


SAVING PETS' LIVES, 24 HOURS A DAY, 7 DAYS A WEEK

**PET POISON HELPLINE**

**AVMA LIFE** AVMA PLIT

Veterinarian Inspired Coverage Protecting you through it all

## Sleeping Well Through Shiftwork and Stress



January 23<sup>rd</sup>, 2020

**J. Roxanne Prichard, Ph.D.**  
*Professor Psychology and Neuroscience*

[www.petpoisonhelpline.com](http://www.petpoisonhelpline.com) | Bloomington, MN | Pet Poison Helpline ©2019

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SAVING PETS' LIVES, 24 HOURS A DAY, 7 DAYS A WEEK

**PET POISON HELPLINE**

## What is Pet Poison Helpline?

- **24/7 animal poison control center**
- **Veterinary & human expertise**
  - 20+ DVMs, 75+ CVTs
    - DABVT, DABT
    - DACVECC
    - DACVIM
  - 10 PharmDs
  - 2 MDs
- **Case fee of \$59 includes**
  - Unlimited per case consultation
  - Fax or email of case report

- **Educational center**
  - Free webinars (archived)
  - Tox tools
    - Wheel of Vomit
    - Pot of Poisons (toxic plants)
  - Textbook
  - Newsletters for veterinary professionals
  - Free resources for clinics
    - Videos
    - Electronic material
    - Clings

Email us for more information!

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## The AVMA Trusts



**AVMA LIFE**

Veterinarian Inspired Coverage

**AVMA PLIT**

Protecting you through it all

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avmalife.org and avmaplit.com



**AVMA LIFE**  
Veterinarian Inspired Coverage

**AVMA PLIT**  
Protecting you through it all

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Cynthia G. MacKenzie, DVM  
[cynthia.mackenzie@avmaplit.com](mailto:cynthia.mackenzie@avmaplit.com)  
859.806.3757



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 **PET POISON HELPLINE**  
800.213.6680  
www.petpoisonhelpline.com

**AVMA LIFE** **AVMA PLIT**  
Veterinarian Inspired Coverage Protecting you through it all

**Speaker Introduction**



**J. Roxanne Prichard, Ph.D.**  
*Professor of Psychology and Neuroscience*

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**Sleeping Well Through  
Shiftwork and Stress**

**J. Roxanne Prichard, Ph.D.**  
**Professor of Psychology &  
Neuroscience**

**AVMA Life Webinar  
1/23/2020**

**@RoxannePrichard**



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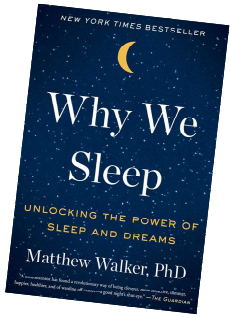
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*"Human beings are in fact the  
only species that will  
deliberately deprive  
themselves of sleep without  
legitimate gain."*

*Matthew Walker*



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**Consider the dichotomies  
our 100,000 year old brains experienced.**



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Fight or Flight



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Rest & Digest; Tend & Befriend



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DAY



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## NIGHT



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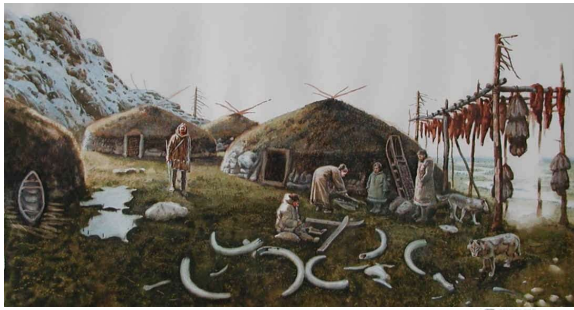
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## Different Sleep Phenotypes Living Together was Advantageous



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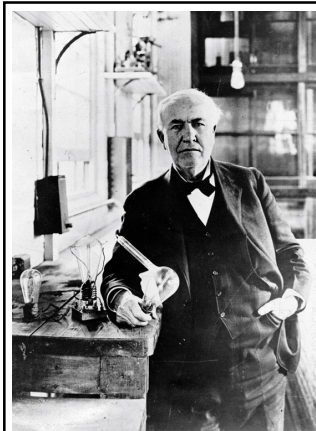
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Sleep is an acquired habit.  
Cells don't sleep. Fish  
swim in the water all  
night. Even a horse  
doesn't sleep. A man  
doesn't need any sleep.

