Chapter One

Building and Maintaining a System of Care

Symposium

Outcome Analyses from the Longitudinal Comparison Study of the National Evaluation of the Comprehensive Community Mental Health Services for Children and their Families Program

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Symposium Introduction

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This symposium presented results of outcome analyses from the Longitudinal Comparison Study conducted as part of the National Evaluation of the Comprehensive Community Mental Health Services for Children and their Families Program. The initial presentation addressed policy implications of the longitudinal comparison study and the national evaluation overall. The three presentations that followed focused on analyses of outcome data. These presentations provided information on the effects of systems of care on juvenile arrest rates and substance abuse. In addition, an imputation procedure was illustrated for generating missing clinical outcome data using services and costs variables. The implications of using imputation procedures for analyzing data across system of care and matched comparison communities was also addressed. The role of these presentations in understanding the effectiveness of community-based mental health services was also discussed. In particular, these presentations illustrated the use of sophisticated statistical approaches (e.g., survival analysis, general growth mixture modeling, and multiple imputation) that attempt to address various confounding factors found when conducting longitudinal research in community settings.

Policy Implications of the National Evaluation

Rolando Santiago

Introduction

This paper presents an overview of the policy implications of the national evaluation of the Comprehensive Community Mental Health for Children and Their Families Program. This program, sponsored by the Center for Mental Health Services (CMHS) at the Substance Abuse Mental Health Services Administration (SAMHSA) since 1993, has provided grant funding for the implementation of systems of care for mental health services in communities throughout the United Sates. The program represents the largest federal investment ever to develop community-based mental health services for children and their families; and it provides grants to states, communities, territories, and Native American tribes to improve and expand their systems of care to meet the needs of children and adolescents with serious emotional disturbances and their families (Manteuffel, Stephens, & Santiago, 2002). In total, 67 grants have been awarded to communities in 43 states.

The system-of-care program theory (Stroul & Friedman, 1986) asserts that service delivery systems for children with serious emotional disturbance need to offer a broad array of accessible, community-based services that address children's individual needs in the least-restrictive setting possible, include the family in treatment planning and delivery, and provide services in a culturally competent manner. In addition, because many children with serious emotional disturbance use a variety of services and have contact with several child-serving agencies, service delivery should be coordinated and collaborative across agencies. The approach asserts that if systems of care deliver services in this manner, outcomes for children and families will be better than in service delivery systems that deliver services in the usual manner.

The National Evaluation and its Policy Implications

The national evaluation of this program was designed to examine the implementation of system-of-care theory, as described by the model. The evaluation has a strong commitment to both national and local-level evaluation. Data from the evaluation are used to inform policy development at the federal, state, and local program level. The overall intent is to build and disseminate effective service systems.

The national evaluation has multiple policy audiences. These include: (a) individual program participants; (b) program personnel; (c) local-level policymakers and agency administrators; (d) State agency personnel and legislators; (e) Federal agency personnel, legislators, and national advocacy groups; and (f) researchers and evaluators. The existence of these multiple policy audiences creates a unique set of circumstances for presenting evaluation data that are relevant to the policy decisions that each of these stakeholder groups must make. In order to provide relevant information to these diverse audiences, the data must address questions that are relevant to each particular audience. These questions differ for participants, agency personnel, legislators, and researchers and evaluators. The messages that are presented must use the language and level of analytic complexity that fits the audience. As an example, the complex analyses presented in this symposium in March of 2002 were directed primarily to a research and evaluation audience. The information will need to be presented differently to maximize its impact on other policy audiences.

While the diversity of the audiences presents these unique challenges, there have been a number of successes in the use of the national evaluation data to influence policy decisions. First, the growth of the Comprehensive Community Mental Health Services for Children and Their Families Program can be viewed as evidence of the effective use of evaluation data at the Federal level. The fact that currently there are 67 funded communities and that plans are in place to fund another 13 to 16 communities this fall is attributable, in part, to the numerous presentations and annual Reports to Congress that have demonstrated the effects that the grant initiative has had in the funded communities. Second, there have been a number of examples of the effective sustainability of the federally-funded programs. This sustainability has been supported by policy changes at the local and state levels—policy changes that have been informed by data from the national evaluation. Third, the dissemination of components of the system-of-care model across the country in communities that have not received CMHS funding for system of care implementation has been driven, in part, by effective presentation of data suggesting that positive mental health service delivery system reform is possible.

Continuing Challenges

While there have been a number of successes, several evaluation and policy challenges remain. First, there is the complexity of evaluating questions of overall effectiveness within community settings. Second, is the challenge of making specific questions about evidence-based interventions and the outcomes of other specific services relevant to policy audiences. Third, is the continuing challenge of translating complex and sometimes uncertain research findings into easily digestible information that is useful for policy decision-making by multiple audiences.

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Survival Analysis of Arrest Data in the Longitudinal Comparison Study

Tim Connor, Debra L. Phan, Robert L. Stephens

Introduction

Grant funding for the Comprehensive Community Mental Health for Children and Their Families Program. This program, sponsored by the Center for Mental Health Services (CMHS) at the Substance Abuse Mental Health Services Administration (SAMHSA) is designed to support the implementation of systems of care for children with serious emotional disturbance who often come in contact with a number of different child-serving agencies. One of the populations that these grant funds are intended to serve are children in juvenile justice systems. While many juvenile justice systems historically have been correctional by nature, more facilities are beginning to integrate mental health services into their institutions. Several other variables have been found to have fairly consistent influences on recidivism such as age at first conviction, group home placement, and status conviction (Myner, Santman, Cappelletty, & Perlmutter, 1998). Additional studies also have found personality traits and substance abuse to be related to juvenile recidivism (Wilson, Rojas, Haapanen, Duxbury, & Steiner, 2001). Many of these characteristics are related to children's mental health. Thus, the contribution of mental health services in reducing recidivism does seem plausible. In fact, evidence exists to show that mental health interventions can have an impact on reducing juvenile recidivism (Dembo et al., 2000).

This paper examines the impact of mental health services in a CMHS-funded system-of-care site and a non-system-of-care site. The research questions are:

- How is juvenile delinquent behavior affected after children are enrolled into mental health services?
- Do the rates of juvenile delinquent behavior differ among children served in a system of care versus a non-system of care?

Method

Data for this paper come from the longitudinal comparison study conducted from 1997-2000 as part of the national evaluation of the Comprehensive Community Mental Health Services for Children and Their Families Program. Three system-of-care grantee communities from Phase I of the CMHS initiative were paired with three non-system of care communities. One of the pairs included children served in Ohio in the Stark County system of care and the more traditional service system in Mahoning County.

