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Age-Based Disparities in Guideline-Recommended Statin Initiation for Primary Prevention Among Statin-Naive Adults

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The Pooled Cohort Equations is guideline-recommended to determine the risk of an initial atherosclerotic cardiovascular disease (ASCVD) event over 10 years, informing the use of statin therapy.[1,2] There may be an age-bias leading to fewer adults <50 years of age receiving appropriate statin therapy compared to older adults with similar risk. We determined age-based disparities in statin initiation for primary prevention of ASCVD in an academic health care system.

We included statin-naive adults 40 to 75 years with an indication for statin therapy by Pooled Cohort Equations–calculated ASCVD risk seen as an outpatient between January 1, 2021 and January 22, 2022. We excluded patients with diabetes, low-density lipoprotein-cholesterol >190 mg/dL, ASCVD, current lipid-lowering therapy, or documented statin-intolerance. We categorized age as 40 to 49, 50 to 64, or 65 to 75 years, and determined statin initiation as a prescription within 90 days of the index encounter. We fit an adjusted logistic regression (model covariates found in Figure 1) to determine the association between age and statin initiation. This study was approved by the University of Utah Institutional Review Board. All analysis was conducted in R v.4.1.3.

Among 7,327 statin-naive adults with a guideline-indication for statin therapy based with an ASCVD risk of >7.5%, 665, 2,840, and 3,822 were 40 to 49, 50 to 64, and 65 to 75 years, respectively. The median ASCVD risk by age was 10.4% (IQR: 8.7%–14.0%), 10.6% (IQR: 8.8%–13.4%), and 14.1% (IQR: 10.4%–19.7%) for adults 40 to 49, 50 to 64, and 65 to 75 years, respectively. Statin initiation among adults with ASCVD risk >7.5% was 9.3%, 13.0%, and 11.3% among adults 40 to 49, 50 to 64, and 65 to 75 years, respectively. Adults with ASCVD risk >20% demonstrated a similar distribution (Figure 1). Adjusted odds ratios (aOR) of statin initiation for adults 50 to 64 years and 65 to 75 years were 1.31 (95% CI: 0.93–1.87; $P = 0.13$) and 1.64 (95% CI: 1.10–2.48; $P = 0.02$) (Figure 1). Among adults with an ASCVD risk >20% (N = 1,173) statin initiation among adults 40 to 49 years (8.1%) was lower than adults 50 to 64 years (21.3%; OR: 2.79; 95% CI: 0.95–9.87; $P = 0.08$) and 65 to

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75 years (18.1%; OR: 3.38; 95% CI: 1.16–11.94; $P = 0.04$) (Figure 1). Statin initiation was less likely among female patients at the >7.5% threshold (aOR: 0.80; 95% CI: 0.65–0.99), particularly those 40 to 49 years (aOR: 0.23; 95% CI: 0.10–0.50). While female patients 50 to 64 years and 65 to 75 years were less likely to receive statin initiation, these differences were not statistically significant (50–64 years; aOR: 0.90; 95% CI: 0.59–1.33; 65–75 years; aOR: 0.87; 95% CI: 0.67–1.13). No difference in statin initiation by sex were seen at the >20% threshold (aOR: 0.64; 95% CI: 0.37–1.06).

In the current report, despite similar 10-year ASCVD risk, statin initiation was substantially lower for adults <50 with ASCVD risk >7.5% and >20% compared to adults 65 to 75 years. Although adults 40 to 75 years are categorized similarly by guidelines, the current report suggests that there may be a bias leading to undertreatment of younger adults, leaving a significant amount of unaddressed ASCVD risk that can accrue over time.

