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BACKGROUND

- Diabetes, hypertension, and hyperlipidemia often occur together in older adults which significantly increase the cardiovascular risk.
- Medication adherence is instrumental in decreasing this risk but becomes more challenging given the increased regimen complexity with concomitant triple therapy.
- Medicare STAR metrics are used to evaluate adherence renin-angiotensin system antagonists (RAS), oral antidiabetics (OAD), and statins.
- Understanding patterns of adherence to OAD among diabetes patients with comorbid hypertension and hypercholesterolemia on triple therapy is essential to develop interventions that can improve adherence to OAD.

GROUP-BASED TRAJECTORY MODEL

- Group-based trajectory modeling (GBTM) can graphically display the dynamic nature of adherence behavior patterns
- GBTM uses monthly adherence measures calculated by proportion of days covered (PDC) over the follow-up period to group patients by similarity in adherence characteristics.
- GBTM incorporates monthly PDC values to distinct longitudinal patterns of visualize adherence.

OBJECTIVE

To evaluate adherence to OADs using GBTMs among elderly patients on concomitant triple therapy.

Figure 1. Study Design

| | Baseline | | Identification | | Trajeo | ctory Modeling | |
|---------|----------|------|----------------|----------|-----------------|----------------|----------|
| | | | • | | | | |
| | | | ** | | | | |
| January | | June | Index Date | December | | | December |
| 2016 | | 2016 | | 2016 | | | 2017 |
| | | | | | | |) |
| | | | | | Ŷ | | |
| | | | | | 1 Year Follow-U | p Period | |

Group-Based Trajectory Modeling to Identify Longitudinal Patterns of Adherence to Oral Antidiabetic Medication in Older Adults on Concomitant Triple Therapy (Oral Antidiabetic, RAS Antagonists, Statins)

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METHODS

Design: Longitudinal, retrospective Study cohort study

Data Source: Texas Medicare Advantage Plan: Administrative Claims Data

Inclusion Criteria

- •Patients with overlap of 30 days of triple therapy (OADs, RAS antagonists, and statins), second prescription of each component within the identification period of July 1st, 2016 and December 31st, 2016.
- •Continuous enrollment was required over study period of January 2016 to December 2017

Exclusion Criteria

with a diagnosis •Patients dementia, of angioedema, hyperkalemia, renal artery stenosis, or myopathy in the 6-month baseline period. Patients with prescriptions of insulin

Adherence Measures

- •Monthly adherence of OADs was measured using (PDC) during 12-month follow-up
- •Patients were defined as adherent to OADs if they had a PDC ≥ 0.80 .
- •Monthly PDC of OADs was incorporated into a logistic GBTM to provide distinct patterns of adherence of patients.

STATISTICAL ANALYSIS

•SAS version 9.4. Trajectory modeling uses "Proc • Using model interpretation criterion and Traj" procedure validation protocols, the model with 3 distinct

•2-5 adherence groups were estimated using the second-order polynomial function of time.

•The Bayesian information criterion, clinical relevance, and 5% minimum membership criteria were used for model interpretation

Identifying adherence patterns to ODAs among patients using triple therapy provides insight into validation requires (1) similar estimated Model adherence behaviors and can guide intervention development for the non-adherent group group probability and proportion of members Future studies should investigate patient characteristics associated with nonadherent trajectories to classified to same group according to the maximum develop tailored interventions. probability rule, (2) an average posterior probability Future studies should also investigate adherence patterns to other components of the concomitant (AvePP) > 0.7, (3) odds of correct classification are[•] triple therapy (RAS antagonist and statins) for these high-risk patients > 5 for each group.





Table 1. Model Validation

| Fraj Froup | AvePP* | OCC* | Group Membership | Probability | π– P |
|---------------|--------|--------|---------------------|-------------|-------------|
| 1 | 0.897 | 62.521 | 0.133 | 0.133 | 0 |
| 2 | 0.928 | 24.331 | 0.346 | 0.346 | 0 |
| 3 | 0.893 | 7.344 | 0.531 | 0.531 | 0 |
| | 0 | | | | |

'AvePP: Average Group Posterior Probability: OCC: Odds of Correct Classification *AveP values must be greater than or equal to .7 and OCC values must be greater than 5

RESULTS

7,847 total patients on triple therapy were identified, baseline characteristics in Table 3.

adherence trajectories for OADs was selected which included: gradual decline (12.3%), adherent (34.6%), and near perfectly adherent (53.1%).

• Approximately 12.3% of this high-risk population followed nonadherent trajectory underscoring the need for patient-centered interventions.

CONCLUSION



CMS Risk S **Total numb** other medic **Regimen co**





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Table 2. Bayesian Criteria Calculation and Group **Membership Probabilities for 2-5 Group Trajectories**

| BIC (All data points) | BIC (Number of subjects) | AIC | Log(2ABIC) | Group Membership |
|--------------------------|-----------------------------|-----------|------------|---|
| -25272.75 | -25264.04 | -25239.67 | | 74.69% 25.31% |
| -24959.45 | -24945.78 | -24907.46 | 2.804 | 12.27% 34.61% 53.12% |
| -24876.92 | -24858.28 | -24806.02 | 2.243 | 30.92% 49.49% 2.04% 17.54% |
| -24569.53 | -24545.92 | -24479.73 | 2.796 | 2.01% 27.26% 56.30% 6.08% 8.34% |

*BIC: Bayesian Information Criterion; AIC: Akaike information criterion

Table 3. Baseline Characteristics

| Variables | | Total OAD Patients (7,847) |
|----------------|--|----------------------------|
| | Male | 3728 (47.51%) |
| | Female | 4119 (52.49%) |
| | < 65 | 1021 (13.01%) |
| | 65-69 | 2747 (35.01%) |
| | 70-74 | 2127 (27.11%) |
| | es Tota Male 3 Female 4 < 65 1 $65-69$ 2 $70-74$ 2 >75 1 No Subsidy 4 Low-Income Subsidy 3 0 7 $>/= 1$ 7 No 7 Yes 7 Mean + SD 7 Mean + SD 7 Mean + SD 7 | 1952 (24.88%) |
| | No Subsidy | 4153 (52.92%) |
| | Low-Income Subsidy | 3694 (47.08%) |
| ospitalization | 0 | 7560 (96.34%) |
| ospitalization | 0 >/= 1 | 287 (3.66%) |
| | No | 7826 (99.73%) |
| | Yes | 21 (0.27%) |
| | No | 7589 (96.71%) |
| | Yes | 258 (3.29%) |
| Score* | Mean + SD | $1.30 \pm .78$ |
| er of | | |
| ations | Mean + SD | 6.54 ± 4.21 |
| mplexity | Mean + SD | 21.12 ± 38.81 |
| | | |

*CV: Cardiovascular; *CMS: Center for Medicare and Medicaid Services