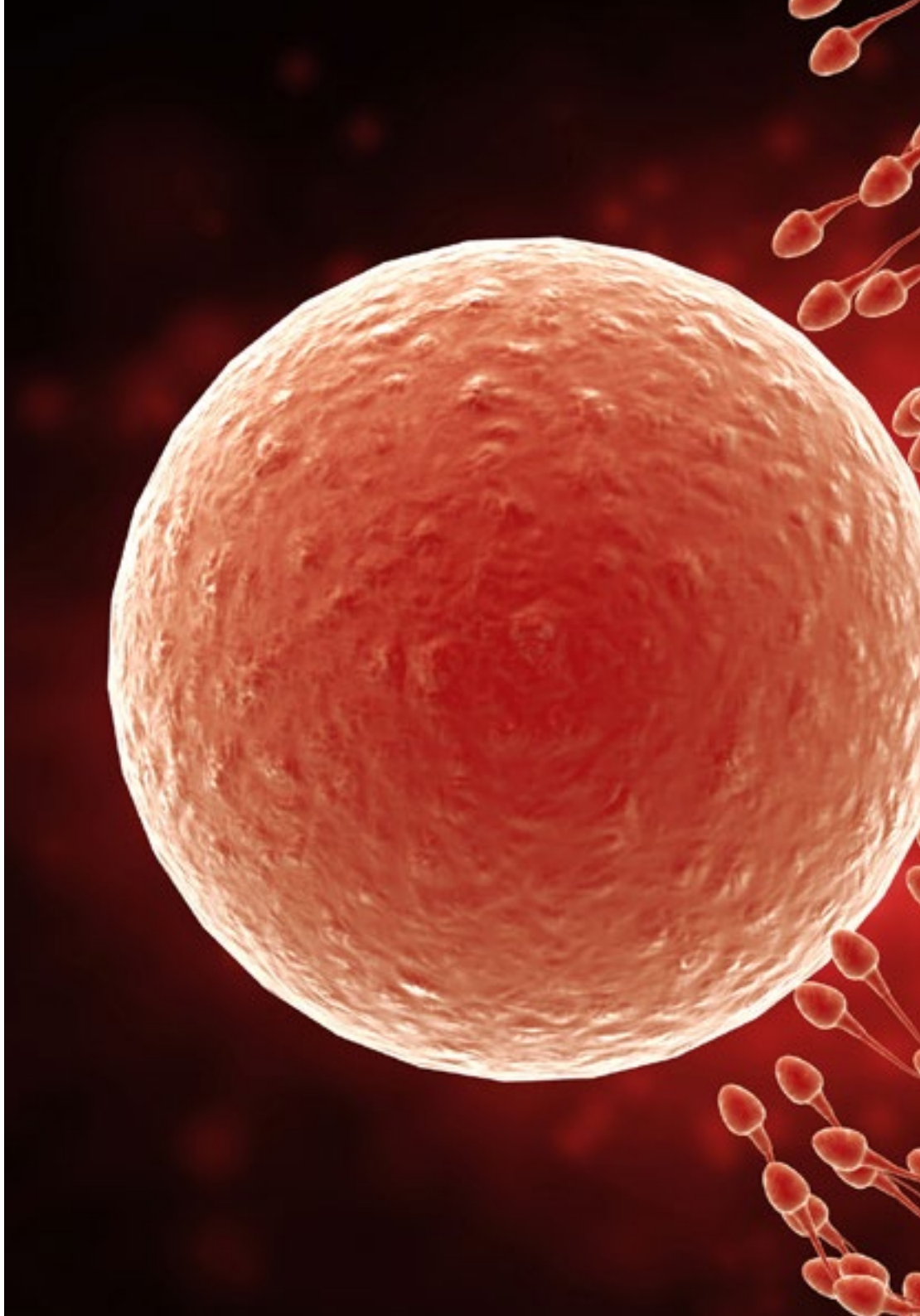
This Master's Degree in Assisted Reproductive Nursing has been created as a high qualification tool for the professional of this intervention unit. Your intensive program will prepare you to be able to intervene, in an adequate manner, in the different areas of work in this area. A compendium of knowledge that will provide you with the appropriate skills at all stages and intervention developments, from your initial approach and consultation, to the time of patient discharge.

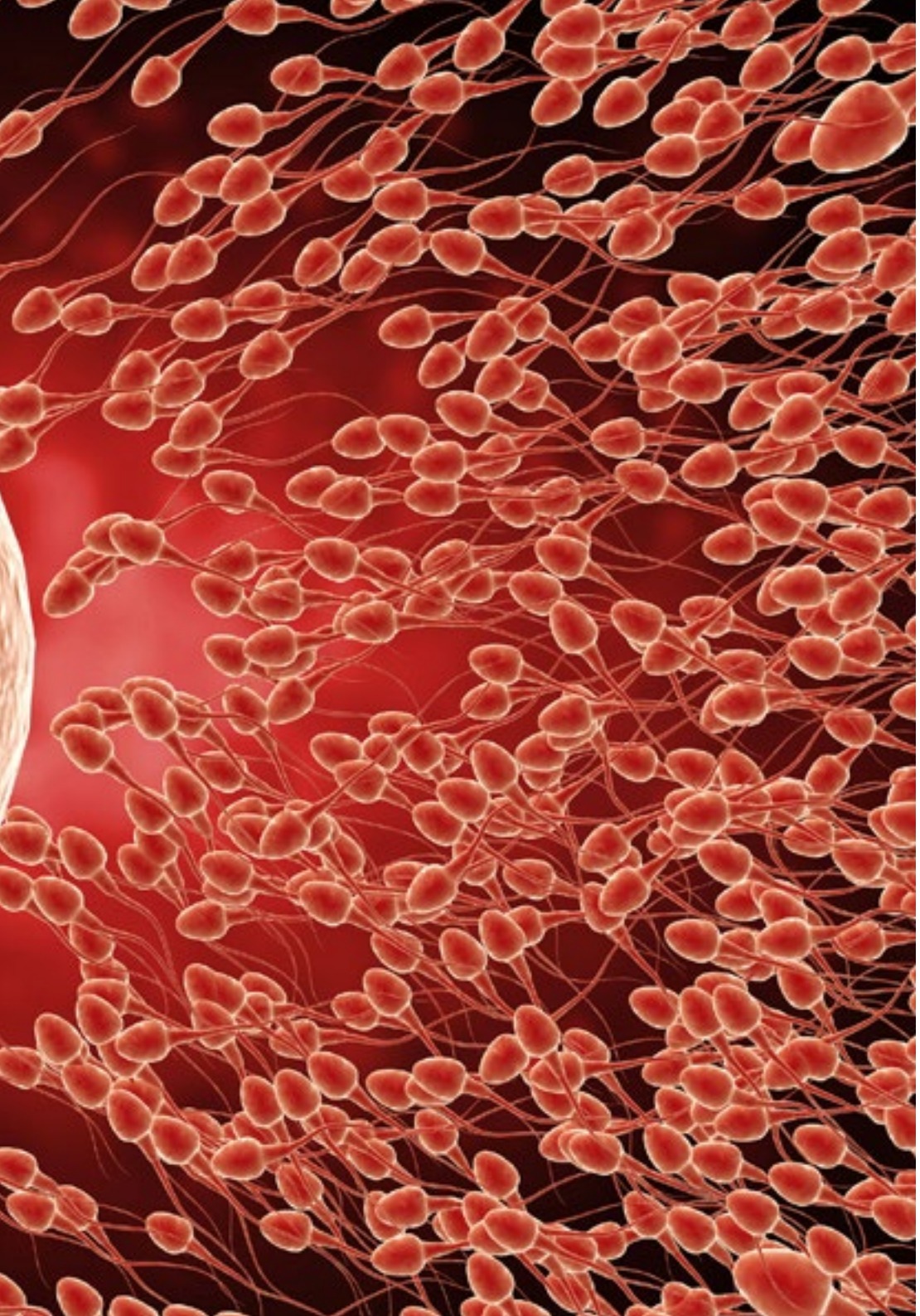
The Master's Degree in Assisted Reproductive Nursing will provide you with the essential personal and professional skills to play an appropriate role in any professional situation in this field of intervention"

General Skills

- Be competent in the nursing performance in the Assisted Reproduction Unit
- Know all the protocols and techniques relevant to the nursing practice of Assisted Reproduction
- Know how to work in an interdisciplinary way in the Assisted Reproduction Unit

A unique specialization course that will enable you to acquire superior knowledge for development in this field"