Participants

From August 1997 through October 1999, 232 children and families were enrolled in the Stark County system of care and 217 children and families were enrolled in the more traditional Mahoning County system. Children were eligible for the study if they were between the ages of 6 and 17.5 and presented with serious emotional or behavioral problems. A comparison of baseline demographic characteristics revealed that children enrolled in the study were fairly similar in the two communities. Children's age and gender distributions did not differ; however, children in the two communities did differ with regard to race/ethnicity ($\chi^2 = 46.82$, $df = 3$, $p < .001$) and family income ($\chi^2 = 11.32$, $df = 1$, $p < .001$). Children in the system-of-care community were more likely to be White and to report family incomes greater than $15,000 per year.

Data

Data were collected from the management information systems (MIS) in the Stark County and Mahoning County Juvenile Court Departments. These MIS include current and historical information on all juvenile offenses in the county including offense type, degree of offense, date of court referral, adjudication decision, and disposition decision. Both official and unofficial cases are included in the data. Although unofficial cases still involve actual offenses, the case is handled informally. For example, the parents and the judge may come to an agreement about the child's disposition as opposed to a formal court hearing process. A wide range of offenses are recorded in each MIS including violent crimes, property crimes, criminal trespassing, disorderly conduct, alcohol and drug-related offenses, weapons-related offenses, truancy and curfew violations, and probation violations.

Analysis

A survival analysis technique was used to determine whether children in the SOC "survived" longer after intake without committing an offense than children served in the non-SOC. The technique measures the time between intake and an ensuing offense. After intake, a probability for every day is calculated that represents the probability of an offense being committed in each group of children. These individual probabilities are charted over a period of time to form a survival function. Since the survival function plot starts at the time of intake for each child and each child was enrolled at different times, the probability of committing an offense is not relevant to time on a calendar but rather time after program intake. However, juvenile arrest data were collected over a period of calendar time (i.e., January 1997 through October 2000). Thus, less post-intake data were available for those children enrolled later in the study. One of the advantages of survival analysis is the ability to use information from all cases even though varying amounts of data are available. Thus, a child with six months of post-intake arrest data contributes to the first six months of the survival function and then drops out of the analysis. The present application of survival analysis used Cox Regression, which allows for the inclusion of time-invariant (e.g., gender) and time-varying covariates (e.g., age) in the model.

The effects of individual variables were tested alone first. Then, in the comprehensive survival model, all variables were included using both forced entry and forward stepwise regression techniques. The order of forced entry was age, treatment site (SOC; non-SOC), gender (male; female), race/ethnicity (White; non-White), family income (less than $15,000; $15,000 or more), and prior offense history (0, 1, or 2+ prior). Age was included as a time- varying covariate. Both models generated similar results. The forced entry model is presented below.

Results and Discussion

The recent offense history of children in the SOC versus the non-SOC was reviewed first for comparability. In the eight months prior to intake, 20% of children in the SOC committed offenses compared to 22% of children in the non-SOC. This difference was not statistically significant.

After establishing that the probabilities of committing an offense were similar prior to intake, a basic model was calculated generating survival functions for SOC and non-SOC children with no covariates included. Children in the non-SOC site had a slightly greater probability of committing an offense, $\chi^2 = 3.707$, $df = 1$, $p = .054$ (Figure 1). More children survived without committing an offense in the SOC over the first 1000 days after intake. At the end of the 1000 days, 67% of children had survived in the SOC site compared to about 58% of children in the non-SOC site.

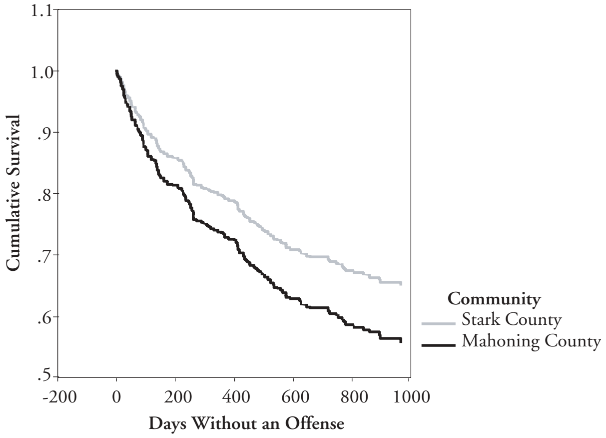
Survival analyses were then performed to determine the impact of demographic characteristics on survival functions without site included. The impact of age was highly significant, $\chi^2 = 76.964$, $df = 2$, $p < .0001$, as previous studies have shown. While 91% of children between the ages of 6-9 did not commit an offense after intake, only 52% of children between the ages of 10-13 survived without an offense. Only 40% of children between the ages of 14-17 survived without an offense.

Race/ethnicity had no effect on children's probability of recidivating. Prior offense history, however, had a large effect, $\chi^2 = 164.543$, $df = 2$ $p < .0001$. Only 17% of children with two or more offenses prior to intake survived without committing another offense in the first 1000 days after intake. Thirty-eight percent of children with one prior offense survived while 80% of children with no prior offenses survived.

To determine if the site effect would remain once the strong effects of variables like age and prior offense history were added, the comprehensive survival model was run with all variables. When all variables were included, the slightly greater probability of committing offenses in the non-SOC was not observed and the effects of age and prior offense history remained strong (Table 1). The relative risk of committing an offense went up 20% for every year increase in age, *exp(B)* = 1.196, *p* < .0001. The relative risk of committing an offense was 152% greater for children who had committed one prior offense, *exp(B)* = 2.52, *p* < .0001. The relative risk of committing an offense was 389% greater for children who had committed two or more prior offenses, *exp(B)* = 4.889, *p* < .0001.

Figure 1

Survival Function for the Stark County System of Care and the Mahoning County Traditional Service Delivery System with No Covariates



In summary, the effect of treatment site on delinquency disappears when the strong influences of age and prior offense history are included in the model. The high rate of recidivism in this sample regardless of treatment site raises the issue of whether these children need mental health interventions more tailored to their specific juvenile delinquent behaviors. Regardless of whether the intervention was through the SOC or non-SOC, past offenders were very likely to offend again during or after mental health services. Another possible implication is the need for different treatments for "chronic" versus less frequent offenders. Additional variables not included in this analysis could also influence delinquency. Future analyses should examine the influence of time in mental health treatment and degree of prior offenses on future delinquency.

