T1D Exchange Quality Improvement (T1DX-QI) Pediatric Quality Metrics 2023-2025

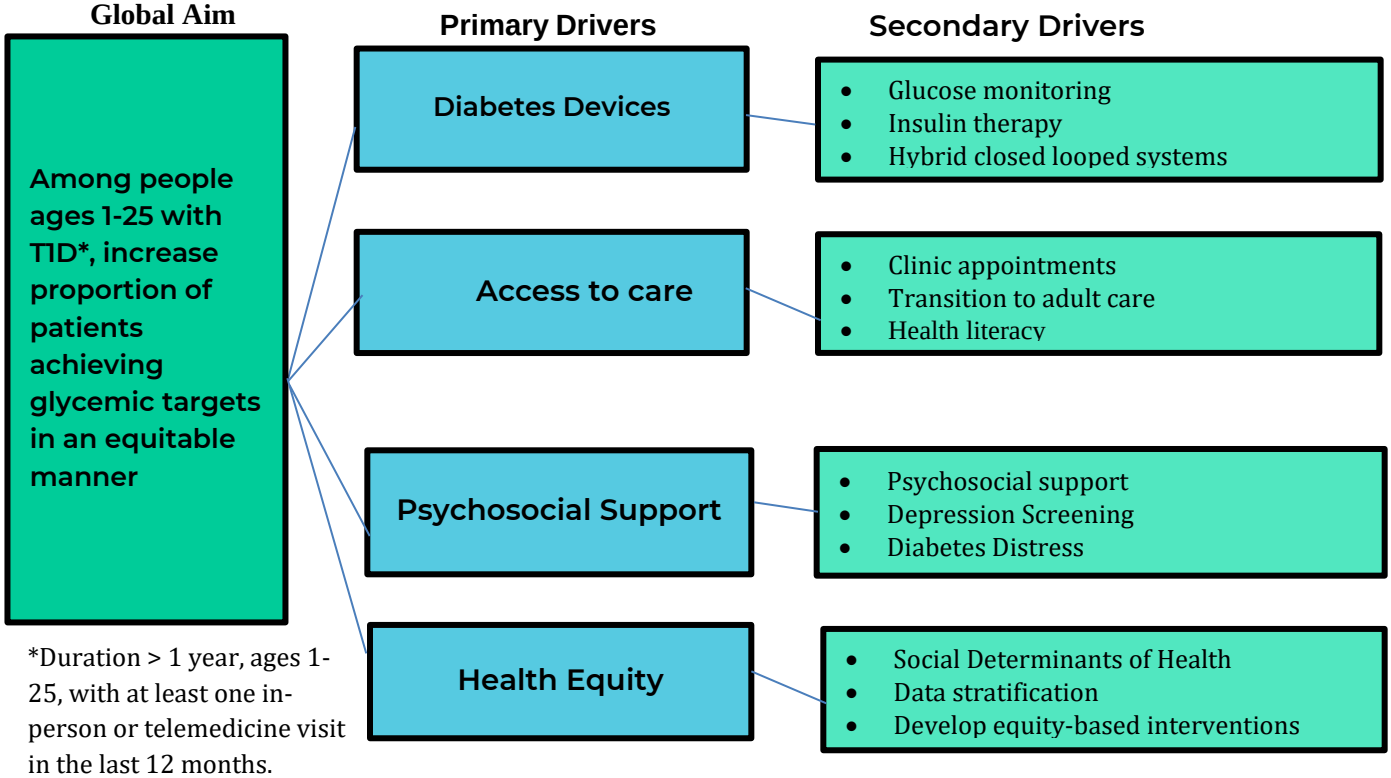
This document outlines quality measures for Pediatric Centers in the T1DX-QI network. Numerators and denominators for each measure have been defined below. We acknowledge that centers may not be able to report all the measures outlined in this document, report available data on Smart Sheet. These data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

Aim Statement for 2023-2025

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 A1C
    a. Increase % of patients with A1c <7 by 5%
    b. Decrease % of patients with A1c >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 patients with Time in Range >50% by 10%
    c) Decease % of patients with Time below Range (<70 mmol/dL) <4% by 5%

Key Driver Diagram



*Duration > 1 year, ages 1-25, with at least one in-person or telemedicine visit in the last 12 months.

