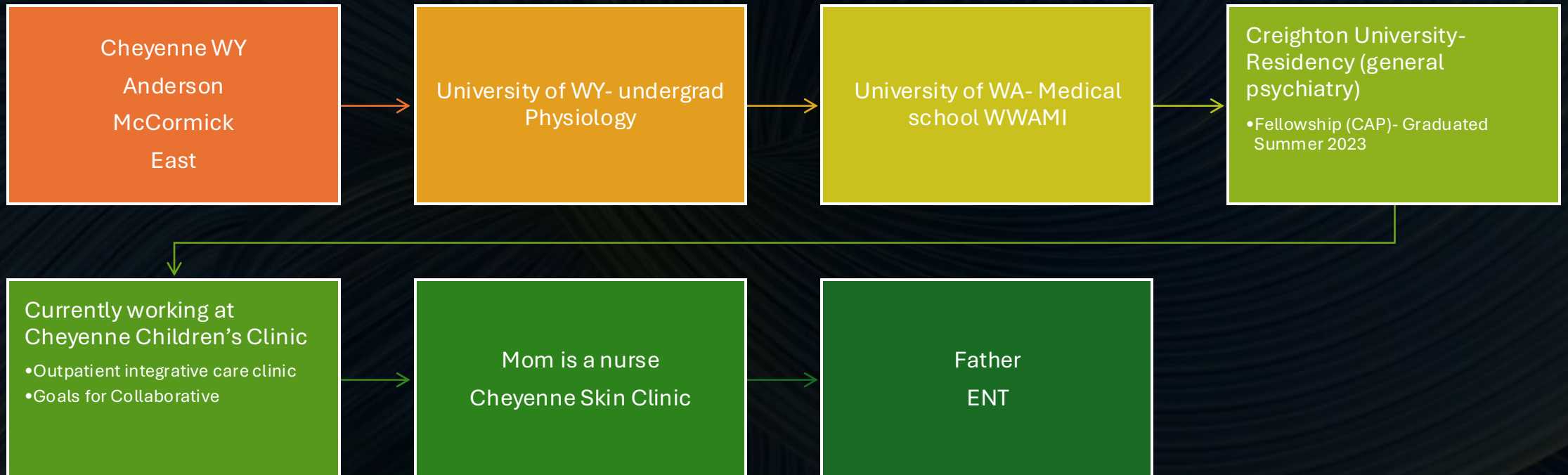


# The Mind Body Connection (and Diabetes)

Justin Romano MD

Board Certified Child and Adolescent Psychiatrist

# About me







Baby Beau





# Objectives

01

Explain how deeply connected the body and brain are

02

Give some examples of how diabetes and mental health are related

03

Answer questions about mental health

04

Have fun!





# Humans Learn Through Storytelling

- Bryce 6 y/o
  - Was diagnosed with diabetes earlier this year after scary ED visit

# What is Bryce Feeling right now?



OVERWHELMED



UNSURE



CONFUSED



What are his  
parents/caregivers  
feeling?

- Overwhelmed
- Scared



## Fast Forward a few years...

- Bryce is 15
- He is in a car accident and has a concussion
- 3 months after the car accident family notices that he has not been consistent with taking insulin
- This has never happened before (he has always been on top of it)
- What could be going on?

# Talking with Bryce

He says that since the accident he has not felt like himself

He is not enjoying the things he used to

Not sleeping well

Appetite is down

Feels sad most of the time

# Bryce Says

- “I just have not felt the motivation to take my insulin. I have been doing it for so long it doesn’t even seem important to me anymore. I know I should be doing it, I just don’t really care right now.”

# What is going on with Bryce?

- Anhedonia
- Low drive and motivation
- Could be experiencing depression



## Next Steps

- Family tells the pediatrician Dr. Horse
- Doctor is worried about depression
- They start therapy
- Doctor validates feelings
  - Encourages medicine consistency
  - Parents also help



## 4 months later

- Bryce is feeling better
  - He has his old energy and motivation back
  - He has been more consistent with the insulin

# Moral of the Story



MENTAL AND PHYSICAL HEALTH  
ARE INTERTWINED



THIS IS A CASE OF MENTAL  
HEALTH IMPACTING PHYSICAL  
HEALTH



DEPRESSION CAUSED A  
DECREASE IN MOTIVATION TO  
KEEP UP ON INSULIN

# Ways that diabetes can impact mental health



## Low blood sugar

Irritability and behavior issues  
“Mood swings”  
The Hangry effect



## High blood sugars

Irritability and anxiety



## Psychological

Frustration  
“Why me?”



