PEDIATRICS INSTRUMENTS

TUBES AND CATHETERS

Endotracheal Tubes: They are used for intubation to maintain the airway in case of cardio-respiratory arrest to create artificial ventilation. In neonates also, it is used in the treatment of meconium aspiration syndrome


MEDLINE
ID 6.0
OD 9.0
116cm
118cm
120cm
122cm
124cm

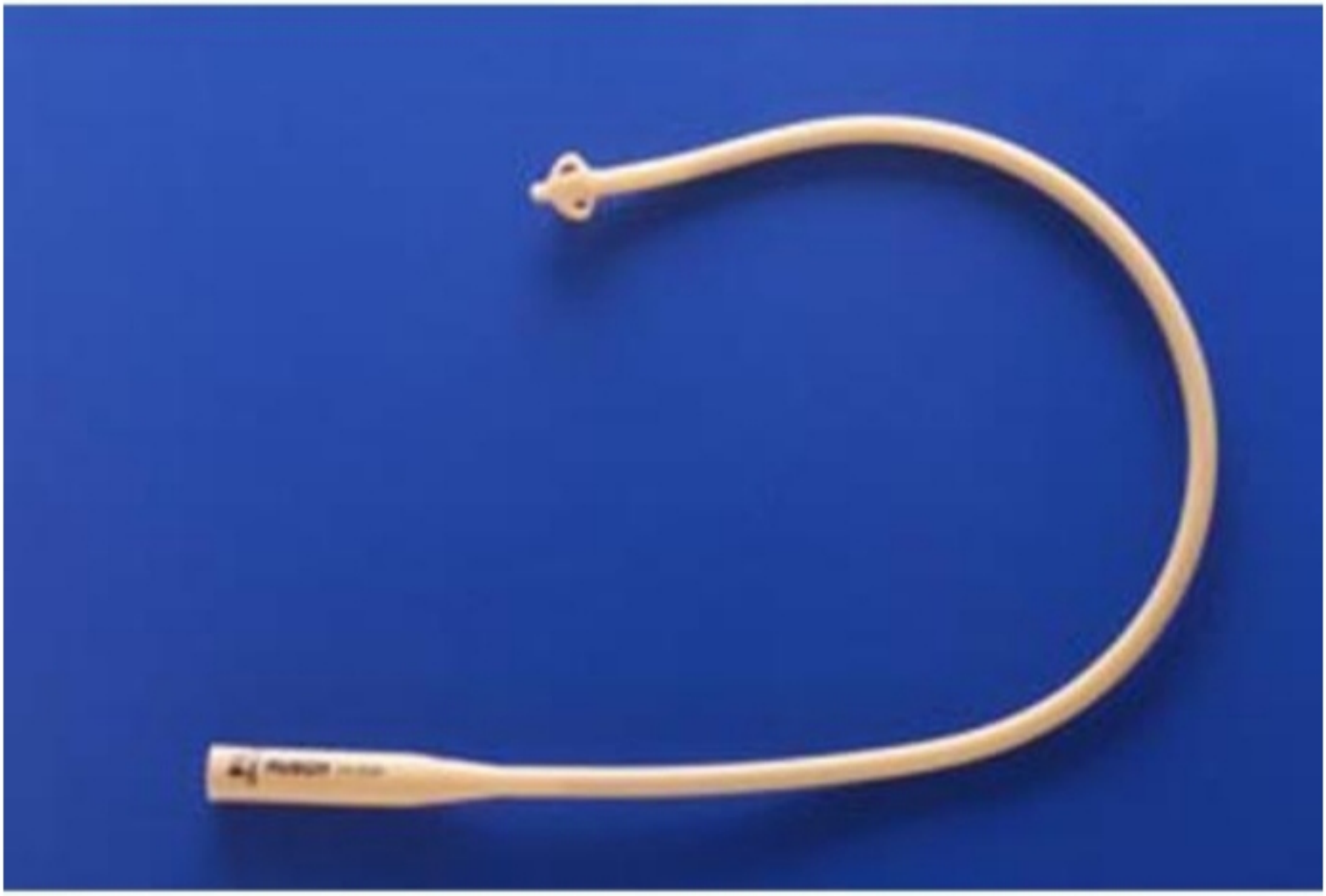
Ryle's tube: It is mainly used for feeding in patients with lower cranial nerve palsies, in unconscious patients and in patients with PEM. It is also used for doing gastric lavage in cases of poisoning. It is used to aspirate gastric contents in case of hematemesis, intestinal obstruction, post surgery and gastric acid aspiration for gastric function tests.