Denominator (A): Patients 1–25 years of age with type 1 diabetes[1] (minimum duration ≥ 12 months) with at least 1 A1c values in the preceding 12 months, and an endocrinology related visit (in-person or telemedicine) from the reporting month)

Numerator:

1. HbA1c
    a. Number of patients in (A) with HbA1c <7 (Most recent A1c)
    b. Number of patients in (A) with HbA1c >9 (Most recent A1c)
    c. Median HbA1c from all patients
2. Continuous Glucose Monitor (CGM)[2]: Number of patients in (A) using CGM at using at least 14 days in the reporting month at the most recent clinical encounter.
3. Insulin Delivery: Number of patients in (A) using the following insulin delivery methods at the most recent encounter
    a. Sensor augmented insulin pump[3]
    b. Hybrid closed loop users on automated delivery mode
    c. Smart Insulin pen
4. Depression Screening
    a. Number of patients aged 12 years and older who have not had depression screening in the last 12 months)
    b. Number of patients in (4a) who have been screened for depression (PHQ-2, 4, 8 or 9)
    c. Number of patients in (4b) who screened positive for depression (PHQ8/PHQ-9 score above 10)
    d. Number of patients in (4c) who received a behavioral health visit referral
    e. Number of patients in (4d) who received referral and kept their behavioral health visit
5. Ambulatory Glucose Profile (AGP) : Number of patients in (A) who reported using CGM at least 14 days in the reporting month
    a. Number of patients in (5) with Time in Range (70-180 mmol/dL) >50%
    b. Number of patients in (5) with Time in Range (70-180 mmol/dL) >70%
    c. Number of patients in (5) with Time below Range (less than 70 mmol/dl) <4%
6. Insulin Bolus: Number of patients in (A) who bolus at least 3 times per day based on a pump/insulin pen download from their visit during the reporting month
7. Diabetic Ketoacidosis (DKA)[4] Hospitalization: Number of patients in (A) with at least one DKA hospitalizations in the last 12 months.
8. Transition plan
    a. Number of patients in (A) age 16 and older
    b. Number of patients in (8a) transition discussion happened and documented in the last 12 months
9. Social Determinants of Health
    a. Food Insecurity
        i. Number of patients in (A) who have been screened for Hunger Vital Signs/Food insecurity in the past year. Sample questions below
            1. "Within the past 12 months we worried whether our food would run out before we got money to buy more."

2. Within the past 12 months the food we bought just didn't last and we didn't have money to get more."

ii. Number of patients in (9a i) who screened positive (answered Yes to either question) for food insecurity

iii. Number of patients in (9b ii) who received a referral for food resources

b. 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?

1. Yes
2. No

c. 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?

1. Yes
2. No

ii. In the past 12 months, has lack of transportation kept you from meetings, work or from getting things needed for daily life?

1. Yes
2. No

d. Housing

i. Number of eligible patients for the reporting month who have been screened for housing needs. What is your housing situation today?

1. I have a steady place to live
2. I have a stead place to live today, but I am worried about it in the future
3. 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)
4. Unknown

ii. In the last 12 months, was there a time when you were not able to pay the mortgage or rent on time?

1. Yes 2. No

<u>Optional Measures. These elective measures should only be done after completing Measures 1-9</u>

10. Tobacco The number of patients in (A) seen in the reporting month who have been screened for tobacco use in the past year

i. Never ii. Current (within past month) iii. Past (ever) iv. Tried once

11. Number of patients in (A) seen in the reporting month who have been screened for distress in the past year. Do you feel stressed - tense, restless, nervous, or anxious, or unable to sleep at night because your mind is troubled all the time - these days?

i. Not at all
ii. Only a little
iii. To some extent
iv. Rather much
v. Very much

12. Number of patients in (A) seen in the reporting month who have been screened for isolation in the past year. Social: how often do you feel isolated from others?
    i. Never
    ii. Rarely
    iii. Sometimes
    iv. Often
    v. Always

Variable Definition

Type 1 Diabetes Diagnosis Inclusion criteria

Eligible patients meet one or more of the following criteria [1]:

- Positive for autoimmune marker:
    - GAD (GAD65)
    - Tyrosine Phosphatases IA-2 and IA-2β
    - 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

T1D Exclusion criteria

1. Patients are excluded from the T1D population if they meet any of the below criteria. However, if a patient with T1D is later diagnosed with one of these criteria, they remain included.
    - 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
New Onset of Diabetes Mellitus in Pediatric Patient	ICD-10	E10.9
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. Insulin Pump use can be patient reported or confirmed through device data download and can be reported/measured in multiple ways, including but not limited to:

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

4. 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