



Continuous Glucose Monitoring: How Could We Manage Diabetes Without It?

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There was a time when the only way to assess a person's diabetes management was to measure glucose in the urine. Although this practice did not provide immediate feedback on hyperglycemia, it did give some indication of when the renal threshold of ~ 180 mg/dL had been exceeded and some approximation of the person's level of glycosuria.

In the 1980s, the development of blood glucose meters using test strips that allowed people with diabetes to monitor their own glucose levels was heralded as a quantum leap forward in diabetes management. Glucose meters empowered people to take control of their condition and enabled better metrics and outcomes. The ensuing decades brought improvements in the standardization and accuracy of meters, and as a result, blood glucose monitoring (BGM) became gold standard for assessing diabetes management.

Unfortunately, BGM has significant limitations. People complain that the fingersticks necessary to check glucose with a meter are not only painful (usually more so than taking their injectable therapies), but also inconvenient if their clinician wants more than just early-morning glucose levels. Health care professionals may ask patients to keep a log of their glucose levels, but frequently these are just morning measurements provided in a blood-stained booklet that contains months of numbers but may not even be reviewed. Because using a meter requires a person to be awake, nighttime hypoglycemia often goes unmeasured and unrecognized.

In 1999, the U.S. Food and Drug Administration approved the first continuous glucose monitoring (CGM) system. This system was blinded to users but allowed their clinician to review 3 days of glucose data and provide them with feedback. Although this system was a dramatic improvement over BGM data collected only at specific time points, its utility was limited and not practical for use in primary care.

Subsequently, there were improvements in CGM technology that allowed for collection of real-time data and also integration with insulin pumps. More recently, there have been even more significant advancements in both CGM technology and accessibility. Media advertisements touting the ability to better manage blood glucose "without painful fingersticks" have resulted in greater consumer awareness of and demand for CGM systems. As a result of proven improved outcomes, insurance coverage is also expanding.

People using CGM can get real-time glucose readings and trend information from an app on their smartphone, as well as alarms to alert them to impending glycemic lows and highs in time to take preventive action. They can more easily see how their lifestyle influences their glycemic indices, encouraging positive behavior modifications.

As health care professionals, we can now spend quality time efficiently reviewing standardized CGM data reports. As a result, we can provide better guidance to our patients and make appropriate individualized therapeutic decisions based on the more complete picture we now have of each person's glucose fluctuations throughout the day and night.

Already, having patients who do not use CGM can feel like trying to drive a race car while blindfolded. Before long, we will look back on the days when this technology was not widely available and wonder how we ever managed diabetes without it.

Duality of Interest

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