Table 1
Relative Risk of Committing an Offense - Overall Model

Covariate	*Relative Risk*
Age (time-varying)	1.20***
1 Prior Offense	2.52***
2+ Prior Offenses	4.89***
Male	1.56*
Race: White	.92
Poverty (<$15,000)	.86
SOC Site: Stark	.80

****p* < .001, ***p* < .01, **p* < .05

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General Growth Mixture Modeling (GGMM) of Alcohol Use Patterns in the Longitudinal Comparison Study

Robert L. Stephens, Debra L. Phan, & Paul Greenbaum

Introduction

The onset of both substance use and mental disorders frequently occurs in adolescence (Substance Abuse and Mental Health Services Administration, 1999), and substance use is a frequently co-occurring condition for children with serious emotional disturbance (Greenbaum, Prange, Friedman, & Silver, 1991). Further, the onset of substance use prior to age 15 has been associated with substance-related problems in adolescence and adulthood (Spoth, Reyes, Redmond, & Shin, 1999). As noted by Chassin and her colleagues (Chassin, Pitts & Prost, 2002), understanding the heterogeneity in developmental trajectories of drinking behavior among adolescents is critically important to understanding the impact that these various trajectories have on the development of mental disorders. This study focuses on identifying patterns of change in alcohol consumption among children enrolled in system-of-care and matched traditional service delivery systems in the longitudinal comparison study of the National Evaluation of the Comprehensive Community Mental Health Services for Children and Their Families Program.

Methods

Participants. Participants included 123 children enrolled in system-of-care (SOC) and 100 children enrolled in matched traditional service delivery systems (Non-SOC). Children were included in the study if they were between the ages of 8 and 18 years old and if they reported consuming alcohol at least once during the first 18 months after study entry. Demographic information at intake for the sample is presented in Table 1. The two samples differed only in terms of family income. Children in SOC were significantly more likely to have family incomes below $15,000 per year.

Table 1
Demographics of Children at Intake into Services by Site

	SOC (N = 123)	*Non-SOC (N = 100)*
Age		
Mean	14.38	14.77
Race		
Male	42.1%	33.7%
Non-White	57.9%	66.3%
Gender		
Male	58.5%	59.6%
Female	41.5%	40.4%
Family Income*		
Below $15,000	43.3%	25.0%
Above $15,000	56.7%	75.0%

* $p < .05$

Measures. Measures were derived from instruments included in the National Evaluation protocol. One item from the Substance Use Questionnaire, which asked for the number of occasions the participant had consumed alcohol in the past 30 days, was the outcome measure for the study. Covariates included demographic variables from the Descriptive Information Questionnaire and baseline functional impairment, as measured by the Child and Adolescent Functional Assessment Scale (CAFAS; Hodges & Wong, 1996). The CAFAS is widely used for evaluating the extent to which services for children and their families reduce functional impairment associated with mental health disorders.

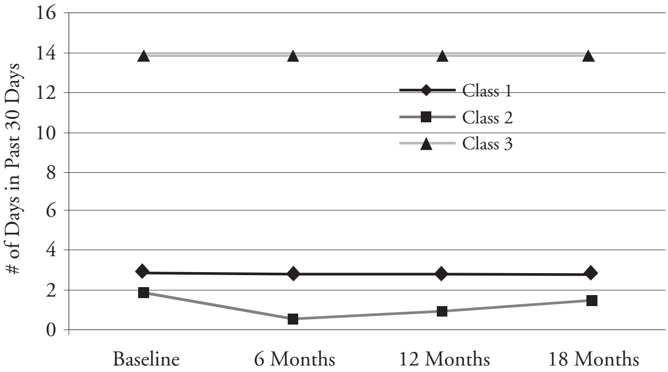
Analysis. Latent growth curve analysis and general growth mixture modeling were used to determine heterogeneity in patterns of change in 30-day alcohol consumption over the 18-month study period. M*plus* version 2.01 statistical software (Muthén & Muthén, 1998) was used to perform all growth curve analyses. The initial step in the analysis strategy was selection of the best-fitting latent growth curve model. A series of nested polynomial models was fit to the data starting with an intercept only model and proceeding to a linear slope model and then to a linear plus quadratic slope model. Selection of the best-fitting model was based on the likelihood ratio test. Once the best-fitting latent growth curve model was established, latent class enumeration testing was performed in order to select the best-fitting growth mixture model. As these models are not nested, selection of the best-fitting model was based on information criteria fit indices that included the Akaike Information Criteria (AIC), the Bayesian Information Criterion (BIC), and Sample Size Adjusted Bayesian Information Criteria (SSABIC). Finally, once different classes of individual growth patterns were identified, covariate or predictor effects were examined for each latent growth class.

Results and Discussion

Results of the initial latent growth curve modeling indicated that the best-fitting model included an intercept and a linear slope component only. Comparing the likelihood ratio 0^2 of the intercept and slope model to the intercept, linear slope, and quadratic slope model showed that adding a quadratic component did not contribute to a better-fitting latent growth curve model. As expected, the initial latent growth curve model indicated that children's alcohol consumption increased over time, essentially doubling, from an initial average of slightly over 1.5 days in the past 30 days at baseline to an average of 3.0 days in the past 30 days at 18 months.

Using the fitted latent growth curve slope model as a basis for comparison, the next step involved the enumeration of latent classes. Information criteria fit indices indicated that a three-class solution was the best-fitting model. The growth curve model for Class 1 was a no-change, intercept only model. Thirty-day alcohol use for children in this class was low at intake and remained low over time. The Class 2 growth curve model included intercept and slope growth factors. Alcohol consumption for children in this class was low at intake and increased slightly over time. The Class 3 growth curve model was also a no-change, intercept only model. Children in this class had high alcohol consumption at intake and continued to have high consumption over time. Figure 1 depicts the estimated trajectories for the three classes.

