T1D Exchange

HEAL Advisory Committee Meeting

10/20/22

Welcome and Centering

T1D Exchange (T1DX) Health Equity Advancement Lab (HEAL)
Meeting Agenda

October 20, 2022, 1-2:30 pm EDT, Zoom

Participants:

Ananta Addala, Todd Alonso, Ashley Butler, Jesse Cases, Carla Demeterco, Osagie Ebekozien, Colette Edwards, Deborah Ellis, Eddie Hammond, Holly Hardison, Kristopher Leeper, Shideh Majidi, Faisal Malik, Makaila Manukyan, Ann Mungmode, Margarita Ochoa-Maya, Ori Odugbesan, Gary Puckrein, Nicole Rioles, Janine Sanchez, Devin Steenkamp, Tenishia Thurman

Agenda:

Time	Item	Facilitator
1:00-1:10 pm 10′	**Welcome** • Welcome • Centering	 Dr. Osagie Ebekozien Ann Mungmode
1:10-1:50 pm 40′	**Supporting Black youth with T1D** • Project from Wayne State University	Dr. Deborah Ellis
1:50-2:20 pm 30′	**Preliminary Survey Results** • Racial Equity practices • LGBTQ+ documentation	Jesse Cases
2:20-2:30 pm 10′	**Updates and Close Out** • Summary of next steps • Next meeting 1/19, 1 PM EST	T1DX staff

Supporting Black Youth with T1D
Dr. Deborah Ellis

Outcomes of an Effectiveness Trial to Address Health Disparities in Black Youth with Type 1 Diabetes

Deborah Ellis, Ph.D.

Department of Family Medicine and Public Health Sciences

Wayne State University School of Medicine

Research reported was supported by the NIDDK of the National Institutes of Health under award number R01DK110075. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH

Disparities in Health Outcomes for Youth of Color with Type 1 Diabetes

Hispanic and Black children more likely to have suboptimal glycemic control

Hispanic and Black children less likely to initiate and/or sustain diabetes technology use

Evidence-based interventions to address such disparities and promote health equity are lacking

What is Parental Monitoring?

- Parenting behaviors that involve *information seeking* about a youth's daily activities as well as *direct supervision and oversight* of those activities
- Related to parenting behaviors like discipline and setting limits

Parental monitoring studies in the general child development literature

- Low levels of monitoring are related to:
  - early initiation of sexual activity/ risky sex
  - delinquent behavior
  - problematic use of alcohol and drugs
  - poor academic outcomes
- Shown to be just as important as affective aspects of parenting such as warmth and support
- Particularly important to health outcomes of youth living in high-risk contexts, such as disadvantaged neighborhoods

Does parental monitoring predict *illness management* and *health outcomes* in youth with *diabetes*?

Unknown, no studies

Parental Monitoring Research: Two cross-sectional studies enrolling families of adolescents with T1D

- N=99 Families

Table 1
Demographic characteristics of study participants (n = 99)

	%	M (SD)
Youth age		14.8 (1.7)
Parent Age		43.2 (6.9)
Annual family income (dollars)		$43,625 (26,024)
Youth gender		
Male	52	
Female	48	
Caregiver gender		
Male	22	
Female	78	
Number of parents in home		
Two parents	65	
Single parent	35	
Family ethnicity		
Caucasian	47	
African American	36	
Other/missing	17	
Duration of diabetes in years		5.7 (4.2)
HbA1c		9.1 (2.3)
Insulin regimen		
2–3 injections/day	24	
4 or more injections/day	52	
Insulin pump	24	

- N=267 Families

Table 1 Sample socio-demographic characteristics (N = 267)

Variables	Mean (SD)	N (%)
Adolescent age	14.62 (1.96)	
Adolescent gender		
Female		133 (49.8)
Male		134 (50.2)
Parents' age	42.92 (7.35)	
Parent's gender		
Female		215 (80.8)
Male		51 (19.2)
Minority		
African American		95 (35.7)
White/other		171 (64.3)
Family structure		
Single-parent		83 (31.1)
Two-parent		184 (68.9)
Parent's education		
No college		107 (40.7)
Some college		156 (59.3)
Employment status		
Unemployed		86 (32.3)
Employed		180 (67.7)
Family annual income		
<$30 000		83 (32.5)
≥$30 000		172 (67.5)

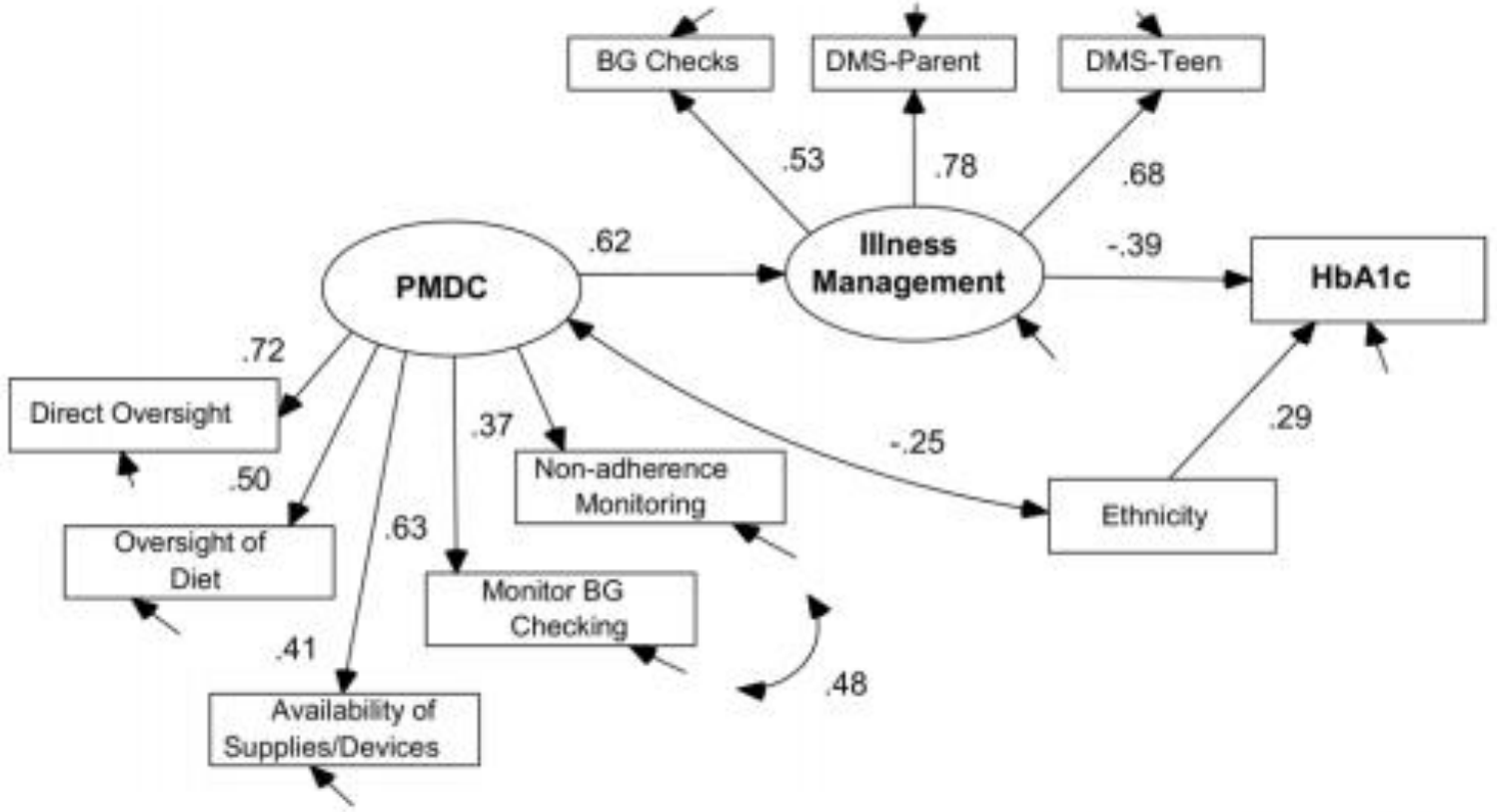


Figure 1. Final SEM model results showing standardized path coefficients of relationship between parental monitoring of diabetes care (PMDC), illness management, and metabolic control (HbA1c). All paths are significant, $p < .05$.

Study Design

- Multicenter Effectiveness-Implementation Study
- Randomized Clinical Trial
  - 4 pediatric diabetes clinics in Chicago, 3 in Detroit
- Eligibility
  - Young Adolescents aged 10-15
  - Primary Caregiver willing to participate
  - Self-Identify as Black
  - 6 months post dx with type 1 diabetes

Evidence-Based Intervention: The 3Ms

- Used with primary caregivers of young Black adolescents
- Daily parental supervision of diabetes care
- eHealth platform
- Delivered using Motivational Interviewing principles
- Three sessions lasting 10-15 minutes

Characteristics of the Innovation/ Intervention Promoting Health Equity

- Psychoeducational content developed with primary caregivers of Black adolescents with type 1 diabetes
  - Language adapted based on parent input
  - Black researchers vetted content and language
- Used videoclips showing people of color
  - Black health care provider gave advice
  - Black parent provided testimonial

