Preparing for Digital HEDIS®: Integrating CGM Data into the EHR at Scale

How CCHMC's integration ended manual transcription, and laid the groundwork for measure readiness and data sharing

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Speakers



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DISCLOSURES

- Portions of work shared in this presentation have been supported by the Leona M. and Harry B. Helmsley Charitable Trust
- Member, Board of Directors, Ohio Health Information Partnership



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- Tidepool is a Leona M. and Harry B. Helmsley Charitable Trust Grantee
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- Tidepool is an active member of the iCODE-2 Steering committee and Rising TIDE Alliance

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AGENDA

How CGM data moves from device to EHR to HEDIS, and what providers and plans each control

1

Why quality measures need CGM data in the EHR

How GSD and CGD-E count CGM data, and what claims alone miss

2

What CCHMC built

An order-driven integration that ended manual transcription and put CGM data in front of clinicians and families

3

Technical and Clinical Decisions

Integration paths, data standards, send timing, and GMI filing rules

4

Recap & what's next

What CCHMC learned, eight questions for providers and plans, and what's next

1. CGM DATA AND QUALITY MEASURES

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CGM and GMI in 30 seconds



CGM
Continuous Glucose Monitor



TIR
Time in Range



GMI
Glucose Management Indicator

1. CGM DATA AND QUALITY MEASURES

GSD: GMI from CGM can count when a patient has no lab HbA1c

What it measures Diabetes control (latest HbA1c or GMI of the year) for adults 18–75 with diabetes

What EHR integration adds

1

Counts more patients

A GMI with its date range fills the gap for patients without a recent lab HbA1c.

2

Counts automatically

A GMI stored as discrete data can be reported digitally for every eligible patient, with no chart review or searching PDFs.

Source: NCQA, Glycemic Status Assessment for Patients With Diabetes (GSD), 2026.

1. CGM DATA AND QUALITY MEASURES

CGD-E: EHR data finds the CGM users that claims miss

What it measures New for 2027: CGM use among adults 18–75 with diabetes on insulin

What EHR integration adds

1

Counts patients with no claim

A CGM metric or coded CGM report in the EHR counts as use, for example for self-pay patients or those on free supplies.

2

Shows actual wear

A claim shows a CGM was dispensed. EHR data shows it's being worn, the foundation for future CGM outcome measures.

Source: NCQA, Proposed New Measure for HEDIS MY 2027: CGD-E, public comment draft, 2026.

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1. CGM DATA AND QUALITY MEASURES

Today, CGM data rarely reaches the EHR as structured data, so it rarely reaches plans

One portal per device maker, each with its own report and login → **PDF reports printed, then scanned into the chart** → **Key metrics transcribed into the EHR**

> *"We have 12 different third-party softwares and we're still printing out these PDF reports."*
>
> **Diabetes specialist, community health center**

> *"I'm manually typing data into this flowsheet because once a month, we push our data to the QI collaborative."*
>
> **Clinician, pediatric diabetes clinic**

Source: Tidepool conversations with health systems, 2026. Quotes lightly trimmed

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2. WHAT CCHMC BUILT

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Our story

- Urban, tertiary, academic pediatric medical center in Southwest Ohio serving ~ 500,000 children
- Diabetes Center provides care for ~2,200 patients including 200+ new onset cases/year
- 58% private insurance, 29% public insurance, 13% self-pay or uninsured
- Multidisciplinary team - 21 physicians, 8 APRNs, 16 Certified Diabetes Care and Education Specialists (CDCES), 5 social workers, 1 PhD psychologist, community health workers, community partnership, and families



2. WHAT CCHMC BUILT

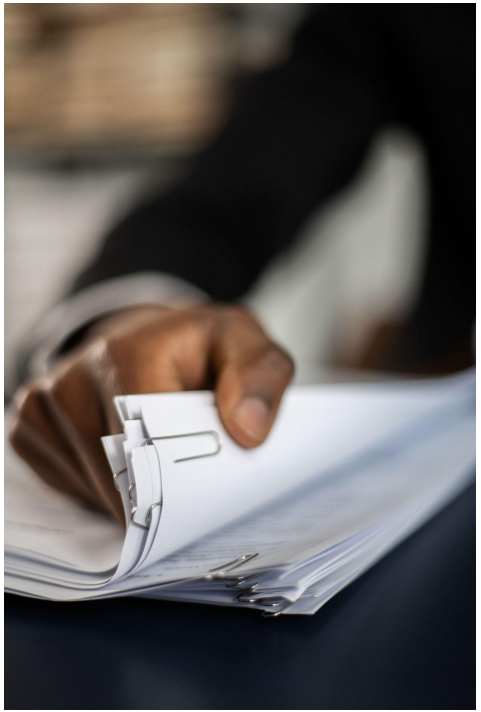
Our why

"As clinicians, we do not need more portals. We need the right data, in the right place, at the right time, connected to the rest of the patient's story."

