

Population Screening for Type 1 Diabetes and Celiac Disease: Autoimmunity Screening for Kids (2017-2024)

303-724-1ASK | ASKhealth.org
1 2 7 5

Autoimmunity Screening for Kids
ask
FREE
A SIMPLE TEST TO DETECT
Childhood Diabetes + Celiac

Approved by the Colorado Multiple IRB #14-0553 Marian J Rivera, MD, PhD



Sponsors:



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UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS

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Presenter Disclosure Information

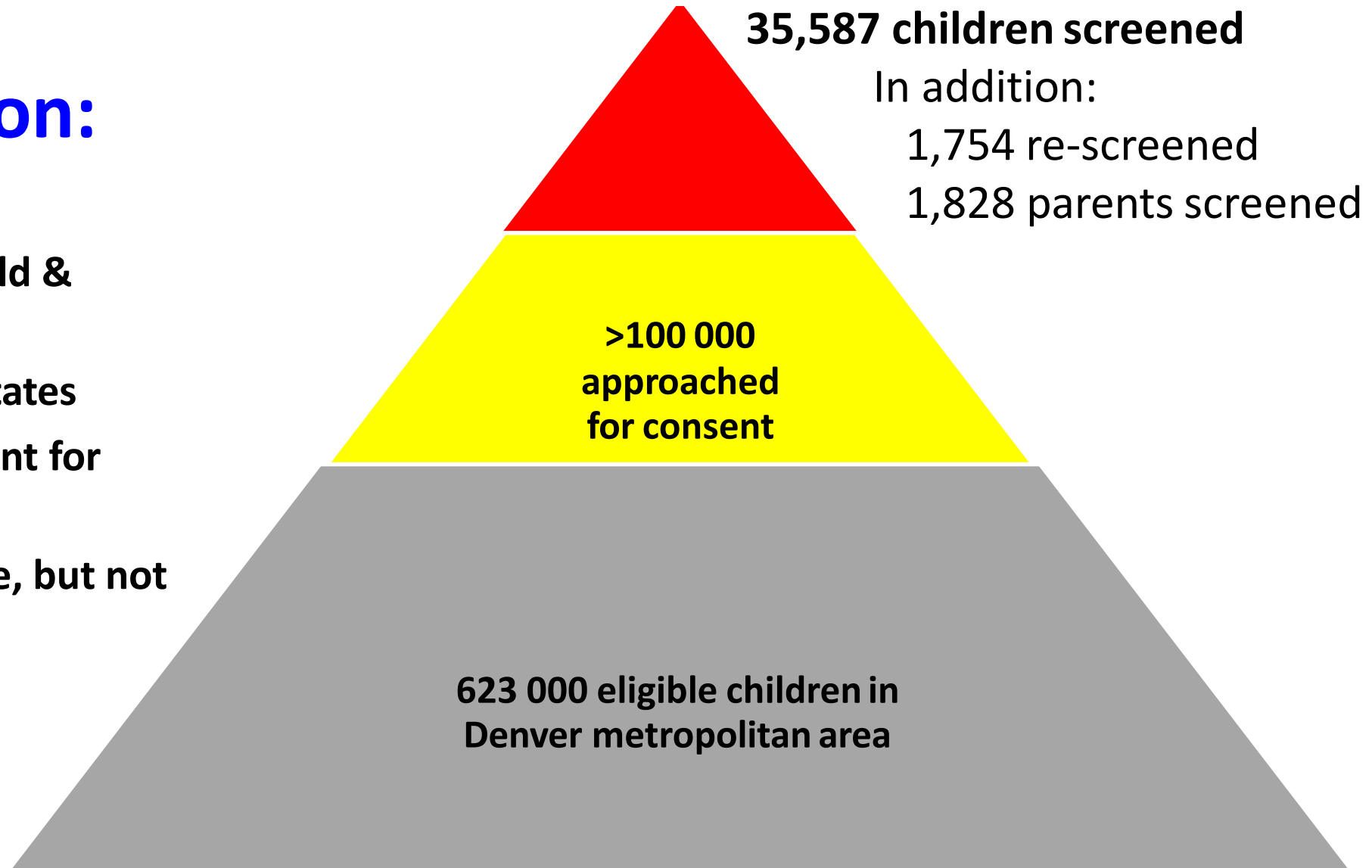
Consultant - Sanofi

Autoimmunity Screening for Kids (ASK) Goals:

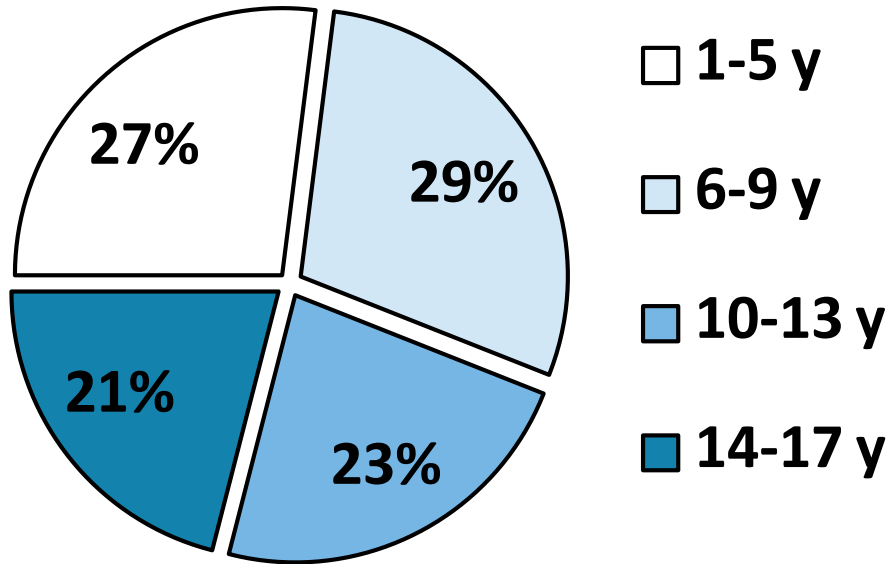
- 1. Determine frequency of pre-symptomatic T1D and celiac disease**
- 2. Prevent diabetic ketoacidosis (DKA) at diagnosis of diabetes**
- 3. Offer interventions to slow progression to diabetes**
- 4. Reduce complications of undiagnosed celiac disease**
- 5. Analyze cost-effectiveness of screening -> universal screening**
- 6. Increase community awareness**

ASK Population:

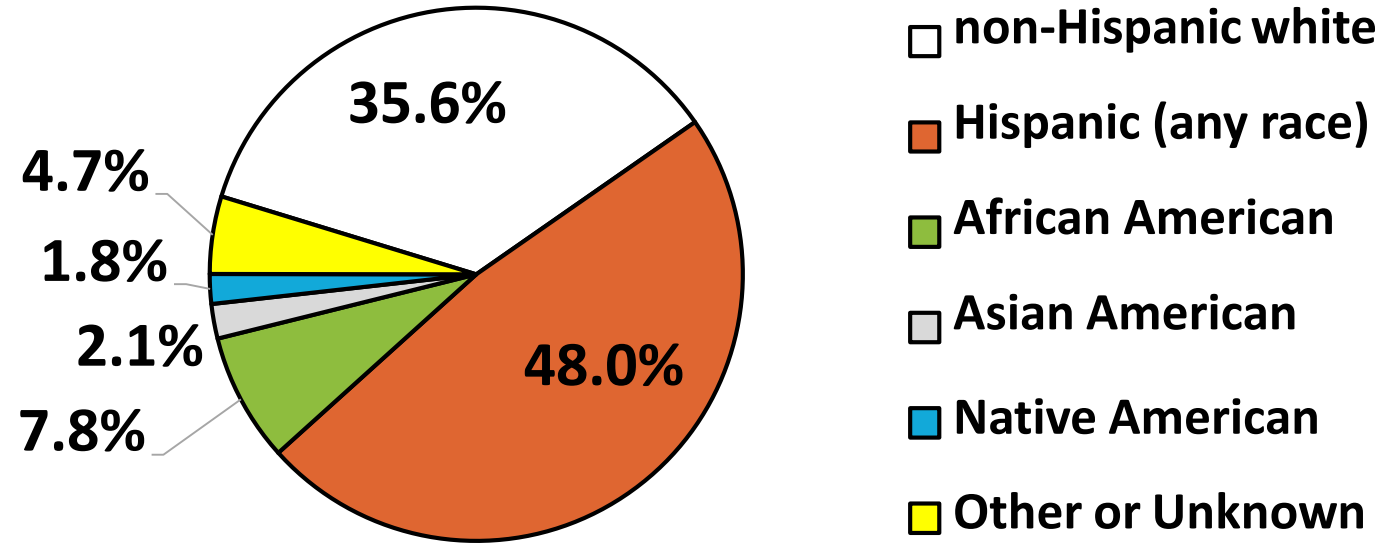
- Children ≥ 1 to < 18 y old & Adults 18-99
- Reside in the United States
- Parent/guardian consent for child
- Can have celiac disease, but not diabetes



