Discussion Summary

Benefits of Structured SMBG Data

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High-level Overview

Self-monitoring of blood glucose (SMBG) has been an established component of diabetes management in patients with type 1 diabetes or insulin-treated type 2 diabetes. Use of SMBG is associated with significant reduction of hemoglobin A1c (HbA1c) levels in comparison to no SMBG. Further, structured SMBG regimens showed significantly greater reduction in HbA1c levels over unstructured SMBG regimens.

Featured Experts

- Antonio Ceriello - Head Research Department at IRCCS MultiMedica, Milan,
- Gilbert Alexander Fleming - Executive Chairman at Kinexum
- Katrina Donahue - Professor and Vice Chair of Research, Department of Family Medicine at University of North Carolina at Chapel Hill
- Francesco Giorgino - Chief, Division of Endocrinology at University Hospital "Consorziale Policlinico"
- Christopher Parkin - President at CGParkin Communications, Inc.
- Andrew Farmer - Professor of General Practice at University of Oxford

Featured Moderators

- Katharine Barnard - Visiting Professor of Health Psychology at University of Southampton

Summary

- There is no doubt timing and frequency of readings can aid in making proper meal decisions – increasing a patient's ability to control their diabetes. However, patients opt for regular checks with their primary care physician for convenience – often considered a less intrusive route for many individuals.
- The difference between structured diabetic testing verses unstructured is quite simple. Structured testing is assessing with purpose. If a clinician recommends that a patient regularly check their blood sugar, there must be an actionable intervention associated with the recommendation, whether that be titration of medications or supporting behavioral change (ie carbohydrate intake awareness, exercise, stress management, and annual checks-ups with their PCPs. Patients need a clear understanding of why they are testing and what the next steps are after receiving those results. Without this understanding, it is less likely for patients to adhere to the recommendations made and more likely for them to feel that it is a waste of time and resources. Clinicians must be equipped with the necessary information and tools to properly educate, train and support their patients on the importance of SMBG.
- Structured data on the other hand is defined as data in discrete format which is codified with a standardized code system like LOINC, CPT or ICD-10. The SMBG results integrated into the clinical workflow could have clinical decision support applied. CDS may include trends of the patient (downward or upward) over time. Connection with other PGHD such as weight gain or loss which may require insulin adjustments.
- The correlation of PGHD and A1C measurements are significant. If the patient is in control, but A1C indicates they are not, how is that reconciled by their provider? CDS may improve with the patient's data over time and more subtle changes may be indicative as predictor of illness or other issues, which may alert providers well in advance of a patient requiring an acute episode visit.
- Actions by the physician based upon glucose results may be medication adjustments, scheduling additional visits, or other information communicated back to the patient. It would be ideal if these changes were electronically received by the patient and marked on their system collecting their levels of when they implemented such adjustments. Then, indicated on subsequent communications back to the provider to have a feedback loop, so they can see how effective the intervention was on patient care and if further adjustments are needed, allowing for more precision medicine.
- Although SMBG has proven to be a beneficial glycemic control method, accuracy of the device used is extremely critical. Without accuracy, results are meaningless and potentially dangerous if erroneous interventions are taken. To remedy this potential blunder, it is recommended that periodic checks on each patient's meter (via laboratory reference) and monitoring of their testing technique is fundamental to ensure safe and effective use of SMBG devices. In a nutshell, no data is better than bad data. https://academic.oup.com/jes/article/2/12/1320/5181247
- There are many social determinants of health that should be considered when monitoring glucose. According to the World Health Organization, SDoH are conditions in which people are born, grow, work and age. The following elements should be considered in diabetes management.
    - Cognitive ability of the patient.

    - Do they live alone or have support?
    - Are they able to maintain adequate nutrition status?
    - Do they have adequate transportation?
    - Are they able to fill/refill prescriptions?
    - What is there level of compliance in terms of self-care?
    - What is their financial or insurance status?
    - Are they able to maintain their glucose supplies?
    - What is the patient's socioeconomic status?
- The United Kingdom now embeds SDoH elements in their medical records. For example, deprivation and learning difficulties based on area code and the risk of developing diabetes. https://www.bmj.com/content/359/bmj.j5019
- Depression and avoidance of self-care are elements that should also be considered when reviewing SMBG data. https://drc.bmj.com/content/4/1/e000184
- Often, SDoH elements are collected but not in a discrete and systematic manner that would allow clinicians to thoughtfully consider at point of care. These elements are frequently buried within clinical notes.
- SMBG is more widely used and accepted for T1D and T2D with insulin. However, when it comes to non-insulin T2D, the use of SMBG is questionable among providers. This may stem from a clinician's inability to adequately explain why a patient must test and lack of guidance in interpreting the glucose data. Other factors to consider are lack of time, reimbursement and knowledge by both clinician and patient. Clinicians must educate themselves on the importance of SMBG for all types of diabetes to properly support their patient and optimize their care. The following resource supports the use of SMBG in non-insulin T2D, specifically to guide medication prescriptions. https://www.ncbi.nlm.nih.gov/pubmed/23735724

Resources

1. https://www.bmj.com/content/2/6137/596
2. https://academic.oup.com/jes/article/2/12/1320/5181247
3. https://www.bmj.com/content/359/bmj.j5019
4. https://drc.bmj.com/content/4/1/e000184