



UNIVERSITAS
Miguel Hernández

STUDY ABROAD

Clinical Simulation - Block 3

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**SURGICAL
& OBSTETRIC
ASPECTS
AND VIRTUAL REALITY**



UMH Area of Clinical Simulation



1- Surgical Aspects I: Training for Bladder Catheterization with Bandages

Instructors: Manuel Díaz & María Teresa Pérez.
Department of Pathology and Surgery.

1.1 Training for Bladder Catheterization

Basic concepts

- Knowledge of the anatomy of the urinary system.
- Become familiar with the equipment and supplies needed to perform bladder catheterization.
- Identification of indications and contraindications for this procedure.

Objectives

- Acquire the ability to perform a bladder catheterization correctly and safely.
- Acquire the ability to properly position the patient for the procedure.
- Recognize and manage the possible complications associated with bladder catheterizations.

Activities performed by students

- Preparation of the equipment and work area, including and hygiene and use of sterile gloves.

- Positioning of patient in the supine decubitus position with legs slightly separated.
- Insertion of the catheter via the urethra until the bladder, using the bladder catheterization trainer.
- Collection of urine and proper management of samples.
- Simulation of clinical situations to practice decision making and addressing complications.



3B Male Scientific Catheterization Simulator. Model W44005.

1.2 Training with Bandages

Basic concepts

- Knowledge of different types of bandages and their applications.
- Become familiar with the equipment and supplies needed to apply bandages.
- Identification of the indications and contraindications for each type of bandage.

Objectives

- Attain the skills to apply different types of bandages correctly and safely.
- Advance the ability to select the proper bandage depending upon the clinical situation.
- Recognize and manage possible complications associated with bandages.

Activities performed by students

- Preparation of the equipment and work area, including hand hygiene and use of sterile gloves.
- Application of bandages to cover wounds, ensuring proper coverage and protection of the wound.
- Application of bandages to immobilize limbs, using techniques such as the herringbone bandage or figure-eight bandage.
- Use of compression bandages to treat venous insufficiency, ensuring adequate and uniform compression.
- Simulation of clinical situations to practice decision making and managing complications.



2- Surgical Aspects I. Training with Sutures and Venous and Arterial Punctures

Instructor: Francisco Sánchez. Department of Pharmacology, Pediatrics and Organic Chemistry

These practices enable students to acquire technical skills in clinical suturing.

2.1 Suture training

Basic concepts

- Knowledge of the different types of sutures and their applications.
- Become familiar with the equipment and supplies needed to perform sutures.
- Identification of the indications and contraindications for each kind of suture.

Objectives

- Acquire the skills to perform different types of sutures correctly and safely.
- Attain the skills to select the proper suturing technique for each type of wound.
- Recognize and manage possible complications associated with sutures.

Activities performed by the student

- Preparation of the equipment and work area, including hand hygiene and use of sterile gloves.
- Perform simple and continuous sutures, ensuring correction approximation of the wound edges.
- Application of different knot techniques, such as manual knots and instrumented knots.
- Simulation of clinical situations to practice decision making and manage complications.



Training model for surgical knot tying.

2.1. Training with Venous and Arterial Punctures

Basic concepts

- Knowledge of anatomy relevant to the placement of peripheral and central venous lines.
- Become familiar with the equipment and supplies needed to perform venous punctures.
- Identification of the indications and contraindications for each type of venous type.

Objectives

- Acquire the ability to place peripheral and central venous lines correctly and safely.
- Become able to select the appropriate type of venous line in accordance with the clinical situation.
- Recognize and manage possible complications associated with the placement of venous lines.

Activities performed by students

- Preparation of the equipment and work area, including hand hygiene and use of sterile gloves.
- Positioning of the patient in the correct position for venipuncture.
- Insertion of the catheter into the correct peripheral or central vein by using the venipuncture trainer.
- Maintenance and care for the IV line, including the prevention of infections and management of complications.
- Simulation of clinical situations to practice decision making and manage complications.



IV Injection Arm P50. 3B Scientific.

3. Obstetric Aspects: Training for Normal Delivery (2 Hours)

Instructor: Asunción Quijada. Department of Public Health, History of Science and Gynaecology

Performing these procedures enable students to enhance technical skills and decision making for their future medical practice.

Basic concepts

- Knowledge of the stages of labor and delivery.
- Become familiar with the equipment and supplies needed to assist with a delivery.
- Identification of maternal positions and support techniques during delivery.

Objectives

- Acquire the ability to assist a normal delivery correctly and safely.
- Improve skills for recognizing and managing the different stages of labor and delivery.
- Identify and respond appropriately to common complications during delivery.

Prácticas

- Preparation of equipment and the work environment, including hand hygiene and the application of sterile gloves.
- Maternal positioning in various birthing positions, such as lateral decubitus, upright, or squatting positions.
- Assistance during the stages of dilation, including monitoring of contractions and cervical dilation.
- Assistance during the stage of expulsion, instructing the mother to push, and ensuring a safe birth of the baby.
- Managing the newborn immediately after delivery, including the Apgar assessment and umbilical cord care.
- Simulation of clinical situations to practice decision making and manage complications.



Prompt Flex Birthing Simulator

4- Learning with Virtual Reality and 3D Glasses (4 hours)

Instructors: María Dolores Grima (Area of Simulation) and Jos Manuel Ramos (Department of Medicine)

The use of virtual reality and 3D glasses enables students to improve their anatomical comprehension and clinical skills in an immersive manner and without risk to real patients.

Objectives

- Become familiar with the use of virtual reality technologies applied to medical training.
- Understand human anatomy in an interactive three-dimensional environment.
- Improve spatial orientation and the visualization of complex anatomical structures.
- Enhance basic clinical examination skills and procedures in virtual simulations.
- Experience simulated clinical scenarios to improve decision-making.
- Foster immersive learning and visual memory to reinforce theoretical knowledge.

Activities performed by students

- **3D Anatomical Exploration:** Visualization and manipulation of organs and systems using three-dimensional models.
- **Simulation of basic clinical examinations:** Hands-on practice of vital sign assessment, neurological examination, and auscultation using interactive virtual environments.
- **Training on medical procedures:** Simulate techniques, such as IV insertion, basic sutures, and examination maneuvers.
- **Interactive clinical scenarios:** Resolve clinical cases in real time with decision-making based on symptoms and signs in virtual patients.
- **Simulation of medical emergencies:** Training on rapid responses in situations including cardiopulmonary arrest and trauma.
- **Training on communication skills:** Practice conducting clinical interviews with virtual patients that respond in real time.
- **Review of applied anatomy:** Relationships between anatomical and pathological structures in interactive simulations.

Estimated number of program students: 6 - 12

This program is intended for both US university students who have either completed or are near completion of their pre-med programs as well as for students from other countries who have completed at least two years of their university medical training programs.

Student requirements

- **Area of knowledge: medicine**
- **Language requirements: B1 Spanish**