Recipients: Patient Factors Promoting Health Equity

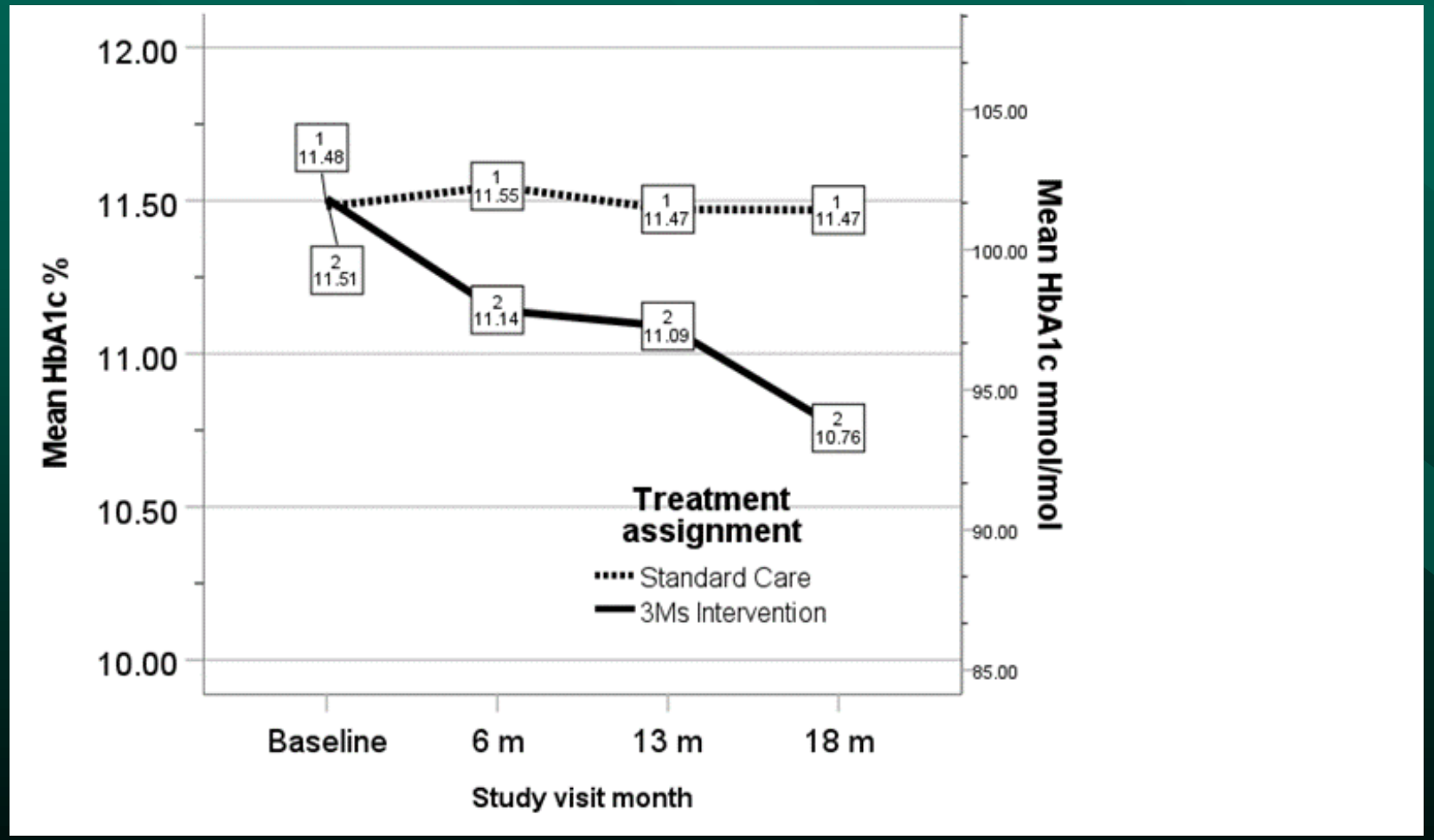
- IS question: use of diabetes clinic-based delivery or mHealth approach?
  - *Pro:* Clinic delivery could circumvent barriers to Internet access
  - *Con:* Clinic delivery could be affected by barriers to clinic attendance

Decision: Deliver 3Ms sessions at any diabetes clinic visit during a 12 months window

Sample Demographics (N=149)

- Median Family Income =$25,000 (USD)
- Mean HbA1c 11.5% ± 2.7%
  (102 ± 29.7 mmol/mol)
- 58% female, 42% male
- Mean youth age =13.4 ± 1.7 years
- Mean duration diabetes =5.8 ± 3.9 years
- *Recruitment rates were high- only 27% of families approached declined to participate*

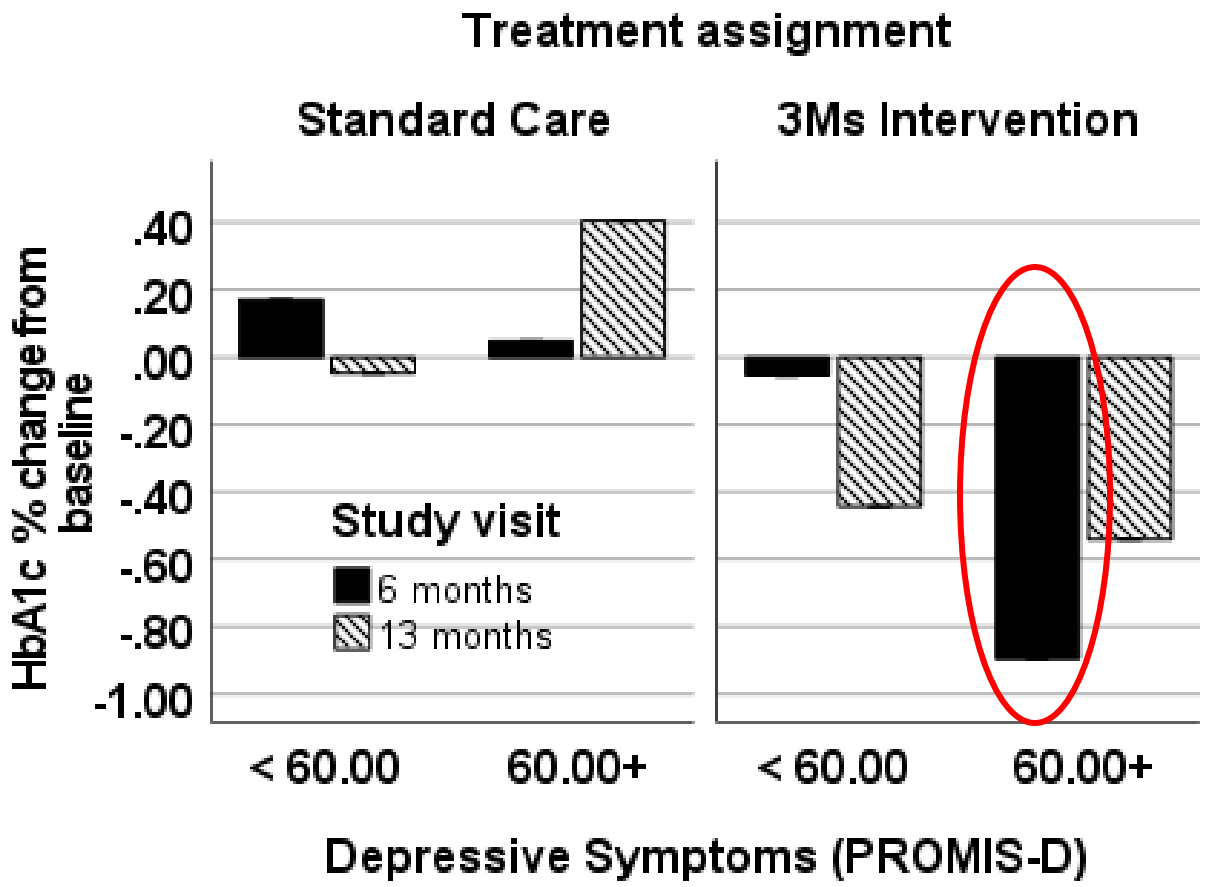
Intervention Effects on Primary Endpoint



Linear Mixed Effects Regression Model with Planned Contrasts

Significant Group x Time interaction at 6-month and 18-month follow-up (p <.05)

HbA1c decreased by 0.74% at 18-month follow-up in intervention group



Intervention youth with higher baseline depression scores had more improvement

Decrease in HbA1c of 0.89% (*P*=.012) at 6-month follow-up

Number of 3Ms Sessions (Dose) Delivered

- Dose was evenly distributed in the intervention group
  - 36% received one session, 36% received two sessions, 28% received three sessions
- Effects of dose on health outcomes
  - Effect of one session versus more than one session was significant at 18-month follow-up
  - HbA1c declined by 0.70% vs 0.31%, $p < .05$

Qualitative Interviews-Parents (N=21)

Social Impact		
Caregiver- Youth Collaboration	Caregivers described how their teamwork with their teen improved after the intervention	***"She's more comfortable with checking it… [it] seems like since I'm doing it with her with the 3Ms, she's getting used to it"***
Shared Experiences	Caregivers related to the caregiver depicted in the peer testimonial	***"It's always good to hear something from another parent just to see if you guys experienced the same thing or are going through the same thing."***
Teen Impact	Caregivers noticed their teens becoming more proactive in completing their diabetes management tasks	***"I have seen a change in how he approaches [checking blood sugar levels] a lot of times. Now, I don't have to ask him to see his meter. He'll automatically bring it to me and show it to me."***
Family Support	Caregivers described how the intervention impacted support from relatives	***"Getting family members to assist is another thing I've been using in that implemented on the 3Ms… asking them if I'm not home and he is home to make sure that they monitor him."***

Qualitative Interviews-Parents (N=21)

Parenting Educational Impact		
Helpful Reminders	Caregivers described how the intervention reminded them to supervise their teen during diabetes tasks	***"I do think that the program did help me kind of keep that in the forefront of my mind to make sure that I check (blood glucose levels).."***
The 3Ms	Caregivers described how the 3Ms mnemonic simplified diabetes management tasks into specific parental monitoring strategies	***"It specifically gave directions as to what to do with your child. 3Ms helped a lot because it's just simple, those 3Ms are just simple and that's really what you do."***
Caregiver Knowledge	Caregivers described how the intervention provided further insight and clarified supervisory strategies	***"There's so many different little myths out there that are so wrong, so this would give people good information... if they got into [the 3Ms]***

Conclusions

- A brief, culturally tailored eHealth intervention was successful in improving glycemic control for Black adolescents with type 1 diabetes
  - Parents reported high satisfaction and improved family interactions in qualitative interviews
- Delivery during diabetes clinic visits was feasible
  - Increases provision of integrated behavioral health services to Black youth
- Future work could explore the potential of eHealth interventions to address other factors that affect health outcomes among Black youth
  - Screening and referrals to address other needs

Collaborators

Jill Weissberg-Benchell Ph.D, Meredyth A Evans Ph.D and Jennifer Miller M.D.

