

Improving Teen Sleep Health To Prevent Suicide

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If you or someone you know
is in need of support or in crisis, please:

Dial 988
(Suicide and Crisis Lifeline)

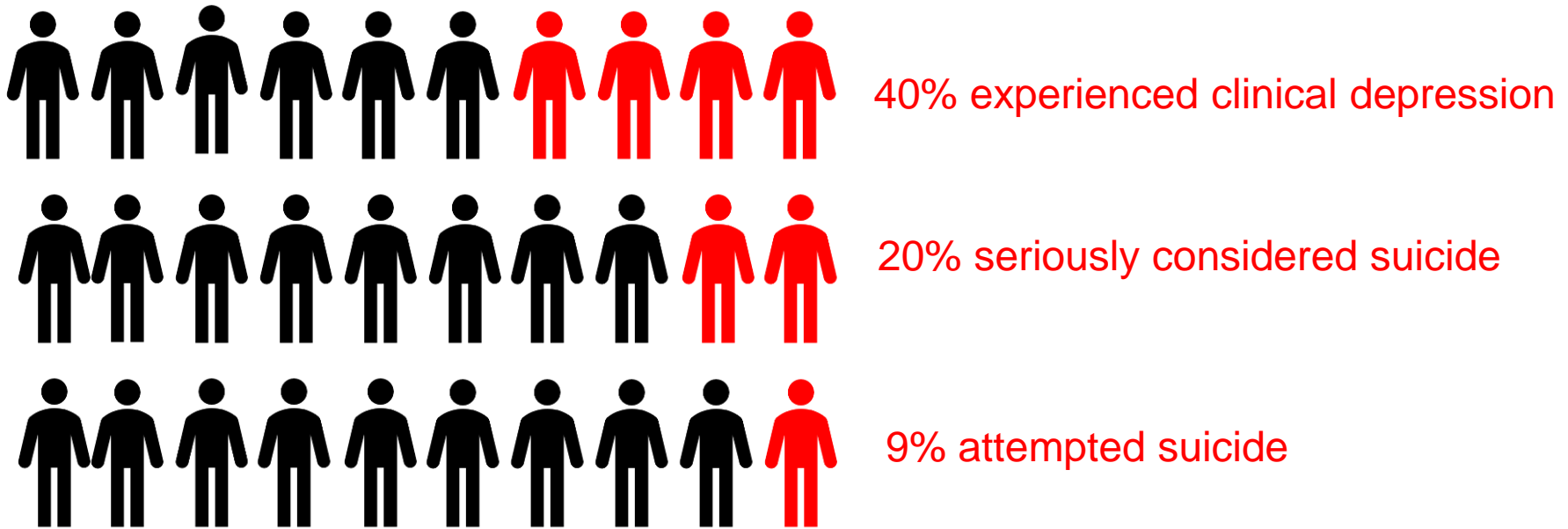
Text TALK to 741741
(Crisis Textline)

Agenda

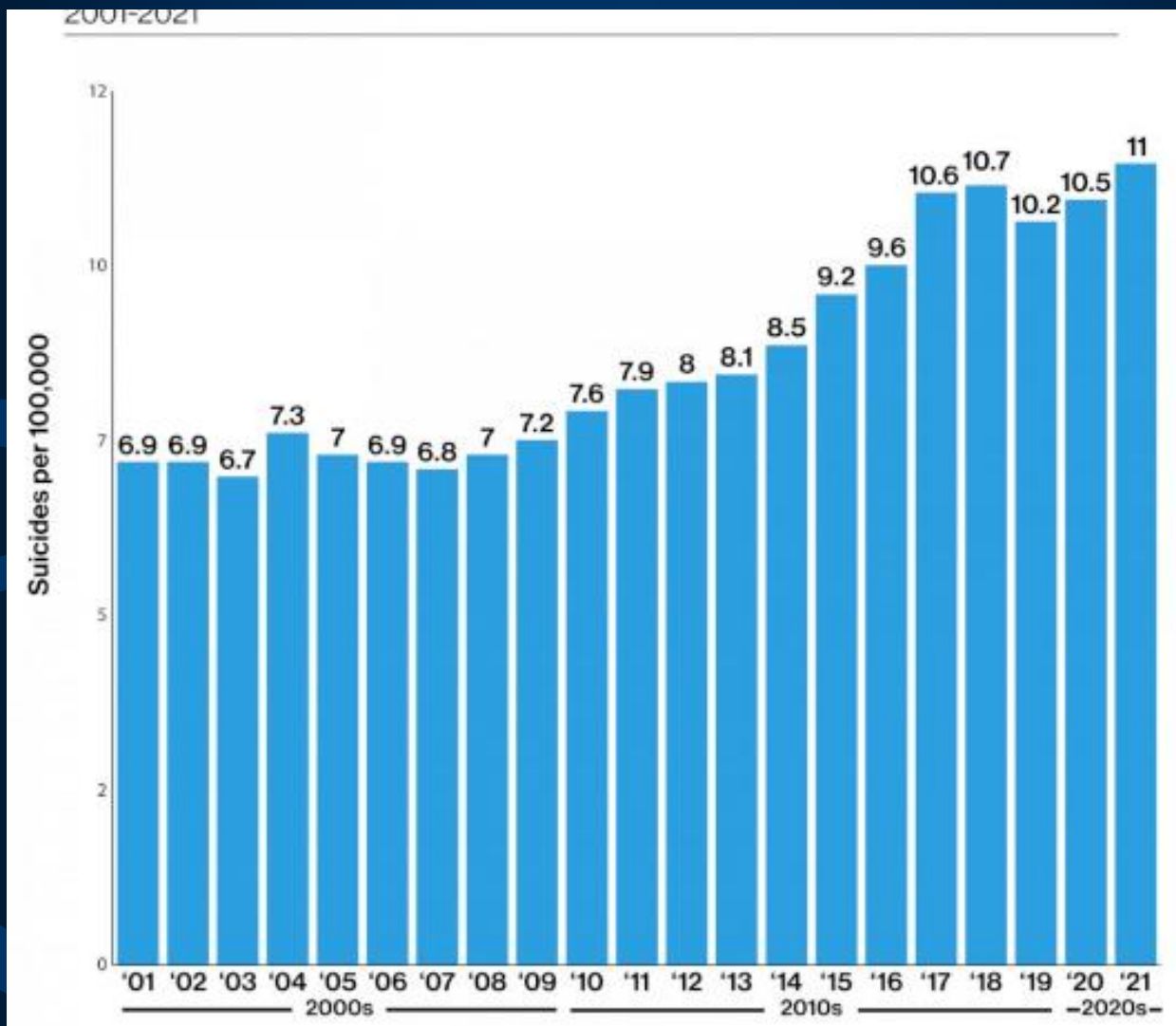
1. Update on Adolescent Suicide
2. Why Sleep?
3. The Sleep-Suicide Association
4. Implications for:
 - Assessment
 - Treatment

How Common Are Suicidal Thoughts and Behaviors in Youth?