2. WHAT CCHMC BUILT

Before integration,

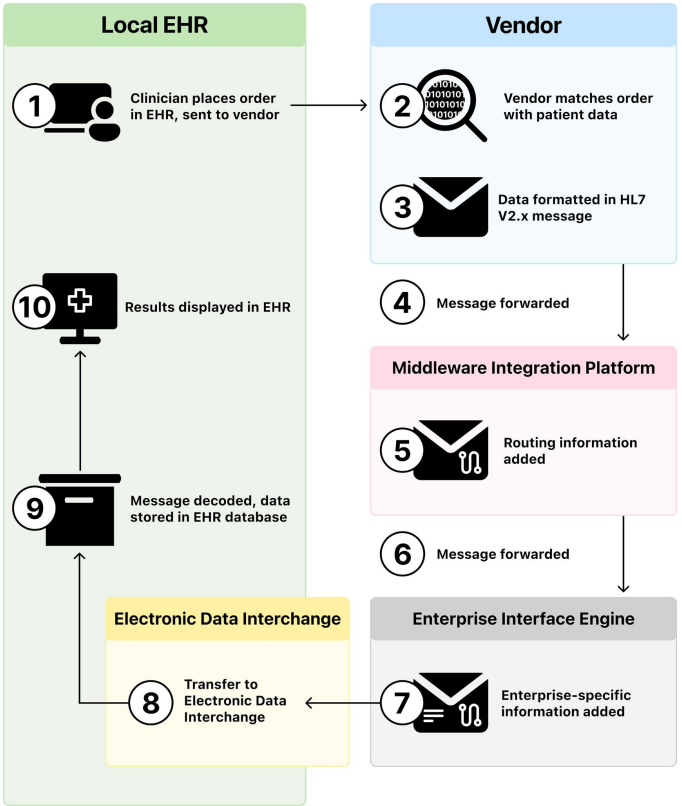
CGM data meant four portals and hand-typed metrics



2. WHAT CCHMC BUILT

Our order-based workflow:

From EHR order to results in the chart



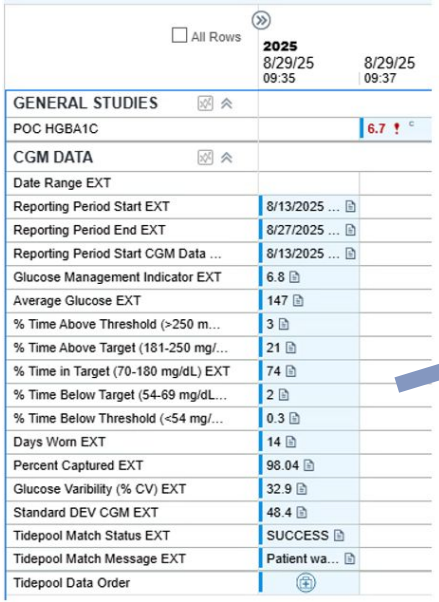
Source: Knopp MI et al. Diabetes Technol Ther. 2026;28(5):472–482.

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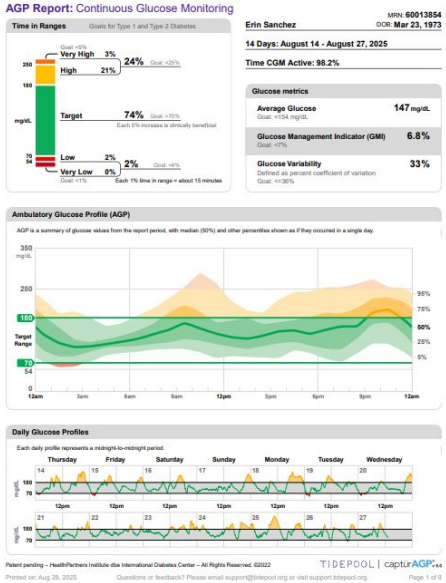
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2. WHAT CCHMC BUILT

