



Mini Review

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Impact of Skipping Hemoglobin A1c Testing During Coronavirus Disease-2019 Pandemic

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To Cite This Article: Harvey W Kaufman MD, Ky Van MS, and Michael McPhaul MD . Impact of Skipping Hemoglobin A1c Testing During Coronavirus Disease-2019 Pandemic. *Am J Biomed Sci & Res.* 2023 18(2) AJBSR.MS.ID.002460, DOI: [10.34297/AJBSR.2023.18.002460](https://doi.org/10.34297/AJBSR.2023.18.002460)

Received: 📅 March 20, 2023; Published: 📅 March 27, 2023

Summary

During the COVID-19 pandemic many patients skipped care. In this study of 2,411,751 patients in the United States, patients who skipped hemoglobin A1c testing in 2020 were adversely affected based on hemoglobin A1c values, compared to patients who did not skip testing in 2020.

Keywords: Hemoglobin A1c, Diabetes, COVID-19, Pandemic, Missed care

Objective

To assess the impact of skipping hemoglobin A1c (HbA1c) testing during the COVID-19 pandemic on glycemic control in patients with diabetes.

Method

We assessed HbA1c results for patients tested at Quest Diagnostics in each of 2017, 2018, and 2019 and subsequently in 2020 only, 2021 only, both 2020 and 2021, or neither 2020 nor 2021. To be included, patients had to have HbA1c result $\geq 6.5\%$ in 2017 or an International Classification of Disease-10 code indicating type 1 or 2 diabetes. For patients with >1 test result in a calendar year, the mean value was used in the analyses. HbA1c results $<4.0\%$ or $>14.0\%$ were analyzed as at these limits. All HbA1c testing was within the limit for certification of methods by the National Glycohemoglobin Standardization Program of $\pm 5.0\%$ [1]. This Quest Diagnostics Health Trends study was deemed exempt by the wcg Institutional Review Board.

Results

The 2,411,751 patients in this study represented all 50 states and District of Columbia, 50.3% were female, and the mean (standard deviation) age was 63.3 (12.3) years. The majority of patients (1,404,773; 58.3%) had testing in 2017-2021; 374,959 (15.5%) were tested in 2017-2020; 178,280 (7.4%) were tested 2017-2019 and 2021 (but not 2020), and 453,739 (18.8%) were tested in 2017-2019 and neither 2020 nor 2021. The mean HbA1c value was relatively consistent among all groups in 2017, 2018, and 2019, with year-to-year shifts within acceptable assay tolerance. The differences in mean values between patients tested in 2017-2020 (four consecutive years) and patients tested 2017-2021 (five consecutive years) were essentially flat throughout the study: 0.05% in 2017, 0.04% in 2018, 0.03% in 2019, and 0.04% in 2020 (Figure 1). In contrast, the difference in HbA1c values between patients tested in 2017-2019 and 2021 but not in 2020 and patients tested in each of the years 2017-2021 (five consecutive years) was 0.16% or approximately 10-fold higher in 2021 than the observed differences between these two groups in the prior years: 0.02% in 2017, -0.01% in 2018, and -0.01% in 2019.

