



Mid-America (HHS Region 7)

**MHTTC**

Mental Health Technology Transfer Center Network  
Funded by Substance Abuse and Mental Health Services Administration

# Context Clues: Using Social Determinants of Health (SDOH) to Enhance Treatment: Sleep

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# Learning Objectives

This presentation provides an orientation to sleep as a Social Determinant of Health. You will:

- Learn how sleep is related to physical and mental health
- Learn how to assess for sleep problems
- Learn how to make referrals to support for sleep problems

What do we  
need to know  
about sleep



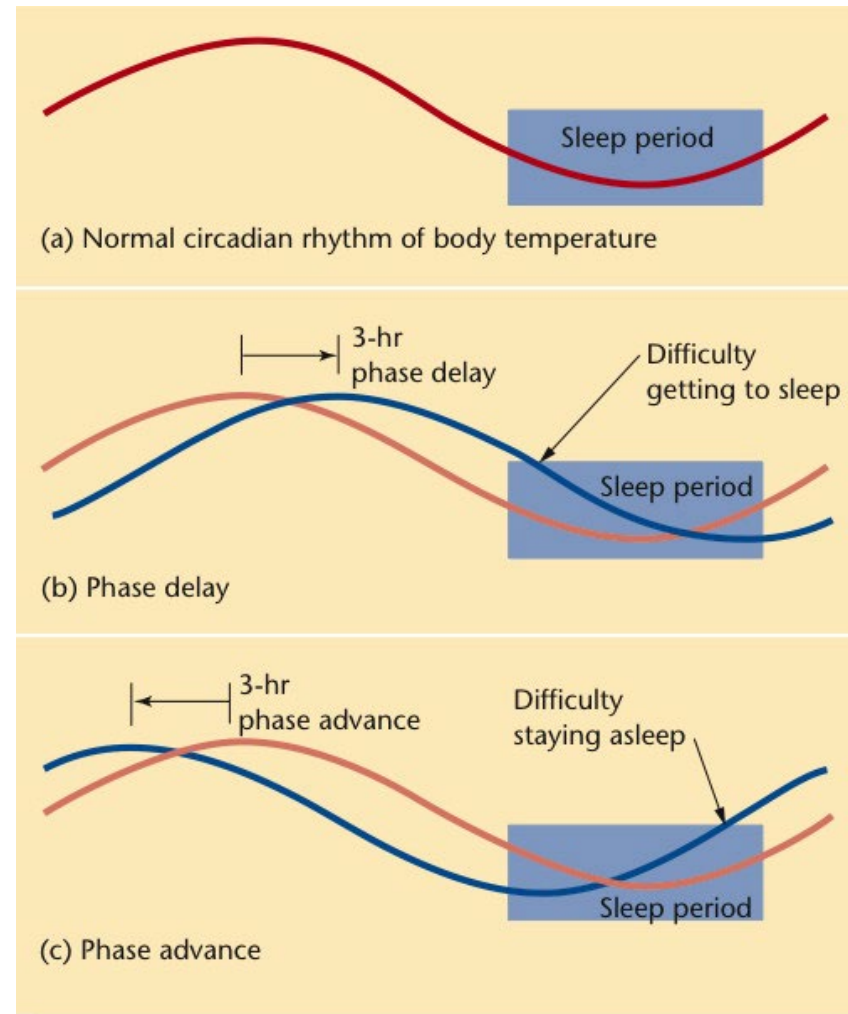
# Waking and Sleeping Rhythms

Sleeping and waking are regulated by internal mechanisms that operate on an approximately 24 hour cycle.

- Individual differences to the rhythm of wakefulness and alertness.
- The sleep cycle is associated with age.
- The 24-hour cycle is called the “Circadian rhythm” and it remains consistent throughout the day; even without external stimuli.
- It is possible to adjust to 23- or 25- hour day, but not to a 22- or 28-hour day.
- People who engage in shift work often fail to adjust completely.

(Cengage Learning, 2008)

# Rhythms of Waking and Sleeping



# Rhythms of Waking and Sleeping

How to adjust (restore) the circadian rhythm

- **Free-running rhythm** is when no stimuli resets it.
- A **zeitgeber** is a term used to describe any stimuli that affect the circadian rhythms.
- Light is important. Can buy lights to help with that. Other sleep altering stimuli include exercise, noise, meals, and temperature.

