Sleep Disorders

WEEK 8, LECTURE 4

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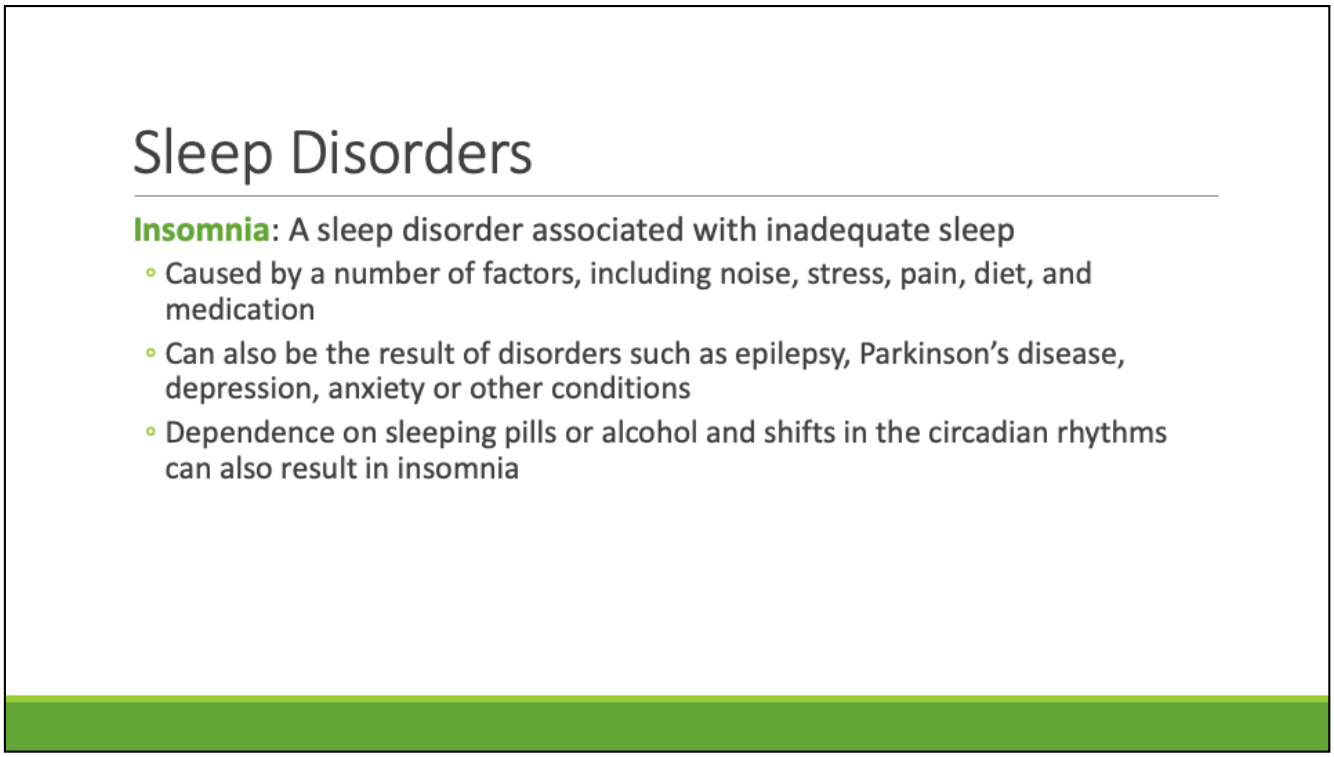
Okay, let's finish up our last lecture topic for today: sleep disorders.



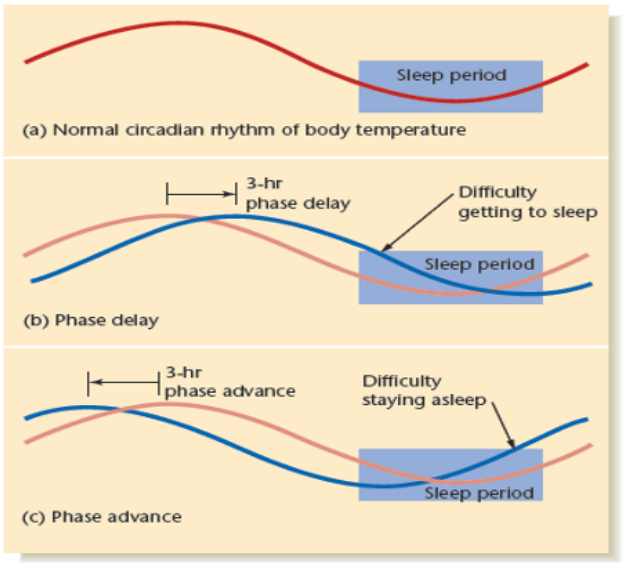
One of the more common disorders is insomnia, which is a disorder in which individuals either cannot fall asleep, or cannot stay asleep. You can read more about it above.

