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# Compliance with an Evidence-based Policy for Improving Youth Mental Health Services

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UNIVERSITY OF MIAMI

COMPLIANCE WITH AN EVIDENCE-BASED POLICY FOR IMPROVING YOUTH  
MENTAL HEALTH SERVICES

By

Vanesa A. Ringle

A THESIS

Submitted to the Faculty  
of the University of Miami  
in partial fulfillment of the requirements for  
the degree of Master of Science

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MENTAL HEALTH SERVICES

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Compliance with an Evidence-based Policy  
for Improving Youth Mental Health Services

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Little is known about rates and patterns of compliance with state policies aimed at improving the quality of mental health services youth receive in community settings. This study examined compliance with clinical practice guidelines that recommended service packages developed by the State of Texas to support an evidence-based practice policy. Under the policy, clinics were allowed to override the recommended service package, in recognition that following the practice guidelines would not always be feasible. To examine the implications of these overrides, medical records were extracted for 727 child and adolescent clients who received mental health treatment at one of 4 community mental health clinics in one Texas County. Compliance was defined as providing the recommended service package, whereas “overrides” occurred when clinics did not provide the recommended service package. Patterns of compliance were examined by breaking compliance down into two components: the level of service intensity provided and the treatment received for the youth’s specific diagnosis/problem type. Forty-six percent of youths (n = 328) received services that complied with the mental health policy guidelines. Overrides based on level of intensity occurred more frequently than overrides based on problem type. Almost all youth received treatment consistent with their diagnosis/problem type, but not all youth received the recommended level of service intensity, most often receiving less intensive services. Youth with depression and severe

mental illness were more likely to receive more intensive services. Older youth and those with worse functioning at intake were more likely to receive less intensive services. On average, youth improved in problem severity and functioning regardless of compliance, but those who received less intensive services showed less improvement. Findings point to the importance of measuring and tracking compliance to state policy guidelines.

## TABLE OF CONTENTS

	Page
LIST OF TABLES .....	iv
Chapter	
1 INTRODUCTION .....	1
2 METHOD .....	10
3 DATA ANALYTIC PLAN.....	13
4 RESULTS .....	16
5 DISCUSSION .....	19
References .....	26
Tables .....	32

## LIST OF TABLES

	Page
Table 1 .....	33
Table 2 .....	35
Table 3 .....	36
Table 4 .....	37
Table 5 .....	38
Table 6 .....	39
Table 7 .....	40



## Chapter 1: Introduction

Currently, there is a critical need and strong push to improve the quality of mental health services provided to youth in publicly funded, community mental health settings (Bruns & Hoagwood, 2008). Consequently, multiple implementation strategies, which are “methods or techniques used to enhance the adoption, implementation, and sustainability of a clinical program or practice,” (p.2, Powell et al., 2015), are being employed with the aim of improving mental health services for youth in these settings. Implementation strategies most often support evidence-based practice (EBP), which is commonly understood as the process of applying robust scientific evidence to service practices (Bruns & Hoagwood, 2008). However, most implementation strategies advocated and used today have yet to be empirically evaluated (Powell et al., 2015). The primary goal of this study was to examine clinical practice guidelines created to facilitate and track implementation of a policy. These guidelines were created by the state of Texas to improve mental health services provided to youths in community settings. We examined whether and when clinics followed the policy guidelines, client factors associated with following the guidelines, and the relationship between following the guidelines and client outcomes.

Implementation research conducted to date has commonly focused on mental health agency factors (e.g. organization culture and climate), and has less frequently examined important system-level factors (i.e., factors occurring outside of implementing agencies), such as state policies that promote the use of EBP (Bruns et al., 2008; Chambers & Rupp, 2015; Finnerty et al., 2009; Ganju, 2003; Hoagwood et al., 2015; Moser, Deluca, Bond & Rollins, 2004; Morrison, 2004). This may be because system-level factors, such

as policies, are more difficult to examine empirically due to their complexity (i.e., their multiple components and processes; Stelk & Slaton, 2010) and occurrence in uncontrolled, naturalistic settings (Hoagwood et al., 2015). This study is one the first to examine compliance with policy guidelines.

Although under-studied, policies that support EBP are widely advocated as powerful drivers of quality improvement in public sector mental health care both internationally and in the U.S. (Chambers & Rupp, 2015; Finnerty et al., 2009; Garfield, 2009; Hanney, Gonzalez-Block, Buxton & Kogan, 2003; Murray & Frenk, 2000; Hoagwood et al., 2015; Rapp et al., 2005; Tenebaum, 2005). In mental health, policies are generally defined as laws, regulations, judicial decrees, agency guidelines, and budget priorities (Brownson et al., 2009). Brownson and colleagues specifically define *evidence-based* public policy as: “policy developed through a continuous process that uses the best available quantitative and qualitative evidence.... to improve public health outcomes” (p. 1580). In the U.S., the federal government, state systems, and foundations have developed policies to increase access to EBP (see Chambers, Ringeisen & Hickman, 2005; Garfield, 2009; Hoagwood et al., 2015; McHugh & Barlow, 2010).

