Sleep Apnea Facts and Figures

What is sleep-disordered breathing (SDB)?
SDB describes a number of breathing disorders that occur during sleep
- Obstructive sleep apnea (OSA)
- Central sleep apnea (CSA)
- Nocturnal hypoventilation
- Cheyne–Stokes respiration (CSR)

What is obstructive sleep apnea (OSA)?
- A partial or complete collapse of the upper airway caused by relaxation of the muscles controlling the soft palate and tongue
- Person experiences apneas, hypopneas and flow limitation
  - Apnea: A cessation of airflow for ≥10 seconds
  - Hypopnea: A decrease in airflow lasting ≥10 seconds with a 30% oxygen reduction in airflow and with at least a 4% oxygen desaturation from baseline
  - Flow limitation: Narrowing of the upper airway and an indication of an impending upper airway closure

Classification of sleep apnea
Apnea–hypopnea index (AHI)
- Number of apneas and/or hypopneas per hour of sleep (or study time)
- Reflects the severity of sleep apnea
  - AHI: < 5 Normal range
  - AHI: 5 to < 15 Mild sleep apnea
  - AHI: 15 to < 30 Moderate sleep apnea
  - AHI: ≥ 30 Severe sleep apnea

Prevalence of sleep apnea
- Approximately 42 million American adults have SDB\(^1\)
- An estimated 26% of adults have at least mild SDB\(^2\)
- 9% of middle-aged women and 25% of middle-aged men suffer from OSA\(^3\)
- Prevalence is similar to asthma (20 million) and diabetes (23.5 million) of US population\(^4\)
- 75% of severe SDB cases remain undiagnosed\(^5\)

Signs and Symptoms of Sleep Apnea
- Lack of energy
- Morning headaches
- Frequent nocturnal urination
- Depression
- Large neck size
- Excessive daytime sleepiness
- Nighttime gasping, choking or coughing
- Gastroesophageal reflux (GER reflux)
- Irregular breathing during sleep (eg, snoring)

Increased risk factors for sleep apnea
- Male gender
- Obesity (BMI >30)
- Diagnosis of hypertension
- Excessive use of alcohol or sedatives
- Upper airway or facial abnormalities
- Smoking
- Family history of OSA
- Large neck circumference (>17” men; >16” women)
- Endocrine and metabolic disorders

Drug-Resistant Hypertension
Obesity
Congestive Heart Failure
Pacemakers
Atrial Fibrillation
Diabetes
All Hypertension* 83%
Coronary Artery Disease* 30%

Prevalence of Sleep Apnea in Comorbidities

*Male subjects only

Airway state
- Normal
- Flow Limitation (airway narrowing)
- Apnea (airway closed)
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**Hypertension links**
- Studies have shown that sleep apnea is an independent risk factor for hypertension
- 30–83% of patients with hypertension have sleep apnea¹,¹²
- 43% of patients with mild OSA and 69% of patients with severe OSA have hypertension⁶
- AHA guidelines on drug-resistant hypertension have shown treatment of sleep apnea with continuous positive airway pressure (CPAP) likely to improve blood pressure control

**Traffic accidents**
- People with moderate to severe sleep apnea have an up to 15-fold increase of being involved in a traffic accident¹⁴
- People with sleep apnea are at twice the risk of having a traffic accident²⁵
- Treating all US drivers suffering from sleep apnea would save $11.1 billion in collision costs and save 980 lives annually²⁶

**Treatment of OSA with MRD**
- A mandibular repositioning device (MRD) is a custom-made, adjustable oral appliance (available from a dentist) that maintains the lower jaw in a forward position during sleep. This mechanical protrusion widens the space behind the tongue and reduces the vibration and physical obstruction to breathing and the tendency to snore.
- MRD treatment offers significant improvement of sleep apnea symptoms including sleepiness, quality of life, systolic or diastolic blood pressure and cognitive performance²⁰
- MRDs offer an equally efficacious alternative in mild to moderate OSA patients who are not compliant or refuse CPAP therapy²¹
- MRDs are indicated as primary treatment for patients with mild to moderate OSA²²
- Mandibular advancement can increase upper airway capacity by 50-75% with maximum mandibular protrusion²³
- OSA is a chronic condition; MRD or CPAP treatment must be used nightly

**Stroke risk**
- 85% of stroke patients have SDB¹⁴
- Up to 70% of patients in rehabilitation therapy following stroke have significant SDB (AHI >10)¹⁵

**Health care costs** (Economic consequences of untreated SDB)
- Undiagnosed patients used $200,000 more in the two-year period prior to diagnosis than matched controls¹⁶
- Prior to sleep apnea diagnosis, patients utilized 23–50% more medical resources¹⁷
- Total economic cost of sleepiness = approximately $43–56 billion¹⁸
- Undiagnosed moderate to severe sleep apnea in middle-aged adults may cause $3.4 billion in additional medical costs in the US¹⁹

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