T or F ?

- Everyone dreams every night.
- Opening a window or turning up the music is a good way to fight sleep if you're driving tired.
- More than 6.5 hrs. but less than 9 hrs. is a healthy amount of sleep
- A adolescent is physiologically unlikely to be sleepy before 10:30

There are serious consequences

One in 6 fatal car crashes and more than 200,000 workplace accidents a year are related to sleep deprivation.

According to the Presidential Commission on the Challenger Accident:

"Time pressure . . . Increased the potential for sleep loss and judgement errors," and that working "excessive hours, while admirable, raises serious questions when it jeopardizes performance, particularly when critical management decisions are at stake."

You and 22 million fellow Americans

- Non-traditional work schedules can pose additional challenges
  - To relationships
  - To daily organizational management
  - To sense of self-efficacy

How tired are you??

What I hope you will take away

- Function of sleep
  - Consequences of sleep deprivation
- Structure of sleep
  - Healthy sleep patterns
  - Understand the brain's activity in sleep
- Challenges and perils of Shift-work Sleep disorders
- Strategies for healthy sleep!

What is "Enough" Sleep?

- More than 40 % of adults have sleep complaints
- Enough sleep is the amount of sleep we require in order not to be sleepy during the day!

How Has Sleep Changed Historically?

- Ancient world-late 1600's: "1st sleep, 2nd sleep"
- Early 20th C: Norm 8-9 hrs.
- mid 1980s-2002: 7-8 hrs.
- Gallup poll 2013: 6.8 hrs.

So, Margaret Thatcher is most like a . . .

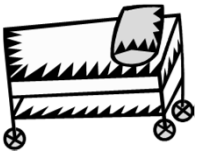
Species	Average total sleep time per day
Python	18 hrs
Tiger	15.8 hrs
Cat	12.1 hrs
Chimpanzee	9.7 hrs
Sheep	3.8 hrs
African elephant	3.3 hrs
Giraffe	1.9 hr

How much sleep do you need?

- Not everyone needs the same amount of sleep
  - Natural short and long sleepers
- <u>BUT</u> sleeping less than 6.5 or more than 9 hours is associated with 1.7 x greater mortality & risk of disease.

Health risks

- Risk of cancer DOUBLES

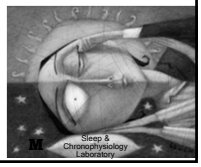


- Risk of Heart Disease increases

- Weight gain increases
  - Want to lose 14.3 lbs per year?

Sleep & Depression

- **Sleep disturbance > 2 wks. is a risk factor for the development of depression**
- **From Sleep disturbance to Sleep abnormality**
- **Often the presenting symptom: Common to notice the sleep problem first**



Shift work and health

- Fatigue
- Poor performance
- Cognitive impairment
- G.I. issues
- Greater risk of accidents
- **Increased risk of CV Disease, Diabetes, and some types of Cancer**

Why sleep matters

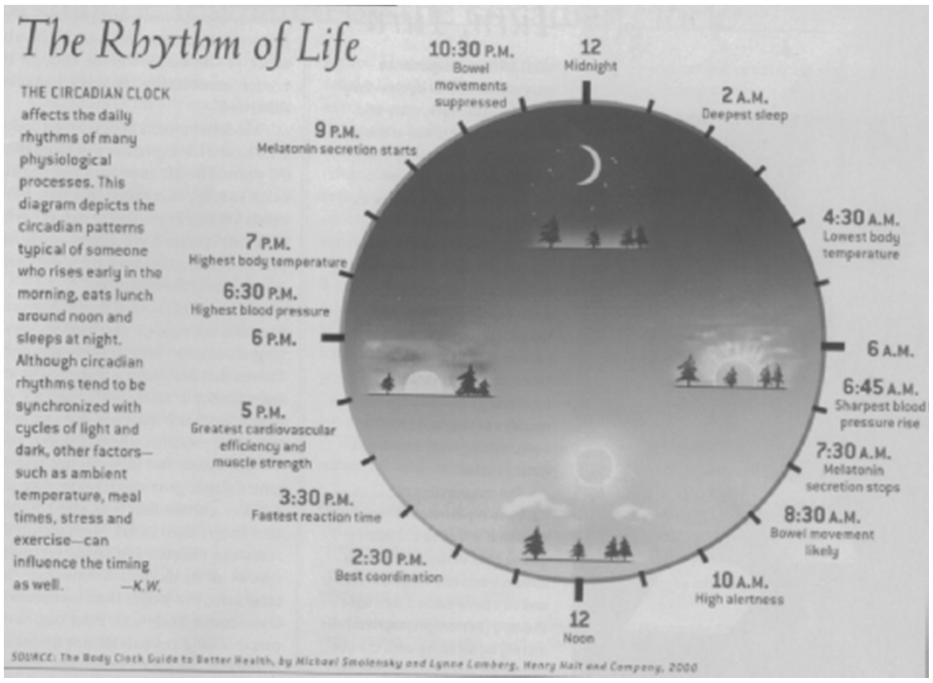
- key to health & wellness
- cell growth
- memory formation and mental agility physical performance
- peace of mind

