Obstructive sleep apnea (OSA) is a disorder in which recurrent closure of the upper airways occur during sleep. It is characterized by repetitive episodes of complete (apnea) or partial (hypopnea) upper airway obstruction occurring during sleep. Whereas apnea is complete cessation of airflow, hypopnea is characterized by a 70% reduction of airflow for ≥10 seconds or any reduction in airflow that is associated with either an arousal from sleep or a ≥3% arterial oxygen desaturation. These frequent arousals are the primary cause of excessive daytime somnolence(1), are associated with impaired daytime cognitive function, and are recognized as a cofactor in the etiology of road traffic accidents. Sleep apnea may also be associated with increased cardiovascular and increased cerebrovascular morbidity and mortality. Many techniques have been used to evaluate the upper airway in patients with obstructive sleep apnea. These techniques have included cephalometry, computed tomography, magnetic resonance imaging, fluoroscopy, acoustic reflection studies and polysomnography (PSG). Electroencephalogram, eye movements, postural muscle tone, oxygen saturation (SaO₂), air flow, respiratory effort and heart rate are measured with a complete PSG. Full PSG evaluates the apnea index (AI) and respiratory disturbance index (AHI). AI indicates the number of apneas per hour. AHI indicate the number of apneas/hypopneas per hours of sleeping (this is also called AHI apnea/hypopnea index). An estimated 82% of men and 92% of women with moderate to severe sleep apnea remain undiagnosed.

OSA treatment is chosen is based on patients clinical features. Its resolution may occur by losing weight, if the patient is obese, avoiding sleeping in the supine position, if the OSA is position dependent, avoiding alcohol consumption during the evening and treating hypothyroidism if present. When these approaches are proved to be unsuccessful, other treatment should be chosen: nasal continuous positive pressure (nCPAP), surgical treatment or the application of oral appliances.

Actually, continuous or bi-level positive airway pressure (CPAP/biPap) represent the gold standard in the treatment of obstructive sleep-related breathing disorders. Many authors suggest that the appropriate use of nCPAP in patients with OSA may be required to decrease implications for cardiovascular morbidity and mortality.
Patients with obstructive sleep apnea and high risk for morbidity may be treated with surgical management with change of upper airways obstruction. Surgical treatment of obstructive sleep apnea is limited to about 15% of the patients and, usually, reserved for those in whom a trial of nasal CPAP fails. In these patients, surgery is the elective form of therapy. Brigance et al. showed how AHI in patients treated with surgical management of OSA significantly improved.

CPAP and surgery treatment require a great patients collaboration. Many authors treat not severe OSA with oral appliances (OA).

A new OSA therapy with OA and may enhance patients compliance. The use of OA in OSAs seems very effective and, thus, capable to reduce complications associated to this condition. In addition, while CPAP is actually the gold standard therapy for OSA, due to its complexity patients are often reluctant to use it; conversely, the OA has the advantage to be comfortable and very easy to use, thus, a very good patients compliance can be obtained quite simply. For these reasons OA seems very promising and worth of further research in OSA therapy.