-Thomas Edison

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Our modern lifestyle creates a culture of **somnorexia**.



As a society, we get 20% less sleep than our ancestors only 100 years ago, and have 90 min less TIB on weeknights than 50 years ago.

COLLEGE SLEEP

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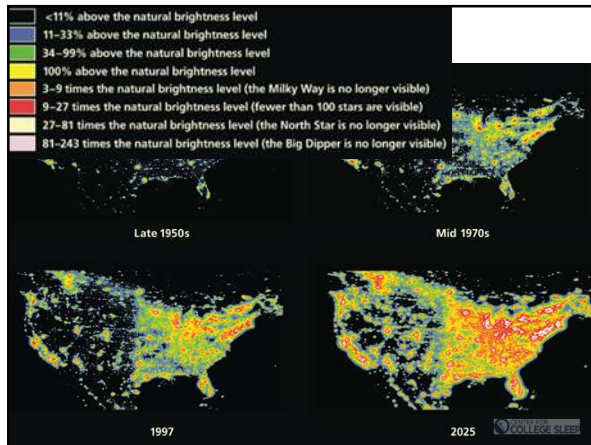
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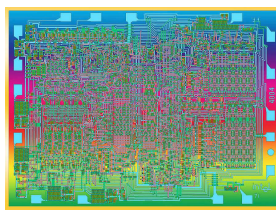
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How do we conceptualize sleep?



COLLEGE SLEEP

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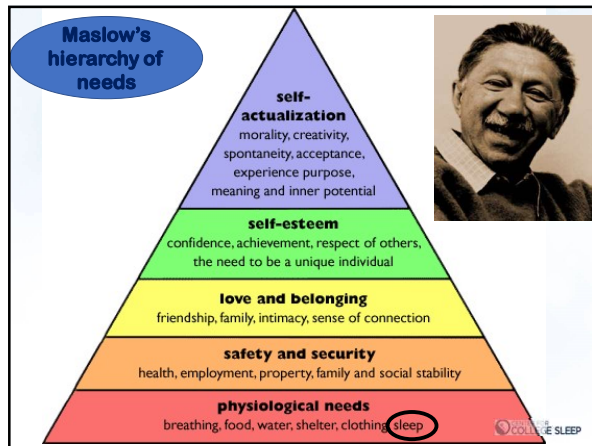
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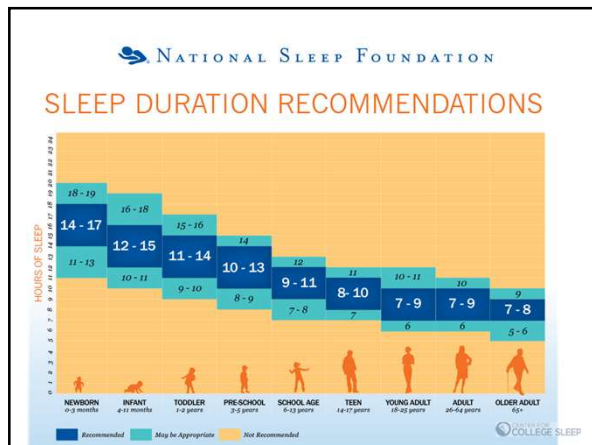
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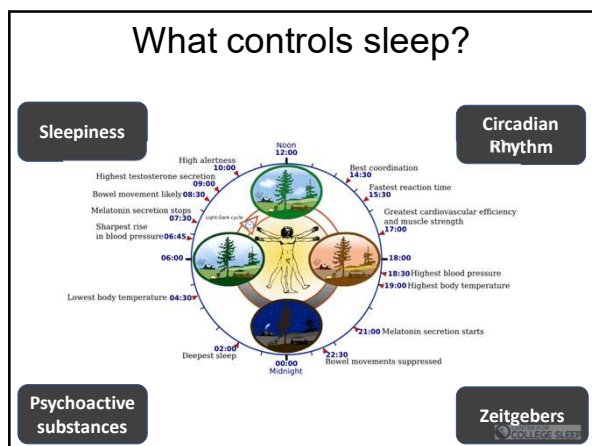
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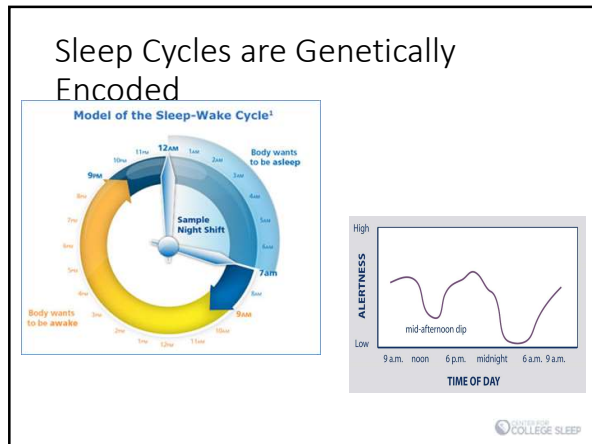
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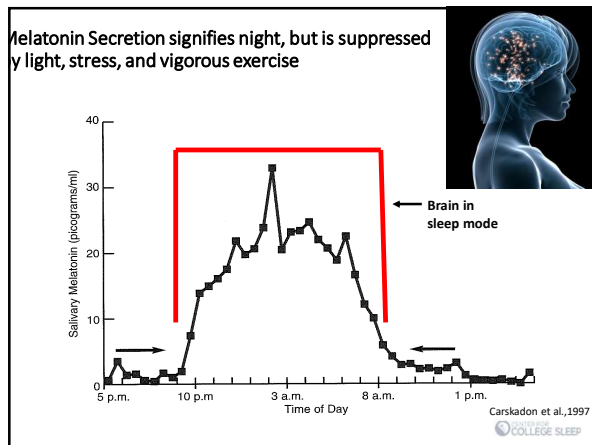
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### How strong is your circadian rhythm?