Texas’ Resiliency and Disease Management (RDM, now known as Resilience and Recovery) initiative is an example of an innovative evidence-based public policy that has important implications for other states (Chambers, Ringeisen & Hickman, 2005; Jensen-Doss, Hawley, Lopez & Duvivier Osterberg, 2009; Painter, 2009; 2012). In 2003 Texas legislature passed House Bill 2292 with the goal of improving the quality and cost efficiency of a fragmented public mental health service system by employing a managed care model. To meet the goals of the RDM initiative, the state of Texas gathered a panel

of national experts in youth mental health and EBP to develop clinical practice guidelines to facilitate and track the implementation of the policy and aid in treatment decision-making (Daleiden & Chorpita, 2005; Hoagwood, 2003). The guidelines were based on the latest empirical research on EBP, and recommended service packages that consisted of a level of service intensity (e.g., brief or intensive outpatient), and a specific evidence-based treatment (EBT) that matched the youth’s psychological disorder (also known as “problem type”; e.g., anxiety disorders, depressive disorders, disruptive behavior disorders, and severe mental illness; Hoagwood, 2003). The level of service intensity model has also been implemented in states such as Hawaii, which uses the Child and Adolescent Level of Care (CALOCUS) instrument to determine treatment packages for children and adolescents receiving mental health services (Daleiden & Chorpita, 2005; Fallon et al., 2006; Sowers, Pumariega, Huffine & Fallon, 2003). However, empirical research on using a service intensity model within states mandating the use of EBP has yet to emerge.

Under the Texas policy, clinics were asked to comply with the practice guidelines when possible (hereafter referred to as “compliance”<sup>1</sup>), but were allowed to “override” the guideline recommendations due to issues of feasibility, client preferences, and/or justifications based on a client’s specific clinical needs (hereafter referred to as an “override”). Please see Table 1 for a description of service packages. The present study sought to expand research on Texas’s mental health policy which has been limited

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<sup>1</sup> Although both following the guidelines and overriding them were considered “complying” with the policy, the term “compliance” is used here for parsimony and for consistency with other studies. The term “adherence” was considered, but rejected given its association with adhering to the components of EBT protocols, which was not examined here.

despite its importance and relevance to other state initiatives to improve the quality of public mental health services.

Because of the limited research on evidence-based policies, this study also utilized research on clinical practice guidelines to inform hypotheses. Clinical practice guidelines are extensively used in medicine (Grimshaw & Russel, 1993; Hollon et al., 2014) and only minimally used in mental health. Clinical practice guidelines are instructions that help practitioners and patients apply health care information in the treatment of physical and mental health. (Field & Lohr, 1990). Dennehy and colleagues (2005) note that guidelines were created to “optimize symptom reduction in a majority of patients, and assist providers to make more informed decisions” (p. 1695). Much like what Texas did, mental health clinical practice guidelines are typically developed by a panel of experts who come to a consensus on guideline content (Bauer, 2002; Hollon et al., 2014; Parry et al., 2003). Some examples of clinical practice guidelines include, The American Psychiatric Association, the Agency for Health Care Policy and Research (Azocar, Cuffel, Goldman & McCulloch, 2001), and the Texas Medication Algorithm Project (TMAP; Gilbert et al., 1998; Kashner, Rush, & Allshuler, 1999; Suppes et al., 2003).

Once policies and guidelines are developed, it is also pivotal to determine whether they are complied with (Rutten, 2012). Compliance can be generally understood as the correct implementation of clinical practice guidelines (Brouwers et al., 2015) and has been measured via report from program directors, compliance measures, and via analysis of organizational administrative data (e.g., Bauer, 2002). Overall, compliance rates have been higher in controlled (67%) vs. uncontrolled studies and/or naturalistic studies (27%). Guideline compliance has also been found to be low across a variety of

psychological disorders including attention deficit hyperactivity (Rushton, Fant, & Clark, 2004), depression and anxiety (Smolders et al., 2009), bipolar (Dennehy, Bauer, Perlis, Kogan, & Sach, 2007), and schizophrenia (Drake, Bond, & Essock, 2009).

Examining factors associated with compliance is important as this may reveal potential barriers to compliance with policy guidelines. Cabana et al. (1999) provide a useful organizational framework to understand barriers to compliance with guidelines in medicine by organizing barriers into guideline (e.g., too rigid), clinician (e.g., lack of self-efficacy), and patient (patient preferences) categories. A systematic meta-review of factors influencing guideline implementation across health care professions provided support for this framework (Francke, Smit, de Veer, & Mistiaen, 2008).

Studies have found that client factors such as problem severity and complexity (Hetrick et al., 2011), and earlier age of onset (Dennehy, Bauer, Perlis, Kogan, & Sachs, 2007) may hamper compliance with clinical practice guidelines for the treatment of depression and bipolar disorders. However, other studies have not found a relationship between severity and comorbidities, and compliance, therefore the literature remains mixed (Prins et al., 2010; Smolders et al., 2009; Stiles et al., 2009). Further research is needed to clarify the relationship between various client-level factors (e.g., severity, diagnosis, comorbidities) and guideline compliance.

Compliance with clinical practice guidelines has also been linked to improved client outcomes across multiple psychological disorders. Client improvement has been associated with adherence to guidelines for the treatment of anxiety (van Dijk et al., 2013), bipolar disorder (Dennehy et al., 2005), and depression (Datto et al., 2003; Hepner et al., 2007). However, a recent systematic review suggests that literature on the effect of

guideline compliance on client outcomes may not be as conclusive as previously proposed, with some evidence suggesting it does not always positively impact client outcomes (Weinmann, Kokesters, & Becker, 2007). Additional research is needed to clarify why providers do and do not follow guidelines and what, if any, impact this has on client outcomes.

