Evidence-Based Services in a Statewide Public Mental Health System: Do the Services Fit the Problems?

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This study examined the degree to which a literature review of evidence-based services identified services appropriate for the actual problems of youth involved in intensive public mental health services. The diagnostic profiles and specific intervention targets reported by treatment providers were coded to determine whether a relevant empirically supported treatment was identified in the literature by the Hawaii Evidence-Based Services Committee for each problem. Of the 2,197 youth with diagnostic information available, 721 youth (33%) had a pure diagnosis for which an evidence-based service was identified in the literature, and 1,953 youth (89%) had a primary diagnosis with a relevant evidence-based service. Of the 1,220 youth with treatment target information, 1,094 (90%) had 1 or more problem areas targeted for intervention with an identified evidence-based service; thus, the vast majority of youth receiving intensive public mental services experienced a mental health difficulty for which an evidence-based service was identified through a review of the empirical literature. Nevertheless, many youth had additional problems for which evidence-based services have not yet been identified through research.

Psychological science has fostered renewed optimism in psychological practice with the development, identification, and utilization of treatment supported by research (Task Force on Promotion and Dissemination of Psychological Procedures, 1995; Wilson, 1995). At the same time, however, widespread dissemination and implementation of such interventions is impeded by continued controversy surrounding evidence-based services (Garfield, 1996; Persons, 1995). The evidence-based movement within child clinical psychology has lagged behind the movement in adult clinical psychology (Herschell, McNeil, & McNeil, 2004), but progress is occurring through the execution of efficacy and effectiveness research for treatments of childhood disorders. Among a host of criticisms of the evidence-based services movement lie concerns regarding the generalizability of treatment effects obtained from randomized controlled trials (efficacy research) to clinical settings (effectiveness research; Chambless & Hollon, 1998; Kopta, Lueger, Saunders, & Howard, 1999).

Criticisms against the generalizability of treatment effects obtained from randomized controlled trials are partially fueled by the contention that efficacy studies exclude clients with comorbid diagnoses, the very clients receiving treatment from community-based practitioners (e.g., Garfield, 1996; Levant, 2004; Nathan, Stuart, & Dolan, 2000; Seligman, 1995). Contrary to this criticism, within child clinical psychology, recent efficacy studies have included young clients with comorbid disorders (e.g., Kendall, Brady, & Verduin, 2001; Weiss, Harris, Catron, & Han, 2003). Additionally, although the presence of comorbid disorders in youth perhaps suggests poorer treatment responses, empirical results suggest that comorbidity is not necessarily related to treatment outcome (e.g., Flannery-Schroeder, Suveg, Safford, Kendall, & Webb, 2004; Webster-Stratton, Reid, & Hammond, 2001). Currently, effectiveness studies for childhood treatments tend to yield poorer treatment outcomes than do efficacy studies (Curtis, Ronan, & Borduin, 2004; Weisz, Donenberg, Han, & Weiss, 1995). It is important to note, however, that evidence from the literature as a whole suggests that factors other than differences in...
client populations (e.g., comorbidity), such as agency characteristics and systems issues, may be important considerations when transporting evidence-based services into the community (Henggeler, 2004; Southam-Gerow, 2004; Weisz et al., 1995).

The Child and Adolescent Mental Health Division (CAMHD) of the Hawaii Department of Health took a significant step toward organizing mental health services provided to children and adolescents with the establishment of the Evidence-Based Services (EBS) Committee in 1999 (Chorpita et al., 2002). The primary task accorded to this multidisciplinary team was to identify and disseminate evidence-based psycho-social services for children and adolescents through a systematic evaluation of published studies. The resultant reports specified evidence-based interventions for a variety of pediatric mental health problems (e.g., anxious and avoidant behavior, attentional problems, depressed or withdrawn behavior, disruptive behavior). Over the past 5 years, CAMHD has promoted large-scale implementation of these evidence-based services throughout its service network.

