250 mg per day). Sodium oxybate (3 to 9 g each day) is also used to treat EDS, cataplexy, and disrupted nocturnal sleep. It is potent but short acting; it is typically administered at bedtime and again a few hours later. Sodium oxybate and modafinil may be synergistic in treating EDS. For cataplexy, antidepressants can be used (Table 106-2).

Prognosis is usually good with adequate treatment. However, narcolepsy, when severe, can remain disabling and require accommodations such as scheduled naps.

IDIOPATHIC HYPERSOMNIA

Definition and Epidemiology

Idiopathic hypersomnia is a poorly characterized syndrome with no known pathologic substrate. It is therefore a diagnosis of elimination. It is much less common than narcolepsy.

Clinical Manifestation

Patients have lifelong EDS with non-REM (long and unrefreshing) naps, and none of the REM-type accessory symptoms of narcolepsy. By definition, there must be no other cause of EDS. Patients also wake up unrefreshed (i.e., sleep inertia) from nocturnal sleep and long daytime naps, and they can have prolonged states of fogginess (i.e., sleep drunkenness).

Diagnosis and Differential Diagnosis

Other causes of EDS must be excluded, and the PSG should be normal with no sleep-disordered breathing and no sleep fragmentation such as seen in narcolepsy. MSLT confirm sleep latency of less than 8 minutes but without sleep-onset REM.

Treatment and Prognosis

Treatment includes the same stimulants and wake-promoting agents as used for narcolepsy. The response is typically less satisfactory. The response to treatment is varies, and accommodation in the workplace is usually necessary.

KLEINE-LEVIN SYNDROME

Kleine-Levin syndrome is a rare, recurrent or cyclic hypersomnia with a prevalence of 1 case per 1 million people. Its cause is unknown. Its onset is usually in the second decade, with episodes of hypersomnia lasting days to weeks and with associated hyperphagia, hypersexuality, confusion, and hallucinations. Episodes tend to recur every few months and at least once each year. Other symptomatic causes of EDS must be excluded.

Stimulants and wake-promoting agents and lithium are used for treatment. With time, episodes tend to become less severe, less prolonged, and less frequent.

TABLE 106-2 AGENTS PROMOTING WAKEFULNESS

DRUG	DOSE RANGE (MG)
Amphetamine (Dexedrine, Desoxyn, Adderall, Adderall XR)	5-60
Methylphenidate (Ritalin, Metadate, Methylin, Concerta)	10-60
Modafinil (Provigil)	200-400
Armodafinil	150-250

PERIODIC LIMB MOVEMENT DISORDER

Definition and Epidemiology

Periodic limb movement disorder (PLMD) is characterized by repetitive movements (usually of the legs) that occur during sleep. This can be purely a PSG finding, but it is often associated with restless legs syndrome (RLS).

Pathophysiology

PLMD is caused by decreased dopamine neurotransmission.

Clinical Manifestations

Leg movements may be reported by the bed partner, and the patient may report EDS, insomnia, or symptoms of RLS (i.e., urge to move legs or walk due to unpleasant "creepy-crawly" sensations at rest). Most patients with RLS have PLMD, but the reverse is not true.

Diagnosis and Differential Diagnosis

RLS is diagnosed by the history. PLMD is diagnosed by PSG. Once established, the search for a cause of secondary PLMD should investigate the same causes as RLS: polyneuropathy, spinal cord disease, pregnancy, iron-deficiency anemia (i.e., ferritin levels), B_{12} deficiency, uremia, medications, primary sleep disorders, narcolepsy, or OSA.

Treatment and Prognosis

Similar to RLS, pramipexole or ropinirole is used at lower doses than for treating Parkinson's disease (Table 106-3). Prognosis is usually good with treatment.

For a deeper discussion of these topics, please see Chapter 410, "Other Movement Disorders," in Goldman-Cecil Medicine, *25th Edition.*

INSOMNIA

Definition and Epidemiology

Insomnia is defined as difficulty initiating or maintaining sleep. Severe, chronic insomnia can have major health consequences, including depression, anxiety, drug or alcohol use, and overall higher mortality rates.

Insomnia is the most common sleep complaint in the general population. Up to one third of the population report at least occasional difficulties sleeping. Chronic insomnia (>1 month) affects about 10% of the population.

Pathophysiology

Insomnia can be caused by pain, medical conditions (e.g., chronic obstructive pulmonary disease), psychiatric conditions, and

TABLE 106-3 TREATMENTS FOR RESTLESS LEGS SYNDROME

DRUG	DOSE RANGE (MG)
Levodopa or carbidopa (Sinemet)	50-200
Ropinirole (Requip)	0.25-4.0
Pramipexole (Mirapex)	0.125-0.5