

# PROPENSITY SCORE MATCHING TO DETERMINE THE IMPACT OF METFORMIN ON MORTALITY IN OLDER VETERANS WITH DIABETES

Hermes Florez, MD, PhD, MPH (presenter), Juliana Ferri-Guerra, MD  
Daniela Pirela, MD, Raquel Aparicio-Ugarriza, PhD, and Jorge Ruiz MD



Medical University of South Carolina (COM-DPHS, IFHA/CoA),  
University of Miami (DOM, DPHS), Jackson Health System  
Department of Veterans Affairs (RHJ VAMC, Miami GRECC)



## Background

- Diabetes mellitus (DM) is associated with accelerated aging that increases morbidity and mortality.
- Metformin targets aging-related mechanisms, including inflammation and insulin resistance.
- Metformin may lead to lower risk of overall mortality in middle aged adults with type 2 DM (T2DM) but the evidence is less clear in older adults.

## Material & Methods

- Retrospective comparative cohort study analysis using propensity score matching (PSM) to control for confounding by indication.

New prescriptions from June 30<sup>th</sup>  
2011 to June 30<sup>th</sup> 2014

Followed until June 30<sup>th</sup> 2019

- 352 Community-dwelling Veterans ≥ 65yo with T2DM and new prescriptions for metformin were matched with those with new prescriptions for insulin/ other oral antidiabetic drugs (OAD) using PSM with one-to-one nearest neighbor matching.
- Matching covariates, tolerance level of 0.02: age, gender, race, level of glycemic control, T2DM duration and complications, body mass index (BMI), and frailty.
- Frailty assessment: VA frailty index (30 variables)

## Results

Table 1. Baseline Characteristics

| Characteristics                     | Metformin Use   |                  | TOTAL<br>n = 352 | p    |
|-------------------------------------|-----------------|------------------|------------------|------|
|                                     | NO<br>(n = 176) | YES<br>(n = 176) |                  |      |
| Age, mean (SD)                      | 74.73 (7.52)    | 79.95 (7.17)     | 74.82 (7.36)     | .56  |
| Gender-M, n (%)                     | 172 (97.7)      | 171 (97.1)       | 343 (97.4)       | .20  |
| Caucasian, n (%)                    | 139 (79.0)      | 143 (81.3)       | 290 (80.1)       | .59  |
| Non-Hispanic, n (%)                 | 160 (90.9)      | 154 (87.5)       | 324 (89.5)       | .30  |
| BMI (kg/m <sup>2</sup> ), mean (SD) | 30.55 (6.08)    | 31.03 (5.31)     | 30.22 (5.74)     | .71  |
| End organ Damage                    | 25 (14.2)       | 26 (14.8)        | 53 (14.6)        | .88  |
| Tight Glycemic Control, n (%)       | 85 (48.3)       | 83 (47.2)        | 172 (47.5)       |      |
| Adequate Glycemic Control, n (%)    | 66 (37.5)       | 60 (34.1)        | 130 (35.9)       | 0.49 |
| Poor Glycemic Control, n (%)        | 25 (14.2)       | 33 (18.8)        | 60 (16.6)        |      |
| Frail, n (%)                        | 33 (18.8)       | 35 (19.9)        | 70 (19.3)        | 0.79 |
| Frailty Index, mean (SD)            | .13 (.11)       | .14 (.09)        | .13 (.10)        | 0.09 |

Overall Survival from Initiation of Metformin in T2DM Older Adults

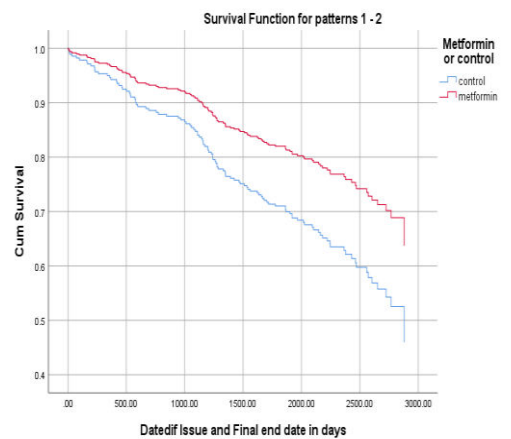


Table 2: Association of Metformin Use with Mortality

| Metformin Use | Adjusted Model Hazard ratio (95% CI) | p value |
|---------------|--------------------------------------|---------|
| No            | 1.0 (Reference)                      |         |
| Yes           | 0.57 (0.39-0.84)                     | 0.005   |

- Median follow-up : 2151 days (IQR=685.75),
- Deaths: 112 (metformin n=43, insulin/ OAD, n=69)
- Data on all-cause mortality was aggregated and the association of metformin vs. insulin/OAD with all-cause mortality was determined using a Cox regression model.

## Conclusion

Metformin is associated with lower mortality risk in older adults with type 2 diabetes