As noted nationally, questions have emerged regarding the generality and comprehensiveness of the evidence base for addressing the problems of youth in the Hawaii system. Although evidence-based services do not currently address all problems, the extent to which evidence-based services provide coverage for the actual population of youth seeking services remains an empirical question. This study addressed this question by examining, within the statewide CAMHD system of care, the proportion of youth that had a mental health diagnosis or a problem behavior targeted for intervention for which the EBS Committee had identified an evidence-based service in the literature.

Method

Sample

The sample comprised 2,431 youth registered for services with CAMHD. Primary diagnostic information was available for 2,197 (90%) of these youth. Monthly treatment and progress summaries that contain information regarding problem behaviors targeted in therapy are provided for youth who receive mental health services through the CAMHD provider network. Due to the various service delivery systems in CAMHD, only a subset of youth receives services from this provider network. As such, treatment targets were available for a subsample of 1,220 of the youth who received mental health services through the CAMHD provider network. Although only the subset of youth with monthly treatment and progress data was considered for treatment targets, the entire sample was considered with respect to diagnosis to provide as broad a representation as possible.

The sample consisted of 67% male and 33% female youth with an average age of 14.2 years ($SD = 3.4$). Information about ethnicity was unavailable for 32.6% of the sample. Of the remaining youth, the ethnic breakdown of the sample was 30.4% multiethnic, 28.8% Native Hawaiian or Pacific Islander, 22.3% White, 13.6% Asian, 2.5% African American or Black, 2.2% Hispanic or Latino, and 0.2% American Indian and Alaska Native. Although the system does not have a child-specific measure of socioeconomic status, 37.4% were Medicaid eligible. CAMHD requires completion of standard consent and notice of privacy practices forms by consumers or their guardians that specify use of their information for research purposes in de-identified form or following Institutional Review Board approval.

Materials

The primary data source for this report was the Child and Adolescent Mental Health Management Information System (Hawaii Child and Adolescent Mental Health Division, 2004a), which records comprehensive demographic, diagnostic, and treatment data for youth registered for CAMHD services.

Diagnosis. Diagnoses were based on Diagnostic and Statistical Manual of Mental Disorders (4th ed. [DSM–IV], American Psychiatric Association [APA], 1994) codes. Youth received diagnostic evaluations from CAMHD clinical staff, the Department of Education clinical staff, or contracted mental health care providers. Assessment performance standards and practice guidelines require inclusion of a five-axis DSM–IV diagnosis in mental health assessment reports and state that “clinicians are encouraged to use structured or semistructured clinical interviews to arrive at a clinical diagnosis” (p. 160) but do not mandate an interview protocol. All diagnoses on Axes I and II were studied, and comorbidity was defined at the disorder category rather than diagnostic code level.

To explore diagnostic reliability, we selected individuals who had two mental health evaluations within 90 days ($n = 67$) and tested the stability of diagnostic categories. Kappa for this analysis was .43 (Daleiden, Lee, & Tolman, 2004), in the “fair” range (e.g., Mannuzza et al., 1989). We estimate that diagnostic reliability for the entire sample would be higher than for this subsample because short-term repeat assessments are most likely to occur in cases of diagnostic uncertainty, atypical circumstances, or an evolving clinical picture (e.g., new or diagnosis-incompatible information).

For the purposes of this report, Axes I and II were evaluated for the presence of pure, primary, and all DSM–IV diagnoses (APA, 1994). A pure diagnosis re-
flects the presence of a single principal Axis I or II diagnosis in the category of interest with no additional diagnosed disorder; a primary diagnosis refers to the presence of a principal diagnosis in the category of interest with or without an additional diagnosis; and an “all” diagnosis refers to the presence of either a principal diagnosis or an additional diagnosis in the category of interest. For example, a youth with a principal diagnosis of conduct disorder and no additional diagnosis would be included in the (a) pure delinquency and willful misconduct category and the (b) primary delinquency and willful misconduct category. A youth with a principal diagnosis of conduct disorder and an additional diagnosis of major depression would be included in the (a) primary delinquency and willful misconduct disorder category, (b) all delinquency and willful misconduct disorder category, and (c) all depressed or withdrawn category.