CGM results next to lab results, not in flowsheets



All Rows	2025 8/29/25 09:35	8/29/25 09:37
GENERAL STUDIES		
POC HGBA1C		6.7
CGM DATA		
Date Range EXT		
Reporting Period Start EXT	8/13/2025 …	
Reporting Period End EXT	8/27/2025 …	
Reporting Period Start CGM Data …	8/13/2025 …	
Glucose Management Indicator EXT	6.8	
Average Glucose EXT	147	
% Time Above Threshold (>250 m…	3	
% Time Above Target (181-250 mg/…	21	
% Time in Target (70-180 mg/dL) EXT	74	
% Time Below Target (54-69 mg/dL…	2	
% Time Below Threshold (<54 mg/…	0.3	
Days Worn EXT	14	
Percent Captured EXT	98.04	
Glucose Variability (% CV) EXT	32.9	
Standard DEV CGM EXT	48.4	
Tidepool Match Status EXT	SUCCESS	
Tidepool Match Message EXT	Patient wa…	
Tidepool Data Order		



2 clicks to PDF report

Synthetic patient and data shown. © 2026 Epic Systems Corporation

2. WHAT CCHMC BUILT

We standardized every vendor's metrics, so adding LOINC codes is a small update

Table 1: Time in Range Metrics

Metric	LOINC	Sample value
Very low (<54 mg/dL) TIME_BELOW_RANGE_VERY_LOW_CGM	104642-4	**0.2%**
Low (54–69 mg/dL) TIME_BELOW_RANGE_LOW_CGM	104641-6	**1%**
Time in range (70–180 mg/dL) TIME_IN_RANGE_CGM	97510-2	**82%**
High (181–250 mg/dL) TIME_ABOVE_RANGE_HIGH_CGM	104640-8	**16%**
Very high (>250 mg/dL) TIME_ABOVE_RANGE_VERY_HIGH_CGM	104639-0	**1%**

Table 2: Glucose Metrics

Metric	LOINC	Sample value
GMI GLUCOSE_MANAGEMENT_INDICATOR	97506-0	**6.7**
Mean glucose AVERAGE_CGM	97507-8	**142 mg/dL**
Standard deviation (SD) STANDARD_DEVIATION_CGM	97505-2	**39.5 mg/dL**
Coefficient of variation (CV) COEFFICIENT_OF_VARIATION_CGM	104638-2	**27.8%**
CGM Summary Report CGM_SUMMARY	107930-0	AGP Summary Report (PDF)

LOINC codes: LOINC v2.81, Regenstrief Institute.

2. WHAT CCHMC BUILT

We standardized every vendor's metrics, so adding LOINC codes is a small update

Table 3: Reporting period

Metric	LOINC	Sample value
Reporting period start REPORTING_PERIOD_START_CGM	104634-1	2026-10-21 02:04:39
Reporting period end REPORTING_PERIOD_END_CGM	104635-8	2026-11-04 02:04:39
First CGM data point in period REPORTING_PERIOD_START_CGM_DATA	—	2026-10-23 08:01:58

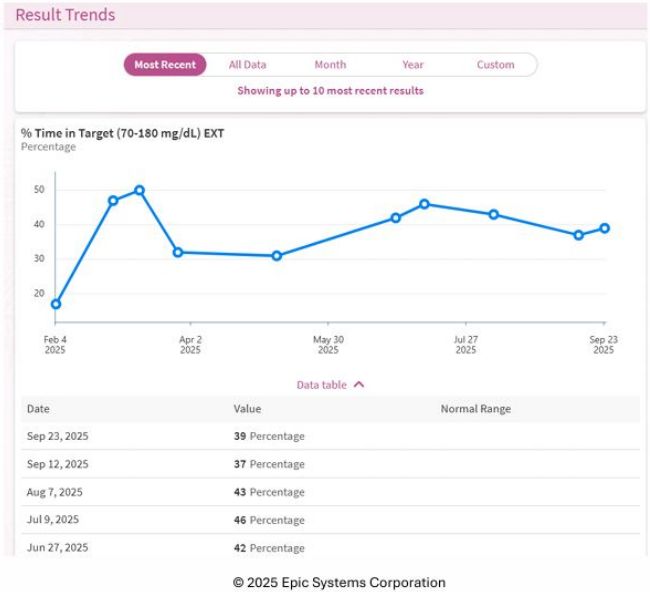
Table 4: Data sufficiency

Metric	LOINC	Sample value
Active CGM wear time ACTIVE_WEAR_TIME_CGM	104637-4	**82.75%**
Days with CGM data DAYS_WITH_DATA_CGM	104636-6	**12 days**
Hours with CGM data HOURS_WITH_DATA_CGM	—	**278 hours**

LOINC codes: LOINC v2.81, Regenstrief Institute.