COLLEGE SLEEP

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**Hypothalamus contains  
“Master-clock” cells**



The diagram illustrates the role of the hypothalamus in the sleep-wake cycle. On the left, a coronal section of the brain shows the hypothalamus, with a label 'Hypothalamus (containing master clock)' pointing to a specific region. An arrow points from this region to a large, vertical graph on the right. The graph shows a 24-hour cycle (0 to 24 hours) on the x-axis and a vertical scale on the y-axis. The top half of the graph is labeled 'Wake' and the bottom half is labeled 'Sleep'. The graph shows a regular, rhythmic pattern of sleep and wakefulness, with a sharp transition from sleep to wakefulness around 12 hours. The label 'Hypothalamus (containing master clock)' is also present at the bottom of the graph.

Damage to the SCN master clock cells results in irregular sleep patterns.

25

**Circadian Temperature Rhythm: Structured Schedule**

The figure illustrates the circadian temperature rhythm over a 24-hour period, structured into a schedule. The left panel shows a timeline from 00:00 to 23:00, with a structured schedule indicated by blue and red blocks. The right panel shows the BN temperature rhythm over 6 days, plotting temperature (°C) against Time (HH:MM GMT). The graph displays six lines representing temperature rhythms over six days, showing a clear circadian pattern with peaks around 12:00 and troughs around 00:00.

26

**Circadian Temperature Rhythm: Erratic Schedule**

6 AM 10 PM

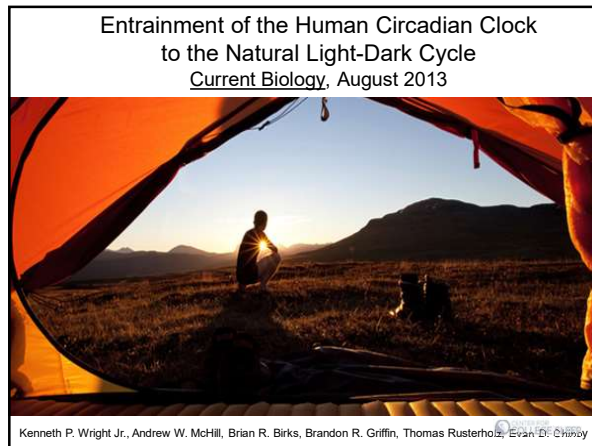
**LE temperature rhythm over 10 days**

Day 1  
Day 2  
Day 3  
Day 4  
Day 5  
Day 6  
Day 7  
Day 8  
Day 9  
Day 10

Time (HMS UT)