**Monthly Treatment and Progress Summary (MTPS).** The MTPS (Hawaii Child and Adolescent Mental Health Division, 2003) is a locally constructed clinician report form designed to measure treatment targets, clinical progress, and intervention practices on a monthly basis. Of particular relevance to this study, treatment targets are defined as “the strengths and needs being addressed as part of the mental health services for that youth” (Hawaii Child and Adolescent Mental Health Division, 2003, p. 1). Using the MTPS, providers indicate up to 10 active treatment targets from a list of 48 predefined targets (e.g., anxiety, attention problems, depressed mood, and so on), with space available for the write-in of up to two treatment targets per month.

All providers receive statewide training on the MTPS. Contracted agencies provide ongoing training and supervision of the implementation. The average 1-month stability of the treatment targets was $\kappa = .65$ (Daleiden et al., 2004), indicating good reliability over time (e.g., Mannuzza et al., 1989). This value likely underestimates true retest reliability due to ongoing treatment between the two time periods.

We assessed the validity of the MTPS by testing whether MTPS targets converged with diagnoses as would be expected. Results suggested that particular diagnoses generally linked to targets associated as features of those diagnoses, whereas targets not thought to associate with those diagnoses did not. For example, targets such as hyperactivity, academic underachievement, and attention problems were significantly more likely to be endorsed for youth with an attention and hyperactivity diagnosis than for youth without such a diagnosis, whereas targets such as anxiety, psychosis, and substance use did not significantly differ between groups with and without attention and hyperactivity problems (cf. Daleiden et al., 2004).

**Procedure**

We matched clinician-generated diagnoses and targets for individual youth to evidence-based interventions identified in the literature by the Hawaii EBS Committee (Hawaii Child and Adolescent Mental Health Division, 2004b). This was accomplished in three steps. The first step was to look at EBS Committee documents. The EBS Committee reviewed the child and adolescent treatment literature to identify practices supported by research. The Committee employed a “level” system similar to the system established by the American Psychological Association’s Task Force on Promotion and Dissemination of Psychological Procedures (APA, 1995; Chambless & Hollon, 1998). For the purpose of this study, an intervention was considered evidence based if it was classified by the EBS Committee as having best or good support, which were comparable to “well-established” and “probably efficacious” services in the APA system. The EBS Committee identified one or more evidence-based services for the following problem areas: anxiety and avoidant, attention and hyperactivity, autism spectrum disorder, bipolar disorder, depressed and withdrawn, disruptive or oppositional, eating disorders, delinquency and willful misconduct, psychotic disorders or schizophrenia, and substance-related disorders.

The second step involved mapping the diagnostic and target codes in the information system as a whole to the EBS Committee problem areas. The *DSM-IV* diagnostic codes and monthly summary treatment targets were coded into one of the identified problem areas from the EBS report. Diagnostic codes and treatment targets that did not fit into one of the EBS problem areas were coded as not included in the evidence base. Strict and conservative instructions were established for coding targets into EBS problem areas such that targets that overlapped with different problem areas were coded as not included in an EBS problem area. For example, depressed mood was coded as a target in the depressed and withdrawn behavior EBS category but suicidality was not because it might overlap with borderline personality problems. Agreement between judges was high (99%).

Finally, after these problem–treatment relations were established, the actual diagnoses and treatment targets for each case were used to identify whether an evidence-based service was identified in the EBS Committee document for that case. For example, if a child had a primary diagnosis of depression, his or her primary diagnosis would be coded as covered by an evidence-based service. If, however, he or she had a diagnosis of reactive attachment disorder, his or her diagnosis would be coded as not covered by an evidence-based service. Similarly, if the child’s therapist indicated depressed mood and academic functioning as targets of intervention, depressed mood would
be coded as covered by an evidence-based service, whereas academic achievement would be coded as not covered.