Figure 1
3-class Model for 30-day Alcohol Use



Following class enumeration, covariate analysis was conducted for each of the three classes simultaneously. Covariates included family income (less than $15,000 per year vs. greater than or equal to $15,000 per year), age (less than 15 years old vs. greater than or equal to 15), gender (male vs. female), site (SOC vs. Non-SOC), and child functioning at baseline (Table 2). Most interesting were the results for Class 2—the only class to exhibit a slope growth factor in the latent growth model. In Class 2, the latent intercept was significantly predicted by age with children 15 or older at entry into the study having a greater initial alcohol consumption rate. In addition, family income predicted change in alcohol consumption over time (i.e., latent slope). Alcohol consumption increased over time at a greater rate for children from households with incomes less than $15,000 per year. None of the other effects was significant. For Class 1, initial rates of alcohol consumption in the past 30 days (i.e., latent intercept) were significantly higher for children with higher baseline CAFAS scores. None of the other effects was significant. For Class 3, the heaviest drinking class, initial rates of alcohol consumption in the past 30 days (i.e., latent intercept) were significantly higher for males, children 15 or older, and children with greater baseline functional impairment. The two sites differed with respect to the effect of age on the initial level of alcohol consumption. For children served in Non-SOC, those who were 14 or younger had higher 30-day alcohol consumption rates than those 15 and older. However, for children served in the SOC, the opposite was observed, children 15 and older had higher 30-day alcohol consumption rates than those 14 and younger. One possible explanation for this interaction effect is that the older children in Non-SOC might have been in more restrictive placements (e.g., incarcerated or in residential treatment facilities) limiting their access to alcohol.

Table 2
Estimated Covariate Coefficients for
the Growth Factors from the 3-Class Growth Mixture Model

		Coefficients			
Class (Propor. of total sample)	*Covariate*	*Unstandardized*		*Standardized*	
		Intercept	*Slope*	*Intercept*	*Slope*
Class 1 (.328)	Baseline CAFAS	.010*	---	.007*	---
Class 2 (.578)	Age	.325**	.000	2.022**	.000
	Family Income	.000	.212*	.000	2.091*
Class 3 (.094)	Gender	2.631*	---	.525*	---
	Age	6.210**	---	1.239**	---
	Baseline CAFAS	.043**	---	.009**	---
	Site X Age	-13.419**	---	-2.678**	---

*$p < .05$, **$p < .01$

In summary, results revealed three separate trajectory classes, but only one (Class 2) showed change in alcohol consumption over the 18 months we studied. The other two classes differed only in their rates of alcohol consumption in past 30 days at baseline. Change in 30-day alcohol consumption rates over time was unrelated to the type of service delivery system. Although annual family income below $15,000 was associated with more rapid increases in 30-day alcohol consumption than annual family income greater than or equal to $15,000, this effect was not different in the two sites. The only difference between sites was observed in the heaviest drinking class where the influence of age on initial levels of alcohol consumption was reversed in the two sites.

Some limitations of the study should be noted. First, the lack of site effects might be a function of the insensitivity of the 30-day alcohol use measure. Our future work will examine other measures of drinking (e.g., number of binge drinking episodes) that have been shown to be sensitive to heterogeneity in alcohol consumption change trajectories (Chassin, Pitts, & Prost, 2002). Second, a change in the analysis strategy needs to be considered. Because of the initial focus of the study on assessing differences in alcohol use patterns across two different service delivery systems, time was conceptualized in terms of time in services and age was entered as a covariate in the model. Given the importance of adolescent development on alcohol consumption, time should be represented as age rather than time after study entry. This would result in the data being structured to reflect each individual child's stage of development rather than time in study. Age at study entry could be used as a covariate in the model to represent the influence of time in service on the outcome. Third, the current study limited the number of covariates included in the models. Other covariates, like family functioning, that could potentially impact alcohol consumption should be included in subsequent studies of change in alcohol consumption over time in this population.

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Using Services Data to Adjust for Attrition in Outcome Analyses: An Application of Multiple Imputation

E. Michael Foster

Introduction

A major threat to the validity of longitudinal evaluations like the Center for Mental Health Services (CMHS) comparison study involves attrition. Using data from the Ohio pair (Stark and Mahoning), we examine how the handling of non-response affects measured between-site differences in the trajectory of key outcome measures. In particular, we examine the use of multiple imputation and the benefits of incorporating administrative data in the imputation model.

Follow up rates for the Ohio pairs are relatively high, especially given the nature of the population served. However, even modest attrition can seriously distort study findings if attrition is related to either observed or unmeasured characteristics of children and their families. The apparent trajectory of children's emotional well-being over time, for example, can be misleading if the children of the greatest severity are more (or less) likely to leave the study. Between-site comparisons are especially vulnerable if the rate of attrition differs between sites or if the factors predicting study dropout differ between sites.

The handling of attrition and non-response more generally has been an active area of methodological innovation in recent years. Among the new methods are multiple-imputation (MI) techniques (Schafer, 1997a, 1999; Schafer & Olsen, 1998). Multiple imputation is superior to common methods for handling missing data such as listwise deletion or mean imputation. Those methods discard useful information (reducing statistical power) and/or make implausible assumptions about the missing data mechanism. When those assumptions are incorrect, analyses of the complete or adjusted data can produce results that are misleading and/or have poor statistical properties.

One can think of MI as involving three steps. The first of these involves filling in the missing variables in the data and creating a complete data set. A common way of doing this involves the Markov Chain Monte Carlo (MCMC) method (Schafer, 1997b). The key advantage of this method is that it preserves the relationship among all variables included in the imputation stage as well as the residual variance of the filled-in variables. Recognizing the uncertainty associated with the filled-in variables, MI repeats this process five or more times, generating a series of "complete" files. A key feature of the MCMC-generated files is that they are statistically independent, an advantage that will become apparent below.

In the second step, each of the imputed datasets are analyzed, using any method. The only restriction on the choice of models is that the analytical model not be more general than the imputation model. For example, one cannot add variables to the analysis that were not included in the imputation model. If a variable is added at the analysis stage, the relationships between that variable and the others were not preserved at the imputation stage, and estimates based on that relationship (e.g., regression coefficients) are potentially biased. As an example, this problem might occur when the analysis model includes interactions between two variables that were not included in the imputation stage.

This problem points to a strength of MI, however. The researcher may include variables in the imputation model that are intentionally excluded from the analysis (Collins, Schafer, & Kam, 2001). For example, time of study entry might be related to severity and so might be useful for imputing data. Services data (available for all individuals, whether they are available for interview or not) is another potential source of such information. This presentation explored the use of MI using data from the Ohio comparison pairs that are part of the CMHS evaluation.

Data

For this study, we relied on three sources of data. First, we used data from the baseline and 12-month follow up interviews. The principal outcome for these analyses is the change in the Child Behavior Checklist (CBCL; Achenbach, 1991) total problems score that occurred between the two interviews. We also made use of basic client and family demographics. Second, data were also collected for services received at the core mental health agencies and other child-serving agencies and providers in the community. The National Evaluation collects management information system data from the mental health agencies in study communities. These databases are available for both Stark County (the grantee) and Mahoning (the comparison site). However, those databases suffer from key omissions—namely, they do not provide data on residential psychiatric care or other child-serving agencies.