In sum, although research on mental health clinical practice guidelines is growing, it is limited in comparison to guideline literature in medicine. Further, research on client-level barriers to compliance remains inconclusive, with some studies suggesting that more severe presentations hamper compliance with guidelines while others have not found this association. Studies on the association between guideline compliance and client outcomes also remained mixed. To date, no study has examined the use of clinical practice guidelines in accordance with an evidence-based policy, an important system-level implementation strategy. In light of this, this study's purpose was to expand the scant research on large-scale, state EBP implementation efforts by examining compliance with state-developed clinical practice guidelines within a mental health system reform in the state of Texas.

To date, three published studies have examined clinician and policy guideline factors related to the Texas policy, but no study has focused on client characteristics. One study found that providers working under the policy had negative opinions of EBP (e.g., difficult to adapt EBP to specific client needs), but positive views of training quality and agency support for EBP (Jensen-Doss et al., 2009). A second study examined one of the youth services packages and found a significant difference between the proportion of youth who improved after the policy implementation and those who received services

before the policy (Painter, 2009). Finally, another study found significant improvement in self-harm behavior and functioning of adults with severe and persistent psychological disorders after one year of receiving a Texas service package that involved medication management and rehabilitative case management (Painter, 2012). The only exceptions to improvements were adults with major depression and psychosis.

This study expands research on Texas's evidence-based policy, which similarly to other states' child mental health policies, is scant, yet important and applicable to other state initiatives. Specifically, this study examined all service packages (as opposed to only one service package as in previous studies) for youth services, focusing on guideline compliance. There were three primary aims: 1) describe guideline compliance rates and patterns, 2) identify client-level factors associated with guideline compliance, and 3) examine the relationship between compliance and youth outcomes.

For Aim 1, since service packages were made up of two components, the intensity level of services and the specific problem type the treatment was for, we hypothesized that overrides would most often be related to service intensity rather than service problem type (for example, a youth might receive less intensive services than recommended by the policy guidelines, but would still receive the appropriate treatment for their specific problem). We also hypothesized that compliance with less intensive service packages would be more common than guideline compliance with more intensive service packages due to known clinic resource constraints.

For Aim 2, we sought to identify types of clients for whom clinics did not fully comply with the policy guidelines. We did this by examining client ethnicity, age, insurance status, diagnosis, number of diagnoses, problem severity, and functioning as

predictors of compliance. Only one guideline compliance study examined and found no relationship between ethnicity and guideline compliance (Dennehy et al., 2007).

However, concerns have been raised about the fact that evidence-based treatment protocols (which the Texas policy mandated) have been predominantly tested with Caucasian youth and therefore, may not adequately address the mental health needs of minority youth (Bernal & Scharron, Del-Rio, 2001; Gray-Little & Kaplan, 2000; Huey & Polo, 2008; Sue, 2003). Thus, we hypothesized that guideline compliance would be more likely for Caucasian youth relative to minority youth.

Because these clinics were working under resource constraints, we hypothesized that overrides would be more likely for those who were uninsured vs. those who had insurance. Previous research indicates that more than one diagnosis may hamper guideline compliance (Francke et al., 2008); therefore we also hypothesized that overrides would be more likely for youth with more than one diagnosis. Additionally, we also hypothesized that overrides would be more likely for youth with a diagnosis of severe mental illness.

Previous findings on the association between problem severity and functional impairment have been mixed in relation to guideline compliance. Therefore we did not have a directional hypothesis for this relationship. In addition, although prior studies have not examined the relation between age and guideline compliance, given the large age range in this youth sample, we also explored age as a possible predictor of overrides.

For Aim 3, we examined the relationship between compliance and reasons for overrides and changes in youth problem severity and functioning over the course of treatment. Given that one of the primary goals of the RDM policy was to establish routine



implementation of EBP as this practice has been associated with improved client outcomes, we hypothesized that guideline compliance would be associated with improvement in problem severity and functioning, controlling for baseline levels of severity and/or functioning.

## Chapter 2: Method

### Participants

Medical records were extracted for 727 child and adolescent clients who received psychological treatment at 4 community mental health clinics in one urban Texas County from 2004 to 2006. This was the time period after the policy was enacted. Agencies collected client demographic and clinical data as part of regular clinic procedures. Sixty percent of clients were male and 40% were female. Ages ranged from 4 to 17.75 years ( $M= 11.17$ ,  $SD= 3.85$ ). Forty-two percent of clients were African-American, 38% were Hispanic, 17% were Caucasian, and 3% were Asian. Eighty-three percent of youth were of ethnic minority status. Participant diagnoses included ADHD (50%), depression (37%), conduct-related problems (27%), serious mental illness (e.g., bipolar disorder; 27%), anxiety (8%), and other (24%). Fifty percent of clients had more than one diagnosis. Sixty percent of youth were insured. Youth were in treatment for an average of 39.6 weeks ( $SD = 14.7$ ). At intake, average youth problem severity was 38.1 ( $SD = 17.6$ ), and average functioning was 36.6 ( $SD = 14.7$ ). Of note, client characteristics were used to determine what service package they received, but unless they blatantly refused services, clients did not contribute to decisions about compliance.