Results

Of the 2,197 youth with diagnostic information available, 721 (33%) had a pure diagnosis for which an evidence-based service was identified, 1,953 (89%) youth had a primary diagnosis for which an evidence-based service was identified, and 2,068 (94%) youth had at least one diagnosis (primary or additional) for which an evidence-based service was identified. Seventy-two percent (n = 1,572) of youth were diagnosed with multiple disorders. Approximately one in three (30%, n = 664) youth had at least one primary or additional diagnosis for which an evidence-based service was not identified; thus, an evidence-based service existed for all diagnoses of 70% (n = 1,545) of youth with a mental health disorder. Details of the prevalence rates for the specific problem areas are presented in Table 1.

A similar pattern of findings was evident when provider reports of treatment targets were examined. Of the 1,220 youth with treatment target information available, 1,094 (90%) had one or more problem areas targeted for intervention for which an evidence-based service was identified by the EBS Committee. Almost all youth (97%, n = 1,179) had one or more treatment targets for which an evidence-based service was not identified; thus only 3% (n = 41) of youth had an evidence-based service identified for every problem that was the target of treatment. The latter finding is consistent with the MTPS instructions allowing providers to report up to 10 treatment targets per month. Considering up to 10 treatment targets for each youth increased the likelihood that at least one of those targets would not be covered by an evidence-based service. Additionally, coding targets in a way that considered targets falling into multiple problem areas as not included in an EBS problem area decreased the likelihood of EBS coverage for a given target.

As mentioned earlier, available treatment target data from the MTPS represented a subset for whom mental health services were procured through the CAMHD provider network. There are some systematic differences between those youth who have services procured through CAMHD (and thus have target data) and those with services procured outside of CAMHD (without target data). Those with treatment target data were significantly older and more severe in relation to those without target data. Many of the youth without treatment target information were identified through their schools, as would be expected, had more educational and academic diagnoses. Additionally, given that the sample without treatment target data was younger, adjustment diagnoses appeared more frequently in the group without targets. According to the State Evidence-Based Services Task Force, an evidence-based service has not been identified for academic or adjustment diagnoses. As such, the total EBS coverage for diagnoses of those without target information was slightly lower (~4%) less than those with target information.

Discussion

The primary purpose of this study was to examine the extent to which evidence-based services, as identified through an extensive examination of treatment ef-

<table>
<thead>
<tr>
<th>Problem Area Identified by the EBS Committee</th>
<th>Pure</th>
<th>Primary</th>
<th>All Diagnoses</th>
<th>All Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Anxiety and Avoidant</td>
<td>72</td>
<td>3.0</td>
<td>184</td>
<td>8.0</td>
</tr>
<tr>
<td>Attention and Hyperactivity</td>
<td>241</td>
<td>11.0</td>
<td>579</td>
<td>26.0</td>
</tr>
<tr>
<td>Autism Spectrum Disorders</td>
<td>17</td>
<td>1.0</td>
<td>23</td>
<td>1.0</td>
</tr>
<tr>
<td>Bipolar Disorder</td>
<td>36</td>
<td>2.0</td>
<td>108</td>
<td>5.0</td>
</tr>
<tr>
<td>Depressed and Withdrawn</td>
<td>145</td>
<td>7.0</td>
<td>433</td>
<td>20.0</td>
</tr>
<tr>
<td>Disruptive or Oppositional</td>
<td>124</td>
<td>6.0</td>
<td>269</td>
<td>12.0</td>
</tr>
<tr>
<td>Eating Disorders</td>
<td>3</td>
<td>0.1</td>
<td>4</td>
<td>0.2</td>
</tr>
<tr>
<td>Delinquency and Willful Misconduct</td>
<td>55</td>
<td>3.0</td>
<td>256</td>
<td>12.0</td>
</tr>
<tr>
<td>Psychotic Disorders/Schizophrenia</td>
<td>19</td>
<td>1.0</td>
<td>31</td>
<td>1.0</td>
</tr>
<tr>
<td>Substance-Related Disorders</td>
<td>9</td>
<td>0.4</td>
<td>66</td>
<td>3.0</td>
</tr>
<tr>
<td>Not Included in EBS Problem Areas</td>
<td>70</td>
<td>3.0</td>
<td>228</td>
<td>10.0</td>
</tr>
<tr>
<td>No Diagnosis</td>
<td>0</td>
<td>0.0</td>
<td>16</td>
<td>1.0</td>
</tr>
<tr>
<td>Total (Duplicated Problems)</td>
<td>4,288</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (Unduplicated Youth)</td>
<td>791</td>
<td>2,197</td>
<td>2,197</td>
<td>1,220</td>
</tr>
</tbody>
</table>

