



## Monitoring ketones

during therapeutic carbohydrate restriction

If the patient is on diabetes medications, we recommend daily ketone measurements.

Beta-hydroxybutyrate (BHB) levels are blood ketone measurements and considered the most accurate.

If not, weekly should suffice for baseline measurements. More frequent testing is helpful if the patient is adjusting carbohydrate levels for greater benefit.

| Method                | Accuracy | Cost  | Pros  | Cons  |
|-----------------------|----------|---|---|---|
| <b>Blood strips</b>   | High     | High long-term cost due to expensive test strips; frequent testing becomes costly | <ul style="list-style-type: none"> <li>• Most accurate</li> <li>• Gives exact ketone level</li> </ul>                                 | <ul style="list-style-type: none"> <li>• Requires finger stick</li> <li>• Expensive test strips</li> </ul>  |
| <b>Breath testing</b> | Moderate | High initial cost; less expensive long term for frequent testing                  | <ul style="list-style-type: none"> <li>• Easy to use</li> <li>• No finger stick</li> <li>• Lower cost for frequent testers</li> </ul> | <ul style="list-style-type: none"> <li>• High up-front cost</li> <li>• Moderate accuracy</li> <li>• Gives range rather than exact ketone level</li> </ul> |
| <b>Urine strips</b>   | Low      | Low   | <ul style="list-style-type: none"> <li>• Easy to use</li> <li>• No finger stick</li> <li>• Least expensive</li> </ul>                 | <ul style="list-style-type: none"> <li>• Least accurate</li> <li>• Gives range rather than exact ketone level</li> </ul>                                  |

| BHB Level (mmol/L) | Degree of ketosis           | “Normal” or “Abnormal”  |
|--------------------|-----------------------------|---|
| <0.5               | Not in significant ketosis  | <b>Normal</b>   |
| 0.5 - 3.0          | Nutritional ketosis         | <b>Normal</b>   |
| 3.0 - 5.0          | Starvation ketosis          | <b>Normal</b> for carbohydrate restriction plus exercise or fasting             |
| 5.0 - 10.0         | Abnormally elevated ketones | Almost always <b>abnormal</b> except with prolonged fasting or extreme exercise |
| >10.0              | Ketoacidosis                | <b>Abnormal</b> , medical emergency   |