For this reason, we collected data from a third source. We undertook a series of record reviews at the major residential service providers and key child-serving agencies in the study communities. This record review covered service use from 1997 through 2000. The data cover only those services received while participants lived in study communities; services received by individuals who moved to other areas of Ohio or out of state are not included. These data can be used to characterize service use in the six months preceding and 12 months following study entry.

Participating agencies and providers include four local residential providers (two in each community) as well as agencies in the juvenile justice, child welfare and special education sectors. In the case of juvenile justice, data were obtained from county juvenile court as well as from the regional juvenile corrections authority. Information on out-of-home placements was obtained from the county child welfare offices. School districts in the cities and counties involved provided data on special education placements.

All agencies contacted provided data, either in the form of a management information system or a hard copy summary. Information provided included date and type of service. In some instances, information on expenditures on those services was also available.

Results

Using PROC MI and PROC MIANALYZE in SAS (SAS Institute, 2001a, 2001b; Yuan, 2000), we conducted a series of alternative analyses.

Before presenting those results, we briefly describe the extent and degree of missing data in the data. While moderate in overall magnitude, attrition at twelve months at Stark (15%) was twice that for Mahoning (7%). The relationship between attrition and baseline CBCL was modest but somewhat larger at Stark. (Individuals lost to follow up tended to have lower, i.e., better, scores at baseline, especially at Stark.) These figures suggest that the data were not "missing completely at random" (Schafer, 1997b). This suspicion is confirmed when community service data are examined. Individuals lost to follow up were 50% more likely to have been involved in juvenile justice between interviews; site-specific analyses suggest that this relationship was driven exclusively by patterns of missingness at Stark.

These figures suggest that standard alternatives, such as listwise deletion, may produce a rather distorted view of the link between site and change in the CBCL over time. To assess this possibility, we undertook three analyses. Each relied on the same analytical model. That model involved a regression of 12-month change in the CBCL on a constant, a site indicator and baseline characteristics of the child and his or her family. (These last characteristics were included to adjust for between-site differences at baseline.) Presented in Table 1 is the coefficient on the site indicator. The different analyses differed in how missing data were handled. The overall trend over time was for the CBCL to drop, so the positive coefficient on the site variable indicates that children and adolescents at Stark showed less improvement.

Row 1 of the table provides conventional regression results under list-wise deletion. One can see that the effect of site is not significant. Row 2 presents multiple imputation results where the imputation model includes only the variables in the analysis model. Row 3 includes supplemental information, such as the date of entry into the study and the use of community services both before and after entry into the study. One can see that the effect of site increases across analyses, but that the effect of site is insignificant for all analyses.

Table 1
Alternative Estimates of the Effect of Site

Model	*N*	*Beta*	*t-stat*
OLS (LWD)	363	0.42	1.08
Imp. model 1	431	0.64	1.07
Imp. model 2	431	1.09	1.19

Why did the use of the supplemental information not affect the results more substantially? First, the level of attrition was not terribly high. Second, community service use—both pre-study and concurrent—was not terribly predictive of the change in CBCL. Using that information to impute missing information, therefore, had relatively little impact on the imputed values and, concomitantly, the analyses of the filled-in data.

It is important to note that regardless of the variables included in the imputation model, MI still assumes the data are missing at random (Schafer, 1997b). MAR requires that the likelihood of response depend on observed variables but not on the missing values of the partially observed variables. This assumption may be incorrect, and analyses that relax the MAR assumption may produce rather different findings. (For example, see (Foster & Fang, 2002).) In future work, we will apply non-MAR models to these data.

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Symposium

Predictors of Service Quality and Family Participation in CMHS funded Systems of Care

Chair
Rolando Santiago

Authors
Gregory A. Aarons et al.
Kelly L. Frailing
Kelly Rogers et al.
Robin E. Soler et al.

Symposium Introduction

Rolando Santiago

This symposium highlighted research examining predictors of the quality of services and levels of family participation in systems of care funded by the Comprehensive Community Mental Health Services for Children and their Families Program. The initial presentation addressed the effects of leadership and organizational climate on service quality. This was followed by a presentation that addressed the role of parents' satisfaction with children's progress in the level of engagement of families with services. This presentation offered strategies for increasing family satisfaction with services. The third presentation systematically examined factors related to differential attrition across multiple communities participating in a systems of care initiative. The final presentation presented a cluster analysis of services received by children and families included in the national evaluation longitudinal outcome study. Discussants Archie Smith and Mike Epstein provided comments on the role of these variables in enhancing the effectiveness of community based services.

Examining Leadership, Organizational Climate and Service Quality in a Children's System of Care

Gregory A. Aarons, Michela Woodbridge, Angelina Carmazzi

Introduction

Children's mental health services often take place in organizational practice settings. Leadership and organizational climate and their link with service quality have been understudied in mental health service settings. Understanding these issues can be important for program leaders, mental health service providers, and consumers because they can affect both the way services are delivered and ultimately, outcomes.

Leadership affects many aspects of an organization's environment and may subsequently influence mental health services. For example, Glisson and Durick (1988) found that higher leadership ratings were associated with higher levels of organizational commitment and job satisfaction. Glisson (1989) found leadership to be important in a number of aspects of effective operation of human service organizations. Thus, the effects of leadership in the public sector operate in similar fashion to the private sector.

Organizational climate is defined as aggregated worker attitudes and perceptions of the work environment including role and job characteristics such as fairness, role clarity, role overload, and role conflict (James & Sells, 1981). Glisson and Hemmelgarn (1998) demonstrated that organizational climate significantly and positively impacted clinical outcomes for youth in publicly funded social services. Service quality (operationalized as availability, responsiveness, and continuity of services), while associated with organizational climate, was not significantly related to youth outcomes. However, one important aspect of service quality, the relationship between the provider and client, was not assessed.

Therapeutic alliance has been operationalized as the interaction between mental health professionals and their clients (e.g., Noser & Bickman, 2000). Mental health service providers frequently hold that therapeutic alliance is important in clinical change (Abrahamson, 1999; Norcross, 1999; Strupp & Anderson, 1997). The child psychotherapy literature shows some support for the importance of therapeutic alliance (Weisz, Huey, & Weersing, 1998). Noser and Bickman (2000) found that youth ratings of alliance were related to outcomes in community mental health services. Kazdin and Wassell (1999) found that therapist and parent ratings of the parent-therapist relationship were positively associated with improvement in child symptomatology. Thus, therapeutic alliance appears to be associated with service effectiveness.