COLLEGE SLEBS

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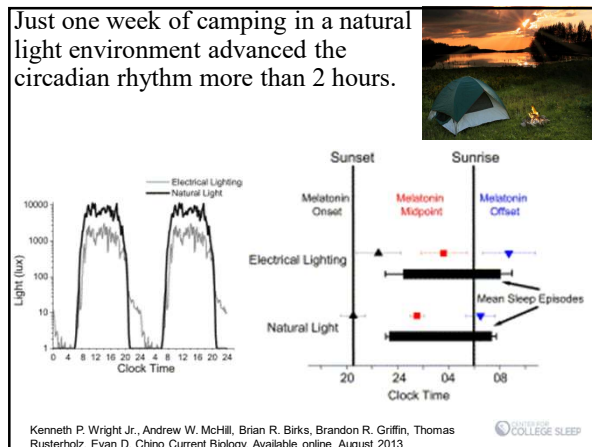
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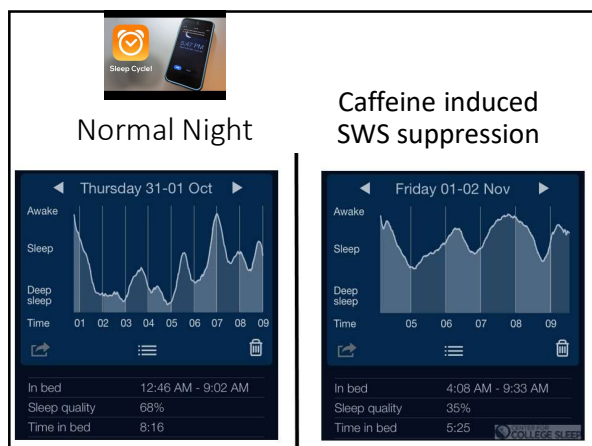
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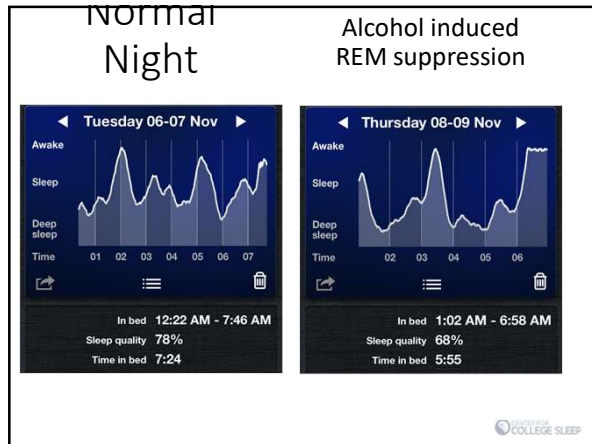
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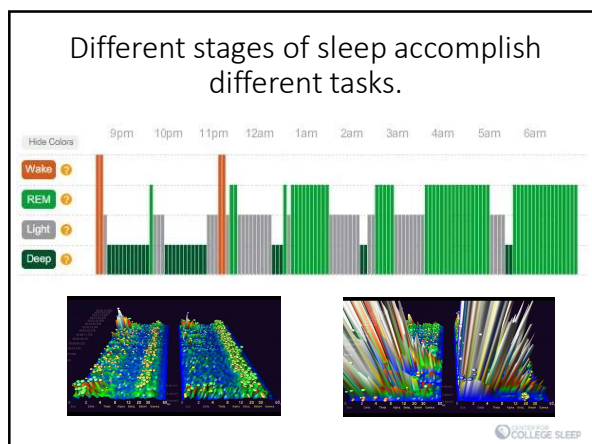
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**Sleep Drives Metabolite Clearance from the Adult Brain.**  
Xie et al. (2013) *Science*