### Procedure

Community mental health clinics collected demographic (age, gender, ethnicity, insurance status), clinical (diagnosis, problem severity and functioning), and administrative (e.g., guideline compliance) data at intake and at 90-day time points throughout treatment. After data were collected and stored, clinic staff extracted, de-

identified, and provided the data to the research team. The Texas A&M Institutional Review Board and the mental health authority's Human Subjects Protection Committee approved all study procedures.

## **Measures**

*Clinical variables.* We used the functioning and problem severity scales of the Ohio Youth Functioning, Problem Severity, and Satisfaction Scales (Ogles, Dowell, Hatfield, Melendez & Carlston, 2004). The 20-item functioning scale assesses a youth's ability to complete daily activities and maintain relationships on a 5-point Likert scale. The 20-item problem severity scale assesses the frequency and severity of the problem within the past 30 days. Responses range from "Not at All" to "All the Time". Clinically meaningful scores include those of  $\leq 50$  for the Functioning scale and  $\geq 20$  for the Problem severity scale. Psychometric data on the Ohio Scales indicate acceptable reliability and validity (Ogles et al., 2004). We used the parent-report versions of these scales as parent report is considered the most reliable concerning their child. Chart diagnosis (depression, anxiety, conduct, serious mental illness, and ADHD) and number of diagnoses (one diagnosis vs. more than one diagnosis) were the two other clinical variables examined as predictors of compliance.

*Compliance.* Based on intake results, the clinician who did the initial diagnostic assessment at the clinic indicated a "recommended service package" based on client characteristics and policy guidelines. Afterwards, an administrator either authorized or did not authorize the provision of the guideline recommended service package. Thus, there were two variables in the database, one that indicated the service package

recommended by guidelines, and one that indicated the service package that was actually authorized. Differences between these two variables were used to characterize the guideline compliance variable. Cases in which the authorized service package matched the guideline recommended service package were coded as “compliance.” Cases where the two did not match were coded as “overrides.” In the case of overrides, clinics were required to report the primary reason for the override from 4 different options: 1) resource limitations, 2) client preferences, 3) clinician override, or 4) other.

### Chapter 3: Data Analytic Plan

Frequency analyses identified rates of compliance and reasons for overrides. To ascertain patterns of overrides, each override was assigned to one or both of the coding schemes below. Chi square tests were used to compare differences among these groups:

- 1) Overrides based on service intensity:
  - a. provision of more intensive services (e.g. service package 2.2 instead of 1.1)
  - b. provision of less intensive services (e.g. service package 1.1 instead of 2.2)
  - c. service intensity compliance

Of note, service intensity was specifically operationalized as providing more or less services. For example, service packages 2.2 and 1.1 both addressed externalizing problems, but whereas 1.1 only offered psychological therapy in the form of parent training, 2.2 offered psychological therapy *and* wrap-around services. Additionally, since the ideal go-to treatment was psychological therapy, when medication (service package 4, *Aftercare Services*) was provided as the first-line treatment instead, this was considered an override of lower intensity.

- 2) Overrides based on client problem type:
  - a. assigning someone with externalizing problems to a service package for internalizing disorders or severe mental illness
  - b. assigning someone with internalizing problems to a service package for externalizing disorders or severe mental illness

- c. assigning someone with severe mental illness to a service package for externalizing or internalizing disorders
- d. problem type compliance

Clients were nested within four clinics and within six service authorizers (i.e., the individuals who made the decision about whether to comply or override). To account for this nesting, we used hierarchical linear modeling (HLM; Raudenbush, Bryk, & Congdon, 2002) in our examination of client-level predictors. Three authorizers oversaw very few cases, so these were combined. ICCs for these two forms of nesting were examined separately. Authorizers accounted for 44% of the variance in compliance, whereas clinics accounted for 2.3%. To simplify the models, authorizers was used as the level 2 nesting variable, while clinics were dummy coded and entered as predictors at level 1 rather than being treated as a separate level of nesting.

Multinomial logit modeling was used to examine predictors of guideline compliance. Based on the Aim 1 results (see below), these analyses focused on overrides based on service intensity. We ran models twice to allow comparisons between all three groups: once with compliance as the reference group, and once with provision of more intensive services as the reference group. Client-level predictors examined included client age, ethnic status, insurance status, diagnosis, number of diagnoses (one vs. more than one), problem severity, and functioning at intake.

In the compliance-outcome relationship analysis, we examined whether compliance and the 4 reasons for guideline policy overrides were associated with changes in client problem severity and functioning across all available assessment data for each

client, controlling for pre-treatment scores, authorizer, length of treatment, and significant predictors identified in the Aim 2 analyses. Models for these analyses were developed based on previous work within this dataset, which established that a log-linear slope model, with clients nested within clinicians, was the best-fitting model for the data. Missing data were low (<6% for all variables) and handled by list-wise deletion

## Chapter 4: Results

### *Aim 1: Patterns of Compliance and Reasons for Overrides*

Forty-seven percent ( $n = 332$ ) of youth received mental health services that were compliant with the guidelines. Frequencies of service package recommendation and compliance rates are presented in Table 2. Service packages 1.1, 1.2, and 2.2 were most frequently recommended. Service package 1.2 was the most complied with package, while 2.1, 2.3, and 9 were the most overridden.