Among 14-18 year-olds in the US in the past year:

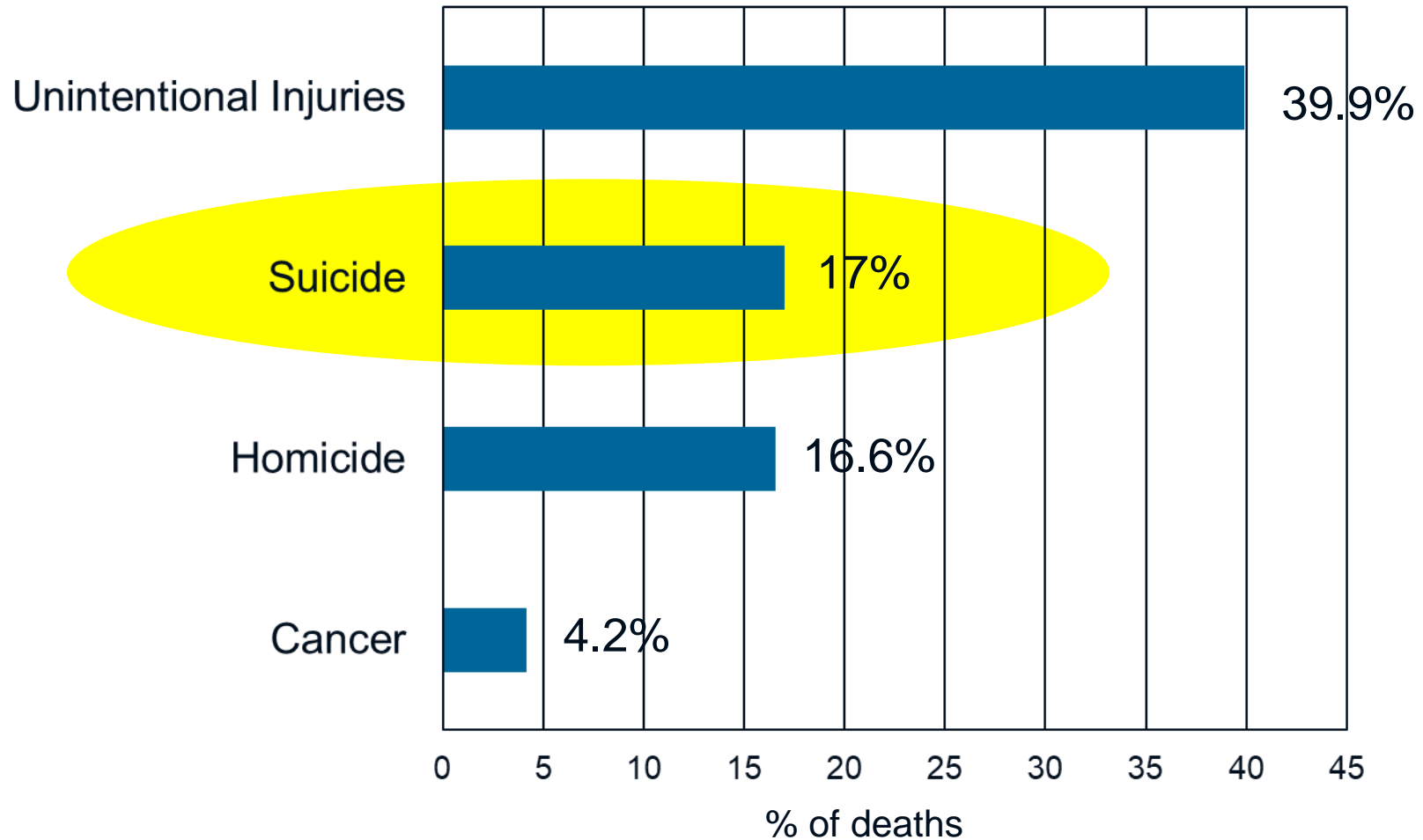


Youth Suicide Rates (age 10-24) in the US Continue to Increase

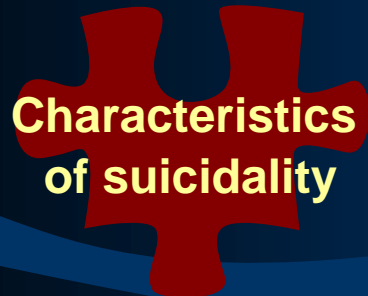


Source: National Center for Health Statistics, National Vital Statistics System

Suicide is the 2nd Leading Cause Of Death Among Children Ages 10-24 in the US



Multiple Domains Contribute to Suicide Risk



Intent
Planning
Prior suicidal behavior



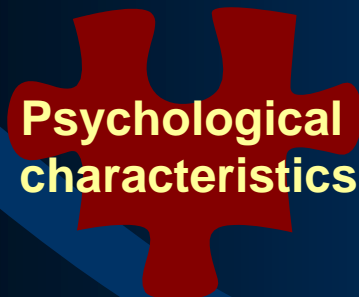
Mood Disorders
Substance Use Disorders
Conduct Disorder



