

ORIGINAL RESEARCH

Provider Deferred Decisions on Hemoglobin A1c Results: A Report from the Colorado Research Network (CaReNet) and the High Plains Research Network (HPRN)

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Background: Hemoglobin A1c (HbA1c) results are generally reviewed several days after office visits. The clinical decisions on elevated HbA1cs may be complex and are rarely urgent. Providers may elect to defer the decision or its implementation to a future clinical encounter.

Objective: To determine the occurrence rate, predictors, and eventual decision outcomes for HbA1c deferred decisions.

Design: Provider questionnaire completed when HbA1c results from type 2 diabetes patients were reviewed, followed by a chart review on deferred cases 6 months later.

Participants: Providers at 19 Colorado primary care clinics.

Measurements: For HbA1c $\geq 7\%$, whether the decision or its implementation was deferred. In deferred cases, whether a clinical decision was eventually made.

Results: Of the 311 HbA1cs $\geq 7\%$, 31 (10.0%) had deferred decisions. In multivariate analysis, deferred decisions were more likely in African Americans (odds ratio [OR] 4.91, 95% CI 1.81, 13.3) and less likely when the patient's usual provider reviewed the HbA1c (OR 0.40, 95% CI 0.18, 0.90). In the chart review, for deferred cases ($n = 18$), a clinical decision was made in 14 cases, usually at the next clinical encounter. In 4 cases, the HbA1c was never addressed.

Conclusion: Deferred decisions on HbA1c results are infrequent, and usually the HbA1c is eventually addressed. (J Am Board Fam Med 2006;19:20–3.)

Intensive glycemic control, as measured by serum hemoglobin A1c (HbA1c) levels,¹ has been demonstrated in randomized trials to reduce diabetic complications, especially microvascular disease.^{2,3,4} The American Diabetes Association (ADA) HbA1c guideline is the most widely disseminated in the United States.⁵ At the time of this study, the ADA-

recommended target for HbA1c was $\leq 7\%$. Clinical intervention was recommended for HbA1c $\geq 8\%$ and was to be considered for HbA1c between 7% and 8%.

A key factor in achieving glycemic control is the clinician's decision concerning the HbA1c result. In the typical outpatient setting, HbA1c results are obtained by venipuncture at a clinic encounter and reviewed by the provider 1 to 7 days later. In a previous report, we found that primary care providers took action on elevated HbA1c most of the time, and we described provider-reported reasons when no action was taken.⁶

The clinical management of an elevated HbA1c level can involve many factors, including assessment of patient medication and lifestyle adherence, the frequency of hypoglycemic episodes, formulary concerns, the issues in initiating insulin therapy, etc. These considerations may require a lengthy telephone call to the patient or another clinic visit.

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This contrasts with clinical decisions on many other abnormal lab results that are used to monitor chronic disease. For example, in a patient who has hypothyroidism and is on thyroid replacement, an abnormal thyroid-stimulating hormone (TSH) typically can be managed with a short phone call or letter to the patient, because only a simple dosage adjustment is required.

The decision to take action on an abnormal HbA1c result is rarely urgent. One quality assessment tool stated that up to 3 months is reasonable for changing management due to an elevated HbA1c.⁷ Therefore, given the multiple factors that may be involved in HbA1c management decisions, a reasonable option could be to defer the decision or implementation of the decision until the next clinical encounter. We are aware of no previous reports that have investigated deferred clinical decisions on HbA1c or any other lab results.

The purpose of this report is to describe deferred clinical decisions on HbA1c lab results, including the frequency of occurrence, the factors associated with the deferred decisions, and what ultimately happens in these deferred cases.

Methods

A complete description of the survey and data collection methods can be found in a previous report.⁶ In brief, the participants in this study consisted of 88 anonymous providers from 19 primary care clinics in 2 practice-based research networks—the Colorado Research Network (CaReNet) and the High Plains Research Network (HPRN). CaReNet is a largely urban network of practices with a high percentage of underserved patients. HPRN clinics are located in rural and frontier northeast Colorado.

Each provider completed a short questionnaire after reviewing every HbA1c result from adult non-pregnant patients with type 2 diabetes. The questionnaires were administered during a 3- to 6-week period at each clinic between December 2001 and August 2002. For each HbA1c result, providers reported that they either: (1) took action (eg, recommended lifestyle or medication change), (2) did not take action, or (3) deferred the clinical decision or the action. Deferred decision or action was defined as when the provider delayed a decision about an action until the next clinical encounter or when the provider decided to take action but did not plan to implement the intervention until the patient's next clinical encounter.