Lurie Children's Hospital and Northwestern University Feinberg School of Medicine

April Idalski Carcone Ph.D, Colleen Buggs-Saxton M.D. and Thomas Templin Ph.D

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Beaumont Health Care

Tina Drossos Ph.D

University of Chicago Medicine

Bernard Degnan M.D.

Ascension St. John Hospital

QUESTIONS?

Reflection

What inspires you about this work?

How can the HEAL Advisory Committee partner with work like the 3M's intervention in the future?

Are there other programs like this that we should be aware of?

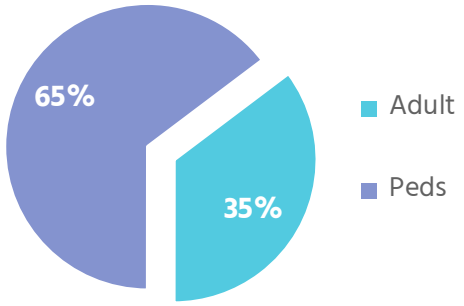
Preliminary Annual Survey Results – Racial Equity

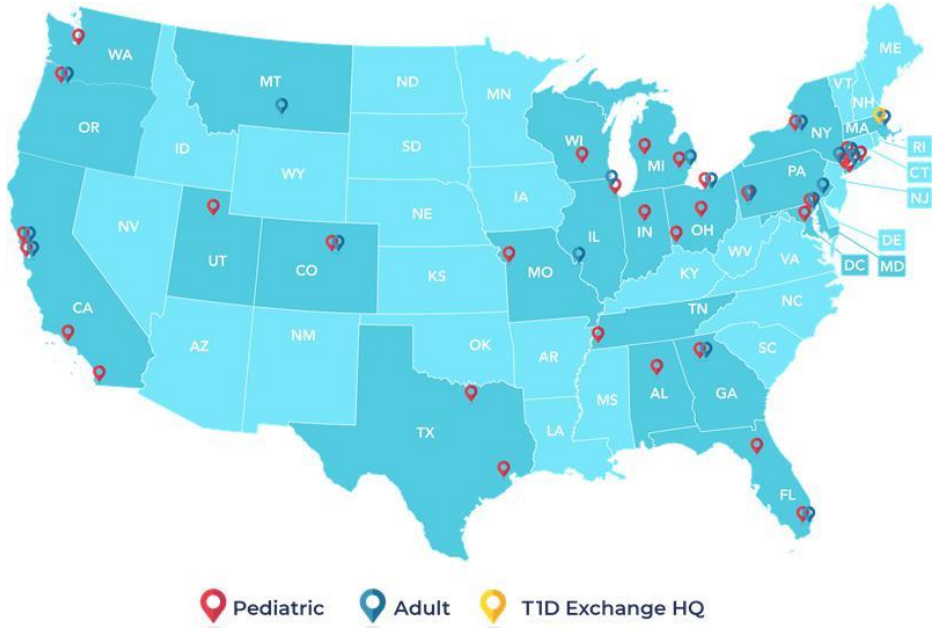
Introduction to the T1D Annual Survey

- The 2022 T1D Exchange annual survey was conducted in August and September and the following are preliminary results

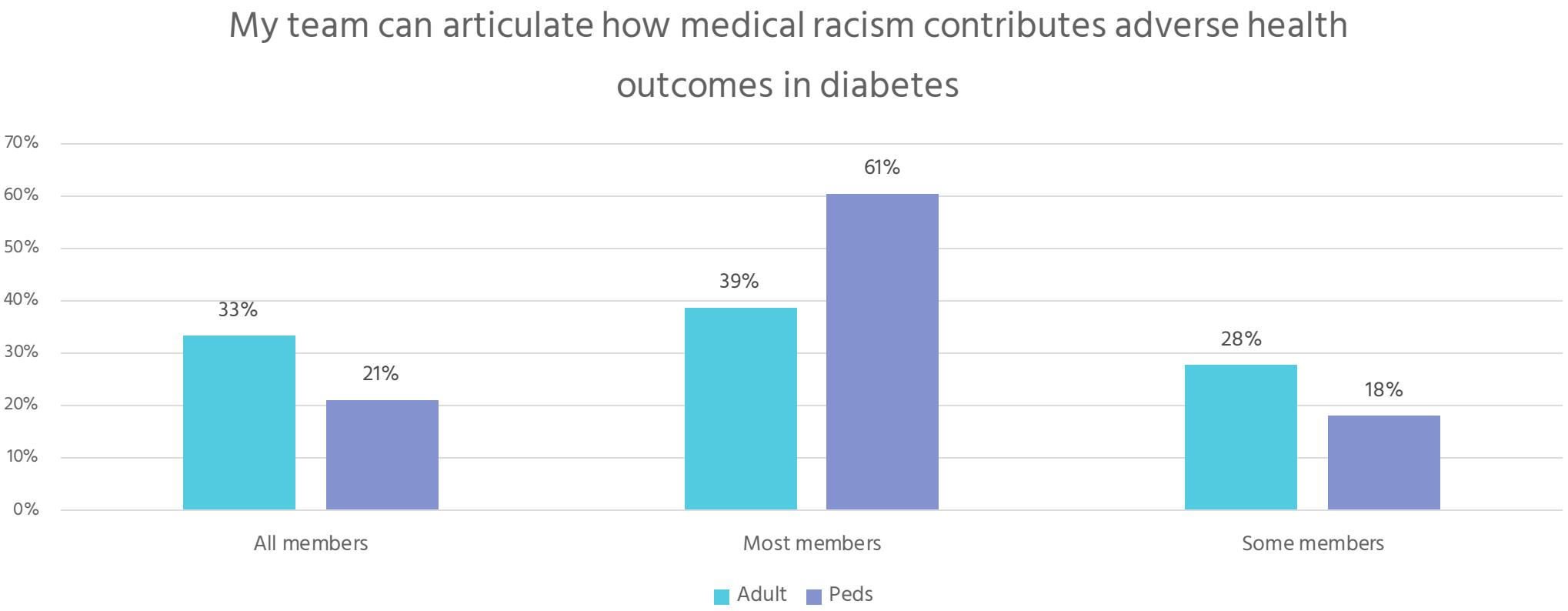
- The survey consisted of an introductory section that surveyed respondents on the size of their diabetes populations and respective care teams and four sections:
  - **LGBTQ Practices**
  - Transitions Practices
  - **Racial Equity**
  - Reproductive Health

- There were 51 total responses
  - (18 Adult & 33 Peds)

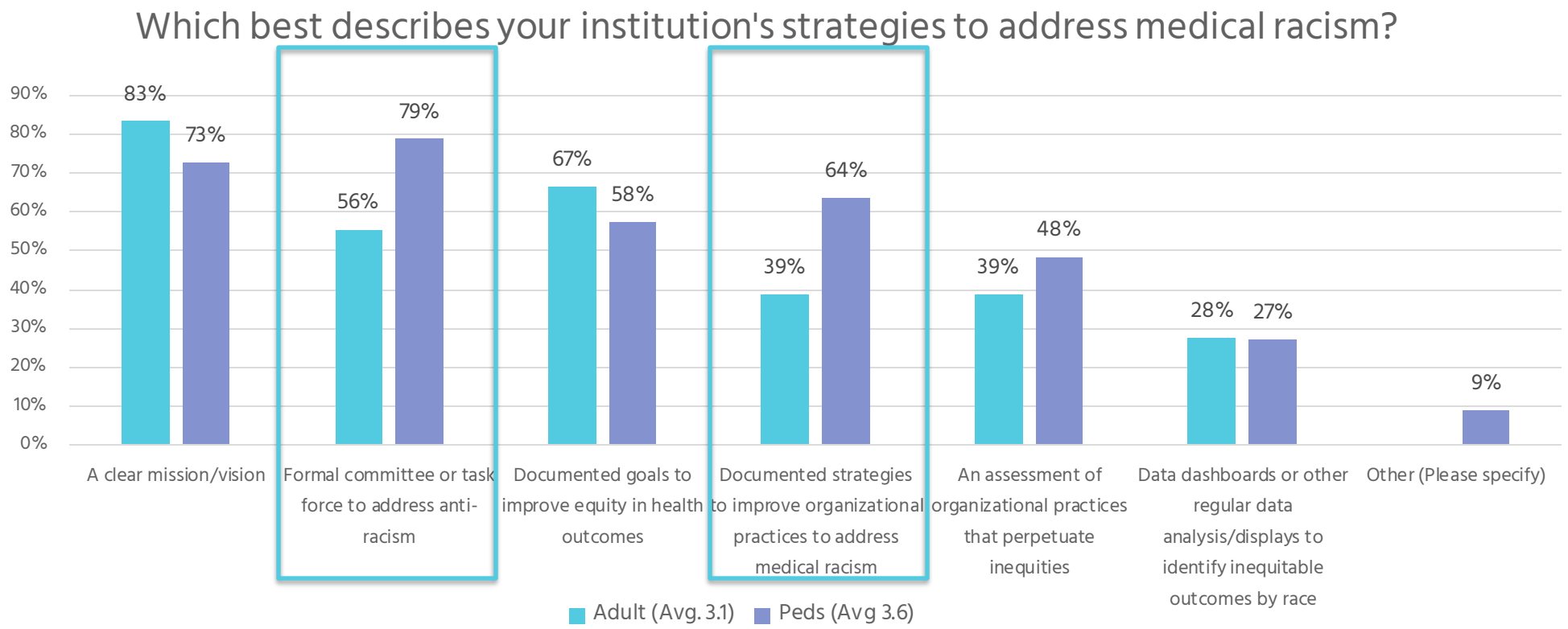




Respondents from 21% of peds institutions and 33% of adult institutions feel all their team members can articulate how medical racism contributes to adverse health outcomes in diabetes

