



## THE LOUIS DE LA PARTE FLORIDA MENTAL HEALTH INSTITUTE



# **Adherence to American Psychiatric Association (APA) Clinical Practice Guidelines for the Treatment of Major Depressive Disorder Among Medicaid Beneficiaries: Impact on Client Outcomes and Costs**

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# Adherence to American Psychiatric Association (APA) Clinical Practice Guidelines for the Treatment of Major Depressive Disorder Among Medicaid Beneficiaries: Impact on Client Outcomes and Costs

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# Adherence to American Psychiatric Association (APA) Clinical Practice Guidelines for the Treatment of Major Depressive Disorder Among Medicaid Beneficiaries: Impact on Client Outcomes and Costs

## Executive Summary

Research indicates that 80% to 90% of persons with major depressive disorder (MDD) can be successfully treated, yet depression often goes unrecognized or improperly treated. In response to this problem, the American Psychiatric Association (APA) and other national organizations such as the Agency for Healthcare Research and Quality (AHRQ) have developed and disseminated evidenced-based practice (EBP) guidelines to achieve greater consistency and quality in clinical care while reducing costs. However, there has been insufficient research on (a) adherence to approved guidelines, (b) the impact of adherence on patients' clinical status, and (c) resulting Medicaid expenditures for mental health services. The purpose of this study was to investigate whether community-dwelling adult Medicaid recipients with a diagnosis of MDD receive services that adhere to APA clinical practice guidelines. In addition, the study examined factors associated with guideline adherence and the relationship between adherence, recipient outcomes, and Medicaid expenditures. This study was completed at the Louis de la Parte Florida Mental Health Institute (FMHI) at the University of South Florida and was funded by a contract with the Florida Agency for Health Administration (AHCA).

## Key Findings

Study data indicate that only 33% of Medicaid recipients with a diagnosis of MDD received mental health services that conform to APA guidelines. Results show that Black recipients were least likely to receive a diagnosis of MDD. Furthermore, among all recipients diagnosed with MDD, Blacks were least likely to receive an antidepressant medication.

Results show that Black recipients were less likely to receive a diagnosis of MDD. Furthermore, among all recipients diagnosed with MDD, Blacks were least likely to receive an antidepressant medication. Whites, adults older than 65 years, and individuals with dual Medicaid and Medicare enrollments were least likely to receive services that adhere to APA guidelines.

Reasons for nonadherence to APA guidelines included receiving insufficient psychotherapy services, inadequate medication follow-up services, prescriptions above or below the therapeutic range, and non-approved drug combinations.

During this study, Medicaid expenditures for recipients receiving nonadherent services were less than for those receiving adherent care. However, the long-term clinical, quality-of-life, and financial impacts of lower expenditures and service utilization are unknown.

## Conclusions

Study results indicate that nonadherence with APA clinical practice guidelines was the norm rather than the exception. Black recipients were least likely to receive an MDD diagnosis and, once diagnosed, were less likely to receive either antidepressant medication or psychotherapy. Despite the fact that clients with MDD generally express a preference for psychotherapy and some refuse all medication, most recipients with MDD were prescribed antidepressant medication without psychotherapy. Findings suggest a need for Medicaid policies and new statewide practitioner training targeted toward improving access to desired psychotherapy services, provider-client collaboration, and client adherence to recommended treatment. The State of Florida could improve mental health treatment outcomes and decrease costs by reducing known provider, organizational, and client-based barriers to EBP guideline adoption. The potential cost savings realized from an aggressive EBP implementation policy could be significant.

## Background

Depression is the second leading cause of disability in the United States (US), affecting approximately 18.8 million adults at any one time or 9.5% of the population (Cohen-Cole & Kaufman, 1993; Knox, Conwell, & Caine, 2004). It is estimated that depressive disorders cost this country approximately \$43.7 billion annually, with \$7.7 billion in direct treatment costs and \$36 billion in lost productivity (Broadhead, Blazer, & George, 1990; Greenberg, Stiglin, Finkelstein, & Berndt 1993). Major depressive disorder (MDD) also is associated with comorbid medical illnesses, excessive utilization of medical services, and increased suicidal risk (Simon, VonKorff, & Barlow, 1995; Rost, Zhang, & Fortney, 1998). A study by Clark and Horton-Deutsch (1992) estimated that two-thirds of people who eventually commit suicide have a depressive illness, which is often unrecognized and untreated. In addition to the 30,000 Americans who die by suicide each year, 650,000 receive emergency treatment after attempting suicide (Goldsmith, Pellmar, Kleinman, & Bunney, 2002).

In addition, depression is a major risk factor for death related to medical illnesses. For example, after a myocardial infarction, patients with MDD are three times more likely to die within the subsequent year (Frasure-Smith, Lespérance, & Talajic, 1993). Controlling for severity of illness, patients with depression who are admitted to nursing homes are 56% more likely to die within one year (Rovner, German, Brant, Burton, & Folstein, 1991). Finally, patients with depression make extensive and costly use of both inpatient and outpatient medical services. Examining records of patients with recurrent depression, Katon and colleagues (1998) found that more than two-thirds visit primary care physicians at least six times per year for somatic complaints (Katon, Von Kroff, & Lin, 1998).

Research indicates that 80% to 90% of persons with MDD can be successfully treated, yet depression often goes inadequately or improperly treated because of inadequate follow-up nontherapeutic dosing or polypharmacy, or both (Olfson et al., 2002). The large gap between well-researched “best practices” and usual care has encouraged the development and dissemination of evidence-based practice (EBP) guidelines to achieve greater consistency and quality in clinical care while reducing costs (Azocar, Cuffel, Goldman, & McCulloh, 2001; Berto, D’lario, Pruffo, Di Virgilio, & Rizzo, 2000; Wells, Schoenbaum, Unützer, Lagomasino, & Rubenstein, 1999). Currently, the National Guideline Clearinghouse offers access to more than 1,900 EBP guidelines on its website, including 160 for mental disorders (AHRQ, 2006).

