



# Adolescent Mental Health & Diabetes

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# Objectives

## Review

Review common mental health concerns/disorders seen in adolescents.

## Discuss

Discuss the impact of diabetes on the mental health of children and adolescents.

## Identify

Identify risk factors and screening for mental health concerns/disorders in adolescents with diabetes.

# Current Rates of Mental Health Conditions/Disorders in Children and Adolescents

- 20% of youth (1 in 5) are affected by mental disorder to the point they have difficulty functioning. (NAMI, 2017)
  - 11% Mood Disorder (i.e. Depression)
  - 10% Behavior/Developmental Disorder (i.e. ADHD)
  - 8% Anxiety Disorder
- According to NHANES data, the percent of youth with mental disorders is higher than the most common physical conditions such as asthma & diabetes.

# More on the Problem

- 1/2 of all chronic mental disorders/illness begins by age 14 years; 75% by age 24 years. (NAMI, 2017)
- 20-30% of adolescents will have 1 major depressive episode before they reach adulthood.
- Although depression and anxiety are prevalent among youth, only 1/3 of youth with anxiety and 40% of those with mood disorders (such as depression) receive any form of treatment.
- 10-years!!! --- Average delay between onset of symptoms and intervention

# Consequences of Poor Mental Health

- The serious consequences of anxiety & depression in youth can compromise education, employment, and relationships with friends and family.
- 37% of students with mental health conditions (14 years or older) will drop out of high school
- 70% of youth in state and local juvenile justice systems have mental illness
- Suicide is the third leading cause of death in youth 10-24 years of age---90% of youth who died from suicide had an underlying mental health disorder.

# Mental Health Conditions Seen in Children and Adolescents

- Mental Health Disorders are separated into a number of categories:
  - Anxiety Disorders
  - Mood Disorders (Major Depressive Disorder; clinical Depression)
  - Psychotic Disorders\*
  - Personality Disorders\*
  - Eating Disorders (anorexia; bulimia; Binge eating)
  - Developmental Disorders (ADHD)
  - Behavior Disorders\*
  - Addicting Disorders of Craving (substance use)
  - Obsessive-compulsive Disorders (OCD)\*
  - Trauma & Stressor-related Disorders (PTSD)\*
- (DMS-IV criteria)
- \*Not discussed today

# The Adolescent Brain

- Significant brain growth and development (continues through '20s)
- Brain reaches maximum size by 11 ½ girls; 14 ½ boys.. (boy's size > girl's)
  - Size is not related to intelligence
  - Size not related to maturity---brain continues to mature another 10 years after final size obtained)
- Brain matures from the back to the front (Frontal and Temporal areas are the last to mature)
  - Center for reward, motivation, and impulsivity in the brain mature early
  - Remember--- frontal lobe is where planning, organization, judgement, impulse control & reasoning occur
- Prefrontal cortex undergoes massive structural changes during adolescence (area of logic thought & restraint)--- one of the last areas to mature
  - May better describe why adolescents can be prone to riskier, impulsive behaviors & less likely to consider the consequences of their behaviors as compared to adults

# Adolescent Brain and Developmental Skills

- New behaviors begin to emerge
  - Attention
  - Motivation---- ‘I don’t Care’
  - Risk-taking
- Many cognitive abilities (including attention) rely on proper functioning of the brain (pre-frontal cortex area; one of the last areas to mature)
- Adolescents underuse ‘motivation’ areas of the brain compared to adults
  - Teens often require extreme (and instant) rewards to achieve same motivational level as adults
- ‘Reward area’ matures disproportionately to the ‘control area’. This leads adolescents towards immediate gain rather than long-term gains.
- Adolescent brain less able to inhibit impulsive behaviors--- situations in which adults may stop a behavior, the adolescent may not
- Some risk-taking behavior is normative and adaptive– might allow to explore adult behaviors, accomplish normal developmental tasks and learn from mistakes---but carries the potential for negative outcomes