When overrides were further examined, we found overrides based on service intensity ( $n = 372$ ) occurred more frequently than overrides based only on client problem type ( $n = 6$ ). Overrides based on both service intensity and client problem types occurred only 7 times. Because of the low occurrence of overrides based on client problem type, the difference between this category and overrides based on service intensity could not be tested for significance. Consistent with the hypothesis that overrides toward less intensive services would occur more frequently, provision of less intensive services than recommended ( $n = 321$ ) was significantly more common than the provision of more intensive services [ $n = 51$ ; ( $1, N = 372$ ) = 195.968,  $p < .001$ ]. Reasons for overrides in descending order included, other (55 %), resource limitations (25%), clinician override (14%), and client preference (6%). See Table 3 for further description of reasons for overrides.

Data regarding patterns of overrides by service package are presented in Table 4. The most frequently used override was from a higher intensity service package to service package 4 (Aftercare services). In addition, the category of youth who received more intensive services than were recommended is made up of youth who were not eligible for



a service package, but were nonetheless assigned into a service package, with the exception of one youth.

### *Aim 2: Client-Level Predictors of Compliance*

In light of Aim 1 findings that overrides based on service intensity occurred most often, these analyses focused on predicting differences between the less intensive group (n = 321), the more intensive group (n = 51), and the intensity compliant group (n = 328). Significant predictors of compliance included serious mental illness diagnosis, depression diagnosis, other diagnosis, age, and functioning (see Table 5).

Clients with serious mental illness ( $OR= 2.70, p<.05$ ), depression ( $OR= 4.45, p<.01$ ), and “other” diagnoses ( $OR= 2.70, p<.05$ ) were more likely to receive more intensive services than compliant services. A comparison between the less intensive services and more intensive services groups revealed that clients who were older ( $OR=1.14, p<.05$ ), and had worse functioning at intake ( $OR= .97, p<.05$ ) were more likely to receive less intensive services. Additionally, youth *without* a diagnosis of serious mental illness ( $OR=.28, p<.01$ ), depression ( $OR= .24, p<.01$ ), or “other” diagnosis ( $OR= .28, p<.01$ ) were also more likely to receive less intensive services. No other differences in compliance based on client characteristics were found.

### *Aim 3: Compliance and Client Outcomes*

Outcome analyses examined differences in the three compliance groups (i.e., less intensive, more intensive, and compliance) and changes in client problem severity and functioning scores controlling for baseline scores, weeks in treatment, and significant predictors from Aim 2 (i.e., client age, serious mental illness, depression, and other

diagnoses). Results are presented in Tables 6 and 7. Youth in the compliance group significantly improved in problem severity ( $B = -2.40, p = <.001$ ) and functioning ( $B = 1.66, p = .01$ ) over the course of treatment. Compared to clients who received guideline compliant services, clients who received less intensive services than recommended showed less improvement in problem severity ( $B = .344, p = .01$ ) and functioning ( $B = -.260, p = <.001$ ) over the course of treatment. There were no significant differences in slope between the more intensive and compliance groups or the more intensive and less intensive groups. Additionally, reasons for guideline overrides were not associated with youth outcomes.

Although not the predictors of interest, some control variables were also significant predictors of outcomes. Less improvement in problem severity ( $B = .64, p <.001$ ) and functioning ( $B = -.62, p <.001$ ) was associated with having a serious mental illness diagnosis. More improvement in problem severity ( $B = -.012, p <.001$ ) and functioning ( $B = .05, p = .008$ ) was associated with older age. In addition, more improvement in problem severity was associated with higher problem severity scores at intake ( $B = -.12, p <.001$ ). Conversely, higher functioning at intake was associated with less improvement in functioning ( $B = -.14, p <.001$ ).

## Chapter 5: Discussion

This is one of the first studies to evaluate compliance with clinical practice guidelines, created by a state enacting an evidence-based policy for youth mental health services. We found that fewer than half of clients received services that were recommended by the guidelines. Overrides were almost always related to adjusting the intensity of services rather than the problem/diagnosis focus of the services, and most overrides resulted in less intensive services. Particularly, service intensity Contrary to initial hypotheses, the only client characteristics related to compliance were client diagnosis, age, and functioning. While, on average, all youth improved in problem severity and functioning, less improvement was observed for youth who received less intensive services than what the policy guidelines recommended.

The fact that most overrides resulted in the provision of less intensive services raises questions about whether these clinics lacked resources to comply with the guidelines, which was provided as a reason for 25% of the overrides. Since the Texas policy was put into place without additional funds or incentives to the clinics, this highlights the need for resources to align with EBP implementation policies (Dickey, 2004; Rapp et al., 2005). In over half of overrides, however, the agency listed “other” as the reason for overriding, so additional information is also needed to understand what was driving these overrides. The preponderance of “other” ratings suggests that a more detailed field for entering reasons for overrides might have yielded more actionable data. Regardless of the reasons, our findings suggest that one priority for states should be to assess clinic needs and potential barriers to compliance and prepare for such barriers before implementing an evidence-based policy that promotes the use of EBP. This supports the Framework for

Dissemination's proposal that capacity and needs assessment (i.e., assessing a setting's strengths and needs/limitations before implementation) is an essential first step in the effective implementation of EBP (Mendel, Meredith, Schoenbaum, Sherbourne, & Wells, 2008).

