

Major Depressive Disorder:

An Actuarial Commercial Claim Data Analysis

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Analysis of a National Commercial Claim Database Provides Key Insights for the Management of Adult Population With Major Depressive Disorder (MDD)

Study objectives

- ▶ Examine drug therapy treatment patterns for MDD in a commercially insured adult population (aged 18-64 years)
- ▶ Quantify antidepressant undertreatment (inadequate dosing and/or duration) and ineffective treatment (therapy signifying treatment resistance^a)
- ▶ Assess prevalence of specific comorbid conditions prior to and after MDD diagnosis

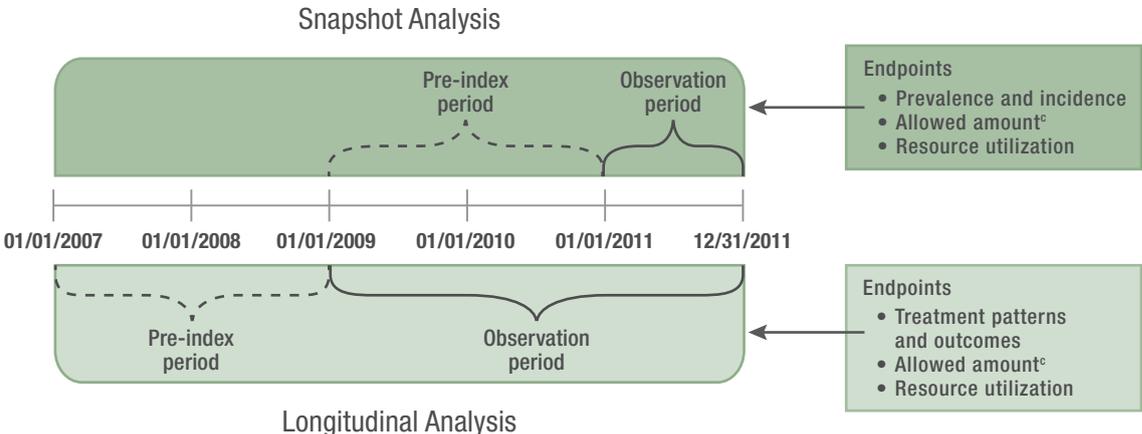
Data source

The analysis is based on the Truven Health MarketScan[®] 2007-2011 commercial claim data, which contains all paid medical and pharmacy claims for 30 million to 50 million lives in each year of data (see methodology for a description of the MarketScan[®] data).

Study design^b

Two distinct analyses were conducted in order to assess annual experience for the MDD population (includes new and existing MDD) and longitudinal experience for newly diagnosed MDD patients.

Figure 1. Study Design



^a For the definition of “treatment resistance,” please see the study methodology in the appendix on page 10.
^b As with any economic or actuarial analysis, it is not possible to capture all factors that may be significant. The findings are based on the national average data and should be interpreted carefully before they are applied to any particular situation.
^c Allowed amount includes the amount paid by a health plan plus patient cost-sharing.

Study population

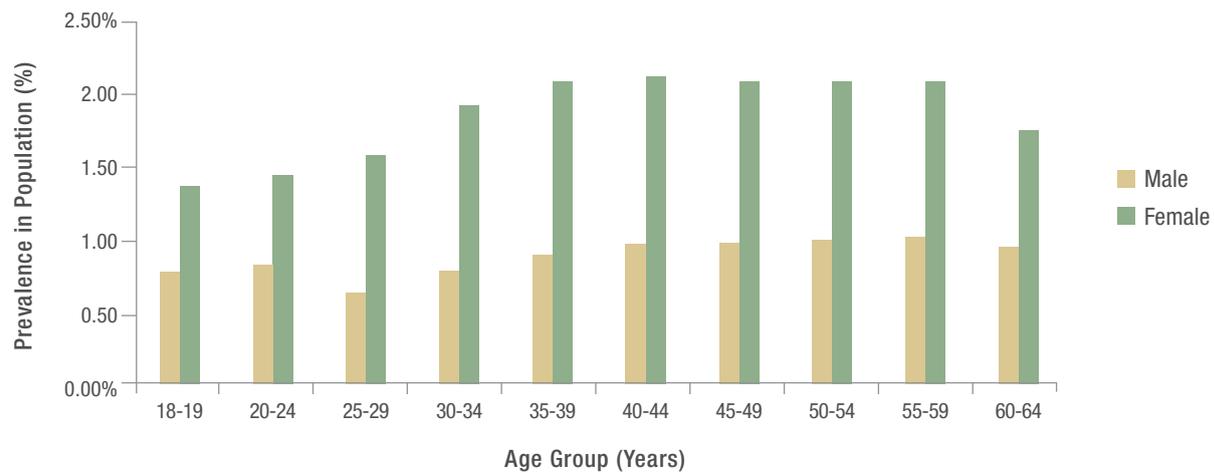
POPULATION	SNAPSHOT ANALYSIS	LONGITUDINAL ANALYSIS
Total MarketScan® sample	52.2 million	43.0 million
Total sample <i>(based on enrollment, benefit, and age restrictions)</i>	9.2 million	4.1 million
MDD population <i>(based on MDD diagnosis criteria and exclusion of confounding conditions)</i>	134,331	19,720