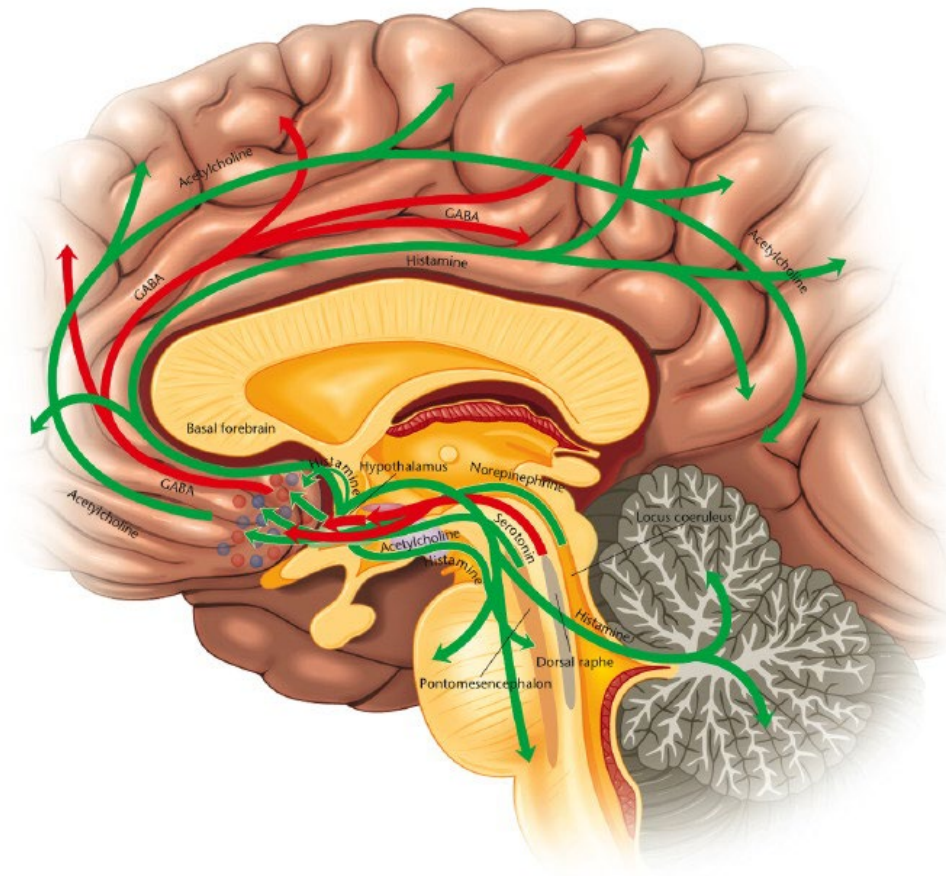
Mechanisms of the Biological Clock (Circadian Rhythm)

- Light stimulate melatonin production in the pineal gland.

# Rhythms of Waking and Sleeping

- Brain mechanisms of sleeping and waking
  - Excitatory connections
    - Histamine, Acetylcholine, Norepinephrine
    - “Histamine” produce widespread excitatory effects throughout the brain.
    - Anti-histamines produce sleepiness.
  - Inhibitory connections
    - Serotonin
    - GABA decrease the temperature and metabolic rate and decrease stimulation of neurons.

# Rhythms of Waking and Sleeping





# Why do we sleep?

## Conserving energy

- The original function of sleep was to probably conserve energy.
- Conservation of energy is accomplished via:
  - Decrease in body temperature of about 1-2 Celsius degrees.
  - Decrease in muscle activity.

(Cengage Learning, 2008)

## Sleep restores the brain

- The brain changes when we sleep and removes waste from the system. I.e. some toxins associated with Alzheimer's disease is removed during sleep at twice the rate as when awake
- Proteins rebuilt in the brain
- Energy supplies replenished

(NIH, 2021)

# Why do we sleep?

## Helps us form memories

- Sleep is important for learning and memory.
- We all function better after a good night's sleep.
- Increased brain activity occurs in the area of the brain activated by a newly learned task while one is asleep.
- Activity also correlates with improvement in activity seen the following day.