Note: EBS = Evidence Based Services.

aDescribes percentage of youth with available diagnostic information (n = 2,197). bDescribes whether youth have one or more diagnoses or treatment targets coded in the problem area; therefore, percentages sum to more than 100% across rows.
ficiency research, provide coverage for the actual population of youth seeking intensive services through the CAMHD of the Hawaii Department of Health. Taken together, the results indicate that the vast majority of youth receiving services through the CAMHD have problems for which at least one evidence-based service is identified but that many youth have additional problems for which evidence-based services have not yet been identified. Nearly one third of all youth registered for public mental health services through CAMHD has a single diagnosis for which an evidence-based service has been identified in the literature. This finding indicates that many consumers receiving intensive treatment in clinical settings actually present with pure diagnostic profiles and appear ideally suited to receive services designed, tested, and shown effective in research settings for youth with similar mental health concerns. Furthermore, an evidence-based service could be identified for the primary diagnosis of 9 out of 10 youth and for one or more treatment targets for 9 out of 10 youth. This suggests that despite the presence of comorbid diagnoses and multiple treatment targets, evidence-based services have been identified in the literature for the principal concerns for these youth.

The state EBS task force has not identified evidence-based services for the following diagnostic categories: adjustment disorders with mixed disturbances; reactive attachment disorder; learning, communication, and academic disorders; intermittent explosive or impulse control disorders; cognitive disorder nonspecific; and neglect, physical, and sexual abuse of the child. Although most youth in the system presented with some problems amenable to an evidence-based intervention, many youth had one of these diagnoses not covered by an evidence-based practice, and most youth had at least one target not directly covered.

These exclusions highlight the fact that the matching performed in this study is influenced by at least three factors related to the definition and application of (a) what constitutes evidence with respect to a target problem, (b) disorders and their diagnoses, and (c) contextual and matching factors. For example, the Hawaii system organizes the evidence base in terms of the problems targeted and identifies a variety of matching factors. Specific studies such as that of Cohen, Deblinger, Mannarino, and Steer (2004) that treated posttraumatic stress disorder in a population of youth with histories of abuse or neglect are considered evidence based for the treatment of anxiety and avoidance (i.e., the posttraumatic stress disorder) matched to the context of young children with histories of abuse or neglect, but this protocol is not considered evidence based for the treatment of neglect, physical, or sexual abuse. For a study to be considered evidence based for neglect, physical, or sexual abuse, the target of treatment and primary outcome measure would likely need to be the experience of neglect, physical, or sexual abuse, not solely a diagnosis of neglect, physical, or sexual abuse. This literature has not been addressed in detail by the Hawaii EBS committee. To date, the Hawaii review has primarily focused on evidence for treatment targeting mental health problems. Thus, problems such as academic difficulties and neglect, physical, or sexual abuse, which are of a high degree of interest to other system partners (e.g., education and child welfare), have not been comprehensively addressed in the review. These are areas in need of additional attention, and the utility of organizing the evidence base with respect to target problems remains an ongoing topic of debate and discussion.

Regardless of whether diagnoses or treatment targets are examined, this study led to similar overall conclusions about the capacity to identify one or more evidence-based services. Evidence-based interventions have been identified for the diagnoses and targets of most youth in the system, while at the same time many youth had diagnoses and targets without evidence-based interventions identified. Although it is beyond the scope of this article to address the relative merits of prescribing treatment based on diagnoses as opposed to treatment targets (cf. Chorpita, Daleiden, & Weisz, in press), the primary difference between these perspectives in this study was the prevalence rates with which specific evidence-based services would be prescribed (see Table 1).