For additional information, please see a detailed description of the study methodology in the appendix on page 10.

The Snapshot Analysis Provides an Overview of the Total MDD Population in a Benefit Reporting Year

Approximately 1.5% of the Commercially-Insured Adults Were Coded With MDD

Figure 2. MDD Prevalence Rate by Age and Gender



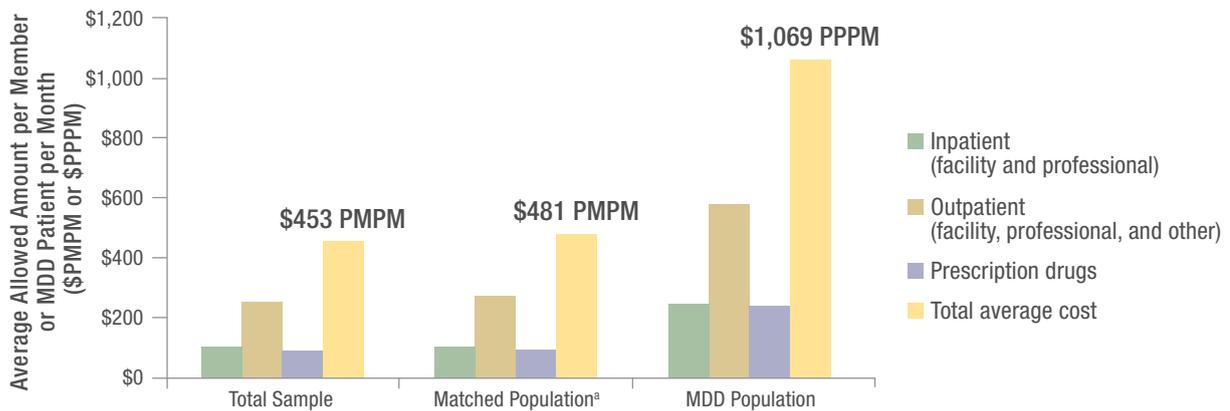
- ▶ This percentage represents a subset of the commercially insured adult population who had 2 separate claims at least 2 weeks apart with a diagnosis code of MDD (296.2x or 296.3x) during a 12-month period in 2011; due to its methodological specificity, it might underestimate actual prevalence of MDD
- ▶ Women had twice the prevalence rate of men

One-Third of Commercially Insured Adults Coded With MDD Were Determined to be Newly Diagnosed in 2011

Thirty-four percent of the MDD patients met the newly diagnosed MDD criteria, defined as those with a claim coded with MDD in 2011 and no claims coded with MDD in the 24 months prior to MDD index date.