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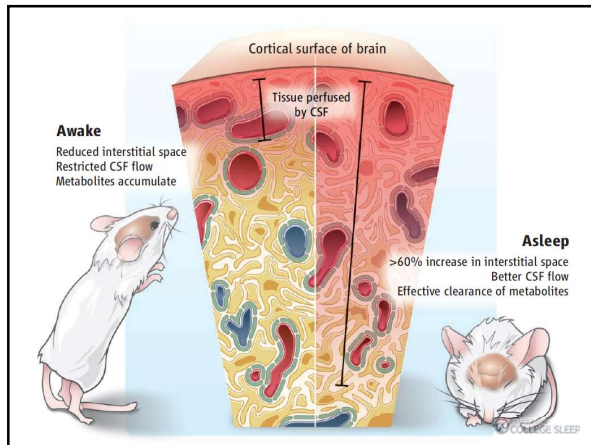
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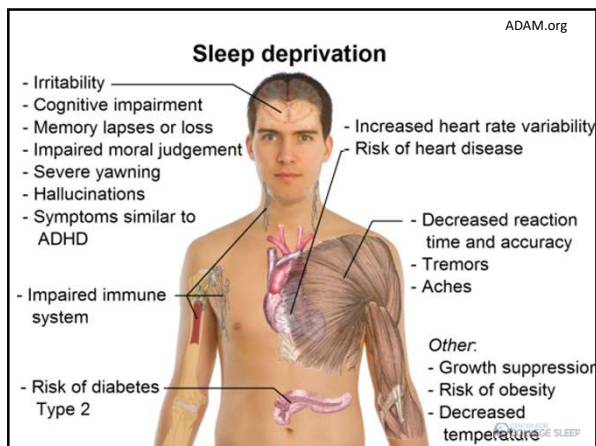
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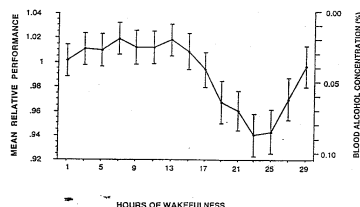
## Sleep Deprivation & Cognition

### • Cognitive performance:

- Tracking task on computer
- No change for 12 hrs
- Drops from 12-24 hrs
- Rebounds 24-29 hrs

### • Conclusion:

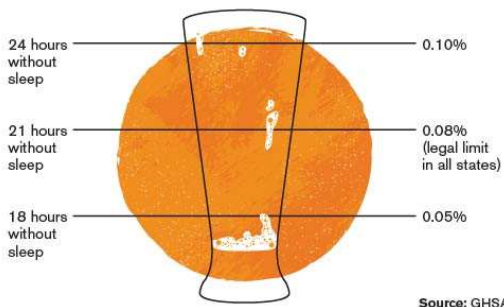
- Performance declines between 12 and 6 a.m. due to fatigue and Circadian rhythm.



Dawson, D., Reid, K. Fatigue, alcohol and performance impairment. *Nature* 388, 235 (1997) doi:10.1038/40775

37

### Lack of sleep mimics blood alcohol concentration



Source: GHSA

COLLEGE SLEEP

38

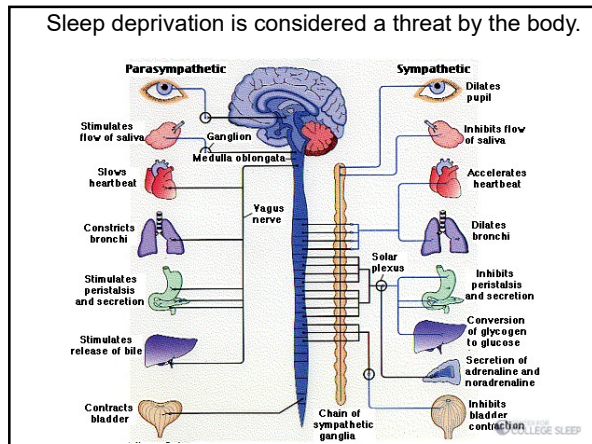
## Chronic Mild Sleep Deprivation & Cognition

- Subjects slept for 4-6 hours a night for 14 consecutive nights
- Deficits in cognitive performance equivalent to 3 days without sleep
- Subjects reported not feeling sleepy