## Nerve damage from too much glucose

Neuropathy  
Inflammation

# Diabetes Distress

- Separate from Depression!
- Common issue in people with diabetes
- From the CDC “feeling discouraged, worried, frustrated, or tired of dealing with daily diabetes care.”
- May cause you to stop taking care of yourself. You may slip into unhealthy habits, stop checking your blood sugar, even skip doctor's appointments.
- It happens to many—if not most—people with diabetes, often after years of good management.

# Numbers

- From CDC
  - Moderate Diabetes distress occurs in 24.3% of Cases
  - Severe in 6.6%
  - Higher Prevalence in ages 18-64
  - More common in Women
  - More common in lower socioeconomic


PREVENTING CHRONIC DISEASE  
PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY

## Diabetes Distress Among US Adults With Diagnosed Diabetes, 2021

RESEARCH BRIEF — Volume 22 — February 24, 2025

This article is part of the [Public Health Research and Program Strategies for Diabetes Prevention and Management](#) collection.

Dayna S. Alexander, DrPH, MSPH<sup>1</sup>; Ryan Saelee, PhD, MPH<sup>1</sup>; Betsy Rodriguez, MSN, DCES, FADCES<sup>1</sup>; Alain K. Koyama, ScD<sup>1</sup>; Yiling J. Cheng, PhD, MD<sup>1</sup>; Shichao Tang, PhD<sup>1</sup>; Rachel E. Rutkowski, MSPH<sup>1</sup>; Kai McKeever Bullard, PhD, MPH<sup>1</sup> (VIEW AUTHOR AFFILIATIONS)

Suggested citation for this article: Alexander DS, Saelee R, Rodriguez B, Koyama AK, Cheng YJ, Tang S, et al. Diabetes Distress Among US Adults With Diagnosed Diabetes, 2021. Prev Chronic Dis 2025;22:240287. DOI: <https://dx.doi.org/10.5888/pcd22.240287> 

PEER REVIEWED

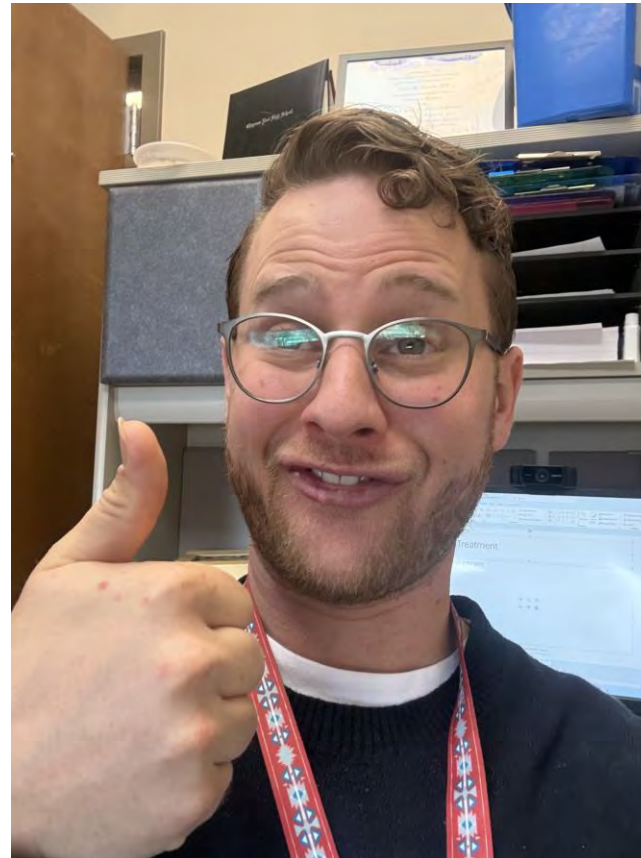
# Diabetes Distress Recommendations

- Diabetes distress can look like depression or anxiety, but it can't be treated effectively with medicine. Instead, these approaches have been shown to help:
  - Make sure you're seeing an **endocrinologist** for your diabetes care. These specialists likely have a deeper understanding of diabetes challenges than your regular doctor.
  - Ask your doctor to **refer you to a mental health counselor** who specializes in chronic health conditions.
  - Get some one-on-one time with a diabetes educator so you can problem-solve together.
  - Focus on one or two small diabetes management goals instead of thinking you have to work on everything all at once.

# New Treatment For Diabetes Distress

## Romanolodapine

Dr. Romano approved



# Favorite Quote

“People treating their diabetes never get a day off”

# What does the Research Say?

- What 3 mental health diagnoses are people with diabetes at a higher risk for developing compared to the general population?

