

# The Science of Sleeping

September 23, 2011

MEDICINE *of* THE HIGHEST ORDER



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# Everything you wanted to know about sleep in 45 minutes

- A brief history of sleep
- What is sleep?
- Why is sleep important?
- What is insomnia? Why can't I sleep?
- Do sleeping pills really help?
- If not sleeping pills, what then?
- Why should I care about my sleep hygiene?



A CLOCKWORK ORANGE, 1971

# A Brief History of Sleep

## SLEEP CHARACTERISTICS

HOW THEY VARY AND REACT TO  
CHANGING CONDITIONS IN THE  
GROUP AND THE INDIVIDUAL

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### ACKNOWLEDGMENTS

This investigation was aided by a generous grant from the Wander Company of Chicago, the manufacturers of Ovaltine, one of the materials whose effect on the quality of sleep was studied among several others. To avoid any misunderstandings, we wish to state that we took the initiative in approaching Mr. James G. McMillan, the president of The Wander Company, with the request for financial support for the investigation of the variability of the different sleep characteristics and their modification by external and internal conditions. The grant was then made to The University of Chicago, subject to the usual rules formulated by the University for accepting aid for research from commercial concerns as regards the type of problem and the manner of publication, namely, that the problems involved should be of fundamental academic interest and that

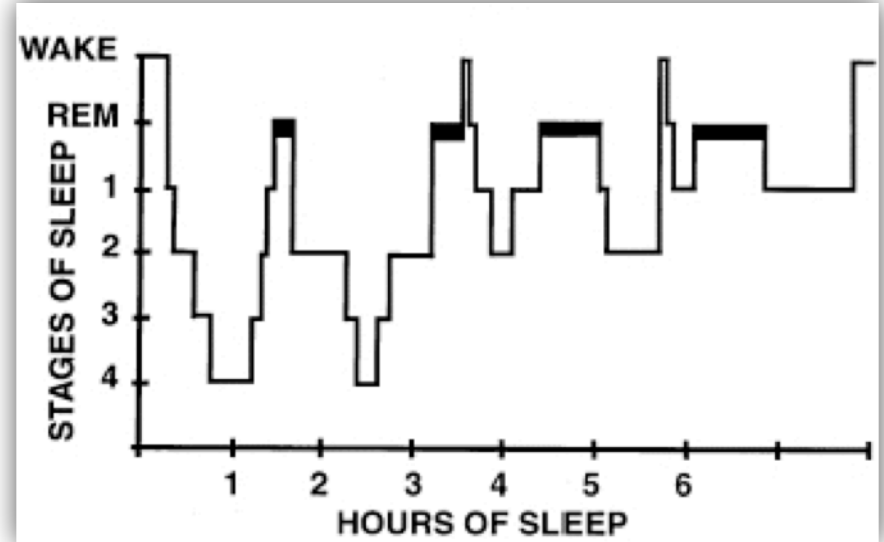
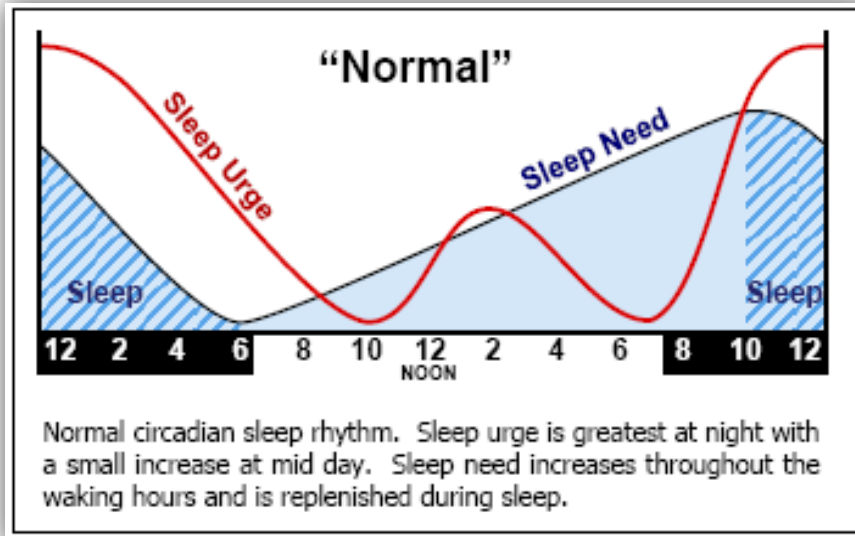
the University reserves the right to decide whether the results should be published, and if published, the place, time, and the method of publication. It is expressly noted that publication will not depend upon relation of the results to the claims made by the donor, but upon general academic interest.

