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ORIGINAL ARTICLE

Effect on Glycemic Control by Short- and Long-Term Use of Continuous Glucose Monitoring in Clinical Practice

Jenny Anderson, M.D.,[1] Stig Attvall, M.D., Ph.D.,[2,3] Lennart Sternemalm, R.N., B.Sc.,[3] Aldina Pivodic, M.Sc.,[4] Martin Fahlén, M.D., Ph.D.,[5] Ragnar Hanås, M.D., Ph.D.,[6] Gunnar Ekeroth, B.Sc.,[4] and Marcus Lind, M.D., Ph.D.[1,2]

Abstract

Background:

In Sweden, patients with diabetes mellitus frequently receive short-term (<3 months) continuous glucose monitoring (CGM) to study glucose patterns or long-term CGM to treat poor glycemic control or severe hypoglycemia. The effects of CGM on glycemic control in clinical practice in relation to indication and duration of use has not been completely studied.

Methods:

Patients with diabetes, among which 99% were diagnosed as type 1, receiving CGM at 10 outpatient clinics in Sweden were studied retrospectively. Long-term use of CGM was defined as ≥3 months use of CGM and short-term as <3 months. A control group matched on start date and date of latest value 3 months after the start was selected for both long- and short-term groups.

Results:

In 34 long-term users of CGM, over a mean follow-up of 1.1 years, the adjusted mean difference of hemoglobin A1c (HbA1c) compared with controls (n = 408) was -0.76 (95% confidence interval -1.17; -0.33, $p < .001$). Long-term users with indications for high HbA1c (n = 15) had a reduction of 1.2% in HbA1c from 10.1 to 8.9% ($p = .003$), whereas patients with hypoglycemia as their indication (n = 16) decreased by 0.3% ($p = .17$). Nonsevere hypoglycemic events decreased in long-term users within the same follow-up period ($p = .004$). Short-term users showed no statistically significant improvement in HbA1c compared with controls at 1.1 years (n = 41), $p = .85$ or at 2.6 years (n = 43), $p = .19$.

Conclusion:

Long-term CGM use was associated with improved glycemic control in clinical practice and a reduction in nonsevere hypoglycemic events, whereas short-term use had no effect on HbA1c. The effect on glycemic control varied by indication.

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Author Affiliations: [1]Department of Medicine, NU-Hospital Organization, Trollhättan, Sweden; [2]Institute of Medicine, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden; [3]Diabetes Section, Sahlgrenska University Hospital, Gothenburg, Sweden; [4]Statistiska Konsultgruppen, Gothenburg, Sweden; [5]Department of Medicine, Kungälvs Hospital, Kungälv, Sweden; and [6]Department of Pediatrics, NU-Hospital Organization, Uddevalla, Sweden

Abbreviations: (CGM) continuous glucose monitoring, (CI) confidence interval, (HbA1c) hemoglobin A1c, (MDI) multiple daily injections, (NGSP) National Glycohemoglobin Standardization Program, (SD) standard deviation, (T1DM) type 1 diabetes mellitus

Keywords: continuous glucose monitoring, hemoglobin A1c, hypoglycemia, indication, long, short

Corresponding Author: Marcus Lind, M.D., Ph.D., Department of Medicine, Uddevalla Hospital, 451 80 Uddevalla, Sweden; email address lind.marcus@telia.com