# Answer

Depression

- Adults up to 2x more likely

Anxiety

Eating disorders

Ducacat Et al 2015

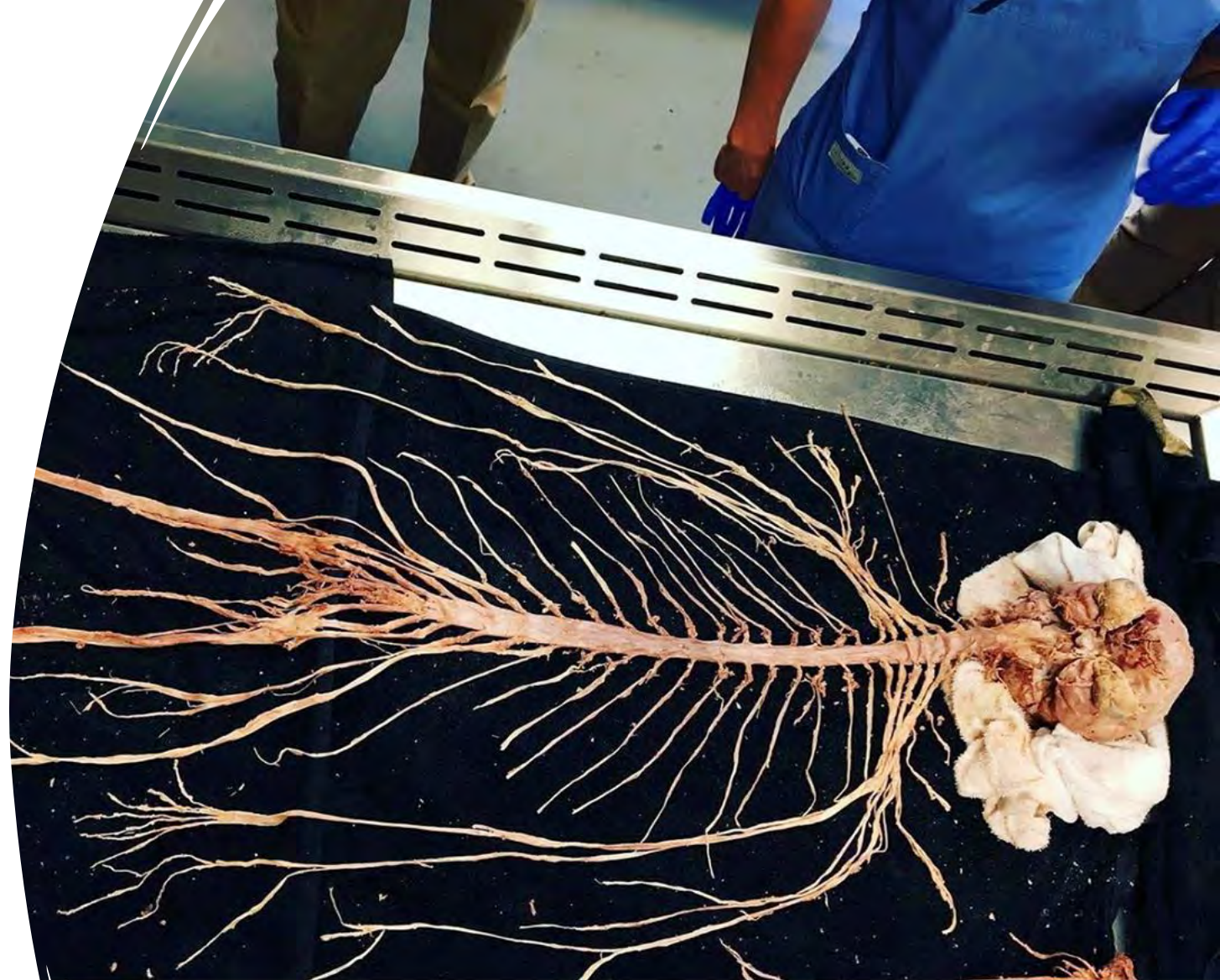
# Shame

- Has anyone felt shame or guilt from a provider when medical care is not going well?