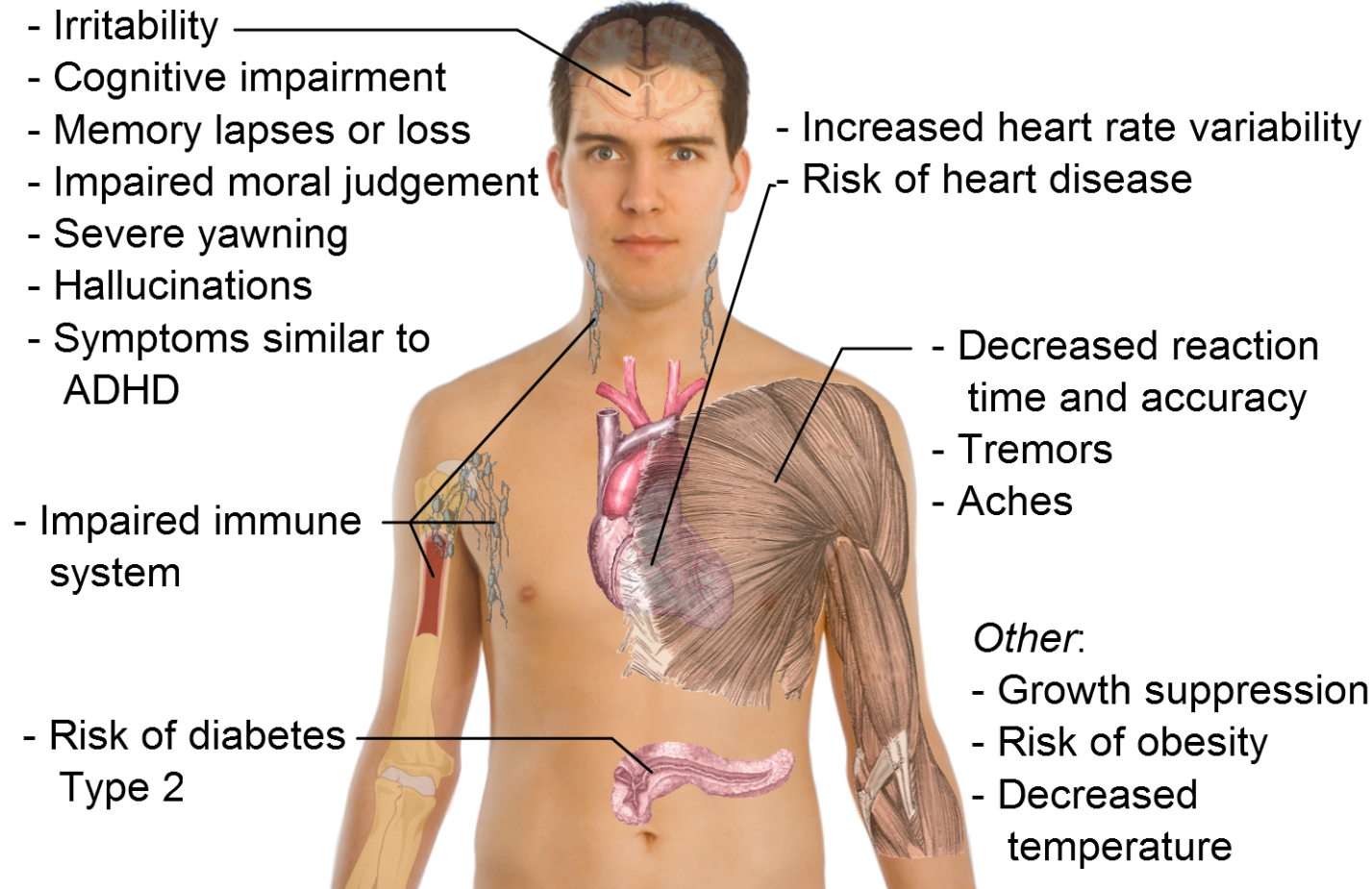
Cengage, 2008

## Dreaming

- We process emotions in our sleep

# Sleep Deprivation

## Effects of Sleep deprivation



# Stages of Sleep

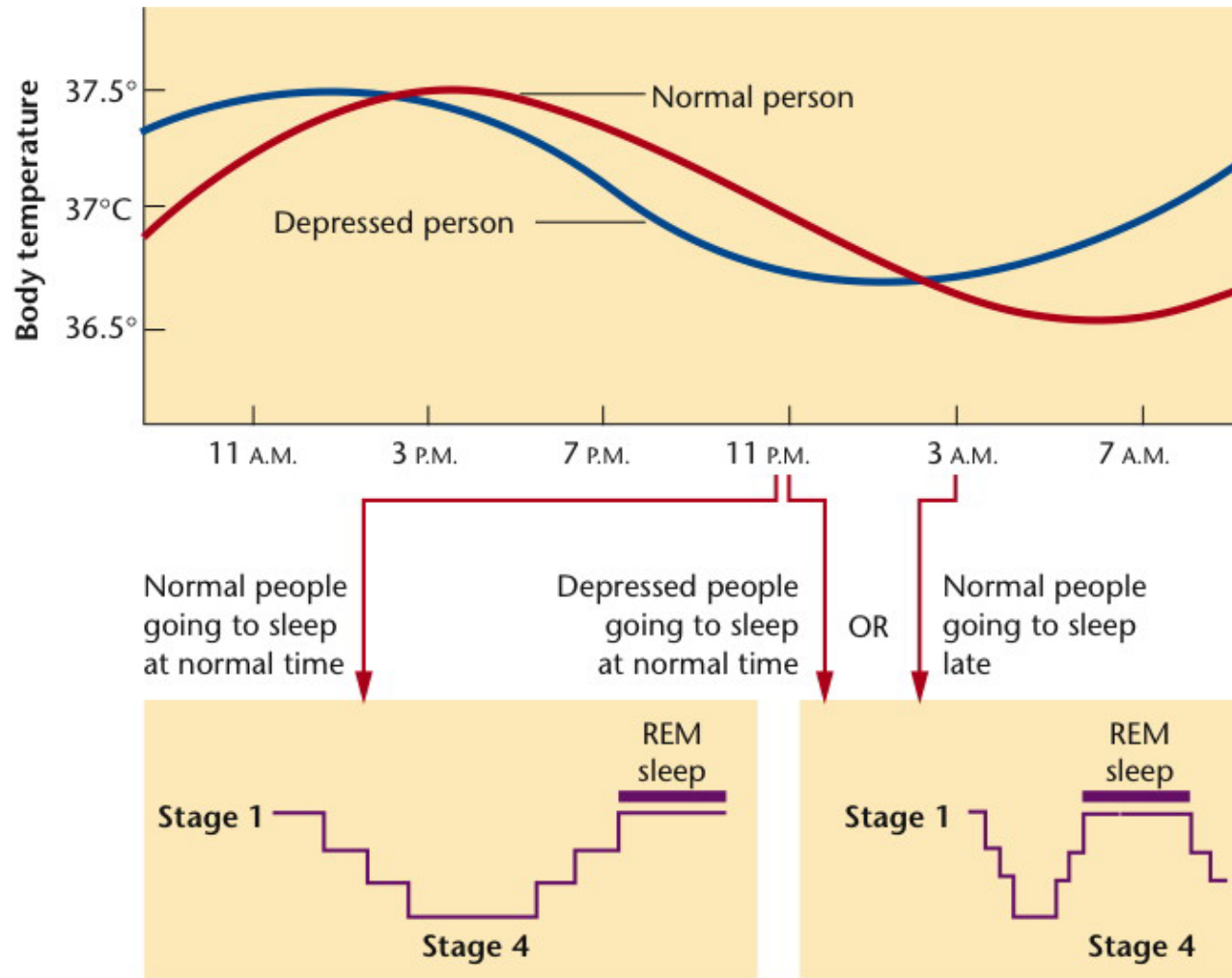
Stage 1 non-REM sleep is the changeover from wakefulness to sleep. During this period of relatively light sleep, your heartbeat, breathing, and eye movements slow, and your muscles relax with occasional twitches. Your brain waves begin to slow.

Stage 2 non-REM sleep is a period of light sleep before you enter deeper sleep. Your heartbeat and breathing slow, and muscles relax even further. Your body temperature drops and eye movements stop. Brain wave activity slows.