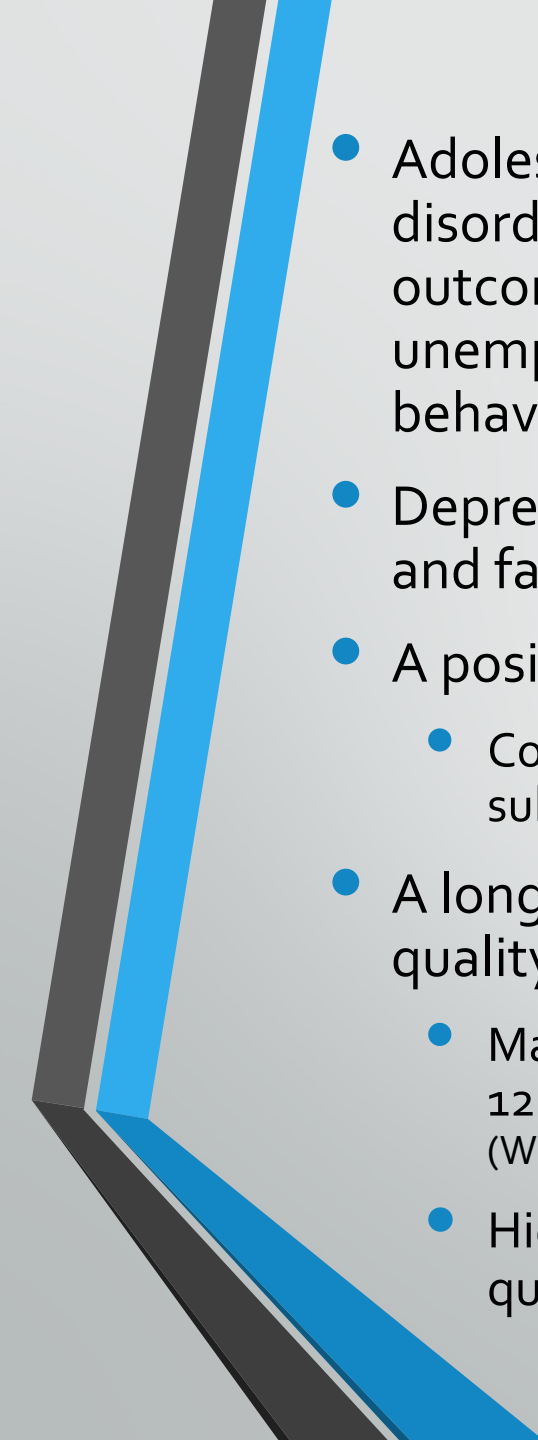
# It's All a Balancing Act



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# Mood Disorders in Adolescents--Depression

- Depression is a major contributor to the global burden of disease and is estimated to be the leading cause of disability, worldwide (Riglin, et. al, 2015).
- Prevalence of Major Depressive events has increased significantly in recent years (8.7% in 2005 to 11.3% in 2014) even after adjusting for substance use disorders and socioeconomic factors (Mojtabai, et. al., 2016).
  - During same time frame mental health contacts did not change--- Increased number of young people with untreated depression.
- Brief bouts of depressive symptoms are common in adolescents (hormones; brain development/maturation; stress/expectations)
- Depression discriminates from sadness. Affects the way a person thinks, feels, and acts---becomes the lens through which they experience the world
- USPSTF recommends screening for major depressive disorder (MDD) in adolescents (aged 12 to 18 years) when systems are in place to ensure accurate diagnosis, psychotherapy (CBT or interpersonal), and follow-up.

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- Adolescence is an important period for the onset of depressive symptoms and disorders—both of which being associated with a wide range of debilitating outcomes including concurrent & future social and educational impairments, unemployment, poor physical health and mental health problems/suicidal behaviors into adult life. (Mojtabai, et. al, 2015).
  - Depression is strongly associated with psychosocial adversity (stressful life events and family conflict)
  - A positive correlation has been found between depression and conduct problems.
    - Conduct problems and disruptive disorders in childhood has been found to predict subsequent depression in adolescence.
  - A longitudinal association between perceptions of mother-adolescent relationship quality and adolescent/maternal depression has been found.
    - Maternal depression negatively correlated with adolescent perception of the relationship at 12 years and 14 years, which positively correlated with adolescent depression at 14 years (Williams, et. al, 2017).
    - Higher youth depression scores were modestly linked to lower adolescent relationship quality at age 12 years. (Withers, et. al., 2016).