Tongue Depressor: used for depressing the tongue to examine the throat and oral cavity. They are also used for spatula test in case of suspected tetanus, to examine the gag reflex and to perform posterior rhinoscopy.

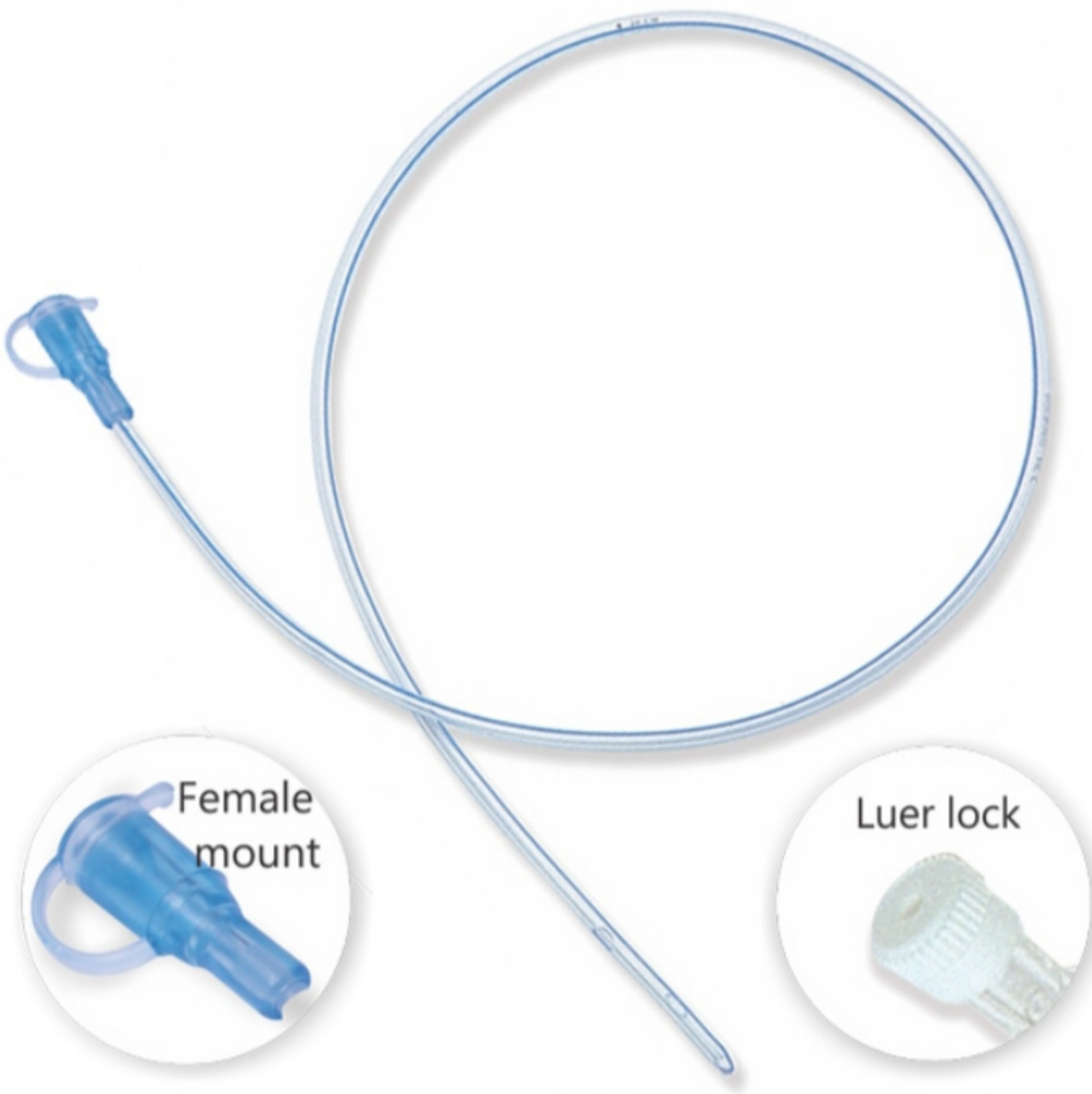
Thermometer: used for measuring body temperature

Flatus tube: It is reusable rubber tube used for the removal of flatus .It is also used for the treatment of sigmoid volvulus and intussusception. It is used also for barium enema.

Moalect's catheter: Initially it was used for bladder drainage in females.However, now it is used only as a intercostal drainage catheter in case of empyema. It is also used as a perinephric drain in post nephrectomy patients and as a condom catheter in male patients.