In cases with an HbA1c value $\geq 7\%$, we conducted univariate and multivariate analyses to identify predictors for deferred cases compared with decisions made and implemented at the time of the initial laboratory result review.

In deferred cases with an HbA1c result $\geq 7\%$, we performed a retrospective chart audit on all available charts 6 months after the HbA1c was obtained. For each case, we determined whether the HbA1c was eventually addressed, and if so, whether or not action was taken.

This study was approved by the Institutional Review Boards overseeing research in the participating clinics.

Results

Of 483 total questionnaires completed, 311 had an HbA1c value $\geq 7\%$. Of these 311 cases, providers took action in 198 cases (63.7%), took no action in 82 (26.4%), and deferred the clinical decision or action in 31 (10.0%). The mean HbA1c on deferred cases was 8.9% compared with 9.2% in non-deferred cases.

Similar findings were obtained in both the univariate and multivariate analyses that compared the 31 deferred cases to the 280 non-deferred cases. The univariate results are presented in Figure 1. African American patients were more likely to be in the deferred group ($n = 7$; 22.6% of the deferred cases) compared with the non-deferred group ($n =$

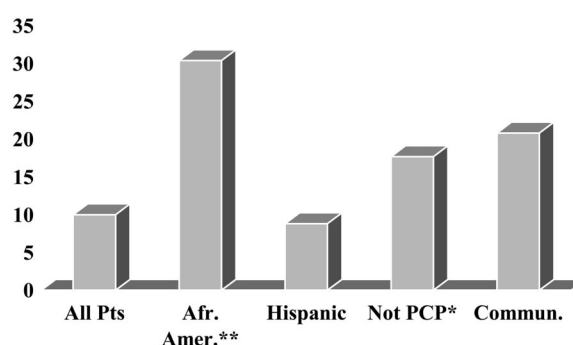


Figure 1. Deferred rate by characteristic univariate analysis. *, $P < .05$; **, $P < .01$; χ^2 with continuity correction; not significant for gender, insurance, A1c level, number of glycemic medicines, number of comorbidities. Afr. Amer., African American; PCP, primary care provider; Commun., there was a communication problem between the provider and patient.