Stage 3 non-REM sleep is the period of deep sleep that you need to feel refreshed in the morning. Your heartbeat and breathing slow to their lowest levels during sleep. Your muscles relax and it may be difficult to awaken you. Brain waves become even slower.

REM sleep first occurs about 90 minutes after falling asleep. Your eyes move rapidly from side to side behind closed eyelids. Your breathing becomes faster and irregular, and your heart rate and blood pressure increase to near waking levels. Most of your dreaming occurs during REM sleep. Your arm and leg muscles become temporarily paralyzed, which prevents you from acting out your dreams. As you age, you sleep less of your time in REM sleep.

# Altered Sleep Patterns and Depression





# Seasonal Affective Disorder and Sleep

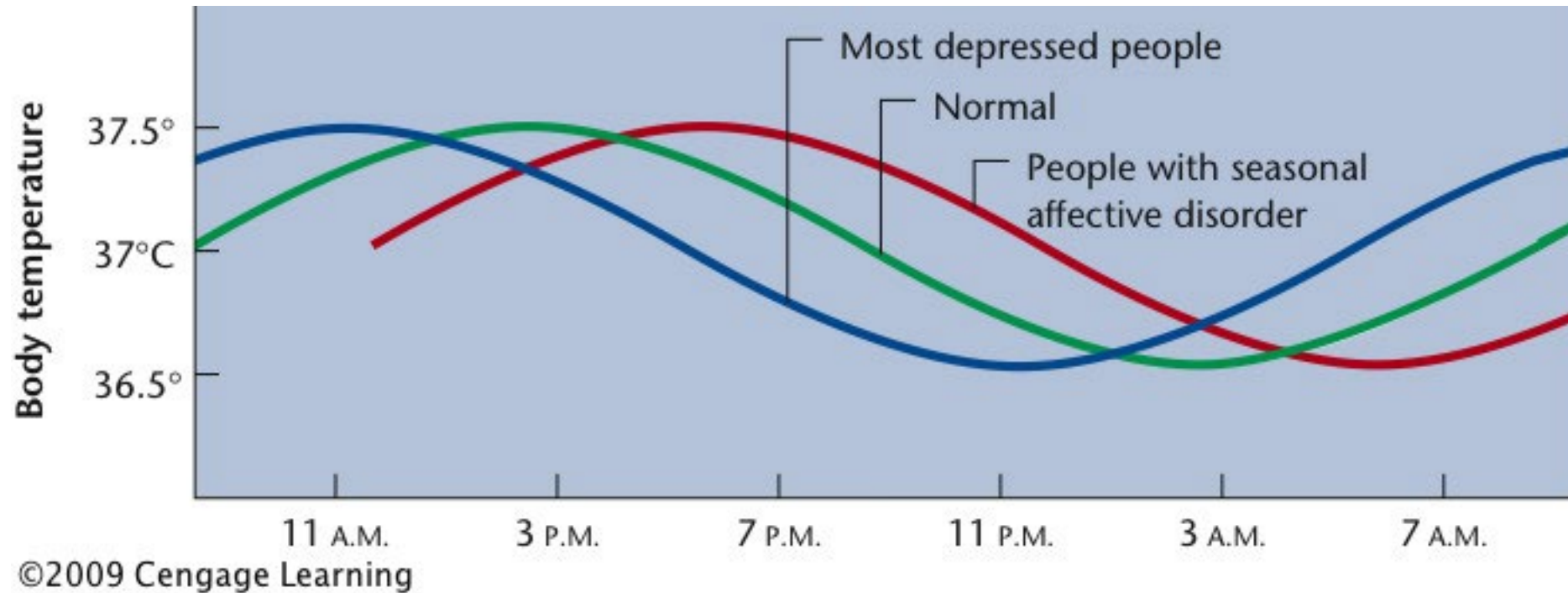
Seasonal affective disorder (SAD) develops during seasons with decreased sun exposure.

Exposure to bright lights in the morning is helpful.

Serotonin levels are affected by light.

Include phase-delayed sleep and temperature rhythms; contrary to most depressed people that have phase-advanced patterns.

