

Core Medical Equipment



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Core medical equipment

“Core medical equipment” refers here to technologies that are commonly considered as important or necessary for specific preventive, diagnostic, treatment or rehabilitation procedures carried out in most health care facilities.

Today, there are more than 10,000 types of medical devices available. The selection of appropriate medical equipment always depends on local, regional or national requirements; factors to consider include the type of health facility where the devices are to be used, the health work force available and the burden of disease experienced in the specific catchment area. It is therefore impossible to make a list of core medical equipment which would be exhaustive and/or universally applicable.

With that being said, we have reproduced hereafter a set of core medical equipment fact sheets which have been issued by the ECRI Institute and the GMDN Agency, with a view to raising stakeholders’ awareness about their existence and their functionality.

Each fact sheet displays a type of medical equipment, the health problems addressed by the device, the operation procedures, its typical size, weight and price range, and infrastructure requirements for effective and safe use. Technologies are placed into context of existing nomenclature systems; they are not specific to any brand, model or vendor. The equipment is classified under the following categories: therapeutic, diagnostic, chronic disease and child health.

The WHO Department of Essential Health Technologies is planning to continuously update the list of core medical equipment and make it publicly available on the WHO website for information purposes, subject to the disclaimers here below.

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Analyzer, Laboratory, Hematology, Blood Grouping, Automated

UMDNS

16817 Analyzers, Laboratory, Hematology, Blood Grouping, Automated

GMDN

56712 ABO/Rh(D) blood grouping analyser IVD, automated

Other common names:

Blood type analyzer, ABO blood typing system, ABO blood typing system; Blood Grouping System

Health problem addressed

Blood grouping systems perform basic blood processing tests that include ABO grouping and subgrouping, Rh and other red cell phenotyping, and antibody detection. These tests determine factors that can cause transfusion reactions such as red cell hemolysis, anaphylaxis, and other immunologic and nonimmunologic effects.

Product description

Floor-standing or benchtop device includes a rack or tray onto which patient blood sample tubes are loaded; the samples are mixed with reagents to determine blood type and the results are displayed on a monitor; cabinets or compartments store reagent vessels; a monitor, keyboard, mouse, and printer (or entire computer) may be connected for programming, data entry, and to view and print testing results.

Principles of operation

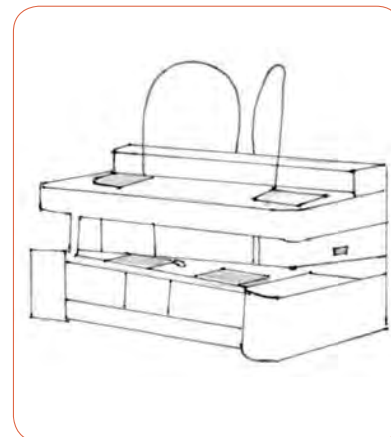
Blood tube containing ethylenediamine-tetraacetic acid (EDTA) anticoagulant is loaded onto the analyzer, and the operator usually centrifuges them to separate the RBCs from the plasma. Automated analyzers typically resuspend the RBCs in saline and load the diluted samples onto microplates to which reagents (known antisera) have been added. Blood group identity occurs when the known antiserum, containing antibodies, clumps (agglutinates) RBCs that have a corresponding antigen. Bar-code labels provides a means of sample tracking.

Operating steps

Technicians load tubes into the sample tray and keep reagents filled; tests are programmed either via a touchscreen panel on the instrument, a computer, or the required test information is on the tube's printed bar code.

Reported problems

Operators should be aware of the risk of exposure to potentially infectious bloodborne pathogens during testing procedures and should use universal precautions, including wearing gloves, face shields or masks, and gowns.



Use and maintenance

User(s): Laboratory technician

Maintenance: Biomedical or clinical engineer

Training: Initial training by manufacturer and manuals

Environment of use

Settings of use: Hospital, blood bank, clinical laboratory

Requirements: Line power, water supply, benchtop or floor space, biohazard disposal

Product specifications

Approx. dimensions (mm): 1,000 x 1,750 x 900

Approx. weight (kg): 50-500

Consumables: Reagents, blood tubes

Price range (USD): 115,000 - 225,000

Typical product life time (years): 5-7

Shelf life (consumables): EDTA: 1 year

Types and variations

Benchtop or floor-standing



Anesthesia Unit

UMDNS

10134 Anesthesia Units

GMDN

47769 Anaesthesia unit, mobile

Other common names:

Anesthesia machines; Anaesthesia apparatus; Gas-machine, anesthesia

Health problem addressed _____

Anesthesia units dispense a mixture of gases and vapors and vary the proportions to control a patient's level of consciousness and/or analgesia during surgical procedures.

Product description _____

An anesthesia system comprises of a gas delivery platform, a data analysis and distribution system, and physiologic and multigas monitors (optional in most units), which indicate levels and variations of several physiologic variables and parameters associated with cardiopulmonary function and/or gas and agent concentrations in breathed-gas mixtures. Manufacturers typically offer a minimum combination of monitors, alarms, and other features that customers must purchase to meet standards and ensure patient safety.