MDD Was Associated With Substantial Medical and Pharmacy Costs

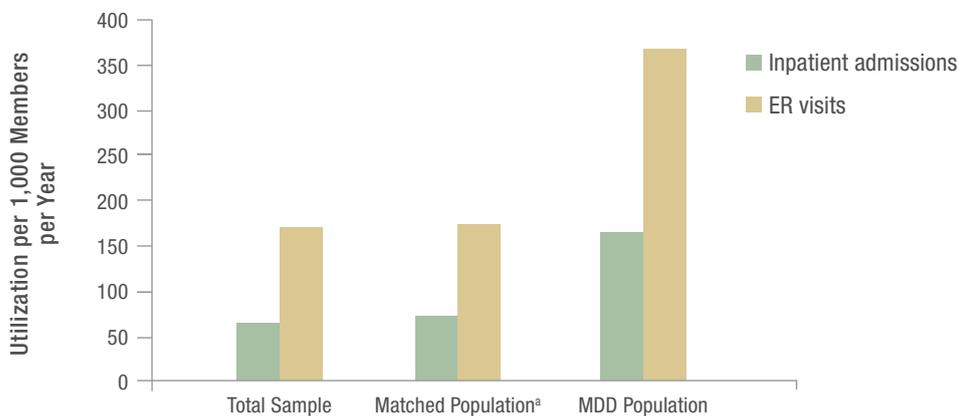
Figure 3. Average Monthly Costs by MDD Diagnosis



- ▶ The total average cost of the MDD population was more than 2 times higher than that of the matched population (\$1,069 vs \$481 PMPM)
- ▶ For the MDD population, outpatient claims represented the largest cost component (~54% of total cost)

Higher Utilization of Medical Services a Key Driver of Incremental Costs in MDD

Figure 4. Average Annual Hospitalizations and ER Visits by MDD Diagnosis



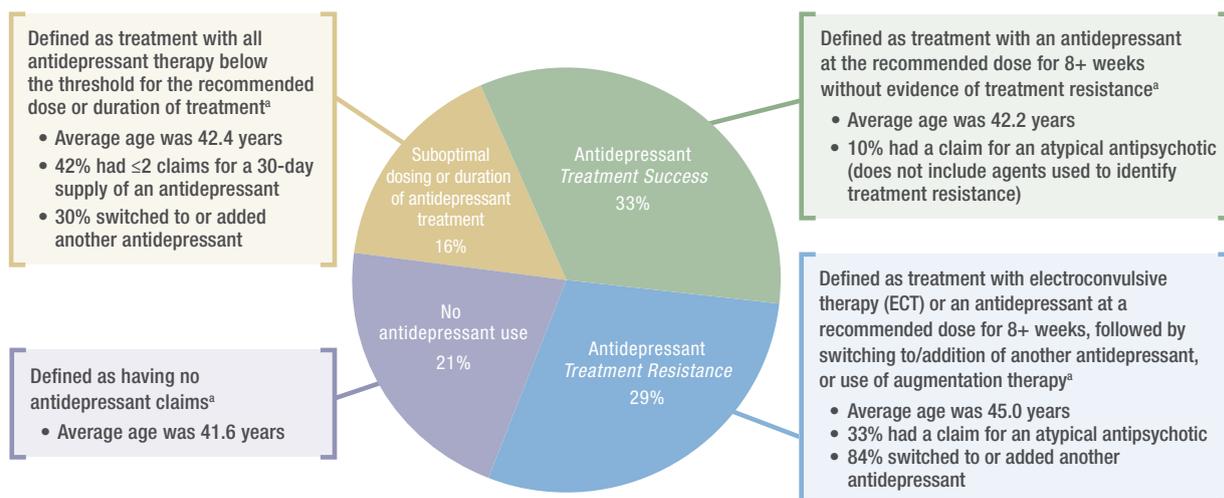
- ▶ The annual rate of hospitalizations and ER visits in the MDD population was more than 2 times higher than that of the matched total population

^a Matched population included the total sample demographically weighted to reflect the MDD population.

The Longitudinal Analysis Evaluated the Experience of Newly Diagnosed MDD Patients During the 24 Months After MDD Index Date

