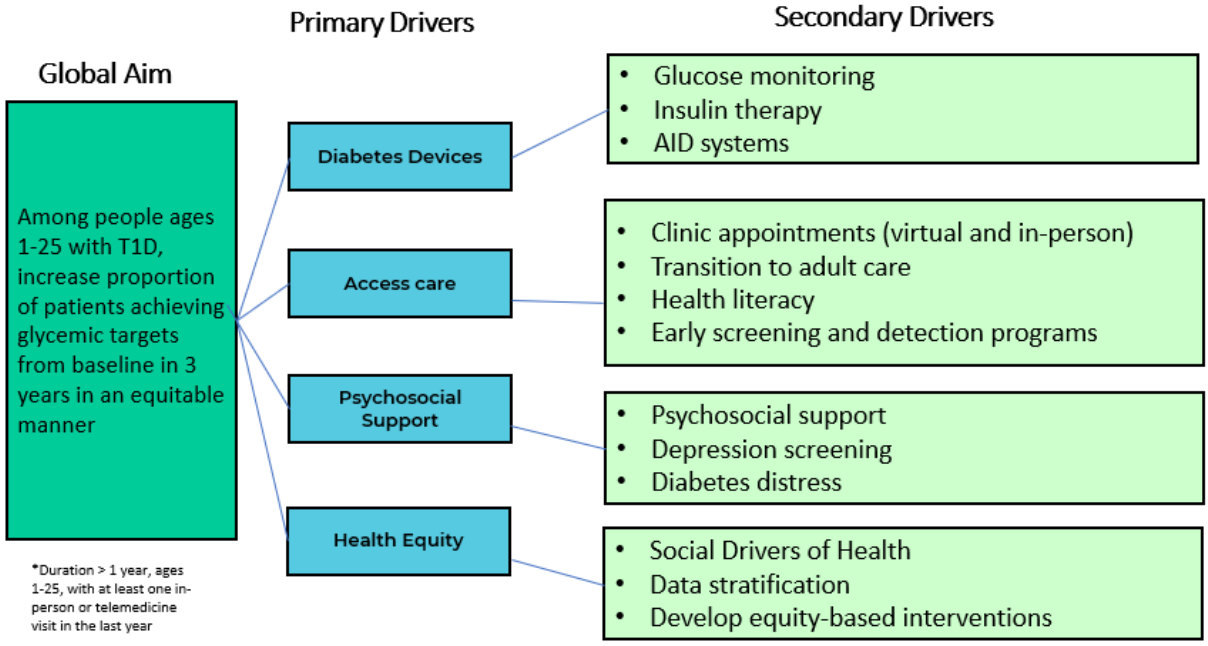
T1D Exchange Quality Improvement (T1DX-QI) Pediatric Quality Metrics 2026-2028

This document outlines quality measures for Pediatric Centers in the T1DX-QI network. Numerators and denominators for each measure have been defined below. We acknowledge that centers may not be able to report all the measures outlined in this document, report available data on Smart Sheet. These data reported allow for benchmarking and quality improvement projects. For questions, email qi@t1dexchange.org or a T1DX-QI Coach.

Aim Statement for 2026-2028
Among people ages 1-25 with T1D, increase proportion of patients achieving glycemic targets in an equitable manner

1. Optimize glycemic outcomes as measured by HbA1c
    a. Increase % of patients with HbA1c <7 by 5%
    b. Decrease % of patients with HbA1c >9 by 5%
2. Optimize glycemic outcomes as measured by TIR
    a) Increase % of patients with Time in Range >70% by 5%
    b) Increase % of population with GMI <7 by 5%
    c) Decrease % of patients with Time below Range (<54 mmol/dL) >1% by 5%

Key Driver Diagram



Denominator (A): Patients 1–25 years of age with type 1 diabetes[1] (minimum duration ≥ 12 months) with at least 1 HbA1c value in the preceding 12 months, and an endocrinology related visit (in-person or telemedicine) from the reporting month.

Core Numerators. We ask that you prioritize measures 1-7 first.