When overriding to less intensive services, clinics tended to provide service package 4 as the first-line treatment, which only included medication management. Although all clients included in this analysis eventually received at least some psychosocial treatment, due to inclusion criteria for the parent project, which examined the effects of psychosocial treatments being provided under the Texas policy. Overrides to less intensive services were more likely to be conducted for older clients, and clients with worse functioning at intake. This may in part be due to the fact that this more complex combination of client characteristics required service packages that were not as easily implemented in light of other contextual factors. It also may be that, for these older clients with more impaired functioning, clinics/authorizers preferred medication as the first-line treatment. This is not surprising considering that medication is the most common treatment for mental illness in adults (Cherry, Hing, Woodwell & Rechtsteiner, 2009; McHugh, Whitton, Peckham, Welge, & Otto, 2013; Olfson & Marcus, 2009). In addition, the sole use of psychotropic medications may also not be in accordance with client preference, as a burgeoning area of research is beginning to suggest client preference for psychosocial treatment (McHugh et al., 2013). Unfortunately, overrides to less intensive services (including service packages 4 and 1.1) at the beginning of treatment were associated with overall smaller treatment gains, above and beyond the effects of baseline problem severity and functioning, treatment duration, and other

significant client predictors of compliance. Importantly, this finding must be considered in light of the fact that at some point in treatment, these youth and their families also received psychosocial services, and these additional services likely also influence outcomes.

Although less common, there were some situations in which more intensive services than were recommended by the guidelines were also provided. In all cases but one, these were youth who, had clinics not overridden the guidelines, would not have been eligible for services based on findings from their initial assessment, which utilized a combination of diagnoses, Ohio Scale ratings, and clinician ratings of functioning across a range of domains. Unfortunately, we do not have further information on why these specific youths were not eligible for mental health services, but do know that it was not due a lack of a diagnosis, as we also found that having a diagnosis of serious mental illness or depression was associated with this type of override. The positive nature of the provision of more intensive services than recommended cannot be sufficiently emphasized: although ineligible for services under the policy, these youth went on to demonstrate comparable outcomes to youths who received the recommended service packages, suggesting that they benefited from the services. This suggests the service package criteria may have been too narrow, potentially excluding youth for whom services were indeed helpful.

Overall, the fact that service intensity, rather than problem type, was a major driver of overrides also suggests that correctly matching an EBT to a problem type/diagnosis may be easier or more feasible than providing the appropriate level of service intensity. In this case, level of service intensity varied either based on the addition or removal of services. Namely, the addition/removal of case management and/or wraparound services to

psychosocial treatment (e.g., service packages 2.3 and 2.4), or the replacement of psychosocial treatment with medication management (e.g. service package 4). Presently most implementation science efforts focus on determining whether a specific EBT is provided, and if provided, whether it is provided with fidelity to a protocol, but this study's findings suggest that the addition or subtraction of other services (i.e., level of service intensity) also contributes to youth outcomes and should be examined in community implementation studies.

Research on assignment into the appropriate level of service intensity is limited, and the few studies that exist suggest that accurate assignment is usually low (Bickman, Noser, Summerfelt, 1999; Bickman, Karver, Schut, 1997; Fallon et al., 2006; Friedman & Street, 1985; Sowers et al., 2003). However, it should be noted that these studies did not include clinical practice guidelines, predominantly relied on clinical judgement to make level of service intensity decisions, and most importantly, they did not occur within a real-world state EBP initiative. This question is especially important given that other states also use managed care and utilization management approaches similar to the one used in Texas. For example, the state of Hawaii has developed a system to determine service intensity based on client service intensity needs (Daleiden & Chorpita, 2005) and several other states have also adopted this model (Sowers et al., 2003). However, none of these state efforts have been examined until now. The present study is the first to provide useful data about factors that influence compliance with service severity recommendations, and how compliance potentially impacts client outcomes. Our present findings suggest that future EBP implementation studies, especially ones evaluating

system level efforts such as state policies, should pay close attention to the level of service intensity.

This study had multiple strengths. First, it is one of few studies to use a real-world, community setting administrative mental health services data set to empirically examine an evidence-based policy (see Hoagwood et al., 2015). This administrative dataset provided a large sample of ethnically (83% were of ethnic minority status) and economically (40% were not insured) diverse youth in the community. We were also able to examine a myriad of client-level factors, which have been previously cited as pertinent to community EBP implementation efforts by community clinicians (Ringle et al., 2015). Not only were we able to account for multiple client factors, but were able to examine these in connection with a state policy, a rarely examined factor at the system level. Furthermore, while empirical research on state child mental health initiatives is on the rise, most have focused on adherence to EBT protocols, and have not considered the possibility that measuring compliance more broadly—as done in the present study—may also provide elucidating data about child mental health policies. Additionally, these findings speak to the latest iteration to the Texas policy, which continues to include treatment options at different levels of intensity, and assignments into these service packages is still determined by results from the initial assessment.

Despite these strengths, present findings should be considered in light of several limitations. There is no provider-level data (including authorizers and therapists) to examine how these factors may have influenced compliance decisions, and as suggested by conceptual models, factors at all levels potentially have an influence (Cabana et al., 1999). We also do not have data for what occurred during treatment and how this may be

related to outcomes; as such, we know which types of services were recommended and authorized, but not whether they were indeed the provided EBTs, and whether they were delivered with fidelity. Future research should examine treatment factors such as these. In addition, there may also be other client-level factors (e.g., language abilities, motivation) that should be examined. Furthermore, most clients moved between two service packages (sometimes more) during the course of treatment, and the present study only focused on the service package that was recommended and authorized at the beginning of treatment. Therefore it may be that some of the outcomes are related to compliance changes throughout the course of treatment.

