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)

DAILY T2D

DRIVING INNOVATION FOR YOUTH WITH TYPE 2 DIABETES

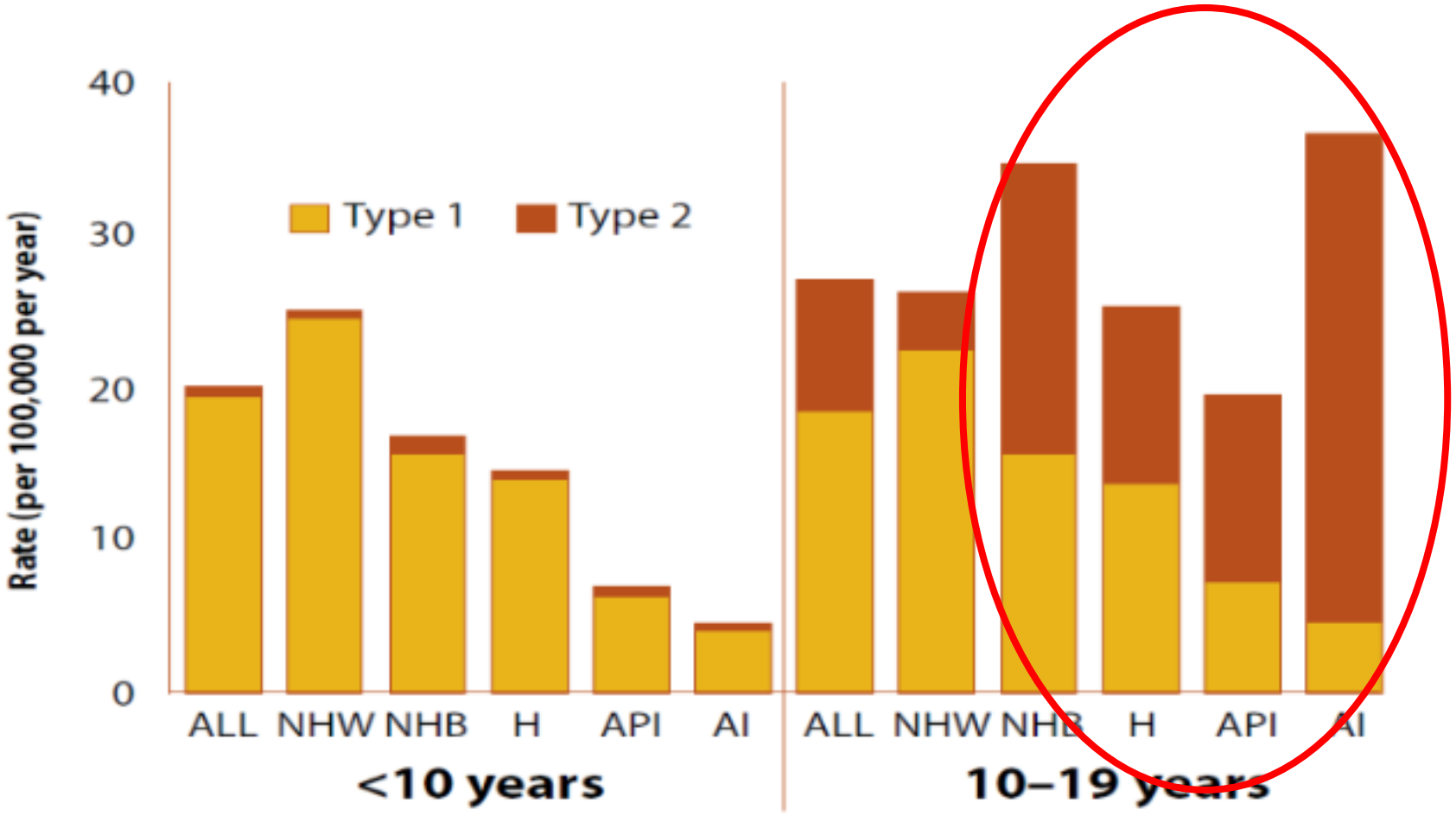