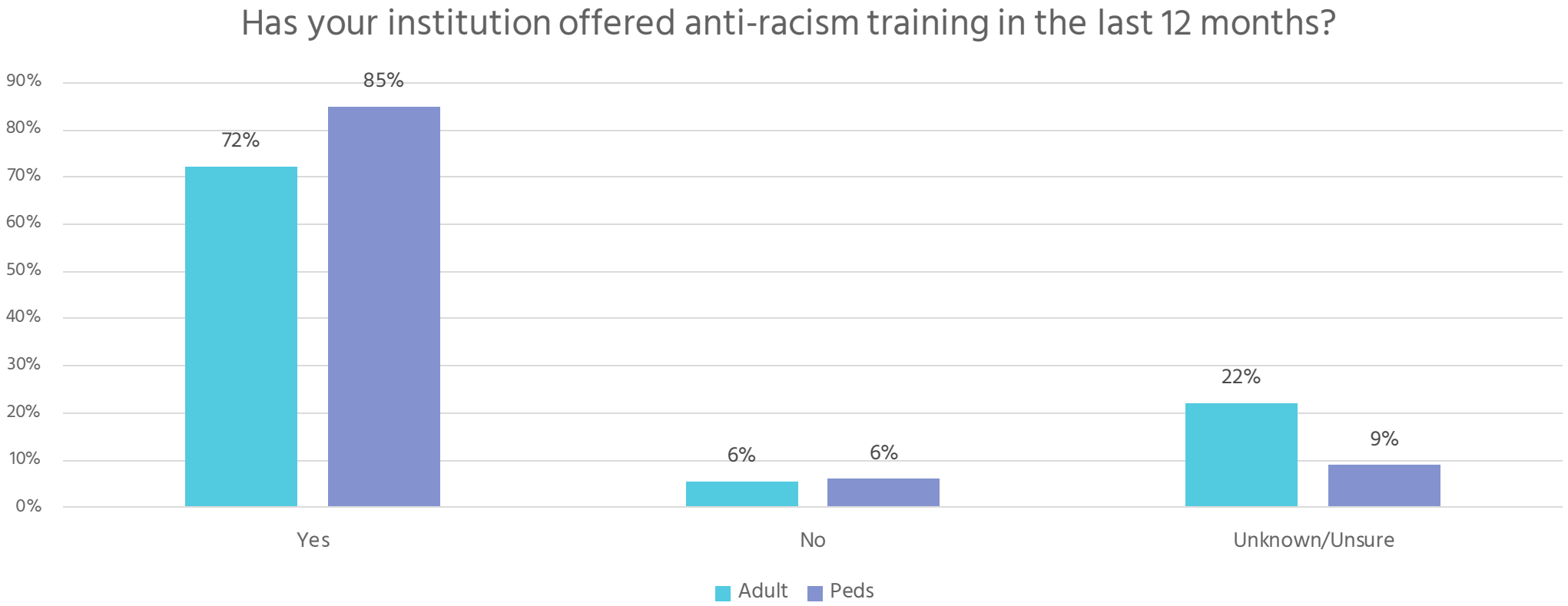


On average, peds institutions have more strategies implemented to address medical racism (adult - 3.1 vs peds – 3.6) Mainly formal committees and documented strategies to improve organizational practices

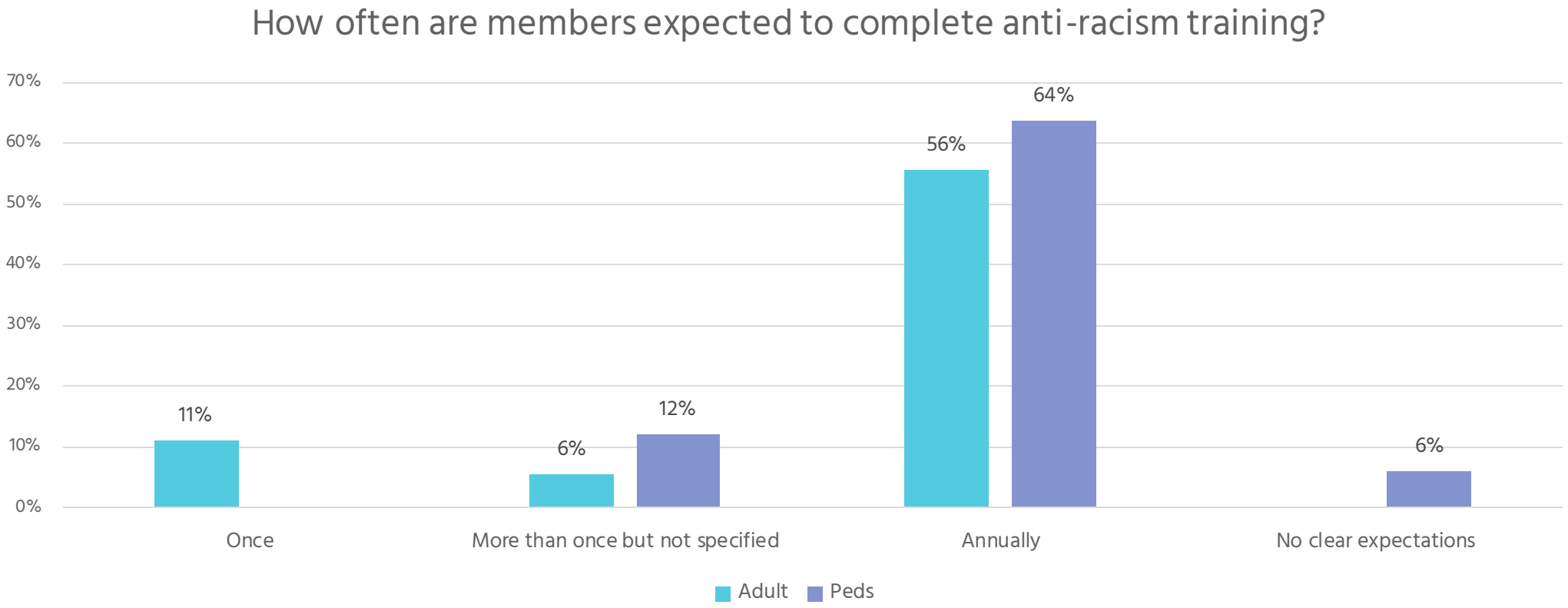


* - Responses for 'Other - Please Specify' - (Data dashboard (x2) and unknown (x1))

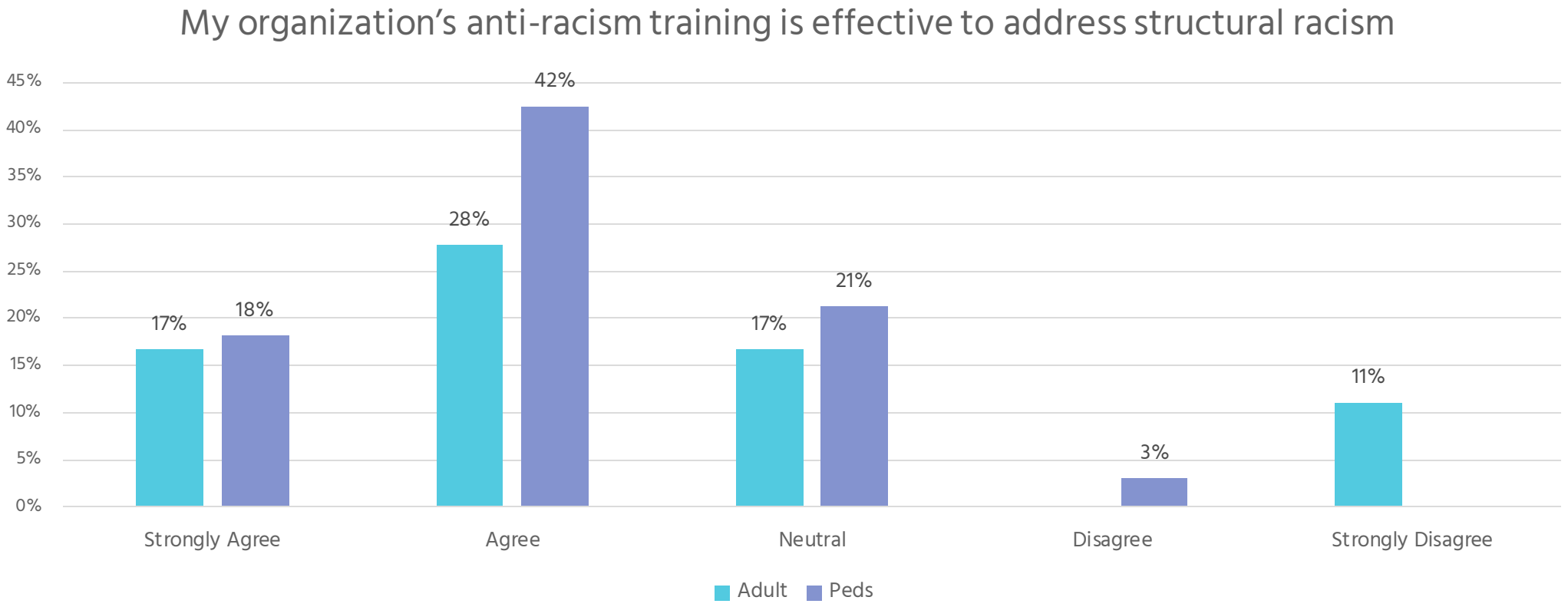
Anti-racism training was offered in the last 12 months for 85% of peds and 72% of adult institutions