Infant feeding tube: It is also used in treatment of volvulus in infants and for diagnosis of tracheo-esophageal fistula, duodenal atresia, choanal atresia and imperforate anus. It can be used to collect the gastric lavage for pus cells, meconium and for giving stomach wash.



Simple rubber catheter: used for giving bladder wash, enema, bowel wash and to drain the urine in case of acute retention of urine. It is also used for retrograde cystourethrogram (MCU).

Urine bags: used for collection of urine in a catheterised patient. It has an air tight mechanism which prevents infection of the urine.

MONITORS

Apnea monitors: are devices that help to detect apnea in child. They are used both in NICU and home setting. They especially useful in infants having frequent apneic spells and are at the risk of dying.


RAN


SmartMonitor 2

Blood pressure monitors

Blood Pressure - The force applied per unit area is called pressure. Similarly, blood pressure is defined as the force of blood on per unit area of blood vessel. Blood pressure is usually measured in the right arm in the brachial artery and is measured in millimeter of mercury. The variability in the blood pressure leads to two readings: the systolic BP and diastolic BP. Systolic pressure is the pressure exerted by blood on the blood vessel which occurs when the heart contracts or expands and is the peak pressure. Diastolic pressure is the pressure reading that occurs when the heart is relaxing and thus is a lower reading.

Blood pressure is measured by invasive and non-invasive methods. The invasive method requires intra-arterial catheterization and is the most accurate method, but this method is not done routinely due to its invasive nature. Hence, the standard practice of monitoring the blood pressure is non-invasive nature and all the blood pressure monitors seen hereafter are non–invasive.

mercury filled blood pressure monitors: mercury filled sphygmomanometer were maximally used for measuring the blood pressure even in intensive care settings.

Aneroid Blood Pressure Monitor: Aneroid blood pressure monitor includes a cuff, mechanical bulb, deflating valve and a round monitor. The basic difference in mercury sphygmomanometer and aneroid manometer is the round monitor that replaces the mercury column. This monitor has a round dial covered with glass and a metal spring that gives the reading.

Digital Blood Pressure Monitor: This model again contains cuff but have semi automatic and fully automatic models.

Finger blood pressure monitor: can be used by in inserting the index finger in the adjustable cuff. The automatic cuff fits to size and inflates and shows the reading LCD panel.

Wrist blood pressure monitor: Wrist blood pressure monitor can be used around the wrist and the button automatically inflates the cuff. The reading is than shown on the LCD panel.

Multiparameter Monitor

The multiparameter monitors are designed to give number of information on one screen and hence provides multiple information that is needed to understand the patient condition. It has emerged as a monitor to offer flexible solution for varying critical care need.