In conclusion, these findings highlight the potential benefits of measuring and tracking compliance and overrides, as Texas did. Although it might be reasonable to assume that pressures to comply with employer requirements might have biased this information, it appears that clinics were comfortable reporting overrides. This is important for other states that, similarly to Texas, may not have enough resources to measure compliance in a more objective and thorough manner (see Brunk, Chapman, & Schoenwald, 2014). Findings also point to the importance of conducting a careful assessment of needs and capacity in order to determine what will help clinics and therapists follow guidelines that promote the use of EBP. Future studies should explore the rate at which youth in community settings use psychotropic medications as the first-line treatment, or only treatment for mental disorders, and examine whether the present study's associations with youth outcomes are replicated. In the present study there were youth who did not qualify for services, but still received them; these were examples of positive guideline overrides that helped youth, suggesting that states should carefully



consider the stringency of their guidelines' exclusion criteria. Research on state policies is scarce, but greatly needed. The present study contributes to this research literature by examining compliance with an evidence-based policy created by a state system and its relationship to youth factors and outcomes. It is of utmost importance that mental health services researchers continue to pursue partnerships with states and other entities creating policies as this will create access to important real-world data that can inform how to best serve youth in community settings.

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Table 1. *Texas 2004-2006 Policy Guidelines Service Packages*

Service Package	Disorder	Intensity Level	Service Package Description
1.1	Externalizing Disorders (e.g., ADHD, Conduct or Oppositional Defiant Disorder)	Low	Youths with externalizing disorders and a moderate level of functional impairment. The focus of intervention is on psychosocial skill development and the enhancement of parenting skills, especially in child behavior management... This package is generally considered short-term and time-limited.
1.2	Internalizing Disorders (depressive or anxiety disorders)	Low	Youths with depressive or anxiety disorders and a moderate level of functional impairment. The focus of intervention is on using Cognitive Behavioral Therapy (CBT). This package is generally considered short-term and time-limited.
2.1	Externalizing Disorders (MST option)	High	Youths with externalizing disorders and high levels of severe disruptive or aggressive behaviors who are in the juvenile justice system and at high risk for out of home placement or further penetration in the juvenile justice system due to presenting behaviors. Intensive parent-to-parent peer support is available to the family. The family service plan is developed using a wraparound planning approach. Multi-Systemic Therapy is recommended if available.
2.2	Externalizing Disorders	High	Youths with externalizing disorders and moderate to high functional impairment at home, school or in the community. The need for intensive case management and significant caregiver support is indicated. The family service plan is developed using a wraparound planning approach. Multi-Systemic Therapy is either not appropriate (due to lack of juvenile justice involvement) or unavailable.

32



2.3	Internalizing Disorders	High	Youths with depressive or anxiety disorders and a moderate to high level of problem severity or functional impairment. The focus of intervention is on CBT...Multiple family concerns and significant parental stress indicate the need for intensive case management and the availability of parent-to-parent peer support. The family service plan is developed using a wraparound planning approach.
2.4	Major Disorders: Bipolar, Schizophrenia, Major Depression with Psychosis, or other psychotic disorders	High	Youth with severe disorders who are not yet stable on medication. The major focus is on stabilizing the youth and providing information and support to the family.
3	Treatment Foster Care	High	Youth at imminent risk of residential treatment placement. Parents retain custody although the youth may be at high risk of relinquishment of legal custody to the State to access residential mental health treatment or residential placement by the juvenile justice system. It is clinically determined that the child and family can progress with intensive community treatment, including treatment foster placement for the child, in lieu of residential treatment. Extensive training and support are available to the custodial parent or caretakers through clinicians and/or the treatment foster parent. The family service plan is developed throughout a wraparound planning approach.
4	Aftercare Services	Low	Youths who have stabilized in terms of problem severity and functioning and require only medication management to maintain their stability. Service package 4 can only be authorized if: 1) the caregiver refuses the recommended package, wants medication-only services and medication is clinically indicated; or 2) if the youth is NOT Medicaid eligible and the recommended service package is not available due to limited resources, but severe presenting problems that are responsive to medication suggest an authorization for service package 4 during the waiting period.
9	Not Eligible for Services	Low	Client is not eligible for services due to various findings from initial intake assessment

Table 2. *Service package frequencies and rates*

Service Package	Treatment Type	Intensity Level	Recommendation Frequency	Compliance Frequency	Compliance Rate (%)
1.1	Skills Training	Low	186	87	46.77
1.2	Therapy	Low	183	115	62.84
2.1	Skills Training ( Multi-Systemic Therapy)	High	3	0	0.00
2.2	Skills Training + wrap around service	High	187	62	33.16
2.3	Therapy + wrap around services	High	35	10	28.57
2.4	Medication + wrap around services	High	61	50	81.97
3	Wrap around services	High	0	N/A	N/A
4*	Medication Management	Low	1	1	100.00
9	Not Eligible for Services	Low	50	0	0.00

\*This service package does not apply to overrides based on problem type and is of lower intensity relative to service packages 1.1 and 1.2