Abuse
Loss
Family history
Stress
Bullying
Medical problems



Firearms
Medications

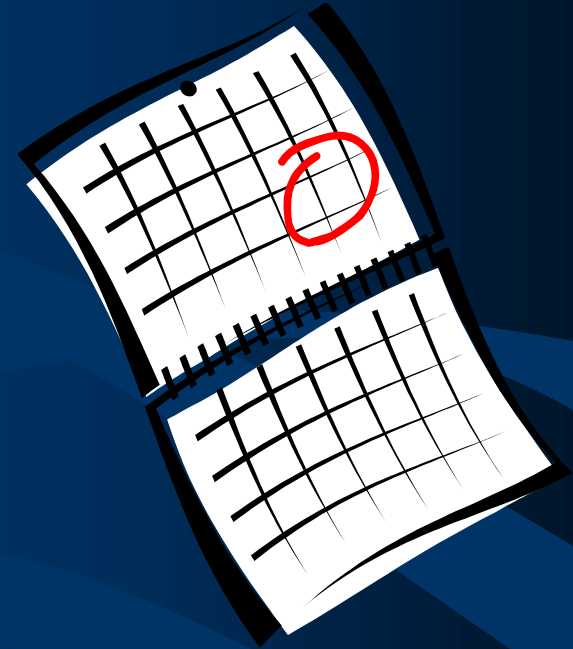
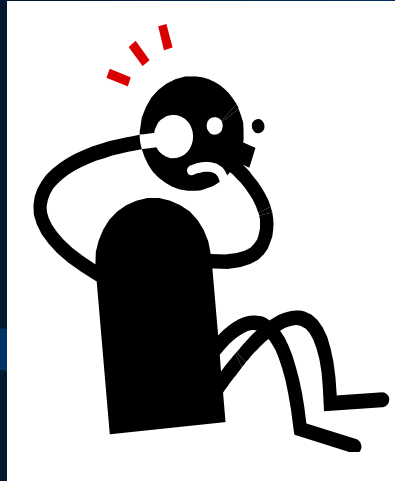


Impulsivity
Hopelessness



Same-sex attraction
Transgender

Improved Understanding of Proximal Risk Factors Is Critical for Suicide Prevention Efforts



WHO? Distal Risk Factors

For example:

- Psychiatric disorders
- Family history

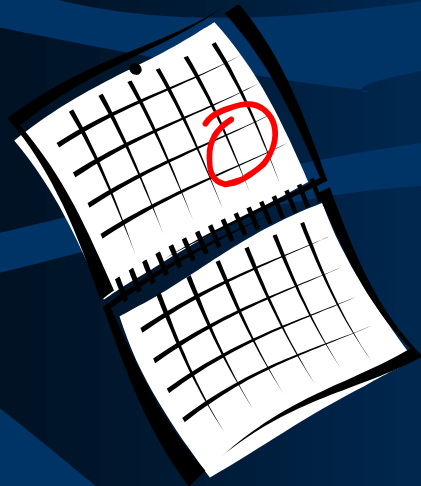
WHEN? Proximal Risk Factors

For example:

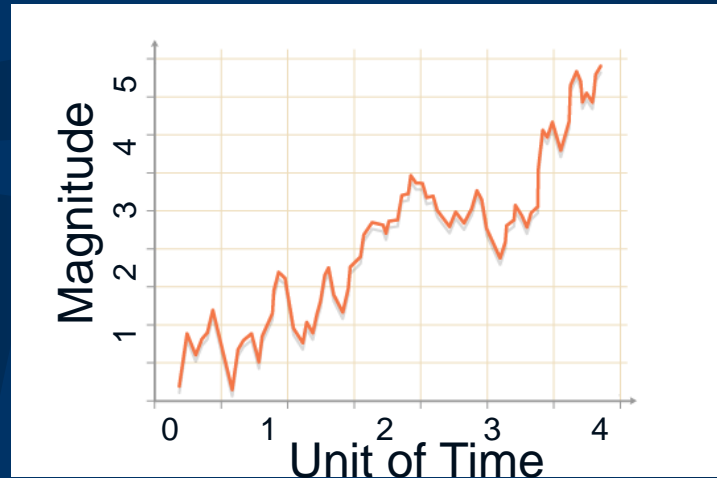
- Recent loss
- Recent hospital discharge

Optimal Targets for Suicide Prevention are:

1) Proximal



2) Dynamic



3) Modifiable



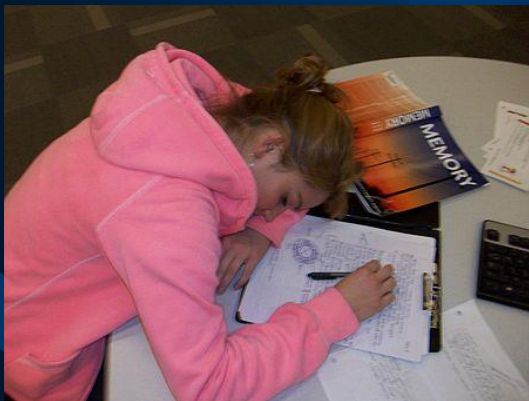
Optimal Targets for Suicide Prevention are:

1) Proximal

2) Dynamic

3) Modifiable

...LIKE SLEEP?!