Learning objectives

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

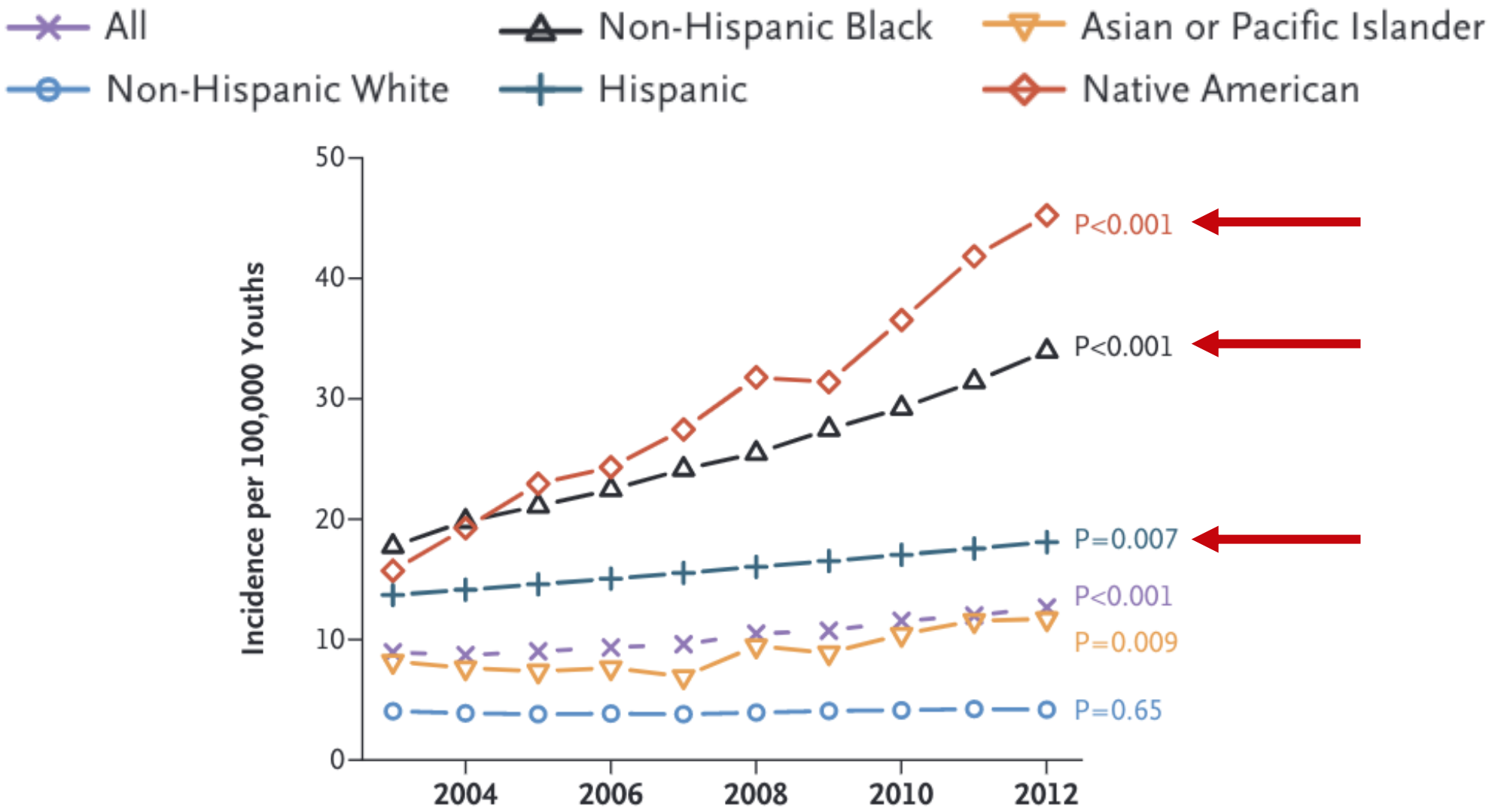
Reality: Rates of T2D are rising in youth