Basically, it can be caused by a wide range of factors: external, lifestyle changes, or other disorders or diseases.

Sleep Disorders as a Result of Phase Delay

Phase delay → trouble falling asleep

Phase advance → trouble staying asleep

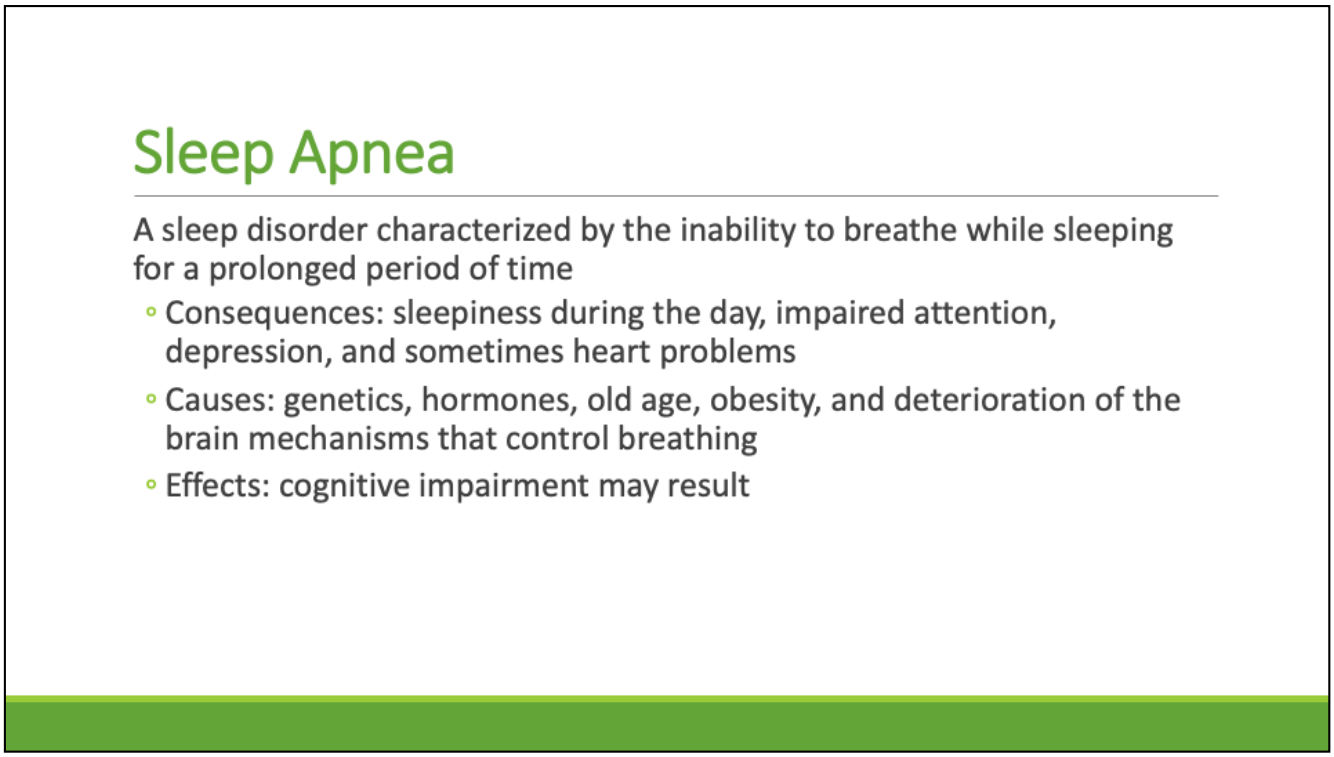


As I said in the previous slide, insomnia can be due to either not being able to fall asleep or not being able to stay asleep. If the underlying issue is one of a disturbed circadian rhythm, then there are two ways that this could play out.

The top of the diagram here is what a normal circadian pattern would look like, in terms of body temperature. Notice that it typically peaks during the day, and is at its lowest at night.