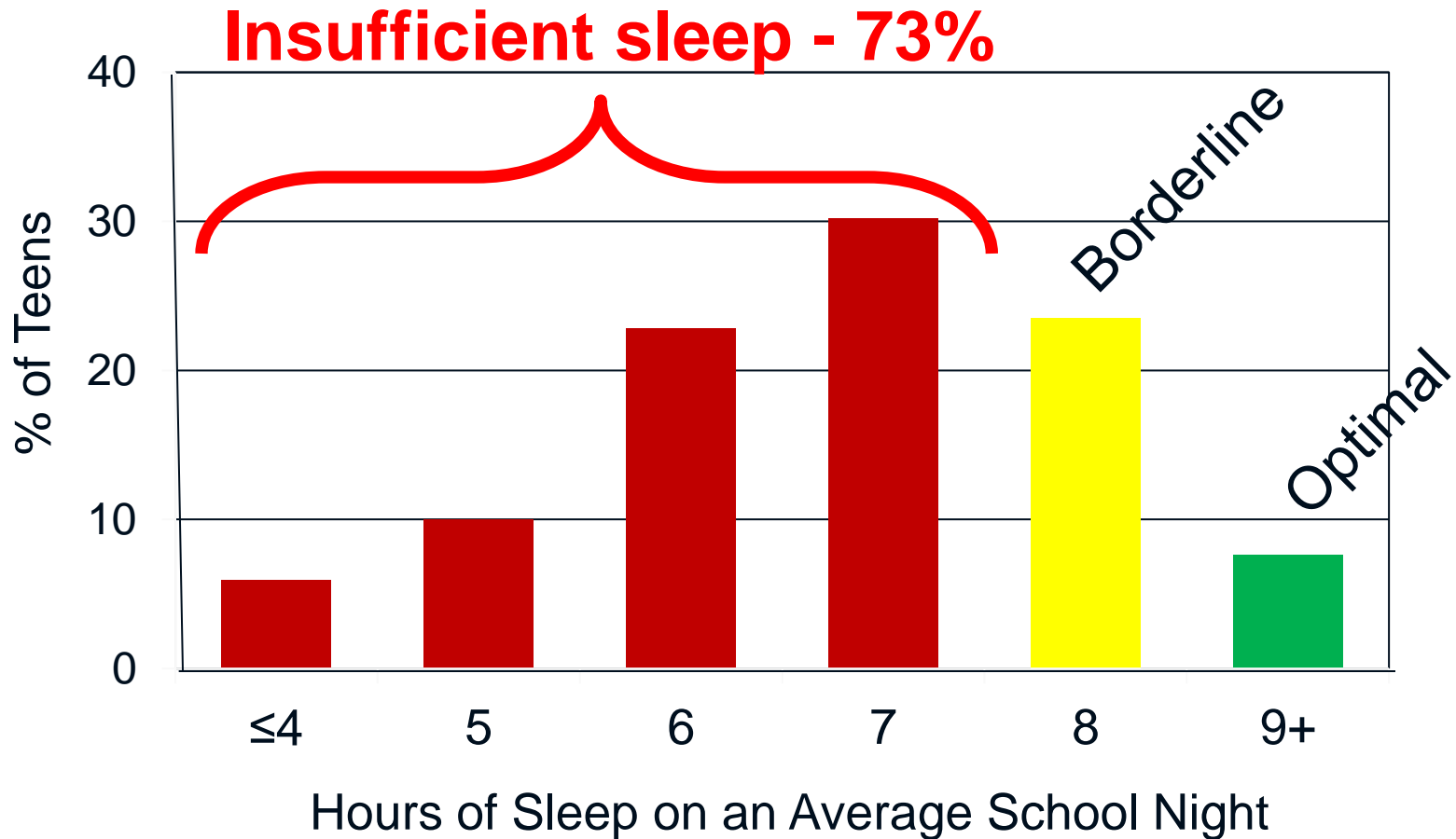


Pediatric Sleep Guidelines

American Academy of Sleep Medicine

Age	Recommended Sleep Hours per 24 hour period
Infants: 4-12 months	12 to 16 hours (including naps)
Toddlers: 1-2 years	11 to 14 hours (including naps)
Preschoolers: 3-5 years	10 to 13 hours (including naps)
Grade-schoolers: 6 to 12 years	9 to 12 hours
Teens: 13-18 years	8 to 10 hours

Epidemic of Sleep Deprivation in US Teens (age 14-18)



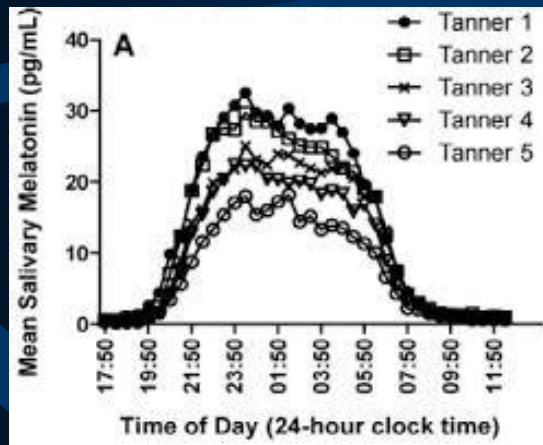
Why is Short Sleep So Common In Teens?

Biological Changes In Sleep at Puberty

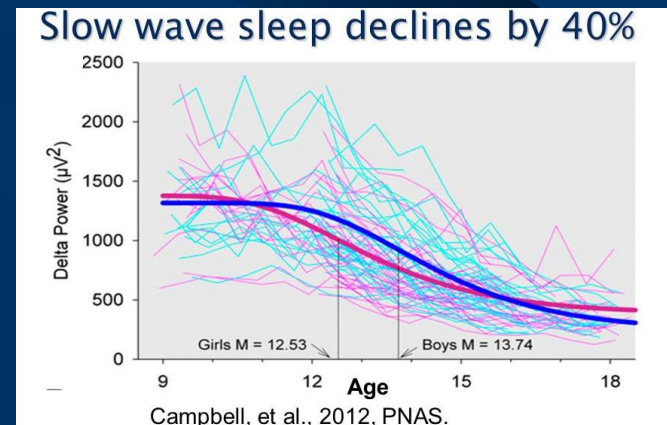
Circadian rhythms shift later
(delayed melatonin onset)
prefer later bed and wake times



& Sleep becomes lighter



Crowley et al 2011, Dev Psychobiol



...leads to preference for later bed and wake times

Keyes et al 2015; Johnson et al 2016; Roenneberg et al 2004

Why is Short Sleep So Common In Teens?

Social & Environmental Changes in Sleep at Puberty

Decrease in parental control

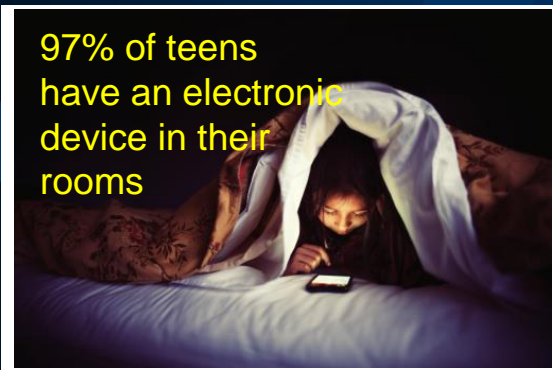


Homework & after school activities



Use of social media
(& exposure to light)

97% of teens
have an electronic
device in their
rooms



Early school start times



This is Your Teen on Insufficient Sleep...

