Not Your Grandma’s Diabetes: Youth-onset type 2 diabetes, an emerging disease

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Driving Innovation for Youth with Type 2 Diabetes (DAILY T2D)
Learning objectives

1. Explain the prevalence and epidemiology of youth-onset T2D
2. Identify the risk factors for youth-onset T2D
3. Contrast health implications & outcomes for youth-onset T2 vs youth-onset T1D vs adult-onset T2D
4. Develop strategies to support youth living with T2D
Myth: T2D is an adult disease

Reality: Rates of T2D are rising in youth
Incidence of type 1 vs type 2 diabetes in youth

Source: SEARCH for Diabetes in Youth Study
NHW=non-Hispanic whites; NHB=non-Hispanic blacks; H=Hispanics; API=Asians/Pacific Islanders; AI=American Indians
Increasing incidence of T2D in youth (10-19 yrs)

Mayer-Davis et al., NEJM, 2017
Trends in youth T2D, by Age and Sex

SEARCH study

30% relative increase from 2001 to 2009

(p<0.0001)

Dabelea D, et al. JAMA 2017
Racial & ethnic disparities for youth with T2D

• Most youth with T2D are from racial/ethnic minority groups
• Many also have low socioeconomic status
• Social determinants of health affect treatment options, opportunities for lifestyle interventions and impact response to treatment
  • Transportation barriers
  • Time off work/school
  • Transient or temporary housing
  • Food insecurity
  • Affordability of medications and technology

Liu, Pediatr Diab, 2010; Young-Hyman, Diab Care, 2016.
**Myth:** T2D is caused by personal choices and behaviors

**Reality:** Genetics, epigenetics, fetal imprinting, environment, chronic stress, and quality of/access to health care all contribute to youth onset T2D
Majority of risk factors for youth onset type 2 diabetes are non-modifiable

Family history of T2D in parents or grandparents
Gestational diabetes and/or obesity exposure in utero
Minority race or ethnicity
Physiologic insulin resistance of puberty
**Obesity, consumption of excess calories and sedentary lifestyle**

A women with obesity has a <1% chance of achieving a “normal” weight (Fildes, American Journal of Public Health 2015)
**Myth:** T2D is the “good kind” of diabetes

**Reality:** Youth-onset T2D is an aggressive disease with higher risk of complications than youth-onset T1D or adult-onset T2D
Youth onset T2D is an aggressive disease

• Cardiac risk factors more common in T2D vs T1D in youth SEARCH for diabetes study (Hamman, Diabetes Care 2014)

• In 2,000 individuals with diabetes (mean duration 8 years), T2D more associated with diabetic kidney disease, retinopathy, peripheral neuropathy, arterial stiffness and hypertension that T1D (Dabelea, JAMA 2017)
  • Adjusting for race, ethnicity and glycemic control, obesity did NOT reduce the 2-fold excess of retinopathy, nephropathy and neuropathy

• Compared to adults with T2D, youth more likely to need insulin, have more severe insulin resistance
**Myth:** Managing T2D is easier than T1D

**Reality:** Youth onset T2D is a progressive and chronic disease that requires life-long management that may include insulin
Pillars of management for youth-onset T2D

Target HbA1c <7% through the following:

1. Nutrition therapy
2. Exercise therapy
3. Non-insulin medications
   1. Metformin (PO)
   2. Liraglutide (sub Q GLP-1 agonist)
4. Insulin (subQ)
UW Health Experience: Youth-onset T2D

- 60-70 patients per year
- 62% live in Dane County
- 71% female
- 66% with public insurance
  - NHB: 75%, NHW: 15%
- Average A1c is 9.8%
  - target <7.0%
- 45% had a no show visit
  - NHB: 60%

Pie chart showing distribution of patients by race/ethnicity:
- Black or African American: 38%
- Non-Hispanic white: 30%
- Hispanic/Latinx: 15%
- Asian: 8%
- American Indian/Alaskan Native: 4%
- Declines to answer: 5%
How to support youth with T2D

• Recognize the increasing prevalence

• Acknowledge the cause is multi-factorial and mostly non-modifiable
  • It’s a disease, not a choice

• Be aware of higher risk of complications
  • More than youth-onset T1D OR adult-onset T2D

• Address chronic disease with chronic management
  • Focus on 4 pillars: nutrition, exercise, non-insulin meds, insulin

• Address racial/ethnic and socioeconomic disparities
  • Systemic/structural racism & bias negatively impact our youth
  • Additive effect of bias against people with obesity & related diseases
  • Consider screening for social determinants of health
For more information

Robert Wood Johnson Foundation: tools to guide action for workers in health care or education

References


The Pediatric Diabetes Team at UW Health

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