Despite easy access to guidelines, implementation and adherence remains limited. Reported rates of adherence to EBP guidelines for MDD range from 19%-42% (Acs, Mayfield, Miller, & Yen, 2006; Wells et al., 1999; Young, Klap, Sherbourne, & Wells, 2001). Implementation barriers for providers include lack of awareness, disagreement with guideline criteria, lack of outcome confidence, provider inertia, and environmental or external barriers. Important patient barriers include lack of access to care, transportation, insurance coverage, and concerns about stigma (Cabana, Rushton, & Rush, 2002). Research is needed on (a) adherence to EBP guidelines within Medicaid populations; and (b) the

impact of adherence on recipients' clinical status, and the cost effect of such "best practice" mental health guidelines (Cabana, et al., 2002; DiMatteo, 2004; Dobscha, Gerrity, Corson, Bahr, & Cuilwik, 2003).

Recent studies in primary care and managed care settings have shown that guideline-adherent clinical practices for MDD improve patient outcomes (Crismon et al., 1999; Melfi et al., 1998; Schneider et al., 2005; Wells et al., 2000). Current data from Washington State indicate that evidence-based treatment of mental health disorders provides about \$3.77 in benefits per treatment dollar (Acs et al., 2006). Acs and colleagues argue that regular use of EBP depression guidelines, including in hospital settings, could increase treatment efficiency and save lives. An important first step toward increasing adherence to EBP guidelines is better understanding of what factors are associated with adherence and nonadherence of guidelines. Such information can be used to reduce unwanted practice variation and improve outcomes of care.

### Study Design and Objectives

The primary objective of this study was to investigate whether community-dwelling adult Medicaid recipients in Florida with a diagnosis of MDD receive services that adhere to APA clinical practice guidelines. These guidelines were selected because they are widely accepted by medical and mental health professionals and offer the clearest guidance for treatment of MDD. This study examined factors associated with adherence to APA guidelines and the relationship between adherence, client outcomes, service use, and Medicaid expenditures. We examined age and racial/ethnic variation in adherence because research suggests that older adults and racial/ethnic minorities are less likely to receive mental health services and expensive second-generation antidepressant medication (Young et al., 2001; Zito, Safer, Zuckerman, Gardnew, & Soeken, 2005).

### Specific Aims

AIM 1: To determine the characteristics of Medicaid recipients diagnosed with MDD.

AIM 2: To examine the relationship between race or ethnicity and receiving treatment services that adhere to APA clinical practice guidelines for MDD.

AIM 3: To examine the relationship between medication class and likelihood of adherence to APA clinical practice guidelines.

AIM 4: To evaluate treatment-related service costs and outcomes, including death rates, service use (e.g., hospitalizations, emergency room treatment, and crisis intervention service), and associated Medicaid expenditures. Treatment that adheres to APA guidelines will be compared with outcomes for nonconforming treatment.

AIM 5: To investigate the relationship between adherence with APA guidelines and the likelihood of having a Baker Act or involuntary psychiatric examination.

AIM 6: To determine predictors of adherence with APA guidelines for MDD.

## Research Methods and Analysis Plan

After obtaining IRB approval, this longitudinal retrospective study used two and a half years (July 1, 2003, through December 31, 2005) of Medicaid eligibility, fee-for-service, pharmacy, Baker Act, and Florida Medicaid date of death data. Age was calculated at entry into the study. We used the Charlson Index to measure and control for physical health status. The Charlson Index is a prospective method for classifying physical health conditions demonstrated to alter the risk of morbidity and mortality. The Charlson Index uses ICD-9-CM physical health codes to classify 19 major physical illnesses into a single weighted severity score. Extensively researched, this instrument reliably measures physical health status in longitudinal studies using administrative data (Charlson, Pompei, Ales, & MacKenzie, 1987; Deyo, Cherkin, & Ciol, 1992; Bravo, Dubois, Hébert, De Wals, & Messier, L, 2002).

We conducted regression analysis to determine the relative importance of predictive factors for adherence to APA clinical practice guidelines. Recipients diagnosed with MDD were identified in the Medicaid data via the following ICD-9 diagnosis codes. Anyone with a co-occurring diagnosis of schizophrenia or bipolar disorder at the beginning of the study was excluded from these analyses.

Major Depressive Disorder Codes Used	Anyone with an ICD-9 diagnosis code beginning with 296.2 MDD-SINGLE or 296.3 MDD-RECURRENT
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All Medicaid-reimbursed services provided during the 18 months after the recipient's diagnosis were examined to determine adherence with APA guidelines. The APA treatment algorithm used to assess adherence was adapted to include only data available in the Medicaid files (see Table 1). Because Medicaid data does not measure patient response to treatment or severity of illness, our analysis is confined to provision of APA-recommended treatment services, including types and doses of antidepressant medication prescribed, psychotherapy, and outpatient follow-up mental health services. The complete APA guidelines for MDD are provided in Appendix 1.

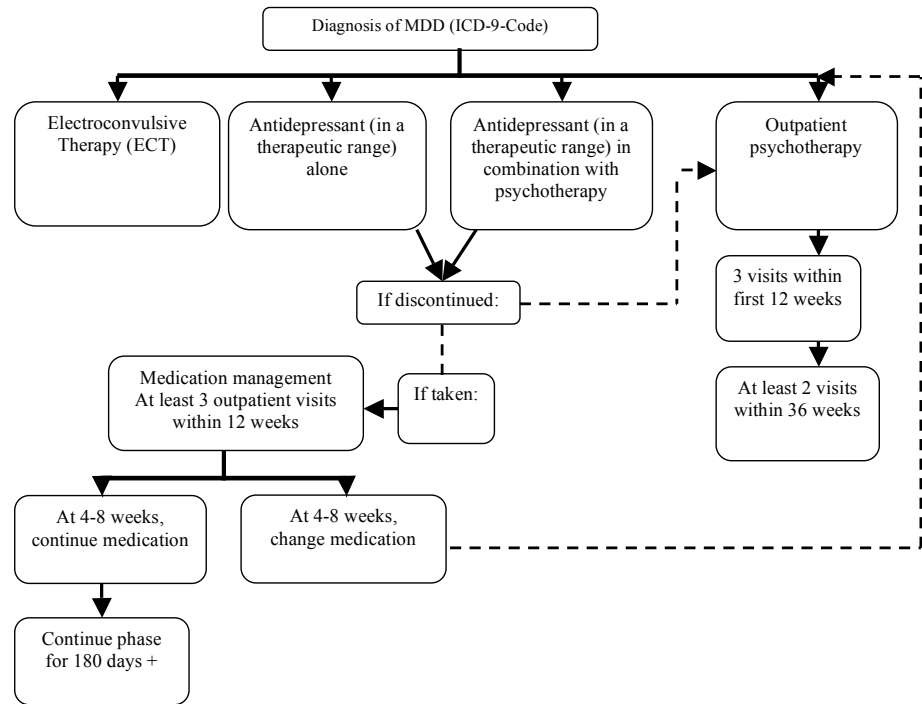
Persons who did not receive antidepressant medications during the first 12 months of the study were evaluated only for adherence to guidelines for treatment with psychotherapy. To be considered adherent to the guidelines for psychotherapy, persons had to have 3 psychotherapy claims within 90 days after their first diagnosis of MDD and 2 additional psychotherapy claims within the next 90 days.