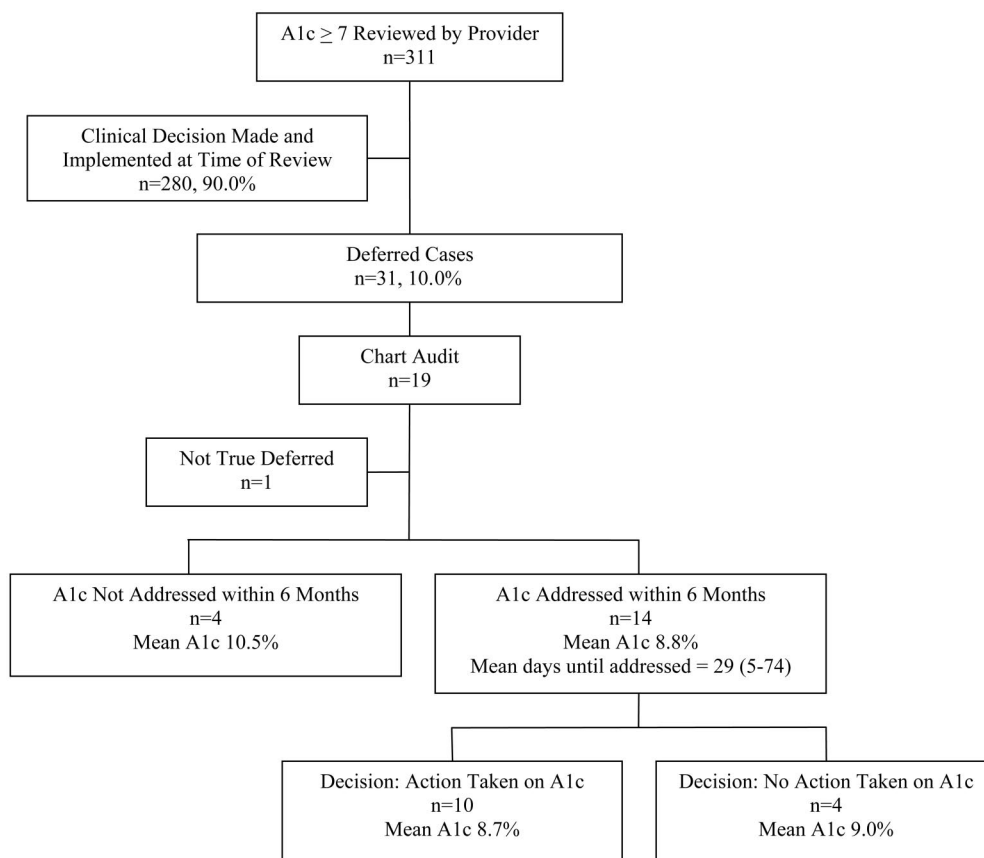


Figure 2. Outcomes for deferred cases.

16; 5.7% of the non-deferred cases), and patients who were *not* seen by their regular provider were more likely to be in the deferred group ($n = 11$; 35.5% of the deferred cases) compared with the non-deferred group ($n = 51$; 18.2% of non-deferred cases). In the logistic regression model, being an African American patient continued to be a significant predictor for being in the deferred group (OR 4.91, 95% CI 1.81, 13.3; $P = .003$), and being a patient seen by his or her regular provider remained a significant predictor that the decision would *not* be deferred (OR 0.40, 95% CI 0.18, 0.90; $P = .028$). No other patient characteristics were statistically significant in the multivariate model.

We were able to perform a chart review on 19 of the 31 deferred cases; in the other 12 cases, the identifying link to the chart was lost. We did not find any significant differences in demographics, insurance, or whether the patient was seen by his or her regular provider, between the 12 missing cases and the 19 that had a chart review.

In the chart review, one of the 19 cases was misclassified as deferred (on chart review, it was

determined that a decision was made at the time of the original laboratory review). Of the remaining 18 cases, 4 HbA1c results (22%) were never addressed. Of the 14 that were addressed, action was taken on 10 (71%) (Figure 2).

Discussion

In this investigation of deferred clinical decisions on elevated HbA1c results in primary care, we found that deferred decision making is uncommon (10% of cases), and in most of these cases (78%), the elevated HbA1c is eventually addressed. The action rate on deferred cases in which a clinical decision is eventually made (71.4%) was similar to the action rate (70.7%) when the clinical decision was made at the time of initial laboratory review.

It is intuitively clear why deferred cases are less likely when the patient's regular provider reviews the results. Other providers less familiar with the patient are less likely to change therapy. Our finding of a greater likelihood of deferred decisions for African American patients is more difficult to un-

derstand. It is interesting that in our previous report, African American patients were less likely to have action taken on elevated HbA1c results,⁶ and others have found racial disparities in diabetes care.^{8–10} However, it is less clear why disparities would be found in deferring a clinical decision. We did not find any disparities for Hispanic patients.

Deferred HbA1c decisions are clinically important because they may expose patients to prolonged periods with inadequate glycemic control, particularly if there is a long interval until the result is addressed or in cases in which the result is never addressed. However, in this study, most deferred decisions were eventually addressed, and the time interval until the clinical decision was implemented was relatively short (mean 29 days). Point-of-service HbA1c testing, which has been demonstrated to improve glycemic control in primary care¹¹ but is not widely used, could eliminate most deferred decisions.

There are several important limitations in this study. First, there may be a Hawthorne effect.¹² Providers may have been more likely to make a decision at the time of the initial HbA1c review because they were completing a questionnaire about their decision, rather than deferring their decision if there had not been a questionnaire. Therefore, the true deferred rate may be higher. Second, the number of deferred cases is relatively small,³¹ and African American patients are a relatively small minority group in these 2 practice-based research networks. Our findings would be best confirmed in a larger sample with a greater proportion of African Americans. Third, there may be provider or practice level effects, but due to sample size concerns, a multilevel analysis was not performed. Fourth, we were unable to perform the chart review on 12 of 31 cases. Even though we did not find significant differences between the 12 cases that were not reviewed and the 19 cases that were reviewed, the data on the eventual outcome in deferred cases should be interpreted with caution. Finally, we did not collect any information on why decisions were deferred, which may have included patient or provider factors.

Deferred clinical decisions on laboratory results have not been previously characterized in the medical literature. In this study, we found that deferred decisions on HbA1c results are relatively uncommon,

and most of these are eventually addressed by providers in a timely fashion.

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