T1D Exchange Quality Improvement (T1DX-QI) Adult Quality Measures 2023-2025

This document outlines quality measures for adult centers in the T1DX-QI network.

These data reported allow for benchmarking and quality improvement (QI) projects. For questions, email qi@t1dexchange.org or ask your center assigned T1DX-QI coach. We acknowledge that your center may not be able to report all the measures outlined in this document.

Aim Statement for 2023-2025
Among people aged 18-75 with T1D (PwT1D), increase proportion reaching recommended glycemic levels.

1. Optimize glycemic outcomes as measured by HbA1c.
    a. Increase % of people with HbA1c <8 by 5%.
    b. Decrease % of people with HbA1c >9 by 5%.
    c. Reduce Median HbA1c by 5%
2. Optimize glycemic outcomes as measured by TIR.
    a. Increase % of people with Time in Range >70% by 5%.
    b. Increase % people with Time in Range >50% by 10%.
    c. Decrease % people with Time Below Range (<70mg/dL) >4% by 5%

Key Driver Diagram
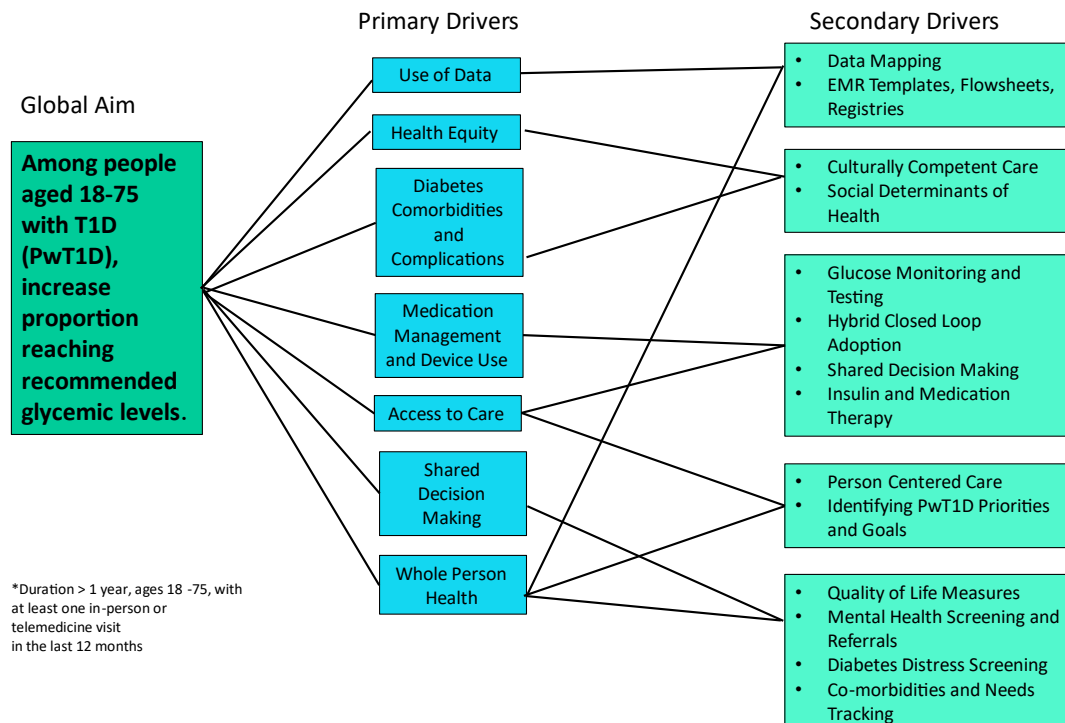
Denominator (A): People with type 1 diabetes[1] (ages 18-75) with a minimum duration of diabetes ≥ 12 months with at least 1 HbA1c in the preceding 12 months, and a diabetes related visit (in person or virtual) in the reporting month.

Numerators:

1. HbA1c
    a. Number of PwT1D in (A) with HbA1c <8% (Most recent HbA1c)
    b. Number of PwT1D in (A) with HbA1c >9% (Most recent HbA1c)
    c. Median HbA1c value for all PwT1D
2. Continuous Glucose Monitor (CGM)[2] Use: Number in (A) using CGM for at least 14 days, 70% of the time in the reporting month.
3. Ambulatory Glucose Profile (AGP): Number of patients in (2) with:
    a. Time in Range (70-180 mg/dL) >50%
    b. Time in Range (70-180 mg/dL) >70%
    c. Time in Hypoglycemia (<70 mg/dL) <4%
    d. Time in Severe Hypoglycemia (<54 mg/dL) < 1%
4. Insulin Delivery: The number in (A) with evidence of:
    a. Insulin delivery system use including:
        1. Pumps
        2. Open Loop
        3. Closed loop/AID/HCL
    b. AID/HCL
    c. Smart or Connected Pen use
5. Depression Screening
    a. Number in A who have been screened for depression (PHQ-2, 4, 8 or 9) in the last 12 months.
    b. Number in (5a) that screened positive for depression (PHQ8/PHQ-9 score above 10)
    c. Number in (5b) that received a behavioral health referral.
    d. Number in (5c) who received referral and kept their behavioral health visit.
6. Social Determinant of Health Screening
    a. Food Insecurity: Number in (A) asked at least one of the questions below or similar questions.
        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."
        i. Number in (6a) who answered Yes to 6a 1 or 2.
        ii. Number in (6a i) who received a referral for food resources.
7. Diabetes Ketoacidosis (DKA)[4] Hospitalization: -Number in (A) with at least one DKA hospitalization in the last 12 months.
8. Severe Hypoglycemia (SHE) Hospitalization: - Number of patients A) with at least one SHE hospitalization in the last 12 months.