# Seasonal Affective Disorder and Sleep



# Work Stress/Burnout & Health

1

## **Sleep is important for physical health and wellness**

Sleep restores protein levels in the brain, helps us form memories and increase learning, and helps us process emotions.

2

## **Sleep problems/disorders are associated with health outcomes**

Sleep problems/disorders are problems by themselves. And, they determine health outcomes.

3

## **Insufficient sleep affects our physical health**

Sleep is associated with diabetes, impaired immune system, heart disease and many other physical symptoms.

4

## **Insufficient sleep affects our mental health**

Is associated with depression, seasonal affective disorder, hallucinations, ADHD, and cognitive functions.

5

## **Sleep is regulated by light**

Light is the most important "zeitgeber". It helps us reset the biological clock everyday



# HEALTH EQUITY

How to assess  
for sleep  
problems



# Sleep Disorders, examples

There are 10 sleep disorders in DSM-5

Insomnia	A disorder associated with inadequate sleep.
Sleep Apnea	A disorder of inability to breathe while sleeping for a prolonged period of time.
Narcolepsy	A disorder of frequent periods of sleepiness throughout the day.
Nightmare	Intense anxiety awakens a person screaming in terror.



# Z72 Problem Related to Lifestyle

## Sleep Z-Codes

Z72.820 Sleep deprivation

Z72.821 Inadequate sleep hygiene

# Sleep Hygiene

Set a schedule – go to bed and wake up at the same time each day.

Exercise 20 to 30 minutes a day but no later than a few hours before going to bed.

Avoid caffeine and nicotine late in the day and alcoholic drinks before bed.

Relax before bed – try a warm bath, reading, or another relaxing routine.

Create a room for sleep – avoid bright lights and loud sounds, keep the room at a comfortable temperature, and don't watch TV or have a computer in your bedroom.

Don't lie in bed awake. If you can't get to sleep, do something else, like reading or listening to music, until you feel tired.

See a doctor if you have a problem sleeping or if you feel unusually tired during the day. Most sleep disorders can be treated effectively.

# Pittsburg Sleep Quality Index

- Assess subjective sleep quality and sleep habits during the last month
- 19 items and 5 additional items that are completed by bedpartner
- Internal consistency: Cronbach  $\alpha = 0.73$ .
- Test-retest reliability = 0.859

# What to do about sleep in primary care

## ASK

- Ask about sleep. Dig into how patients are doing sleepwise. Are they having difficulties falling asleep, do they wake up early, tired during the day, wake up screaming, etc.

## IDENTIFY

- Find local resources for therapy and counseling.

## ACT

- Identify patients via Z-Codes and increase their motivation to seek help for sleep. Provide education about sleep cycle, melatonin, and light and other “zeitgebers”. Make referrals.

# Referrals



# Aunt Bertha - <https://aetna-ks.auntbertha.com>

Search and connect to support. Financial assistance, food pantries, medical care, and other free or reduced-cost **help starts here:**

ZIP

67601

Q Search



Aetna Better Health® of Kansas

By continuing, you agree to the [Terms & Privacy](#)



# Aunt Bertha - <https://aetna-ks.auntbertha.com>

The screenshot displays the Aunt Bertha website interface. At the top left is the Aetna logo. On the right, there are links for 'Support', 'Sign Up', and 'Log In'. Below the logo is a search bar with the placeholder text 'ZIP or keyword or program name' and a magnifying glass icon. To the right of the search bar is the text 'Search for free or reduced cost services like medical care, food, job training, and more.' Below the search bar is a 'Select Language' dropdown menu. A horizontal navigation bar contains icons and labels for various services: FOOD (apple icon), HOUSING (house icon), GOODS (lamp icon), TRANSPORT (bus icon), HEALTH (heart with pulse icon, circled in red), MONEY (dollar bill icon), CARE (person icon), EDUCATION (book icon), WORK (briefcase icon), and LEGAL (scales icon). Below this bar is a list of service categories on the left, each with a right-pointing arrow: 'Addiction & Recovery', 'Dental Care', 'End-Of-Life Care', 'Health Education', 'Help Pay For Healthcare', 'Medical Care', 'Mental Health Care', 'Sexual And Reproductive Health', and 'Vision Care'. The 'Mental Health Care' category is expanded, showing a list of services: 'Mental Health Care - All (156)', 'bereavement (36)', 'counseling (66)', 'family counseling (18)', 'group therapy (9)', 'individual counseling (23)', 'substance abuse counseling (18)', 'hospital treatment (2)', 'medications for mental health (8)', 'mental health evaluation (15)', 'outpatient treatment (16)', 'psychiatric emergency services (3)', 'residential treatment (8)', 'support & service animals (18)', and 'understand mental health (22)'. The 'Help Pay For Healthcare' and 'Mental Health Care' categories are circled in red. At the bottom of the page, a footer note states: 'This curated database of resources is provided by Aetna Better Health of Kansas'.