# The Mind Body connection

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- From diabetes specific to a broader topic
- Mental health and physical health are closely related



VIVIT |  
THE WORLD'S ONLY SEMI-SYNTHETIC HUMAN CADAVER

IMMERSIVE POST-MORTEM EXPERIENCE  
LIVE DISSECTION OF **REAL** SPECIMENS  
[WWW.THEVIVITEXPERIENCE.CO.UK](http://WWW.THEVIVITEXPERIENCE.CO.UK)

# 4 lifestyle modifications to improve physical and mental health



## Diet

Less processed foods

More fiber

Less added sugars



## Exercise

Do what you love

Shown to as effective as  
taking anti-depressants



## Better sleep

Less screens before bed

Kids should be getting 9-  
10 hrs of sleep per night

CBT-I Coach



## Reduce Stress

Meditation

Breathing exercises

Time with family and  
friends

# Dr. Romano's Bonus Tips



Reduce Screen Time



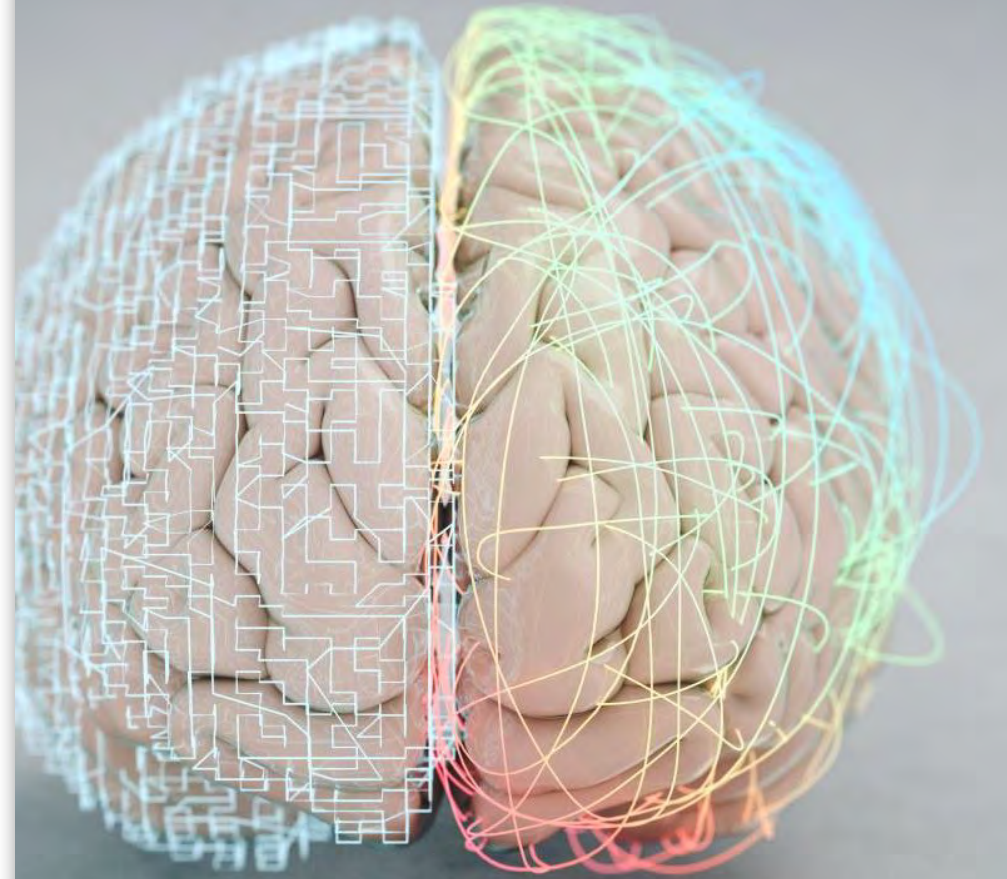
Connect to a  
community



Practice gratitude

# The body and brain are connected in many ways

1. The nervous system
2. The blood
3. The gut microbiome



# Bidirectional

The Body Keeps the Score

THE BODY  
KEEPS THE SCORE



BESSEL VAN DER KOLK



# Aces Study

Monnat and Chandler 2015

“Experiencing childhood physical, verbal, or sexual abuse, witnessing parental domestic violence, experiencing parental divorce, and living with someone who was depressed, abused drugs or alcohol, or who had been incarcerated were associated with one or more of the following health outcomes: self-rated health, functional limitations, **diabetes**, and heart attack.”

- Adverse childhood events also increases risk for mental health issues like depression, anxiety, ptsd

<b>Adverse Childhood Experiences (ACEs)</b>	<b>Counter-ACEs</b>
Physical abuse	Liking school
Verbal abuse	Teachers who care
Sexual abuse	Opportunities to have fun
Physical neglect	A predictable home routine
Emotional neglect	Feeling comfortable with yourself
An alcoholic parent	Having a caregiver whom you feel safe with
A family member in jail	Beliefs that provide comfort
The disappearance of a parent through divorce, death or abandonment	Having good friends and neighbors
A family member diagnosed with a mental illness	
A mother who's a victim of domestic violence	

# The Gut Microbiome

- There are more Bacteria cells in and on your body than there are human cells. Made of bacteria, fungi, and viruses.
- From The Cleveland Clinic “ The gut microbiome is a microscopic world within the world of your larger body. The trillions of microorganisms that live there affect each other and their environment in various ways. They also appear to influence many aspects of your overall health, both within your digestive system and outside of it.”

