CGM Data Reading Cheat Sheet

Your Complete Guide to Understanding Continuous Glucose Monitoring

📱 What is CGM and How It Works

What is a CGM?

A **Continuous Glucose Monitor (CGM)** is a small wearable device that tracks your blood sugar levels 24/7 without finger pricks. It consists of:

1. **Sensor** - A tiny filament inserted just under your skin (usually on arm or abdomen)
2. **Transmitter** - Sends data wirelessly to your phone or receiver
3. **Display** - Your smartphone app or dedicated reader showing real-time glucose

How Does it Work?

- The sensor measures **interstitial fluid glucose** (not blood glucose)
- Readings are taken every **1-5 minutes** (varies by brand)
- There's typically a **5-15 minute lag** behind actual blood glucose
- Most sensors last **10-14 days** before replacement

CGM vs Finger Prick

Feature	CGM	Finger Prick
Readings	Every 1-5 min	On-demand
Pain	Initial insertion only	Every test
Trends	Yes (shows direction)	No
Night monitoring	Automatic	Requires waking up
Data history	Complete picture	Snapshots only

⏱️ Understanding Time in Range (TIR)

What is Time in Range?

TIR measures the **percentage of time** your glucose stays within your target range over a period (usually 7-14 days). It's one of the most important CGM metrics!

Standard Target Ranges

Category	Target Range	TIR Goal
Type 1 & Type 2 Diabetes	70-180 mg/dL	>70% of time
Prediabetes	70-140 mg/dL	>85% of time
Gestational Diabetes	63-140 mg/dL	>85% of time
Older Adults (>65 yrs)	70-200 mg/dL	>50% of time

TIR Goals Breakdown

For most diabetics, aim for:

- ✅ **Above Range (>180 mg/dL)**: <25% of time
- ✅ **In Range (70-180 mg/dL)**: >70% of time
- ✅ **Below Range (<70 mg/dL)**: <4% of time
- ✅ **Very Low (<54 mg/dL)**: <1% of time

Why TIR Matters

- Every **5% increase** in TIR reduces HbA1c by approximately **0.5%**
- Higher TIR = Lower risk of complications
- More useful than HbA1c alone because it shows variability

📊 Reading Glucose Patterns and Trends

Trend Arrows Explained

Arrow	Meaning	Glucose Change
↑↑	Rising rapidly	>3 mg/dL per minute
↑	Rising	2-3 mg/dL per minute
→	Stable	<1 mg/dL per minute
↓	Falling	2-3 mg/dL per minute
↓↓	Falling rapidly	>3 mg/dL per minute

Key Patterns to Watch

1. Dawn Phenomenon 🌅

- **What**: Glucose rises early morning (4-8 AM) without eating
- **Why**: Liver releases glucose + hormones increase insulin resistance
- **Action**: Talk to doctor about medication timing; try protein-rich bedtime snack

2. Post-Meal Spikes 🍽️

- **Normal**: Return to baseline within 2-3 hours
- **Problematic**: Stays elevated >3 hours or rises >50 mg/dL
- **Action**: Review carb portions, try walking after meals

3. Overnight Patterns 🌙

- **Ideal**: Flat line between 90-120 mg/dL
- **Common issues**: Nocturnal hypoglycemia, late-night spikes from dinner
- **Action**: Adjust dinner timing, reduce evening carbs

4. Exercise Response 🏃

- **During cardio**: Usually drops
- **During strength training**: May rise initially, then drop
- **Action**: Time exercise 1-2 hours after meals; keep glucose tabs handy

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📈 What Spikes and Dips Mean

Understanding Spikes (Hyperglycemia)

Spike Level	Reading	Risk	Symptoms
Mild	180-250 mg/dL	Low	May have none
Moderate	250-400 mg/dL	Medium	Thirst, frequent urination
Severe	>400 mg/dL	HIGH	Confusion, nausea, vision issues

Common Causes of Spikes

- 🍚 High-carb meals (especially refined carbs)
- 💊 Missed or insufficient medication/insulin
- 😰 Stress and illness
- 💤 Poor sleep
- ☕ Morning coffee on empty stomach
- 🍛 Large portions of rice/roti

Understanding Dips (Hypoglycemia)

Level	Reading	Severity	Action Needed
Level 1	54-70 mg/dL	Alert	Eat 15g fast carbs
Level 2	<54 mg/dL	Serious	Treat immediately
Level 3	Altered consciousness	Emergency	Glucagon/Call 102

Common Causes of Dips

- 💊 Too much insulin/medication
- 🏃 Unplanned exercise
- 🍽️ Skipped or delayed meals
- 🍺 Alcohol consumption
- ☀️ Hot weather

The 15-15 Rule for Lows

1. Eat **15 grams** of fast-acting carbs
2. Wait **15 minutes**
3. Recheck glucose
4. Repeat if still <70 mg/dL

15g Fast Carbs = 4 glucose tablets = 1/2 cup juice = 1 tbsp honey

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🎯 Optimal Ranges for Diabetics

Time-Based Targets

Time	Target Range	Notes
Fasting (Morning)	80-130 mg/dL	Before breakfast
Before Meals	80-130 mg/dL	Pre-prandial
1-2 Hours After Meals	<180 mg/dL	Post-prandial peak
Bedtime	100-150 mg/dL	Before sleep
Overnight	90-150 mg/dL	Avoid hypos