Specific Skills

- Master the necessary aspects of the anatomy and physiology of human reproduction
- Have knowledge of the endocrinology of the female reproductive system, the menstrual cycle and the particularities of ovogenesis
- Possess knowledge of the anatomy of the male reproductive organs, endocrinology and spermatogenesis
- Understand embryonic development, fertilization and other aspects of human reproduction
- Possess knowledge of the necessary aspects of nursing practice in the field of female infertility
- Know everything about ovarian, uterine and tubal, infectious, genetic and immunological factors and be able to adjust the intervention to these aspects
- Recognize implementation failures and their causes, as well as the special factors that determine them
- Possess knowledge of the aspects of male infertility necessary for nursing practice
- Recognize which are the diagnostic tests in male infertility and how they are performed
- Know the processes of sample collection and analysis
- Know which oral therapies can be used
- Know the relevant aspects for Assisted Reproduction nursing in the field of genetics and reproductive immunology

- Know how to proceed in the field of basic cytogenetics
- Describe chromosomal abnormalities
- Recognizing genetic disorders that affect infertile couples
- Operating in the preimplantation genetic diagnosis environment (PGT: Preimplantation Genetic Testing)
- Take into account the importance of the immunological factor in Assisted Reproduction
- Have the capacity to act appropriately in the Assisted Reproduction and donor bank consultation
- Schedule, draw and interpret blood tests for infertility testing
- Know how to perform the intervention in the field of Patient Education
- Run a management area in nursing in Assisted Reproduction units
- Conduct patient follow-up after the BHCG result
- Work in the donor bank in all areas of nursing care
- Know the protocols, uses and applications of pharmacology in Assisted Reproduction: folliculogenesis inducers, ovulation inducers, other hormonal treatments
- Know the commercial presentations of the pharmaceutical products
- Know the proper anesthetic management in AR
- Recognize each one of the Assisted Reproduction techniques: artificial insemination

- Know how to perform preimplantation genetic testing, embryo transfer, freezing and vitrification
- Know the donation protocols, ROPA method, traceability, bio-surveillance
- Perform all operating room nursing duties
- Act at the time of intervention: follicular puncture, embryo transfer, sperm collection in cases of azoospermia and other surgical interventions in the area of infertility
- Know all aspects of the laboratory in Assisted Reproduction: structure, conditions, etc.
- Have the ability to provide psychological support to the patient being treated in the Assisted Reproduction unit
- Have the ability to act in the case of patients in special situations
- Know how to plan food during Assisted Reproduction
- Recognizing and accompanying bereavement in Assisted Reproduction
- Know what the new alternatives in AR are
- Recognize the legal and ethical aspects of Assisted Reproduction
- Describe the portfolio of services offered by our national social security system in Assisted Reproduction
- Reflect on ethical issues and approaches
- Keep up with research advances in Assisted Reproduction

04

Course Management

For our course to be of the highest quality, we are proud to work with a teaching staff of the highest level, chosen for their proven track record. Professionals from different areas and fields of expertise that make up a complete, multidisciplinary team. A unique opportunity to learn from the best.

An impressive academic staff, made up of professionals from different areas of expertise, will be your professors during the training: A unique opportunity not to be missed"

Management

Ms. Agra Bao, Vanesa

- Operating room supervisor at EVA FERTILITY-DORSIA
- Degree in Nursing University of La Coruña
- Postgraduate Diploma in Legal Nursing. UNED
- Official Master's Degree in Occupational Risk Prevention. USP-CEU
- Master's Degree in Physical Activity and Health. Miguel de Cervantes University
- Instructor of Basic Life Support and DESA. SEMICYUC
- Postgraduate Diploma in Surgical Anesthesiology for Nursing. CEU Cardenal Herrera University
- Biosafety and Occupational Risk Prevention in Microbiology Laboratories. SEM
- The male in Assisted Reproduction EVA FERTILITY CLINICS
- Biosafety Laboratories and Research Animal Facilities with Biocontainment Level 3. SEGLA
- Nursing action in traumatic emergencies, poisoning and other urgent situations. DAE

Ms. Boyano Rodríguez, Beatriz

- Embryologist at Clínicas EVA, Madrid
- Postgraduate Diploma in Clinical Genetics, Universidad de Alcalá de Henares, Madrid
- Master's Degree in Assisted Human Reproduction Biotechnology, IVI and University of Valencia
- Postgraduate in Medical Genetics, University of Valencia, Spain
- Degree in Biology, Universidad de Salamanca
- Member of the Association for the Study of Reproductive Biology
- Member of the Spanish Association of Human Genetics

Professors

Ms. Martín, Alba

- Embryologist at Clínicas EVA, Madrid
- Degree in Biology from the Complutense University of Madrid, specializing in NEUROBIOLOGY and BIOSANITARY
- Master's Degree in Mammalian Reproductive Biology and Technology at the University of Murcia, Spain
- Postgraduate and professional development program with modular structure in Health Law and Biomedicine Universidad Nacional de Educación a Distancia (National University of Distance Education)
- Online Postgraduate Certificate entitled "Epigenetic Control of Gene Expression" given by the University of Melbourne

Ms. Fernández Rubio, Marta

- Diploma in Nursing San Pablo CEU University
- Master's Degree in Emergency and Intrahospital Critical Care. San Pablo CEU University
- More than 30 FUNDEN Postgraduate Certificate courses in nursing care
- Postgraduate Certificate in chronic wounds. Madrid Hospital
- Postgraduate Certificate in Umbilical Cord Stem Cells and Regenerative Medicine. Madrid Hospital

Ms. Fernández, Sara

- ICU, Hospitalization and Dialysis Ward. General surgery, specialties, internal medicine, oncology and Medical Surgical Day Hospital. HM Norte Sanchinarro
- Degree in Nursing. San Pablo CEU University
- Expert in the care of adult patients in life-threatening situations. CODEM
- Postgraduate Certificate in chronic wounds. Madrid Hospital
- Nursing guidance for emergency use of intravenous pharmaceutical products. LOGGOS
- More than twenty FUNDEN Postgraduate Certificate courses in nursing care

Ms. De Riva, María

- Embryologist. Laboratory management, orders, shipments, protocol development, database control, administrative tasks. EVA CLINICS
- Degree in Biological Sciences. Alcalá de Henares University
- Research work on gene expression in mouse embryos. Brussels Free University
- Assisted Reproduction Post-graduate basic degree: Alcalá de Henares Hospital
- Assisted Reproduction Advanced postgraduate course: Alcalá de Henares Hospital
- Master on Theoretical Basis and Laboratory Procedures of Assisted Reproduction. IVI

Ms. Serrano, Erika

- Outpatient nurse, gynecology, dermatology, neurology, rheumatology, endocrinology. José Marvá Specialty Center
- Diploma in Nursing. Alcalá de Henares University
- University Specialist in Outpatient Emergency Nursing. Juan Carlos University. Madrid
- Complementary Therapies in Health Sciences. UAH. Faculty of Medicine
- Update on Intravenous Therapy IDER TRAINING

Ms. Aldama, Perla

- Gynecologist specialized in Assisted Reproduction Egg bank. Eva Fertility Clinics
- Medical Surgeon School of Medicine UNAM. Mexico City
- Master's Degree in Human Reproduction Universidad Complutense de Madrid Spanish Fertility Society Madrid, Spain

Ms. Pulido, Sara

- Nurse in Assisted Reproduction consultation in the International Department, and in the Assisted Reproduction Operating Room. Eva Clinics, Madrid (since 2019)
- Graduate in Nursing, Alfonso X El Sabio University (2013)
- Master's Degree in Intensive Care Nursing (2018).

05

Structure and Content

The content on this Master's Degree has been developed by the different experts on program with a clear purpose: to ensure our students acquire each and every one of the skills required to become true experts in the field.

A complete and well-structured program that will take you to the highest standards of quality and success.