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

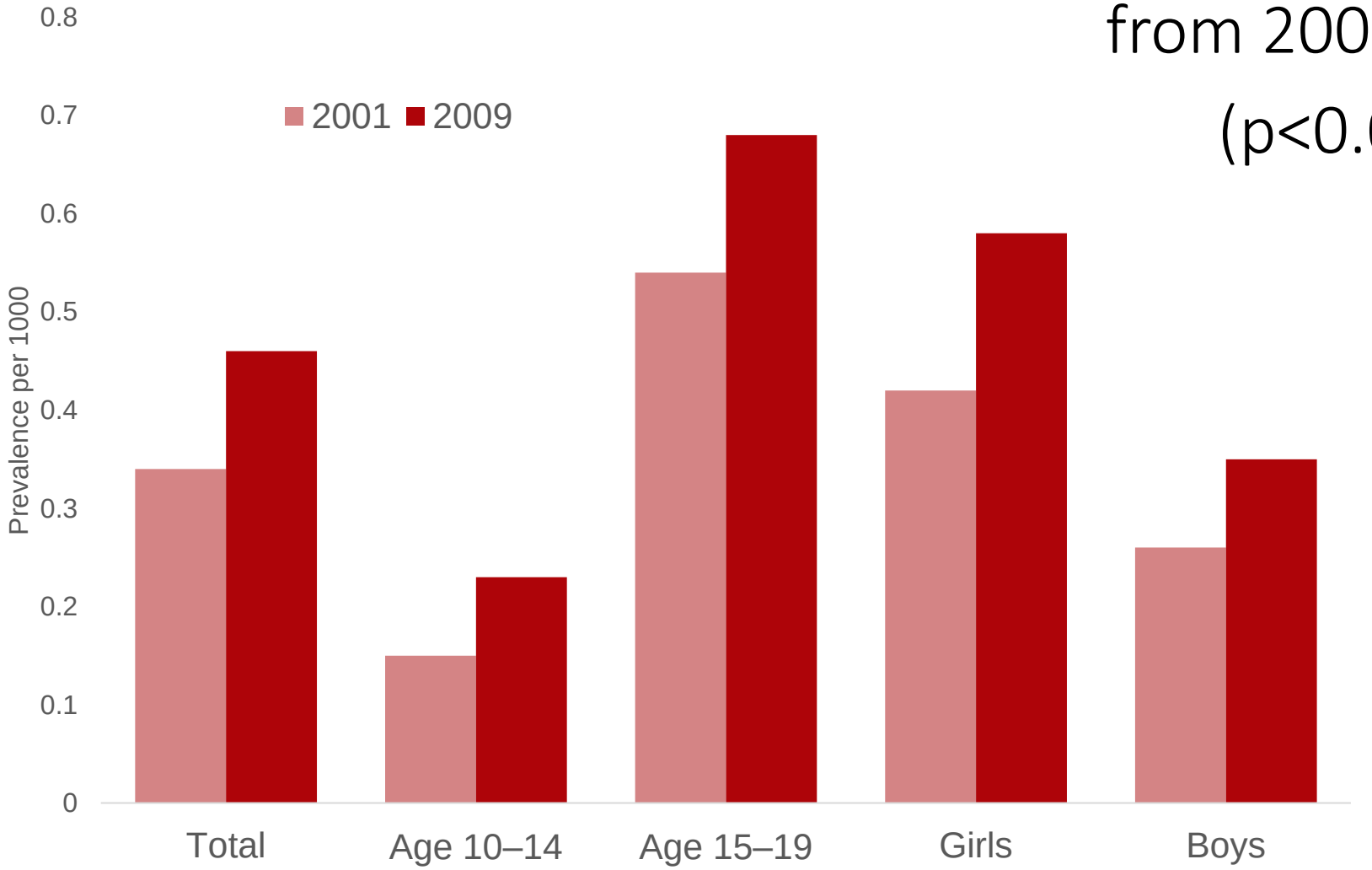
Increasing incidence of T2D in youth (10-19 yrs)