The goal of this study was to examine the relationships of leadership and organizational climate with an empirically supported aspect of service quality - therapeutic alliance. Because leadership can affect organizational climate, and climate can affect job performance, we hypothesized that the effect of leadership on therapeutic alliance would be mediated by organizational climate.

Method

Participants were 308 mental health workers from 51 youth mental health programs in the San Diego County system of care. Seventy-seven percent were female and the ethnicity representation was Caucasian (62.9%), Hispanic (14.1%), African American (6.7%), Asian American (5.4%), Native American (6%), and other (6.7%). Education level ranged from some college (3%), bachelor's degree (20.1%), bachelor's degree plus additional college (10.2%), master's degree (56.3%), to doctoral level (9.9%).

Programs primarily provided outpatient treatment (49%), day treatment (19.6%), assessment and evaluation (9.8%), case management (7.8%), and residential treatment (5.9%) services. Programs served from 8 clients to 2800 clients per year (*M* = 258, *SD* = 453). The number of staff at each program ranged from 1 full time equivalent (FTE) employee to 72 FTEs (*M* = 14.6, *SD* = 16.2).

Leadership was assessed with the 45-item short-form version of the Multifactor Leadership Questionnaire (MLQ; Bass & Avolio, 1995). The MLQ assesses 12 dimensions of leadership. We calculated mean subscale scores for contingent reward (CONRWD), intellectual stimulation (INTSTIM), individual consideration (INDCON), and inspirational motivation (INSPMOT). The MLQ has good psychometric properties with Cronbach's alphas ranging from .76 to .90.

Organizational climate and work characteristics were assessed with the Children's Services Survey (CSS; see Glisson & Hemmelgarn, 1998). We used climate mean subscales of growth and advancement (GROWADV), job satisfaction (JOBSAT), and role clarity (ROLCLAR). The measure has good psychometric properties with Cronbach's alphas ranging from .69 to .92.

Service quality was assessed using the short-form version of the Working Alliance Inventory (WAI; Tracey & Kokotovic, 1989). This twelve-item measure assesses three aspects of the therapeutic alliance: agreement on treatment goals, agreement on steps to be taken to reach goals, and liking or affiliation. Due to time constraints in survey administration, the WAI was modified so that the service provider made a single global assessment of each item in reference to all of his or her clients as a group. While this more generalized adaptation may attenuate individual variability, it gives an indication of the service provider's judgment regarding his or her generalized level of therapeutic alliance. We combined the "steps" and "goals" scale (STPS/GLS) into a single indicator and used the "liking" scale (LIKING) as a second indicator. Cronbach's alphas for the WAI ranged from .68 to .87.

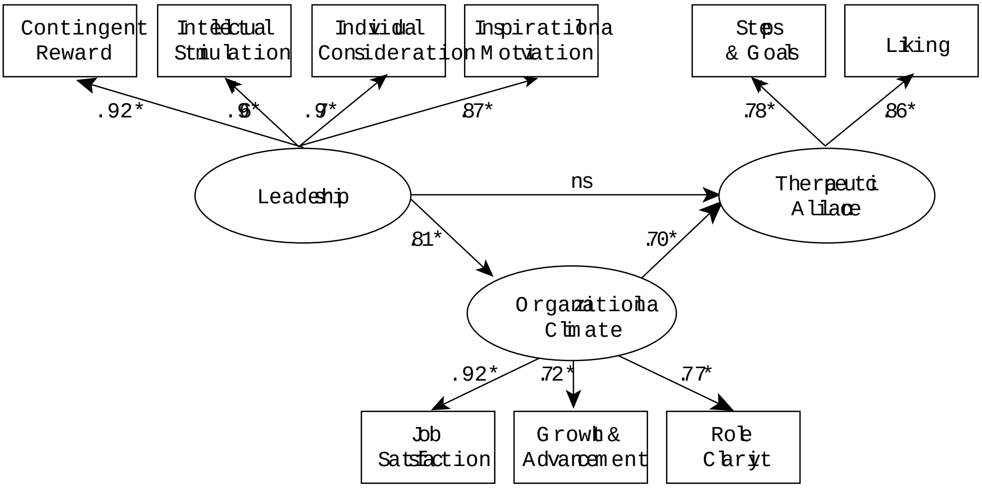
Potential participant mental health programs were identified as those that were part of the San Diego County Children's Mental Health System of Care (*N* = 55). We identified a primary contact person for each agency and contacted him or her to obtain permission and to ask for the participation of the program manager and staff. All program managers and each eligible staff member were given the opportunity to participate or to decline participation without penalty or consequence. For those program managers who agreed to their program's participation (*n*= 51, 93%), survey sessions were scheduled and conducted at the program site.

We tested a mediational model, predicting that climate would mediate the relationship between leadership and therapeutic alliance. Multilevel structural equation modeling was used to test the mediational model while accounting for the nested data structure. Analyses were conducted using Mplus (Muthen & Muthen, 1998). As shown in Figure 1, the four MLQ subscales were used as indicators for the leadership latent variable, the three CSS subscales were used as indicators for the climate latent variable, and the two WAI subscales were used as indicators for the therapeutic alliance latent variable.

Results

All indicators loaded highly and significantly on their designated latent variable. Figure 1 also shows that we found a significant relationship between MLQ and climate (ß = .81), but no significant direct path from MLQ to WAI. There was also a significant path from climate to WAI (ß = .70) supporting the mediation hypothesis. The model showed good fit according to several accepted criteria: $\chi^2(48) = 96.84$, $p < .001$, comparative fit index = .97, Tucker-Lewis index = .96, root mean square error of approximation = .03, and standardized root mean residual = .05.

Figure 1
Multilevel Mediational Model of Leadership, Organizational Climate, and Service Quality



*p< .05, ns = nonsignificant

Discussion

This study demonstrated that the effect of leadership on service quality in this sample of youth mental health service providers was mediated by organizational climate. Therapeutic alliance as a measure of quality of care has been posed in other studies and likely has a practical and meaningful relationship with outcomes in children's services (e.g., Noser & Bickman, 2000). While beyond the purview of this study, the link between service quality and outcomes is critical. Several other variables (e.g., client and family characteristics, service coordination, organizational culture) may also influence service outcomes. The model presented here adds to our understanding of theoretical issues in regard to effective mental health service delivery for youth. This holistic approach views mental health services as an ecological context in which providers, as well as consumers, should have the opportunity to grow and thrive.