With adequate sleep

- Problem solving skills improve 2-fold
- Empathy increases
- Energy increases

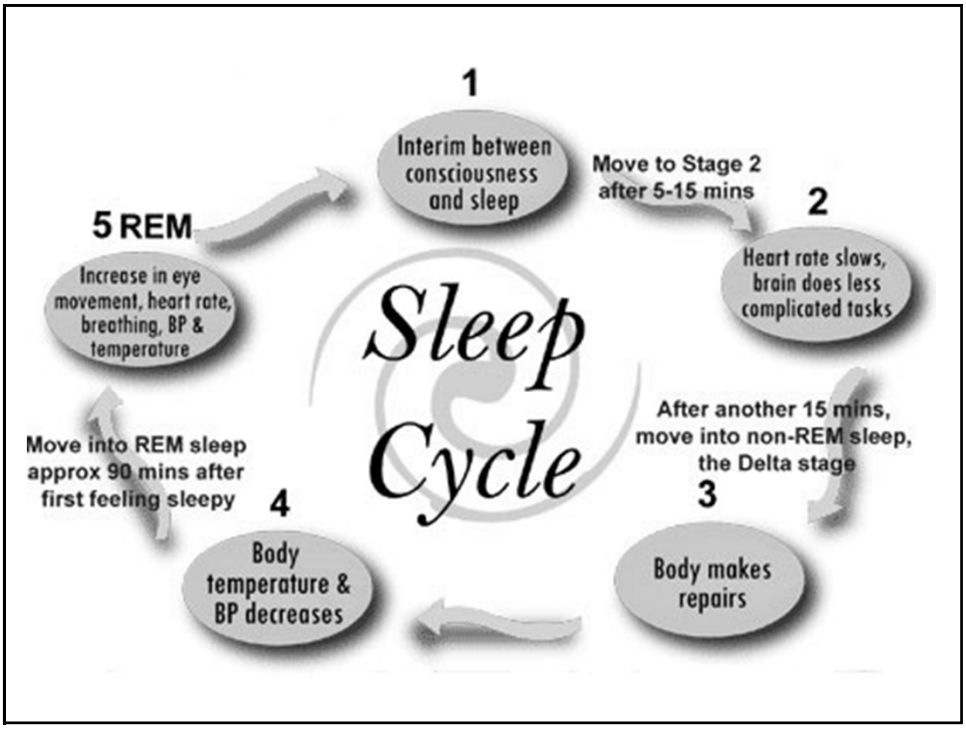
Your turn

- Name two consequences of inadequate sleep
- Name two benefits of good sleep
- Describe an impediment you have to getting good sleep