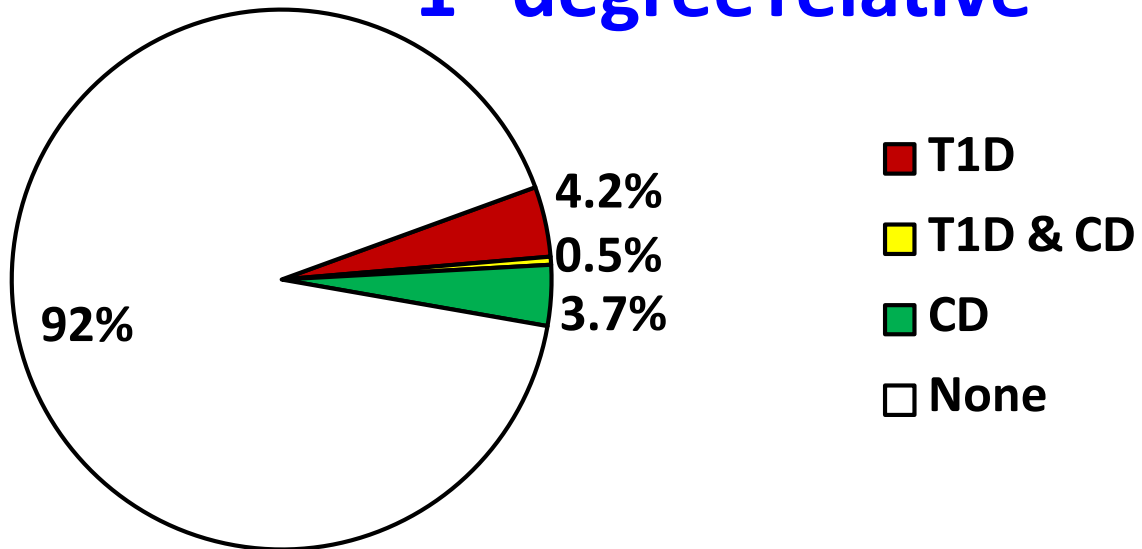
Age distribution



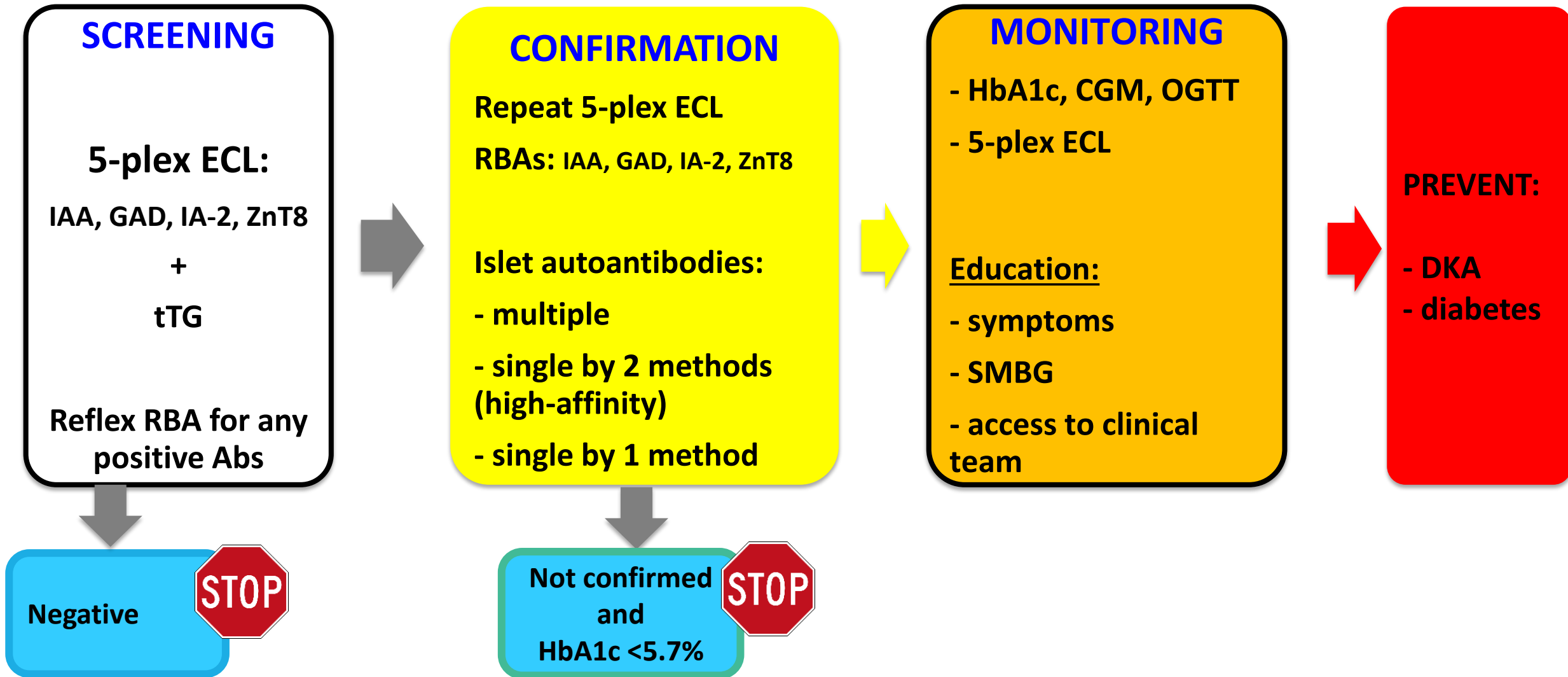
Race/ethnicity



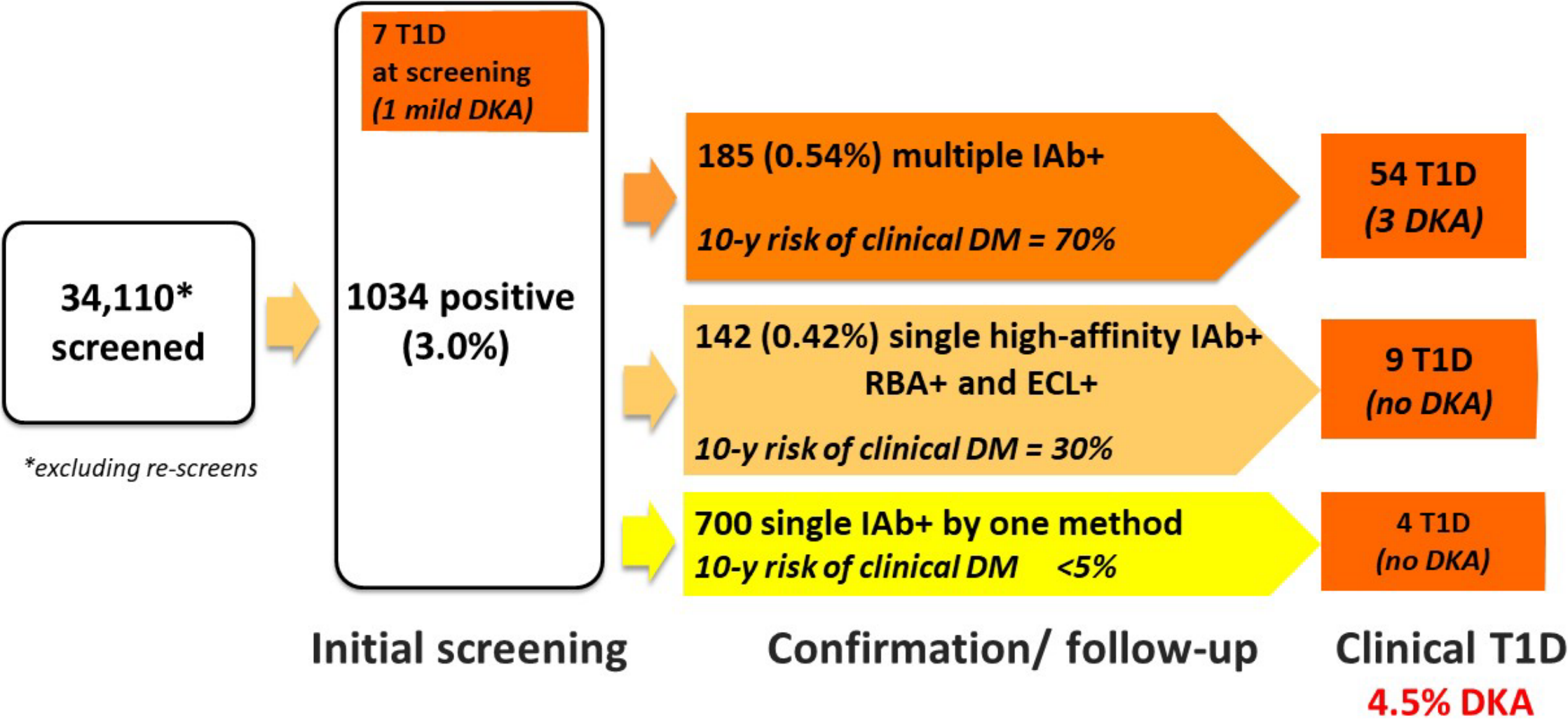
1st degree relative



Protocol: Screening for Pre-clinical T1D



Results: Islet Autoimmunity and Diabetes



Data as of 3/15/2024

Follow-up and Monitoring Protocol

Islet autoantibody+
Follow-up intensity
determined by risk of
progression to stage 3 T1D