Persons who did receive antidepressant medications were evaluated only for adherence to guidelines for treatment with antidepressant medications. The specific criteria that were considered involved a) dosing below the recommended range, b) dosing above the recommended range, c) polypharmacy, d) non-approved combinations, and e) inadequate monitoring. For dosing below the recommended range, we considered the regimen to be nonadherent if the person received only one antidepressant drug and if the dose was below the recommended range from the APA guidelines. For dosing above the recommended range, we considered the regimen to be nonadherent if a prescription for any antidepressant was at a dose

above the APA recommended range. For polypharmacy, we considered the regimen to be nonadherent if the person had prescriptions for 3 different antidepressants simultaneously for at least 45 days. For non-approved combinations, we considered the regimen to be nonadherent if the person had simultaneous prescriptions for at least 45 days of any of the following combinations: a monoamine oxidase inhibitor (MAOI) with a selective serotonin reuptake inhibitor (SSRI), an SSRI with another SSRI, or an SSRI with a serotonin and norepinephrine reuptake inhibitor (SNRI). For inadequate follow-up, we considered the regimen to be nonadherent if the person had fewer than 3 follow-up visits within the first 90 days after the first antidepressant prescription, or had less than 1 follow-up visit in the subsequent 90 days.

**Table 1**  
**Algorithm for Adherence to APA Clinical Practice Guidelines**

### Sampling Procedures



The sample included all community-dwelling Florida Medicaid recipients who met the following inclusion criteria: (1) 18 years or older at entry into the study, (2) at least one inpatient or two outpatient claims containing ICD-9-CM codes for MDD, and (3) continuous Medicaid enrollment for at least 33 of 36 months after the claim that identified the recipient's diagnosis for MDD. Continuous enrollment was required to permit complete examination of services received. Exclusion criteria included (1) enrollment in a Medicaid managed care plan, (2) living in a nursing home, or (3) diagnosis of schizophrenia or bipolar disorder at the beginning of the study. FY 03-04 was used as the baseline year. Once study participants were identified, service use for 18 months through December 31, 2005, was examined for conformity with APA guidelines.

# Results

## Study Question 1

### Within the Florida Medicaid program, what are the demographic and antidepressant drug use characteristics of persons diagnosed with MDD?

#### Demographics

Table 2a presents demographic and medication characteristics for study participants. During FY 03-04, approximately 4.3% of recipients aged 18 years and older (N = 42,009) had a documented diagnosis of MDD identified in the Medicaid administrative data files. Of these individuals, 15,950 met study inclusion criteria. As found in other studies, the number of recipients diagnosed with MDD increased with age. The smallest cohort was adults between 18 and 34 years old; the largest cohort was persons 65 years and older. Individuals 65 years and older accounted for 28.5% of the study population. Almost half the sample (7,403 recipients) was between 45 and 64 years old. Slightly more than three fourths of the sample was female. Approximately 37.2% were identified as White, 9% as Black, 42.3% as Hispanic, and 11.5% as “Other.” More than half the study sample qualified for both Medicaid and Medicare. Almost two thirds (73%) qualified for SSI, 21% qualified as SSI related, and 6% were on TANIF and other programs.

In FY 03-04, Blacks comprised about 27% of the Florida Medicaid population aged 18 and older. However, the percentage of Blacks diagnosed with MDD was only 9.1%. This finding corresponds to previous research reporting overdiagnosis of schizophrenia and underdiagnosis of depression in African Americans (Baker & Bell, 1999; Becker, Jang, & Kane, 2006; Epstein & Ayanian, 2001; Moy, Dayton, & Clancy, 2005). Even when diagnosed with MDD, Blacks are more likely to be prescribed an antipsychotic than an antidepressant (Becker et al., 2006; Zito et al., 2005). A substantial body of research suggests that disparities in mental health services and outcomes between White and Black patients have not substantially improved during the past two decades (Lurie, 2005; Pi & Simpson, 2005; Sohler, Bromer, Lavelle, Craig, & Mojtabei, 2004).

**Table 2a**  
Sample Demographics by Eligibility Status (N=15,950)

Frequency Row (%) Column (%)	Totals (Dually eligible)	Totals (Medicaid only)	Totals (N)
Age			
18-34	418 26.9% 4.9%	1134 73.1% 15.3%	1552 ----- 9.7%
35-44	967 39.4% 11.3%	1487 60.6% 20.1%	2454 ----- 15.4%
45-54	1542 42.7% 18.1%	2072 57.3% 28.0%	3614 ----- 22.7%

Frequency Row (%) Column (%)	Totals (Dually eligible)	Totals (Medicaid only)	Totals (N)
55-64	1642 43.3% 19.2%	2147 56.7% 29.0%	3789 ---- 23.8%
65 +	3976 87.6% 46.5%	565 12.4% 7.6%	4541 ---- 28.5%
Mean Age	60.7	48.6	55.0
Race			
Black	647 44.7% 7.6%	802 55.4% 10.8%	1449 ---- 9.1%
Hispanic	3416 50.7% 40.0%	3328 49.4% 44.9%	6744 ---- 42.3%
Other	889 48.6% 10.4%	942 51.5% 12.7%	1831 ---- 11.5%
White	3593 60.6% 42.1%	2333 39.4% 31.5%	5926 ---- 37.2%
Sex			
F	6184 51.3% 72.4%	5876 48.7% 79.4%	12060 ---- 75.6%
M	2361 60.7% 27.6%	1529 39.3% 20.7%	3890 ---- 24.4%
Charlson Mean	1.5	1.6	1.5
Total Number and %	8545 53.6%	7405 46.4%	15950 ----

### Antidepressant Medication

Table 2b presents the demographic characteristics of recipients by major medication class. Study data revealed that 91% were prescribed antidepressant medication during the study timeframe. Consistent with prior research, women in this study were more likely to receive antidepressant medication. While men accounted for 24% of the sample, they accounted for 36.6% of those not receiving medication. The data lack a specific measure of symptom severity. However, available diagnostic information showed that men and women had similar rates of recurrent depression.

