The Sanford PLEDGE Study

Integration of General-population Screening into Routine Pediatric Care

Kurt J. Griffin PhD, MD

Associate Member
Benaroya Research Institute
Seattle, WA

Research Director
Sanford Research
Sioux Falls, SD

8th Symposium on General Population Screening for T1D
Barbara Davis Center
10 November 2025

pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

Benaroya Research Institute

SANFORD RESEARCH

THE LEONA M. AND HARRY B. HELMSLEY CHARITABLE TRUST

Disclosures

Employed by Benaroya Research Institute at Virginia Mason
Contracted with Sanford Health to direct PLEDGE

Sanford Health (Todd and Linda Broin Chair; PLEDGE)
Leona M. and Harry B. Helmsley Charitable Trust (PLEDGE)
Clinical Trial Funding (Paid to Institutions):
– Diabetes TrialNet (TN-01, TN-22, TN-25, TN-28, TN-31, BRI Clinical Center, HUB)
– Immune Tolerance Network (DESIGNATE, T1DES)
– Sanofi (PROTECT, PROTECT Extension, Fabulinus, ßeta Preserve)
– SAB Biotherapeutics (Safeguard)

Unpaid Advisory Boards
– North Carolina Early Check
– CanScreen T1D

Past Screening for Early Stage T1D Misses Most People at Risk

Diabetes TrialNet

- Screens for autoantibodies in family members of people with T1D (15 x risk)
- ~250,000 people screened over 18 years

<u>BUT:</u>

- 90% who will get T1D have no family history
- Not eligible for TrialNet screening

pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

Sanford PLEDGE:
General Population Screening

Novel, Pragmatic Design:

– Minimize burden on:
  - Providers & Staff
  - Families
  - Research Coordinators

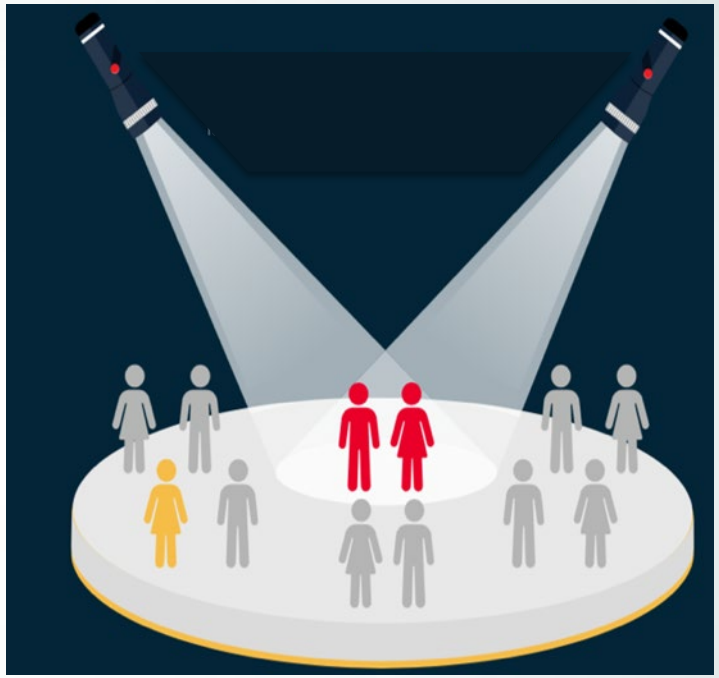
– Integrated into routine clinic visits

– Leverage existing Epic electronic record system and

– MyChart patient messaging for enrollment & questionnaires

– Economic analyses and modeling

– No cost to families



pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

In Partnership with
THE LEONA M. AND HARRY B. HELMSLEY CHARITABLE TRUST

Goals

Prevent initial diabetic ketoacidosis at time of diagnosis

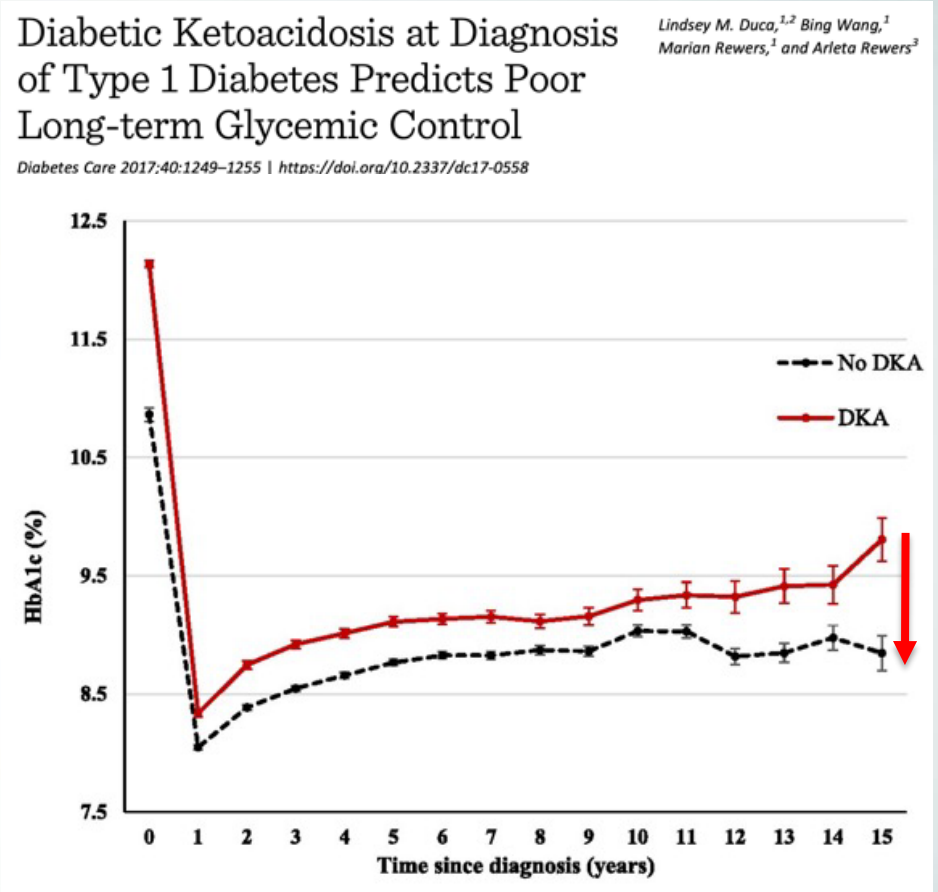
- Improves glycemic control for *decades*
- Should have major impact on long term complications

Identify patients for possible intervention:

- Teplizumab when appropriate
- Stage 1 / 2 intervention trials

Generate evidence to support including T1D screening in standard care

- Demonstrate feasibility of *integration* into *routine pediatric care*
- Prospective validation of GRS and assessment of utility to focus screening
- Assess cost effectiveness of general population screening in clinics

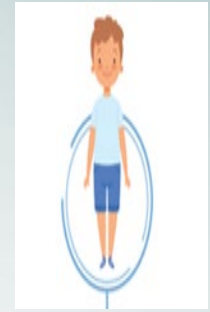


pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

THE LEONA M. AND HARRY B. HELMSLEY CHARITABLE TRUST

PLEDGE Overview of Procedures

Entry before 6th birthday
OR once 9 -16 y.