High risk of T1D in 6 months (stage 2)
N=158 → 53 progressed to stage 3 T1D

- Early T1D education
- Home fasting and 2-h glucose post largest meal x 1 week, CGM
- Call if BG>200 mg/dl or symptoms
- Follow q3 mo to exclude dx, repeat Ab, A1c, OGTT

Elevated risk of T1D in 6 months (stage 1)
N=132 → 13 progressed to stage 3 T1D

- Home 2-hr glucose post largest meal x 1 week, CGM optional
- Call if BG>200 mg/dl or symptoms
- Follow q3-6 mo to exclude dx, repeat Ab, A1c (OGTT q6 mo)



Lower risk of T1D in 6 months (single antibody+, by 2 methods)
N=149 → 27 dysglycemia → 7 progressed to stage 3 T1D

- Home BG testing when ill, call if BG>200 mg/dl or symptoms
- Follow-up q6-12 mo to exclude dx, repeat Ab, A1c

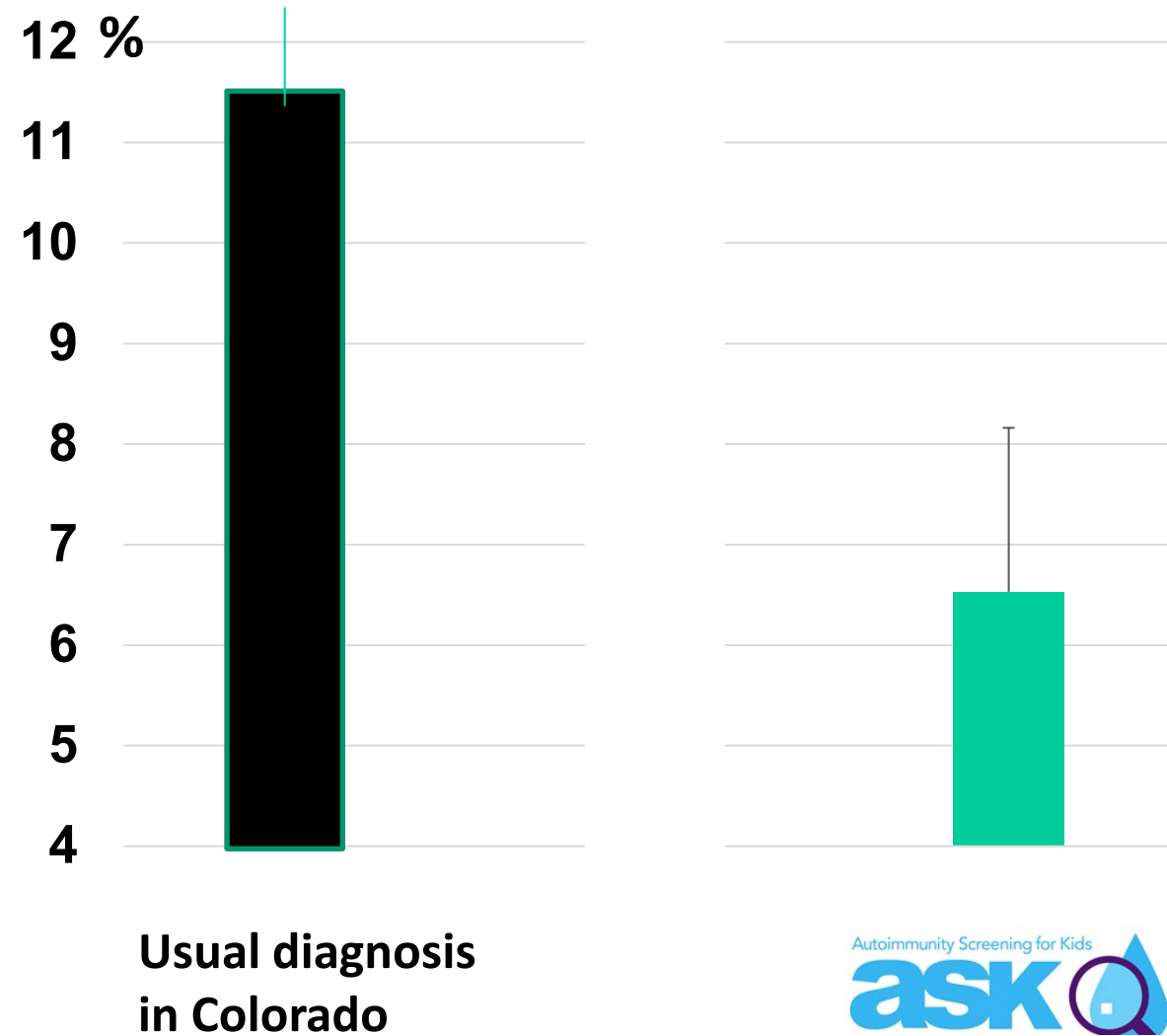
Low risk of T1D in 6 months (single antibody+, by one method)
N=593 → 29 dysglycemia (persistent in 10) → 3 progressed to stage 3 T1D

