



# Effect of the Holiday Season in Patients With Diabetes: Glycemia and Lipids Increase Postholiday, but the Effect Is Small and Transient

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January diabetes clinics can leave both patients and clinicians facing a dilemma: Should high HbA<sub>1c</sub> and lipids be treated, or should we blame the holiday festivities and defer any decision to later in the year, when New Year resolutions have had a chance to be effective? This is an important question: If raised risk factors are not transient, delaying treatment could increase future complications; if these celebrations do have a marked transient effect, clinicians treating diabetes may be best reviewing patients after the effects of holiday festivities have subsided.

We assessed the impact of the holiday season on glycemia and lipid profile in 3,212 adults with diabetes recruited to the Diabetes Alliance for Research in England (DARE) study (<http://www.exeter.crf.nihr.ac.uk/node/132>) (89% type 2 diabetes, 96% white British, 60% male). Biochemistry results from January 2000 to January 2012 were exported from local laboratory records (Royal Devon and Exeter Hospital, Exeter, U.K.). We compared the results of the most recent test result in the 31 days after Christmas (26 December to 25 January inclusive) for each patient, if available, with the mean of that participant's results in the preceding and following 6 months (excluding post-Christmas) using paired *t* tests. To determine whether this was simply seasonal (winter) variation, we performed the same analysis comparing within-individual differences between the post-Christmas period and the

preceding and following 2 months. To assess monthly variation across the year, we compared results taken in each month with the mean of available results for the same individual in the 6 months before and after the test date. Again, the most recent result available for each month was used, with a result being eligible if the analyte was assessed in both the stated month and the comparison period.

Measures of glycemia and lipids increased in the 31 days after Christmas compared with an individual's mean for the rest of the year: mean (95% CI) increase in HbA<sub>1c</sub> 3.0 (2.5–3.5) mmol/mol (0.27 [0.23–0.32] %), *P* < 0.0001, *n* = 1,451; random glucose 0.76 (0.42–1.11) mmol/L, *P* < 0.0001, *n* = 647; cholesterol 0.16 (0.08–0.23) mmol/L, *P* < 0.0001, *n* = 622; triglycerides 0.13 (0.03–0.23) mmol/L, *P* = 0.01, *n* = 335. Post-Christmas HbA<sub>1c</sub> and cholesterol were also higher than other winter months (difference +1.8 mmol/mol [0.17%], *P* < 0.001, *n* = 269 and +0.23 mmol/L, *P* < 0.01, *n* = 104, respectively) and showed a greater increase in January than in any other month of the year (Fig. 1). The effect appears to be short-lived, with results in February similar to December and March.

While changes in diet and activity may explain this postholiday increase, the transient difference in results may suggest these changes are not only due to the moderate (but persistent) weight

gain associated with the festive period (1,2). Local climate records suggest this is unlikely to be due to temperature differences, thought to be responsible for much of the seasonal variation seen in these analytes (3–5).

In conclusion, the holiday season is associated with small transient increases in both HbA<sub>1c</sub> and cholesterol. Small increases in risk factors after Christmas may be best retested at a later date, without changing therapy.

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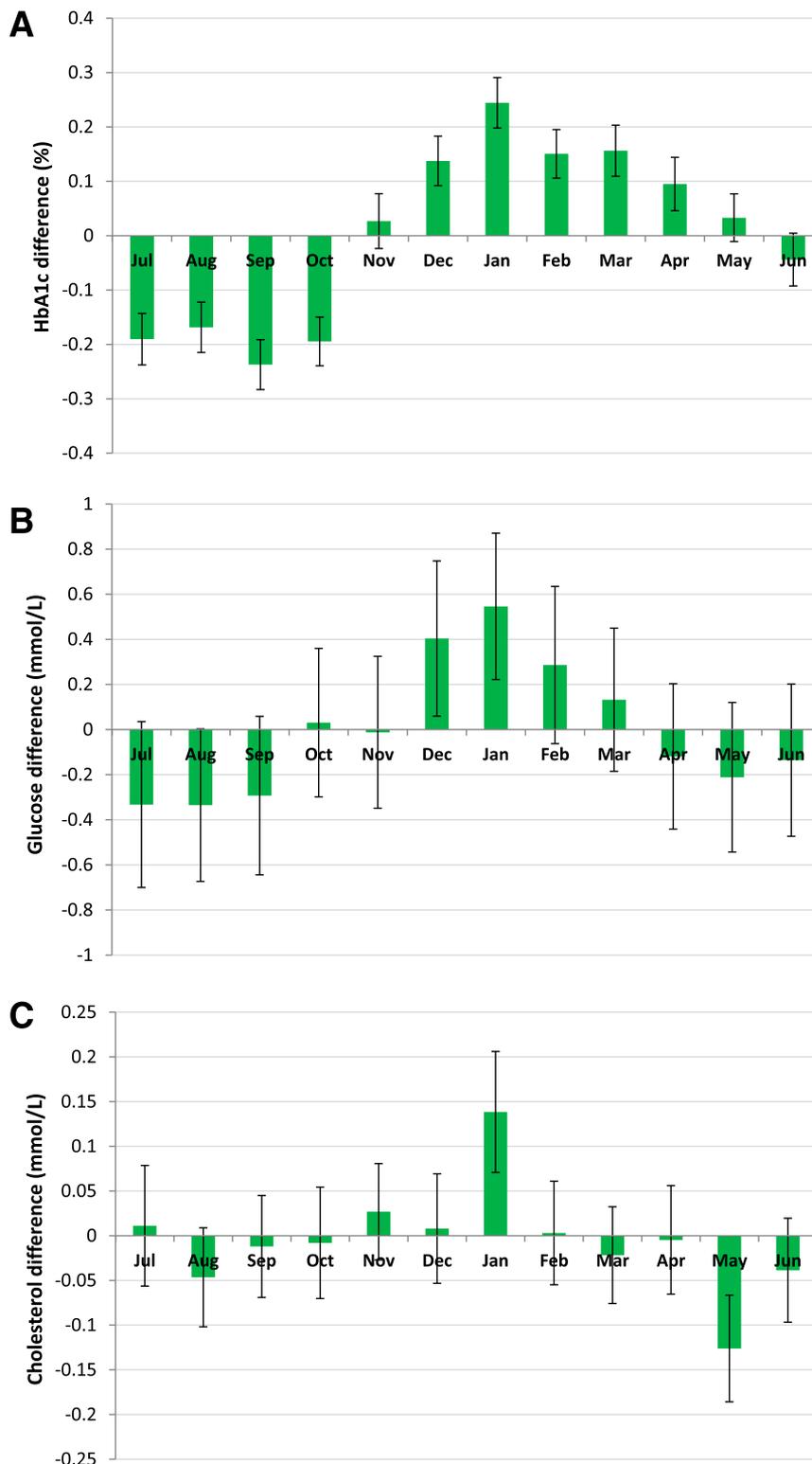
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**Figure 1**—Within-individual variation by month for HbA<sub>1c</sub> (A), glucose (B), and cholesterol (C): Within-person comparison of the result for the stated month with mean of available results (median two results) for the same individual for the rest of the year (preceding/following 6 months excluding stated month). Bars = 95% CI. For HbA<sub>1c</sub>: N = 1,394 (December) to 1,629 (March); for glucose: N = 607 (December) to 779 (March); for cholesterol: N = 599 (December) to 765 (March).

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