Genetic Risk Score
GRS2 Once at study entry
(blood spot; can be with Newborn Screening)

Anxiety Survey
Entry & Annually

T1D AutoAb

Celiac Testing

Birth | 2 years | 5 years | 9 -16 years

pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

PLEDGE Overview of Procedures

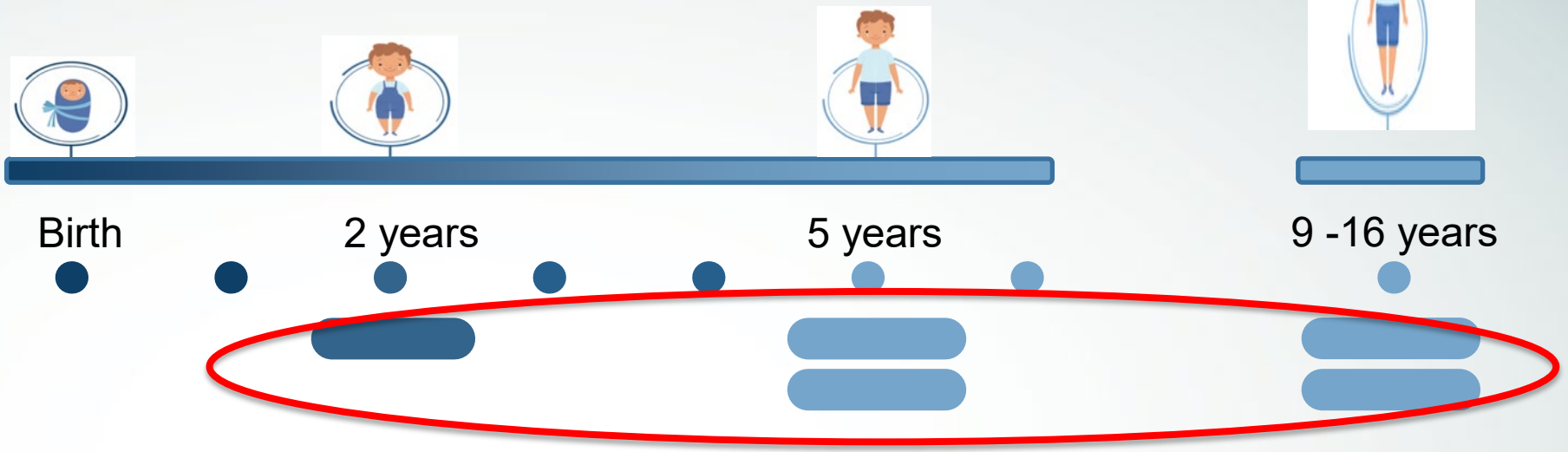
Entry before 6th birthday
OR once 11-16 y.

Genetic Risk Score
GRS2 Once at study entry
(blood spot; can be with Newborn Screening)

Anxiety Survey
Entry & Annually

T1D AutoAb

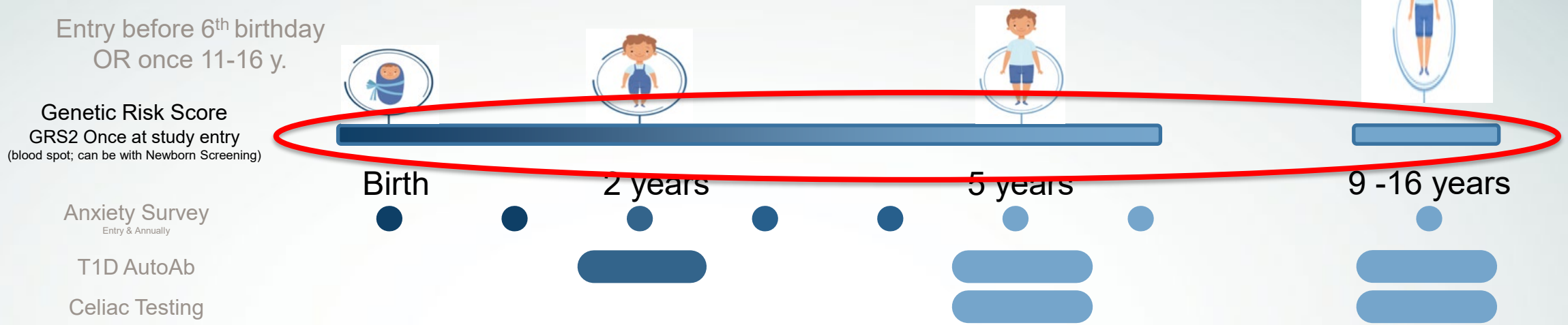
Celiac Testing



Antibody Screening at ~2, ~ 5, and 9-16 years of age

pledge
A SIMPLE SCREENING FOR
TYPE 1 DIABETES
AND CELIAC

PLEDGE Overview of Procedures



GRS2 at study entry

– SNP-based risk score for T1D and Celiac autoimmunity
– Can enroll before birth and collect with newborn screens

How is this innovative?

pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

How does PLEDGE Work?

Consent
(MyChart)

Invitation
(MyChart)

Completed Consent
Self-eligibility

Orders Entered
(Research Staff)

Routine Care
Lab Collection

Lab Results
Epic / MyChart

–

Next Window or Exit Study

+

Investigator Enters Result Note
– Library of "Dotphrases"
– Routed to PCP
– Attached to result detail

Automatic report: upcoming eligible
Automatic invitation via MyChart

Appointment

20 days

Existing Infrastructure
– Collection
– Processing
– Shipping (PNRI)
– Results (.csv file → sFTP)

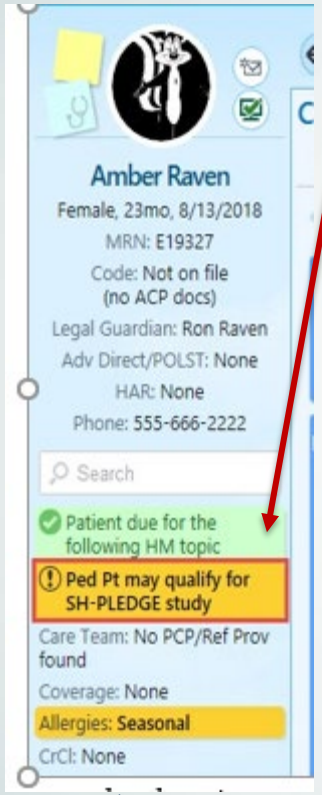
Integration into routine care
Leverage existing processes and infrastructure
Automation of invitation, enrollment, and messaging

Research Staff will:
– Contact Family & Explain
– Retest @ BDC incl ECL for single IAb
– If persistent:
  – Monitoring Protocol for T1D
  – Clinical referral to peds GI for celiac

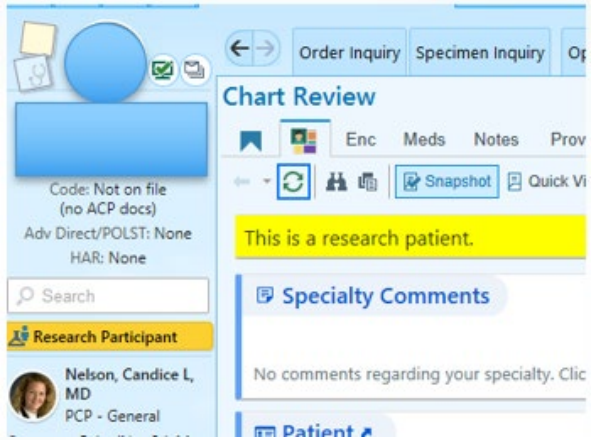
pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

What do Providers See?