2. WHAT CCHMC BUILT

Families now see CGM results in the patient portal, next to their A1c





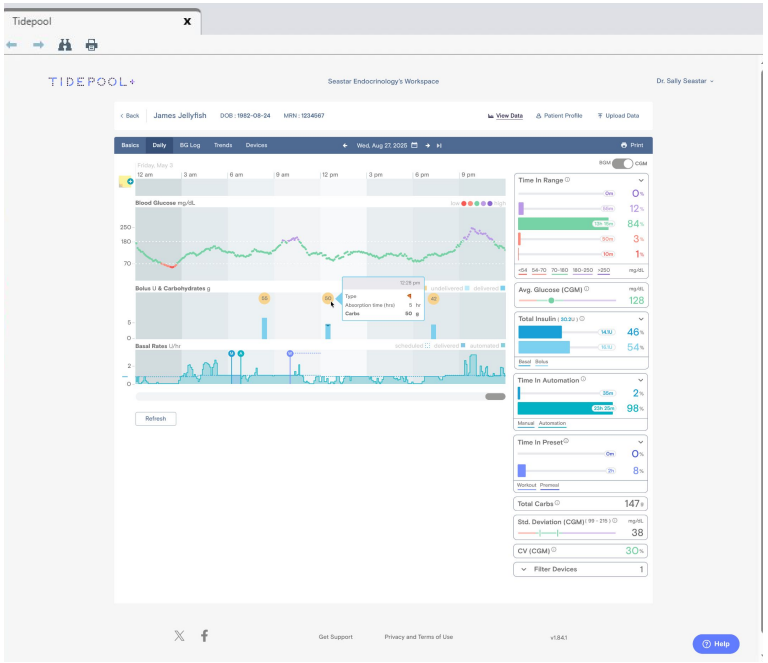
Source: Knopp MI et al. Diabetes Technol Ther. 2026;28(5):472–482.

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2. WHAT CCHMC BUILT

Our clinicians can also open interactive reports inside the EHR via SMART on FHIR



2. WHAT CCHMC BUILT

Four reasons a patient's data doesn't reach the chart

1. Not integrated

- Device platform isn't integrated with the EHR
- Clinics run the manual workflow for these patients

2. Not connected

- Receivers and some pumps need manual uploads
- Uploaded data is often missing at the visit

3. Not shared

- No data flows until the patient approves sharing
- Patients can stop sharing anytime

4. Not matched

- Account created at home doesn't match the EHR record
- Nicknames, day-first birth dates, a parent's email, no MRN

Each of these is a patient whose GMI won't be counted for quality reporting.

2. WHAT CCHMC BUILT

What our clinicians say

- “Integrating diabetes device data into the EHR has significantly improved how I access and use data in daily clinical practice.”
- “The integration has reduced the number of steps required to access data. During busy clinics or when managing multiple request for insulin adjustments, these streamlined workflows save a substantial amount of time.”
- “I appreciate being able to review this information with families during visits.”

2. WHAT CCHMC BUILT

What our families say

- "[Vendors] systems were not set up to have adult caregivers access more than one child's data. So for me it is much easier to access the data in [patient portal] than in through the [vendor]."
- "I love the idea of all of this [CGM metrics and PDF] being in the [patient portal]"
- "I [parent] am a frequent checker of the CGM data and use that data to move the dial as need on [patients] trends... I think it would be really cool if [we could use this data] to collaborate with the team on how things affect their sugars as well as be more mindful of it themselves."

3. TECHNICAL AND CLINICAL DECISIONS

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Many integration paths to get CGM data in the EHR

	Redox	Xealth	App launch (SMART on FHIR)	Direct integration (FHIR)	Epic Aura
Discrete Metrics	✓	✓	Not included without some kind of direct integration	✓	✓
EHRs	Epic, Oracle Health, athenahealth, and most others	Epic and Oracle Health; others case by case	Typically only major EHRs (Epic, Oracle Health)	Typically only major EHRs (Epic, Oracle Health)	Epic only

3. TECHNICAL AND CLINICAL DECISIONS

Plan for 3–4 months to get CGM data into the chart

Tidepool's integration options & typical timeline, based on completed integrations