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 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

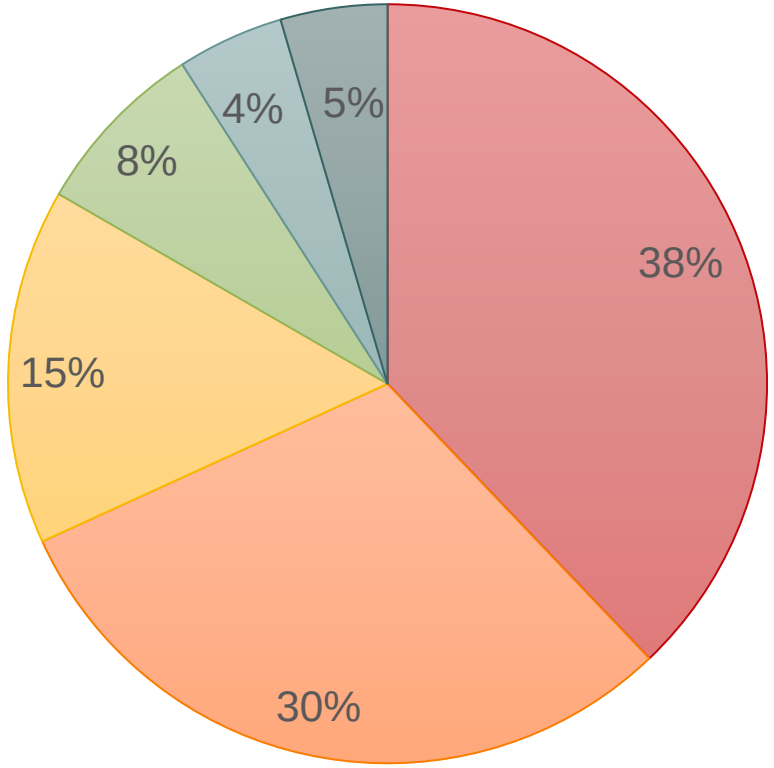
Reality: Youth onset T2D is a progressive and chronic disease that requires life-long management that may include insulin

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%

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

- Mayer-Davis, et al. (2017). Incidence Trends of Type 1 and Type 2 Diabetes among Youths, 2002–2012. In *New England Journal of Medicine* (Vol. 376, Issue 15, pp. 1419–1429).
- Young-Hyman, D., et al. (2016). Psychosocial care for people with diabetes: A position statement of the American diabetes association. *Diabetes Care*, *39*(12), 2126–2140.
- Dabelea, D., et al. (2017). Association of type 1 diabetes vs type 2 diabetes diagnosed during childhood and adolescence with complications during teenage years and young adulthood. *JAMA - Journal of the American Medical Association*, *317*(8), 825–835.
- Imperatore, G., et al. (2012). Projections of type 1 and type 2 diabetes burden in the U.S. population aged <20 years through 2050: Dynamic modeling of incidence, mortality, and population growth. *Diabetes Care*, *35*(12), 2515–2520.
- Liu, L. L., et al. (2010). Prevalence of overweight and obesity in youth with diabetes in USA: The SEARCH for Diabetes in Youth Study. *Pediatric Diabetes*, *11*(1), 4–11.
- Hamman, R. F., et al. (2014). The SEARCH for diabetes in youth study: Rationale, findings, and future directions. *Diabetes Care*, *37*(12), 3336–3344.

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