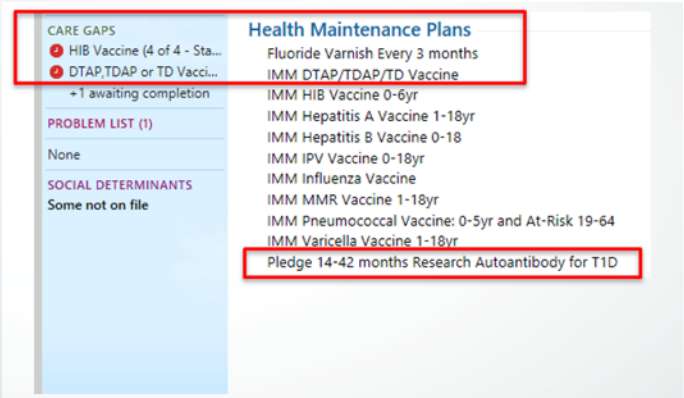
"BPA" light in Storyboard
Eligible to Enroll



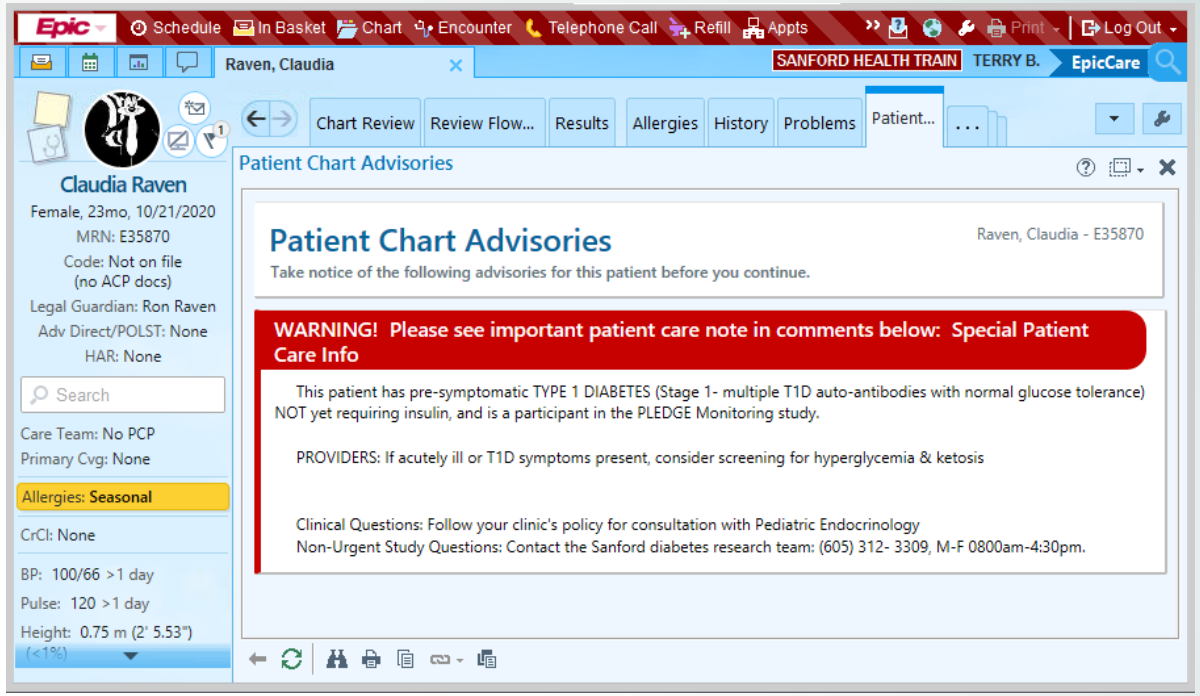
Enrolled



Due for Antibodies: Care Gaps



Early Stage T1D

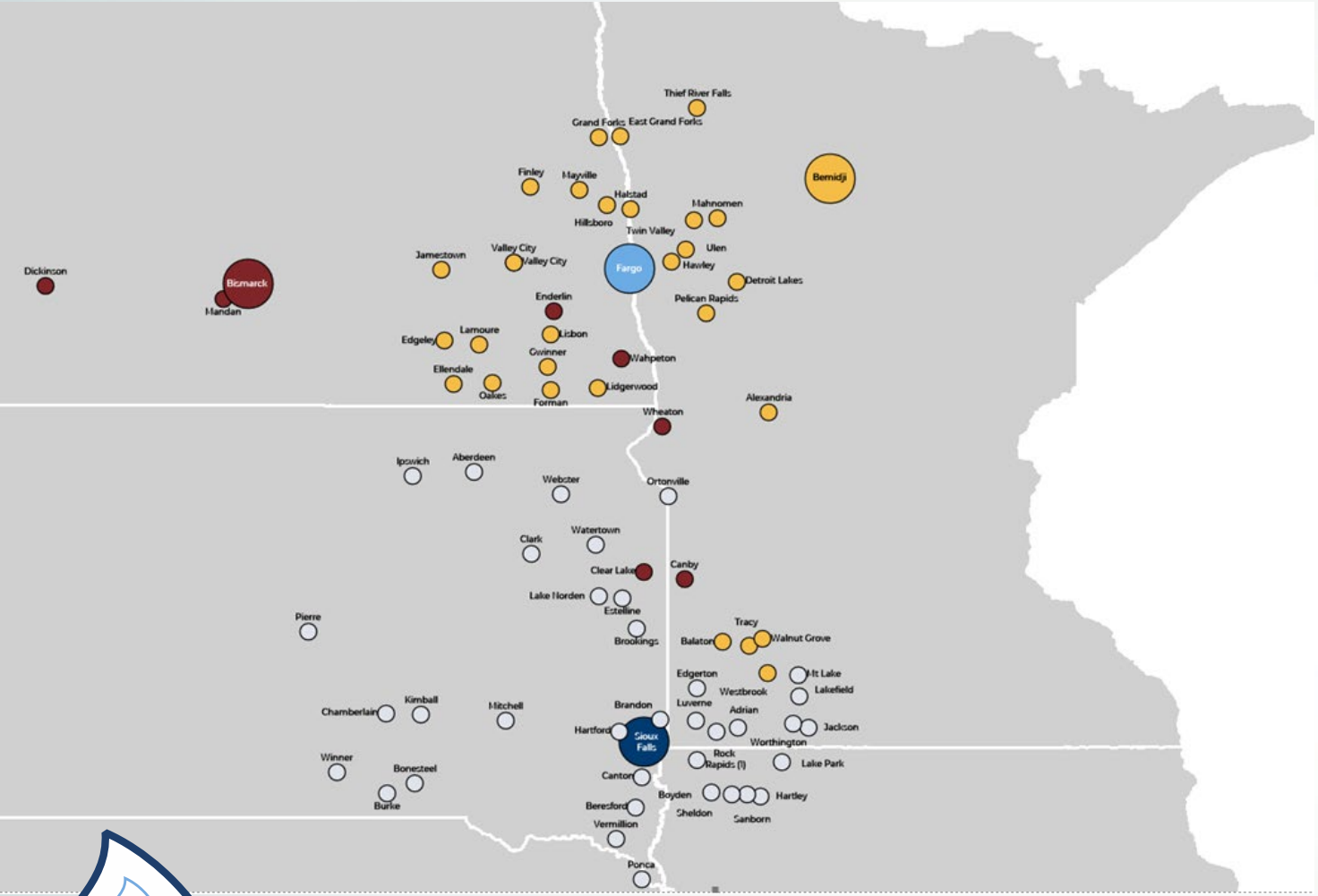


"Patient Chart Advisory"