Van Dongen et al. The Cumulative Cost of Additional Wakefulness: Dose-Response Effects on Neurobehavioral Functions and Sleep Physiology From Chronic Sleep Restriction and Total Sleep Deprivation, *Sleep*, March 2003, <https://doi.org/10.1093/sleep/26.2.211>

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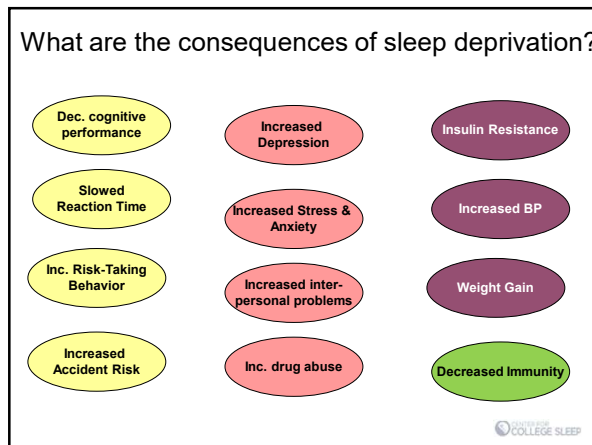
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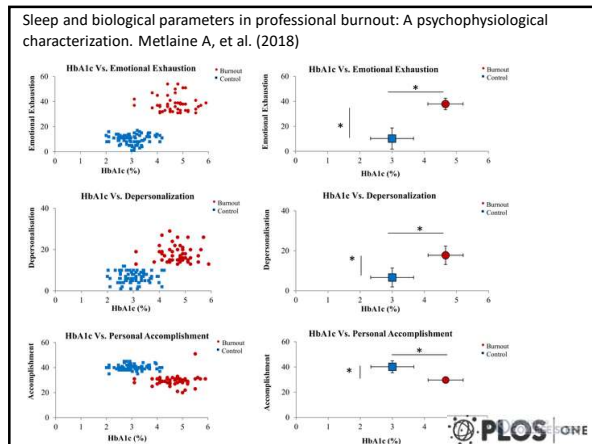
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**Poor Sleep = Worse Mental Health**

**A Person with inadequate sleep is...**

- 9x more likely to have depressive symptoms
- 17x more likely to have anxiety symptoms

**Sleep disruption is predictive of (precedes)**

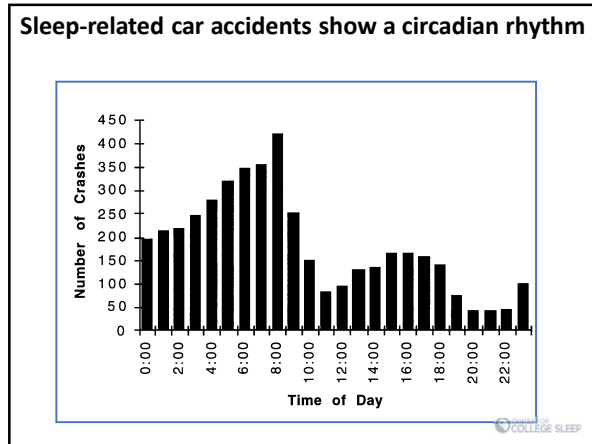
- 50% of depression episodes
- 75% of mania episode
- 90% of suicide attempts

Sateia, M. (2009) Peterson & Benita (2006)

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**How Sleepy Are You?**

COLLEGE SLEEP

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**The Stanford Sleepiness Scale**  
<http://web.stanford.edu/~dement/sss.html>

Degree of Sleepiness	Rating
Feeling active, vital, alert, or wide awake	1
Functioning at high levels, but not at peak; able to concentrate	2
Awake, but relaxed; responsive but not fully alert	3
Somewhat foggy, let down	4
Foggy; losing interest in remaining awake; slowed down	5
Sleepy, woozy, fighting sleep; prefer to lie down	6
No longer fighting sleep, sleep onset soon; having dream-like thoughts	7
Asleep	X

COLLEGE SLEEP

51

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### Epworth Sleepiness Scale (ESS)

Situation	Chance of dozing (0-3)			
Sitting and reading	0	1	2	3
Watching television	0	1	2	3
Sitting inactive in a public place—for example, a theater or meeting	0	1	2	3
As a passenger in a car for an hour without a break	0	1	2	3
Lying down to rest in the afternoon	0	1	2	3
Sitting and talking to someone	0	1	2	3
Sitting quietly after lunch (when you've had no alcohol)	0	1	2	3
In a car, while stopped in traffic	0	1	2	3
<b>Total Score</b>				

0 = would never doze 1 = slight chance of dozing 2 = moderate chance of dozing 3 = high chance of dozing  
Johns MW. Sleep. 1991;14:540.