We take this opportunity to express our thanks to the officers of The Wander Company for making this research possible. Thanks are also due to the Eli Lilly Company and the Winthrop Chemical Company for the generous supply of Amytal and Evipal, respectively, which we received from them. While we are not going to mention each subject by name, we wish to thank our human "guinea pigs" collectively for their loyalty and co-operation in the gathering of the data.

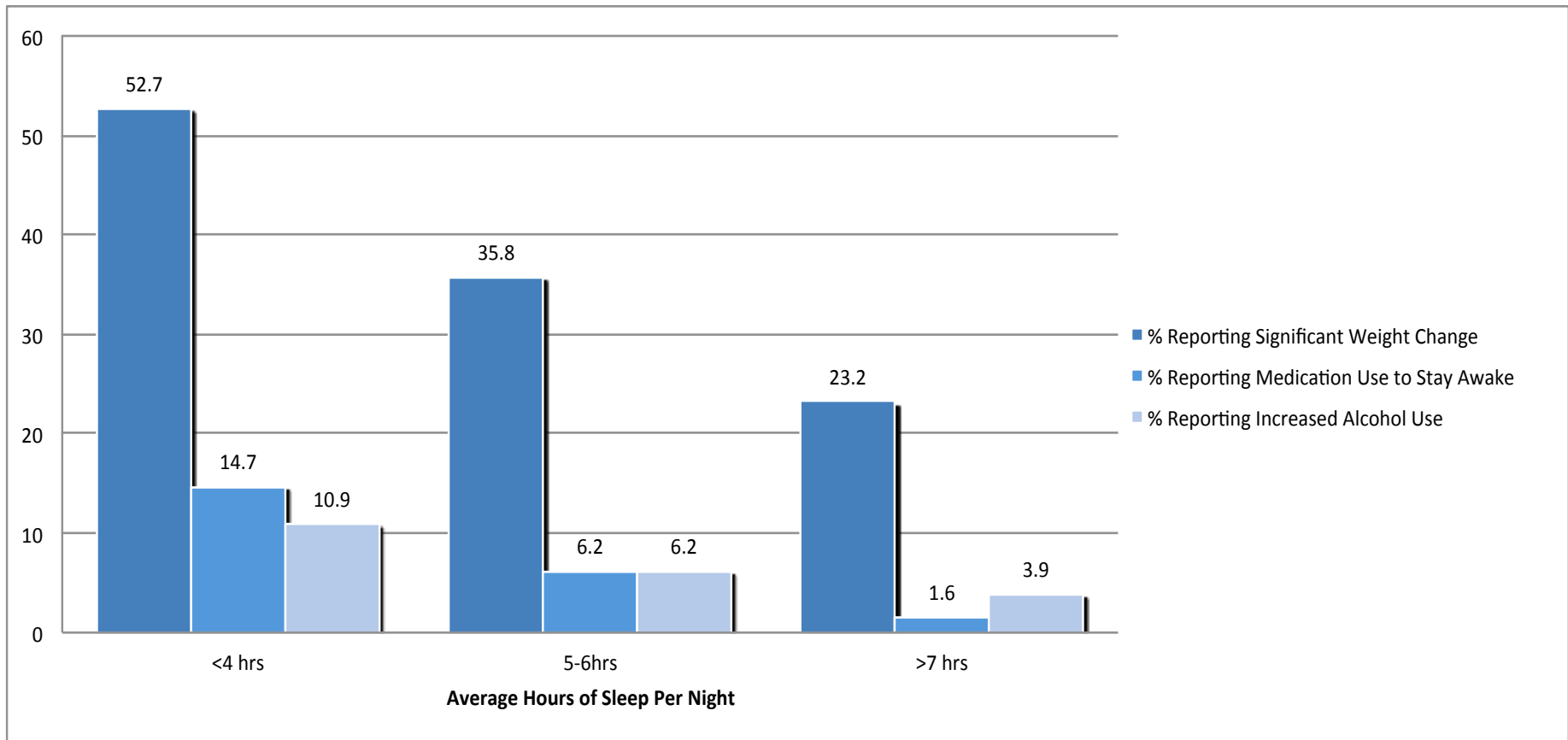
The transfer of the coded sleep records to Hollerith machine cards and all the sortings and correlations were made under the direction of Mr. James C. Messer of the tabulating division of the Comptroller's Office of The University of Chicago. We hereby wish to thank Mr. Messer and his assistants for the help they gave us in this matter.