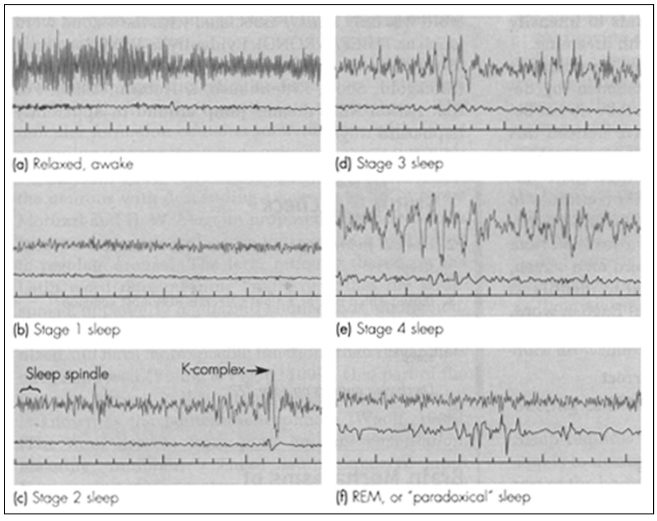


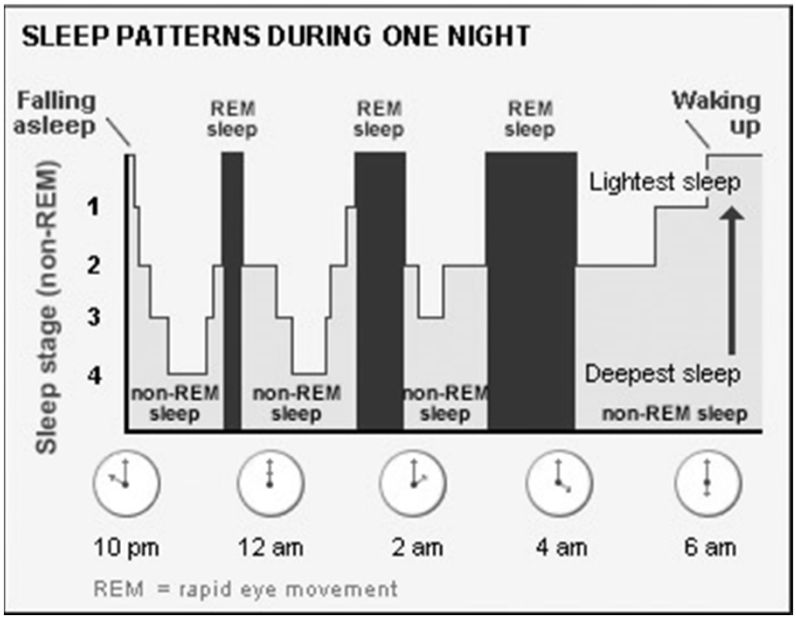
What happens during

Sleep ? ?

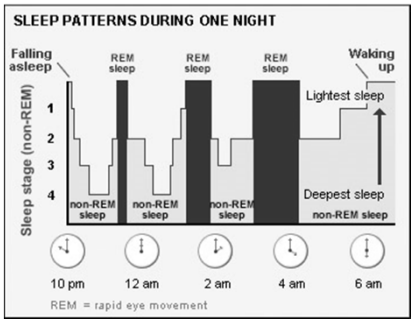


Sleep: Stages





Non-REM and REM

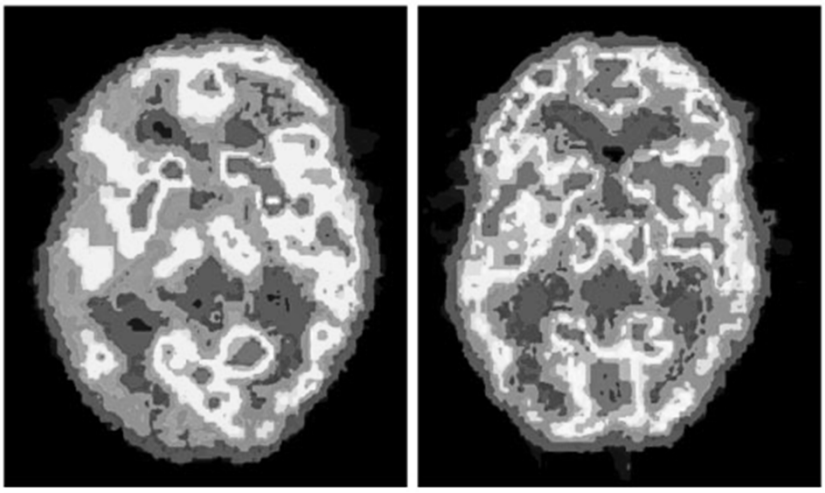


Non-REM:

- Stage One: Transition
- Stage Two: Shallowest restorative sleep.
- Stages 3, 4: Most restorative & restful; vital for physical recuperation.
- First stage to be “made up” after sleep deprivation.
- SWS deprivation causes fatigue, muscle aches

REM: brain on, body off.

