

# Ventilator using continuous positive airway pressure

Country of origin | Vietnam

## Health problem addressed

Every year hundreds of thousands babies die because of respiratory failure. Infant mortality could be reduced by application of CPAP — relatively simple therapy addressing 90% of cases. Diseases treated: pneumonia, apnea, hypoxia, and respiratory failure - main cause of infant mortality worldwide.



## Product description

CPAP is one of the methods used to support infants with respiratory distress and assist them in maintaining continuous positive airway pressure while breathing on their own. This solution is customized for the use in hospitals with basic infrastructure and limited resources. It is simple in use with only short training required.

## Product functionality

CPAP provides mixed gas flows down the inspiratory limb to nasal cannula while expired gas returns via the expiratory limb to the pressure bottle. The medical staff is able to control appropriate mix of gases as well as desired temperature, humidity and flow.

## Developer's claims of product benefits

The Complete CPAP system is designed to be used in the low resources settings. The only requirement is power supply and oxygen. The system provides its own air compressor, humidifier, oxygen and air blender, air heater. All the functions can be controlled by the user through simple interface requiring minimum training. The system is fully reusable and washable limiting the need for consumable parts to nasal connectors. It allows the user to keep running expenses at very low level keeping the treatment costs at less than a few dollars per patient.

## Operating steps

Connect the system to oxygen and power source; Connect the tube circuit to the patient; Turn the system on, Set the desired oxygen concentration and flow rate; set the temperature and humidity.

## Development stage

The device is based on the concept of the CPAP technology developed by Colin Sullivan at Royal Prince Alfred Hospital, Australia, 1981. To this, the adaptation element to low resource settings was added. The system has been proven by extensive use in countries such as Vietnam, Laos, Cambodia and East Timor following initial studies at National Hospital of Pediatrics in Hanoi in 2006/2007. By now it is a national standard in countries mentioned above being used in over 200 public hospitals treating thousands of patients every year.

## Future work and challenges

Due to a lack of funds in public healthcare barring commercial ventures, the strategy is to introduce the technology using charity money and leverage from such demonstration in the future. The biggest challenge is to convince local authorities to start spending public funds on such solutions which could make the whole system sustainable.

## User and environment

**User:** Nurse, physician

**Training:** CPAP set, 3 days

**Maintenance:** Nurse, physician, technician

## Environment of use

**Settings:** Rural as well as urban secondary and tertiary health care facilities

**Requirements:** Stable power supply, oxygen supply (wall, cylinder, concentrator)

## Product specifications

**Dimensions (mm):** 330 x 330 x 1400

**Weight (kg):** 15

**Consumables:** None

**Life time:** 5 years

**Retail Price (USD):** 2,500

**List price (USD):** 2,300

**Other features:** Reusable. Uses software.

**Year of commercialization:** 2006

**Currently sold in:** Vietnam, Laos, Cambodia, East Timor

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