Black recipients were disproportionately represented in the no antidepressant group. While Blacks comprised 9.0% of the total sample, they comprised 17.3 % of those not receiving medication. This disparity is consistent with recent research on Florida Medicaid pharmacy practice conducted by Becker et al., (2006). That research found Black recipients with a diagnosis of MDD were significantly less likely than Whites or other minorities to have antidepressant medication prescribed. Published literature suggested such disparities decreased during the 1990s; however, current data contradicts this belief (Epstein & Ayanian,

2001; Melfi, Croghan & Hanna, 2000; Schneider et al., 2002). Racial/ethnic disparities also persist in the prescription of newer and more expensive “first line” antidepressant medications (Pi & Simpson, 2005; Sramek & Pi, 1999; Sohler et al., 2004).

Roughly half of our study group was prescribed more than one antidepressant (combination therapy) or switched medications during the study timeframe. Among individuals receiving only one antidepressant, the most commonly prescribed type of antidepressant was an SSRI. Almost two fifths (35.8%) were prescribed an SSRI. A smaller number of participants (428, or 2.8% of the sample) received an SNRI. The least commonly prescribed class of antidepressant was tricyclic antidepressants (TCAs), prescribed for 2.5% of recipients. Other antidepressants prescribed for the study population included bupropion (388 persons), mirtazapine (199 persons), and an MAOI (1 person). Individuals between 35 and 54 years old were the most likely to receive combination therapy or to switch medications. Study findings reflect the current clinical practice pattern within the United States, in which SSRIs have largely replaced TCAs as a “first line” choice because of their improved tolerability and safety profile (Ables & Baughman, 2003). Data in Table 2b present information for only major classes of antidepressants; thus, the sample size is less than 15,590.

**Table 2b**  
**Participant Demographics by Major Medication Classes**

Frequency Row (%) Column (%)	TCAs Only	SSRIs Only	SNRIs Only	Combo/ Switchers	No Medication	Total (N)
Age 18-34	23 1.6% 6.1%	486 33.1% 8.9%	46 3.1% 10.8%	730 49.7% 9.2%	184 12.5% 17.4%	1469 ----- 9.7%
35-44	36 1.5% 9.5%	651 27.9% 12.0%	68 2.9% 15.9%	1418 60.8% 18.0%	158 6.8% 14.9%	2331 ----- 15.3%
45-54	79 2.3% 20.9%	993 28.8% 18.3%	80 2.3% 18.7%	2108 61.2% 26.7%	185 5.4% 17.5%	3445 ----- 22.7%
55-64	92 2.5% 24.3%	1348 37.2% 24.8%	107 3.0% 25.0%	1910 52.7% 24.2%	165 4.6% 15.6%	3622 ----- 23.8%
65 +	148 3.4% 39.2%	1962 45.3% 36.1%	127 2.9% 29.7%	1731 39.9% 21.9%	368 8.5% 34.7%	4336 ----- 28.5%
Mean Age	59.6	57.5	55.7	53.2	54.6	55.0
Race						
Black	36 2.6% 9.5%	439 32.1% 8.1%	38 2.8% 8.9%	672 49.1% 8.5%	183 13.4% 17.3%	1368 ----- 9.0%
Hispanic	143 2.2% 37.8%	2754 42.6% 50.6%	176 2.7% 41.1%	3020 46.7% 38.2%	373 5.8% 35.2%	6466 ----- 42.5%

Frequency Row (%) Column (%)	TCA's Only	SSRIs Only	SNRIs Only	Combo/ Switchers	No Medication	Total (N)
Other	48 2.8% 12.7%	663 38.3% 12.2%	52 3.0% 12.2%	864 49.9% 10.9%	103 6.0% 9.7%	1730 ----- 11.4%
White	151 2.7% 40.0%	1584 28.1% 29.1%	162 2.9% 37.9%	3341 59.3% 42.3%	401 7.1% 37.8%	5639 ----- 37.1%
Sex						
F	290 2.5% 76.7%	4068 35.2% 74.8%	326 2.8% 76.2%	6208 53.7% 78.6%	672 5.8% 63.4%	11564 ----- 76.1%
M	88 2.4% 23.3%	1372 37.7% 25.2%	102 2.8% 23.8%	1689 46.4% 21.4%	388 10.7% 36.6%	3639 ----- 23.9%
Charlson Mean	1.5	1.6	1.5	1.6	1.3	1.5
Dually Eligible	223 2.7% 59.0%	2973 36.5% 54.7%	248 3.0% 57.9%	4090 50.2% 51.8%	621 7.6% 58.6%	8155 ----- 53.6%
Total Number and %	378 2.5%	5440 35.8%	428 2.8%	7897 51.9%	1060 7.0%	15203 -----

## Study Question 2

### What is the relationship between recipient demographic characteristics and adherence to APA guidelines for MDD?

Study findings reveal that nonadherence to the APA guidelines was the norm rather than the exception. Only 33% of the population received services that adhere to APA guidelines. There were 71% of Whites, 80% of the adults older than 65 years, and 81.8% of individuals with dual eligibility who received treatment that did not adhere to the guidelines. Review of recipients' physical health status, as measured by Charlson Index scores, indicates that recipients receiving treatment that was adherent with APA guidelines were in poorer health. It is possible that recipients with poor physical health status are followed more closely, facilitating their adherence with recommended treatment (see Table 3a).

Study data show that, among recipients receiving antidepressant medication, less than half (32.7%) received services that adhered to APA practice guidelines for medication treatment of MDD. Of those recipients receiving no medication, only 4 (0.3%) of the 1,434 persons receiving psychotherapy alone had a sufficient dose of psychotherapy to meet APA guideline criteria. These study findings are of concern but not all that surprising. Previous research on patient adherence with medical treatment has shown that, on average, 25% of patients do not follow the treatments that have been recommended (DeMatteo, 2004). Research on implementing EBP guidelines for antidepressant medication has consistently shown low rates of guideline adherence. For example, Wells and colleagues (1999) surveyed 1,204 patients with MDD receiving care from primary care clinics in

seven different managed care organizations and found that only 35% to 42% of patients with antidepressant medication met AHRQ guideline criteria for antidepressant therapy (Wells, et al., 1999). In a similar fashion, in a study of patients with depression and anxiety disorders in the United States, Young et al. (2001) found that only 19% of patients with depression received treatment that met AHRQ guideline criteria for the disorder.

