

Home glucose monitoring makes little difference in type 2 diabetes

Clinical question In patients with type 2 diabetes who are not using insulin does home monitoring of blood glucose improve care?

Bottom line Intensive monitoring of blood glucose in patients with type 2 diabetes not using insulin results in a small decrease in haemoglobin A_{1c} (HbA_{1c}) levels but does not change fasting blood glucose levels. Urine glucose monitoring works just as well. More casual monitoring of blood glucose, such as once a day, has not been studied. There is a strong possibility that the weak study design was largely responsible for the difference seen in the study. Blood glucose monitoring is expensive: at the intense level of monitoring used in some of these studies (six times a day), the cost of the monitoring strips alone can be \$2,000 per year.

Synopsis The researchers conducting this meta-analysis started by searching three databases for randomised controlled studies evaluating blood glucose self-monitoring with typical care in patients with type 2 diabetes who were not using insulin. They did not attempt to find unpublished studies, research that is usually rejected because it does not find a difference. Two authors independently reviewed the studies for inclusion and evaluated the quality of their methodology, and two authors independently extracted the data. The study quality was moderate for four of the studies and high for two of the studies. However, none of the patients included in this analysis were blinded to treatment. Concealed allocation was either not done or not described in any of the studies,

allowing the real possibility that the patients in the blood glucose monitoring groups were different from those in the control groups. They were also highly motivated patients; patients doing the self-monitoring checked blood glucose levels from twice every other day to six times per day, six days per week. The comparison groups in the study either did no self-monitoring or monitored urine glucose. In the five studies that compared blood glucose monitoring with no monitoring, HbA_{1c} levels were nominally but significantly lower in the blood glucose monitoring group (−0.39 per cent; 95 per cent confidence interval −0.56 to −0.21) after approximately six months of follow-up. Blood glucose monitoring did not produce better HbA_{1c} levels than urine glucose monitoring. Fasting blood glucose levels were not different in the two studies that evaluated it and quality of life was not different with blood glucose monitoring in the two studies that evaluated it. In one study of more than 700 patients in which it was monitored, no serious hypoglycaemic episodes occurred in any patient.

Level of evidence 1a (systematic review of randomised controlled trials)

Reference Welschen LM, Bloemendal E, Nijpels G, Dekker JM, Heine RJ, Stalman WA, Bouter LM. Self-monitoring of blood glucose in patients with type 2 diabetes who are not using insulin. *Diabetes Care* 2005;28:1510-17.

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