	Redox	Xealth	SMART on FHIR (app launch)
What it does	Enrollment orders, PDF to the chart, discrete metrics	Enrollment, PDF report on demand, discrete metrics, patient upload reminders	One-click launch into Tidepool. No data written today; FHIR writeback planned
Health system work	ORM order feed out; ORU and MDM routing in	Xealth contract; ADT feed (SIU feed optional, for reminders)	Launch button and URL, SSO, FHIR APIs, allowlist Tidepool URLs
Typical timeline	**15 weeks** Median, based on 21 completed integrations	**14–16 weeks** Shorter if Xealth is already in place	**4 weeks** Average, based on 4 completed integrations

3. TECHNICAL AND CLINICAL DECISIONS

HL7v2 vs. FHIR: what it means for quality reporting

HL7v2
Messages between systems

- Used by 95%+ of U.S. health organizations
- Each interface is mapped site by site, so codes and filing vary
- CCHMC's integration uses HL7v2

FHIR APIs
Standard data over web APIs

- Same data structure everywhere, so data is easier to share with plans
- NCQA's digital HEDIS measures are built on FHIR
- iCoDE and iCoDE-2 recommend FHIR-first

SMART on FHIR
Opens an app inside the EHR

- A secure way to open an app from the patient's chart
- Helps clinicians review data, but doesn't put data in the chart on its own
- CCHMC clinicians use it to open the full report

FHIR is where digital HEDIS is headed; HL7v2 is what most sites run today. Either way, standard codes like LOINC are what make the data countable.

Sources: HL7 International, HL7 Version 2 Product Brief; HL7 FHIR, Comparison with V2; HL7 SMART App Launch Implementation Guide; NCQA, Digital HEDIS; Espinoza J et al., iCoDE (2022) and iCoDE-2 (2025); Tidepool+ EHR Integration Technical Specification v5.0, 2026.

3. TECHNICAL AND CLINICAL DECISIONS

How often data is sent determines how many patients have a countable GMI

A. ORDER TYPE

One-time order

A clinician orders and signs each time data is needed.

CCHMC's choice

Standing order

A provider signs once. MAs then release it at each visit, with no new signature.

B. WHAT TRIGGERS A DATA SEND

CCHMC's choice

Staff release the order

A nurse or MA releases it, e.g. when rooming the patient.

New upload

Results send automatically after device data is uploaded.

Timed cadence

Every 7, 14, or 30 days for cloud-connected devices.

Appointment arrival

Sends when the patient checks in, using the ADT feed.

3. TECHNICAL AND CLINICAL DECISIONS

GMI reporting: How you configure the CGM feed determines which readings count for HEDIS

Decision	Why it matters
How much CGM data is enough? minimum days worn, % time CGM active	NCQA requires a documented date range. Your team sets the minimum that makes a GMI clinically meaningful.
Which reporting window? 14, 30 or 90 days	Different windows can produce different GMIs for the same patient.
Which GMI should be filed? every automated send, or one reviewed at a visit	Automated feeds can file many GMIs a year, and the measure uses the most recent one.

NCQA rules: most recent value in the year; lowest value if several on the same date; GMI must document its CGM date range, with the end date as the assessment date. GSD applies to ages 18–75. Source: NCQA HEDIS MY 2026 Technical Specifications, Volume 2 (GSD).

3. TECHNICAL AND CLINICAL DECISIONS

GMI reporting: How you configure the CGM feed determines which readings count for HEDIS

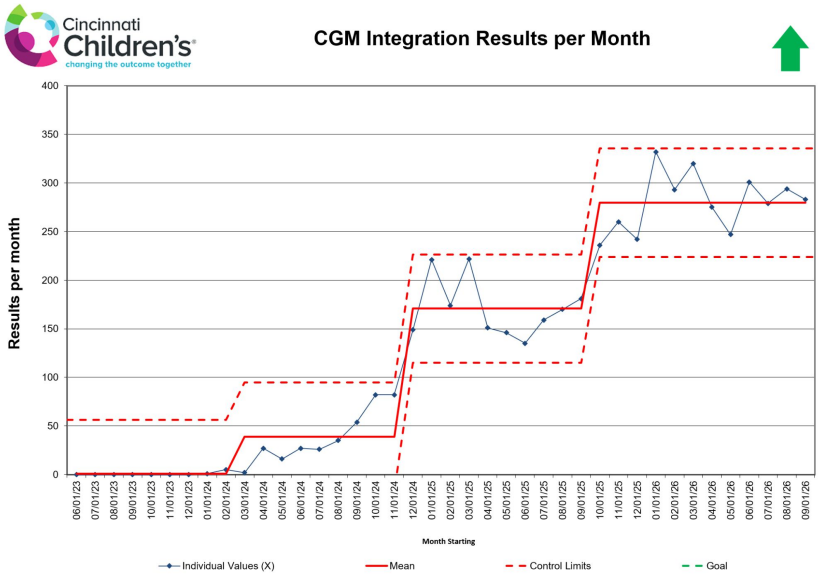
Decision	Why it matters
Which values are filed when several share a date? e.g., 14- and 90-day GMIs, or a GMI and a lab A1c, on the same date	The measure uses the lowest value on a shared date, so filing extra windows could favor a lower result.
How are rounded values compared to cut points? e.g., is 7.96% (sent as 8.0%) under 8.0%?	If values are rounded before the EHR checks reference ranges, a result can flip from in range to out of range.