Mental health service organizations have a mission and a consumer base that is clearly different from that of most service industries. In addition, organizations providing services to children and adolescents have a unique consumer base relative to those providing adult services. Often, client resistance to involvement in services can affect the interactions of service providers and their clients. Therefore, it is critical to engage consumers in services. The hurdle for developing an effective provider-consumer relationship is quite high in these organizations and further research should address additional organizational constraints on provision of effective services for youth.

There are a number of specific organizational interventions that may help to improve the quality of care for youth. For example, in a high stress job where each consumer brings unique challenges, supervisors could provide more contingent rewards, intellectual stimulation, individual consideration, and inspirational motivation for clinical staff. It may also be that aspects of climate such as opportunities for growth and advancement, role clarity, and job satisfaction could be improved by changes in program structure or process. Leaders can also improve their own skills in providing a workplace climate that will foster the development of provider-consumer relationships that will help to achieve positive outcomes for youths and families. Our challenge for the future is to determine what elements of leadership and organizational climate may have the greatest impact on service quality and outcomes.

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Parents' and Caregivers' Satisfaction with Children's Progress as a Predictor of Continued Enrollment in the System of Care

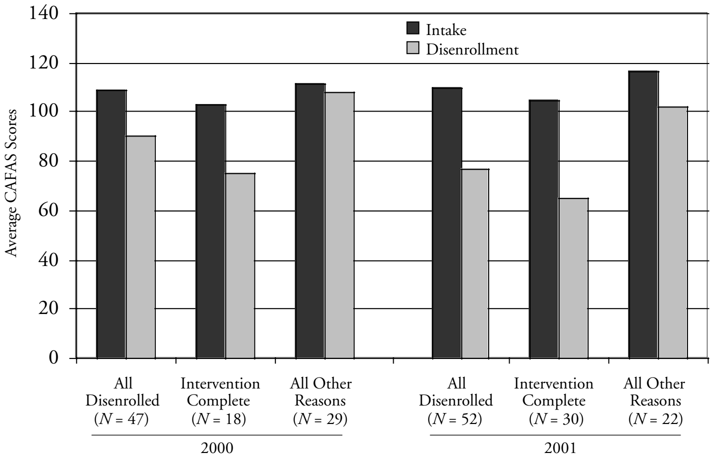
Kelly L. Frailing

Introduction

The Northwoods Alliance for Children and Families (NACF) is an integrated services process for children with severe emotional and behavioral disorders and their families. Serving the six contiguous, largely rural northern Wisconsin counties of Forest, Langlade, Lincoln, Marathon, Oneida, and Vilas, the overriding goal of the Northwoods Alliance is to create and sustain a regional, integrated system of care that will successfully meet the complex needs of troubled and at-risk youth and their families. The Northwoods Alliance process relies on the use of individualized, strengths-based planning and support teams, formal and informal community resources, and flexible funding in making a coordinated effort to meet the needs of youth and families served.

Because enrollment in NACF is voluntary, it is imperative that parents and caregivers are satisfied with the different aspects of the integrated services process. Should parents and caregivers begin to believe, for example, that the needs of their children and of their families are not being sufficiently and consistently met, they may choose to disenroll from the process prior to the successful completion of their goals. Recent data collected by Northwoods Alliance (2000; 2001) show that functioning at school, at home, and in the community improves notably when children are enrolled in the system of care until intervention is complete; Figure 1 reveals improvements in average Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1997) scores at intake and disenrollment for 2000 and 2001 combined.

Figure 1
Average CAFAS Scores at Intake and Disenrollment, 2000 & 2001



Each of the factors that affects continued enrollment deserves examination. This study focuses on just one—parental/caregiver satisfaction with children's progress—and compares the satisfaction with children's progress among parents and caregivers of children enrolled in NACF, parents and caregivers of children disenrolled from NACF because they successfully completed their goals, and parents and caregivers of children disenrolled from NACF for all other reasons. It was hypothesized that satisfaction with children's progress is a predictor of continued enrollment and that the level of satisfaction felt by parents and caregivers of those children disenrolled because intervention was complete would be significantly higher than that felt by parents and caregivers of children disenrolled from the system of care for all other reasons.

Method

Participants

Northwoods Alliance staff had previously administered ORC Macro follow-up surveys containing a question on satisfaction with children's progress to 78 respondents, who were separated into three distinct categories: parents and caregivers of enrolled clients (n = 44), parents and caregivers of children disenrolled because intervention was complete (n = 18), and parents and caregivers of children disenrolled for all other reasons (n = 16). Of these last 16 children, five were removed from services, four moved out of the service area, three were disenrolled for other reasons, two were incarcerated, one was deceased, and contact was lost with one. ORC Macro follow-up surveys are administered every six months to parents and caregivers of current and former NACF enrollees in an effort to gather detailed information on various aspects of family life, including specific services the child and family receive, resources, and caregiver strain and satisfaction.

Materials

Northwoods Alliance staff administered ORC Macro follow-up surveys to parents and caregivers of those enrolled in the Northwoods Alliance at six-month intervals. Similar information was collected upon disenrollment and every attempt was made to follow up every six months with those who had been disenrolled previously. Each of these surveys included a section entitled Family Satisfaction Questionnaire: Abbreviated Version (OMB, 2000), wherein question number 7, "How satisfied have you been with (child's name)'s progress in the past six months?" was posed to parents and caregivers. They were asked to respond with a number on a 5-point scale where an answer of 1 indicated *great dissatisfaction* and an answer of 5 indicated *great satisfaction*.

Design

This study compared the mean response to the question "How satisfied have you been with (child's name)'s progress in the past six months?" for clients in each of three categories: enrolled, disenrolled because intervention was complete, and disenrolled for all other reasons, using responses from the six-month follow-up survey only and again using the average of all available responses from each client in each category.

Procedure

Seventy-eight NACF client files containing varying numbers of ORC Macro follow-up surveys completed by parents and caregivers were available for analysis. Files were divided into three categories: enrolled, disenrolled because intervention was complete, and disenrolled for all other reasons. These responses were averaged for each of the three categories and means were compared using a two-sample *t*-test assuming unequal variances. All available responses to the question on satisfaction with children's progress from each client in each of the three categories were also averaged and the means of each category were compared, using the same *t*-test mentioned above. Twenty-nine clients had one survey, 32 had two, 12 had three, and five had four surveys, for a total of 149 responses. The second comparison was conducted in an effort to determine whether the results found using only the six-month follow-up survey responses were also evident over time.