They provide a comprehensive understanding of patient by giving a broader monitoring scope. These monitors provide reading such as heart rate, central venous pressure, non-invasive blood pressure, ECG, SpO2, PaCO2 and invasive blood pressure and temperature. The monitor has alarm where the parameters can be set and the care giver will be alerted for change beyond the set parameter.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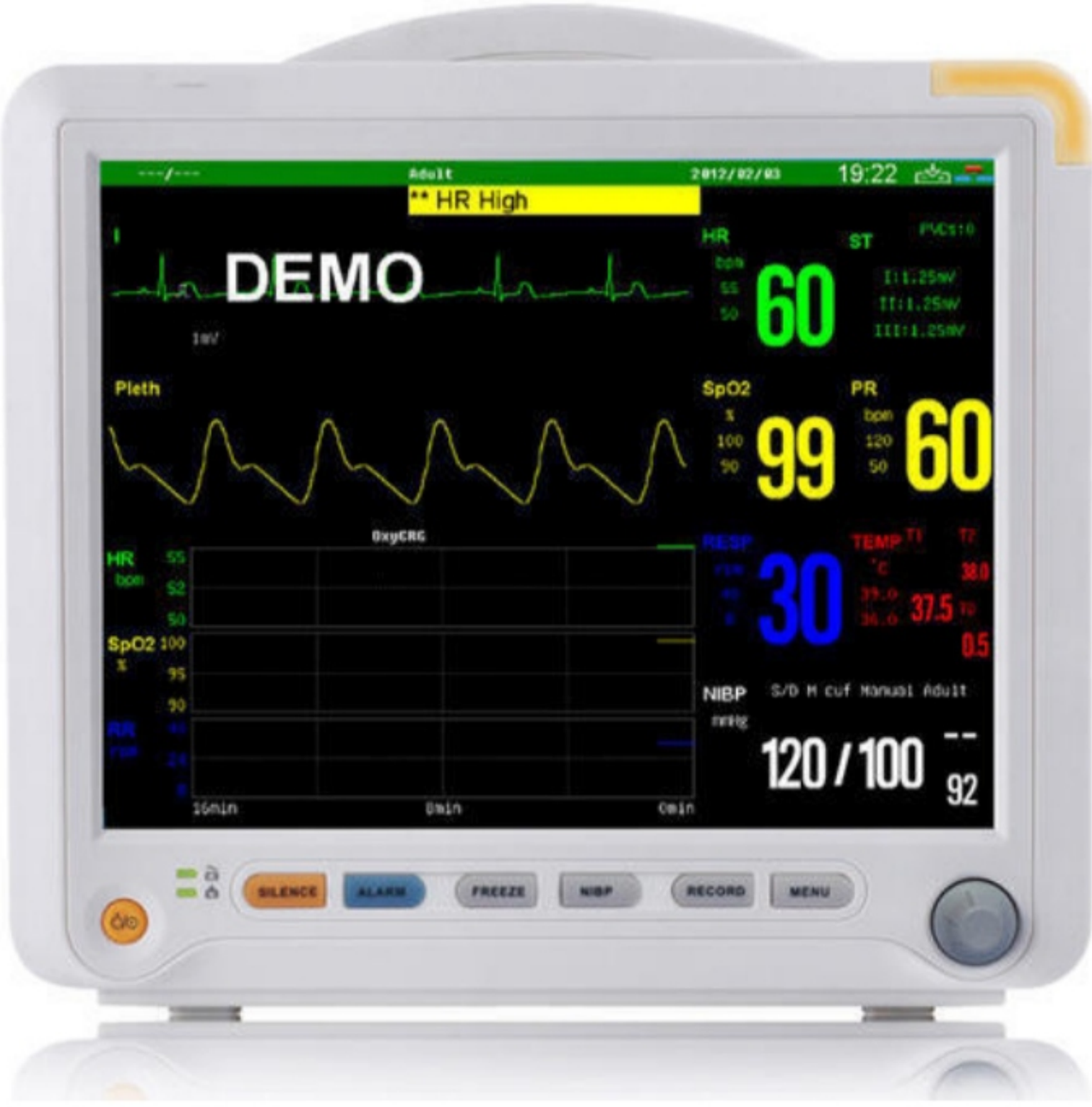
NIHON KOHDEN


Adult
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** HR High
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HR
ST
60
Pleth
SpO2
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99
60
OxyCRG
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TEMP
30
37.5
NIBP
S/D M cuf Manual Adult
120 / 100
92
SILENCE
ALARM
FREEZE
NIBP
RECORD
MENU

SYRINGES

Syringe pump: is designed to deliver drug at a predetermined rate and speed. In recent years, pharmaceutical companies have developed more and more concentrated and effective medicine. Hence, these medicines are required to be injected very slowly as well as continuously. Syringe pumps are particularly helpful under such circumstances as they are programmed to do deliver drug through the vein at a determined rate.


mindray
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Infusion pumps: are devices that are used to deliver therapeutic fluids which can be either medication or nutrients at a predetermined rate.

An inline manometer: is used to check the pressure of air (or liquid) depending on the instrument with which it is coupled. The instrument is connected through an opening that already exists for connecting pressure gauge. The air or liquid will enter to the tube and the pressure will be shown on the pressure gauge.

Breast pump: is a device that is used by mothers who want their baby to be fed mothers milk even when they are not around. In the 21st century, a large number of mothers are working, especially in metros. When we discuss about newborn babies, mother's milk is strongly recommended by doctors. But when it comes to working mothers, they are not available every time for the baby so that they can feed breast milk to the baby when required. In such conditions, mothers can store breast milk in a bottle or flask through breast pump which can be fed at the appropriate time to the baby by care takers, or father of the bay or any relative who is taking care of the baby.


Advanced
evenflo

INCUBATORS

Radiant Warmer: is a body warming device to provide heat to the body. This device helps to maintain the body temperature of the baby and limit the metabolism rate. Heat has a tendency to flow in the heat gradient direction that is from high temperature to low temperature. The heat loss in some newborn babies is rapid; hence body warmers provide an artificial support to keep the body temperature constant. In certain areas with very cold climate, babies are kept on Radiant Warmer for couple of hours immediately after birth to ensure the baby is stabilized after birth.

Incubators: are device that provides sufficient warmth to the body to maintain a desired temperature. Premature babies have very less fat around them and lose heat rapidly to the surrounding environment. The incubator plays an important role in maintaining the small environment of desired temperature which minimizes the heat loss. Once the heat loss is reduced, the nutrition given to premature babies will be utilized in organ development and weight gain.