COGNITIVE

- lower grades & achievement test scores
- concentration
- judgment
- problem-solving

EMOTIONAL

- more depressive symptoms
- emotional reactivity
- more negative/less positive affect
- difficulty regulating emotions

BEHAVIORAL

- impulsivity
- violence
- risky sexual activities
- delinquent behavior
- substance use

PHYSICAL

- weight gain/obesity
- diabetes
- preference high-fat, high-carb food
- acne
- perceived as less attractive
- elevated pro-inflammatory cytokines

NEUROBIOLOGICAL

- Impaired prefrontal cortical functioning
- Amygdala activation
- Diminished brain connectivity (frontal/limbic)
- Blunted neural reward circuitry (striatum)
- Decreased serotonin activity
- HPA axis alterations

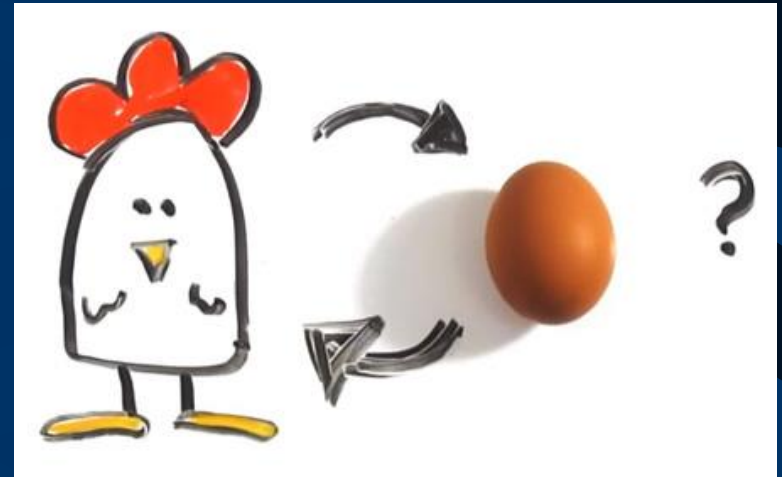


Perlis et al 2016; Kohyama 2009; Roman et al 2005 ; Yoo et al 2007, 2011; Hanson et al 2015; Hasler et al 2012; Carskadon 2004; Fallone et al 2005; O'Brien & Mindell 2005; Kilgore et al 2008; Talbot et al 2010; Fortier-Brochu et al 2012; Pasch et al 2011; Roberts & Duong 2014; Zohar et al 2005; Pilcher et al 2015; Palmer et al 2018; Baum et al 2014; McMakin et al 2016; Andersen & Platten 2011; Owens et al 2017; Peach & Gaultney 2013; Altman et al 2012; Bixler 2009, Hublin 2009; Spiegel et al 1999; Sundelin et al 2017; Nedeltcheva et al 2009; Pigeon et al 2012; Mcknight-Eily et al 2011; Hasler et al 2017; Terry-McElrath et al 2017

Sleep and Youth Psychiatric Disorders

Sleep is disturbed in youth with psychiatric disorders

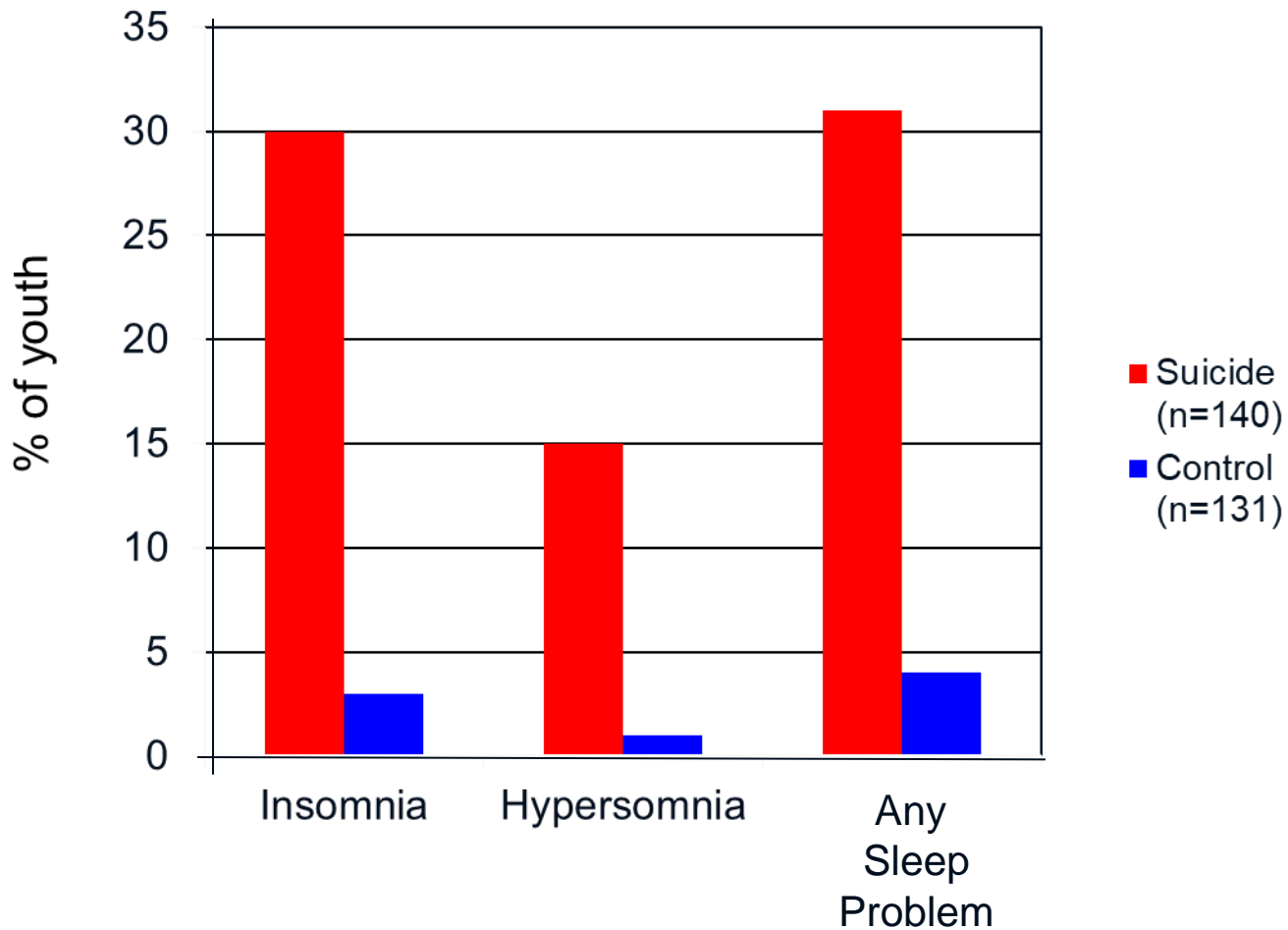
- depression
- anxiety
- ADHD
- substance use disorders