- Appears on opening chart
- Reminder to consider T1D
- Provides guidance
- Does not slow work
- Less intrusive than BPA

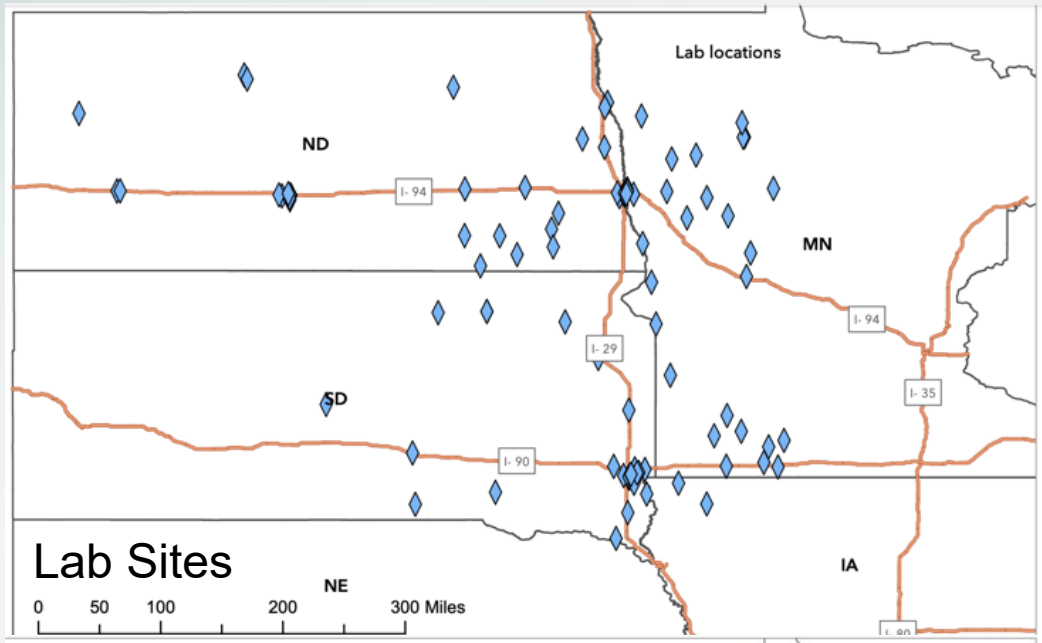
pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

