

# NEED FOR CASE-MIX ADJUSTMENT IN EVALUATING GEOGRAPHIC DISPARITIES IN MEDICATION ADHERENCE TO ORAL HYPOGLYCEMICS

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## BACKGROUND

- Diabetes affects about 25.8 million people (i.e. 8.3 % of the total population) in the United States<sup>1</sup>
- According to the CDC, the total national estimated cost of diabetes was \$174 billion in the year 2007<sup>1</sup>
- Mississippi has the highest rates of diabetes (8.8%) and obesity (24.3%) in the United States
- There is a strong correlation between lower socio-economic status, poor health outcomes and poor medication adherence in the case of chronic diseases such as diabetes
- Thus, it is important to assess adherence to oral anti-diabetics in a vulnerable population such as Mississippi Medicaid
- Assessing geographic disparities in medication adherence can help pinpoint areas of concern and poor outcomes where potential intervention programs can be implemented

## OBJECTIVES

- To examine adherence to oral hypoglycemics among Mississippi Medicaid beneficiaries and to evaluate the need for case-mix adjustment when examining disparities among counties

## METHODS

### DATA SOURCE

- 2008-2011 Mississippi Medicaid Fee-For-Service administrative claims data

### STUDY POPULATION

Beneficiaries were included in the analysis if they :

- had at least two claims for oral hypoglycemics
- had at least 90 days of therapy
- were at least 18 years old
- were not dual-eligible
- were not in long term care

### STUDY DESIGN

- Medication adherence was measured using Proportion of Days Covered (PDC) with a gap of 60 days being considered a discontinuation of therapy
- PDC was calculated for each drug being taken and an average PDC was computed for each beneficiary weighted for the time on each therapy
- Beneficiaries with a PDC greater than 80% were considered to be compliant to therapy
- Overall comorbidity was measured using the overall RxRisk score
- Percentage of beneficiaries compliant in each county was calculated
- Counties were classified as high, medium and low compliance and plotted on a map of Mississippi to examine geographical variations in compliance

## METHODS

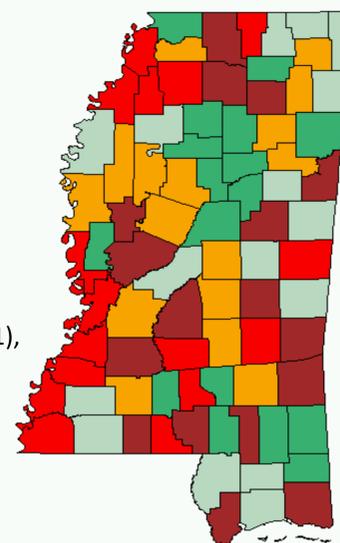
### ANALYSIS

- A multivariable logistic regression model (using PROC LOGISTIC) was used to assess the relationship between compliance and beneficiaries' age, sex, race and comorbidities
- The relationships among county compliance level and beneficiary characteristics associated with compliance were evaluated to determine case-mix confounders that need to be adjusted for in evaluating county level disparities
- All analyses were carried out using SAS version 9.3

## RESULTS

### BASELINE CHARACTERISTICS OF THE BENEFICIAIRES INCLUDED IN THE STUDY

- The study population predominantly consisted of Females (75.93%) and Africa-Americans (60.5%)
- The average age of the sample was 47.42 years ( $\pm$  10.65)
- The average comorbidity burden, in the form of an RxRisk score, was 7.47 ( $\pm$  2.86)
- Percentage of compliant beneficiaries in the counties ranged from 30.0% to 64.28%
- The counties where more than 53.26% of the beneficiaries were found to be compliant were considered to be high performing counties
- The counties where more than 42.19% but less than 53.26% of the beneficiaries were found to be compliant were considered to be medium performing counties
- The counties where less than 42.19% of the beneficiaries were found to be compliant were considered to be low performing counties.
- Counties with the lowest rates were more likely to be in the delta and in more rural parts of the state.
- Beneficiary characteristics related to compliance were gender (OR female to male = 0.921), race (OR African-Americans to Caucasians = 0.623), and RxRisk score (odds ratio for score of 0 vs. 6+ = 0.931).



percent\_compliant ■ 31.8841 - 40.4412 ■ 40.5556 - 44.0510 ■ 44.1379 - 47.5410 ■ 47.5610 - 51.9481 ■ 51.9608 - 65.2174

## RESULTS

TABLE 2. ASSOCIATION BETWEEN COMPLIANCE LEVEL AND BENEFICIARY CASE-MIX

Outcome Measure	Odds Ratio	Wald's 95% Confidence Intervals		p-value
<b>Age years</b>				
18-25	-			
25-35	1.306	0.969	1.758	0.0791
35-45	1.433	1.075	1.910	0.0141
45-55	1.930	1.461	2.551	<0.0001
55-64	2.252	1.702	2.980	<0.0001
<b>Sex</b>				
Male**	-	-	-	
Female	0.921	0.826	1.027	0.1373
<b>Race</b>				
Caucasian**	-			
African American	0.623	0.562	0.691	<0.0001
Other Races	0.786	0.664	0.930	0.0051
<b>Comorbidity Burden</b>				
RxRisk	0.931	0.916	0.947	<0.0001

\*\*Reference Categories

- Race and RxRisk scores were significantly related to county compliance levels

## CONCLUSIONS AND IMPLICATIONS

- As other studies have shown, beneficiary characteristics are strong predictors of compliance.
- Any evaluation of county level disparities in adherence rates must use adjustments for variations in the patient mix among the counties

## REFERENCES

- U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. National diabetes factsheet, 2011. 2011. Retrieved 7/25/2012, from [http://www.cdc.gov/diabetes/pubs/pdf/ndfs\\_2011.pdf](http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf)

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