Research shows that provider and client attitudes toward EBP guidelines are important determinants of adherence. Previous research suggests that if clients are not receptive to EBP guidelines, adherence rates will be low and services will not be cost effective (Pyne et al., 2005). Some physicians disagree with the basic concept of EBP guidelines. Surveys of physician attitudes suggest that some see guidelines as a biased synthesis of evidence and a threat to their autonomy (Cabana et al., 2002). Even if physicians agree with the concept of guidelines, they may disagree with specific aspects of a particular guideline (e.g., dosage range for medication). By understanding underlying barriers to guideline adherence and specific client and provider factors associated with nonadherence, we can develop effective interventions to improve both guideline implementation and client outcomes of care.

**Table 3a**  
**Demographic Characteristics of Recipients by Adherence Status**

Frequency Row (%) Column (%)	Medication Adherence YES	Medication Adherence NO	Psychotherapy Adherence YES	Psychotherapy Adherence NO	Total Number & %
Age					
18-34	547 35.2% 10.5%	778 50.1% 8.4%	0 0% 0%	227 14.6% 15.9%	1552 ---- 9.7%
35-44	903 36.8% 17.3%	1334 54.4% 14.3%	1 .04% 25.0%	216 8.8% 15.1%	2454 ---- 15.4%
45-54	1362 37.7% 26.1%	1979 54.8% 21.2%	1 .03% 25.0%	272 7.5% 19.0%	3614 ---- 22.7%
55-64	1522 40.2% 29.1%	2015 53.2% 21.7%	1 .03% 25.0%	251 6.6% 17.6%	3789 ---- 23.8%
65 +	881 19.4% 16.9%	3195 70.4% 34.4%	1 .02% 25.0%	464 10.2% 32.5%	4541 ---- 28.5%
Mean Age (SD)	52.4 (13.7)	56.6 (15.4)	55.0 (11.9)	54.4 (18.2)	55.0 (15.3)
Race					
Black	447 30.8% 8.6%	758 52.3% 8.2%	1 .07% 25.0%	243 16.8% 17.0%	1449 ---- 9.1%

Frequency Row (%) Column (%)	Medication Adherence YES	Medication Adherence NO	Psychotherapy Adherence YES	Psychotherapy Adherence NO	Total Number & %
Hispanic	2424 35.9% 46.5%	3777 56.1% 40.6%	1 .01% 25.0%	542 8.0% 37.9%	6744 ---- 42.3%
Other	622 34.0% 11.9%	1071 58.5% 11.5%	0 0 0	138 7.5% 9.7%	1831 ---- 11.5%
White	1722 29.1% 33.0%	3695 62.4% 39.7%	2 .03% 50.0%	507 8.6% 35.5%	5926 ---- 37.2%
Sex					
F	4101 34.0% 78.6%	7023 58.2% 75.5%	2 .02% 50.0%	934 7.7% 65.3%	12060 ---- 75.6%
M	1114 28.6% 21.4%	2278 58.6% 24.5%	2 .05% 50.0%	496 12.8% 34.7%	3890 ---- 24.4%
Charlson Index	1.7	1.5	1.25	1.4	1.5
Dually Eligible	1555 18.2% 29.8%	6197 72.5% 66.6%	1 .01% 25%	792 9.3% 55.4%	8545 ---- 53.6%
Total Number and %	5215 32.7%	9301 58.3%	4 0.3%	1430 99.7%	15950 ----

### Study Question 3

#### What is the relationship between medications prescribed and adherence to APA clinical practice guidelines?

Table 3b compares adherence patterns and time on medication for recipients receiving the major classes of antidepressant medication. Data indicate that recipients on combination antidepressants were most likely to receive treatment adherent with APA guidelines, and recipients receiving TCAs were most likely to receive treatment nonadherent with those guidelines. The high percentage (82.8%) of nonadherent treatment provided to recipients who were prescribed TCAs was due, in part, to inadequate dosage or dosage designated as below the therapeutic range for the treatment of MDD. Although all persons in this study had a diagnosis of MDD, it is possible that the TCA prescribed was being used to treat something other than the recipient's depressive disorder (e.g., migraine headache). Given the limitations of administrative data, we cannot determine the intent of the physician prescribing the medication; we can only determine the specific medication and dosage that the physician prescribes. Nonetheless, those recipients receiving TCAs alone were not receiving any other medication for depression. It is noteworthy that most recipients remained on their antidepressant medication for more than a year regardless of the dosage or adherence of the treatment to APA guidelines.

**Table 3b**  
**Major Medications Prescribed by Adherence Status APA Clinical Practice Guidelines**

Frequency Row (%) Column (%)	Patients With Adherence	Mean Total Time (Months)	Patients Without Adherence	Mean Total Time (Months)	Number & Sample
TCAs only	61 17.2% 1.2%	15.9	294 82.8% 3.2%	14.1	355 ----- 2.6%
SSRIs only	1766 33.7% 33.9%	13.3	3480 66.3% 37.4%	12.2	5246 ---- 38.0%
SNRIs only	137 33.3% 2.6%	14.0	274 66.7% 3.0%	12.9	411 ---- 3.0%
Combination	3016 38.7% 57.8%	14.1	4783 61.33% 51.4%	14.4	7799 ---- 56.5%
Total Number and %	4980 36.1% ----	13.8	8831 63.9% ----	13.4	13811 ---- ----

### Study Question 4

#### What is the relationship between demographic characteristics and the reason for nonadherence to APA guidelines?

Table 3c shows the relationship between demographic characteristics and the reason for nonadherence to APA clinical practice guidelines for MDD. In this study, inadequate monitoring was the most common reason for nonadherence to guidelines. Of the 14,516 recipients evaluated for their medication regimen, most (63.9%) did not meet APA guideline criteria for adequate monitoring. After inadequate monitoring, medication dosage below or above the recommended range was the second most frequent reason for treatment nonadherence. By age, the most likely recipients to receive below-guideline dosages were young adults (30.2%) and older adults (24.7%), with middle aged adults being least likely to receive below-guideline dosages (15.1%). For Black recipients, 22.6% received doses below the guideline level, and 26.3% of Hispanics received below-guideline dosages.