The statistical analysis was made by Dr. Helen M. Wolfle and Mr. Severn Proves, under the able guidance of Professor Harold Gulliksen. Without the treatment they gave our results, the figures we collected and the correlations we worked out would be largely meaningless. It is impossible for us adequately to express our feeling of appreciation for the aid they gave us.

# What is Sleep?



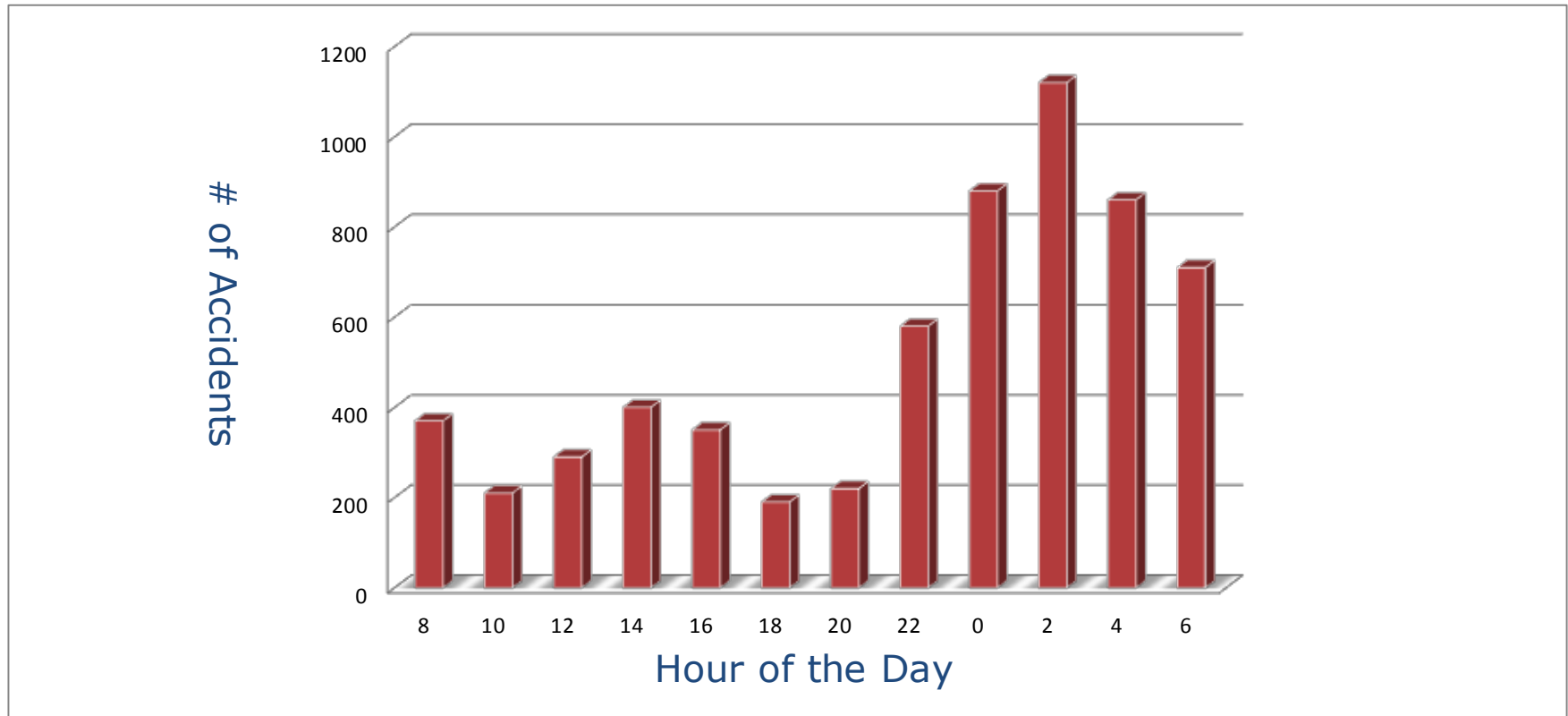
# Why is sleep important ? Reason #1



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# Why is sleep important ? Reason #2