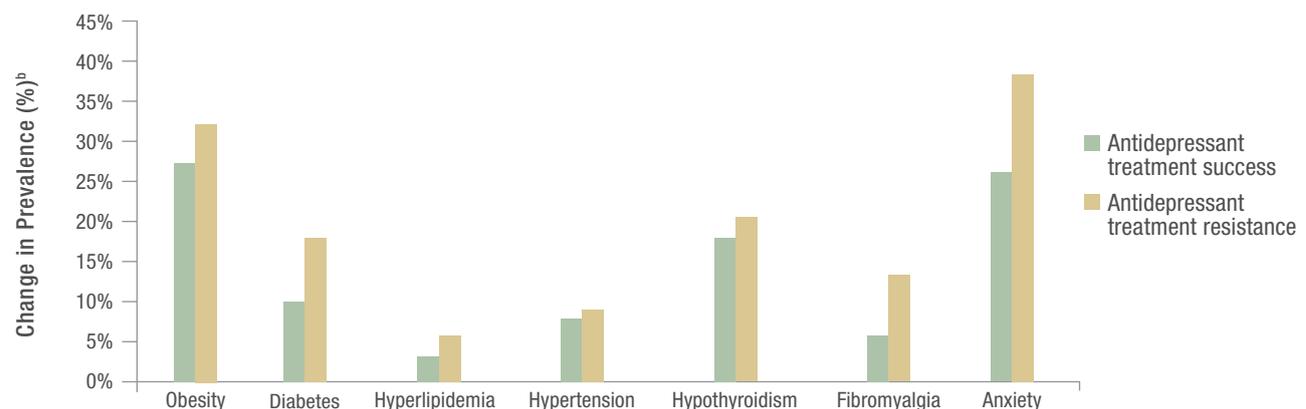
1 in 3 Newly Diagnosed MDD Patients Had Evidence of Antidepressant Therapy Treatment Success

Figure 5. Antidepressant Treatment Patterns Among Newly Diagnosed MDD Patients During the 24-Month Observation Period



Among Patients With an Adequate Antidepressant Dose and Treatment Duration, Prevalence of Cardiometabolic and Other Select Comorbidities Increased After Index MDD Diagnosis

Figure 6. Change in the Prevalence of Select Comorbid Conditions Among Antidepressant Treatment Success and Antidepressant Treatment Resistance Cohorts During the 12 Months Prior to the MDD Index Date Compared With the Annual Rate During the 24 Months Post MDD Index Date



► After the MDD index date, the treatment resistance cohort experienced greater increase in the prevalence of some of these comorbid conditions than the treatment success cohort^c

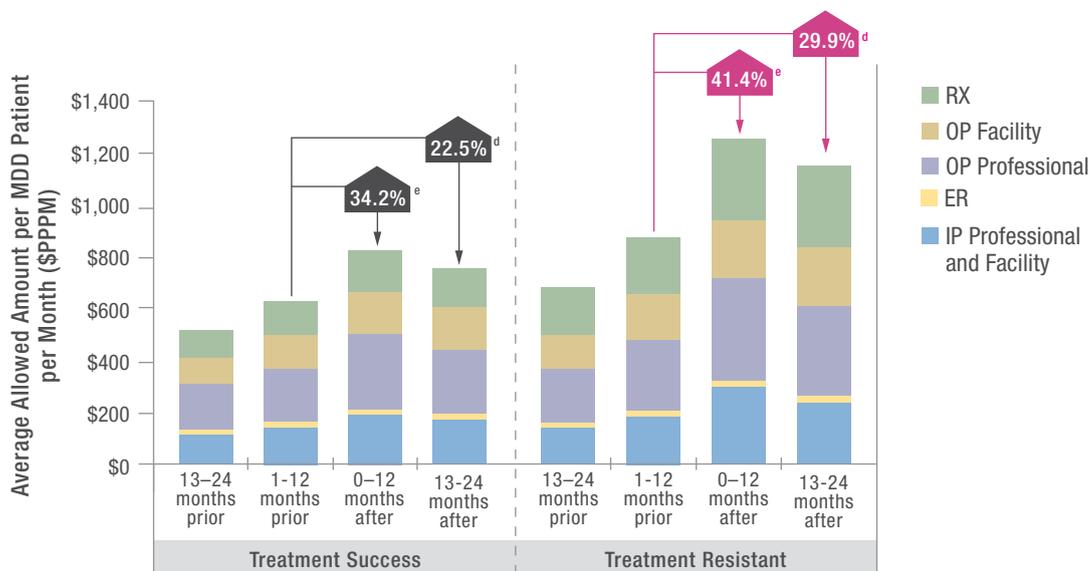
^a For full criteria used to define these cohorts, please see the appendix for a detailed description of the study methodology.

^b During the 12 months prior to the MDD Index date compared with the annual rate during the 24 months after the MDD Index date.

^c The prevalence of the following comorbid conditions was unchanged: eating disorder (anorexia nervosa and bulimia) and irritable bowel syndrome.