**Table 3c**  
**Demographics by Reason for Nonadherence to APA Clinical Practice**  
**For Recipients Receiving Antidepressant Medication**

Frequency Row (%) Column (%)	Below Dosing Range	Above Dosing Range	Polypharm (3 or more antidepress)	Non approved Combo	Inadequate Monitoring	Number & % of Total Sample
Age						
18-34	293 22.1% 11.6%	143 10.8% 7.4%	32 2.4% 7.5%	27 2.0% 6.4%	476 35.9% 7.2%	1325 ----- 9.1%
35-44	317 14.2% 12.6%	373 16.7% 19.4%	89 4.0% 20.9%	76 3.4% 18.0%	842 49.2% 12.7%	2237 ----- 15.4%
45-54	382 11.4% 15.2%	610 18.3% 31.7%	167 5.0% 39.3%	113 3.4% 26.7%	1285 49.6% 19.3%	3341 ----- 23.0%

Frequency Row (%) Column (%)	Below Dosing Range	Above Dosing Range	Polypharm (3 or more antidepress)	Non approved Combo	Inadequate Monitoring	Number & % of Total Sample
55-64	494 14.0% 19.6%	478 13.5% 24.8%	90 2.5% 21.2%	108 3.1% 25.5%	1326 52.6% 20.0%	3537 ----- 24.4%
65 +	1033 25.3% 41.0%	320 7.9% 16.6%	47 1.2% 11.1%	99 2.4% 23.4%	2671 63.2% 40.7%	4076 ----- 28.1%
Race						
Black	272 22.6% 10.8%	104 8.6% 5.4%	32 2.6% 7.5%	25 2.1% 5.9%	521 43.2% 7.9%	1205 ----- 8.3%
Hispanic	1246 26.3% 49.5%	648 13.7% 33.7%	99 2.1% 23.3%	157 3.3% 37.1%	2622 54.6% 39.8%	6201 ----- 40.2%
Other	302 22.6% 12.0%	226 16.9% 11.8%	36 2.7% 8.5%	42 3.1% 9.9%	738 54.7% 11.2%	1693 ----- 11.3%
White	699 14.6% 27.8%	946 19.8% 49.2%	258 5.4% 60.7%	199 4.2% 47.0%	2719 56.1% 41.3%	5417 ----- 40.6%
Mean Age	57.7	52.3	50.4	54.3	58.4	55.0
Sex						
F	1888 17.0% 75.0%	1489 13.4% 77.4%	332 3.0% 78.1%	334 3.0% 79.0%	4902 44.1% 74.3%	11124 ----- 76.6%
M	631 18.6% 25.1%	435 12.8% 22.6%	93 2.7% 21.9%	89 2.6% 21.0%	1698 50.1% 25.7%	3392 ----- 23.4%
Other Characteristics						
Charlson Index	1.6	1.5	1.5	1.7	1.4	1.5
Dual Eligibility	1366 17.6% 54.2%	1087 14.0% 56.5%	251 3.2% 59.1%	237 3.1% 56.0%	5274 68.0% 79.9%	7752 ----- 53.4%
Total Number and %	2519 17.4%	1924 13.3%	425 2.9%	423 2.9%	6502 45.5%	14516 100%

## Study Question 5

### What is the relationship between medication class and the reason for nonadherence to APA guidelines?

As shown in table 3d, the reasons for nonadherent treatment varied by medication class. For recipients receiving TCA medication, the most common reason for nonadherence to guidelines was dosage below the recommended therapeutic range. Among recipients receiving SSRIs, SNRIs, or combination antidepressant medication, inadequate monitoring was the most frequent cause of nonadherence. Perhaps because of a general agreement among physicians that antidepressant polypharmacy or prescription of three or more antidepressant medications at one time should be avoided, only a small percentage (3.1%)

of recipients received non-approved combinations (e.g., MAOI and SSRI) or multiple antidepressants at the same time (see Table 3d).

**Table 3d**  
**Treatment Type by Reason for Nonadherence to APA Guidelines**

Frequency Row (%) Column (%)	Below Dosing Range	Above Dosing Range	Polypharm (3 or more antidepress)	Non approved Combo	Inadequate Monitoring	Number & % of Total Sample
TCA's only	224 63.1% 8.9%	8 2.3% 0.4%	0 0.0% 0.0%	197 55.5% 3.0%	0 0.0% 0.0%	355 ----- 2.6%
SSRIs only	1405 26.8% 55.8%	391 7.5% 20.3%	1 0.0% 0.2%	2504 47.7% 37.9%	82 1.9% 19.4%	5246 ----- 38.0%
SNRIs only	111 27.0% 4.4%	5 1.2% 0.3%	0 0.0% 0.0%	213 51.8 3.2	0 0.0% 0.0%	411 ----- 3.0%
Combos	625 8.0% 24.8%	1420 18.2% 73.8%	424 5.4% 99.8%	3344 42.9 50.7	341 4.4% 80.6%	7799 ----- 56.5%
Total Number and %	2365 17.1% ----	1824 13.2% ----	425 3.1% ----	6258 45.3% ----	423 3.1% ----	13811 ----- -----

### Study Question 6

**What is the relationship between MDD treatment adherence; service use; and expenditures for services including hospitalizations, outpatient, emergency room, and pharmacy services? How many Medicaid recipients in the study sample die during the study period?**

Tables 4a-4c present the service use and costs for recipients receiving treatment with and without adherence to APA guidelines. In this study we counted the frequency of services by counting the days an individual received each service type. For example, we examine the number of days a person was in the hospital and the number of days a person received outpatient BH service. This may undercount the number of outpatient service events if an individual, for example, had two sessions of outpatient group therapy on a given day because they would count as one service day. The expenditure information reflects the average monthly amount that Medicaid paid for all services provided during the 18-month follow-up period. These data necessarily undercount service use and expenditures for recipients with dual eligibility in Medicaid and Medicare because Medicare data were unavailable for this study.