- Follow-up q6-12 mo to exclude dx, repeat Ab, A1c

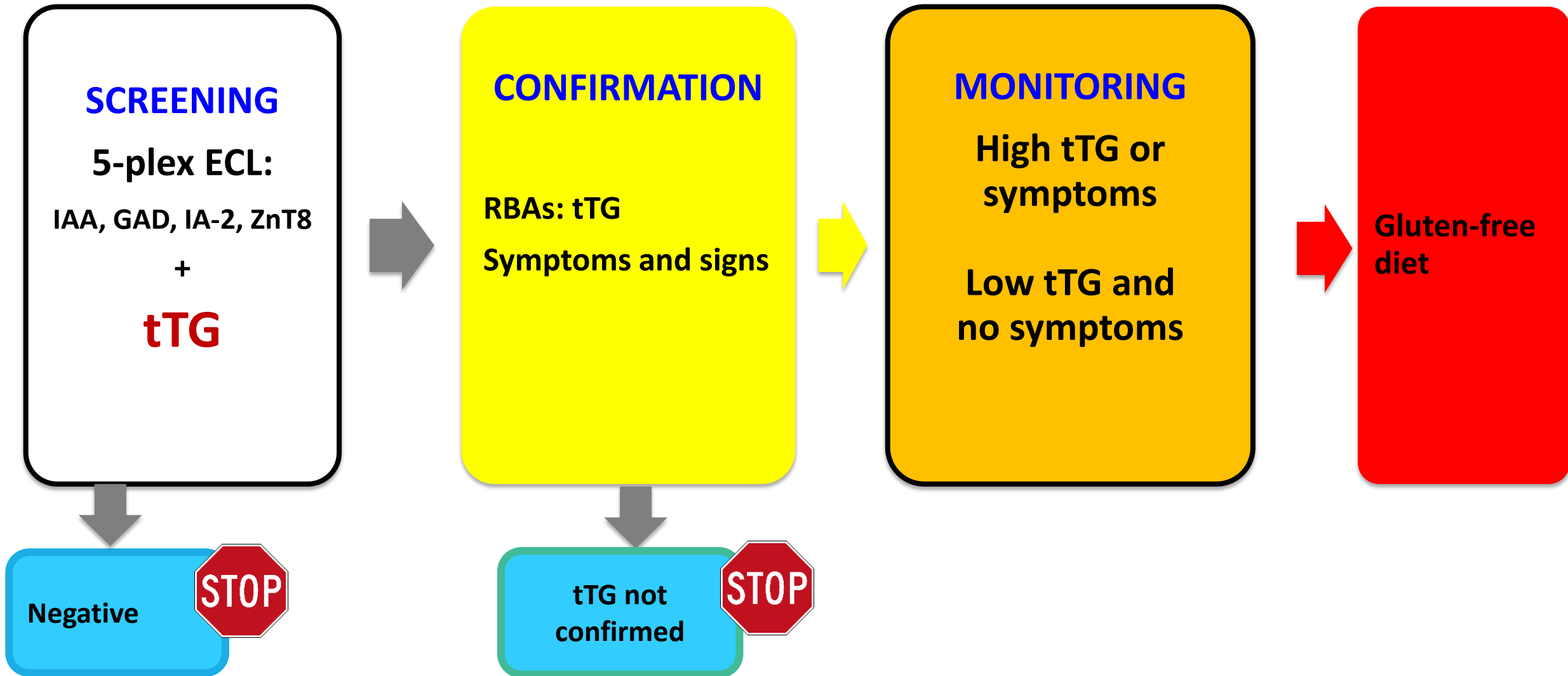
Screening, monitoring and education can prevent DKA at onset