While our analysis included 56 distinct clinics, all patients received care in a single health care system, limiting generalizability. Additionally, as this study was performed at an academic medical center, variation in clinical decision-making between trainees and attendings may influence the overall low use of statin therapy. Further, we did not account for multiple comparisons and thus caution should be applied to interpretation of the current analysis. We cannot comment on patient-clinician conversations which may have impacted treatment decisions or clinic- or clinician-specific behaviors which are unaccounted for in the current analysis. Young female adults were less likely to receive statin therapy and are often not offered indicated statin therapy contributing to undertreatment with ASCVD risk-reducing therapies.[3] Analysis of the Patient and Provider Assessment of Lipid Management Registry demonstrated that women were less likely to be prescribed a statin (67.0% vs 78.4%; $P < 0.01$) and more likely to have never had a clinician offer a statin prescription (18.6% vs 13.5%; $P < 0.01$).[3] Future studies aimed at understanding perceived risk-benefit by clinicians and patients may help to elucidate low rates of statin initiation among adults <50 years.

Statin therapy for primary prevention among adults with 10-year ASCVD risk >7.5% is cost-effective and can reduce ASCVD incidence.[4,5] Adaptation of novel interventions such as integrated electronic medical record tools that calculate ASCVD risk and provide a prescription recommendation, team-based care including pharmacists and care-managers, or patient- and clinician-educational material regarding risk reduction and therapeutic options may help to improve appropriate use of statin therapy. Understanding factors that may lead to underuse of statin therapy for primary prevention for younger adults can help to design interventions to reduce disparities in care and cardiovascular risk.

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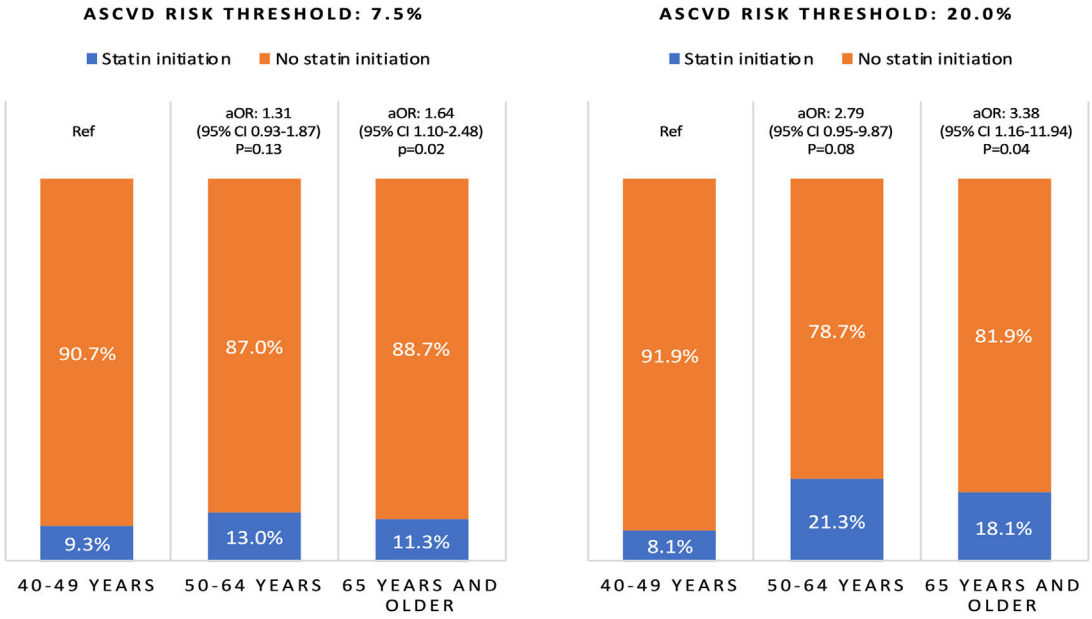

FIGURE 1. Statin Initiation by ASCVD Risk-Threshold by Age

Models adjusted for self-reported sex (male or female), self-reported race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, and American Indian and Alaska Native or Native Hawaiian and other Pacific Islander, or other), number of medications, Charlson Comorbidity Index, insurance type, clinical specialty (cardiology, internal medicine, family medicine, and geriatrics), and new vs established patient status based on a priori clinically-relevant variable selection. aOR = adjusted odds ratio; ASCVD = atherosclerotic cardiovascular disease.