During the 13- to 24-Month Period After the MDD Index Date, the Treatment Resistance Cohort Experienced Greater Cost Increases Than the Treatment Success Cohort

Figure 7. Average Monthly Patient Costs Among Antidepressant Treatment Success and Antidepressant Treatment Resistance Cohorts During the 24 Months Prior to and 24 Months After MDD Index Date



- ▶ In each time period after the MDD index date, greater costs were observed in the treatment resistance cohort and the treatment success cohort
- ▶ For both cohorts, medical and pharmacy costs increased in the 12 months prior to the MDD index date and peaked during the 12 months after the MDD index date
- ▶ The trend in the total costs of the treatment resistance cohort between the 12 months prior to and the 13 to 24 months after the MDD index date is significantly higher than the trend for the treatment success cohort

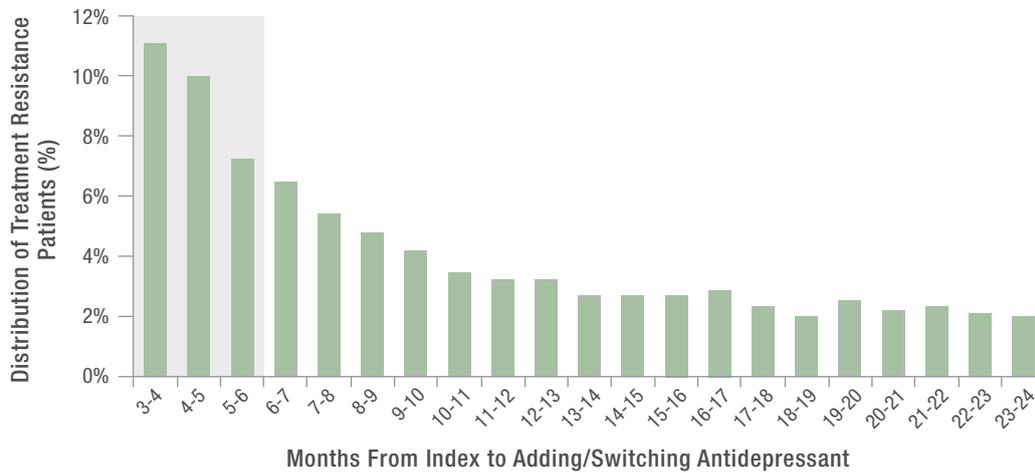
^dTrend in costs for the TR cohort was statistically significantly higher than the TS cohort: $P=0.002$ for comparison of 22.5% and 29.9% cost trends.

^e $P=0.088$ for the comparison of cost trends between the TS cohort (34.2%) and the TR cohort (41.4%).

The Longitudinal Analysis Highlights the Burden of Antidepressant Treatment Resistance Among Newly Diagnosed MDD Patients

More Than 1 in 4 Patients in the Treatment Resistance Cohort Switched or Added Another Antidepressant Within 6 Months of the MDD Index Date

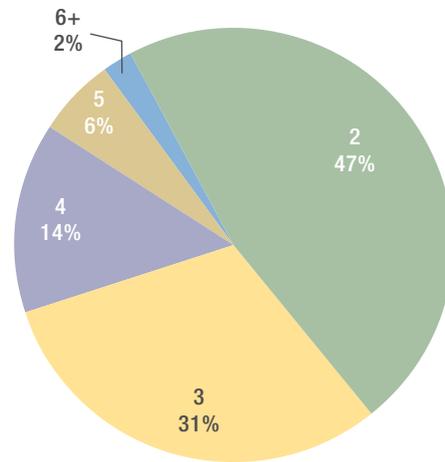
Figure 8. Time to Switching or Adding Another Antidepressant in the Treatment Resistance Cohort



- ▶ On average, patients in the treatment resistance cohort switched or added another antidepressant at 9.2 months