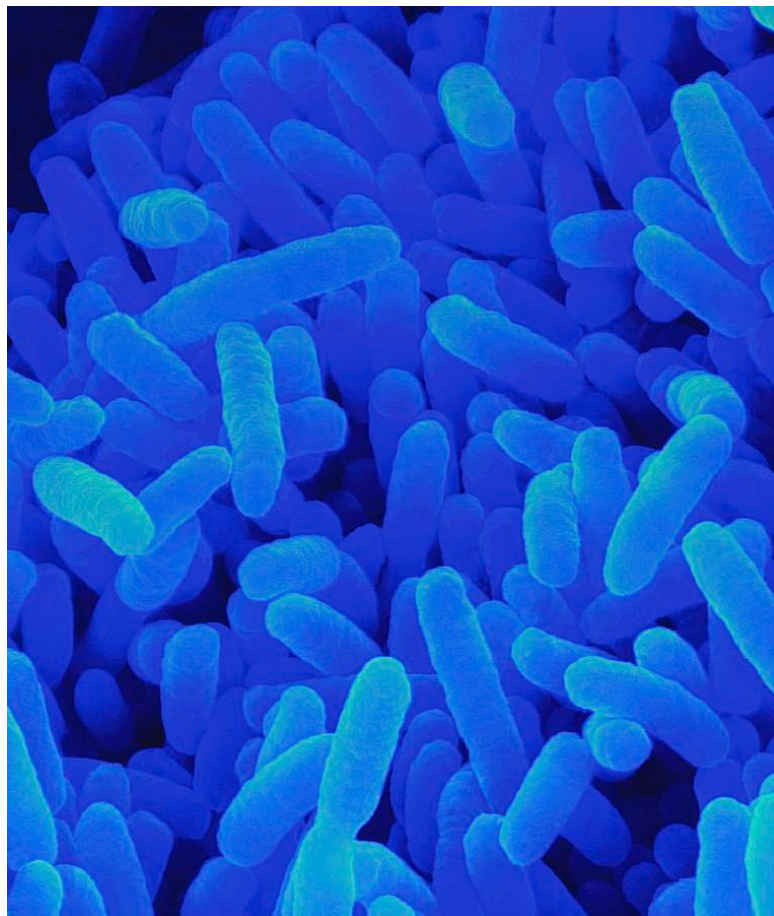
The Body is  
like a Tide  
Pool



# Does Stress Change the Microbiome?

- 
- Yes!
  - Leclercq et al 2016
  - Stress changes the composition of gut bacteria
  - Proinflammation response
  - These effects can last for years!
    - Adverse childhood events can change the microbiome, and these changes from early childhood can last until adulthood

What is this?



# Bacteroides

- One of the most common healthy gut bacteria in our digestive system
- Bacteria help us break down our food and make nutrients that our bodies can't
- We feed good/healthy gut bacteria by eating fiber
  - Most processed food has minimal fiber
  - Only 5% of Americans get enough fiber
  - Mostly found in plant-based foods