A comprehensive teaching program, structured in well-developed teaching units, oriented towards learning that is compatible with your personal and professional life"

Module 1. Anatomy and Physiology of Reproduction

1.1 Anatomy of the Female Reproductive Organs
- 1.1.1. Introduction
- 1.1.2. External Female Genitalia
  - 1.1.2.1. Vulva
  - 1.1.2.2. Mons Pubis
  - 1.1.2.3. Labia Majora
  - 1.1.2.4. Labia Minora
  - 1.1.2.5. Vaginal Vestibule
  - 1.1.2.6. Clitoris
  - 1.1.2.7. Vestibular Bulbs
- 1.1.3. Internal Female Genitalia
  - 1.1.3.1. Vagina.
  - 1.1.3.2. Uterus
  - 1.1.3.3. Fallopian Tube
  - 1.1.3.4. Ovaries

1.2. Endocrinology of the Female Reproductive System
- 1.2.1. Introduction
- 1.2.2. The Hypothalamus
  - 1.2.2.1. GnRH
- 1.2.3. Pituitary Gland
  - 1.2.3.1. FSH and LH
- 1.2.4. Steroid Hormones
  - 1.2.4.1. Introduction
  - 1.2.4.2. Synthesis
  - 1.2.4.3. Action Mechanism
  - 1.2.4.4. Estrogen
  - 1.2.4.5. Androgens
  - 1.2.4.6. Progestogens
- 1.2.5. External Modulation: Endorphins and Melatonin
- 1.2.6. GnRH Pulses: Brain-Ovarian Relationship
- 1.2.7. GnRH Agonists and Antagonists

1.3. Menstrual Cycle
- 1.3.1. Menstrual Cycle
- 1.3.2. Biochemical Indicators of the Menstrual Cycle
  - 1.3.2.1. Hormones in Basal State
  - 1.3.2.2. Ovulation
  - 1.3.2.3. Evaluation of Ovarian Reserve. Antimüllerian Hormone
- 1.3.3. Ultrasound Indicators of the Menstrual Cycle
  - 1.3.3.1. Follicle Count
  - 1.3.3.2. Endometrial Ultrasound
- 1.3.4. End of the Reproductive Age
  - 1.3.4.1. Premenopause
  - 1.3.4.2. Menopause
  - 1.3.4.3. Post-menopause

1.4. Ovogenesis (Folliculogenesis and Ovulation)
- 1.4.1. Meiosis. From the Oogonia to the MII Oocyte
- 1.4.2. Types of Follicles and their Relation to Ovogenesis: Follicular Dynamics
- 1.4.3. Ovarian Recruitment and Ovulation
- 1.4.4. Oocyte MII: Markers of Oocyte Quality
- 1.4.5. In Vitro Oocyte Maturation

1.5. Anatomy of the Male Reproductive Organs
- 1.5.1. External Male Genitalia
  - 1.5.1.1. Testicles
  - 1.5.1.2. Penis
  - 1.5.1.3. Epididymis
  - 1.5.1.4. Vas Deferens
- 1.5.2. Internal Male Genitalia
  - 1.5.2.1. Seminal Vesicles
  - 1.5.2.2. Ejaculatory Duct
  - 1.5.2.3. Prostate
  - 1.5.2.4. Urethra
  - 1.5.2.5. Bulbourethral Glands

1.6. Endocrinology of the Male Reproductive System
- 1.6.1. Testicular Function Regulation
- 1.6.2. Androgen Biosynthesis
- 1.6.3. Inhibins and Activins
- 1.6.4. Prolactin
- 1.6.5. Prostaglandins
- 1.6.6. Estrogens
- 1.6.7. Other Factors

1.7. Spermatogenesis
- 1.7.1. Meiosis
- 1.7.2. Differences between Ovogenesis and Spermatogenesis
- 1.7.3. The Seminiferous Tubule
  - 1.7.3.1. Hormones Involved
  - 1.7.3.2. Cell Types
- 1.7.4. The Blood-Tissue Barrier
- 1.7.5. Endocrine and Paracrine Control

1.8. Fertilization
- 1.8.1. Gamete Transport
- 1.8.2. Gametic Maturation
- 1.8.3. Gamete Interaction

1.9. Embryonic Development
- 1.9.1. Zygote Formation
- 1.9.2. First Divisions
- 1.9.3. Blastocyst Formation and Implantation
- 1.9.4. Gastrulation: Formation of Mesoderm
  - 1.9.4.1. Notochord Formation
  - 1.9.4.2. Establishment of Body Axes
  - 1.9.4.3. Setting Cellular Destinations
  - 1.9.4.4. Trophoblast Growth
- 1.9.5. Embryonic Period or Organogenesis Period
  - 1.9.5.1. Ectoderm
  - 1.9.5.2. Mesoderm
  - 1.9.5.3. Endoderm

1.10. Effect of Age on the Male and Female Reproductive System
- 1.10.1. Female Reproductive System
- 1.10.2. Male Reproductive system

Module 2. Study of Infertility in Women

2.1. Initial Study
- 2.1.1. Introduction
- 2.1.2. Basis of the Study by Factors
- 2.1.3. Medical History
- 2.1.4. Physical Exploration
- 2.1.5. Basic Infertility Studies
- 2.1.6. Complementary Studies According to Altered Factor

2.2. Ovarian Factor
- 2.2.1. Age
  - 2.2.1.1. Age and Ovarian Reserve
  - 2.2.1.2. Early Ovarian Failure
  - 2.2.1.3. Studies to Assess Ovarian Reserve
    - 2.2.1.3.1. AMH
    - 2.2.1.3.2. RFA
    - 2.2.1.3.3. Other Hormones
- 2.2.2. Anovulation
  - 2.2.2.1. What is Anovulation?
  - 2.2.2.2. Clinical Manifestations
  - 2.2.2.3. Importance of the Luteal Phase
  - 2.2.2.4. Causes
    - 2.2.2.4.1. Polycystic Ovarian Syndrome
    - 2.2.2.4.2. Most Frequent Hormonal Disorders
    - 2.2.2.4.3. Other Causes
  - 2.2.2.5. Studies to Assess Ovulation
    - 2.2.2.5.1. Gynecological Hormonal Profile

2.2.2.5.2. Other Hormones
2.2.2.5.2.1. Thyroid Hormones
2.2.2.5.2.2. Prolactin
2.2.2.4.2.3. Androgens
2.2.2.5.3. Luteal Phase Progesterone

2.3. Uterine and Tubal Factor
2.3.1. Uterus
2.3.1.1. Uterus and Endometrium
2.3.1.2. Müllerian Malformations
2.3.1.3. Myomas and Polyps
2.3.1.4. Asherman's Syndrome
2.3.1.5. Uterine Factor and Implantation Failure
2.3.1.6. Uterine Factor and Recurrent Abortion
2.3.2. Fallopian Tubes
2.3.2.1. Tubal Obstruction
2.3.2.1.1. Pathology
2.3.2.1.2. Surgical
2.3.2.1.3. Endometriosis
2.3.2.1.4. Others
2.3.3. Studies
2.3.3.1. 2D and 3D Ultrasound Echography
2.3.3.2. Hysteroscopy and Others
2.3.3.2.1. Hysteroscopy
2.3.3.2.2. Hysterosalpingography
2.3.3.2.3. Hysterosonography
2.3.3.2.4. Hysterolaparoscopy
2.3.3.2.5. MRI

2.4. Infectious Factor
2.4.1. Infections and Infertility
2.4.2. Most Frequent Infections
2.4.3. Pelvic Inflammatory Disease
2.4.4. Hydrosalpinx

2.4.5. Studies
2.4.5.1. Crops and Specialty Crops
2.4.5.2. PCR and Others
2.5. Genetic Factor
2.5.1. Genetics Today
2.5.2. Most Frequent Genetics Disorders
2.5.2.1. Turner Syndrome
2.5.2.2. Fragile X Syndrome
2.5.2.3. Hereditary Thrombophilias
2.5.2.4. Other Mutations
2.5.3. Screening Studies
2.6. Immunological Factor
2.6.1. Immune System and Fertility
2.6.2. Main Disorders
2.6.2.1. Antiphospholipid Antibody Syndrome
2.6.2.2. Systemic Lupus Erythematosus (SLE)
2.6.2.3. Others
2.6.3. Key Immunological Tests
2.7. Endometriosis
2.7.1. Endometriosis Today
2.7.2. Implications in Fertility
2.7.3. The Patient with Endometriosis
2.7.4. Clinical and Laboratory Study
2.8. Implantation Failure and Recurrent Abortion
2.8.1. Failure of Implantation
2.8.1.1. Definition
2.8.1.2. Main Causes
2.8.1.3. Study
2.8.2. Recurrent Abortion
2.8.2.1. Definition
2.8.2.2. Main Causes
2.8.2.3. Study

2.9. Special considerations
- 2.9.1. Cervical Factor
  - 2.9.1.1. Importance of Cervical Physiology
- 2.9.2. Postcoital Test
  - 2.9.2.1. Sexology
  - 2.9.2.2. Vaginismus
- 2.9.3. Psychological Causes
- 2.9.4. Infertility of Unknown Origin
  - 2.9.4.1. Definition
  - 2.9.4.2. What Should Be Done?
- 2.9.5. Integral Approach