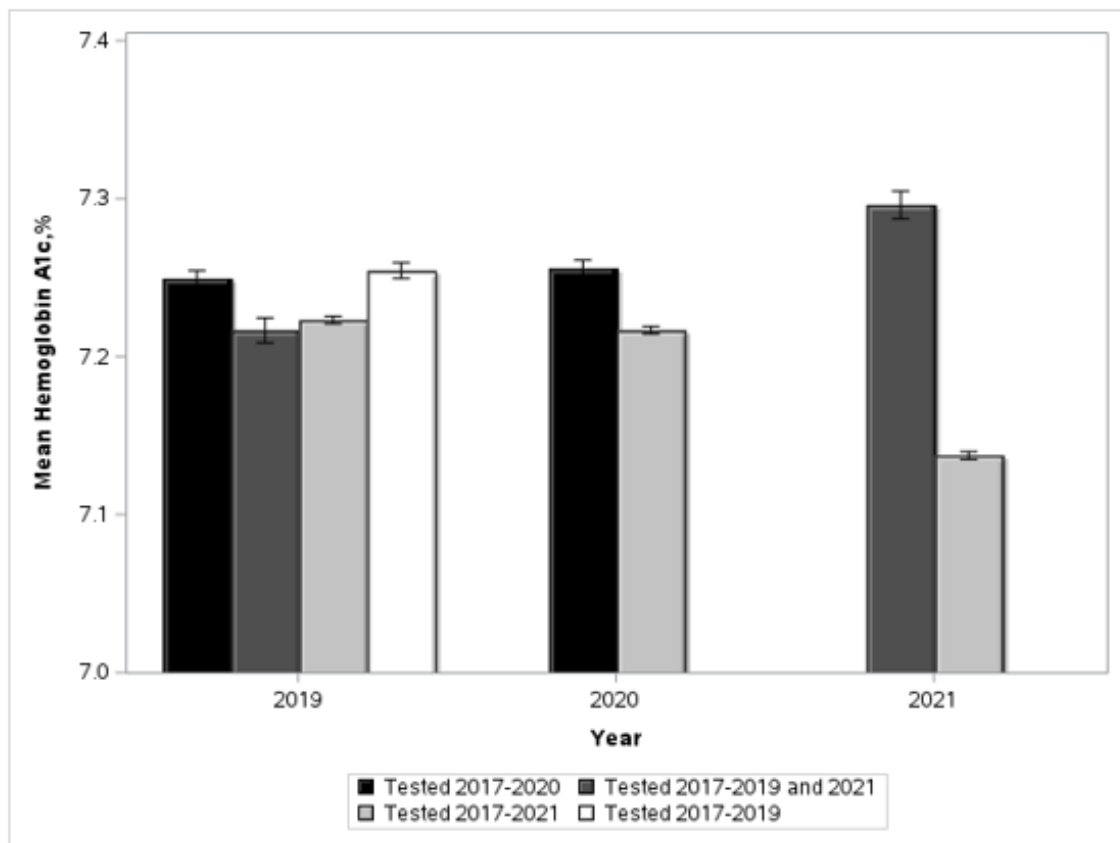


Figure 1: Mean hemoglobin A1c (percent) by calendar year among patients with testing in 2017, 2018, and 2019: and only 2020, only 2021, both 2020 and 2021, or neither 2020 nor 2021.

Discussion

The majority (58.3%) of the 2.4 million patients received testing in all five consecutive years and only 7.4% appear to have skipped testing in 2020. The comparison between these groups suggests skipping testing in 2020 adversely impacted hemoglobin A1c levels. (Of note, 18.8% of patients tested 2017-2019 and not subsequently could have obtained testing elsewhere or skipped testing in 2020 and 2021.) Our study found that patients who missed testing in 2020 but were tested in 2021 had a small increase in mean HbA1c relative to 2019 values, while those tested in both 2020 and 2021 had a small decrease in 2021 relative to 2019. These findings suggest that patients who skipped care in 2020 and received testing in 2021 were adversely impacted.

During the early months of the pandemic, HbA1c testing declined dramatically (by two-thirds in March/April 2020 compared to pre-pandemic) [2]. A meta-analysis evaluating 27 studies from various countries found that lockdowns had no impact on HbA1c values among patients with diabetes [3]. In contrast, our study suggests that patients who skipped care in 2020 were adversely impacted.

Returning to routine monitoring for those who have delayed or skipped healthcare is vital to monitor glycemic control in patients with diabetes.

Acknowledgments

None.

Conflict of Interest

Kaufman Van, and McPhaul are employees of Quest Diagnostics and Kaufman and McPhaul own stock in Quest Diagnostics.

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