1. HbA1c
    a. Number of patients in (A) with HbA1c <7% (Most recent HbA1c)
    b. Number of patients in (A) with HbA1c >9% (Most recent HbA1c)
    c. Median HbA1c value from all patients
2. Continuous Glucose Monitor (CGM)[2]: Number of patients in (A) using CGM at least 14 days in the reporting month at the most recent clinical encounter.
3. Automated Insulin Delivery (AID)[3] Use: Number of patients in (A) using AID at least 14 days in the reporting month at the most recent clinic encounter.
4. Ambulatory Glucose Profile (AGP)[4:] Number of patients in (2)
    a. with Time in Range (70-180 mmol/dL) >70%
    b. with Time below Range (less than 70 mmol/dl) <4%
    c. with Time in Significant Hypoglycemia (<54 mmol/dL) <1%
5. Food Insecurity: Number of patients in (A) who have been screened for Hunger Vital Signs[5]/Food insecurity in the past year. Sample questions below
    a. "Within the past 12 months we worried whether our food would run out before we got money to buy more."
    b. "Within the past 12 months the food we bought just didn't last and we didn't have money to get more."
        i. Number of patients in (5a) who screened positive (answered Yes to either question) for food insecurity
        ii. Number of patients in (5ai) who received a referral for food resources
6. Diabetic Ketoacidosis (DKA)[6] Hospitalization: Number of patients in (A) with at least one DKA hospitalization in the reporting month.
7. Severe Hypoglycemia (SH)[7] Hospitalization/ED Visit: Number of patients in (A) with at least one SH hospitalization in the reporting month, including ED SH visits with discharge at the ED
8. Severe Hypoglycemia Event (SHE) where PWD required assistance or treatment (but did not result in subsequent ED/hospitalization)
9. Transition plan[9]
    a. Number of patients in (A) age 16 and older
    b. Number of patients in (9a) where a transition discussion happened and was documented in the last 12 months

Other Priority Numerators, if available.

10. Median GMI[8] among the patients in (2)

11. Diabetes Distress[11]
    Number of patients in (A) seen in the reporting month who have been screened for distress using PAID-T in the past year.
    *We recognize there are multiple versions of PAID (a child, parent-of-child, and parent-of-teen versions), but we are recommending the use of PAID-T for children 12-18. But for those 19+ we are using the T1-DDAS. We recognize that some may be using the DDS.
12. Depression Screening[12] across total population ages 12 and above in the last 12 months
    a. Number of patients from (A) seen in the reporting month who have been screened for depression (PHQ-2, 4, 8 or 9) in the past 12 months.
    b. Number of patients in (12a) who screened positive for depression (PHQ8/PHQ-9 score above 10) in the past 12 months

13. Incretin mimetic drug prescribing[13] GLP-1 and GIP. Number of patients in (A) prescribed an incretin drug. *

    *We want to understand the landscape of prescribing. We recognize that this isn't a standard of care nor is it approved for those under 18. We are not setting an outcomes goal for this.

14. Social Drivers of Health Screening[14]. Number of patients in (A) seen in the reporting month who have been screened for social drivers in the past year.
    a. Economics
        i. Number of patients who have been screened for financial needs: "How hard is it for you to pay for the very basics like food, housing, medical care, and heating?" [Sample Responses: Very hard, Hard, somewhat hard, not very hard, Not hard at all, Patient refused, Not asked]
        ii. The number of eligible patients for the reporting month who have been screened for medication affordability. "Are you able to afford your medication?"
            a. Yes
            b. No
    b. Transportation
        i. Number of eligible patients who have been screened for transportation needs. "In the past 12 months, has lack of transportation kept you from medical appointments or getting medication?"
            a. Yes
            b. No

ii. "In the past 12 months, has lack of transportation kept you from meetings, work or from getting things needed for daily life?"
    a. Yes
    b. No

c. Housing
    i. Number of eligible patients for the reporting month who have been screened for housing needs. "What is your housing situation today?"
        a. I have a steady place to live
        b. I have a stead place to live today, but I am worried about it in the future
        c. I do not have a steady place to live (I am temporarily staying with others, in a hotel, in a shelter, living outside on the street, on a beach, in a car, abandoned building, bus or train station, or in a park)
        d. Unknown
    ii. "In the last 12 months, was there a time when you were not able to pay the mortgage or rent on time?"