2.10. Conclusions

Module 3. Study of Male Infertility

3.1. Initial Study
- 3.1.1. Objectives
- 3.1.2. When Should it be Done?
- 3.1.3. Minimum Evaluation
- 3.1.4. Optimal Evaluation
- 3.1.5. Medical History
- 3.1.6. Physical Exploration

3.2. Complementary Explorations
- 3.2.1. Sperm Function Tests
- 3.2.2. Hormonal Determinations
- 3.2.3. Ultrasonography and Scrotal Doppler Ultrasonography
- 3.2.4. Transrectal Ultrasound
- 3.2.5. Bacteriological Study of Semen
- 3.2.6. Post-Orgasm Urinalysis

3.3. Genetic Studies
- 3.3.1. Karyotype
- 3.3.2. Microdeletions Yq
- 3.3.3. CFTR Mutations
- 3.3.4. Meiotic Chromosome Studies
- 3.3.5. FISH of Spermatozoa

3.4. Seminogram
- 3.4.1. Basic Considerations
- 3.4.2. Proper Sample Handling
- 3.4.3. Sample Collection
  - 3.4.3.1. Preparation
  - 3.4.3.2. Collection for Diagnosis
  - 3.4.3.3. Collection for Use in Assisted Reproduction
  - 3.4.3.4. Collection for Microbiological Analysis
  - 3.4.3.5. Home Collection
  - 3.4.3.6. Collection with Preservative
- 3.4.4. Initial Macroscopic Examination
  - 3.4.4.1. Liquefaction
  - 3.4.4.2. Viscosity
  - 3.4.4.3. Appearance
  - 3.4.4.4. Volume
  - 3.4.4.5. PH
- 3.4.5. Initial Microscopic Examination
  - 3.4.5.1. How to Get a Representative Sample?
  - 3.4.5.2. Sample Quantity
  - 3.4.5.3. Aggregation
  - 3.4.5.4. Agglutination
  - 3.4.5.5. Presence of Cellular Elements Other than Spermatozoa
- 3.4.6. Motility
- 3.4.7. Vitality
- 3.4.8. Concentration
- 3.4.9. Counting of Cells Other than Sperm Cells
- 3.4.10. Sperm Morphology
- 3.4.11. Presence of Leukocytes in Semen
- 3.4.12. Antispermatozoa Antibodies Test
- 3.4.13. Automated Analysis

3.5. Analysis and Processing of Samples for Assisted Reproduction Techniques (ART)
- 3.5.1. Washing
- 3.5.2. Swim-up
- 3.5.3. Density Gradients

3.6. Sperm Freezing
- 3.6.1. Indications
- 3.6.2. Cryoprotection
- 3.6.3. Semen Freezing Techniques
- 3.6.4. Storage Containers

3.7. Semen Washing for HIV, Hepatitis B and Hepatitis C Seropositive Males
- 3.7.1. Hepatitis B
- 3.7.2. HIV
- 3.7.3. Hepatitis C
- 3.7.4. General Considerations

3.8. Sperm Donation
- 3.8.1. General Aspects
- 3.8.2. Indications
- 3.8.3. Sperm Donor Considerations
- 3.8.4. Recommended Tests
- 3.8.5. Anonymity
- 3.8.6. Choosing the Right Donor
- 3.8.7. Risks
- 3.8.8. Cessation of Donation

3.9. Complementary Sperm Selection Techniques
- 3.9.1. MACS (Magnetically Marked Cell Sorting)
  - 3.9.1.1. Biological Basis of the Technique
  - 3.9.1.2. Indications
  - 3.9.1.3. Advantages and Disadvantages
- 3.9.2. IMSI (Intracytoplasmic Injection of Morphologically Selected Spermatozoa)
  - 3.9.2.1. Procedure
  - 3.9.2.2. Indications
  - 3.9.2.3. Advantages and Disadvantages
- 3.9.3. Selection Based on Binding to Hyaluronic Acid
  - 3.9.3.1. Procedure
  - 3.9.3.2. Indications
  - 3.9.3.3. Advantages and Disadvantages

3.10. Oral Therapy Use of Antioxidants
- 3.10.1. Antioxidant Concept
- 3.10.2. Reactive Oxygen Species (ROS)
- 3.10.3. Factors Leading to Increased ROS in Semen
- 3.10.4. Damage Caused by Increased ROS in Spermatozoa
- 3.10.5. Antioxidant System in Semen
  - 3.10.5.1. Enzymatic Antioxidants
  - 3.10.5.2. Superoxide Dismutase
  - 3.10.5.3. Catalase
  - 3.10.5.4. Nitric Oxide Synthase
  - 3.10.5.5. Glutathione S-Transferase
  - 3.10.5.6. Peroxiredoxin
  - 3.10.5.7. Thioredoxins
  - 3.10.5.8. Glutathione Peroxidase
- 3.10.6. Exogenous Supplementation
  - 3.10.6.1. Omega 3 Fatty Acids
  - 3.10.6.2. Vitamin C
  - 3.10.6.3. Coenzyme Q10
  - 3.10.6.4. L-Carnitine
  - 3.10.6.5. Vitamin E
  - 3.10.6.6. Selenium
  - 3.10.6.7. Zinc
  - 3.10.6.8. Folic Acid
  - 3.10.6.9. L-Arginine
- 3.10.7. Conclusions

Module 4. Genetics and Immunology of Reproduction

4.1. Basic Cytogenetics: The Importance of Karyotyping
- 4.1.1. DNA and its Structure
  - 4.1.1.1. Genes
  - 4.1.1.2. Chromosomes
- 4.1.2. The Karyotype
- 4.1.3. Uses of Karyotyping: Prenatal Diagnosis
  - 4.1.3.1. Amniocentesis
  - 4.1.3.2. Chorionic Villus Biopsy
  - 4.1.3.3. Abortion Analysis
  - 4.1.3.4. Meiosis Studies

4.2. The New Era of Diagnostics: Molecular Cytogenetics and Massive Sequencing
- 4.2.1. FISH
- 4.2.2. CGH Arrays
- 4.2.3. Massive Sequencing

4.3. Origin and Etiology of Chromosomal Abnormalities
- 4.3.1. Introduction
- 4.3.2. Classification According to Origin
  - 4.3.2.1. Numeric
  - 4.3.2.2. Structural
  - 4.3.2.3. Mosaicism
- 4.3.3. Classification According to Etiology
  - 4.3.3.1. Autosomal
  - 4.3.3.2. Sexual
  - 4.3.3.3. Polyploidy and Haploidy

4.4. Genetic Disorders in the Infertile Couple
- 4.4.1. Genetic Disorders in Women
  - 4.4.1.1. Hypothalamic Origin
  - 4.4.1.2. Pituitary Origin
  - 4.4.1.3. Ovarian Origin
    - 4.4.1.3.1. Chromosomal Alterations
      - 4.4.1.3.1.1. Total Deletion of the X Chromosome: Turner's Syndrome
      - 4.4.1.3.1.2. Partial Deletion of the X Chromosome
      - 4.4.1.3.1.3. X Chromosome Translocations and Autosomes
      - 4.4.1.3.1.4. Others
  - 4.4.1.4. Monogenic Alterations
    - 4.4.1.4.1. X-Fragile
  - 4.4.1.5. Hereditary Thrombophilias
- 4.4.2. Genetic Disorders in Men
  - 4.4.2.1. Numerical Alterations: Klineffelter's Syndrome
  - 4.4.2.2. Robertsonian Translocations
  - 4.4.2.3. CFTR Mutation
  - 4.4.2.4. Microdeletions in the Y Chromosome

4.5. Preimplantation Genetic Diagnosis (PGT): Preimplantation Genetic Testing)
- 4.5.1. Introduction
- 4.5.2. Embryo Biopsy
- 4.5.3. Indications
- 4.5.4. Genetic Diagnosis for Monogenic Diseases (PGT-M)
  - 4.5.4.1. Carrier Studies
- 4.5.5. Genetic Diagnosis for Structural Abnormalities
  - 4.5.5.1. Numerical (Aneuploidies; PGT-A)
  - 4.5.5.2. Structural (PGT-SR)
- 4.5.6. Combined Genetic Diagnosis
- 4.5.7. Limitations
- 4.5.8. Mosaic Embryos as a Special Case
- 4.5.9. Non-Invasive Pre-implantational Genetic Diagnosis

