

A Guide for Patients and Families

Guide on Common Haemodynamic Monitoring and Devices in Intensive Care Unit (ICU)



What is ICU?



ICU is a highly specialised care unit for patients who suffer from serious injury/illness that requires intensive monitoring and treatment.

Patients in the ICU require continuous haemodynamic monitoring and may have multiple devices (e.g., lines and infusion pumps) used to deliver treatment.

What is Haemodynamic Monitoring?

The goal of haemodynamic monitoring in the critically ill patient is to ensure optimal tissue perfusion and oxygen delivery while maintaining adequate blood pressure.

The parameters that are constantly being monitored are:

- ◆ Heart rate
- ◆ Non-invasive blood pressure
- ◆ Arterial blood pressure
- ◆ End-tidal carbon dioxide (ETCO₂)
- ◆ Respiratory rate
- ◆ Oxygen saturation
- ◆ Central venous pressure
- ◆ Intracranial pressure (ICP)

Note: Not all parameters are required at all times.

Monitoring of these parameters' aid in timely detection of any critical changes in the patient's condition. This would also help healthcare personnel understand how to treat the patients effectively.



HEART RATE (HR)

- ◆ Heart rate is the number of heartbeats in a minute, typically expressed as beats per minute (bpm).
- ◆ If there are any abnormal heart rates/rhythm (i.e., fast, slow, or irregular), the bedside monitor will sound to alert the healthcare personnel.



BLOOD PRESSURE (BP) MONITORING

- ◆ Blood pressure is expressed in terms of systolic pressure over diastolic pressure (mmHg), for example 140/90mmHg.
- ◆ Blood pressure can be measured in forms of:
 - Non-invasive blood pressure (NBP) monitoring which is measured using a cuff placed at the upper arm at an interval timing.
 - Arterial blood pressure (ABP) monitoring which measures through a fine cannula inserted in an artery. It allows continuous monitoring of the blood pressure.
- ◆ Blood pressure may vary and fluctuate with the underlying medical problem.



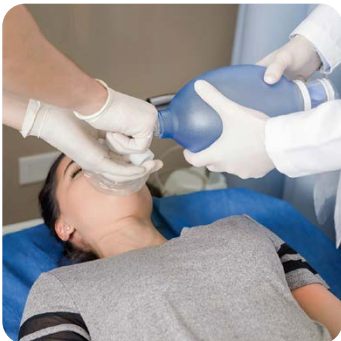
OXYGEN SATURATION (SpO₂) MONITORING

- ◆ SpO₂ measures the oxygen level in the body, using an oxygen probe placed on a finger.



RESPIRATORY RATE

- ◆ Respiratory rate is the number of times that an individual breathes in and out.



END-TIDAL CARBON DIOXIDE (ETCO₂)

- ◆ Measure the level of carbon dioxide that is released at the end of each breath.



CENTRAL VENOUS PRESSURE (CVP) MONITORING

- ◆ Central venous pressure measures the fluid status in the body. It enables the healthcare personnel to give appropriate treatment based on the trends of the reading.



INTRACRANIAL PRESSURE (ICP) MONITORING

- ◆ Intracranial pressure monitoring measures the excessive fluid such as cerebrospinal fluid (CSF), swelling, bleeding, tumors, infection inside your skull and on the brain tissue. The increase in volume over-fills the limited space in patient's skull and puts pressure on the brain.

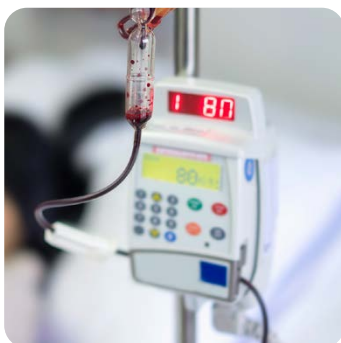
The Types of Devices Found in ICU:

PATIENT CONTROLLED ANALGESIA (PCA)



A type of handheld controller which allows patients to control the amount of medication required to relieve the pain.

BLOOD PUMP MONITORS



A type of machine which measures the amount of blood being pump by the heart.

INFUSION PUMPS



Pumps that help to deliver intravenous fluid or medication.

Care and Management



The monitoring devices will alarm when readings are out of range, but do not be alarmed as the nurses will be attending to the alarms and perform appropriate intervention.

Others

Please consult the doctors or nurses for more information.



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