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In setting hemoglobin A_{1c} (HbA_{1c}) targets, physicians must consider individualized risks and benefits of tight glycemic control (1,2) by recognizing that the risk-benefit ratio may become unfavorable in certain patients, including the elderly and/or those with multiple comorbidities (3,4). Customization of treatment goals based on patient characteristics is poorly understood, partly due to insufficient data on physicians' decisions in setting targets. We used the National Health and Nutrition Examination Survey (NHANES) to analyze patient-reported HbA_{1c} targets set by physicians and to test whether targets are correlated with patient characteristics.

Data from the NHANES waves 2005–2006, 2007–2008, 2011–2012, and 2013–2014 (the 2009–2010 wave lacked HbA_{1c} data) comprised 2,641 individuals with self-reported diabetes, of which 1,782 responded to the question, "What does [your doctor] say [your] 'A1C' level should be?" On the basis of the distribution of responses, we analyzed the following targets: <6%, <7%, and higher cutoffs (<8%, 9%, and 10%) combined. Using ordered logistic regression, we assessed the influence of age; sex; race; diabetes duration; comorbidities; BMI; variables on physical, mental, and biological health; and health care utilization. We used NHANES sample weights to calculate population rates of target HbA_{1c} categories across the survey waves. We specified and fit an ordered logistic regression with survey year as a fixed effect to assess whether the covariates influenced target decisions. ANOVA was used to test the differences across the subsamples.

Of 1,782 respondents, 958 (54%) reported a target; others responded that they did not know or that no target was set. Patients in the two unknown target categories were comparable with patients in the known target categories on the majority of variables. Only 4% of our sample reported target HbA_{1c} >7%. Twenty-six percent of those reporting that a target was not set were over the age 75 years, significantly higher than in other target categories ($P < 0.05$). Seventy percent of patients who were not aware of their target HbA_{1c} were nonwhite, which was also significantly higher than in other categories ($P < 0.05$), except for higher cutoffs. Weighted proportions of response categories show that the proportion responding "do not know" consistently declined from 2005 to 2013: 30% (95% CI 22–39) of patients were not aware of their target HbA_{1c} in 2005, compared with 10% (6–14) in 2013. Changes to other response categories were not statistically significant over time.

Figure 1 summarizes the results of regression analysis on patients who reported a target level ($n = 958$). Variables representing demographics (age, sex, race); medical history (comorbidities, BMI, duration of diabetes); biological, physical, and mental health (self-reported health, physical activity, level of disability, memory loss or confusion, health compared with last year); and health service use were not correlated with reported target HbA_{1c}. The odds ratios for independent variables of target HbA_{1c} (except for the fixed-effect variable) were within a narrow range close to unity. Compared with 2005–2006, the odds of physicians in 2013 setting the target one unit lower decreased by 41% (OR 0.58 [95% CI 0.39–0.87]). The overall pattern of null effects remained when age and comorbidity were combined. The proportion of target HbA_{1c} <7% in young and healthy patients (<45 years old with no comorbidities) was 61% (95% CI 49–71), compared with 62% (95% CI 52–72) in those older than 65 years with at least two comorbidities.

Although self-reported HbA_{1c} targets (and awareness of targets) have increased over the past decade, the targets remained very low. Additionally, we did not find any evidence that U.S. physicians systematically consider important patient-specific information when selecting the intensity of glycemic control. Rising targets seen during the