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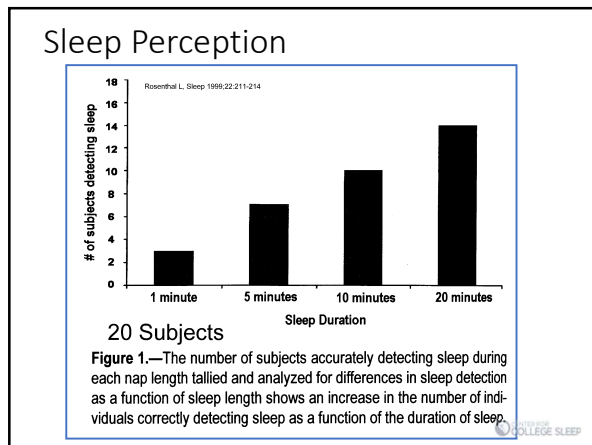
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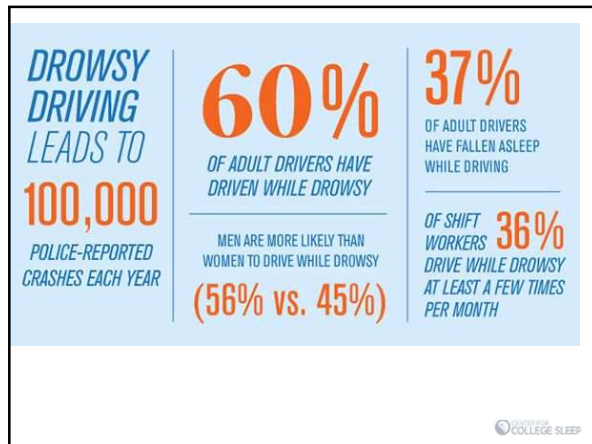
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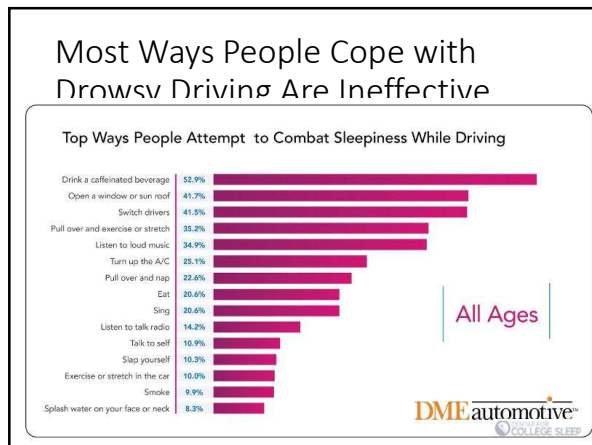
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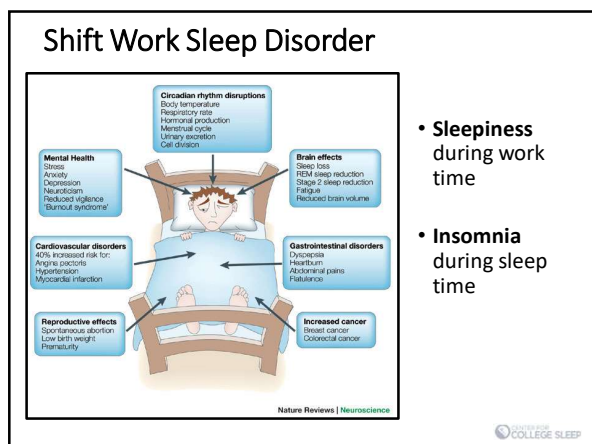
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## Tolerance to Shift Work