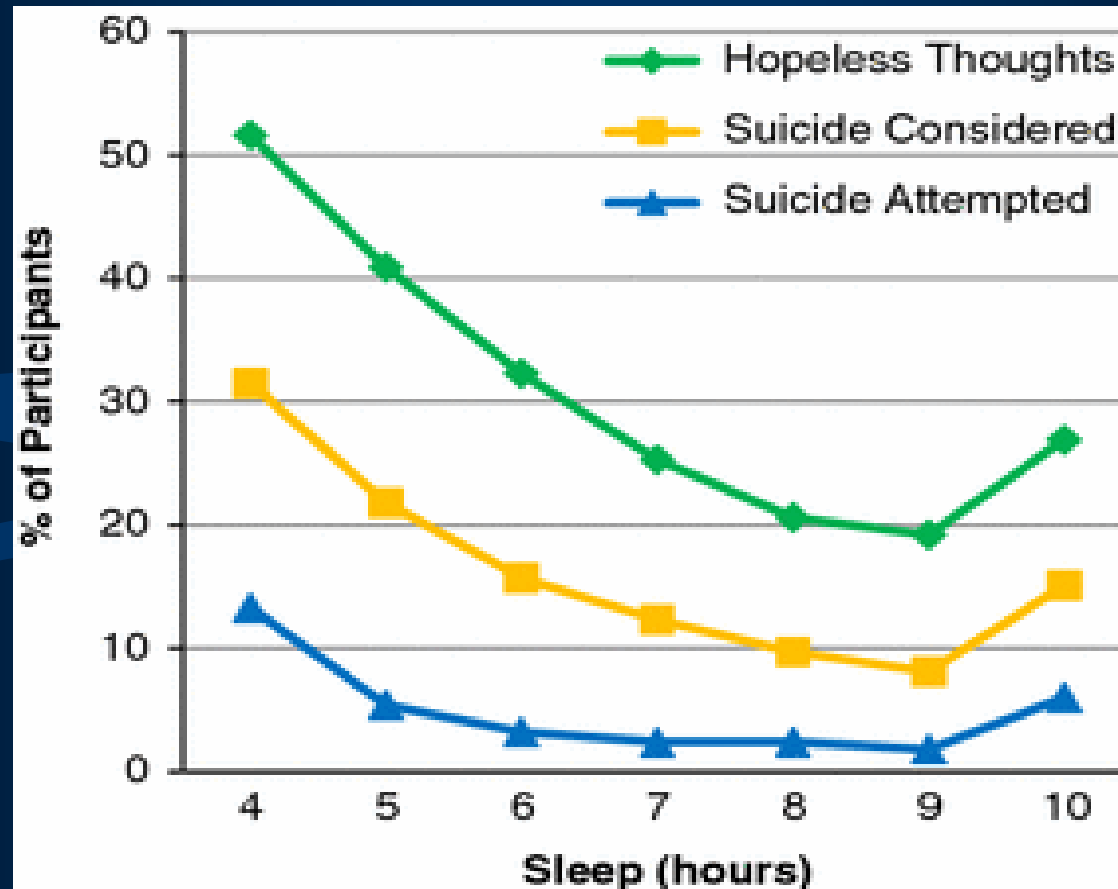
Sleep problems are:

- a risk factor for developing psychiatric disorders
- symptoms of psychiatric disorders
- associated with worse outcomes in patients with psychiatric disorders

Greater Rates of Sleep Disturbance in the Preceding Week Among Youth who Died by Suicide vs. Controls