Optional Measures. These elective measures should only be done after completing measures 1-8

9. Economics
    a. Number in A 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]

    b. The number in A for the reporting month who have been screenedfor medication affordability. Are you able to afford your medication?

        1. Yes; 2. No

10. Transportation

    a. Number of A who have been screened for transportation needs. Inthe past 12 months, has lack of transportation kept you from medical appointments or from getting medication?

        1. Yes; 2. No

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

        1. Yes; 2. No

11. Housing

    a. Number of (A) for the reporting month who have been screened forhousing 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

    b. 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

12. Foot Exam: Number of patients in (A) who received a foot exam (visual inspection with either a sensory exam or pulse exam) in the last 12 months.

13. Eye Exam: Number of patients in (A) who received a retinal or dilated eye exam during the measurement year or a negative retinal or dilated eye exam in last 12 months.

14. Missing Appointments: Number of patients in (A) who have not been seen within the last 180 days based on days between visits and care.

15. Angiotensin-Converting Enzyme) Inhibitors and Angiotensin Receptor Blockers (ACE-I/ARB) prescription

    a. Number of patients in (A) with a diagnosis of hypertension or blood pressure <140/90 mmHg

    a. Number of patients in (12a) who prescribed ACE-I or ARBs in the measurement year are

16. Statin prescription

    a. Number of patients in (A) with hyperlipidemia or an LDL >130 mg/dL

    b. Number of patients in (13a) who are prescribed a statin for cholesterol in the last 12 months.

17. Tobacco The number (A) seen in the reporting month who have been screened fortobacco use in the past year.

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

18. Number in (A) seen in the reporting month who have been screened for distress in thepast 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

19. Number in (A) seen in the reporting month who have been screened for isolation in thepast year. Social: how often do you feel isolated from others?

    1.   Never, ii Rarely; iii Sometimes; iv Often; v Always

Health Equity Measures:

20. Number in (A) with at least one in person or virtual visit in the reporting month.
    a. Number in (20A) by race and ethnicity.
        1. NH White
        1. NH Black
        2. Hispanic
        3. Asian
        4. Other
        5. Not Reported
    b. Number in (20A) by insurance type.
        1. Public
        2. Private
        3. Uninsured
        4. Other

21. Number in (A) who reported using insulin pump during the reporting month.
    a. Number in (21A) by race and ethnicity.
        1. NH White
        2. NH Black
        3. Hispanic
        4. Asian
        5. Other
        6. Not Reported
    b. Number in (21A) by insurance type.
        1. Public
        2. Private
        3. Uninsured
        4. Other

22. Number in (A) who were not on pump previously, were prescribed insulin pump in the reporting month.
    a. Number (22A) by race and ethnicity.
        1. NH White
        2. NH Black
        3. Hispanic
        4. Asian
        5. Other

      6. Not Reported

  b. Number in (22A) by insurance type.

      1. Public

      2. Private

      3. Uninsured

      4. Other

Appendix:

T1D Inclusion Criteria: Type 1 Diabetes Diagnosis Inclusion criteria
Eligible patients meet one of more of the following criteria [1]:
- Positive for autoimmune marker:
    - o GAD (GAD65)
    - o Tyrosine Phosphatases IA-2 and IA-2β
    - o ZnT8, OR
- T1D diagnosis determined using clinical judgment, OR

- Idiopathic Type 1 diabetes (negative autoantibodies but with permanent insulinopenia and prone to ketoacidosis)

(Inclusion) 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
Type 1 Diabetes Mellitus with Hyperglycemia	ICD	E10.65
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

(Exclusion) Test or condition	Type of code	ICD/LOINC Code
Cystic Fibrosis	ICD-10	E84.*
Steroid induced/glucocorticoid	ICD-10	E09*
Gestational diabetes	ICD-10	O24.*
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, e.g., 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:
   ❖ EHR 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