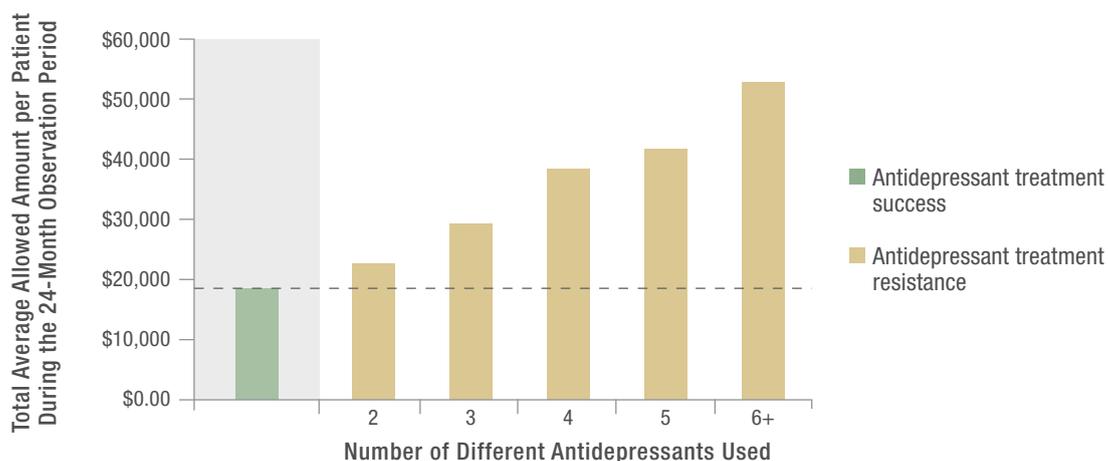
84% of Patients in the Treatment Resistance Cohort Had Claims for at Least Two Different Antidepressants^a

Figure 9. Distribution of the Treatment Resistance Patients With at Least Two Different Antidepressants by the Number of Different Antidepressants Used During the 24-Month Observation Period



During the 24-Month Observation Period, Average Costs Among These Treatment Resistance Patients Increased With Each Additional Different Antidepressant Used

Figure 10. Average 24-Month Member Costs Among Treatment Success and Resistance Cohorts by the Number of Antidepressants Used



- ▶ Patients in the treatment resistance cohort were associated with the highest spending among newly diagnosed MDD patients
- ▶ During the 24-month observation period, an average of \$23,388 to \$52,548 was spent per patient in the treatment resistance cohort (when examined by the number of antidepressants used) vs \$19,029 per patient in the treatment success cohort

^a16% of patients in the treatment resistance cohort were treated with ECT or 1 antidepressant and augmentation therapy for treatment resistance.

Appendix:

Methodology for MarketScan® MDD Analysis

Data Source

Thomson Reuters MarketScan® claims data contains all paid claims generated by approximately 50 million commercially insured lives annually from approximately 100 private sector payers. The MarketScan® database represents the inpatient and outpatient healthcare service use of individuals nationwide who are covered by the benefit plans of large employers, health plans, government and public organizations. The MarketScan® database links paid claims and encounter data to detailed patient information across sites and types of providers, and over time. Member identification codes are consistent from year to year and allow for multiyear longitudinal studies. The database contains ICD-9-CM diagnosis codes; procedure codes and diagnosis-related group (DRG) codes; national drug codes (NDCs); and site of service information and the amounts allowed and paid by commercial insurers. For this study, we used MarketScan® 2007 through 2011. To insure the data was representative of all paid claims for a commercially insured population, we limited the data to that generated by full time employees and their families under age 65, having pharmacy benefits and we removed contributors with capitated services as claims may be incomplete.

MDD Patient Identification Criteria

MDD patients were identified as individuals with two or more claims coded with an MDD ICD-9 code (296.2x or 296.3x) in any position of the claim on separate dates of service (at least 2 weeks apart). inpatient, ER, outpatient, intensive outpatient setting or partial hospitalization claims were claim types used to identify MDD. Patients with the following conditions were excluded as these conditions would be considered to have more primary significance than MDD. An individual was considered to have these conditions if a claim was coded with the ICD9 code in any position of the claim during the observation period: dementia (290.xx), schizophrenia (295.xx), delusional disorder (297.xx), nonorganic psychoses (298.xx), pervasive developmental disorders (299.xx), mental retardation (317.xx-310.xx), cerebral degeneration (331.xx), parkinson's disease (332.x), huntington's chorea (333.4), multiple sclerosis (340), senility without psychosis (797.xx), manic depression or bipolar (296.0, 296.1, 296.5, 296.7, 296.80, 296.82, 296.89).

Categorization of MDD Patients

We categorized all MDD patients into the following cohorts based on their antidepressant drug use.