Principles of operation _____

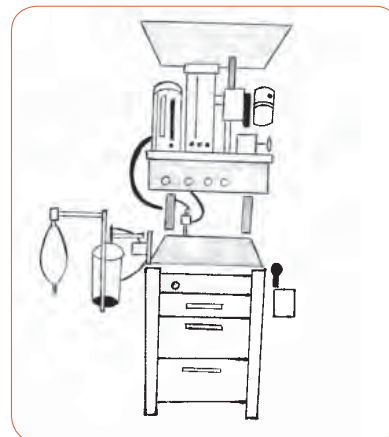
Because O₂ and N₂O are used in large quantities, they are usually drawn from the hospital's central gas supplies. Vaporizers add a controlled amount of anesthetic vapor to the gas mixture. An automatic ventilator is generally used to mechanically deliver breaths to the patient. The ventilator forces the anesthesia gas mixture into the patient's breathing circuit and lungs and, in a circle breathing system, receives exhaled breath from the patient as well as fresh gas. A scavenging system captures and exhausts waste gases to minimize the exposure of the operating room staff to harmful anesthetic agents. Scavenging systems remove gas by a vacuum, a passive exhaust system, or both.

Operating steps _____

A mask is placed over the nose and mouth. The anesthesia unit dispenses a mixture of gases and vapors and varies the proportions to control a patient's level of consciousness and/or analgesia during surgical procedures. The patient is anesthetized by inspiring a mixture of O₂, the vapor of a volatile liquid halogenated hydrocarbon anesthetic, and, if necessary, N₂O and other gases.

Reported problems _____

One of the greatest dangers of anesthesia is hypoxia, which can result in brain damage or death, though the administration of concentrated O₂ (100%) may be toxic. Gas with excessive CO₂ concentration, an inadequate amount of anesthetic agent, or dangerously high pressure may cause hypoventilation, compromised cardiac output, pneumothorax, and asphyxiation. Contamination of the anesthesia breathing circuit may lead to nosocomial infections.



Use and maintenance _____

User(s): Anesthesiologist, nurse anesthetist, medical staff

Maintenance: Biomedical or clinical engineer/technician, medical staff, manufacturer/servicer

Training: Initial training by manufacturer, operator's manuals, user's guide, some manufacturers offer offsite training or remote training

Environment of use _____

Settings of use: Hospital (surgery), ambulatory surgery centers

Requirements: Uninterruptible power source, O₂ fail-safe and hypoxic mixture fail-safe systems, gas cylinder yokes for O₂ if central supplies fail, internal battery (for units with automatic ventilators) capable of powering the unit for at least 30 minutes

Product specifications _____

Approx. dimensions (mm): 1,500 x 700 x 700

Approx. weight (kg): 130

Consumables: Anesthetic agents, tubing, masks

Price range (USD): 5,000 - 100,000

Typical product life time (years): 8-10

Shelf life (consumables): Variable

Types and variations _____

Cart mounted, ceiling mounted, wall mounted, mobile



Apnea Monitors

UMDNS

12575 Monitors, Bedside, Respiration, Apnea

GMDN

35194 Respiratory apnoea monitoring system

Other common names:

Cardiorespiratory monitors; Monitor, recording, apnoea

Health problem addressed

Apnea monitors detect the cessation of breathing (apnea) in infants and adults who are at risk of respiratory failure and alert the parent or attendant to the condition. Some prolonged respiratory pauses result in low oxygen concentration levels in the body, which can lead to irreversible brain damage and, if prolonged, death.

Product description

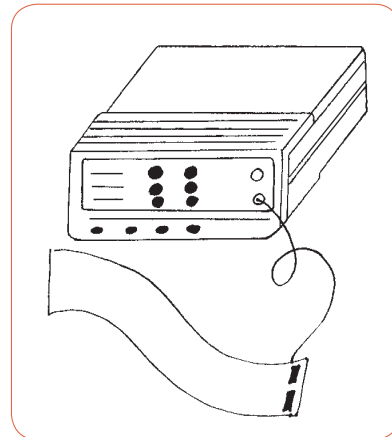
The components of apnea monitors depend specifically on the type. However, in general they are composed of a set of sensors which obtain the information of different physiological parameters. This information is passed to a micro computer system, which analyses the sensors' information and determines if apnea is occurring.

Principles of operation

Monitors that use impedance pneumography detect small changes in electrical impedance as air enters and leaves the lungs and as the blood volume changes in the thoracic cavity. Mattress-type motion sensors typically monitor changes in the capacitance or resistance of a mattress transducer. Pneumatic abdominal sensors also detect breaths as changes in pressure. More direct methods of respiration detection monitor the airflow into and out of the lungs; these include thermistors, proximal airway pressure sensors, and carbon dioxide (CO₂) sensors.

Operating steps

The apnea monitor is attached to the patient using appropriate sensor for the measurement technique (e.g., mattress motion sensor, pneumatic abdominal sensors, thermistors, proximal airway pressure sensors, carbon dioxide (CO₂) sensors, cannula). Once connected, as the patient breathes, the unit monitors different body parameters. If an alarm sounds, the operator must attend the patient immediately.



Use and maintenance

User(s): Nurse, medical staff, home care providers

Maintenance: Biomedical or clinical engineer/technician, medical staff, manufacturer/servicer

Training: Initial training by manufacturer, operator's manuals, user's guide

Environment of use

Settings of use: Hospital, home, ambulatory care center, nursery

Requirements: Uninterruptible power source, battery backup

Product specifications

Approx. dimensions (mm): 150 x 120 x 120

Approx. weight (kg): 0.75

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_28755

