



# Integrating Ketone and Glucose Monitoring for Optimized Diabetes Management

## The Ketone Conversation: Removing Barriers and Rethinking Monitoring

Solutions, strategies, and patient empowerment for proactive diabetes management



Many barriers exist to poor patient utilization of ketone testing, including:<sup>1</sup>

### Inadequate patient education<sup>1-3</sup>



- **Lack of awareness:** some individuals may not fully understand the importance of ketone testing, especially in preventing diabetic ketoacidosis (DKA).



- **Misinterpretation:** individuals might not recognize the symptoms that warrant ketone testing, such as nausea, vomiting, or abdominal pain.



- **Neglect:** in some cases, individuals might forget or neglect to test for ketones, especially if they are managing multiple aspects of their diabetes care.

### Lack of access to testing supplies<sup>1,4</sup>



- **Cost:** blood ketone meters and strips can be thought to be expensive, making regular testing less accessible for some individuals.

### Inconvenience of frequent monitoring<sup>5</sup>



- **Cumbersome testing:** testing for ketones can be seen as cumbersome, requiring either urine strips or blood meters.

While the barriers to ketone monitoring are real and multifaceted, they are not insurmountable. With targeted strategies and thoughtful communication, ketone testing can be made more accessible, actionable, and routine.

Practical, evidence-based approaches to help overcome the above barriers to testing include:



## Normalizing ketone education<sup>6-8</sup>

- Identify patients at risk of DKA and integrate ketone education during visits.
- Use intake forms and team-based approaches to initiate conversations.
- Teach when, why, and how to test—most people cannot rely on smell to detect ketosis.
- Review glucose/ketone logs and provide structured education and sick-day plans.
- Begin education at diagnosis and reinforce it annually or as needed.



## Prescribing proactively<sup>7,8</sup>

- Provide easy-to-access handouts and up-to-date testing supplies.
- Personalize testing options based on patient preference and access.
- Use behavioral and peer-support interventions for patients with recurrent DKA.
- Incorporate telemedicine and emergency support for patients at risk of DKA.
- Stay informed about upcoming tools like continuous ketone monitors (CKMs).

## KEY MESSAGES

- Testing for ketones can be life and cost saving. However, current evidence suggests that ketone testing is done infrequently and not at a time when it could have the most benefit.
- Primary care physicians should provide clear guidance on when and how to check ketones, including the need to obtain supplies in the event of ketosis becoming a reality.
- Small changes in education and follow-up can greatly improve ketone testing and help prevent DKA. Do not assume that patients remember everything—keep revisiting the topic!

**References:** 1. Nguyen KT, et al. *J Diabetes Sci Technol*. 2022;16:689-715; 2. Verhoeff N, et al. *Diabetes*. 2024;73(Suppl 1):552-P; 3. Ebekozi O, et al. *Diabetes Obes Metab*. 2024;26(Suppl 1):3-13; 4. Dhatariya K, et al. *Diabet Med*. 2016;33:269-270; 5. Umpierrez GE, et al. *Diabetes Care*. 2024;47:1257-1275; 6. Huang J, et al. *J Diabetes Sci Technol*. 2024;18:714-726; 7. Ehrmann D, et al. *Lancet Diabetes Endocrinol*. 2020;8:436-446; 8. Phelan H, et al. *Pediatr Diabetes*. 2022;23:912-925.