Appendix: Variable Definition and Additional Resources

Type 1 Diabetes Diagnosis Inclusion criteria
Eligible patients meet one or more of the following criteria [1]:

- Positive for autoimmune markers:
    - GAD65
    - IA-2A
    - Insulin Aab
    - ICA

  - ZnT8, OR
- T1D diagnosis determined using clinical judgment, OR
- Idiopathic Type 1 diabetes (negative autoantibodies but with permanent insulinopenia and prone to ketoacidosis)

Test or condition	**Type of code**	**ICD/LOINC Code**
GAD65 autoimmune marker	LOINC	13926-1; 56540-8; 58451-6; 81725-4; 72523-4
Idiopathic type 1 diabetes (Type 1 diabetes mellitus without complications)	ICD-10	E10.9
Tyrosine Phosphatases IA-2 and IA-2β autoimmune marker	LOINC	31209-0; 56718-0; 81155-4; 32636-3; 70253-0; 70252-2
ZnT8 autoimmune marker	LOINC	76651-9

1. T1D Exclusion Criteria: Patients are excluded from the T1D population if they meet any of the criteria below.
   - Cystic Fibrosis related diabetes (CFRD)
   - Steroid induced/Glucocorticoid
   - Genetic evidence of Monogenic Diabetes (MODY)/neonatal diabetes
   - Gestational diabetes
   - Type 2 diabetes

Test or condition	**Type of code**	**ICD/LOINC Code**
Cystic Fibrosis	ICD-10	E84.*
Steroid induced/glucocorticoid	ICD-10	E09*
Gestational diabetes	ICD-10	024.*
Monogenic Diabetes (MODY; neonatal diabetes)	ICD-10	P70.2
Type 2 Diabetes	ICD-10	E11. *

2. *CGM use can be patient reported or confirmed through device data download and can be report/measured in multiple ways, including but not limited to:*

- ❖ *CGM in the medication list within the last 12 months, OR*
- ❖ *CGM in flow sheet as Yes/No, OR*
- ❖ *CGM company models updated in the last 12 months (see Table 2 for examples), OR*
- ❖ *CGM data available (Yes/No, for example from Abbott Libre, Dexcom Clarity, Glooko, or Tidepool, OR*
- ❖ *Site-specific measure that is accurate and frequently updated*

3. AID systems can be confirmed through device data download and can be reported/measured in multiple ways, including but not limited to:

i.AID system prescribed in the medication list within the last 12 months, OR
ii.AID use in flow sheets, OR
iii.AID company models updated in the last 12 months (see Table 2 for examples), OR
iv.AID data available (Yes/No, for example from Tandem T:connect, Medtronic Carelink, Sequel Med Tech, Beta Bionics, Roche, Insulet, Glooko, or Tidepool, OR
v.Data download from Medtronic CareLink, Tandem, Glooko, Tidepool, OR
vi.Center-specific measure that is accurate and frequently updated

4. AGP Ambulatory Glucose Profile (AGP): Number of patients in (2)

a. Time in Range (70-180 mmol/dL) >70%
b. Time in Hypoglycemia (<70 mmol/dL) <4%
c. Time in Significant Hypoglycemia (<54 mmol/dL) < 1%

5. Hunger Vital Sign, SDOH. Developed by Children's HealthWatch https://childrenshealthwatch.org/hunger-vital-sign/ (accessed September 17, 2025) There is no fee or license required to use the Hunger Vital Sign™. We only ask that parties properly cite the tool as follows: Hager, E. R., Quigg, A. M., Black, M. M., Coleman, S. M., Heeren, T., Rose-Jacobs, R., Cook, J. T., Ettinger de Cuba, S. A., Casey, P. H., Chilton, M., Cutts, D. B., Meyers A. F., Frank, D. A. (2010). Development and Validity of a 2-Item Screen to Identify Families at Risk for Food Insecurity. Pediatrics, 126(1), 26-32. doi:10.1542/peds.2009-3146.