# Developmental Disorders in Adolescents--- ADHD

- ADHD is a neurodevelopmental disorder affecting 5% of children
- 65% of ADHD-related symptoms will persist into adolescence.
- May struggle with inattention and impulsivity; May not experience as much hyperactivity as their younger counterpart.
- May have more difficulty staying on top of demands related academic expectations (expected to be more independent in work/school activities) as well as common stressors when working towards independence.

# Anxiety Disorders in Adolescents

- 9% of people will develop generalized anxiety disorder in their lifetime (women twice as likely)
- Generalized anxiety disorder rarely develops before adolescence
- There is a strong link between particular parental characteristics and the risk of the development of a mental disorder
  - Adolescents with parents with less education (no college degree; any kind of disorder)
  - Compared to adolescents with married/cohabitating parents, those with divorced parents were at higher risk (anxiety; behavioral; substance use disorders)
- They often experience fear, nervousness, and shyness—begin to avoid places and activities
- Be sure to rule out medical conditions that may mimic generalized anxiety disorder (ie. Hyperthyroidism)

# Eating Disorders in Adolescents

- 50% teenage girls and 30 % teenage boys use unhealthy eating practices to control weight (skipping meals, fasting, smoking cigarettes, vomiting, using laxatives)
- 46% 9-11 year-olds are 'sometimes' or 'very often' on diets
- 25 % college females use bingeing/purging behaviors to control weight
- 13.5% high school athletes have sub-clinical or clinical eating disorders
- 35% of normal dieters progress to pathological dieters; 20-25% progress to partial or full eating disorders
- 25% American men and 45% American women are on a diet on any given day.

# Non-Suicidal Self-injury (NSSI) in Adolescents

- Rates may be as high as 17% in adolescents (peaks at mid-adolescence)
- 70% adolescents participating in NSSI have made suicide attempt at least once; 55% have made numerous attempts.
  - One study found adolescents will often utilize NSSI to stop suicidal ideation
- Some use to cope with stress; dissociate from problems (distraction from pain). Others use to reduce anxiety/tension; reduce sadness/loneliness; reduce anger feelings; punish themselves for self-hate thoughts; 'to feel something'
- Others to get help---show their distress

Brown & Plener, 2017

# Substance Use Disorder in Adolescents

- By the time an adolescent reaches their Senior year of high school:
  - 73% tried alcohol
  - 50% tried an illegal drug (primarily marijuana)
  - 46% have smoked a cigarette
  - >20% have used a prescription drug for non-medical purposes
- Age of initiation to substance is an important predictor of substance use disorder (SUD) development
- SUD may arrest brain maturation
  - Chronic marijuana use in adolescents has been shown to lead to a loss of IQ that is not recovered, even if that individual stops using as an adult
- Only 10% of 12-17-year olds needing SUD treatment actually receive any services



# Diabetes in Children and Adolescents

- Type 1 Diabetes (T1DM) is the 3<sup>rd</sup> most common chronic condition of childhood.
- The impact of the diagnosis of T1DM in children can be significant for the child and their family due to the complex, invasive and relentless nature of disease management.
- For youth with diabetes the transition into adolescence is often associated with poorer adherence to treatment, deteriorating metabolic control, and increased risk for psychological disorders

# Mental Health in Children with Diabetes

- T1DM is associated with a high prevalence of psychosocial co-morbidities which is frequently related to increased A1c levels and Lower health-related quality of life scores.
- 1/3 (31.9%) met criteria for at least 1 mental health disorder in their lifetime
- In a cross-sectional study of Children and adolescents with T1DM, 26.6% met the criteria for a mental health disorder
  - Anxiety (15.5%)
  - Mood disorder (13.9%)
- Presence of a mental health disorder was related to higher A1c levels (8.6% Vs 7.6%) and lower health-related quality of life scores in youth.
- In diabetes-specific, pediatric quality of life inventory, children with mental health disorders showed more symptoms of diabetes treatment barriers and lower adherence than children with diabetes, without mental health disorders.

