

## Seasonal Variation in Hemoglobin A1c: Is It the Same in Both Hemispheres?

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### Abstract

#### *Introduction:*

There are several reports from locations in the northern hemisphere of seasonal variation in hemoglobin A1c (HbA1c) levels with higher values noted in the cooler months. The variation has been attributed to holiday seasons, temperature differences, and changes in diet. This article describes the seasonal variation in both hemispheres and in a country on the equator with minimal temperature variation.

#### *Methods:*

The mean and median HbA1c by month was calculated for a maximum of 2 years for HbA1c data from the different locations: Edmonton and Calgary, Canada; Singapore; Melbourne, Australia; and Marshfield, Wisconsin. The mean monthly temperature for each location was found from available meteorological information.

#### *Results:*

In both northern and southern hemispheres, the HbA1c was higher in cooler months and lower in the warmer months. In Singapore, where there is minimal temperature variation, there is also minimal variation in HbA1c values over the year. The difference in HbA1c over a year appears to be related to the difference in temperature.

#### *Conclusion:*

Hemoglobin A1c is higher in cooler months and lower in the warmer months in both hemispheres. In a country with minimal monthly temperature variation, there is only minimal variation in HbA1c values through the year. In all locations, the mean and median HbA1c declined over the study period, possibly due to better glycemic control of patients with diabetes or an increase in use of HbA1c as a screening test for diabetes or a combination of both.

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