4.6. Babies with Three Genetic Progenitors, Nuclear Transfer in Mitochondrial Diseases
- 4.6.1. Mitochondrial DNA
- 4.6.2. Mitochondrial Diseases
- 4.6.3. Donor Cytoplasmic Transfer

4.7. Epigenetics
- 4.7.1. General Concepts
- 4.7.2. Epigenetic Modifications
- 4.7.3. Genetic Imprinting

4.8. Genetic Studies in Donors
- 4.8.1. Recommendations
- 4.8.2. Carrier Matching
- 4.8.3. Carrier Panels

4.9. The Immunological Factor in Assisted Reproduction
- 4.9.1. General Aspects
- 4.9.2. The Immune System in Women in Constant Change
- 4.9.3. Immune Cell Population in the Female Reproductive System
  - 4.9.3.1. Regulation of T-lymphocyte Populations
  - 4.9.3.2. Cytokines
  - 4.9.3.3. Female Hormones
- 4.9.4. Infertility of Autoimmune Origin
  - 4.9.4.1. Antiphospholipid Syndrome
  - 4.9.4.2. Antithyroid Antibodies
  - 4.9.4.3. Anti -Nuclear Antibodies
  - 4.9.4.4. Anti-Ovarian and Anti-FSH Antibodies
  - 4.9.4.5. Anti-Sperm Antibodies
- 4.9.5. Infertility of Alloimmune Origin, the Contribution of the Fetus
  - 4.9.5.1. The Embryo as Antigen
  - 4.9.5.2. Implantation Failure of Euploid Embryos
    - 4.9.5.2.1. NK Cells
    - 4.9.5.2.2. T-Helpers
    - 4.9.5.2.3. Autoantibodies
- 4.9.6. The Role of Sperm and Spermatozoa
  - 4.9.6.1. T-Lymphocyte Regulation
  - 4.9.6.2. Seminal Fluid and Dendritic Cells
  - 4.9.6.3. Clinical Relevance

4.10. Immunotherapy and Special Situations
- 4.10.1. Introduction
- 4.10.2. Aspirin and Heparin
- 4.10.3. Corticosteroids
- 4.10.4. Antibiotic Therapy
- 4.10.5. Colony Growth Factors
- 4.10.6. Intravenous Fat Emulsions
- 4.10.7. Intravenous Immunoglobulins
- 4.10.8. Adalimumab
- 4.10.9. Peripheral Mononuclear Cells
- 4.10.10. Seminal Plasma
- 4.10.11. Antibody-Free Semen Preparations
- 4.10.12. Tacrolimus
- 4.10.13. Risks and benefits
- 4.10.14. Conclusions
- 4.10.15. Special Situations: Endometriosis
- 4.10.16. Special Situations - Chlamydia Trachomatis Infection

Module 5. Assisted Reproduction Consultation and Donor Bank

5.1. Importance of the Nurse in the Assisted Reproduction Clinic
- 5.1.1. Nursing Consultation. An Emerging Requirement
- 5.1.2. Areas of Work: Assistance, Management and Education
- 5.1.3. The Integral Continuum of Care

5.2. Assistance Area. Follow-Up Consultation
- 5.2.1. Patient Care in Stimulation Cycles
- 5.2.2. Folliculometry
- 5.2.3. Cytology

5.3. Blood Tests for Fertility Study. Programming, Interpretation and Extraction
- 5.3.1. Hypophyseal Hormones or Gonadotropins
  - 5.3.1.1. FSH
  - 5.3.1.2. LH
  - 5.3.1.3. Prolactin
  - 5.3.1.4. TSH

5.3.2. Ovarian Hormones
5.3.2.1. Estradiol
5.3.2.2. Progesterone
5.3.2.3. Antimullerian (HAM)
5.3.3. Other Hormones
5.3.3.1. Free Triiodothyronine (T3)
5.3.3.2. Free Thyroxine (T4)
5.3.3.3. Total Testosterone (T)
5.3.3.4. Inhibin B
5.3.4. Implantation Failure Study. Interpretation and Extraction
5.3.4.1. Definition
5.3.4.2. Immunological Profile
5.3.4.3. Thrombophilias
5.3.4.4. Endometrial Biopsy
5.3.4.5. Endocervical and Vaginal Culture
5.3.5. Serologies. Interpretation and Extraction
5.3.5.1. Introduction and Necessity
5.3.5.2. HBV
5.3.5.3. HCV
5.3.5.4. HIV
5.3.5.5. Syphilis (RPR)
5.3.5.6. Rubella
5.3.5.7. Toxoplasmosis
5.3.6. Karyotypes
5.4. Patient Education Area
5.4.1. Effective Communication
5.4.2. Basic Hygienic-Dietetic Measures. Importance of BMI
5.4.3. Self-Administration of Medications
5.5. Management Area
5.5.1. Medical History
5.5.2. Informed Consents

5.5.3. Gamete Request
5.5.3.1. Male Gamete Petition
5.5.3.2. Female Gamete Petition
5.5.4. Transfer of Genetic Material
5.6. Patient Follow-up after BHCG Result
5.6.1. Introduction Interpretation of the Result
5.6.2. First Consultation after BHCG Result
5.6.2.1. Negative Result
5.6.2.2. Positive Result
5.6.3. Food Education for Pregnant Women
5.6.4. Follow-Up of the Pregnant Woman. Medication and Ultrasound Monitoring Discharge
5.6.5. Obstetrical Control after Delivery
5.7. Donor Bank
5.7.1. Donor Requirements. Testing and Compatibility. Importance of Blood Type
5.7.2. Limits on the Number of Stimulations and/or Donations
5.7.3. Limit on the Number of Pregnancies
5.7.4. International Donations
5.7.5. Anonymity
5.7.6. Financial Compensation
5.7.7. Donor Registration
5.7.8. Additional Tests
5.8. Frequently Asked Questions
5.9. Conclusions

Module 6. Pharmacology

6.1. Folliculogenesis Inducer: Clomiphene Citrate
6.1.1. Introduction
6.1.2. Definition
6.1.3. Action Mechanism
6.1.4. Administration and Use
6.1.5. Side Effects
6.1.6. Advantages and Disadvantages
6.1.7. Results

6.2. Induction of Folliculogenesis with Gonadotropins
- 6.2.1. Introduction and Indications
- 6.2.2. Types
  - 6.2.2.1. Follicle Stimulants
  - 6.2.2.2. Corpus Luteum Stimulants
- 6.2.3. Stimulation with Increasing or Decreasing Doses
- 6.2.4. Treatment Results
- 6.2.5. Complications
- 6.2.6. Instruction in Self-Administration

6.3. Ovulation Inducers
- 6.3.1. Human Chorionic Gonadotropin (hCG) and Recombinant Chorionic Gonadotropin
- 6.3.2. Human Menopausal Gonadotropin (hMG)
- 6.3.3. Recombinant Follicle Stimulating Hormone (FSH)
- 6.3.4. Recombinant Luteinizing Hormone (LH)
- 6.3.5. GnRH Agonists

6.4. Other Hormonal Treatments
- 6.4.1. Hypothalamic Gonadotropin-Releasing Hormone (GnRH)
  - 6.4.1.1. Introduction
  - 6.4.1.2. Action Mechanism
  - 6.4.1.3. Administration Guideline
  - 6.4.1.4. Complications
- 6.4.2. Aromatase Inhibitors
  - 6.4.2.1. Definition and Use
  - 6.4.2.2. Mechanism of Action and Mode of Use
  - 6.4.2.3. Administration Guideline
  - 6.4.2.4. Types
  - 6.4.2.5. Advantages and Disadvantages

6.5. Use of Gonadotropin Analogues in Assisted Reproduction
- 6.5.1. Agonists
  - 6.5.1.1. Introduction and Main Agonists
  - 6.5.1.2. Origin, Chemical Structure and Pharmacodynamic Properties
  - 6.5.1.3. Pharmacokinetics and Method of Administration
  - 6.5.1.4. Effectiveness
- 6.5.2. Antagonists
  - 6.5.2.1. Types and Mechanism of Action
  - 6.5.2.2. Form of Administration
  - 6.5.2.3. Pharmacokinetics and Pharmacodynamics

6.6. Other Coadjuvant Pharmaceutical Products Used in Assisted Reproduction
- 6.6.1. Insulin-Sensitizing Drugs: Metformin
- 6.6.2. Corticoids
- 6.6.3. Folic Acid
- 6.6.4. Estrogens and Progesterone
- 6.6.5. Oral Contraceptives