Expansion and Enrollment

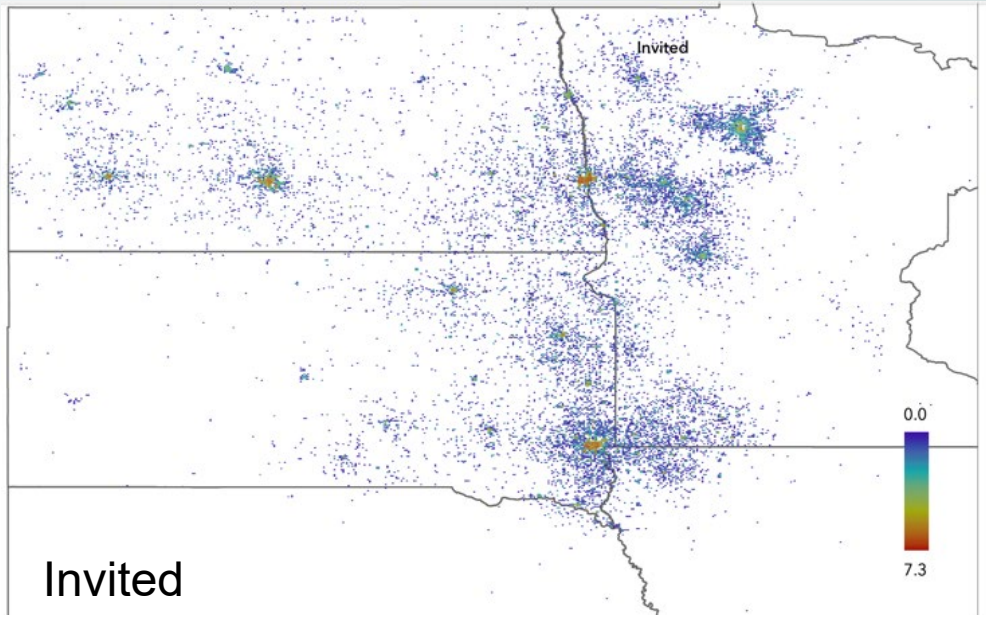


pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

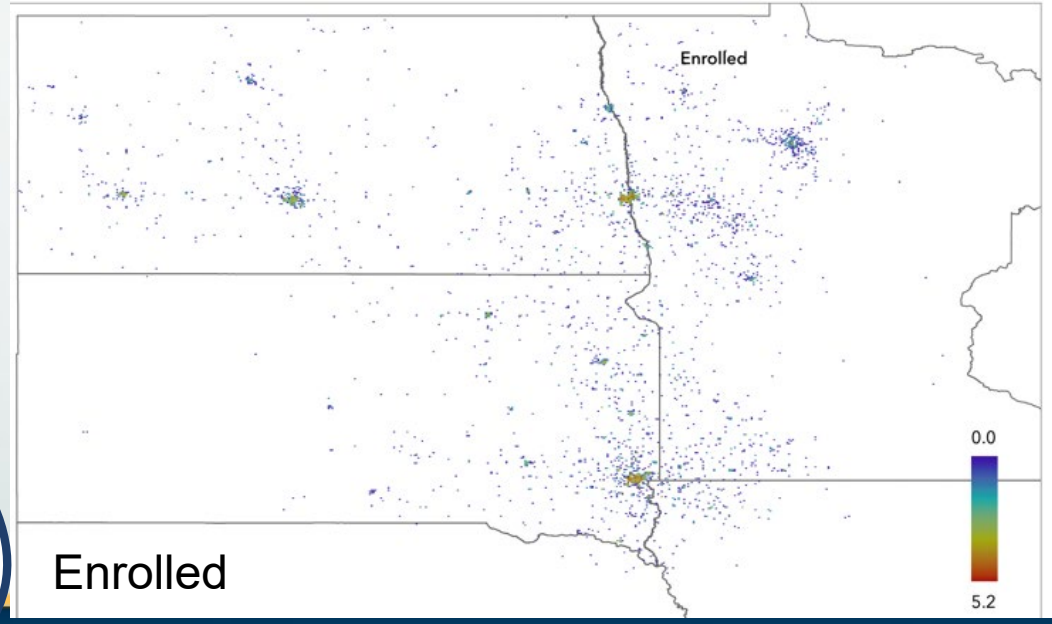
Geographic Distribution



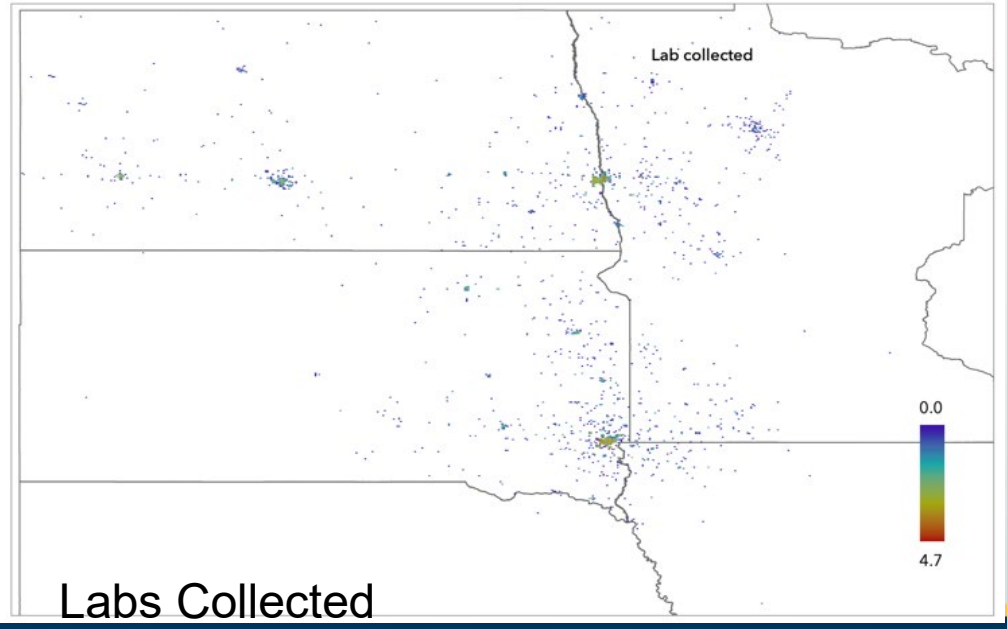
Lab Sites



Invited



Enrolled

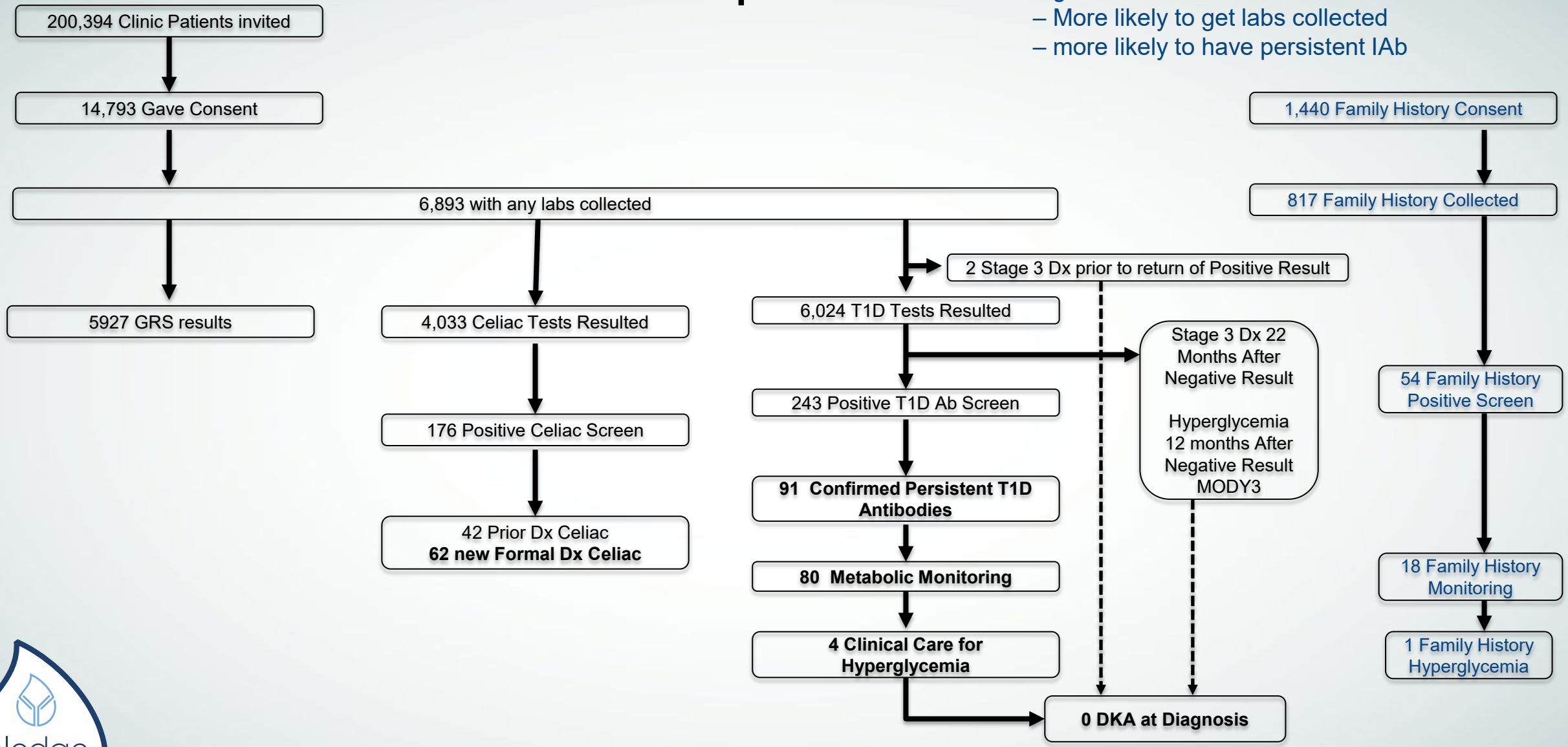


Labs Collected

pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

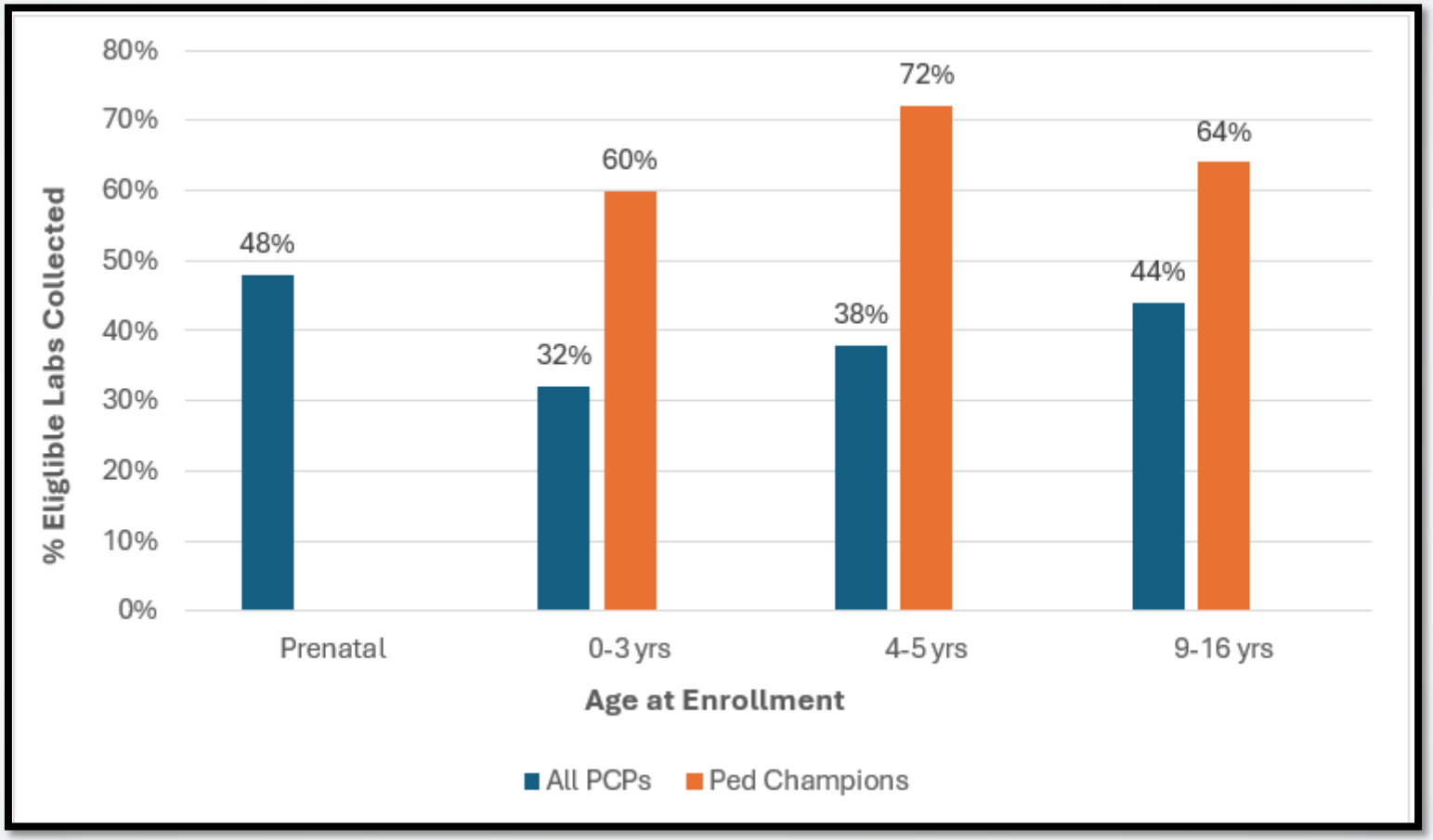