**Limitations**

This study has several limitations. The MTPS does not require service providers to designate a primary treatment target; therefore analyses were limited to the presence of a target. Another limitation is that the CAMHD system provides intensive public mental health services (i.e., intensive home and community-based services, therapeutic foster homes, and residential services), whereas less intensive, ambulatory services are generally provided through managed health plans or the Department of Education’s School Based Behavioral Health program. Therefore, results from this study may not generalize to systems of care serving youth with less intensive needs. As an additional concern, although an evidence-based service may be identified in the literature, it may not necessarily be available in the community. Clients may not have access to all services, and those who do have access may still have challenges finding available providers. Additionally, this article is predicated on the assumption that diagnoses and problems are reasonable bases for identifying appropriate services for youth. This study only matched treatments based on diagnoses and targets and ignored other individual difference and contextual variables, such as gender, age, ethnicity, setting, and so on, that may be relevant to individualizing care.
Future Directions

The effectiveness of evidence-based interventions depends to some extent on congruence between the idiosyncratic presentation of each client and the qualities of the original study sample (Haynes, Kaholokula, & Nelson, 1999; Wilson, 1998). Much has been made of the lack of external validity of efficacy research due to the diagnostic complexity of clients treated in clinical settings relative to those involved in efficacy studies and insufficient coverage of the problems encountered in community settings (e.g., Garfield, 1996; Levant, 2004; Nathan et al., 2000). Our findings indicate that a significant number of youth would potentially benefit from a large-scale evidence-based services dissemination, but a sizable portion of these same youth would still face problems for which evidence-based services are not yet identified.

Identification, the focus of this report, is an early step in system development. From the set of identified treatments, system designers may select those to include in a service array and provide appropriate benefits so that consumers have access to such services. Once consumers have access to services in a system, there remains a question of provider availability to deliver those services, and, if available, whether those services are delivered with sufficient integrity to the evidence-based model. This article addresses only identification, the first step in this process. Several types of studies are needed to continue this line of research past the identification phase, such as investigations of access, availability, and integrity. Studies of access could examine service arrays, benefit availability, contracts, and funding streams, whereas studies of availability might involve examination by geographic area, waiting times, travel distances, provider ratios, and so on. Studies of integrity in the form of treatment fidelity investigations have become more common, but further work is needed (e.g., Weisz, Doss, & Hawley, 2005).

Inclusion of additional matching factors beyond diagnoses and treatment targets is another key issue for future research direction. Matching on more specific factors other than diagnoses and treatment targets, such as gender, setting, ethnicity, and age, may increase the appropriateness of fit between youth and treatment. At present, however, such a strategy would tend to reduce the proportion of the population with an identified evidence-based service because it increases the demands on the research base. A continued development of evidence-based approaches might, however, present other models for identifying empirically supported interventions for clinically relevant case features beyond matching services to diagnoses or specific problems within diagnoses. The CAMHD EBS Committee review remains a work in progress, such that the research literature related to new problem areas is continually being reviewed and coding schemes expanded. Therefore, as examination of research continues, the degree to which evidence-based services provide coverage for youth’s problems and other potential matching factors will hopefully increase.

With respect to the actual evidence base, future thought and research should focus on continued treatment testing, identification of evidence-based services, and subsequent dissemination. Another important question, however, is at what point resources should be allocated to dissemination of evidence-based services as opposed to other strategies for improving the quality of services and outcomes for youth (e.g., performance measurement, outcomes monitoring). Systems of care face complex discussions and decisions about how to allocate resources among the various quality improvement strategies. Evidence-based interventions are one of multiple strategies viable for the improvement of mental health services for youth.

References

EVIDENCE-BASED SERVICES IN A MENTAL HEALTH SYSTEM


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