## Car Crashes by Time of Day



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# Why is sleep important ? *Reason #3*

## *Environmental Disasters and Time of Day*

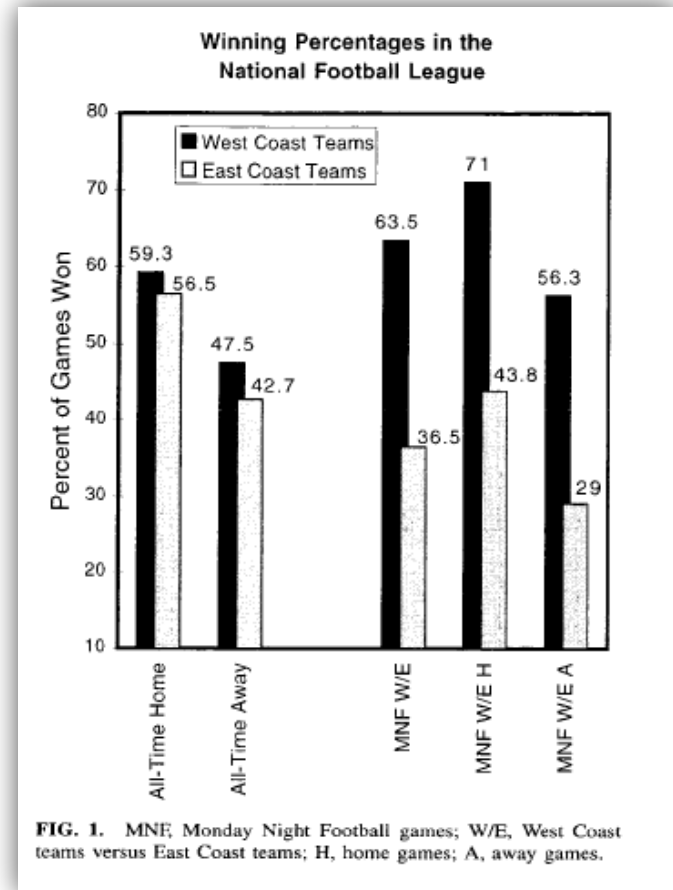
Chernobyl 1:23 AM

Bhopal 12:40 AM

Three Mile Island 4:00 AM

# Why is sleep important ? Reason #4

- Researchers at Stanford looked at MNF results from 1970 – 1994.
- West coast teams won 63.5% of games, while east coast teams won 36.5%.
- West coast teams consistently beat the spread more than by chance alone.