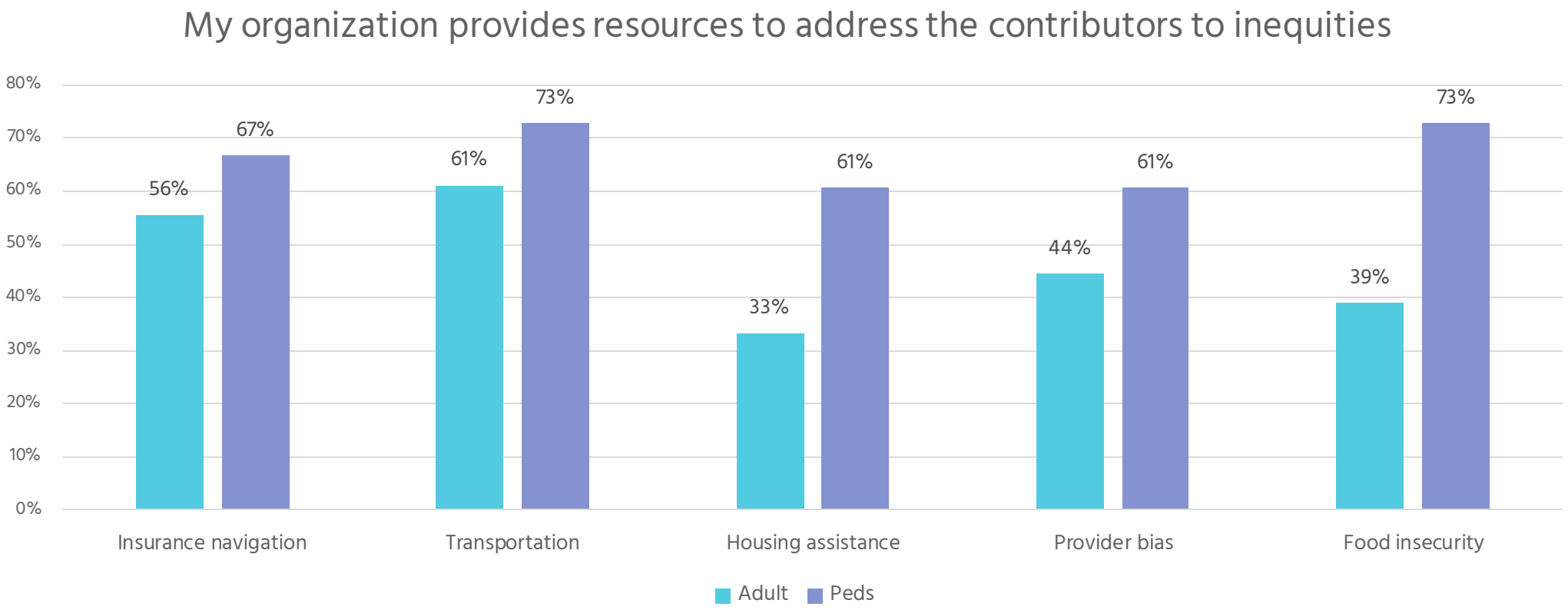
A majority of both adult and peds institutions complete anti-racism training annually



A higher proportion of peds respondents believe their institution's anti-racism training is effective (45% vs 60%)



For every type of resource, peds institutions more commonly provide these resources to help address contributors to inequities than adult institutions



Describe your organization's strategies to improve organizational practices to address medical racism:

Open-ended text responses were reviewed for common themes.

1. Employee trainings
   - Bias-reduction training, modules, discussion groups
2. Offices and/or committees promoting DEI
   - Anti-racism, DEI, JEDI, racial and gender equality
3. Patient Resources
   - Interpreter services, transportation, insurance navigation, food insecurity
4. Hiring practices
   - Changing prior hiring practices, hiring from the community, diversifying workforces

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Racial Equity Highlights for Discussion

1. Only 21% (peds) and 33% (adult) institutions feel all their team members can articulate how medical racism contributes to adverse health outcomes in diabetes
2. Peds institutions have implemented more strategies to address medical racism
   - **Averages number of strategies: Peds - 3.6 vs. Adult - 3.1**
3. A majority of institutions have offered anti-racism training in the last 12 months
   - **Peds - 85% vs. Adult - 72%**
4. A majority of institutions offer anti-racism training annually
   - **Peds - 64% vs. Adult - 56%**
5. Respondents from peds institutions are more likely to agree that their anti-racism training is effective
   - **Peds - 60% vs. Adult - 45%**
6. Peds institutions more commonly provide resources to help address contributors to inequities

7. Common themes for organizational strategies
   - Employee trainings, DEI offices or committees, patient resources, hiring practices

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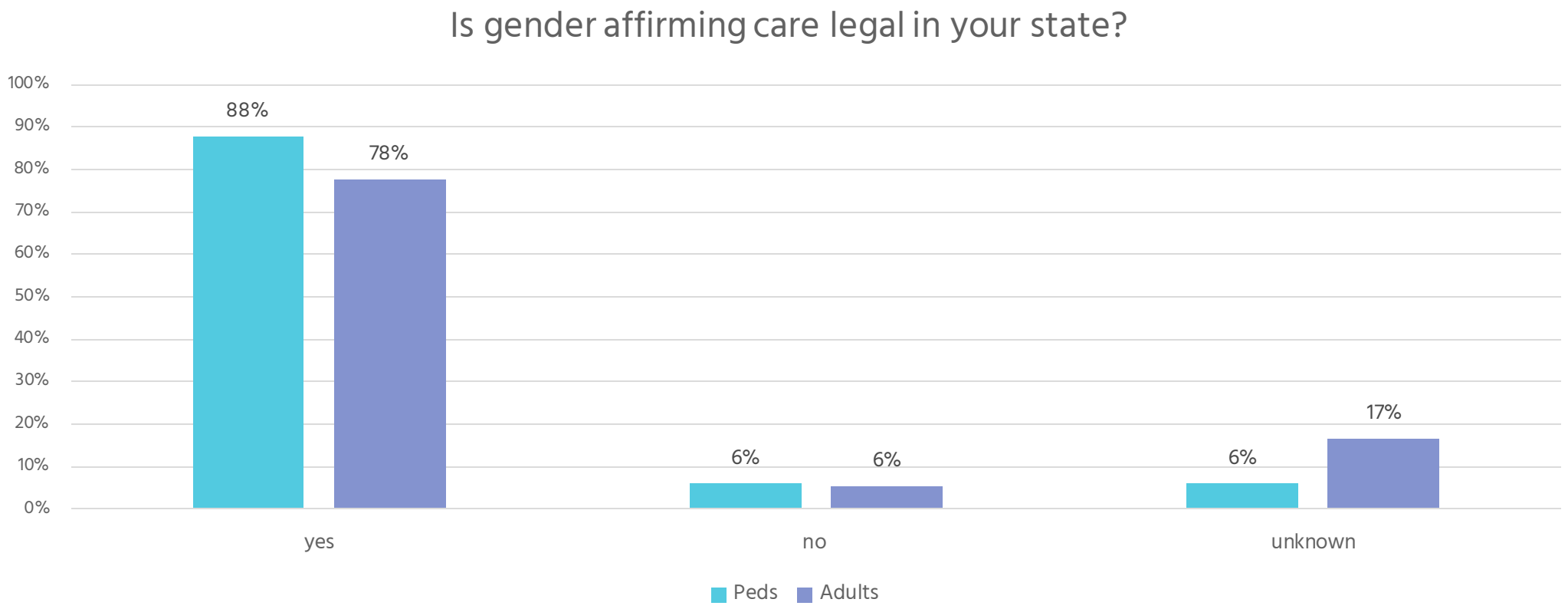
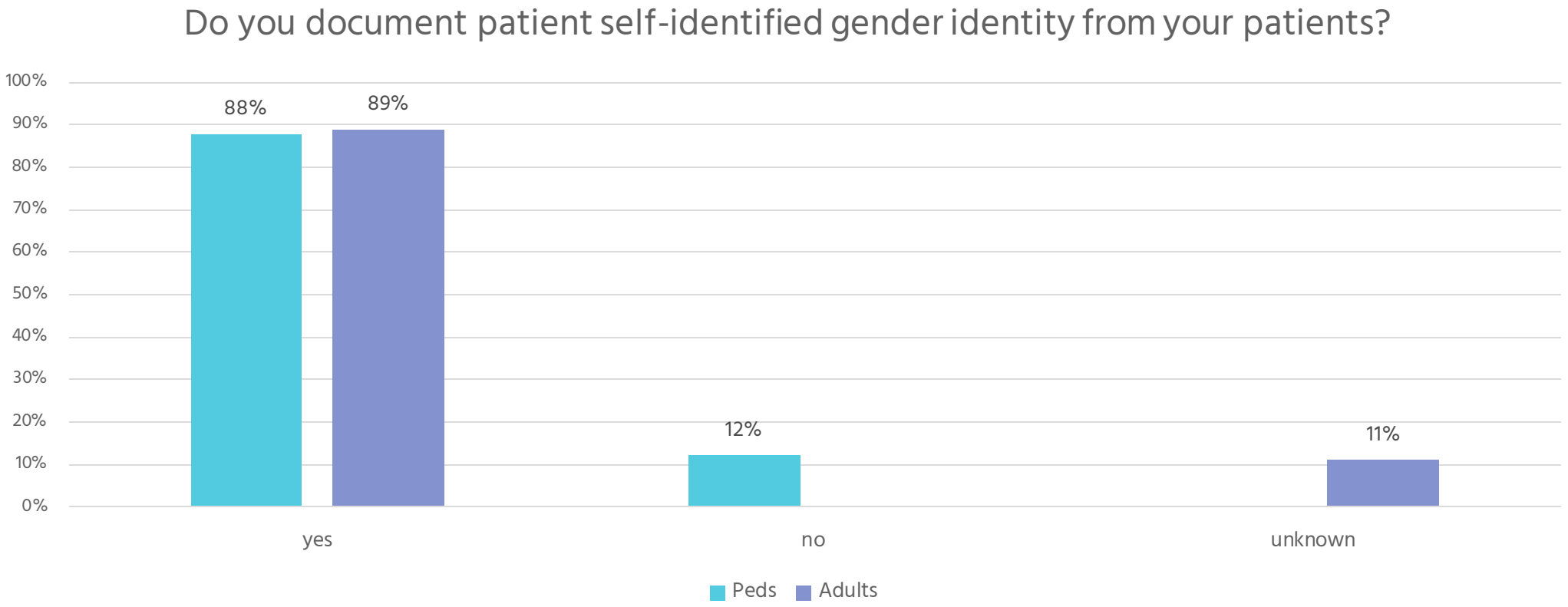
Preliminary Annual Survey Results – LGBTQ+ Documentation Practices