NCQA rules: most recent value in the year; lowest value if several on the same date; GMI must document its CGM date range, with the end date as the assessment date. GSD applies to ages 18–75. Source: NCQA HEDIS MY 2026 Technical Specifications, Volume 2 (GSD).

4. RECAP AND WHAT'S NEXT

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About 300 patients a month now get CGM results in the EHR, 40% of encounters



3000

digital data entries/month that were previously manually transcribed

>$10K

saved in paper and printing costs by adopting a digital workflow; reduced time for check-in

Next: insulin and pump data, now covered by iCoDE-2



Source: Espinoza J et al. 2025 iCoDE Report: EHR Integration Standards and Recommendations for Insulin Delivery Data. Diabetes Technology Society; 2025.

4. RECAP AND WHAT'S NEXT

For provider teams: eight questions to answer before you integrate

Topic	
1. Patient access	Which patients will be invisible: unmatched, unconnected, unsupported devices?
2. Technical capacity	Who maps results to LOINC, and HL7 v2 or FHIR?
3. Security and compliance	Do lab accreditation rules apply if you use Results Review?
4. Financial feasibility	What do purchase, installation and maintenance cost?
5. Operational capacity	Who maintains account linkage and resolves duplicates?
6. Business case	Which measures (GSD, CGD-E, CMS122, Diabetes Recognition) and which contracts?
7. Training	How do clinicians use the integration in ways that support both review and reporting?
8. Launch and optimization	Are you monitoring measure data completeness, not just order counts?

Source: Adapted from Espinoza JC et al. Front Clin Diabetes Healthc. 2022;3:867284.

4. RECAP AND WHAT'S NEXT

For health plans: eight questions to ask your provider partners

Topic	
1. Format	Are CGM metrics stored as discrete results, or only as PDFs?
2. Standard codes	Are they mapped to LOINC codes?
3. Date range	Does each GMI carry the CGM date range it was calculated from?
4. Which GMI	Is every automated data point filed, or only a GMI reviewed at a visit?
5. Data sufficiency	What minimum wear time does a GMI need before it's filed?
6. Coverage	Which patients are missed: unmatched, unconnected, unsupported devices?
7. Data exchange	Can the data reach us electronically: supplemental data, an HIE, or FHIR APIs?
8. Audit readiness	Can each value be traced to its source, device and date?

Questions draw on the GSD and CGD-E specifications and CCHMC's integration experience.

4. RECAP AND WHAT'S NEXT

Four takeaways for providers and plans

Structured data is what counts

A GMI filed as a discrete, LOINC-coded result with its CGM date range can count for GSD and CGD-E. PDFs and transcribed values can't.

Expect gaps, and plan for them

Some patients won't reach the chart because their device isn't connected, they haven't shared their data, or their account doesn't match. Integration is ongoing work.

Agree on the GMI rules before go-live

Order type, send trigger, minimum wear time, and reporting window determine which GMI gets filed.

The EHR is only half the path

Health systems and plans should agree early on how CGM data will be exchanged, whether through supplemental data, an HIE, or FHIR.

A connected data foundation supports population management and HEDIS reporting

Risk Stratification

Surface the patients who need attention most, so outreach happens between visits instead of after an ED visit.

Population Management

Track cohorts, identify gaps in care, and standardize care pathways across a patient panel.

Quality Reporting

Bring standardized CGM metrics into the EHR so they can support HEDIS reporting, including GMI for the Glycemic Status Assessment (GSD) measure.

Connected Data Foundation

Unify CGM and diabetes device data across manufacturers into one consistent, reliable dataset.



Citations

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