PLEDGE Impact

Family History associated with
– greater enrollment
– More likely to get labs collected
– more likely to have persistent IAb



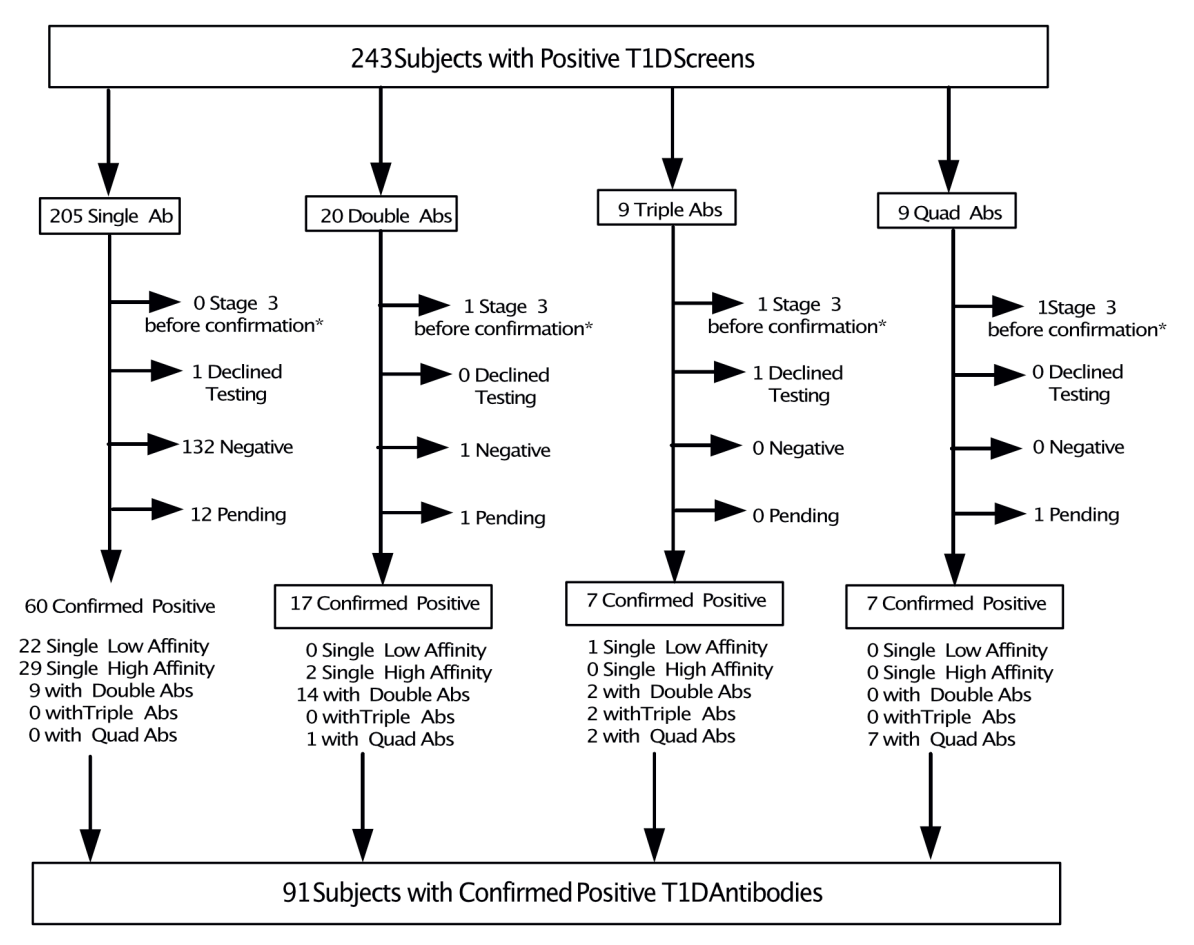
pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

Physician Engagement Impacts Collection Rates



pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

Confirmation of Initial Positive Screens



High uptake of confirmatory testing (2 declined)