- Better in younger people (under 40, or pre-menopausal)
- Better in childless people
- Better in natural owls than natural larks
  - 20% of people have no trouble changing shifts
  - 60% have moderate hardship
  - 20% have extreme difficulty



Circadian Rhythms and Shift Work



58

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## Best Schedules for Sleep Health

- **Optimum:** days only; in synchronous with your own best working time
- **Next best:** same shift every day, even if not most suited to your optimal time; or isolated nights. Four 10 hour shifts a week. Breaks in shift for naps or exercise.
- **Worst:** randomly rotating shifts

Circadian Rhythms and Shift Work



59

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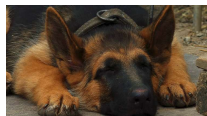
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## How To Get Better Sleep

1. Do you have a treatable condition that is interfering with your sleep?
2. How do you prioritize & track your sleep?
3. How can you improve your sleep environment?



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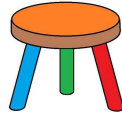


## Three Foundations of Good Sleep

**Consistent:** Rise time and bed times don't vary much

**Restorative:** High quality sleep that makes you feel rested upon awakening

**Sufficient:** 7-9 hours. Ideally, you don't need an alarm clock to wake up



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**COLLEGE SLEEP**

61

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## Maximizing your Sleep Environment

- **Temperature:** between 55 – 65 F
- **Bedroom:** Only for sleep (and sex). No TV, laptops, ipads, serious discussions, etc
- **Ritual:** helps to create a 'stimulus-response' conditioning
- **Noise:** ear plugs, or white noise machine

Keep sleep time sacred, and minimize care-giving responsibilities during that time.

Circadian Rhythms and Shift Work

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62

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## Control Light and Dark

- Full light exposure 30-60 minutes after waking to promote adaptation and wakefulness



- Keep sleep area as dark as possible



Circadian Rhythms and Shift Work

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63

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## Overcoming Wheels Spinning

- Breathing exercises
- Audio podcasts
- Gratitude or other meditations
- Get out of bed if you're awake for more than 20 minutes



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## Using Naps Wisely

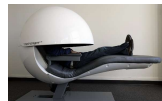
Napping can help improve mood, alertness, and performance.

### Ideal Nap:

20 – 30 minutes

Prior to 6 hours of bedtime

Set an alarm to wake up in time



COLLEGE SLEEP

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## Melatonin

- 3-6 mg, taken one hour prior to desired sleep time **in the dark**
- Diminished in aging.
- Not FDA regulated, but seems to be extremely safe for brief use as in phase adjustment.



Circadian Rhythms and Shift Work

COLLEGE SLEEP

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**CARING FOR MYSELF IS NOT SELF-INDULGENCE, IT IS SELF-PRESERVATION AND THAT IS AN ACT OF POLITICAL WARFARE.**

**AUDRE LORDE**



Questions?

@RoxannePrichard

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**PPH is Hiring!**

- FT & PT CVT/RVT/LVT -daytime & evening, full and part time hours available!
- FT & PT Non Certified Technicians/Assistants-daytime & evening, full and part time hours available!
- Overnight Associate Veterinarian-9pm-7am, 7days on/7 days off.

**NOW HIRING IN MISSOURI & LOUISIANA!**  
Visit our careers page to see all the states we hire in.

Learn all the details of our positions and qualifications by visiting our careers page <https://www.petpoisonhelpline.com/careers/> or emailing [careers@safetycall.com](mailto:careers@safetycall.com).



68

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**PPH World: Australia & New Zealand**

Pet Poison Helpline is excited to announce our recent expansion into Australia and New Zealand!

Our services are available 24/7 to any veterinary professional in Australia by calling **0011-800-4444-0002** and New Zealand by calling **00-800-444-0002**.

For more information please visit our website: <https://www.petpoisonhelpline.com/pphworld>



69

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Thank you for attending!

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- **Can I watch the recorded webinar online or share it with colleagues?** Yes. Go to the "For Vets" page on our website, [www.petpoisonhelpline.com](http://www.petpoisonhelpline.com) for more info.

Comments? Questions? Email us! [info@petpoisonhelpline.com](mailto:info@petpoisonhelpline.com)

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