Table 3. *Reasons for overrides descriptions, frequencies, and percentages (N = 378)*

Reason	Description	Frequency	Rate of use (%)
Resources Limits	Clinic resource constraints prevented assignment to recommended service packages	94	25
Client Preference	Clients (and/or their parents) requested different services or refused services	21	6
Clinician Override	Clinician overrode recommended service package because he/she felt that it was not clinically appropriate.	53	14
Other	Other situations where recommended service packages could not be offered (e.g. the child was institutionalized in a juvenile justice setting).	210	55

Table 4. *Overrides by service package*

Recommended Service Package:	Authorized Service Package:										Total overrides per service package
	Intensity level	1.1	1.2	2.1	2.2	2.3	2.4	3	4 <sup>a</sup>	9	
1.1	Low		1						<u>98</u>		99
1.2	Low	2			<b>1</b>				<u>64</u>		68
2.1	High	<u>1</u>			2						3
2.2	High	<u>78</u>							<u>47</u>		125
2.3	High	<u>2</u>	<u>20</u>						<u>3</u>		25
2.4	High	<u>1</u>	<u>3</u>		2	1			<u>4</u>		11
3	High										0
4	Low										0
9	Low	<b>19</b>	<b>13</b>		<b>3</b>	<b>3</b>			<b>12</b>		50

a. This service package is of lower intensity relative to service packages 1.1 and 1.2

Note: Bolded numbers indicate overrides to provide more intensive service and underlined numbers indicate overrides to provide less intensive services.

Table 5. *Multinomial Logistic Regression of Client Variables Predicting Compliance*

Client predictor variables	Less Intensive Services vs. Compliance <sup>a</sup>		More Intensive Services <sup>a</sup> vs Compliance		Less Intensive Services vs More Intensive Services <sup>b</sup>	
	$\beta$	Odds Ratio (95% CI)	$\beta$	Odds Ratio (95% CI)	$\beta$	Odds Ratio (95% CI)
Age	.02	1.02(.96,1.08)	-0.10	0.90(0.81,1.00)	0.13*	1.14 (1.02,1.26)
Ethnic Status	0.11	1.11(.69,1.79)	0.10	1.10(0.399,3.04)	0.01	1.01(.37,2.77)
Insurance Status	.04	1.04(.69,1.54)	0.38	1.47(0.68,3.16)	-0.35	0.71(.33,1.51)
Diagnosis <sup>c</sup>						
ADHD	0.20	1.22(.68,2.17)	-0.33	0.72(.27,1.90)	0.53	1.69(.66,4.36)
Anxiety	-0.58	0.56(.25,1.24)	-0.84	0.43(.11,1.69)	0.26	1.29(.33,5.14)
Conduct	0.02	1.02(.56,1.85)	-0.11	0.90(.33,2.46)	0.12	1.13(.42,3.03)
Depression	0.05	1.05(.60,1.84)	1.49**	4.45(1.76,11.30)	-1.44**	0.24(.09,0.59)
Serious Mental Illness	-0.49	0.61(1.76,11.3)	0.99*	2.70(1.06,6.90)	-1.48**	0.23(.09,0.57)
Other	-0.29	0.75(.41,1.37)	0.99*	2.70(1.02,7.13)	-1.28**	0.28(.11,0.72)
Number of diagnoses	0.20	1.23(.60,2.52)	0.11	1.12(.31,4.00)	0.10	1.10(.32,3.85)
Problem Severity at Intake	0.01	1.01(1.00,1.02)	-0.01	0.99(.96,1.01)	0.02	1.03(1.00,1.05)
Functioning at Intake	-0.00	1.00(.98,1.01)	0.028	1.03(1.00,1.06)	-0.03*	0.97(.94,1.00)

<sup>a</sup> The reference category is: Compliance

<sup>b</sup> The reference category is: Provision of More Intensive Services

<sup>c</sup> Primary diagnosis assigned at intake

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Table 6. *Multiple Regression of Compliance Predicting Client Problem Severity Across Treatment*

Model Results	B	SE
Model Intercept (estimated slope of Compliance)	-2.40***	0.14
Override: More Intensive Services vs. Compliance	-0.21	0.37
Override: Less Intensive Services vs. Compliance	0.34*	0.14
Override: Less vs. More Intensive Services <sup>1</sup>	0.55	0.37
Age	-0.05*	0.02
Depression	0.11	0.18
Serious Mental Illness	0.64*	0.18
Other	-0.17	0.15
Weeks in Treatment	-0.01	0.01
Problem Severity at Intake	-0.12***	0.00

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

1. This coefficient was generated in a second analysis that utilized the More Intensive group as the reference group.

Table 7. *Multiple Regression of Compliance Prediction Client Functioning Across Treatment*

Predictor variables	B	SE
Model Intercept (estimated slope of Compliance)	1.66***	0.14
Override: More Intensive services vs. Compliance	0.01	0.27
Override: Less Intensive services vs. Compliance	-0.26*	0.12
Override: Less vs. More Intensive Services <sup>1</sup>	-0.27	0.33
Age	0.05**	0.02
Depression	-0.12	0.15
Serious Mental Illness	-0.62***	0.16
Other	0.04	0.15
Weeks in Treatment	0.01	0.01
Functioning at Intake	-0.14***	0.00

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

1. This coefficient was generated in a second analysis that utilized the More Intensive group as the reference group.