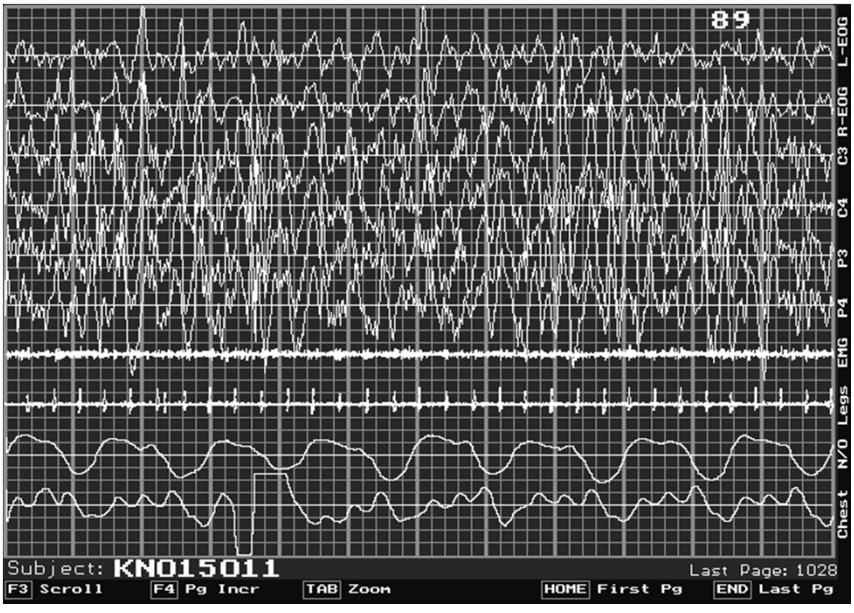
- Vital for psychological well-being



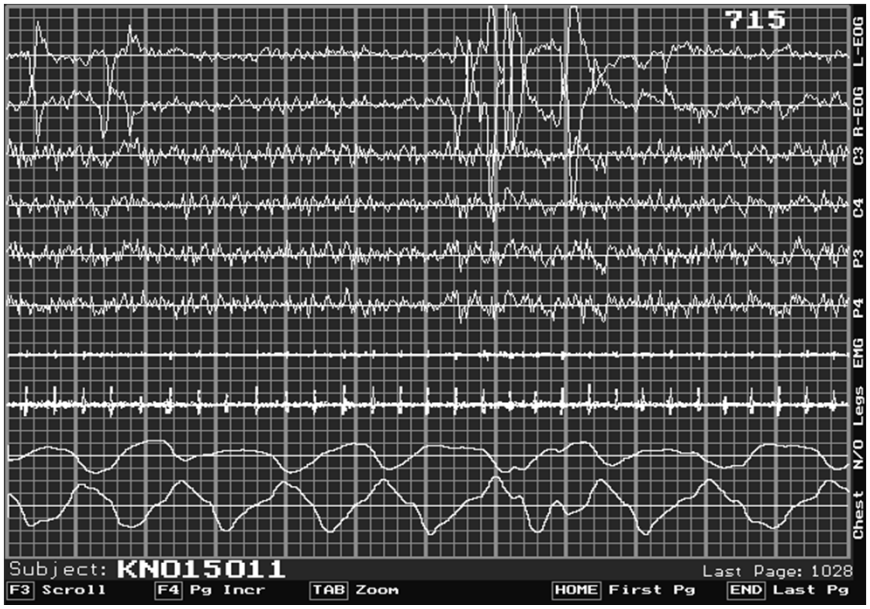
NREM REM

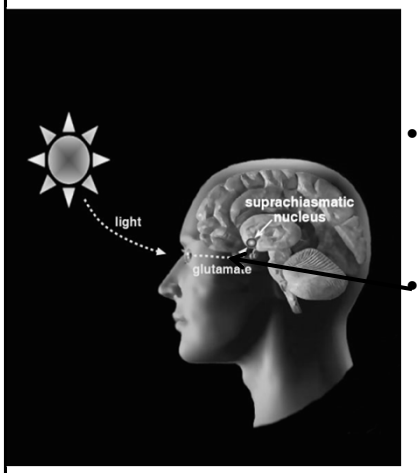
Your body repeats this sequence 4-5 times a night.

Stage 4



REM



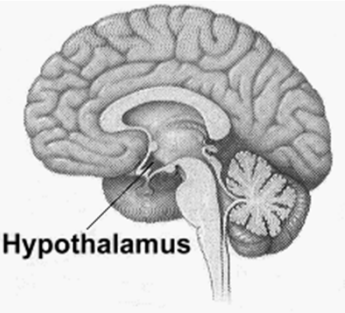


The Sleep Wake Cycle

- Key factor to regulation is exposure to light or darkness
- Exposure to light stimulates nerve from retina to Hypothalamus
  - Raises body temp
  - Releases stimulating hormones
  - Delays release of melatonin

Hypothalamus controls:

- Body temperature
- Hunger, thirst
- Important aspects of parenting and attachment behaviors
- circadian rhythms
- pituitary gland regulation
- testicular function
- Metabolism
- Blood pressure regulation
- Heart rate



What are the body's Biological Rhythms?