Antidepressant treatment resistance: For the definition of initial Treatment Resistance we used the ATHF=1 criteria¹ and created claims logic to mimic this questionnaire based definition. The duration of treatment requirements used in these category designations also follow the current 3rd Edition Practice Guidelines for the Treatment of Patients with Major Depressive Disorder, by the American Psychiatric Association (APA).² We used a requirement of 8+ weeks of adequate dose and duration of the same single antidepressant to occur prior to determining Treatment Resistance, although the ATHF considers a minimum duration of adequate dosing to be at a 4+ week threshold. The approach used in our analysis establishes a more conservative designation of initial Treatment Resistance.

Treatment resistance was designated if the following claims were identified:

1 or more claim for Electroconvulsive Therapy (ECT), identified by claims coded with ECT ICD-9 Procedure codes 94.23, 94.24, 94.26, 94.27 or CPT code 90870, during the observation period; or,

Claims for 8+ weeks of a single antidepressant of adequate dose (ATHF treatment resistance dosage definition) followed by:

- ▶ Switch to a distinctly different antidepressant
- ▶ Addition of a distinctly different antidepressant
- ▶ Addition of lithium carbonate drug therapy or claim coded with ICD9 procedure code 94.22 (lithium therapy) or
- ▶ Addition of specific antipsychotics: risperidone, clozapine, quetiapine fumarate, olanzapine, aripiprazole, ziprasidone or
- ▶ Addition of a thyroid supplement.

Antidepressant success: MDD patients who had prescription claims for a single antidepressant for at least 8+ weeks of adequate dose, and did not have a subsequent claim indicating treatment resistance

Suboptimal dosing or duration of antidepressant treatment: MDD patients who had a prescription claim for an antidepressant but below the dose and/or duration threshold of clinical treatment adequacy

No Antidepressant: MDD patients without any claims for an antidepressant

Comorbidities Among MDD Patients

- ▶ Obesity: one or more claims coded with ICD9 278.00, 278.01 in any position of the claim
- ▶ Anxiety Disorder: two or more claims at least 2 weeks apart coded with ICD9 300.xx in any position of the claim
- ▶ Eating Disorder: two or more claims at least 2 weeks apart coded with ICD9 codes in any position of the claim- anorexia nervosa (307.1) bulimia (783.6)
- ▶ Hypothyroidism: two or more claims at least 2 weeks apart coded with ICD9 244.9x in any position of the claim
- ▶ Irritable Bowel Syndrome: two or more claims at least 2 weeks apart coded with 564.1x in any position of the claim
- ▶ Hypertension: two or more claims at least 2 weeks apart coded with ICD9 401.xx in any position of the claim
- ▶ Diabetes: two or more claims at least 2 weeks apart coded with ICD9 250.xx in any position of the claim
- ▶ Hyperlipidemia: two or more claims at least 2 weeks apart coded with ICD9 272.0 through 272.04 in any position of the claim
- ▶ Fibromyalgia: two or more claims at least 2 weeks apart coded with ICD9 729.1x in any position of the claim

¹Sackeim HA. The definition and meaning of treatment-resistant depression. *J Clin Psychiatry*. 2001;62:10-17.

²American Psychiatric Association. Practice guideline for the treatment of patients with major depressive disorder. 2010.

Key Conclusions

- ▶ In the commercial population, the percent of adult members coded with MDD was substantial at 1.54% of members aged 18 to 64 years
- ▶ The cost of members with MDD was more than 2 times higher than the matched population (\$1,069 PPPM vs \$481 PMPM)
- ▶ Only 33% of newly diagnosed MDD patients had claims indicating antidepressant treatment success; 45% experienced antidepressant treatment resistance or suboptimal dosing/treatment duration
- ▶ Newly diagnosed MDD patients with treatment success and treatment resistance exhibited an increase in prevalence of cardiometabolic and other select comorbidities after MDD Index date
- ▶ Newly diagnosed MDD patients with antidepressant treatment resistance had the highest spending of all the MDD cohorts, and costs increased with each different antidepressant used

Implications for Antidepressant Prescription Drug Benefit Design

- ▶ MDD treatment remains challenging for many, despite a broad range of existing antidepressants
- ▶ MDD patients with antidepressant treatment resistance generate higher costs than MDD patients with antidepressant treatment success
- ▶ Treatment resistance, patient tolerability, and prevalent comorbidities are important considerations for the selection of antidepressant formulary agents
- ▶ Examination of antidepressant formulary access and benefit design should be evaluated to support effective antidepressant therapeutic options