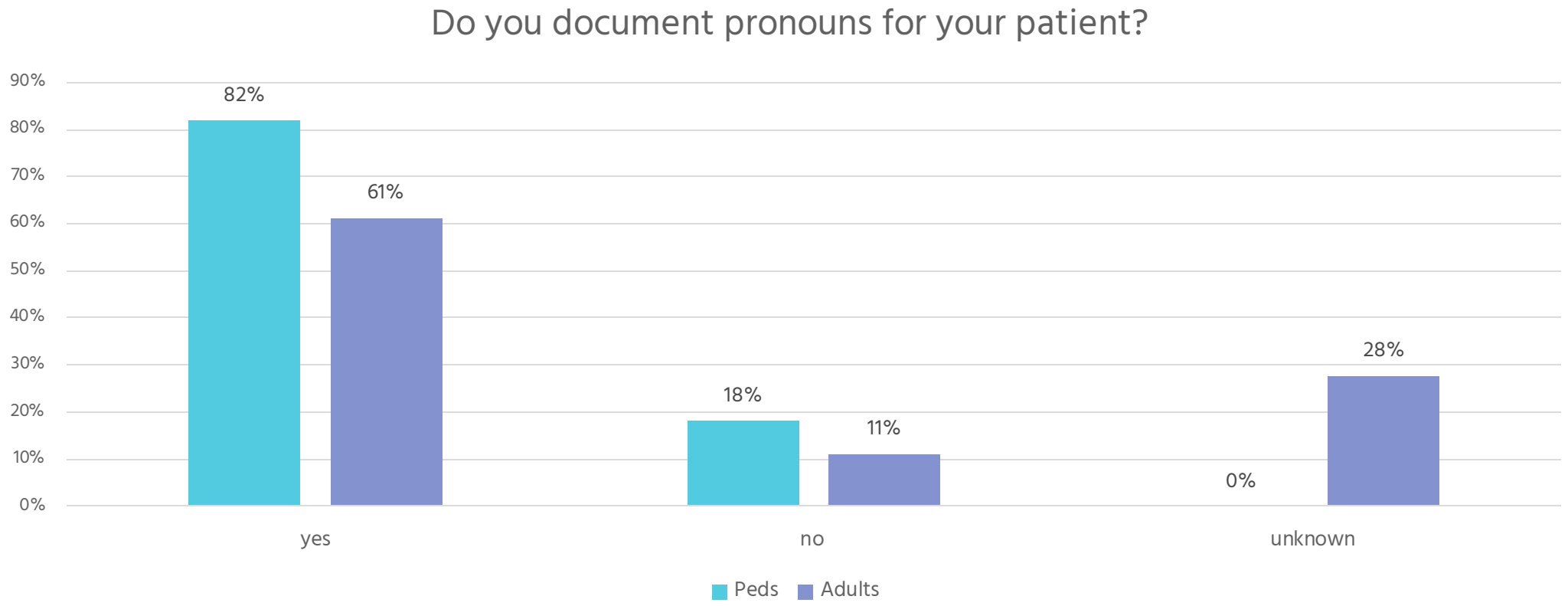
Respondents said gender affirming care is legal in the state for 88% of peds institutions and 78% of adult institutions



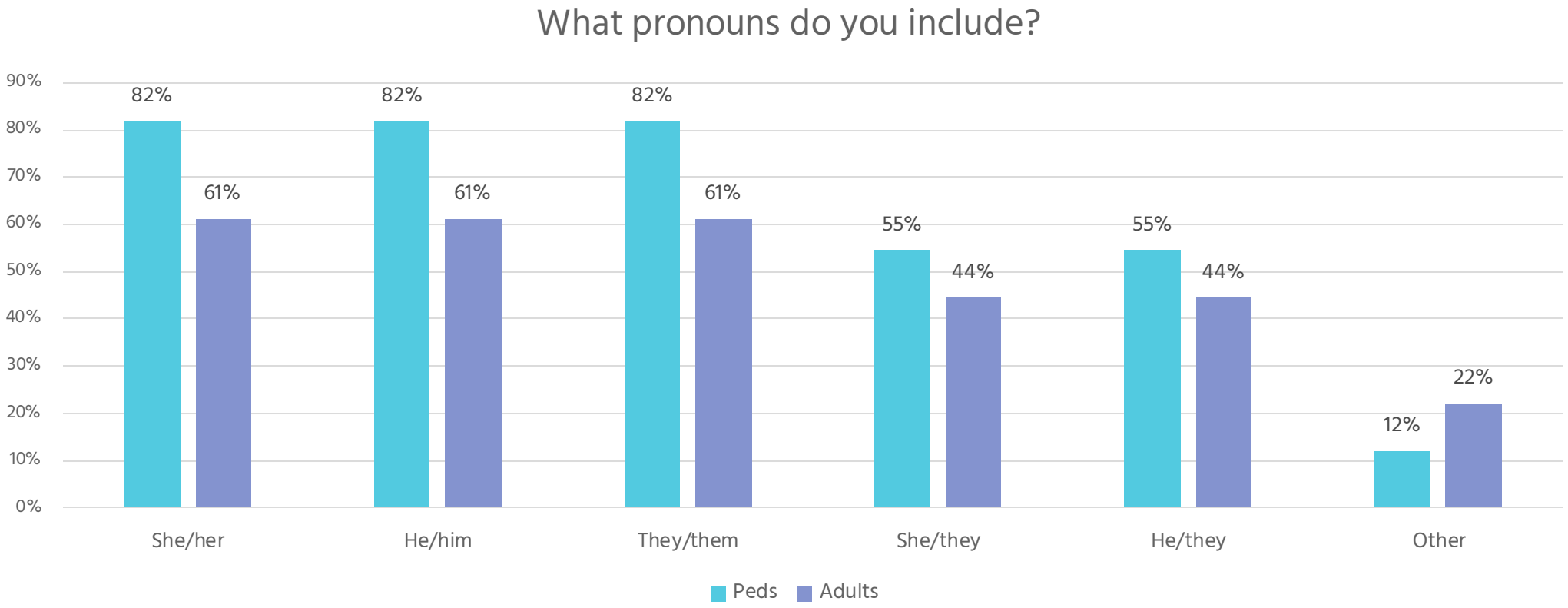
Almost 90% of peds and adult institutions document patient self-identified gender identity



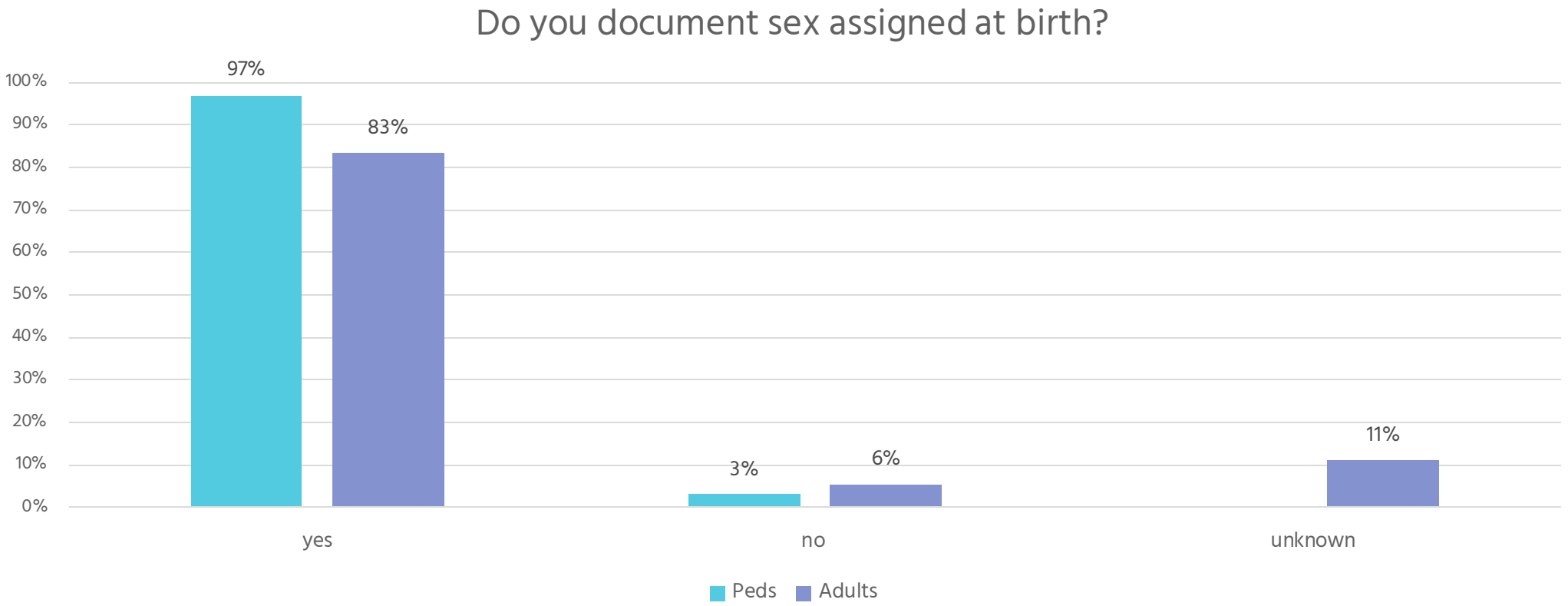
Peds institutions more regularly document patient pronouns (Peds - 82% vs. Adult – 61%)