(Butwicka, et. al, 2016)

# The Stress of Diabetes

- Ways in which children and adolescents cope with stress are important mediators and moderators of the emotional and behavioral outcomes of stressful situations.
  - Greater use of avoidant/disengaging coping strategies are linked to poorer treatment adherence & metabolic control
  - Greater use of avoidance coping is associated with poor psychosocial outcomes--- poor Quality of Life, lower academic achievement, more depressive symptoms
- ADA standards of care recommend a gradual transition towards independence in management during middle/high school years emphasizing adult supervision throughout the transition
- Father's monitoring of diabetes-related tasks (not mother's) is directly related to adolescent's metabolic control.
  - When fathers are highly involved in care for chronically ill child, the usual decline in treatment adherence in adolescence is not observed.
  - Paternal involvement is associated with increased quality of life in youth >14 years and older

# Family Functioning and Diabetes

- Family functioning is widely acknowledged to be an important factor in adolescent adaptation to diabetes management--- accounting for up to 34% of the variance in metabolic control
- Family conflict over diabetes management has been related to poorer metabolic control and poorer quality of life
- Whether family conflict is the cause or the consequence of poor metabolic control, it is important to acknowledge its impact on the adolescent with diabetes
- Greater parent involvement in adolescent diabetes management is associated with better metabolic control; shared responsibility for diabetes-related tasks associated with better psychological health and self-care behaviors in adolescents. However, parents frequently transfer the responsibility of diabetes management at too young an age---often poor adherence may result from youth taking on self-care levels that are disproportionately to their psychosocial maturation (Jaser, 2010)

# The Adolescent Brain Related to Diabetes Care

- During adolescence ~10% are still monitoring blood glucose levels the recommended 4 times daily. (decreased SBGM= increased A1c/Increased risk of DKA)
- <1/3 are able to maintain A1c levels in the target range (<7.5%); 12% have a very high A1c >10%
- Adolescent transition to self care is perceived as a burden; believe parents are too controlling and don't want supervision of their care (Babler, et.al, 2015)
- hhk

# Mood Disorders & Diabetes

- Adolescents with diabetes appear to be at particular risk for developing depression.
- SEARCH for Diabetes in Youth study (longitudinal study of youth 10-21 years) found 42% developed at least 1 mental illness disorder
  - Depression—26% (14% mildly depressed)
  - Anxiety--- 20%
  - Behavior disorders 16%
- Children and adolescents with diabetes have been found to experience longer episodes of depression compared to medically-well depressed youth--also report higher rates of suicidal thoughts.
- One study suggests for every unit rise in Hgb A1c, increases the possibility of depression by 27%

# Depression in Children & Adolescents with Type 2 Diabetes

- Adolescents with type 2 diabetes (T2DM) experience many of the same psychosocial issues as youth with T1DM, possibly at even higher rates.
- A recent study found 36% of youth with obesity-related health conditions (such as T2DM) had at least 1 psychiatric disorder.
  - 19% mild depression
  - 19% moderate to severe depression
  - Depressive symptoms may interfere with the adolescent's ability to engage in healthy lifestyle behaviors (weight loss & activity to improve their level of control)
- Teens with T2DM are more likely to report disordered eating behaviors compared to their T1DM counterparts

# Developmental Disorders & Diabetes

- Prevalence of ADHD is greater in children with T<sub>1</sub>DM compared to the general population (Kapellan, et.al, 2016)
- Adolescents with neurodevelopmental disorders may have difficulty in transitioning to independence in diabetes self-care
- Impulsivity associated with neurodevelopmental disorders (ADHD) may impact many of the self-care management skills (SBGM, Insulin dosing)



# Anxiety Disorders & Diabetes

- Up to 32% adolescents with T1DM reports anxiety symptoms (Burchburger, et.al, 2016)
- Anxiety symptoms are associated with less frequent SBGM and suboptimal glycemic control in adolescents with type 1 diabetes
- Must also consider fear of hypoglycemia which can be magnified with underlying anxiety disorders and worsen metabolic control
  - Fear of hypoglycemia is thought to develop due to fear of the physical consequences of hypoglycemia (LOC, social embarrassment, behavior changes, loss of motor control)
  - Fear of hypoglycemia can result in behaviors to prevent hypoglycemia (omitting insulin/overeating)
  - Parents who have witnessed a severe episode are likely to experience extreme worry thus further exacerbate fear/anxiety