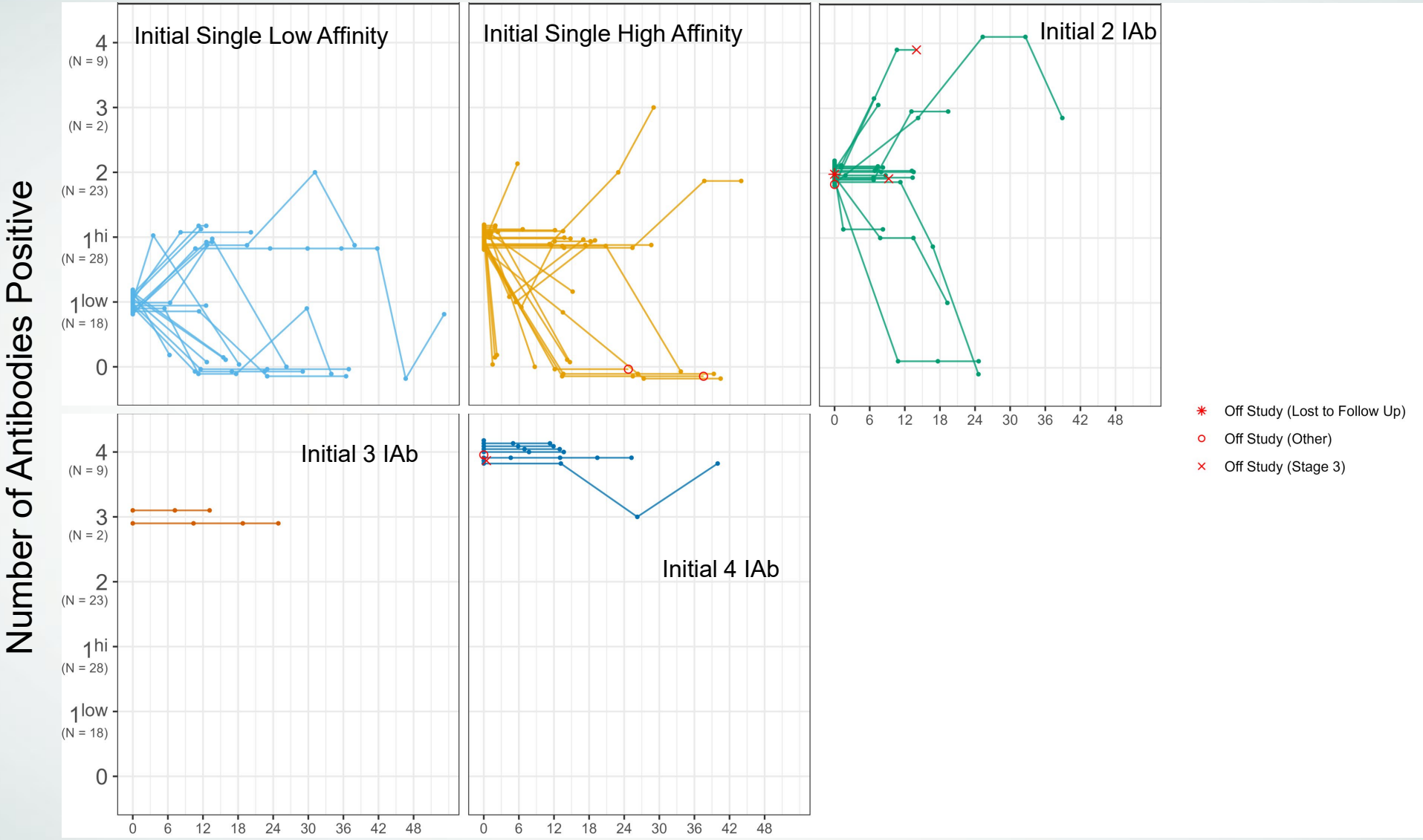
Single IAb Most common positive screening result

- But least likely to confirm (31% since inception)
  - Biology vs. Assay?
  - Updated thresholds improve specificity

Multiple IAb more likely to persist (97% since inception)

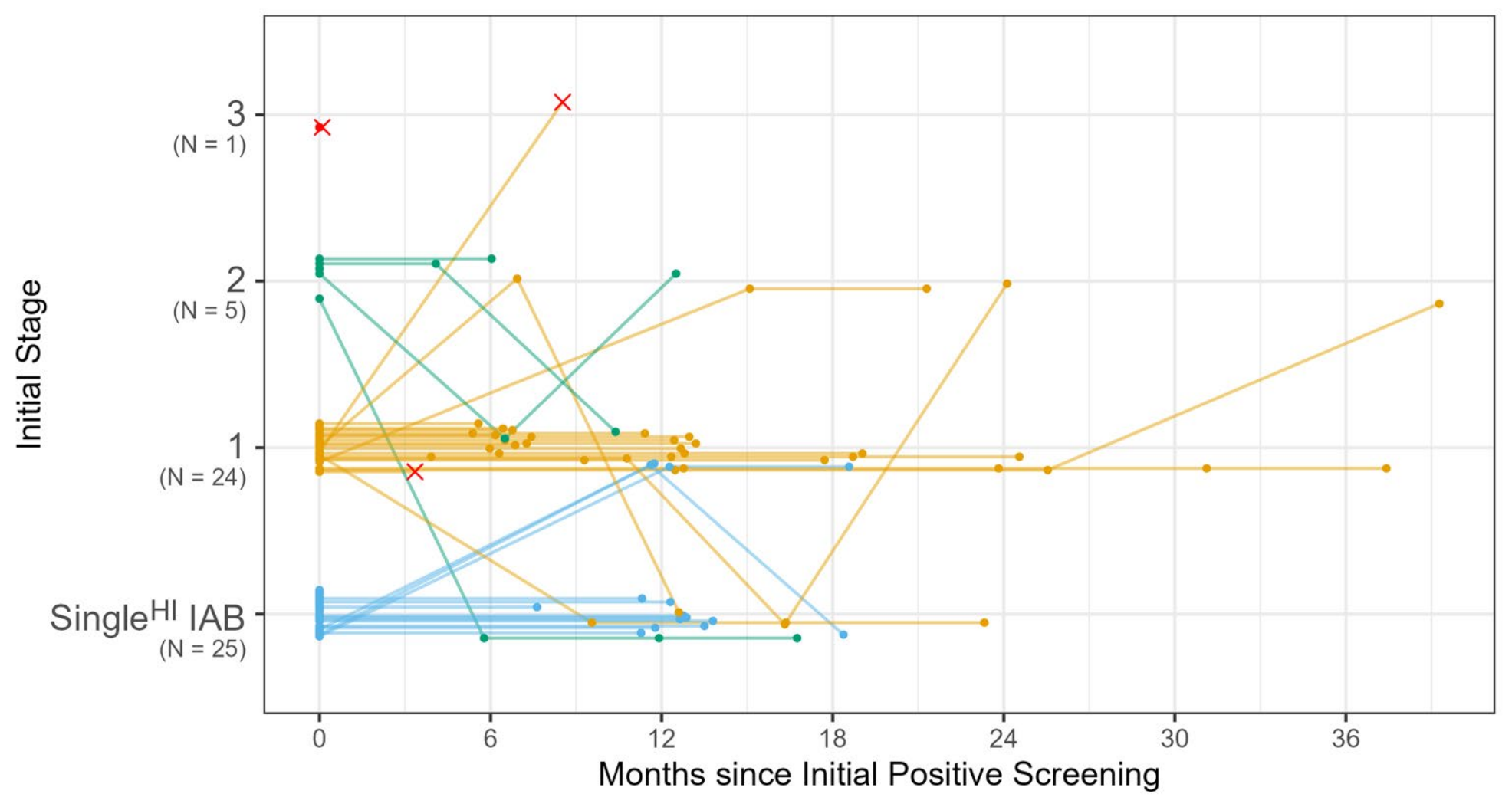
pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