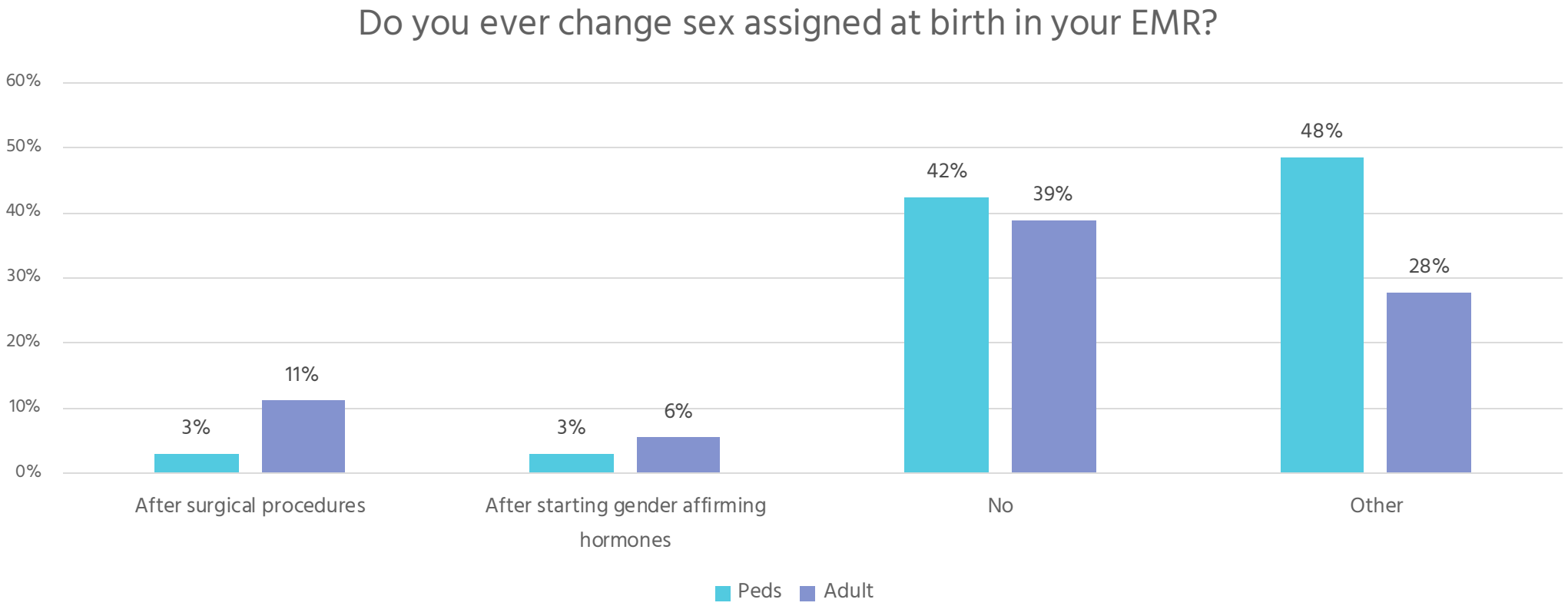
The three main pronoun groupings documented at peds and adult institutions are she/her, he/him, and they/them



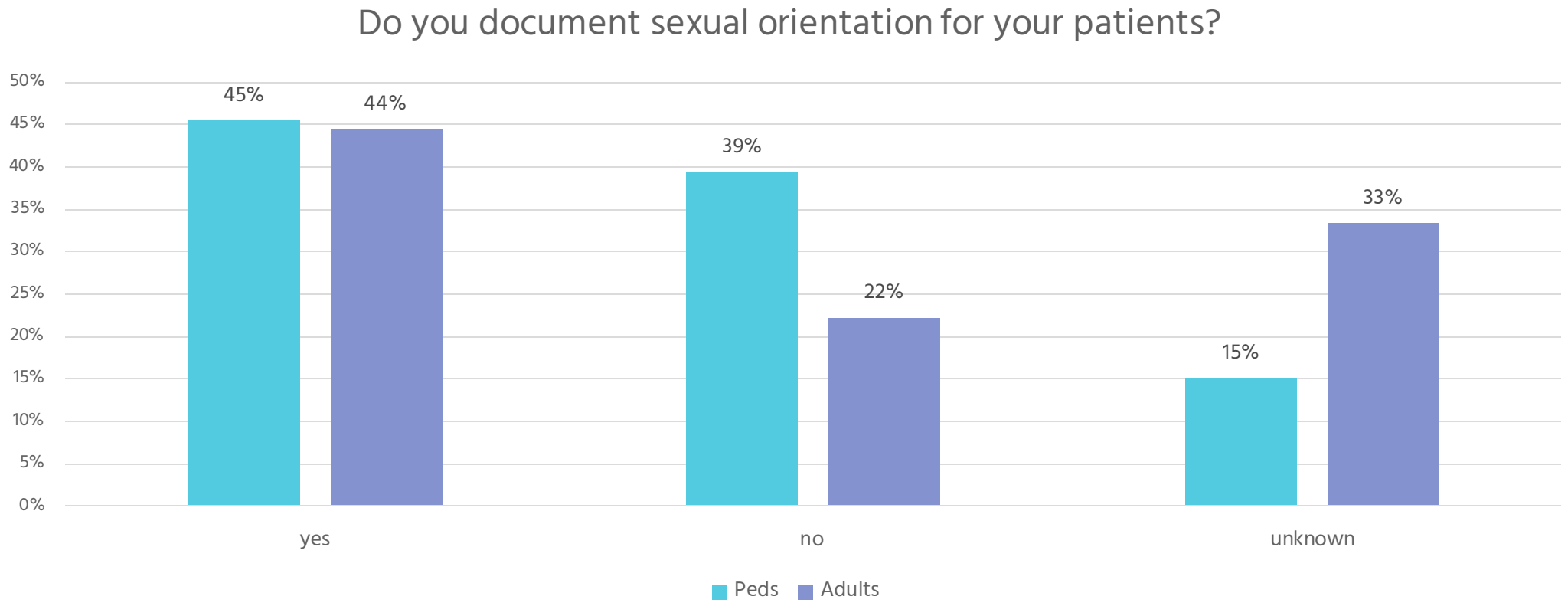
A majority of peds and adult institutions document sex assigned at birth



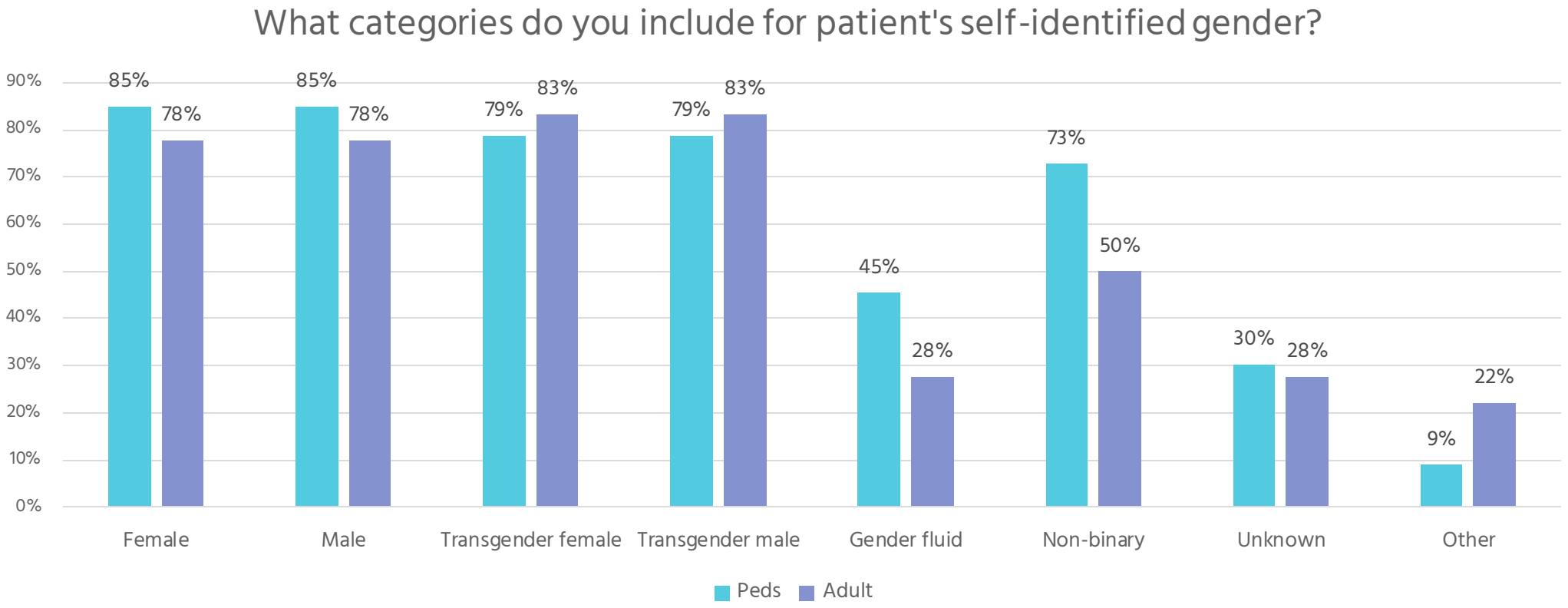
A majority of both peds and adult institutions will change sex assigned at birth in their EMR after certain requirements are fulfilled



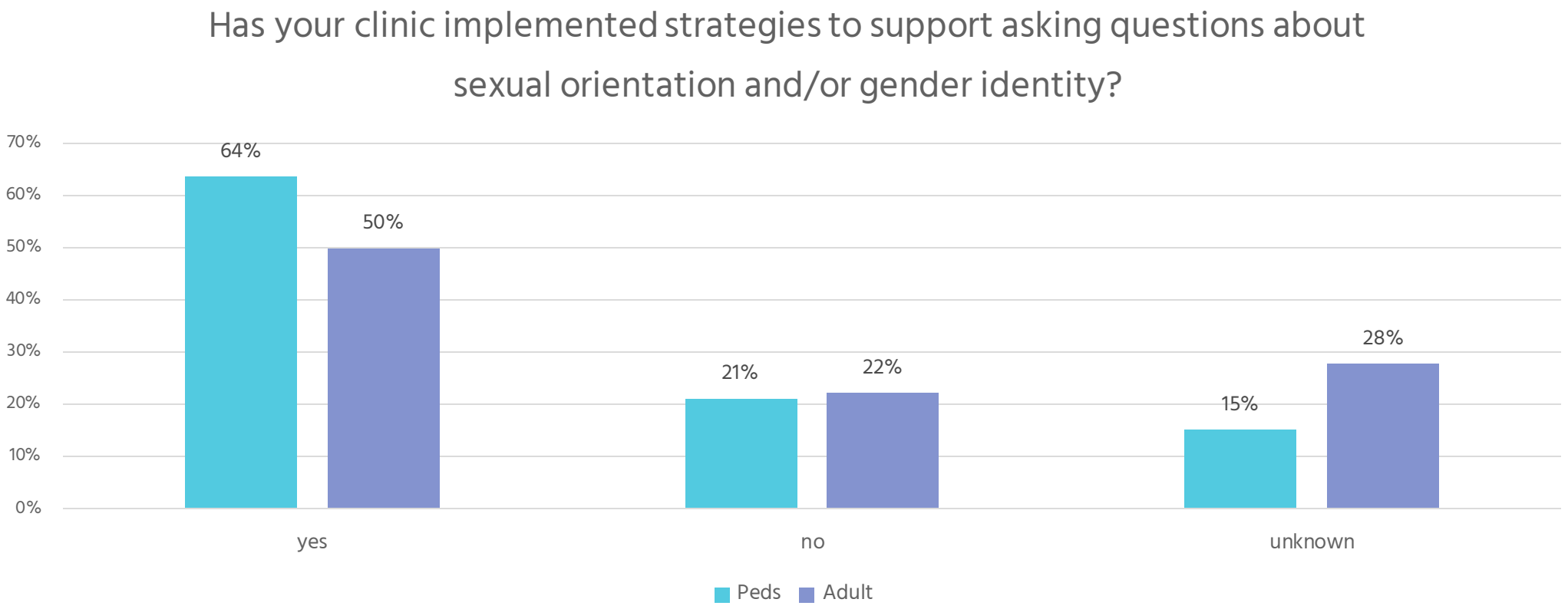
Less than half of respondents for both peds and adult institutions indicated that they document sexual orientation for patients