# Eating Disorders & Diabetes

- Eating disorders/disordered eating have been shown to predict poor control behaviors
- Rates of eating disorders among adolescents with T1DM are estimated at 10% (twice that of girls without diabetes)---One study found disordered eating behaviors in 17% of girls (10-14 years) (Jaser, 2013)
- Greatest concern is the intentional insulin restriction/omission--- Insulin restriction → hyperglycemia → glucosuria → weight loss
  - This behavior may be more common than thought---has been reported in 31%-36% of women with diabetes. This underscores the importance of our need to identify this behavior in adolescents with T1DM
  - Insulin omission/restriction is strongly associated with increased hospitalizations (DKA), microvascular complications, and 3x's risk of death independent of other risk factors (Jaser, 2013)

# Screening for Mental Health Disorders

- ADA recommends annual screening for depression in youth with T1DM, age 10 years & older (ADA, 2010).
- ADA 2017 Standards of Care recommend 'routinely screen for psychosocial problems...'
- 'Consider screening for anxiety in people exhibiting anxiety or worries regarding diabetes complications, insulin injections or infusion, taking medications, and/or hypoglycemia that interfere with self-management behaviors.'
- 'Depression screen ....significant changes of medical status'
- 'Consider annual screening of all patients with diabetes, especially those with a self-reported history of depression, for depressive symptoms with age-appropriate depression screening measures, recognizing that further evaluation will be necessary for individuals who have a positive screen.'
- 'Consider screening for disordered or disrupted eating using validated screening measures when hyperglycemia and weight loss are unexplained based on self-reported behaviors related to medication dosing, meal plan, and physical activity' (ADA, 2017).

# Risk Factors for Mental Health Disorder in Adolescents with Diabetes

- Girls > Boys
- Maternal depression (1/3 mothers of youth with diabetes)
  - Adolescents with T<sub>1</sub>DM whose mother had depression were 2.6 times more likely to develop depressive disorders compared to adolescents without depressed mothers.
- Non-white; Non-Hispanic youth
- Duration of diabetes
  - First few years of diagnosis; peaks again after 10 years of disease
- Family conflict
  - Lack of cohesiveness or adaptability
  - Parental divorce

# What to look for....

- Feeling very sad or withdrawn for more than 2 weeks (crying regularly, feeling fatigued, feeling unmotivated)
- Trying to harm or kill one-self (or making plans to do so)
- Out of control risk-taking behaviors that can cause harm to self or others
- Sudden overwhelming fear for no reason (sometimes a racing heart, physical discomfort, or fast breathing)
- Not eating, throwing-up, or using laxatives to lose weight
- Severe mood swings that cause problems in relationships
- Repeated use of drugs or alcohol
- Drastic behavior change or changes in personality or sleep
- Difficulty concentrating or staying on task that can lead to failure in school
- Intense worries or fears that get in the way of daily activities (school/hanging out with friends)

# Tools Available for Use in Children and Adolescents

- PHQ-9 for Teens (PHQ-9 A)\*
  - Beck's Depression Inventory (BDI)\*
  - Center for Epidemiologic Studies Depression Scale (CED-D)
  - Child-behavior checklist (anxiety)
  - Children's Depression Inventory (CDI)
- \*USPSTF recommended screening tools

# PHQ-9 for Teens PHQ-9 A

- 9-item youth self-report questionnaire
- Designed to detect depression in adolescents
- 5 minutes to administer and score
- Validated and widely used
  - 73% sensitivity; 94% specificity

