Continuous positive airway pressure units

**Health problem addressed**
Continuous positive airway pressure (CPAP) units are commonly used to provide breathing assistance to patients with obstructive sleep apnea (OSA) or sleep apnea/hypopnea syndrome (SAHS). CPAP units are also used as a preventive and support device for patients with other diseases, such as acute asthma, congestive heart failure, cardiogenic pulmonary edema, cystic fibrosis, and chronic lung disease (CLD).

**Product description**
CPAP devices consist of a flow generator or “blower,” a length of tubing, and a tight-fitting face mask, nasal mask, or nasal nares. These units may or may not have an air/oxygen blender, flowmeter, humidifier, or oxygen analyzer.

**Principles of operation**
The CPAP mask is attached to plastic tubing, which runs to a blower device. The blower acts as a pneumatic splint and uses gentle pressure, ranging from 3 to 20 cm H₂O, to prevent the collapse of the walls of the upper airway. This keeps the patient’s upper airway unobstructed during sleep to prevent apnea, hypoxia (inadequate O₂ intake), loud snoring, and sleep fragmentation/insomnia, all of which make up the constellation of OSA symptoms. Power is supplied from either an electrical wall outlet or a battery. Switchover to battery operation (either internal or external) is usually automatic and is signaled by an alarm. Controls are used to set inspiratory time and pressure, expiratory time and pressure, rate, trigger sensitivity, and panel lock.

**Operating steps**
- Patient plugs unit in to electrical unit and attaches the tubing to the unit.
- Patient attaches mask to the other end of the tubing provided.
- Patient places mask over nose and mouth or nose piece over nose and adjusts straps for a correct fit.
- Patient turns CPAP on and lays flat or on their side and breathes normally.

**Reported problems**
CPAP is generally considered a safe therapy, and no serious problems with long-term use have been documented. Many of the reported problems involving CPAP units arise from mouth air leakage that can cause a lack of pressure, discomfort or irritation related to the fit of the mask, nasal congestion or dryness, and loud noise coming from the unit. A sensation of having too much pressure on a patient’s face has also been reported.

**Use and maintenance**
- **User(s):** Patients
- **Maintenance:** Biomedical engineering staff; patient; home medical equipment repair; original manufacturer and/or seller
- **Training:** Training by healthcare provider or seller; user manuals

**Environment of use**
- **Settings of use:** Home; hospital; nursing home; sleep clinic
- **Requirements:** Stable power source

**Product specifications**
- **Approx. dimensions (mm):** 178 x 170 x 208
- **Approx. weight (kg):** 2.3
- **Consumables:** PEEP valves; filters; pressure lines; masks or nose pieces; tubing; headstraps
- **Price range (USD):** 1,135-8,202 (3,200 typical); price covers all types and variations
- **Typical product life time:** 8 years
- **Shelf life (consumables):** NA

**Types and variations**
- Continuous
- bi-level