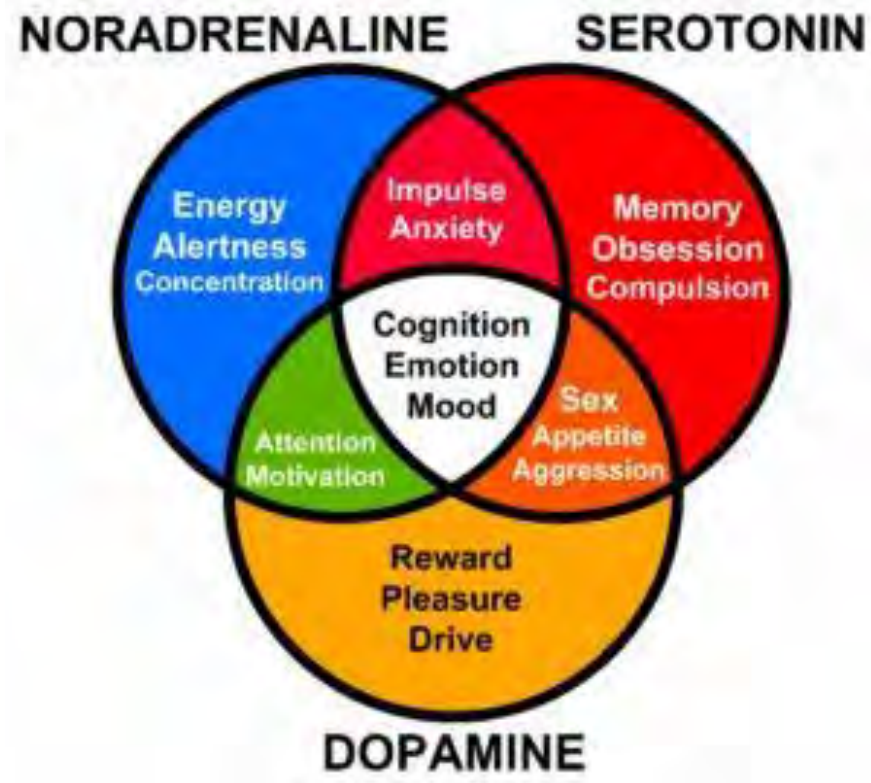
## Fun Fact

90% of the serotonin in your body is made in the digestive tract

Serotonin is the main neurochemical we increase to treat depression and anxiety

The bacteria in our guts help us make serotonin

# Life is about balance... of neurohormones

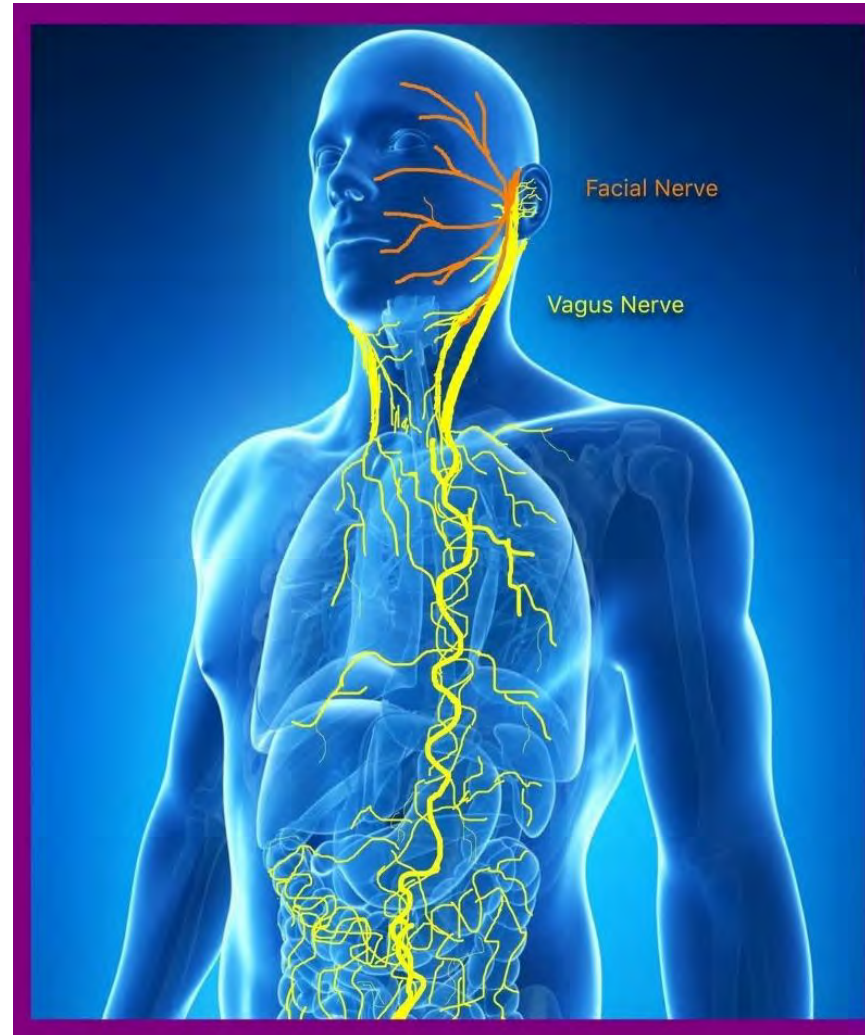


Have you  
heard of the  
Vagus  
nerve?



One of the most direct connections between the body and brain.