# Aunt Bertha - <https://aetna-ks.auntbertha.com>

The screenshot displays the Aunt Bertha website interface. At the top, there is a search bar and a navigation menu with icons for various services: FOOD, HOUSING, GOODS, TRANSIT, HEALTH, MONEY, CARE, EDUCATION, WORK, and LEGAL. The 'HOUSING' icon is circled in red. Below the navigation, the page shows search results for 'Hays, KS (67601) / health / counseling', with a pagination indicator '1 - 25 of 65' also circled in red. There are three filter buttons: 'Personal Filters', 'Program Filters', and 'Income Eligibility'. A map on the left shows the location of the search results. The main content area features two program listings. The first listing is 'FRONTLINE Counseling - Health Care Professionals and Essential Workers' by For The Frontlines, which includes a 'Next Steps' section circled in red. The second listing is 'Children's Behavioral & Mental Health Treatment' by KVC Hospitals Hays.

ZIP or keyword or program name

Select Language

FOOD HOUSING GOODS TRANSIT HEALTH MONEY CARE EDUCATION WORK LEGAL

Hays, KS (67601) / health / counseling 1 - 25 of 65

Sort by RELEVANCE CLOSEST

Personal Filters Program Filters Income Eligibility

Map Satellite

**FRONTLINE Counseling - Health Care Professionals and Essential Workers**  
by For The Frontlines  
COVID-19 Response Program

For The Frontlines is offering free 24/7 crisis counseling and support for health care workers and essential workers dealing with anxiety, stress, fear, isolation or other difficult emotions...

Main Services: mental health care , counseling , help hotlines

Serving: anyone in need, adults, young adults, teens, seniors, covid19, in crisis, anxiety, all mental health

MORE INFO SAVE SHARE NOTES SUGGEST SEE NEXT STEPS

**Next Steps:**  
Go to the program's website.  
Serves nationwide  
Open Now : Open 24 Hours

Notice out-of-date information or see a program you work for? Click **Suggest** to share an update or claim your program listing to get access to free tools and data.

**Children's Behavioral & Mental Health Treatment**  
by KVC Hospitals Hays

KVC Hospitals Hays provides psychiatric residential treatment for children ages 6 to 18 who are struggling with depression, anxiety, suicidal thoughts, the impacts of trauma, and other behavioral...

Main Services: psychiatric emergency services , residential treatment , counseling , mental health care , group therapy , family counseling , individual counseling , mental health evaluation , alternative education

Other Services: skilled nursing , medications for mental health , navigating the system , help fill out forms , case management

**Next Steps:**  
Call 913-890-7468 or go to the program's website.  
1.58 miles ( serves your state)  
205 East 7th Street, Hays, KS 67601

# Practice Application

“Our Case Study”



# What can we learn from our case study?

Claudia



Mother  
Age: 38  
Race: Latina  
Employment: Waitress  
Insurance: through employer

Patrick



Father  
Age: 41  
Race: White/Thai  
Employment: Auto detailer  
Insurance: marketplace plan

Ivonne



Grandmother  
Age: 63  
Race: Latina  
Employment: N/A  
Insurance: none

# What can we learn from our case study?

Tyler



Eldest daughter  
Age: 16  
Race: biracial  
Employment: student  
Insurance: Medicaid

Elliot



Son  
Age: 13  
Race: Latino  
Employment: student  
Insurance: Medicaid

Edith



Youngest daughter  
Age: 2  
Race: biracial  
Employment: N/A  
Insurance: Medicaid

Questions?





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