**Table 4a**  
**Expenditures and Service Use for Recipients With Adherence to APA Guidelines**

Services	PUPM Average Cost (\$)	PUPM Days (Average)	Average Monthly Penetration Rate
Inpatient Hospitalization: Behavioral Health(BH)	30.16 (504.86)	.05 (.64)	1%
Inpatient Hospitalization: Physical Health(PH)	124.16 (1137.66)	.18 (1.30)	3.5%
Total Hospital	154.32 (1252.72)	.23 (1.45)	3.9%
ER (BH)	77.21 (896.58)	.04 (.27)	2.5%
ER (PH)	50.32 (525.23)	.04 (.27)	3.2%
All Other BH Outpatient Services	72.02 (159.56)	1.32 (2.71)	54%
All Other PH Outpatient Services	291.42 (720.29)	3.33 (6.47)	67%
Total BH Outpatient	149.24 (911.32)	1.35 (2.73)	55%
Total PH Outpatient	341.74 (905.06)	3.35 (6.47)	67%
Pharmacy costs (Antidepressant)	66.24 (57.80)	21.08 (11.48)	84%
Pharmacy BH (Not Antidepressants)	102.94 (188.56)	15.65 (13.56)	62%
Pharmacy costs (All other)	374.64 (554.65)	26.14 (8.56)	94%
Total Pharmacy Costs	543.83 (604.56)	27.61 (6.63)	97%
Total Medicaid	1189.12 (2051.52)	27.80 (6.27)	98%

The data in tables 4a and 4b indicate only slight differences in expenditures and service use between recipients with and without adherent treatment. On average, the total Medicaid expenditures for recipients receiving treatment that conforms to APA guidelines were \$176.86 higher than those of recipients receiving treatment nonadherent with guidelines. The differences in expenditures were largely driven by higher use of inpatient services by recipients receiving adherent treatment. However, the long-term clinical, quality of life, or financial impact of lower expenditures and service utilization is unknown. Perhaps the most striking observation is the fact that although all recipients have a mental health disorder (MDD), physical service use and expenditures dwarf the behavioral health service use and costs.

**Table 4b**  
**Expenditures and Service Use for Recipients Without Adherence to APA Guidelines**

Services	PUPM Average Cost (\$)	PUPM Days (Average)	Average Monthly Penetration Rate (%)
Inpatient Hospitalization: Behavioral Health(BH)	16.79 (332.37)	.05 (.66)	.09
Inpatient Hospitalization: Physical Health(PH)	70.56 (815.14)	.17 (1.24)	.03
Total Hospital	87.35 (885.74)	.21 (1.41)	.04
ER (BH)	44.65 (644.44)	.03 (.23)	2
ER (PH)	28.33 (398.96)	.03 (.26)	2
All Other BH Outpatient Services	34.26 (130.54)	.76 (2.05)	36.3
All Other PH Outpatient Services	287.63 (839.92)	3.47 (7.68)	51.7
Total BH Outpatient	78.91 (658.11)	.78 (2.07)	37.5
Total PH Outpatient	315.96 (934.59)	3.49 (7.68)	52.1

Services	PUPM Average Cost (\$)	PUPM Days (Average)	Average Monthly Penetration Rate (%)
Pharmacy costs (Antidepressant)	61.53 (70.37)	18.24 (13.06)	71.7
Pharmacy BH (Not Antidepressants)	85.57 (183.61)	14.70 (13.78)	57.7
Pharmacy costs (All other)	382.92 (581.52)	25.24 (9.74)	90.2
Total Pharmacy Costs	530.01 (639.39)	26.62 (8.28)	93.4
Total Medicaid	1012.23 (1683.83)	26.88 (7.89)	96

The data in Table 4c suggest that recipients infrequently received services that were designated as medication management. This does not necessarily mean that they infrequently received evaluation for their medication. Rather, we believe that medication evaluation was most likely incorporated into other types of service encounters such as case management and counseling services, which were not recorded as medication management.

**Table 4c**  
**Medication Management Days of Service**

Med Management Visits	Adherence	Nonadherence
Behavioral Health	.32 (.73)	.25 (.64)
Physical Health	.92 (2.06)	.38 (1.67)

Florida Medicaid date of death data were used to determine the number of recipients in the sample who died. Of the 42,009 Medicaid recipients aged 18 and older with a documented diagnosis of MDD in FY 03-04 Medicaid administrative files, 3,656 (8.7%) died by December 31, 2006. Within the subsample of 15,950 recipients meeting study inclusion criteria who remained alive and were eligible for services during the 18-month follow-up period, 851 (5.3%) died by December 31, 2006. We are unable to determine the cause of death because that information is not contained in the data used for this study.

### Study Question 7

#### What is the relationship between guideline adherence and the likelihood of experiencing a Baker Act examination?

Data indicate that only a small percentage (4.5%) of the 15,950 recipients meeting inclusion criteria had an involuntary psychiatric or Baker Act (BA) examination. White recipients were slightly more likely than minorities to have a BA examination. Data indicate that slightly less than two percent (1.9%) of Hispanic recipients, 3.5% of “Other” minorities, 5.5% of Blacks, and 7.4% of White recipients received a BA examination. In a similar fashion, male recipients had a slightly higher proportion of the BA examinations than female recipients. Data indicate that 5.5% of male and 4.1% of female recipients experienced a BA examination during the study timeframe.

There was little difference in the risk of BA examination for recipients with and without guideline-adherent treatment. Among the 5,219 recipients who received treatment that adhered to APA guidelines, a little more than four percent (4.3%) received a BA examination, and almost the same percentage (4.5%) of the recipients receiving nonadherent treatment underwent a BA examination.

**Table 6**  
**Baker Act Experience by Adherence to APA Clinical Practice Guidelines**

Frequency Row (%) Column (%)	Baker Act YES N = 713		Baker Act NO N = 15237	
	Adherent	Nonadherent	Adherent	Nonadherent
Age	n = 227	n = 486	n = 4992	n = 10245
18-34	55 41.4% 24.2%	78 58.7% 16.1%	492 34.7% 9.9%	927 65.3% 9.1%
35-44	71 37.8% 31.3%	117 62.2% 24.1%	833 36.8% 16.7%	1433 63.2% 14.0%
45-54	59 31.2% 26.0%	130 68.8% 26.8%	1304 38.1% 26.1%	2121 61.93% 20.7%
55-64	28 25.9% 12.3%	80 74.1% 16.5%	1495 40.61% 30.0%	2186 59.4% 21.3%
65 +	14 14.7% 6.2%	81 85.3% 16.7%	868 19.5% 17.4%	3578 80.48% 34.9%
Mean Age	43.6	49.0	52.8	56.7
Race				
Black	24 30.0% 10.6%	56 70.0% 11.5%	424 31.0% 8.5%	945 69.0% 9.2%
Hispanic	50 39.1% 22.0%	78 60.9% 16.1%	2375 35.9% 47.6%	4241 64.1% 41.4%
Other	19 29.7% 8.4%	45 70.3% 9.3%	603 34.1% 12.1%	1164 65.9% 11.4%
White	134 30.4% 59.0%	307 69.6% 63.2%	1590 29.0% 31.9%	3895 71.0% 38.0%
Sex				
M	54 25.1% 23.8%	161 74.9% 33.1%	1062 28.9% 21.3%	2613 71.1% 25.5%
F	173 34.7% 76.2%	325 65.3% 66.9%	3930 34.0% 78.7%	7632 66.0% 74.5%
Other Characteristics				
Charlson Index	1.7	1.4	1.7	1.5
Dual Eligibility	59 15.9% 26.0%	313 84.1% 64.4%	1497 18.3% 30.0%	6676 81.7% 65.2%

