



ADVANCED MEDICINE

LECTURE FOUR : PRINCIPLE AND CRITICAL CARE MEDICINE

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Fourth Stage

المرحلة الرابعة

Lecture four

Theoretical

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What is critical care?

Critical care is medical care for people who have life-threatening injuries and illnesses. It usually takes place in an intensive care unit (ICU). A team of specially-trained health care providers gives you 24-hour care. This includes using machines to constantly monitor your vital signs. It also usually involves giving you specialized treatments.

Who needs critical care?

You need critical care if you have a life-threatening illness or injury, such as:

- 1. Severe burns**
- 2. COVID-19** 
- 3. Heart attack**
- 4. Heart failure**
- 5. Kidney failure**
- 6. People recovering from certain major surgeries**
- 7. Respiratory failure**
- 8. Sepsis**
- 9. Severe bleeding**

In a critical care unit, health care providers use lots of different equipment, including:

Catheters, flexible tubes used to get fluids into the body or to drain fluids from the body

Dialysis machines ("artificial kidneys") for people with kidney failure

Feeding tubes, which give you nutritional support Intravenous (IV) tubes to give you fluids and medicines Machines which check your vital signs and display them on monitors Oxygen therapy to give you extra oxygen to breathe in Tracheostomy tubes, which are breathing tubes. The tube is placed in a surgically made hole that goes through the front of the neck and into the windpipe.

Ventilators (breathing machines), which move air in and out of your lungs. This is for people who have respiratory failure.

Intensive care medicine, usually called critical care medicine, is a medical specialty that deals with seriously or critically ill patients who have, are at risk of, or are recovering from conditions that may be life-threatening. It includes providing life support, invasive monitoring techniques, resuscitation, and end-of-life care. Doctors in this specialty are often called intensive care physicians, critical care physicians, or intensivists.

Intensive care relies on multidisciplinary teams composed of many different health professionals. Such teams often include doctors, nurses, physical therapists, respiratory therapists, and pharmacists, among others. They usually work together in intensive care units (ICUs) within a hospital.

Patients are admitted to the intensive care unit if their medical needs are greater than what the general hospital ward can provide. Indications for the ICU include blood pressure support for cardiovascular instability (hypertension/hypotension), sepsis, post-cardiac arrest syndrome or certain cardiac arrhythmias. Other ICU needs include airway or ventilator support due to respiratory compromise. The cumulative effects of multiple organ failure, more commonly referred to as multiple organ dysfunction syndrome, also requires advanced care. Patients may also be admitted to the ICU for close monitoring or intensive needs following a major surgery.

There are two common ICU structures: closed and open. In a closed unit, the intensivist takes on the primary role for all patients in the unit. In an open ICU, the primary physician, who may or may not be an intensivist, can differ for each patient. There is increasingly strong evidence that closed units provide better patient outcomes.

Monitoring refers to various tools and technologies used to obtain information about a patient's condition. These can include tests to evaluate blood flow and gas exchange in the body, or to assess the function of organs such as the heart and lungs. Broadly, there are two common types of monitoring in the ICU: noninvasive and invasive.

Noninvasive monitoring

Noninvasive monitoring does not require puncturing the skin and usually does not cause pain. These tools are more inexpensive, easier to perform, and faster to result.

Vital signs which include heart rate, blood pressure, breathing rate, body temperature

Capnography to confirm correct position of an endotracheal tube

Echocardiogram to evaluate the function and structure of the heart

Electroencephalography (EEG) to assess electrical activity of the brain

Electrocardiogram to monitor the heart's rhythm and detect changes or abnormalities

Pulse oximetry for monitoring oxygen levels in the blood

Thoracic electric bioimpedance (TEB) cardiography to monitor fluid status and heart function

Ultrasound to evaluate internal structures including the heart, lungs, gallbladder, liver, kidneys, bladder, and blood vessels

Invasive monitoring

Invasive monitoring generally provides more accurate measurements, but these tests may require blood draws, puncturing the skin, and can be painful or uncomfortable.

Arterial line to directly monitor blood pressure and obtain arterial blood gas measurements

Blood draws or venipuncture to monitor various blood components as well as administer therapeutic treatments

Intracranial pressure monitoring to assess pressures inside the skull and on the brain

Intravesicular manometry (bladder pressure) measurements to assess for intra-abdominal pressure

Central line and peripherally inserted central catheter (PICC) lines for drug infusions, fluids or total parenteral nutrition

Bronchoscopy to look at lungs and airways and sample fluid within the lungs

Pulmonary artery catheter to monitor the function of the heart, blood volume, and tissue oxygenation

Intensive care usually takes a system-by-system approach to treatment.[9] In alphabetical order, the key systems considered in the intensive care setting are: airway management and anaesthesia, cardiovascular system, central nervous system, endocrine system, gastro-intestinal tract (and nutritional condition), hematology, integumentary system, microbiology (including sepsis status), renal (and metabolic), and respiratory system.

Airway management and anaesthesia

Cardiovascular

Gastro-intestinal tract

Renal

Respiratory

Drugs

Physiotherapy and mobilization

QUIZ



What is the ICU

Any questions?

*Thank
You*