Most clinics offer choices for patient self-identified gender outside of Male and Female. The most common alternatives are Transgender Male, Transgender Female, and Non-binary



Strategies to support asking questions about sexual orientation or gender identity were implemented in 64% of peds and 50% of adult institutions



LGBTQ Highlights for Discussion

1. Gender affirming care is legal in the state for **88% of peds** institutions and **78% of adult** institutions
2. A majority **(almost 90%)** of peds and adult institutions document patient self-identified gender identity
3. Peds institutions more regularly document patient pronouns
   - **Peds - 82% vs. Adult – 61%**
4. The three main pronoun groupings documented at peds and adult institutions are **she/her, he/him,** and **they/them**
5. A majority of peds and adult institutions document sex assigned at birth
6. A majority of both peds and adult institutions will change sex assigned at birth in their EMR
7. Less than half of respondents indicated they document sexual orientation
8. Most clinics offer choices for self-identified gender outside of '**Male**' and '**Female**'
9. Strategies to support asking questions about sexual orientation or gender identity were implemented in **64% of peds** and **50% of adult** institutions

T1D Exchange

Hybrid Closed-Loop Systems and Glycemic Outcomes in Children and Adults With Type 1 Diabetes: Real-World Evidence From a U.S.-Based Multicenter Collaborative

Nudrat Noor, Manmohan K. Kamboj, Taylor Triolo, Sarit Polsky, Ryan J. McDonough, Carla Demeterco-Berggren, Laura Jacobsen, Rona Sonabend, Osagie Ebekozien, and Daniel J. DeSalvo

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Background

- Increasing evidence demonstrates the benefits of new diabetes technologies, including insulin pumps and continuous glucose monitors (CGM), for glycemic management in people with type 1 diabetes (T1D).

- In addition to the independent use of these technologies, hybrid closed loop systems (HCLS), which combine insulin pumps and CGM with a closed-loop algorithm controller to automate insulin delivery, can improve glucose levels.

- This study compared glycemic outcomes in users of HCLS with those of users of insulin pumps and CGM without automated insulin delivery and those using multiple daily insulin injections (MDI) with CGM in youth and adults with T1D.

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Methods

- We analyzed electronic medical records data (2019–2021) from the T1D Exchange Quality Improvement Collaborative (T1DXQIC), a multicenter database for people with T1D (3).

- A total of 28,019 people, aged $6 years with T1D diagnosis for at least 1 year, were classified into three groups by mode of insulin treatment and CGM use. At their most recent visit, patients who reported using HCLS (either Tandem t:slim X2 pump with Control-IQ or Medtronic 670G or 770G pump with active automated mode)

Methods

- HCLS users: Medtronic 670G or 770G pump with active automated model (N = 2,047),
- Pump+CGM users: those using an insulin pump together with a CGM without automated insulin delivery (N=12,306)
- MDI+CGM: Those using MDI for insulin therapy along with a CGM device (N =13,613).

- Primary outcome: Most recently recorded HbA1c (%).
- Secondary outcomes: Time in range (TIR), defined as percentage of time spent between 70 and 180 mg/dL, time below range (TBR) (250 mg/dL), using an average of the last 14 days.

Results

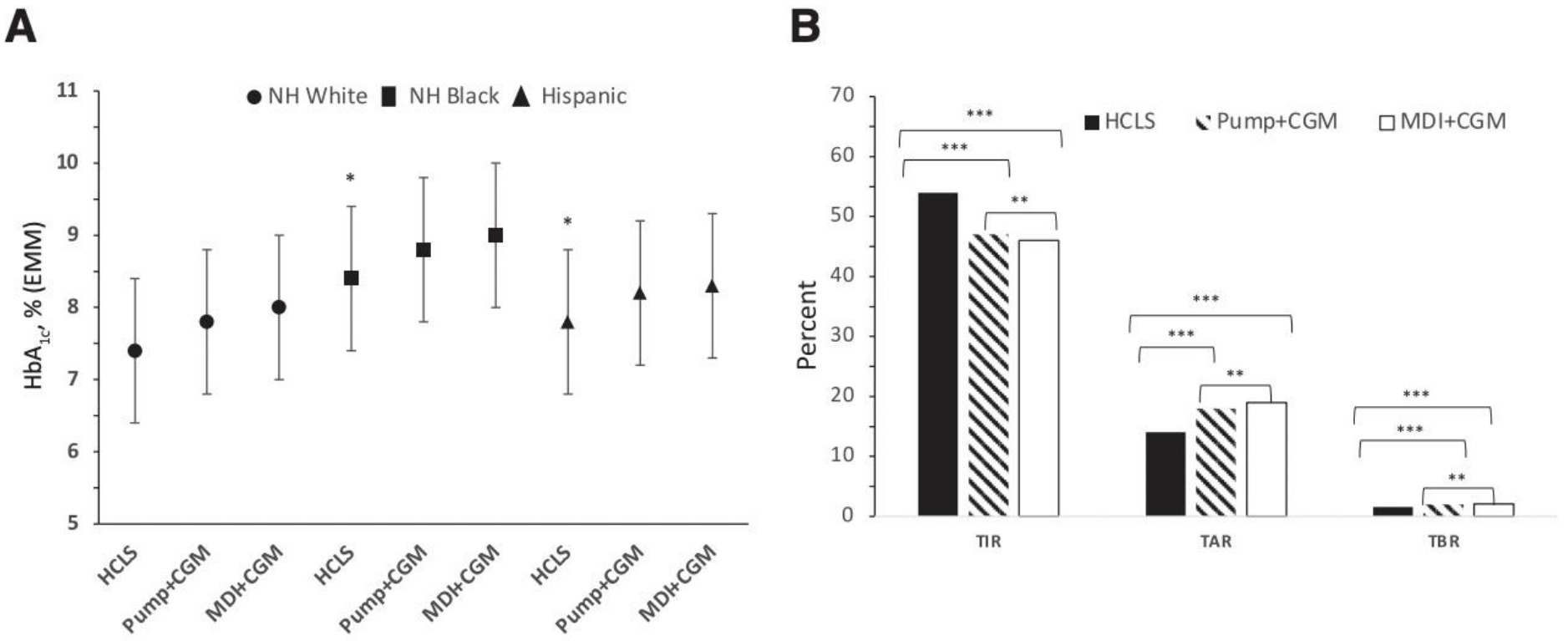

Figure 1–*A*: EMM for HbA_{1c} levels across insulin therapy use groups by race/ethnicity, adjusted for age, sex, and insurance type. *$P < 0.001$ (Bonferroni corrected) for comparison of HbA_{1c} in NH Black vs. NH White and Hispanic vs. NH White HCLS users by Mann-Whitney *U* test. *B*: EMM for TIR, TAR, and TBR, adjusted for age, sex, race/ethnicity, and insurance type. **$P < 0.01$; ***$P < 0.001$. *P* values were determined by Mann-Whitney *U* test and were Bonferroni corrected. The following numbers of samples were used: TIR, HCLS = 1,664 and insulin+pump = 7,629; time below 70 mg/dL, HCLS = 1,330 and insulin+pump = 10,484; time below 54 mg/dL, HCLS = 1,333 and insulin+pump = 10,484; time above 250 mg/dL, HCLS = 1,332 and insulin+pump = 10,416.

Conclusion

- We demonstrate the value of HCLS use in lowering glycemic outcomes; however, a limitation of this cross-sectional study is that we were unable to rule out reverse causation, in that people with lower HbA1c may be more likely to adopt HCLS.

- While the benefit of HCLS technology is apparent for both children and adults, the adult population showed better glycemic levels than the pediatric group, potentially owing to the inherent challenges in reaching optimal glycemic targets in children and young adults with T1D.

- Advanced diabetes technology use was lower in NH Black and publicly insured people, indicating that social disparities continue to be a hindrance to better health outcomes in this population.

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Next Steps

Conclusion

- We demonstrate the value of HCLS use in lowering glycemic outcomes; however, a limitation of this cross-sectional study is that we were unable to rule out reverse causation, in that people with lower HbA1c may be more likely to adopt HCLS.

- While the benefit of HCLS technology is apparent for both children and adults, the adult population showed better glycemic levels than the pediatric group, potentially owing to the inherent challenges in reaching optimal glycemic targets in children and young adults with T1D.

- Advanced diabetes technology use was lower in NH Black and publicly insured people, indicating that social disparities continue to be a hindrance to better health outcomes in this population.

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Thank you

Next HEAL Advisory Committee meeting

- Thursday 1/19/23 1-2:30 pm EST

Have a wonderful holiday season and a happy New Year!