TSE
SI-600
ALARM
TSE

Nebulizer: is a device that is used to deliver liquid medication in the form of spray (vapor form or mist) which can be inhaled by the patient. Thus, nebulizer assists in delivering the medication (which is generally in liquid form) in a fine mist which can be inhaled and this helps in treatment of respiratory disease.

Photo therapy: Photo therapy is still considered to be the most widely used method to treat neonatal jaundice. The commonest cause of neonatal jaundice is associated with excess indirect bilirubin in the blood and phototherapy helps to break the concentration of the bilirubin. Though blue light alone is not the factor, and importance is also given to wavelengths as well as the intensity of light. The right intensity of light helps to break the bilirubin in the skin and reach to a safe level while too high intensity can cause burns.

Weighing Scale: is a device used to measure the weight of person and it is among the common used device by doctors. The weighing scale has two major variants, the mechanical and the digital weighing scales.

Mechanical ventilator

A machine that helps in the process of breathing mechanically by helping in movement of air into and out of the lungs is called as mechanical ventilator. It helps to sustain breathing in a patient who is unable to breathe properly (has respiratory failure). Ventilators are of 2 types: positive pressure ventilators and negative pressure ventilators. Negative pressure ventilators (iron lung machines are no longer used now).

Absolute indication for intubation and mechanical ventilation are:

- Emergency
- Apnea and severe irregularity of spontaneous breathing
- Severe respiratory failure
- Ineffectiveness of oxygen therapy by mask, CPAP or non-invasive ventilation

Advantages of mechanical ventilation:

- Correct ventilation of both lungs and progressive improvement of lung pathology
- Improvement of oxygenation and reduction of hypercapnia
- Reduction of respiratory fatigue and oxygen consumption
- Protection of airways and efficacious bronchial suctioning if tracheal intubation is performed.

Modes of ventilation: Mechanical ventilation using positive pressure can need airway invasion using an endotracheal tube or, as is being more frequently seen, non-invasion of airways can be performed (use of facial and nasal masks).

CRITICAL CARE

Ambu bag / self inflating bag: They are instruments used to provide oxygen during intermittent positive pressure respiration (IPPR) via an endotracheal tube or a facemask. They are used in emergencies when somebody is facing breathing difficulties to provide artificial ventilation.

Laryngoscope: It is an instrument used for intubation and direct laryngoscopy. It consists of two parts the blade and the handle. The handle contains the battery container, which acts as an energy source for the light source.

Continuous Positive Air Pressure (CPAP): The purpose of Continuous Positive Air Pressure (CPAP) is to provide a positive pressure to help a child to breath during the respiratory cycle. Through Continuous Positive Air Pressure treatment, pressurized air is delivered to the child's lungs which assist the child in breathing. CPAP does not breathe for the patient, but it helps the patient to breathe. Here positive intrapulmonary pressure is applied artificially to the airways, whereby distending pressure is created in the alveoli throughout the respiratory cycle in a spontaneously breathing baby. It prevents alveolar atelectasis, enhances & maintains FRC resulting in reopening of collapsed/unstable alveoli leading to improved oxygenation & ventilation.

Oropharyngeal airways: They are metal, plastic or elastomeric instruments, which help to maintain the patency of the airway in an unconscious patient who is breathing spontaneously. They prevent the tongue from falling back by fitting snugly in the oral cavity. They come in various sizes and the correct size is calculated from the angle to the mouth to the angle of the jaw. Care must be taken to avoid using a larger size as the tip may press the epiglottis against the posterior pharyngeal wall causing airway obstruction. If smaller size tube is used, it may push the tongue into the posterior pharynx causing airway obstruction.

Oxygen hood: These are transparent plastic shell that surrounds the baby head. The use of this hood comes when you have to avoid direct flow of cold oxygen on baby's face and head. The shell are designed in such a way so that other body parts like chest, stomach etc. can be accessed. The opening is generally softly padded keeping in mind the soft skin of the baby so that they don't hurt themselves. The oxygen hood is available in various sizes.

Resuscitator oxygen reservoir: is attachment for resuscitation bag and helps to provide concentrated oxygen. It helps to increase the FIO2 of the oxygen being supplied. The reservoir is attached to the resuscitator bag and delivers 100% FIO2.

ABG Machine: Used to measure arterial blood gases

Defibrillator: A defibrillator is a device that gives a high energy electric shock to the heart through the chest wall to someone who is in cardiac arrest.