# Sleep Myths

1. To function best, you must get eight hours of sleep.
2. Many people do just fine on 4-5 hours of sleep at night.
3. It is abnormal to wake up during the night.
4. You can catch up on your sleep during the weekends.

**“Sleep is not a bank account and sleep debt cannot be repaid.”**

5. Tylenol PM is the safest treatment for insomnia

# What Is Insomnia ?

1. Do you have difficulty falling asleep? *Lie awake for a long time before you fall asleep.*
  2. Do you have difficulty staying asleep? *Sleep for only short periods*
  3. Do you wake up too early in the morning?
  4. Does your poor sleep affect how you feel and function in the daytime?
- **If the answer is yes to any of these questions, on average for more than 3 days per week, over the past 6 months you have chronic insomnia.**

# What is Insomnia?

## Risk Factors:

- More common in women
- More common as we age
- People who are shift workers
- Unemployment
- Lower socio-economic status
- Underlying medical and psychiatric problems

# What medical problems can lead to insomnia?

- **Depression**, anxiety, & posttraumatic stress disorder
- Alzheimer's disease and Parkinson's disease
- Chronic pain, such as arthritis and headache disorders
- Breathing problems: such as asthma and heart failure
- Thyroid disorders
- **GI/Stomach Problems**, such as heartburn/reflux
- Other sleep disorders, such as restless leg syndrome and sleep apnea
- **Prostate/bladder issues**

# The Impact of Insomnia

Reported to occur in 1/3<sup>rd</sup> of the world's population. Approximately 20% of men in the US.

It is often under recognized by health care professionals.

- Direct costs: within the US, approximately \$15.0-17.7 billion
- Reduced quality of life
- Impaired daytime function
- More likely to miss work
- Higher health care costs.
- Increased risk of depression – 35-60% incidence

**SLEEP, 2006 ; J Clin Psychiatry, 2009; National Sleep Foundation, 2004**

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# Do Sleeping Pills Really Help?

## Over the Counter:

- Tylenol PM, Advil PM, Benadryl (*diphenhydramine*)
- Melatonin supplements
- Herbs: valerian root supplements, chamomile, valerian root, kava kava, lemon balm, passionflower, lavender, and St. John's Wort

## Prescription Sleeping Pills:

- Ambien, Lunesta, Sonata
- Ativan, Valium, Xanax (benzodiazapenes)
- Trazadone, Remeron
- Rozerem

# Insomnia is Treatable

- 1. Stimulus Control:** The objective of stimulus control therapy is to train the person to re-associate the bed and bedroom with sleep and to re-establish a consistent sleep-wake schedule