If you have trouble falling asleep, your rhythm may be delayed. You can see that in the second part of the diagram here. Notice that the dip in temperature doesn't start to occur until well after a person tries to fall asleep.

On the flipside, if you have trouble staying asleep, this could be due to an advance in your rhythm. You can see that at the very bottom of the diagram, where body temperature starts increasing more before the sleep period ends.

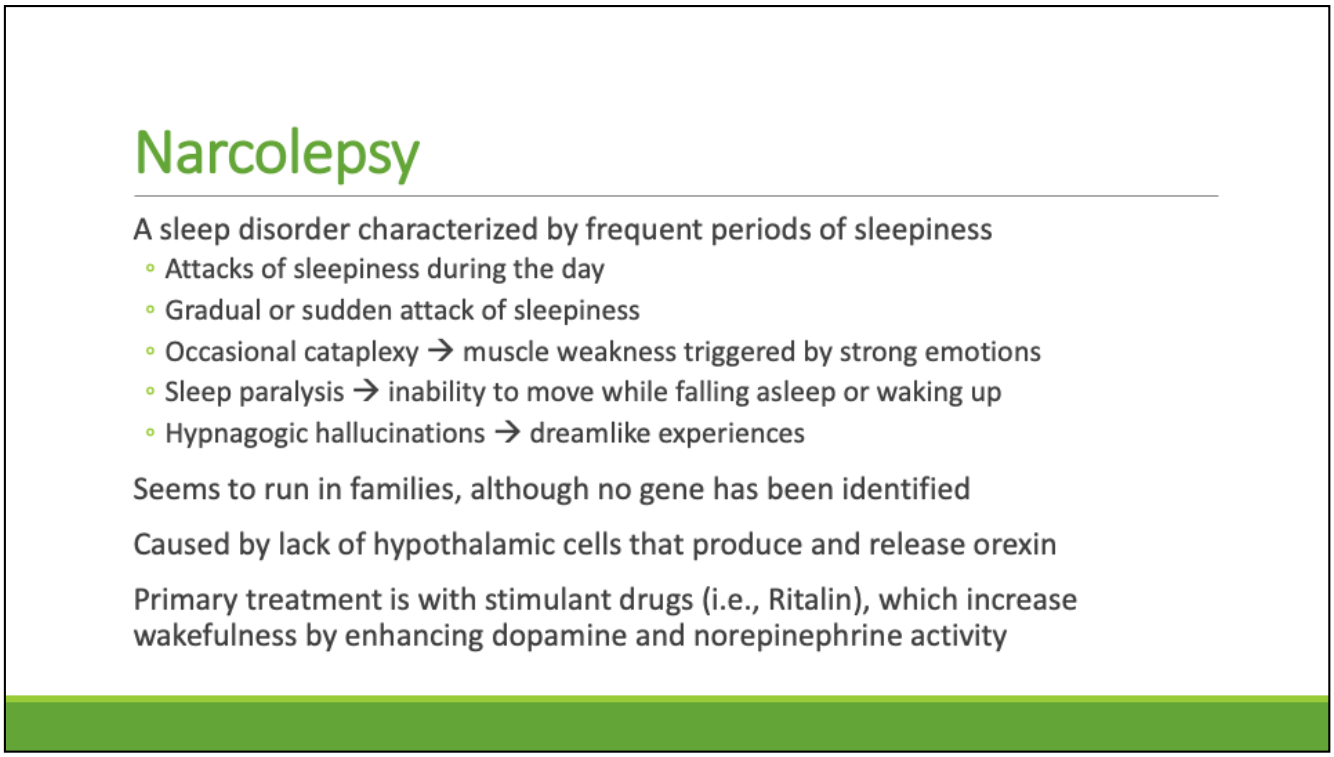


Another common sleep disorder is sleep apnea, which is characterized by breathing issues – mainly the cessation of breathing – while sleeping. This can occur several times over the course of one sleep period.

This disorder is often associated with obesity, but there are many other causes, which you can read about above. If left untreated it can result in eventual cognitive impairment.