# Vagus Nerve Innervates a LOT of the body



One of the most direct ways that the body is connected to the brain

# Why is this important?



**Happy guts = happy brain**

Bidirectional communication



**Vagus nerve is the reason why deep breathing helps calm our hearts and helps with anxiety**



**There are 100 million neurons in the digestive tract**

Enteric nervous system (The second brain)  
More neurons than the spinal cord

# Tips for being physically and mentally healthy

Diet- less processed food and sugar

Exercise – Do something you enjoy

- As effective as taking medicine for depression and anxiety
- Families who walk together, talk together

Get good sleep

- No screens in the room with kids

Reduce stress

Get connected

- With friends, family, community

# Screen Time Tips

One of the biggest  
issues I see in my  
clinic

Recommendations

Have phone free  
times with the family  
(dinner, walks, hikes,  
game night)

No phones in the  
room at night

Set screen time  
limits on the devices  
themselves

Parents should also  
reduce their screen  
time

# Resources

Psychologytoday.com- Find a therapist tool

Cheyenne Children's Clinic- Ask your doctor

Good therapy Clinics in Town

- Hansen and Associates
- Behavioral Health through Cheyenne Regional Medical Center
- Northern Star

Is Mental Health getting in the way of your life?

# When to reach out?

## DEPRESSION SIGN AND SYMPTOM

**Helplessness**  
Lorem ipsum dolor sit amet, consectetur ad tempor incididunt ut labore et dolore magna

**Thoughts of death**  
Lorem ipsum dolor sit amet, consectetur ad tempor incididunt ut labore et dolore magna

**Weight changes**  
Lorem ipsum dolor sit amet, consectetur ad tempor incididunt ut labore et dolore magna

**Energy loss**  
Lorem ipsum dolor sit amet, consectetur ad tempor incididunt ut labore et dolore magna

**Isolation**  
Lorem ipsum dolor sit amet, consectetur ad tempor incididunt ut labore et dolore magna

**Anger**  
Lorem ipsum dolor sit amet, consectetur ad tempor incididunt ut labore et dolore magna

**Anorexia or over-eating**  
Lorem ipsum dolor sit amet, consectetur ad tempor incididunt ut labore et dolore magna

**Difficulty sleeping**  
Lorem ipsum dolor sit amet, consectetur ad tempor incididunt ut labore et dolore magna

**Abandoning hobbies**  
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**Guilt**  
Lorem ipsum dolor sit amet, consectetur ad tempor incididunt ut labore et dolore magna

10,000

# Anxiety

## SIGNS OF ANXIETY IN TEENAGERS

The infographic features eight illustrations of a girl in a white t-shirt, each representing a different sign of anxiety. The signs are arranged in two rows of four. The first row includes: 1) 'CHANGES IN SLEEP PATTERNS' with an illustration of the girl sleeping in bed; 2) 'AVOIDANCE BEHAVIORS' with an illustration of the girl with her arms crossed and a sad expression; 3) 'UNEXPLAINED PHYSICAL COMPLAINTS' with an illustration of the girl holding her neck; 4) 'IRRITABILITY RESTLESSNESS' with an illustration of the girl with her arms crossed and a frustrated expression. The second row includes: 5) 'ACADEMIC CHANGES' with an illustration of the girl sitting at a desk with a book; 6) 'OVERTHINKING AND CONSTANT 'WHAT IF'S'' with an illustration of the girl thinking, accompanied by a question mark icon; 7) 'CHANGING IN EATING HABITS' with an illustration of the girl looking thoughtful; 8) 'EXPRESSIONS OF HOPELESSNESS' with an illustration of the girl with her arms crossed and a sad expression.

- CHANGES IN SLEEP PATTERNS
- AVOIDANCE BEHAVIORS
- UNEXPLAINED PHYSICAL COMPLAINTS
- IRRITABILITY RESTLESSNESS
- ACADEMIC CHANGES
- OVERTHINKING AND CONSTANT 'WHAT IF'S'
- CHANGING IN EATING HABITS
- EXPRESSIONS OF HOPELESSNESS

# Conclusions

Diabetes can be hard on patients and parents for the body and the brain

It is important to be able to recognize signs of diabetes distress or mental health issues and have a plan to get help