6.7. Pharmacological Support of the Luteal Phase in In Vitro Fertilization
- 6.7.1. Introduction
- 6.7.2. Ways to Treat Luteal Phase Deficit
  - 6.7.2.1. Luteal Support with hCG
  - 6.7.2.2. Luteal Phase Supplementation with Progesterone
  - 6.7.2.3. Luteal Phase Supplementation with Estrogen
  - 6.7.2.4. Luteal Phase Maintenance with GnRH Agonists
- 6.7.3. Controversies
- 6.7.4. Conclusions

6.8. Complications of Ovarian Stimulation: Ovarian Hyperstimulation Syndrome (OHSS)
- 6.8.1. Introduction
- 6.8.2. Pathophysiology
- 6.8.3. Symptomatology and Classification
- 6.8.4. Prevention
- 6.8.5. Treatment

6.9. Commercial Presentations in Fertility Treatments
- 6.9.1. Ovitrelle®, Elenva®, Ovaleap®, Porgoveris®, Bemfola®, Monopur®, Gonal®, Puregon®, Fostipur®, HMG-Lepori®, Decapeptyl®, Cetrecide®, Orgaluntan®

6.10. Anesthetic Management in Assisted Reproduction
- 6.10.1. Introduction
- 6.10.2. Local Anesthesia
- 6.10.3. Opioids
- 6.10.4. Benzodiazepines
- 6.10.5. Inhalation and Intravenous General Anesthesia: Nitrous Oxide, Halogenated and Propofol
- 6.10.6. Localized Anesthesia
- 6.10.7. Conclusions

Module 7. Assisted Reproduction Techniques

7.1. Artificial Insemination
- 7.1.1. Definition
- 7.1.2. Types
- 7.1.3. Indications
- 7.1.4. Requirements
- 7.1.5. Procedure
- 7.1.6. IVF/ICSI Results and Pregnancy Probability
- 7.1.7. Definition and Differences
- 7.1.8. IVF/ICSI Indications
- 7.1.9. Requirements
- 7.1.10. Advantages and Disadvantages
- 7.1.11. Probability of Pregnancy
- 7.1.12. Procedure
  - 7.1.12.1. Oocyte Puncture
  - 7.1.12.2. Oocyte Evaluation
  - 7.1.12.3. Oocyte Insemination (IVF/ICSI)
    - 7.1.12.3.1. Other Insemination Techniques: IMSI, PICSI, ICSI+MACS, Use of Polarized Light
  - 7.1.12.4. Evaluation of Fertilization
  - 7.1.12.5. Embryo Culture
    - 7.1.12.5.1. Types
    - 7.1.12.5.2. Cultivation Systems
    - 7.1.12.5.3. Time-Lapse Culture Equipment
- 7.1.13. Possible Risks

7.2. Preimplantation Genetic Test (PGT)
- 7.2.1. Definition
- 7.2.2. Types
- 7.2.3. Indications
- 7.2.4. Procedure
- 7.2.5. Advantages and Disadvantages

7.3. Embryo Transfer
- 7.3.1. Definition
- 7.3.2. Embryo Quality and Selection
  - 7.3.2.1. Transfer Day
  - 7.3.2.2. Number of Embryos to Be Transferred
- 7.3.3. Assisted Eclosion
- 7.3.4. Procedure

7.4. Freezing and Vitrification
- 7.4.1. Differences
- 7.4.2. Sperm Freezing
  - 7.4.2.1. Definition
- 7.4.3. Egg Vitrification
  - 7.4.3.1. Definition
  - 7.4.3.2. Procedure
  - 7.4.3.3. Devitrification
  - 7.4.3.4. Advantages: Preservation and Donation
- 7.4.4. Embryo Vitrification
  - 7.4.4.1. Definition
  - 7.4.4.2. Indications
  - 7.4.4.3. Vitrification Day

7.4.4.4. Procedure
7.4.4.5. Devitrification
7.4.4.6. Advantages
7.4.5. Fertility Preservation (Experimental)
7.4.5.1. Ovarian Tissue
7.4.5.2. Testicular Tissue
7.5. Donation
7.5.1. Definition
7.5.2. Types of Donation
7.5.2.1. Egg Donation (OVODONATION)
7.5.2.1.1. Definition
7.5.2.1.2. Indications
7.5.2.1.3. Types of Ovodonation
7.5.2.1.4. Procedure
7.5.2.1.4.1. Donor Ovarian Puncture
7.5.2.1.4.2. Recipient Endometrial Preparation
7.5.2.2. Egg bank: Storage System
7.5.2.3. Advantages and Disadvantages
7.5.2.4. Sperm Donation
7.5.2.4.1. Procedure
7.5.2.5. Embryo Donation
7.5.2.5.1. Definition
7.5.2.5.2. Indications
7.5.2.5.3. Procedure
7.5.2.5.4. Advantages
7.5.2.6. Double Donation
7.5.2.6.1. Definition
7.5.2.6.2. Indications
7.5.2.6.3. Procedure
7.6. ROPA Method
7.6.1. Definition
7.6.2. Indications
7.6.3. Procedure
7.6.4. Legal Requirements
7.7. Traceability
7.7.1. Definition
7.7.2. Materials
7.7.3. Samples
7.7.4. Double Check
7.7.5. Technological Traceability Systems (Witness, Gidget)
7.8. Biovigilance
7.9. Other techniques
7.9.1. Endometrial Receptivity Test (ERA)
7.9.2. Study of the Vaginal Microbiome

Module 8. The Operating Room and the Assisted Reproduction Laboratory

8.1. The Surgical Unit
8.1.1. Surgical Area Zones
8.1.2. Surgical Clothing
8.1.3. Role of Nurses in the Assisted Reproduction Unit
8.1.4. Waste Management and Environmental Control
8.2. Follicular Puncture for Oocyte Collection
8.2.1. Definition
8.2.2. Features
8.2.3. Procedure and Material Required
8.2.4. Nursing Activities: Intraoperative
8.2.5. Nursing Activities: Post-Operative
8.2.6. Discharge Recommendations
8.2.7. Complications

8.3. Embryo Transfer
- 8.3.1. Definition
- 8.3.2. Features
- 8.3.3. Procedure and Material Required
- 8.3.4. Endometrial Preparation: Estrogen and Progesterone
- 8.3.5. Nursing Role during Embryo Transfer
- 8.3.6. Nursing Role after Embryo Transfer
- 8.3.7. Discharge Instructions
- 8.3.8. Complications

8.4. Sperm Collection in Patients with Azoospermia (Testicular Biopsy)
- 8.4.1. Sperm Introduction and Recovery
- 8.4.2. Methods
  - 8.4.2.1. MESA
  - 8.4.2.2. PESA
  - 8.4.2.3. TESE
  - 8.4.2.4. TESE
  - 8.4.2.5. TEFNA
- 8.4.3. Conclusions

8.5. Surgical Treatments for Infertility
- 8.5.1. Laparoscopy in Infertility
  - 8.5.1.1. Objectives
  - 8.5.1.2. Techniques and Instrumentation
  - 8.5.1.3. Indications
- 8.5.2. Hysteroscopy
  - 8.5.2.1. Introduction
  - 8.5.2.2. Diagnostic Techniques
  - 8.5.2.3. Hysteroscopic Distention Devices
  - 8.5.2.4. Operative Technique

8.6. The Laboratory as a Clean Room: Definition

8.7. Laboratory Structure
- 8.7.1. Andrology Laboratory
- 8.7.2. Embryology Laboratory
- 8.7.3. Cryobiology Laboratory
- 8.7.4. PGD Laboratory

8.8. Laboratory Conditions
- 8.8.1. Design
- 8.8.2. Pressure
- 8.8.3. Gas Control (CO2, O2, N2)
- 8.8.4. Temperature Control
- 8.8.5. Air Control (VOC's)
- 8.8.6. Lighting

8.9. Cleaning, Maintenance and Safety
- 8.9.1. Personnel Clothing and Hygiene
- 8.9.2. Laboratory Cleaning
- 8.9.3. Biosafety
- 8.9.4. Quality Control

8.10. Laboratory Equipment
- 8.10.1. Bells
- 8.10.2. Incubators
- 8.10.3. Microinjectors
- 8.10.4. Refrigerators
- 8.10.5. Nitrogen Tanks
- 8.10.6. Time-Lapse Equipment
- 8.10.7. Control of Equipment, Breakdowns and Repairs