Variability Targets

- **Coefficient of Variation (CV)**: <36% is good
- **Standard Deviation**: Lower is better (indicates stability)
- **GMI (Glucose Management Indicator)**: Estimate of HbA1c from CGM data

Indian Context Considerations 🇮🇳

- Post-meal targets may need to be stricter due to high-carb diets
- Monitor after dal-chawal, roti, rice dishes especially
- Festival periods (Diwali sweets, etc.) require extra attention

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⚡ When to Take Action Based on Readings

Immediate Action Needed

Situation	Reading	Action
🔴 **Critical Low**	<54 mg/dL	Treat NOW with 15g fast carbs
🟠 **Low**	54-70 mg/dL	Eat 15g carbs, recheck in 15 min
🔴 **Very High**	>350 mg/dL	Check ketones, contact doctor
🟠 **Rising Rapidly**	↑↑ with >250	Take correction if advised
🟠 **Falling Rapidly**	↓↓ with <100	Prepare to treat, eat snack

When to Call Your Doctor

📞 **Call Same Day:**

- Readings consistently >250 mg/dL for 24+ hours
- Frequent lows (<70) more than 3x/week
- Ketones present in urine
- Sensor readings don't match how you feel

🚨 **Seek Emergency Care:**

- Blood sugar >400 mg/dL with symptoms
- Loss of consciousness
- Unable to keep food/water down
- Signs of DKA (fruity breath, confusion, vomiting)

Pattern-Based Actions

Pattern Observed	Suggested Action
Morning spikes (dawn phenomenon)	Discuss medication timing with doctor
Post-breakfast spikes	Reduce carbs at breakfast, add protein
Post-lunch dips	Review lunch medication dose
Night-time lows	Adjust dinner or bedtime snack
Consistent high after rice	Try portion control or alternatives

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🏥 Common CGM Brands in India

Available CGM Systems

Brand	Model	Sensor Life	Key Features	Approx. Price
Abbott	FreeStyle Libre 2	14 days	Most popular, alarms, affordable	₹2,500-3,000/sensor

Brand	Model	Sensor Life	Key Features	Approx. Price
Abbott	FreeStyle Libre 3	14 days	Smallest sensor, real-time alerts	₹3,000-3,500/sensor
Dexcom	G6	10 days	High accuracy, no calibration	₹8,000-10,000/sensor
Dexcom	G7	10 days	Latest model, all-in-one design	₹9,000-12,000/sensor
Medtronic	Guardian 3	7 days	Integrated with insulin pumps	Used with pump systems

Comparison Quick Guide

Best for Budget: FreeStyle Libre 2

- Most affordable option in India
- Available at Apollo, Medplus, online pharmacies
- Wide doctor familiarity

Best for Accuracy: Dexcom G6/G7

- Gold standard for accuracy
- Best for Type 1 or insulin-dependent
- Limited availability, higher cost

Best for Beginners: FreeStyle Libre 2

- Easy to apply and use
- Scan-based (no constant notifications)
- Good LibreLink app

Where to Buy in India

- **Apollo Pharmacy** (in-store and online)
- **1mg, PharmEasy, Netmeds** (online)
- **Amazon India** (check for authorized sellers)
- **Hospital pharmacies** (often have stock)
- **Medtronic/Dexcom distributors** (for their systems)

Insurance & Cost Tips

- Some corporate health insurance covers CGM
- Ask your doctor for prescription (may help with insurance)
- Buy in bulk (3-month supply) for better rates
- Check for patient assistance programs

📋 Quick Reference Card

Daily CGM Checklist

- [ ] Morning: Check overnight pattern
- [ ] Before meals: Note starting glucose
- [ ] 2 hours after meals: Check peak
- [ ] Before bed: Ensure safe range
- [ ] Weekly: Review TIR report

Key Numbers to Remember

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Target Range:        70-180 mg/dL
Treat Low at:        <70 mg/dL
Concern High at:     >250 mg/dL
TIR Goal:           >70% of time
CV Target:          <36%
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Emergency Quick Reference

Situation	Do This
Low (<70)	15g fast carbs → wait 15 min → recheck
High (>350)	Check ketones, hydrate, call doctor
Sensor error	Fingerprick to verify, replace if needed
Exercise planned	Check glucose, have glucose tabs ready

🙏 Tips for Success in India

Food Strategies

- **Rice**: Limit to 1 small katori, pair with lots of vegetables
- **Roti**: Choose whole wheat, limit to 2 at a time
- **Dal**: Good choice! Protein helps slow glucose rise
- **Fruits**: Eat whole, not juiced; limit to 1 serving at a time
- **Sweets**: Save for small portions on special occasions

Lifestyle Tips

- **10-minute walk** after meals significantly reduces spikes
- **Sleep 7-8 hours** — poor sleep increases insulin resistance
- **Manage stress** — cortisol raises blood sugar
- **Stay hydrated** — dehydration can affect CGM accuracy

Sharing Data with Your Doctor

- Export reports from app before appointments
- Print or email 14-day/30-day ambulatory glucose profile (AGP)
- Highlight patterns you've noticed
- Ask about medication adjustments based on data

Remember: CGM is a tool, not a judge. Every reading teaches you something about your body. Be curious, not critical! 🌟

This cheat sheet is for educational purposes. Always consult your healthcare provider for personalized advice.