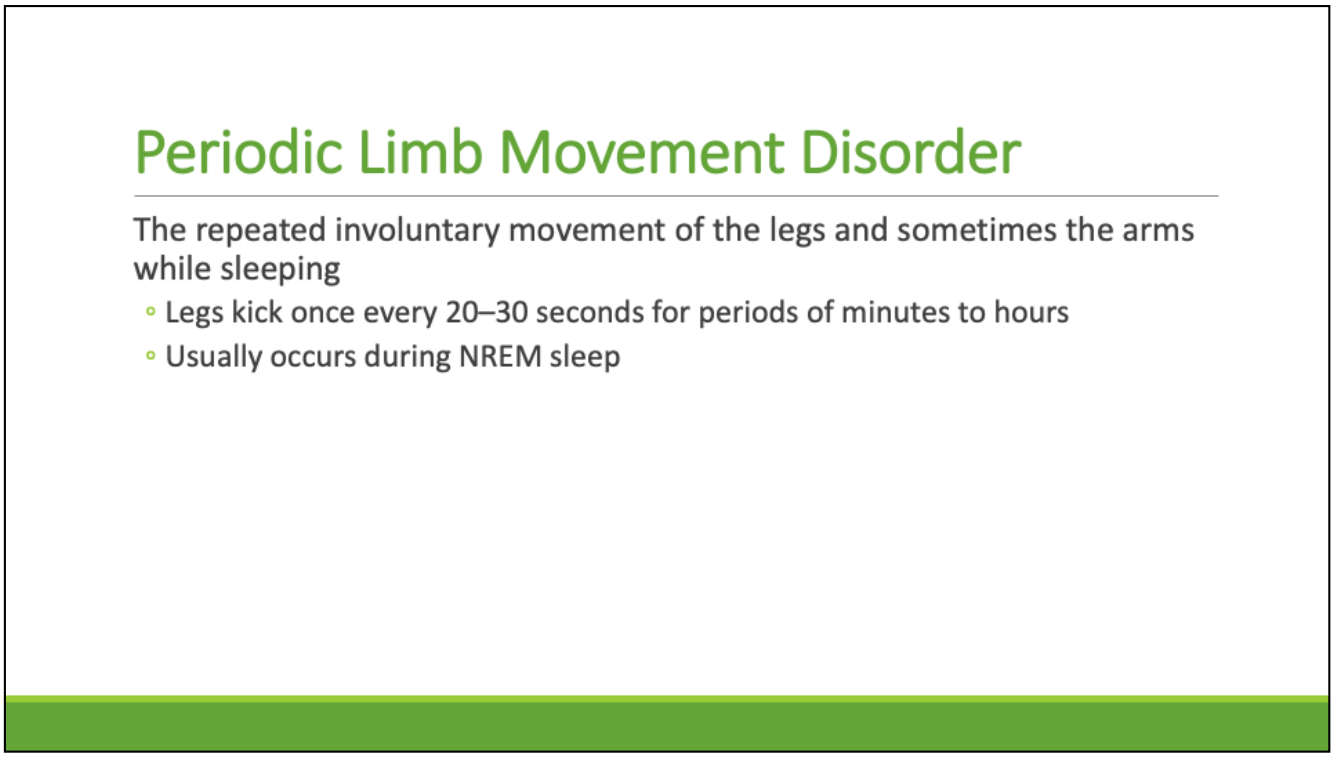
Medical Options to Improve Sleep Apnea

This is something called a continuous positive airway pressure (or CPAP) machine → Basically, you wear a mask while you're sleeping, and the mask fits over your nose and delivers air at a fixed pressure at a level strong enough to keep the breathing passages open. This individual is hooked up to a bunch of other monitoring devices – the CPAP machine itself is just the device that fits over the nose. These are actually now used as a common home treatment for sleep apnea.