## Study Question 8

### What factors predict adherence to APA guidelines?

We used logistic regression analysis to examine the relative importance of variables to the likelihood of receiving treatment for MDD that adheres to APA guidelines. Table 7 presents the logistic regression results. Data indicate that after controlling for all predictors in the model; being Hispanic; and receiving an SSRI, SNRI, or combination antidepressant medication were the most strongly related to adherence with APA guidelines. Persons with Dual Medicaid and Medicare eligibility were significantly less likely to receive treatment that adheres to APA guidelines.

**Table 7**  
**Predictors of Adherence to APA Clinical Practice Guidelines**

Predictor Variable	Values	Odds Ratio	95% CI	Wald X2	P Value
Age at study entry (yrs)	18-99	1.00	.99-1.00	3.65	.056
Sex (Female=1)	Yes or No	1.03	.94-1.12	.32	.57
Black	Yes or No	.94	.82-1.08	.81	.37
Hispanic	Yes or No	1.22	1.12-1.32	20.40	<.0001
Other race/ethnicity	Yes or No	1.08	.96-1.22	1.53	.22
Baker Act exam	Yes or No	.87	.73-1.04	2.37	.12
TCA only	Yes or No	1.38	1.00-1.89	3.87	.05
SSRI only	Yes or No	3.30	2.82-3.85	229.62	<.0001
SNRI only	Yes or No	3.45	2.66-4.47	87.8	<.0001
Combination	Yes or No	4.26	3.67-4.95	357.81	<.0001
Dually eligible	Yes or No	0.23	.21-.25	1261.39	<.0001
Charlson Index	Yes or No	1.34	1.24-1.46	47.44	<.0001

### Study Limitations

This study relied solely on administrative data from one state, so results may not generalize to other locations. Limitations in administrative data included imperfect record keeping, coding errors within the data, and incomplete data. However, the administrative data used here provided detailed information on Medicaid enrollees, NH facility characteristics, and BA examinations that would otherwise not be available. An important limitation was the unavailability of Medicare data and out-of-pocket expenses, which resulted in underestimation of total expenditures and service use. Lack of Medicare data may result in an overestimation of the degree of nonadherence for persons with dual eligibility. Although relying on administrative data has limitations, it also has advantages. Using administrative data avoids attrition due to lost contact over time, and the data can be used at minimal cost because they were already in place. Finally, restricting the sample to enrollees with continuous Medicaid eligibility may bias the sample somewhat toward the sicker end of the spectrum because enrollees who became employed and left the Medicaid program were not included in the sample.

## Discussion

Despite a growing body of research showing that EBP guidelines for the treatment of MDD can improve patient outcomes, findings from this study—and the research of others—show that the development and dissemination of EBP guidelines do not assure they will be implemented. Study data indicate that the most recipients (91%) received a prescription for antidepressant medication and 9% received psychotherapy and no medication. Consistent with previous research, our findings confirm that most individuals receiving medication were prescribed an SSRI. Only about one third of recipients received an antidepressant regimen that adhered to APA guidelines. Even fewer recipients (0.3%) of those receiving psychotherapy without medication received guideline-adherent treatment. Although EBP guidelines for MDD provide support for treatment of MDD with psychotherapy alone, few recipients in this study received those services.

Previous research has shown that efforts to disseminate information about EBP guidelines to practitioners through continuing medical education (CME) produce little change in physician practices or in patient outcomes (Grimshaw, Thomas, & MacLennan, 2004; Foy et al., 2002). Studies on guideline implementation that have demonstrated the greatest lasting improvement in guideline adherence involve multifaceted interventions at the provider, patient, organizational and policy levels (Acs et al., 2006; Cabana et al., 2002; Katon et al., 1997). At the practitioner and organizational level, strategies that address known provider and organizational barriers to guideline implementation—including physician reminder systems, medical record audit with feedback to clinicians, as well as adequate provider time and reimbursement for guideline adherence—have proven most effective in reducing nonadherence with EBP.

At the client level, Diamond & Scheifler (2007) have pointed out that medication alone is almost always insufficient for good treatment outcomes. They state that “medication is a central component of helping people manage mental illness, but medication management is interdependent with other symptom and illness management tools and strategies” (p. 7). They posit that to improve adherence with recommended treatment, clients, therapists, and prescribers must work collaboratively to make treatment decisions and ensure that clients achieve their personal goals. Their suggestions are consistent with earlier research findings of DiMatteo (2004), who concluded, after a thorough review of research literature, that the key to increased adherence with mental health treatment recommendations is provider-client communication. Therefore, continuing education targeted toward improving client, therapist, and physician collaboration are recommended to reduce client-specific barriers to adherence with prescribed treatments and implementation of guidelines.

## Conclusions and Policy Implications

Study results indicate that nonadherence with APA clinical practice guidelines was the norm rather than the exception. Black recipients were least likely to receive an MDD diagnosis and, once diagnosed, were less likely to receive antidepressant medication. Despite the fact that clients with MDD generally express a preference for psychotherapy and some refuse all medication, most recipients with MDD were prescribed antidepressant medication without psychotherapy. Findings suggest a need for Medicaid policies and new statewide practitioner training targeted toward improving access to desired psychotherapy services, provider-client collaboration, and client adherence to recommended treatment. The State of Florida could improve mental health treatment outcomes and decrease costs by reducing known provider, organizational, and client-based barriers to EBP guideline adoption. The potential cost savings realized from an aggressive EBP implementation policy could be significant.

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