8.11. Laboratory Working Times

Module 9. Psychological Support and Special Situations in Assisted Reproduction

9.1. Psychology of Human Reproduction
- 9.1.1. Reproductive Physiology
- 9.1.2. Human Sexuality: Functional and Dysfunctional
- 9.1.3. Definition of Sterility/Infertility
- 9.1.4. Infertile Couple Support

9.2. Assisted Human Reproduction Psychology
- 9.2.1. Beliefs about Assisted Reproduction
- 9.2.2. Psychological, Emotional, Behavioral, Cognitive and Emotional Aspects of Assisted Reproduction
- 9.2.3. Psychological Aspects of Genetic Studies
- 9.2.4. Psychological and Emotional Repercussions of Reproductive Treatments
- 9.2.5. Awaiting Results
- 9.2.6. Families Resulting from Assisted Reproduction
  - 9.2.6.1. Family Types and Emotional Nursing Support

9.3. Recurrent Gestational Loss
- 9.3.1. Causes
  - 9.3.1.1. Stress
- 9.3.2. Social, Cultural and Religious Beliefs
- 9.3.3. Possible Reactions to Repeat Abortion
- 9.3.4. Psychological, Cognitive-Behavioral Repercussions of Abortion
- 9.3.5. Psychosomatic Repeat Miscarriage
- 9.3.6. Intervention in Repeat Abortions
- 9.3.7. Indication for Psychotherapy: Nursing Support in Psychotherapy

9.4. Psychosocial Approach in Gamete Donation
- 9.4.1. Interviewing Gamete Donor Candidates
  - 9.4.1.1. Qualitative Assessment
  - 9.4.1.2. Quantitative Valuation
  - 9.4.1.3. Behavioral Assessment
  - 9.4.1.4. Psycho-Technical Evaluation
- 9.4.2. Gamete Donation Candidate Evaluation Report
  - 9.4.2.1. Re-Evaluation
- 9.4.3. Gamete Recipient Families
  - 9.4.3.1. Myths and Beliefs about Gamete Donation
  - 9.4.3.2. Frequently Asked Questions
  - 9.4.3.3. Disclosure of Origins According to Family Models

9.5. Assisted Reproduction Nursing Consultation: Psychosocial Approach
- 9.5.1. Holistic Counseling and Treatment in Assisted Reproduction Nursing
- 9.5.2. Primary Health Care Role of the Infertile Couple
  - 9.5.2.1. Target Population Recruitment
  - 9.5.2.2. Initial Interview: Reception, Information, Orientation, Referral to Other Professionals
- 9.5.3. Management of Communication with Assisted Reproductive Technologies Patients
  - 9.5.3.1. Communicative Skills
  - 9.5.3.2. Nurse-Patient Interpersonal Relationship
  - 9.5.3.3. Emotional Patient Care in Assisted Reproduction
    - 9.5.3.3.1. Detection of Emotional Problems in the Interview with the Patient
    - 9.5.3.3.2. Intervention and Prevention Strategies
    - 9.5.3.3.3. Support Groups
- 9.5.4. Principal Nursing Diagnoses (NANDA), Interventions (NIC) and Outcomes (NOC) in the Emotional Process of Assisted Reproduction

9.6. Special Situations
- 9.6.1. Reproductive Approach in the Oncology Patient
  - 9.6.1.1. How Does Cancer Treatment Affect Fertility?
  - 9.6.1.2. When is it Necessary to Preserve Fertility?
  - 9.6.1.3. Limits to Fertility Preservation
- 9.6.2. Fertility Preservation in Oncology Patients
  - 9.6.2.1. Ovarian Stimulation for Fertility Preservation in Oncology Patient
  - 9.6.2.2. Preservation Methods
    - 9.6.2.2.1. Cryopreservation: Oocytes, Embryos and Ovarian Tissue
    - 9.6.2.2.2. Hormone Therapy
    - 9.6.2.2.3. Ovarian Transposition

9.6.3. Fertility Preservation in Oncology Patients
9.6.3.1. Preservation Methods
9.6.3.1.1. Cryopreservation of Semen
9.6.3.1.2. Cryopreservation of Testicular Tissue
9.6.3.1.3. Hormone Therapy
9.6.4. Reproductive Approach and Preservation in Patients with Sex Change
9.7. Nutritional Advice in Assisted Reproduction
9.7.1. Nutrition and Infertility: Lifestyle
9.7.1.1. Obesity
9.7.1.2. Hormonal Problems
9.7.1.2.1. Hypothyroidism/Hyperthyroidism
9.7.1.2.2. Diabetes Mellitus
9.7.1.2.3. SOP
9.7.1.2.4. Endometriosis
9.7.2. Foods Recommended/Discouraged before and during Assisted Reproduction Treatment
9.7.2.1. Role of Vitamins
9.7.2.2. Role of Minerals
9.7.3. Myths and Truths About Feeding in Assisted Reproduction
9.7.4. Examples of Diet
9.8. Grief in Assisted Reproduction
9.8.1. Concept of Grief
9.8.2. Types of Grief in Assisted Reproduction
9.8.2.1. Infertility Bereavement
9.8.2.2. Mourning the Loss of the Invisible
9.8.2.3. Gestational Bereavement
9.8.2.4. Duel for Unsuccessful Implementations
9.8.2.5. Perinatal Bereavement
9.8.3. Therapeutic Advice for Overcoming Grief
9.8.4. Care Plan in the Bereavement Process
9.9. Assisted Reproduction Failure: New Alternatives
9.9.1. Adoptions
9.9.2. The Childless Family

Module 10. Legal and Ethical Aspects in Assisted Reproduction

10.1. Assisted Reproduction in Law
10.1.1. Introduction and Key Concepts to be Defined
10.2. Ethical and Legal Approach to Surrogacy
10.2.1. Ethical Debate For or Against: Breakdown of Points
10.3. Ethical Issues and Approaches
10.3.1. What are the Ethical Aspects to be Taken into Account in the Daily Practice of Infertility Treatments?
10.3.2. Ethical Limits to Treatment
10.3.3. Advanced Maternal Age Under Debate
10.3.4. Religious and Cultural Tendencies of Users as Influencing Factors in Undergoing Assisted Reproductive Techniques
10.3.5. Embryo Donation and Destruction: Ethical and Legal Issues
10.3.6. Growth of Assisted Reproduction as a Private Business - Access for All?
10.4. Research in Assisted Reproduction
10.4.1. Donation and Use of Human Gametes and Pre-embryos
10.4.1.1. Procurement of Cells of Embryonic Origin
10.4.1.2. Donation of Human Embryos and Fetuses
10.4.1.3. Donation Requirements
10.6.2. Genetic Analysis and Biological Samples
10.6.3. Biobanks
10.5. Mandatory European Guidelines

A comprehensive academic program, structured in well-developed teaching units, oriented towards learning that is compatible with your personal and professional life"

06

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:

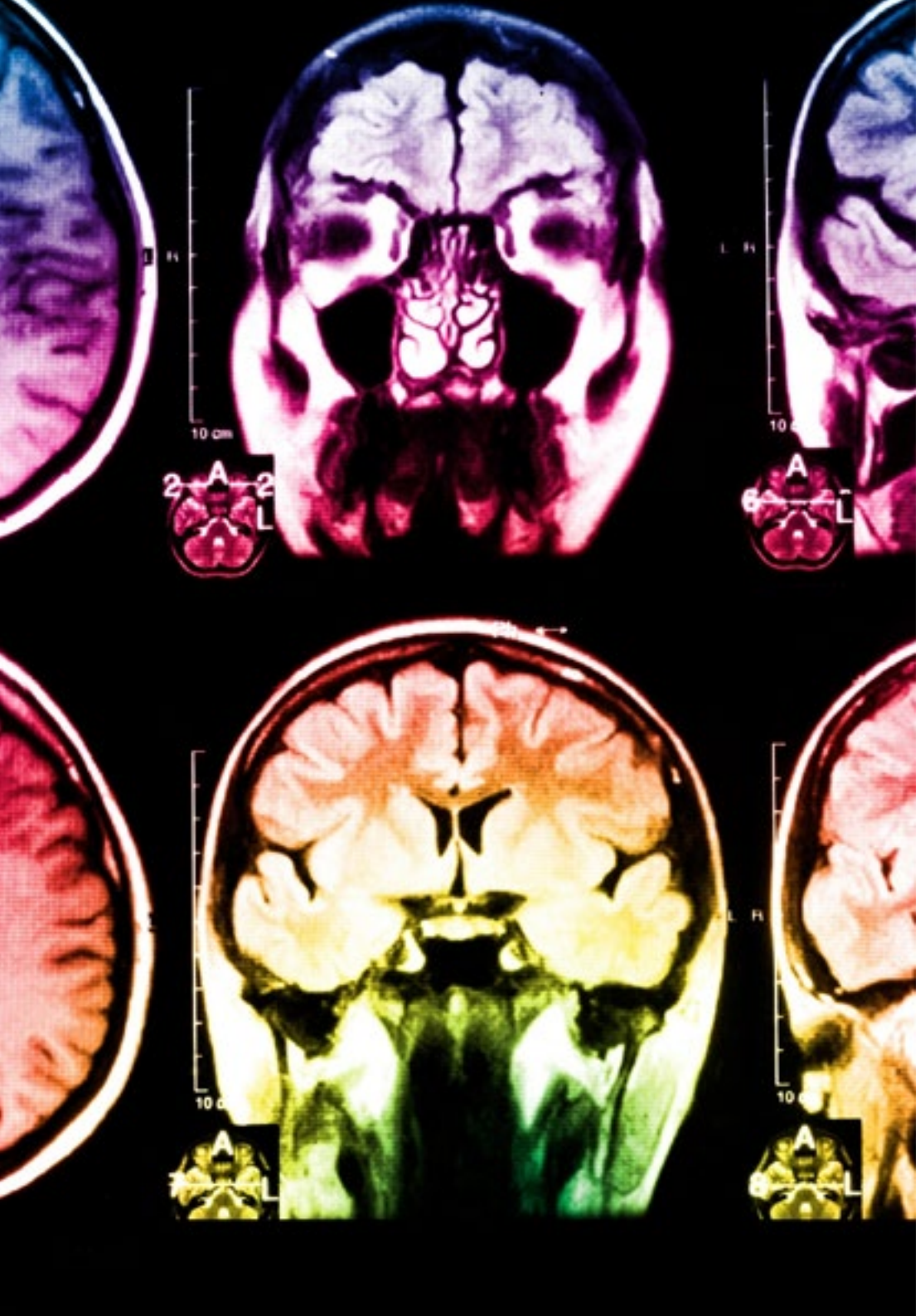
1. Nurses who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. The learning process has a clear focus on practical skills that allow the nursing professional to better integrate knowledge acquisition into 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 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.

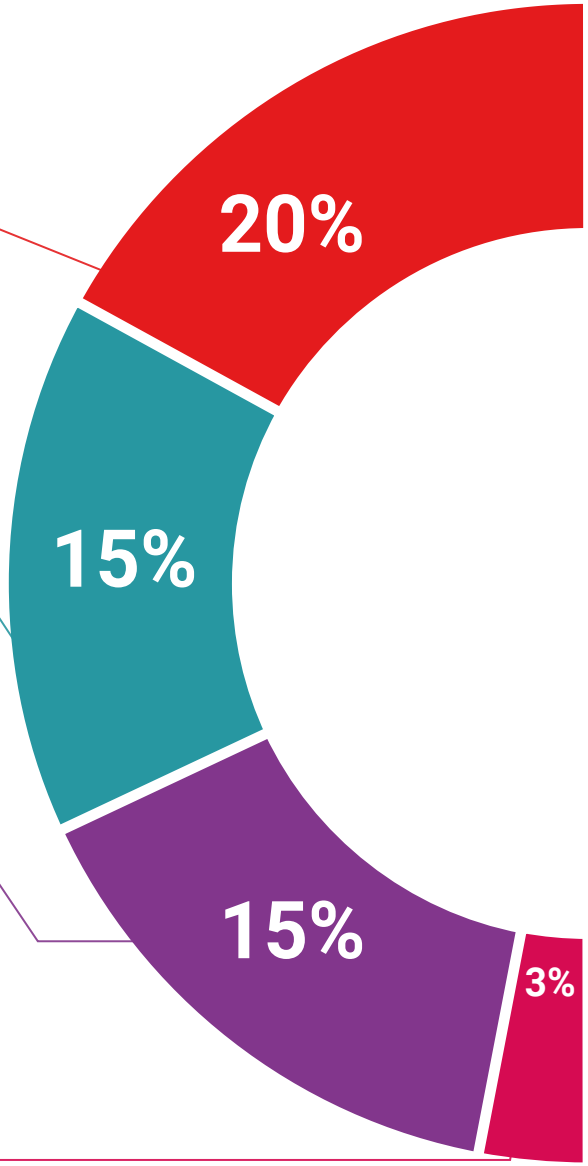
Interactive Summaries

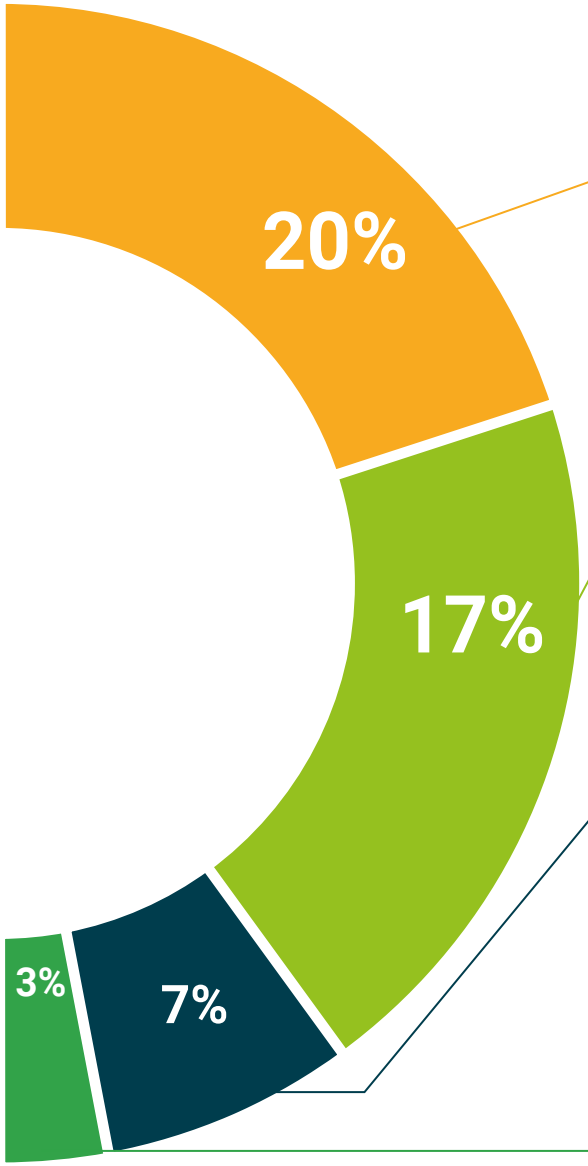
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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.





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.

07

Certificate

The Master's Degree in Assisted Reproductive Nursing guarantees you, in addition to the most rigorous and up-to-date training, access to a Master's Degree issued by TECH Global University.

Successfully complete this program and receive your university degree without travel or laborious paperwork"

This private qualification will allow you to obtain a **Master's Degree diploma in Assisted Reproductive 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** private qualification 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: **Master's Degree in Assisted Reproductive Nursing**

Modality: **online**

Duration: **12 months**

Accreditation: **60 ECTS**

tech global university

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

Master's Degree in Assisted Reproductive Nursing

This is a private qualification of 1,800 hours of duration equivalent to 60 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
Dean

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

Master's Degree in Assisted Reproductive Nursing

General Structure of the Syllabus

Subject type	ECTS credits
Compulsory (CO)	60
Optional (OP)	0
External Work Placement (WP)	0
Master's Degree Thesis (MDT)	0
	Total 60

General Structure of the Syllabus

Year	Subject	ECTS	Type
1º	Anatomy and Physiology of Reproduction	6	CO
1º	Study of Infertility in Women	6	CO
1º	Study of Male Infertility	6	CO
1º	Genetics and Immunology of Reproduction	6	CO
1º	Assisted Reproduction Consultation and the Donor Bank	6	CO
1º	Pharmacology	6	CO
1º	Assisted Reproduction Techniques	6	CO
1º	The Operating Room and the Assisted Reproduction Laboratory	6	CO
1º	Psychological Support and Special Situations in Assisted Reproduction	6	CO
1º	Legal and Ethical Aspects in Assisted Reproduction	6	CO

Dr. Pedro Navarro Illana
Rector

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*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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Master's Degree
Assisted Reproductive Nursing

- Modality: **online**
- Duration: **12 months**
- Certificate: **TECH Global University**
- Credits: **60 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Master's Degree

Assisted Reproductive Nursing

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