Number of IAb Can Fluctuate



pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

Stage of T1D Over Time



pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

Looking to the Future

Planning to transition screening from research to a clinical program across Sanford Health

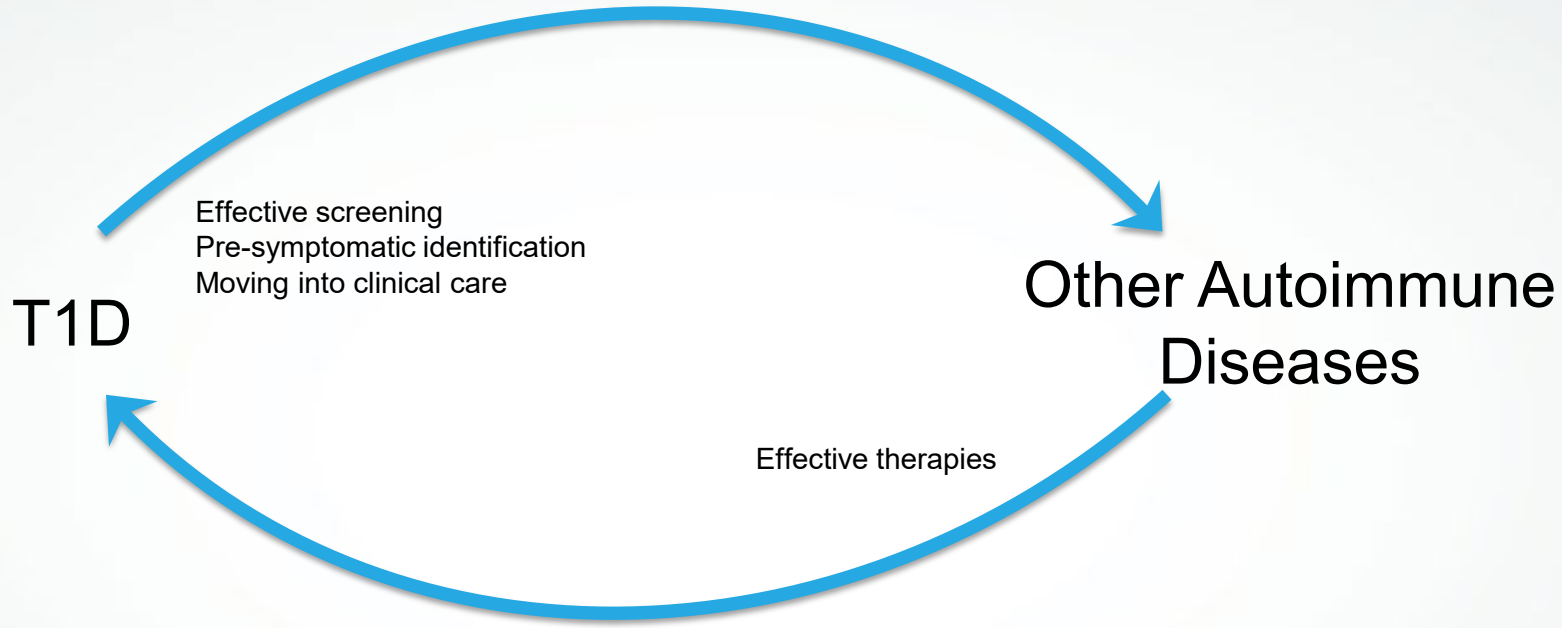
Shift from MyChart invitation to text—based “Hello World”

Stable population and clinical infrastructure will enable measures of PLEDGE impact for decades

pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC


And Now For Something
Completely Different

Next Frontier in Screening and Prevention



- How can we use the knowledge from T1D to accelerate progress in prediction and prevention other autoimmune diseases?

Benaroya Research Institute

LEADERS IN HUMAN IMMUNOLOGY RESEARCH

Predict, prevent, reverse, cure

At Benaroya Research Institute (BRI), we study the immune system and the wide range of diseases that affect it — including autoimmune diseases, allergies, asthma, and cancer. We create detailed pictures of the immune system, in health and disease, aiming to understand how disorders start and how to rebalance the immune system back to health. As a nonprofit research institute within Virginia Mason Franciscan Health, we collaborate with doctors and patients to accelerate the path from innovative lab discoveries to life-changing patient care. Learn more about our research.

Our mission: to advance the science to predict, prevent, reverse and cure diseases of the immune system

Our vision: a healthy immune system for everyone

- Nonprofit, biomedical research center with a focus on understanding autoimmune/immune diseases
- 29 PIs / labs
- 6-bed unit at Virginia Mason hospital
- Located on First Hill in Seattle
- Adult and pediatric clinical trials
- TrialNet Clinical Center for the Pacific Northwest
- TrialNet Clinical HUB

Pilot screening for multiple autoimmune diseases
Completed this year by Sandie Lord

DIABDOCS

National NIH K12 DiabDocs Program

- NIDDK has established **"DiabDocs"** a National K12 program for mentored early-career physician research training in diabetes.
- Awards provide a group of early career physician-scientists the opportunity to be mentored in research-intensive settings to apply successfully for NIH K08/23 or similar Career Development Awards.
- Scholars can conduct research at any eligible US institution.
- **Research must be relevant to diabetes:** can be basic, translational, clinical, epi/statistics, informatics, health services, health policy, etc.
- Most funded scholars will focus on **T1D research**. Limited slots available for persons working in **T2D**.
- Awards will last 1-3 years (until external award obtained) with $100,000 salary support and $50,000 for research.

- ***For program eligibility criteria, timelines and other questions, please email diabdocsk12@stanford.edu or visit the program website at https://stan.md/diabdocs**

Program funded by *The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)* of the National Institutes of Health under award number **K12DK133995.** Additional support provided by Stanford University, Indiana University, and a grant from The Leona M. and Harry B. Helmsley Charitable Trust to Stanford University

Thank you

All the families who participate

The Sanford Project Team
- Ann Mays
- Magdalena Skon
- Lana Baerenwald
- Connie Hoffman

Parent Representatives
- Kirstin Little
- Holly McMahon

Clinical Sub-investigators
- Luis Casas
- Carolyn Gilbertson
- Stephanie Hanson
- Benjamin Hoag
- Sharon Hunt
- Rashmi Jain
- Candice Nelson
- John Shelso

Collaborators & Advisors
- Bill Hagopian (PNRI, Seattle & Indianna University)
- Richard Oram (Exeter)
- Marian Rewers (Denver)
- R. Brett McQueen (Denver)

Providers and staff across all Sanford clinics and Labs

BRI Center for Interventional Immunology
- Carla Greenbaum
- Sandie Lord
- Cate Speak
- Alice Long

www.sanfordhealth.org/PLEDGE
Kurt.Griffin@sanfordhealth.org
Kgriffin@benaroyaresearch.org

pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC

Benaroya Research Institute

THE LEONA M. AND HARRY B. HELMSLEY CHARITABLE TRUST

SANFORD RESEARCH

Timing for Successful Enrollment

Age at study entry with successful collection

Newborn/Infants

Lipid Screen

pledge
A SIMPLE SCREENING FOR TYPE 1 DIABETES AND CELIAC