In other words,

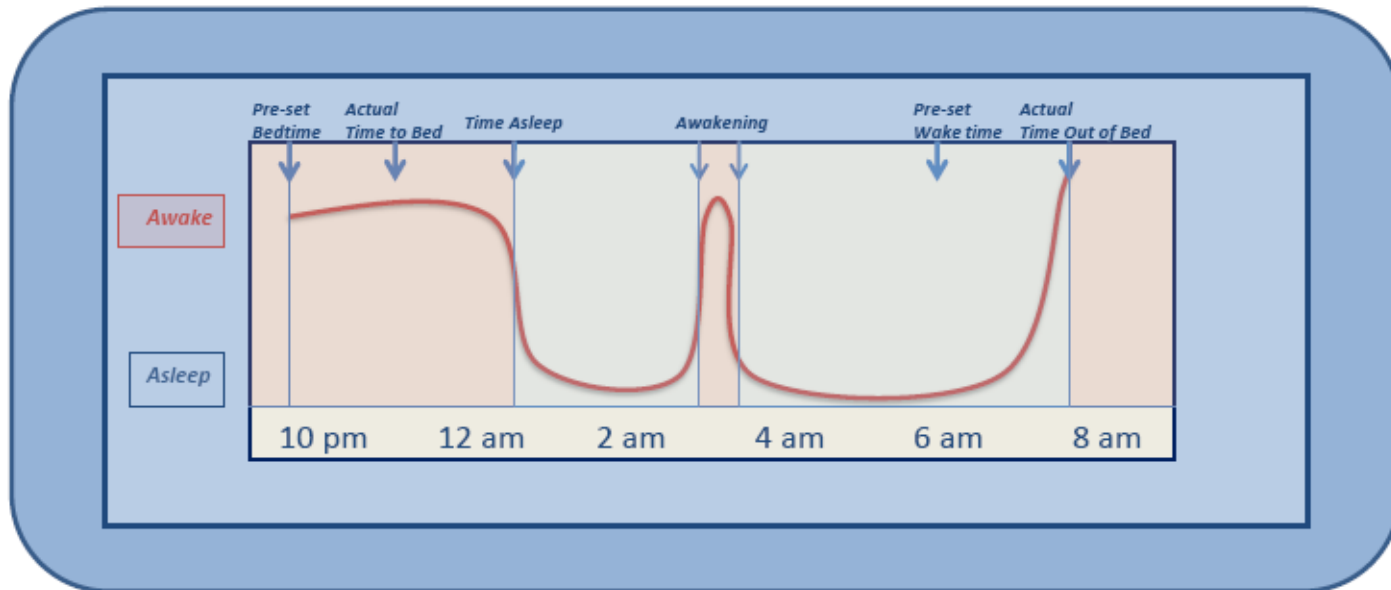
*the bedroom is for two things: sleep and sex.*

# Insomnia is Treatable

- 2. Relaxation Training:** involves methods aimed at reducing body tension (e.g., progressive muscle relaxation) or intrusive thoughts at bedtime that interfere with sleep

# Insomnia is Treatable

- 3. Sleep Restriction Therapy:** form of therapy involves limiting the amount of time in bed to the actual amount of time spent asleep, thereby creating a mild sleep deprivation, and then lengthening sleep



# Insomnia is Treatable

## 4. Sleep Hygiene:

*What sleep hygiene isn't?*

Not instructions on how to brush or floss in bed.

Or, how my wife arranges the decorative pillow on our mattress.

*What sleep hygiene is?*

Rules to follow for a healthier and better sleep.

These rules apply to people with insomnia/poor sleep.

# Sleep Hygiene

**1) Have a fixed bedtime and awakening time.** Yes, even on the weekends. And, even if you are retired!

**2) Avoid daytime naps.** A late afternoon siesta is not a bad thing, provided you limit it 30-45 minutes and sleep well at night.

**3) Avoid alcohol up to 4-6 hours before bed.** It may help you fall asleep, and that's about all.

**4) No caffeine after 4:00 to 5:00 pm.** Real men drink decaf after dinner.

**5) Avoid heavy and rich foods in the hours before bedtime.** No snickers, or marshmallows, or chicken wings

# Sleep Hygiene

**6) Get regular exercise. Most likely not before bed.** Its all about your temperature.

**7) Make sure your bedroom is comfortable.** Comfortable bedding, a cool (not Rochester cold) bedroom.

**8) Reserve the bed for sleep and sex.** Do not eat, watch TV, read, pay bills, talk on the phone, etc.

**9) Getting Up in the Middle of the Night.** Most people wake up one or two times a night for various reasons. If you find that you get up in the middle of night and cannot get back to sleep *within 15-20 minutes*, then do not remain in the bed "trying hard" to sleep. Get out of bed. Leave the bedroom. Read, have a light snack, do some quiet activity, or take a bath. You will generally find that you can get back to sleep 20 minutes or so later. Do not perform challenging or engaging activity such as office work, housework, etc.



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