

# Capsule Commentary on Liu et al., Trends in Self-reported Prediabetes and Metformin Use in the United States: NHANES 2005–2014



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This study by Liu et al.<sup>1</sup> examines trends in the prevalence of prediabetes as self-reported by patients, and of treatment of prediabetes with metformin, using a serial cross-sectional analysis of 2005–2014 NHANES data. In their study, they defined prediabetes by self-report of prediabetes, impaired fasting glucose, impaired glucose tolerance, “borderline diabetes,” or a blood sugar higher than normal but not high enough to be called diabetes or sugar diabetes. Their analysis also includes hemoglobin A1c and fasting glucose data. The authors note that 8% and 14% of self-reported prediabetics met diagnostic criteria for diabetes using HbA1c ( $\geq 6.5\%$ ) or FPG ( $\geq 126$  mg/dL). This may be due to progression from prediabetes to diabetes as they note, but likely also illuminates the challenges of communicating with patients about prediabetes and diabetes, which informs how patients may engage with lifestyle modification or use of metformin for prevention of disease progression.

Self-reported prediabetes has increased over time from 5.1 to 7.4% of adults. Use of self-report as a proxy for prediabetes likely significantly underestimates the actual prevalence of clinical prediabetes. We have found that in our HMO population of > 20,000 adults, the prevalence of prediabetes using hemoglobin A1c criteria is twice that of diabetes.<sup>2</sup> Extrapolating from NHANES data of an 8.5% prevalence of type 2 diabetes among US adults, the actual prevalence of prediabetes should be closer to 17% rather than their reported 7.4%.

In order to engage in treatment to prevent diabetes, patients must first be aware that they have prediabetes. However, even

among those patients with self-reported prediabetes, metformin use is low, concentrated in older adults and those who meet laboratory criteria for diabetes. Although the use of metformin in self-reported prediabetics has increased from 2.4% in 2005 to 5.5% in 2014, this study by Liu et al. shows particularly low rates of metformin use among those younger than 60, despite a grade A recommendation by the 2019 American Diabetes Association (ADA) guidelines to consider its use in this population to prevent progression to diabetes,<sup>3</sup> based on the findings of the Diabetes Prevention Program.<sup>4</sup>

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#### Compliance with Ethical Standards:

**Conflict of Interest:** The authors declare that they do not have a conflict of interest.

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