Study	Frequency of DKA	Reference
Children identified through general population screening programs		
 Fr1da (Germany)	5.6%	Ziegler A-G. JAMA 2020
 ask (Colorado)	4.5%	Rewers M. EASD 2024
Children diagnosed <u>without</u> prior screening		
Sweden	22%	Wersäll J. Pediatr Diabetes 2021
Finland	23%	Hekkala A. Pediatr Diabetes 2018
Germany	24%	Kamrath C. JAMA 2020
Colorado	40-62%	Rewers A. JAMA 2015 Alonso G. Diabetes Care 2020

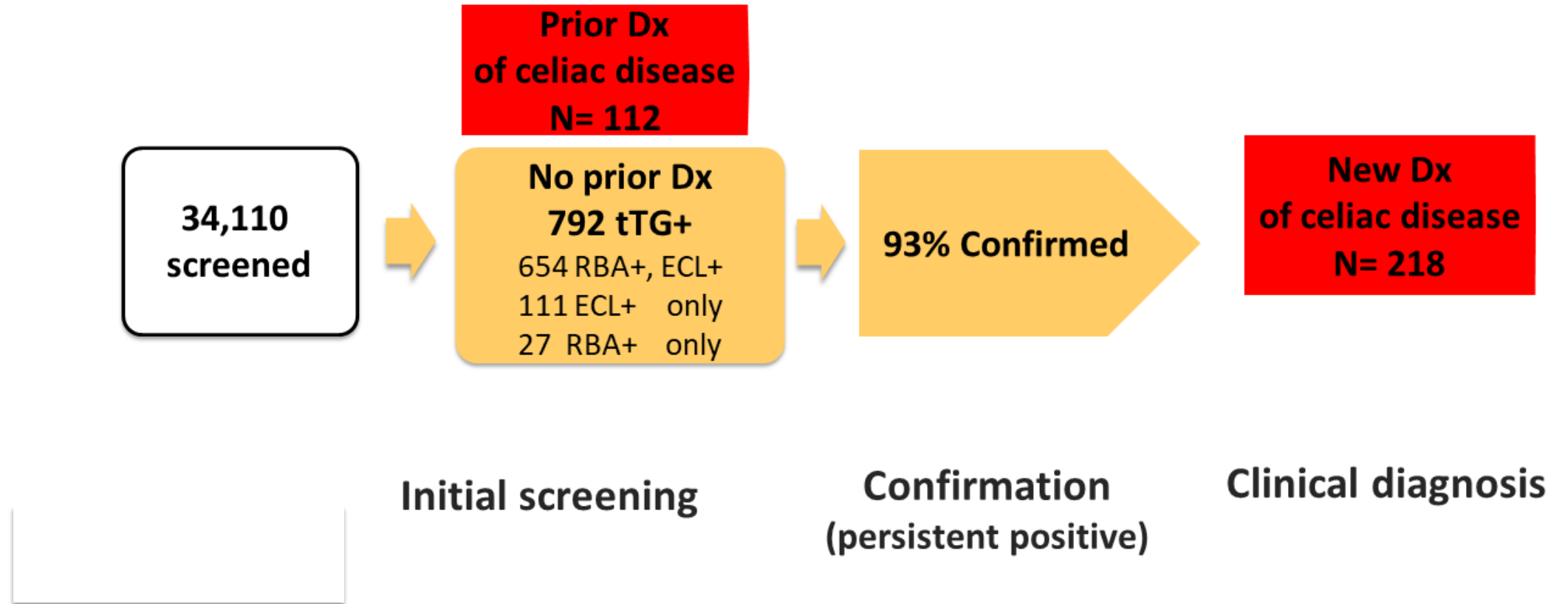
HbA1c at Diagnosis in ASK



Protocol: Screening for Celiac Disease

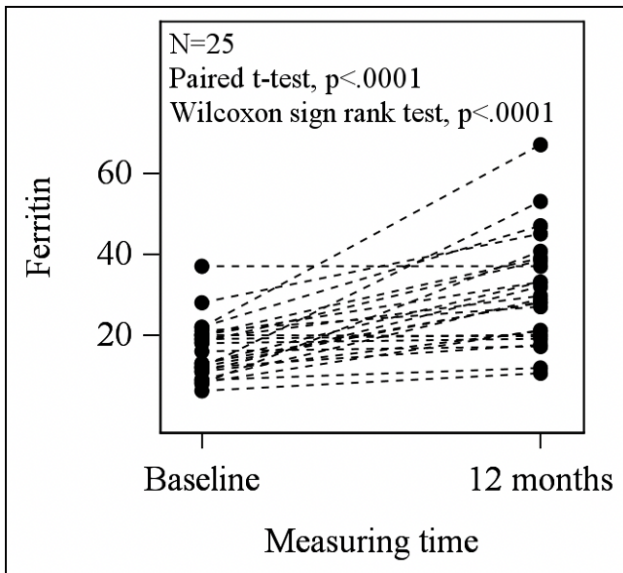
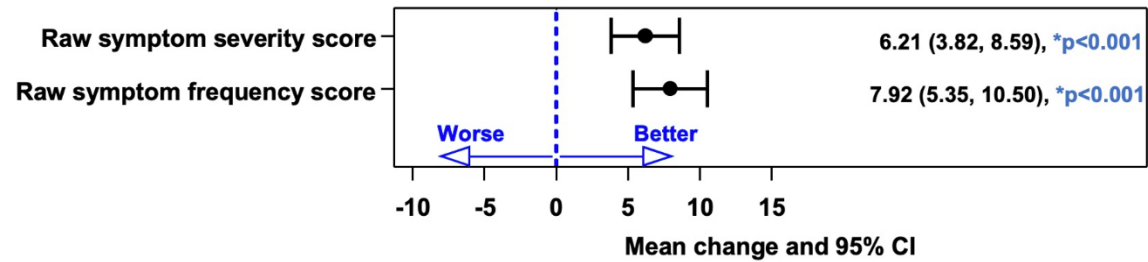


Results: Celiac Autoimmunity and Disease

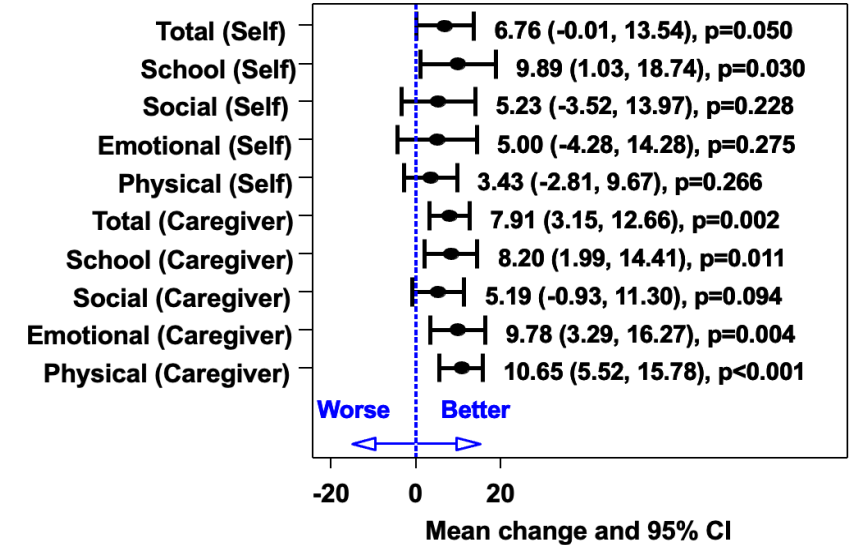


Data as of 3/15/2024

1-year Outcomes Among tTG Screen Positive Children



Symptoms Improve with GFD



Quality of Life Improves with GFD

Iron Deficiency Improves with GFD

Summary

- Prevalence of **pre-symptomatic T1D** - **1.0%** (95%CI: 0.9- 1.1%)
- Prevalence of **celiac disease/autoimmunity** - **2.1%** (1.9- 2.3%)
- **DKA at diagnosis of diabetes <5%** in screened vs 62% not screened
- **Average A1c at diagnosis 6.5%** in screened vs 11.5%
- Among 33 076 screening-negatives:
 - 3 (0.01%) developed T1D, ~5 y later
 - **6/1627 (0.4%)** retested developed islet autoantibodies
- Evidence of cost-effectiveness¹ and benefit² of the screening

1. McQueen RB, et al. *Diabetes Care*. 2020

2. Stahl MG, et al. *Clin Gastroenterol Hepatol*. 2024

How to screen: TODAY

- If you are a US citizen without T1D, you are welcome to be screened through ASK.
- Please go to our website: www.ASKhealth.org to complete the online e-consent.
- Once you complete the e-consent, we'll give you a finger poke kit that you are welcome to do this evening and then drop off with us tomorrow prior to the end of the symposium.

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Sponsors



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**Our ASK
participants,
their families,
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provider
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Partners



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AsktheExperts