6. DKA can be measured as:

- ❖ Electronic Medical Record or patient reported and confirmed by lab result**,** OR
  - ➢ Elevated serum or urine ketones (greater than the upper limit of the normal range), AND
  - ➢ Serum bicarbonate below 15 mmol/L, OR
  - ➢ Blood pH below 7.3.
- ❖ DKA recorded in problem list during reported month

7. Severe Hypoglycemia hospitalizations/ED visits: can be measured via the Electronic Medical Record or patient-reported.

8. Severe Hypoglycemic event: Only count events where the patient needed assistance but did not result in a subsequent hospitalization. If a subsequent hospitalization DID occur, count them under measure 7.

9. Transition Plan: Even though we have an active transition planning working group, we are keeping this measure the same as in the past. It is more of a process measure to allow for the variation in how centers operationalize transition planning.

10. GMI: https://diabetesjournals.org/care/article/41/11/2275/36593/Glucose-Management-Indicator-GMI-A-New-Term-for

11. Diabetes Distress and validation/scoring of the PAID T: Shapiro JB, Vesco AT, Weil LEG, Evans MA, Hood KK, Weissberg-Benchell J. Psychometric Properties of the Problem Areas in Diabetes: Teen and Parent of Teen Versions. J Pediatr Psychol. 2018 Jun 1;43(5):561-571. doi: 10.1093/jpepsy/jsx146. PMID: 29267939; PMCID: PMC6454555.

12. Depression Screening: PQ2, 4, 8, and 9 are available on a website managed by Pfizer: https://www.phqscreeners.com/ and are in the public domain. Pfizer asks users to consent to their use terms.

TOOL 1. The Patient Health Questionnaire-2 (PHQ-2)

Instructions: Print out the short form below and ask patients to complete it while sitting in the waiting or exam room.

Use: The purpose of the PHQ-2 is not to establish a final diagnosis or to monitor depression severity, but rather to screen for depression as a "first-step" approach.

Scoring: A PHQ-2 score ranges from 0 to 6; patients with scores of 3 or more should be further evaluated with the PHQ-9, other diagnostic instrument(s), or a direct interview to determine whether they meet criteria for a depressive disorder.

Patient Name: _____ Date of Visit: _____

Over the past 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than one-half of the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3

Patient Name: _____ Date of Visit: _____

Over the past 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than one-half of the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling asleep, staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you're a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed; or the opposite—being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

10. If you checked off any problems listed above, how difficult have those problems made it for you to do your work, take care of things at home, or get along with other people? ❒ Not difficult at all ❒ Somewhat difficult ❒ Very difficult ❒ Extremely difficult

PHQ-9 SCORE	PROVISIONAL DIAGNOSIS	TREATMENT RECOMMENDATION (Patient preference should be considered)
0-4	None – minimal	None
5-9	Minimal symptoms[a]	Support, educate to call if worse, return in 1 month
10-14	• Minor depression[b]	Support, watchful waiting
	• Dysthmia[a]	Antidepressant or psychotherapy
	• Major depression, mild	Antidepressant or psychotherapy
15-19	Major depression, moderately severe	Antidepressant or psychotherapy
> 20	Major depression, severe	Antidepressant AND psychotherapy (especially if not improved on monotherapy)

13. Incretin mimetic drug prescribing GLP-1 and GIP

Incretin mimetics: Dual GIP and GLP-1 Agonists	
Generic names	Brand names
Tirzepatide	Mounjaro (for type 2 diabetes) and Zepbound (for weight loss)
GLP-1 Agonists	
Semaglutide	Ozempic and Rybelsus (for type 2 diabetes), and Wegovy (for weight loss)
Dulaglutide	Trulicity (for type 2 diabetes)
Liraglutide	Victoza (for type 2 diabetes) and Saxenda (for weight loss)
Exenatide	Byetta (for type 2 diabetes) and Bydureon (for type 2 diabetes) Bydureon BCise
Lixisenatide	Adlyxin (for type 2 diabetes)

14. Social Drivers of Health: https://www.ahrq.gov/sdoh/practice-improvement.html
    - Social drivers vs social determinants: Social Drivers vs. Social Determinants: Using Clear Terms - NACHC