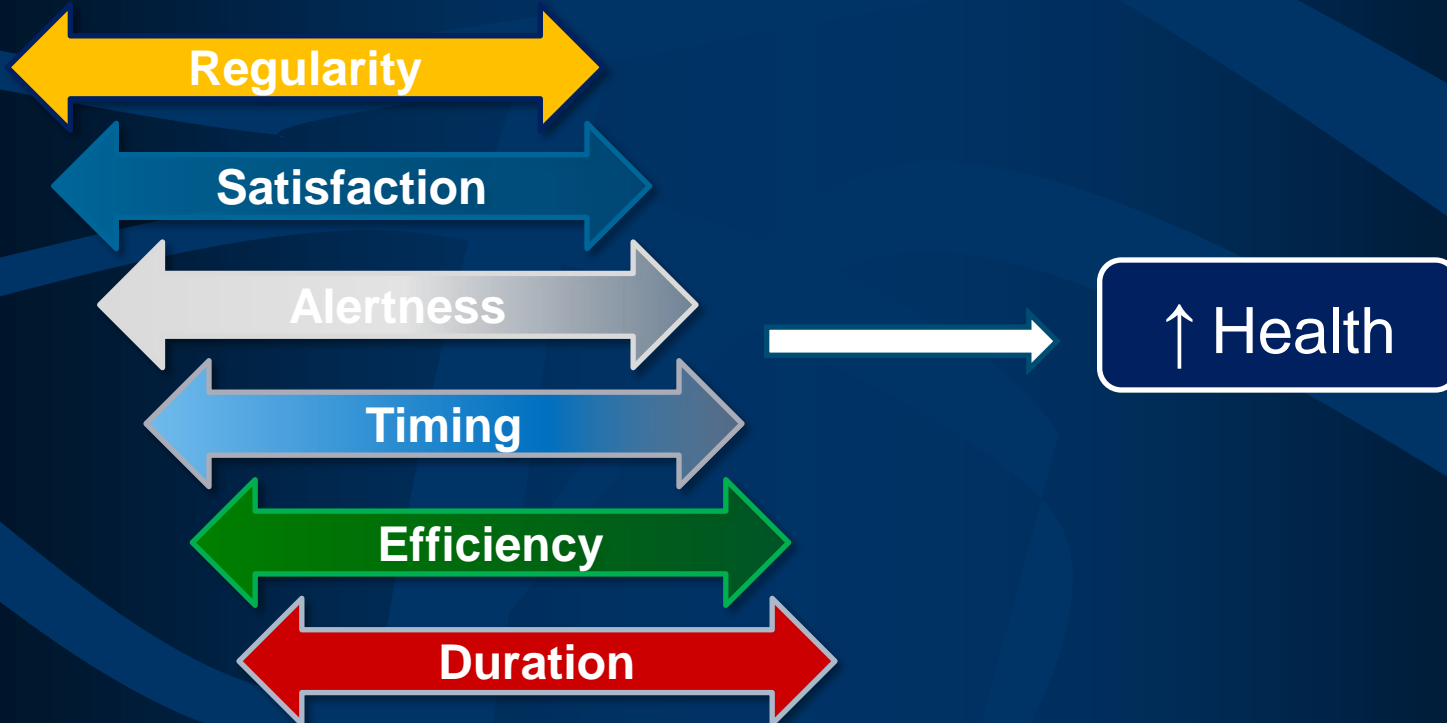


Just 1 Hour Less of Weekday Sleep is Associated with Increase in Risk for Suicidal Ideation and Attempt in HS Students



Which Aspect(s) of Sleep Matter? Applying the Sleep Health Framework

Sleep health is a multidimensional pattern of sleep-wakefulness, adapted to individual, social, and environmental demands, that promotes physical and mental well-being.



The Sleep-Suicide Association: What Do We Know?

	Death by suicide	Suicide attempt	Suicidal ideation
Insomnia	X	X	X
Nightmares	X	X	X
Poor sleep quality	X	X	X
Short sleep	X	X	X
Long sleep	X		X
Sleep variability/Weekend “catch up” sleep		X	X
Hypersomnia		X	X
Eveningness		X	X
Sleep apnea			X
Daytime sleepiness			X
Circadian reversal		X	
Regular sleeping pill use	X		

Examining the prospective association
between sleep health and suicidality in
adolescents and college students
at ultra-high risk for suicide

S.P.O.T. Study

Sleep Predicting Outcomes in Teens



Funded by: The American Foundation for Suicide Prevention
The University of Pittsburgh Clinical and Translational Science Institute

STAR IOP

Adolescents
age 13-18
(n=50)

Co-STAR IOP

College Students
age 18-24
(n=20)

Baseline

1-month

2-month

3-month

Clinical Assessment
Suicidality
Related risk factors



Daily Actigraphy

Objective sleep health

91%



**Daily Cellphone
Ratings**

Suicidal ideation / behavior
Subjective sleep health

84%



**Weekly Clinical
Ratings**

Related risk factors
eg, substance use

HOW Does Sleep Disturbance Contribute to Adolescent Suicide Risk?

Positive and Negative Interpersonal Events

Messages 9:48 AM
research.psychiatry.upmc.com

How enjoyable/pleasant was your most positive event (had fun/was complimented) today?

Not at all enjoyable | Extremely enjoyable

Who did this positive event involve? (Select all that apply)

- Family
- Peers
- Other adults



Messages 9:47 AM
research.psychiatry.upmc.com

How stressful/upsetting was your most negative event (conflict/excluded/insulted) today?

Not at all upsetting | Extremely upsetting

Who did this negative event involve? (Select all that apply)

- Family
- Peers
- Other adults



HOW Does Sleep Disturbance Contribute to Suicide Risk in Adolescents?

Reactivity to Interpersonal Events

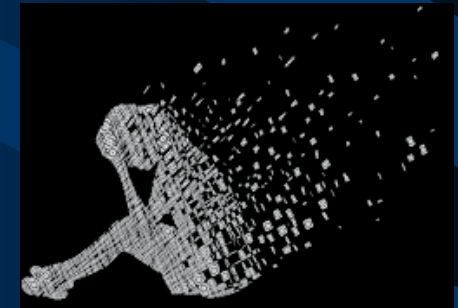
Less sleep & Poorer quality sleep



Reactivity to interpersonal events



Suicidal ideation



How to Assess for Sleep Health in Teens

Ask about a “recent typical night” / 24-hr period

- Be specific
- Get overview of preceding day
- Wind down period
- Pre-sleep period: from ‘in bed’ to ‘lights out’
- Identify thoughts, feelings, behaviors

Look for:

- Regularity of bedtime and waketime (weekdays / weekends)
- Time to fall asleep
- Nighttime awakenings
- Nightmares
- Daytime sleepiness / naps



The Utility of a Sleep Diary

- Clarifies patterns
- Informs intervention/goals
- Monitor progress

Things to consider tracking:

- sleep quantity
- sleep timing
- awakenings
- nightmares
- caffeine
- sleep quality
- physical activity
- daytime sleepiness

SLEEP DIARY													Name: _____													
Date	Noon	p.m.										Midnight	a.m.										Sleep Quality			
		Afternoon					Evening						Morning													
	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11		
M																										
T																										
W																										
Th	3/29																									5
F	3/30		↓	-	↑																					6
Sa	3/31																									5
Su	4/1																									5
M	4/2																									3
T	4/3																									4
W	4/4																									3
Th	4/5		↑																							4
F	4/6																									4
Sa	4/7																									6
Su	4/8		↑																							3

Instructions: Use the symbols below to indicate your sleep times in the grid. Rate your sleep quality each night from 0 (poor) to 10 (excellent).
 ↓ = Go to bed
 ↑ = Get out of bed
 ↔ = Actual sleep

Comments: SUP 4/8 CAR WRECK AT 2:30 PM

Free downloadable sleep diary templates:

American Academy of Sleep Medicine: www.yoursleep.aasmnet.org

National Sleep Foundation: www.sleepfoundation.org

Free apps to track sleep:

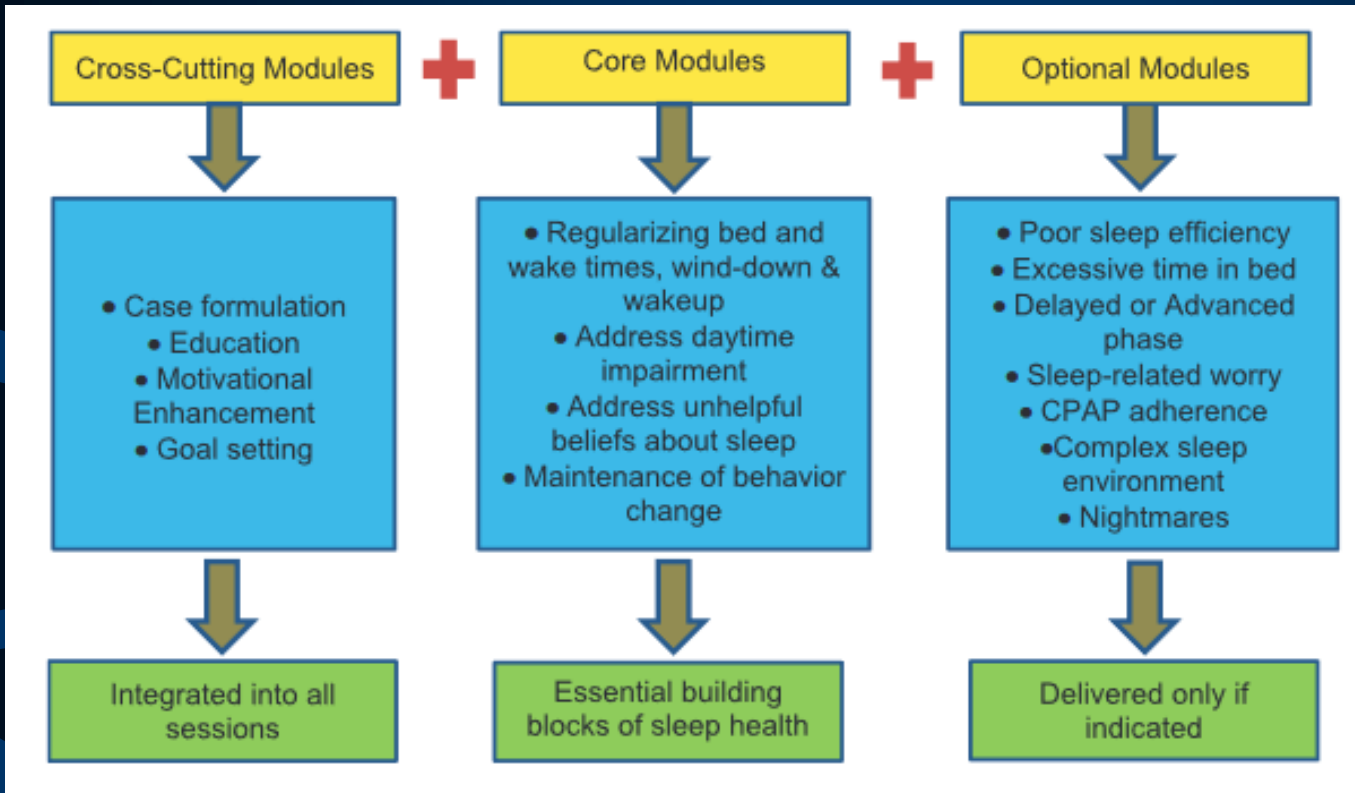
For a review see Grigsby-Toussaint et al 2017

Sleep Ninja

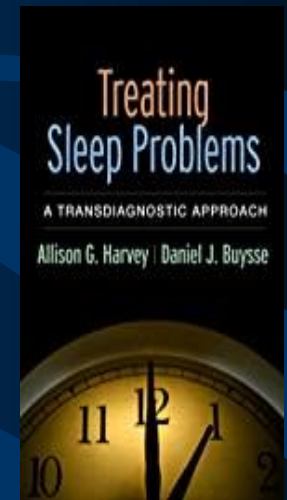
Sleep Better

Sleep Tracker + Mood Diary

Transdiagnostic Intervention for Sleep and Circadian Dysfunction (TSC / TranS-C)



Harvey 2022



Harvey & Buysse 2017

- Youth with evening chronotype, age 10-18 (n=176; Dolson et al 2021)
- ADHD (n=14, ages 13–17; Becker et al 2022)
- Adults with serious mental illness in community care settings (n=92; Harvey et al 2016, 2021)

General Guidelines for Improving Teen Sleep Health

- Minimal fluctuation in the sleep-wake schedule across the week:
Bedtime + 1 hour; Waketime + 2 hours
- “Wind-down” period (30-60 mins) same time every night:
Relaxing activities
Reduce light (esp from technology)
- Wake-Up:
Make it brisk
No snoozing
Get sunlight
Get moving
- Bed is only for sleeping
- Avoid naps

General Guidelines for Improving Teen Sleep Health

Build commitment

Small changes

- Even 1 more hour of sleep can make a big difference!

(Winsler et al 2015)

Engage parents as developmentally and clinically appropriate

(Gangwhisch et al 2010)

Problem solve all that gets in the way...

- Time management
- Technology
- “Catch-up” sleep

The Case for Later School Start Times

Organizations increasingly recommend school start time 8:30 or later!

American Academy of Pediatrics (AAP)
American Medical Association (AMA)
Centers for Disease Control (CDC)
The Sleep Research Society (SRS)

The National Association of School Nurses
Society for Behavioral Sleep Medicine (SBSM)
The National Education Association (NEA)
National Parent Teacher Association (PTS)

Later school start times associated with improved:

- MORE SLEEP!!!
- Attendance
- Tardiness
- Drop-out rates
- Standardized test scores
- Grades
- Depression

- No impact on bedtimes
- Extracurricular activity involvement remains the same or increases



Conclusions

- Adolescence is a period of increased vulnerability that may be further exacerbated by sleep changes and difficulties
- Strong association between sleep health and suicidal ideation and behavior
- Many effective interventions and strategies to improve sleep health!
- May offer a promising strategy for suicide prevention interventions

...More to come!

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