Many US adults with controlled type 2 diabetes receive frequent HbA$_{1c}$ testing and possible overtreatment

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Context

Recent clinical guidelines have emphasised that patients with type 2 diabetes should have glycated haemoglobin (HbA$_{1c}$) goals that are tailored to their individual clinical characteristics. Guidelines also recommend that patients with stable glycaemic control who are meeting their glycaemic goals and have no complications of glucose lowering should have less frequent HbA$_{1c}$ testing. The HbA$_{1c}$ reflects the average glucose over about 3 months and thus, at most, the HbA$_{1c}$ should be measured every 3 months. This epidemiologic study examines how frequently HbA$_{1c}$ levels are being tested in patients with type 2 diabetes and the potential clinical implications.

Methods

This was a retrospective epidemiological study of national administrative claims data from commercially insured adults with type 2 diabetes in the USA from 2001–2013. The study included only patients with two consecutive tests showing HbA$_{1c}$<7.0% within 24 months. Patients were followed prospectively for 24 months. The outcomes were HbA$_{1c}$ testing frequency, categorised as guideline recommended (2 tests/year, or 6 months apart), frequent (3–4/year, or 3–6 months apart), and excessive (5/year, or <3 months apart), and changes to treatments after the second HbA$_{1c}$ test. Confounders included age, gender, race/ethnicity, census region, comorbidity, HbA$_{1c}$ value, baseline diabetes treatment, specialties, number of providers and laboratory testing bundling (same tests on same day). The statistical analyses included tests of comparisons, as well as multiple logistic regression that modelled the odds of testing excessively and frequently as well as the odds of treatment changes.

Findings

The study population included 31 545 patients who had a mean age of 58 years and a mean HbA$_{1c}$ of 6.2%. Half of patients received frequent testing (54.5%) and 5.8% had excessive

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testing. In multivariable analysis, odds of frequent or excessive testing (overtesting) compared to guideline recommended testing increased with higher comorbidity (comorbidity index 4: OR for excessive testing (OR) 1.44, 95% CI 1.29 to 1.61, p<0.001), more diabetes drugs (3: OR 1.61, CI 1.51 to 1.85, p<0.001), and involvement of an endocrinologist (OR 1.87, CI 1.75 to 2.00, p<0.001) or nephrologist (OR 1.36, CI 1.23 to 1.52, p<0.001) in the patient's care. Each additional healthcare provider seen by the patient annually was associated with an increased likelihood of overtesting (OR for excessive testing 1.14, CI 1.10 to 1.18, p<0.001). Overtesting was associated with increased likelihood of treatment intensification. The prevalence of overtesting remained stable from 2003–2008 compared with 2001–2002, but fell significantly in 2009–2010 (OR for excessive testing 0.74, CI 0.67 to 0.83, p<0.001).

Commentary

This article suggests that the majority of commercially insured adults with type 2 diabetes in the US receive testing of HbA_{1c} more frequently than is necessary and that this practice leads to overtreatment in some patients. One important caveat to these findings is that the authors' definitions assume that at best a HbA_{1c} should be <7.0%, even though several diabetes organisations still endorse a HbA_{1c} <6.5% for some patients.[1] Interestingly, the rate of excessive testing was actually quite low (6%) and the majority of overtesting was in the frequent category. Because of the high prevalence of frequent testing, it is important to recognise that this level of testing may not be due entirely to providers acting irresponsibility. There are several important drivers of overtesting—the fragmented healthcare system which prevents providers from seeing test results from other providers, busy providers who may bundle HbA_{1c} testing with other laboratories, and patients who may have been trained to view HbA_{1c} as a better marker of their glycaemic control.[2] The down-shifting in HbA_{1c} testing in 2009 may actually be a positive reflection of providers responding appropriately to clinical evidence. In 2008, the Action to Control Cardiovascular Risk in Diabetes study results were published that suggested intensive lowering of hyperglycaemia increased the risk of mortality[3] and, subsequently, the goals of glycaemic control shifted to emphasise higher targets.[4]

Implications for practice

While this study does provide new evidence for the frequency of HbA_{1c} testing and possible overtreatment, this study does not change practice. The study serves as a reminder to health systems and providers to consciously test HbA_{1c} values and not base decisions to test HbA_{1c} values on previously defined, but outdated, routine practice.

Acknowledgments

References

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