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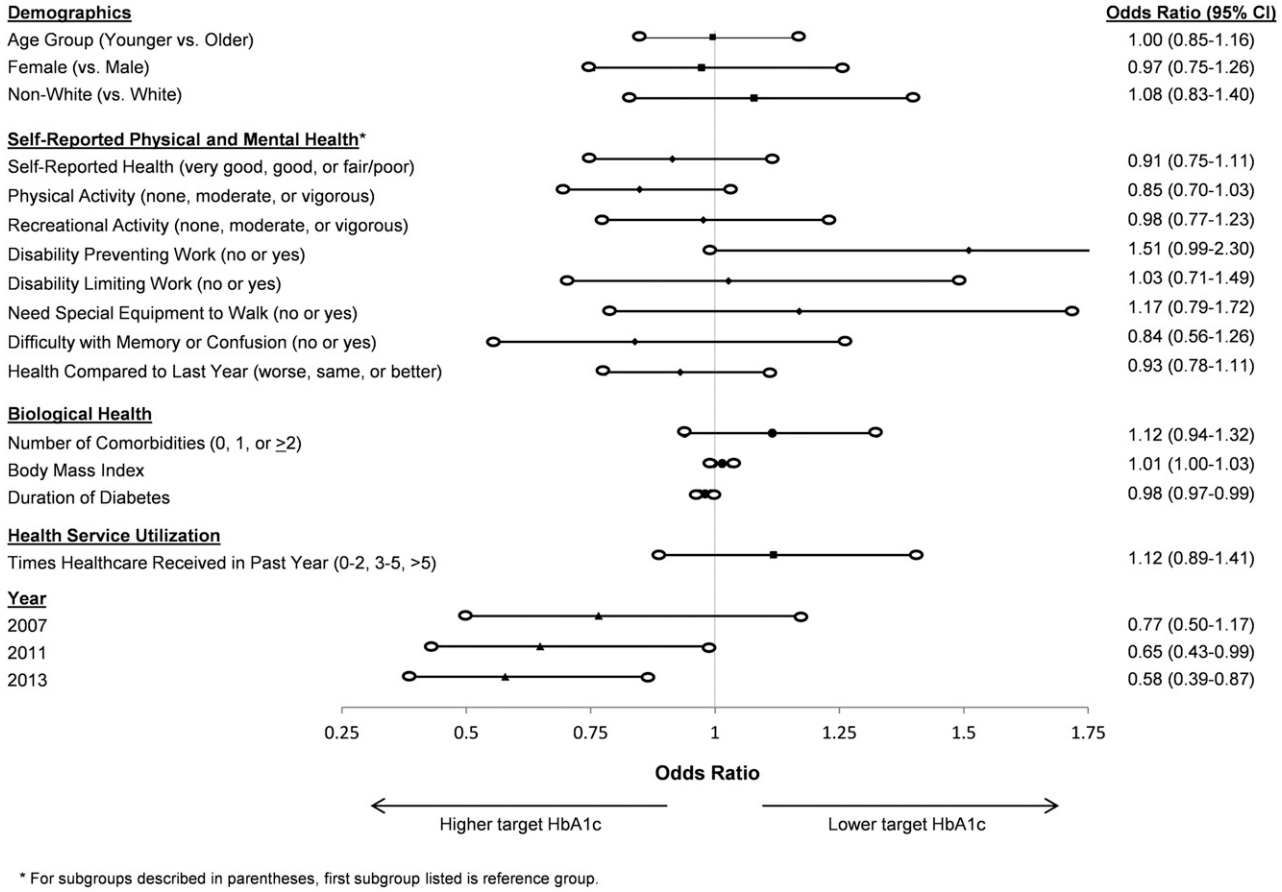

Figure 1—Target HbA_{1c} decision (outcome) and its association with selected patient-level characteristics with potential impact on the outcome. The higher the odds ratio, the more intense the target HbA_{1c}.

study period may reflect gradual adoption of the 2010 American Diabetes Association recommendation to encourage more relaxed HbA_{1c} targets for the elderly (1) and/or changes in quality measures for diabetes control. One parallel explanation is that more contemporary quality metrics permit payers to equally focus on disincentivizing poor HbA_{1c} control (e.g., HbA_{1c} >9%), whereas prior metrics were simple binary targets sensitive only to the proportion of patients achieving tight control (HbA_{1c} <7%) (5). Such emerging incentive models could have influenced target decisions to shy away from intensive control regardless of the patient-level characteristics in recent years. Nevertheless, the lack of variation with patient characteristics suggests overreliance on a general approach, without consideration of individual variation in the risks and benefits (or patient preference) of tight control. As "de-adoption" of tight control in diabetes diffuses into practice, it must be targeted to those in whom it is of low value or harmful.

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