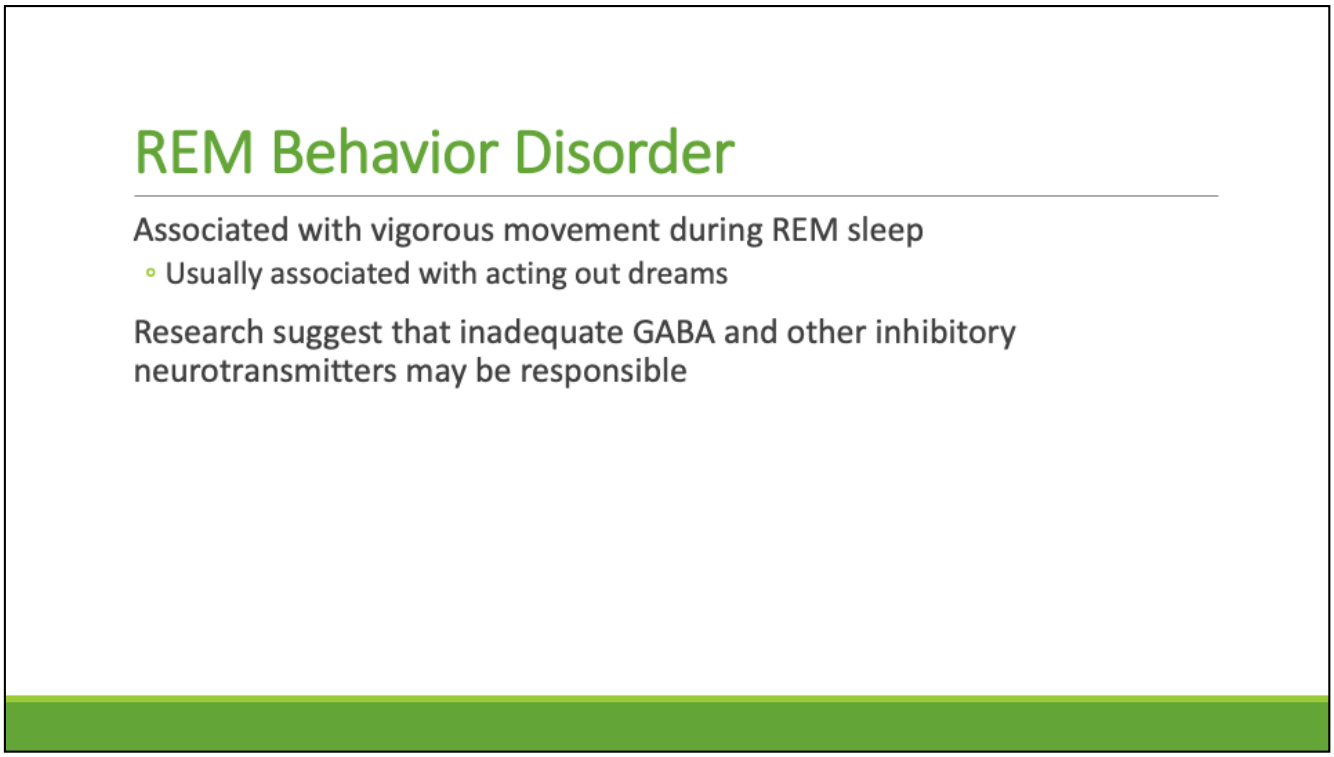


Another slightly less common disorder is narcolepsy, which is kind of like the opposite of insomnia. Basically, it's characterized by frequent periods of *intense* sleepiness. These periods are often referred to as "attacks", and sometimes individuals with narcolepsy will experience cataplexy, or a sudden weakening of the muscles. You can read more about this disorder above.

The cause of this disorder seems to be a lack of orexin, which you'll recall is a neurotransmitter that induces arousal. Stimulant drugs which help release dopamine and norepinephrine (two other stimulant-ish neurotransmitters) seem to help treat the disorder.



Periodic limb movement disorder, which you can read about above, is less common but incredibly disruptive to both the person who has it and anyone who happens to be sleeping next to that person. It can result in disrupted sleep, even though the person typically sleeps through these episodes.



There is also a disorder called REM behavior disorder in which individuals act out their dreams. As you can imagine, this can be *highly* disruptive, depending on the type of dream a person is having.

GABA - and specifically a lack thereof might be the underlying cause of this disorder. Recall that when in REM sleep, GABA down-regulates the functioning of many brain areas, and also helps to inhibit motor control. A lack of GABA during this stage of sleep would enable a person to move around while dreaming.

Night Terrors and Sleepwalking

Night terrors are experiences of intense anxiety from which a person awakens screaming in terror

- Usually occurs in NREM sleep

"Sleepwalking" runs in families, mostly occurs in young children, and occurs mostly in stage 3 or 4 sleep

- Not associated with dreaming

It is not dangerous to wake a sleepwalker

A condition similar to sleepwalking is sexsomnia: engaging in sexual behavior while asleep

- Can pose a threat to romances and marriages

Lastly, we have two similar but slightly different disorders: night terrors and sleepwalking. You can read about both of these above.

Question for your discussion group…

1. Pick one sleep disorder and describe it in detail. Draw information from the textbook, as well as the lecture.

Okay, that does it for this week! Like I said before, I'm really trying to conserve my voice, so I'm hoping I'll be back and talking at you for next week's topic on internal regulation. See you all them!