- Ultradian <24 hrs.
  - 90-120 min cycles
  - REM/NREM sleep cycle, productivity cycles
- ***Circadian*** **= 24 hrs.**
  - **sleep-waking rhythm**, body temperature, sensitivity to pain or alcohol, reaction time, levels of hormones in the blood .
- Infradian >24 hrs.
  - Lunar cycle, the 5-7 day week
  - Menstrual cycle

Sleeping against the clock

Because your clock is set by exposure to sunlight, shift workers often end up with 2-4 hours less sleep than normal.

Light sleepers, less well-rested on waking.

Your turn again

Give an example of an Ultridian, a Circadian and an Infridian rhythm.

There are mechanisms in the body to sense light and dark. These maintain a _____rhythm.

What is a consequence of ignoring each of these rhythmic mechanisms?

Strategies: Shift rotation

- Schedule rotation to move clockwise
  - Day – Evening – Night – Morning
  - 2-3 day rotations preferable to 5-7
  - Best rotations improve productivity, reduce illness, reduce accidents

Strategies: Napping

- 90 minute nap if you have no breaks in your nighttime shift
- 15 minute nap within a shift can restore alertness
- 2 hour “nap” accommodates sleep debt
  - Probably does not leave you “rested”

Strategies: Driving home

- Consider a 20 minute nap before leaving work
- Wear dark, wrap-around glasses
- Come straight home; No errands

Strategies: Limit stimulants

- Caffeine: limit intake four hours before attempting to sleep
- Alcohol
  - disrupts REM sleep
  - Body habituates to the drowsing effect in 2 days
  - Increases incidence of apnea

Strategies: Melatonin

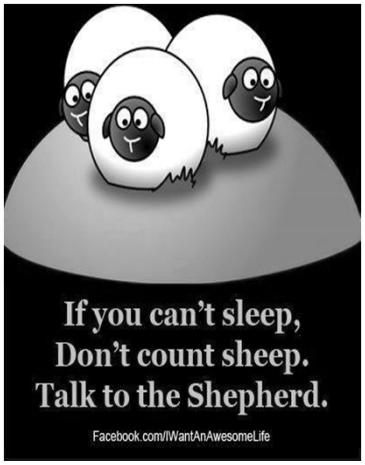
- Most effective in combination with good sleep hygiene
  - Eliminate TV/computer screens
  - Reduce light exposure

Sleep stealers

- **Anxiety and stress**
  - **Ruminating, rehashing and rehearsing**
- **People-pleasing**
  - **Not setting personal limits on evening activities**
- **Disruptive bedroom environment**
  - **Sleep cold, lights off, cell phone out of the bed**
- **Inconsistent sleep schedule**
  - **Naps longer than 20 minutes**
- **Stimulating activities**
  - **Rigorous exercise, video gaming, arguments, conversations**
- **Poor sleep diet**
  - Eating close to bedtime, alcohol, caffeine and spicy food

Useful practices

- Progressive Relaxation
- Breath meditation
- Visualization
- Gratitude meditation



Thank you!

Connie Schrader

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Resources

- American Academy of Sleep Medicine
  One Westbrook Corporate Center,
  Suite 920
  Westchester, IL 60154
  (708) 492-0930
- National Sleep Foundation
  1522 K Street, NW, Suite 500
  Washington, DC 20005

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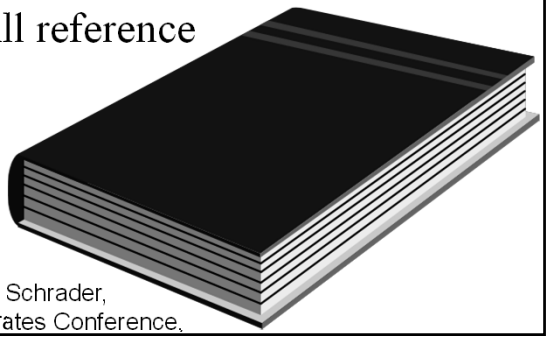
Best single reference

- "Why we Sleep" by James Horne. Published by Oxford University Press Walton St Oxford OX2 6DP 1988
- a classic overall reference



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Web Links

- Northwestern University, Center for Sleep & Circadian Biology,
- About Circadian Rhythms
  National Sleep Foundation,
- Strategies for Shift Workers
- National Sleep Foundation,
- Sleep and the Traveler
- National Institute of Mental Health, How Biological Clocks Work
- Sleepnet.com

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