# PHQ-9

**Table 4. Patient Health Questionnaire-9: Screening Instrument for Depression**

<i>Over the past two weeks, how often have you been bothered by any of the following problems?</i>	<i>Not at all</i>	<i>Several days</i>	<i>More than one-half the days</i>	<i>Nearly every day</i>
Little interest or pleasure in doing things	0	1	2	3
Feeling down, depressed, or hopeless	0	1	2	3
Trouble falling or staying asleep, or sleeping too much	0	1	2	3
Feeling tired or having little energy	0	1	2	3
Poor appetite or overeating	0	1	2	3
Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
Moving or speaking so slowly that other people could have noticed. Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
Thoughts that you would be better off dead, or of hurting yourself in some way	0	1	2	3
<b>Total:</b>	_____ +	_____ +	_____ +	_____

*Interpretation*

<i>Total score</i>	<i>Depression severity</i>
1 to 4	Minimal
5 to 9	Mild
10 to 14	Moderate
15 to 19	Moderately severe
20 to 27	Severe

*Adapted from patient health questionnaire (PHQ) screeners. <http://www.phqscreeners.com>. Accessed September 6, 2011.*



# Beck's Depression Inventory

- 21 item questionnaire
- Measures severity of depression (>13 years)
- 5-10 minutes to administer
- Validated
  - 87% Sensitivity; 79% Specificity

# Tool Scoring

- PHQ-9 A

- 0-4 None
- 5-9 Mild
- 10-14 Moderate
- 15-19 Moderately severe
- 20-27 Severe

- Beck's Depression Inventory

- 1-10 \_\_\_\_\_ These ups and downs are considered normal
- 11-16 \_\_\_\_\_ Mild mood disturbance
- 17-20 \_\_\_\_\_ Borderline clinical depression
- 21-30 \_\_\_\_\_ Moderate depression
- 31-40 \_\_\_\_\_ Severe depression
- over 40 \_\_\_\_\_ Extreme depression

# Tips for Providers

- Screen and refer if needed.
- Maintain parental involvement in diabetes management
  - Goal: high level of involvement with minimal conflict
- Encourage father involvement in management
- Counsel family about slow transition of diabetes-related tasks (with continued parental monitoring)
- Interview adolescents (alone) for portion of each visit to address risky behaviors
- Engage in developmentally appropriate examples/education to illicit discussion ('I have a few teens who.....' ex. Forget to take their insulin, etc.)
- Educate parents how to review (pumps/meters) and establish regular review schedule (helps identify those who are/are not transitioning responsible behaviors)
- Educate adolescents coping skills/strategies (i.e. social problem solving, assertive communication) and steps to manage daily stress of managing their diabetes.

# Tips for Parents

- Discuss ways they can support adolescent in their self-management skills--- focus on positive feedback and fostering independent decision making while decreasing 'nagging'
- Discuss with adolescent whether reward system for completing tasks increases diabetes self-care tasks (i.e. SBGM, insulin administration)
- Engage school nurse/counselor in supporting the adolescent in self-management activities with positive comments that contribute to building self-esteem
- Encourage open conversations about motivation and goal setting strategies
- Assist the adolescent to build skills in coping and diabetes acceptance--- foster positive reinforcement

# Community Access

- <20% of children and adolescents with diagnosable mental health problems receive the treatment they need
- How to get help---
  - Emergency 911 (available 24/7)
  - Suicide prevention lifeline (1-800-273-TALK (8255); available 24/7)—provides crisis counseling and mental health referrals
  - SAMHSA Treatment Referral Helpline (1-877-SAMHSA7; 1-877-726-4727; available M-F 8AM-8PM EST)
  - MentalHealth.gov--- gives ability to search local agencies by zip code (51 facilities within 25 miles from campus).

# Summary

- The adolescent with diabetes is at significant risk for the development of various mental health disorders
- Support the recommendations of the need for early screening for psychological comorbidity and regular psychosocial assessment beginning at diagnosis
- Some suggest screening child and mother for depressive symptoms
- Adolescents do not need to meet full criteria for major depressive disorder to warrant a referral
- In the child with T2DM, consider managing depression before addressing weight loss
- Consider Addressing parent depression before working on family functioning
- Focus on adolescent support and management skills through the use of positive reinforcement and coping strategies to reduce the risk of mental health issues as they transition to self-care management activities

Address parents fears & concerns about their child's diabetes

# Questions





# Case Example