Continuous Positive Airway Pressure, bubble

Country of origin | United States

Primary function | Treatment

Health problem addressed

Preterm birth is the second leading cause of death in children under 5, with over 1 million babies dying directly from complications of preterm birth. In the developed world, Continuous Positive Airway Pressure (CPAP) is the gold standard treatment for respiratory distress syndrome (RDS). This device is based on CPAP technology and aims to treat neonates, particularly premature neonates, suffering from RDS in low-resource settings.

Disease addressed

Diseases of the respiratory system; pregnancy, childbirth, and the puerperium; certain conditions originating from the perinatal period.

Technical descriptions

The device consists of a flow source, pressure source, and patient tubing. The flow source, which is contained within a sheet metal enclosure, supplies a flow of room air and blends room air with supplemental oxygen. The pressure source is a column of water, and the user can adjust the pressure level by adjusting the level of water in the bottle. Infant-sized nasal prongs, connected to the patient tubing, provides the pressurised air flow to the patient.

Developer's claims of products benefits

Oxygen is the standard treatment for neonates with RDS in low-resource settings, although oxygen does not provide the pressure necessary to keep lungs inflated, and can be an ineffective treatment for many neonates. This technology is a low-cost, easy to use device that is designed to keep the patientês lungs inflated. The only additional components required are a power supply and source of oxygen. The device is designed to be very easy to assemble and use.

Operating steps

Fill the bottle to the specified pressure level. Attach the bottle tubing and the patient tubing to the device and attach the nasal prongs to the end of the patient tubing. Plug the power cord into an outlet and turn on the device. Set the oxygen flow and the total flow on the device. Attach the nasal prongs to the patient. Check for bubbling in the water bottle to confirm that the patient is receiving the pressurised air.

Regulatory status and standards compliance

European Community (CE-mark). The device is compliant with: ISO 14971, ISO 980, ISO 1041, ASTM D4169-09, ISO 10993, EC 60601.

Use and maintenance

User: Nurse, general physician, specialised physician

Training: A one-day training of the assembly, use, maintenance, and repair of the device is required in order for clinicians to be comfortable with and capable of providing CPAP therapy. Users are provided with a printed user manual and repair manual, as well as online training videos and documents.

Maintenance/Calibration required: No

Environment of use

Setting: Rural settings, urban settings, indoors, secondary level (general hospital), tertiary level (specialists hospital).

Facility requirements: Gas supply.

Energy requirements: Continuous power supply.

Product specifications

Weight (kg): 12

Dimensions: 480mm x 380mm x 310mm

Accessories: A 'starter kit' of accessories, includes hats, hat clips, nasal prongs, connectors, bottle tubing, and patient tubing. Additional accessories are available separately.

Consumables: A hat, a set of hat clips, nasal prongs, patient tubing, a bottle, and bottle tubing.

General product: The device should be used with a pulse oximeter, respiratory rate monitor, suction machine, and oxygen source (either a concentrator, cylinder, or piped).

Lifetime: 5-10 years

In UN catalog: Yes

Commercial information

Reference price (USD): $800.00

Year of commercialization: 2015

Number of units distributed: 101-1 000

Other features: Portable, reusable (assuming appropriate decontamination and/or other reprocessing between uses)

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