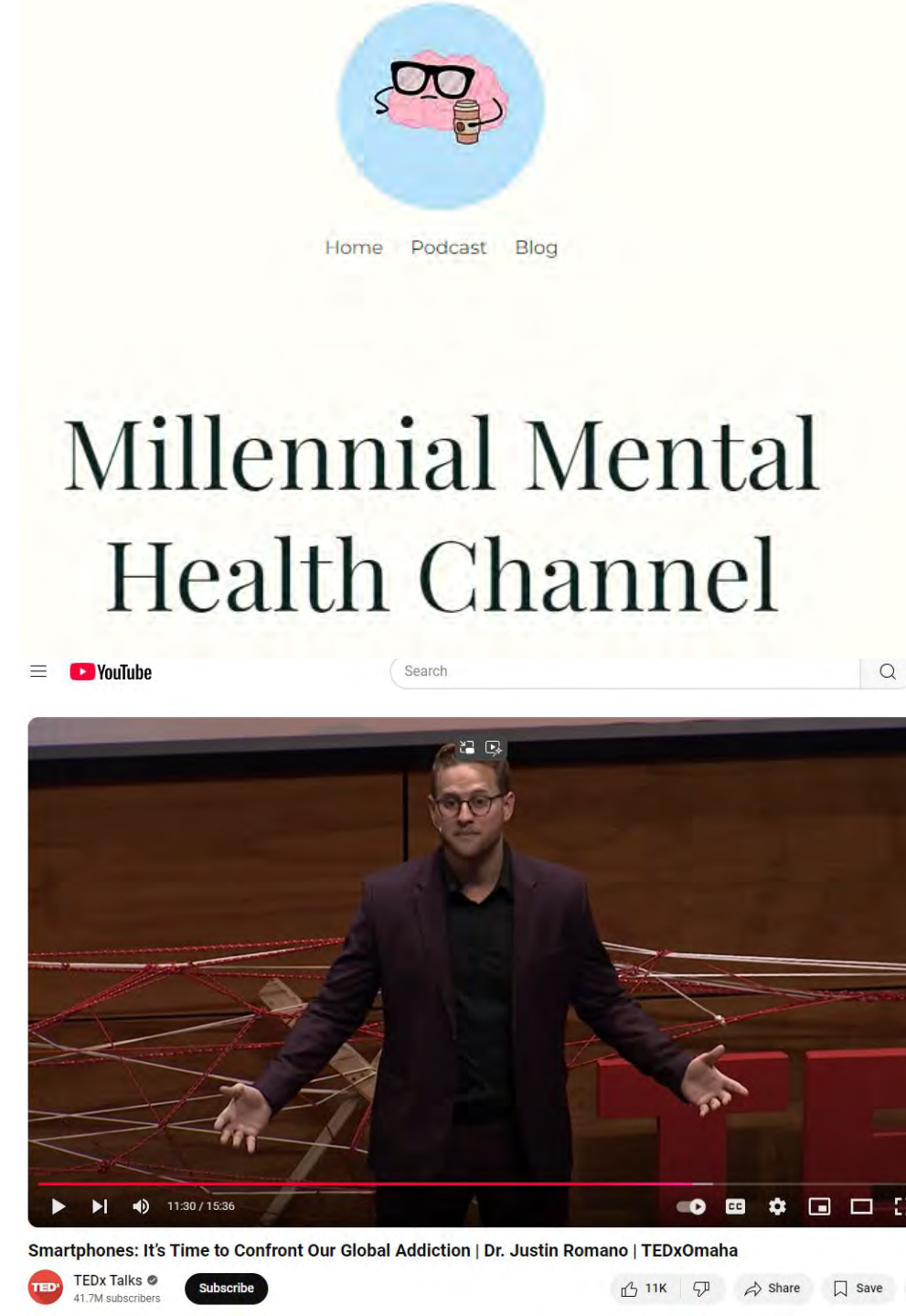
The body and brain are deeply connected in many ways

A healthy body helps keep a healthy brain, and vice versa

## Plugs

Podcast Millennial Mental Health Channel (Some swearing)

TedX Omaha- It is Time to Confront Our Global Addiction



The image shows a screenshot of a YouTube channel page for 'Millennial Mental Health Channel'. At the top, there is a circular profile picture featuring a pink brain with black-rimmed glasses and a small coffee cup. Below the profile picture are navigation links for 'Home', 'Podcast', and 'Blog'. The channel name 'Millennial Mental Health Channel' is displayed in a large, black, serif font. Below the channel name is the YouTube logo and a search bar. The main content area shows a video player with a man in a dark suit and glasses standing on a stage with a red 'TED' logo in the background. The video player includes standard YouTube controls like play, volume, and a progress bar showing 11:30 / 15:36. Below the video player, the video title 'Smartphones: It's Time to Confront Our Global Addiction | Dr. Justin Romano | TEDxOmaha' is visible, along with the channel name 'TEDx Talks' and a 'Subscribe' button. At the bottom right, there are icons for likes (11K), share, and save.

Thank you!