Results

Significance was tested for by first using the responses to the question on satisfaction with children's progress given in the six-month follow-up survey and then using all available responses. Believing it to be a sufficiently strong level, an alpha level of .10 was used for the statistical tests conducted, all of which were one-tailed *t*-tests. The two tables below give the results of these tests. Table 1 contains the mean and standard deviation values for the three categories of clients at six months and shows that 3.92 is truly higher than 3.23. The difference between the two is very likely not due to random occurrence. Table 2 gives the mean and standard deviation values for the three categories of clients using all available responses and shows that not only is 3.88 truly greater than 3.12, so is 3.68.

Table 1
Mean Satisfaction with Children's Progress for Each of the Three Categories of Clients at the Six-month Mark

Categories	*M*	*SD*	*N*
Enrolled	3.61	1.50	33
Disenrolled: Intervention Complete	3.92*	1.54	12
Disenrolled: All Other Reasons	3.23	1.69	13

*3.92 was significantly higher than 3.23
$t(23) = 1.35$, $p = .09$

Table 2
Mean Satisfaction with Children's Progress for Each of the Three Categories of Clients Using All Available Responses

Categories	*M*	*SD*	*N*
Enrolled	3.68*	1.21	38
Disenrolled: Intervention Complete	3.88**	.88	19
Disenrolled: All Other Reasons	3.12	1.77	17

*3.68 was signigicantly higher than 3.12
$t(38) = 1.51$, $p = .07$

**3.88 was significantly higher than 3.12
$t(19) = 1.97$, $p = .02$

Discussion

An examination of satisfaction with children's progress at the six-month mark and over time reveals that parents and caregivers of children disenrolled from the Northwoods Alliance because they had successfully completed their goals and were significantly more satisfied with their children's progress than were parents and caregivers of those children disenrolled for all other reasons. Parental satisfaction with children's progress appears to predict the continued enrollment of children. As such, decreases in or initially low levels of satisfaction with children's progress can be ascertained with ORC Macro surveys and then brought to the caregiver's attention so that she or he can attempt to discern what is dissatisfactory, and together with the child, family, and other service providers, select new and/or different services to best benefit the child and the family. This pattern of survey, report, and adjust can be repeated until the right combination and balance of services is achieved.

It is encouraging that parents and caregivers of children currently enrolled in NACF are significantly more satisfied over time with their children's progress than were parents and caregivers of those children disenrolled for all other reasons. Insofar as satisfaction with children's progress does predict continued enrollment, those children currently enrolled in the Northwoods Alliance will only be disenrolled when they have met their goals. Their improved functioning can then positively impact their schools, families, and the community in general.

The Wisconsin Department of Health and Family Services (DHFS) is currently collecting family satisfaction surveys, which is indicative of the importance of data on satisfaction and how they can be used to continue and improve integrated service projects such as the Northwoods Alliance. Increasing the satisfaction parents and caregivers feel with their children's progress, as well as with other aspects of the system of care, facilitates children's continued enrollment and achievement of their goals and results in stronger communities.

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Differential Attrition Rates for NC FACES System of Care Evaluation

Kelly N. Rogers, Maria Fernandez, Lori Thurber, Andy Smitley

Introduction

In any longitudinal study, two factors contribute to sample size: recruitment and attrition. The sample recruited is very defined for the System of Care (SOC) Evaluation with the NC FACES (North Carolina Families and Communities Equal Success) grant, with eligibility criteria limited to: a) youth are between the ages of 5 and 18, b) resident of the particular county where they are referred, c) at risk for or placed out of the home, d) multiple agency needs, and e) serious emotional and/or behavioral disturbance.

In terms of the second factor that can contribute to sample size, attrition, the nature of the population served creates challenges to retaining families. Loss of cases can limit the power to detect results. Furthermore, differential attrition can bias the analyses and the interpretation of outcomes (Bickman et al., 1995). If there are systematic differences between those who continue to participate in the evaluation and those who do not, estimating program effectiveness becomes unclear. Because of this threat, the present study investigated attrition rates in the NC FACES evaluation.

Method

Participants

Three of the four NC FACES sites participated in this study (Cleveland County, Guilford County, and Sandhills Center). Two hundred and forty-seven youth and families were enrolled in the longitudinal evaluation across these sites. A total of 78 families have exited the evaluation, resulting in a 32% attrition rate. At intake, the mean age of youth that exited the evaluation was 11.38 years (*SD* = 3.32; Range: 5.51 years-17.56 years). Seventy percent of the children were males. Forty percent of the youth were identified by their caregivers or guardians as African American, 50% were European American, 5% were Asian, and 5% were identified as other.

Procedures

Informed consents were obtained by reading the forms aloud to every person participating in the study. After legal consent has been obtained for participation, the baseline interview is completed. Monetary incentives are provided, but vary among individual sites. Families who participate in the longitudinal evaluation are followed for 18 to 36 months, depending upon when they entered the study. Because families entered services and were enrolled into the evaluation at different points across the 6-year grant-funding period, some families completed their baseline interview while others were ready for their 12-month follow-up interview.

Measures

Initial Level of Functioning. Mental health clinicians reported youth levels of functioning at intake using the Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1994). The CAFAS is a widely used measure of functioning that assesses the degree to which children's mental health is disruptive to their functioning in various roles, including school/work role, home role, community role, behavior towards others, moods/emotions, self-harmful behavior, substance use, and thinking (each subscale was used in the present analyses). Raters record the degree to which the child's mental status contributes to role performance based on four levels of severity: (a) minimal or no impairment, 0, (b) mild impairment, 10, (c) moderate impairment, 20, and (d) severe impairment, 30. The CAFAS is completed at baseline and every six months thereafter.

Caregiver-reported youth functioning was obtained using the Child Behavioral Checklist (CBCL; Achenbach, 1991). The CBCL is a 120-item questionnaire of caregiver-reported youth behavior and activities. Caregivers respond on a 3-point Likert scale, with "0" indicating the behavior was *not true of* *the child*, "1" indicating the behavior was *somewhat or sometimes true of the child*, and "2" indicating the behavior was *very true or often true of the child*. The present study utilizes the two broadband syndrome scores that can be discerned from the CBCL (i.e., internalizing behaviors and externalizing behaviors). The CBCL is completed at baseline and every six months thereafter.

Results

Preliminary Analyses

To examine the relationship between families that exited the SOC evaluation and those that remained, it was necessary to first investigate attrition rates across sites as well as the reasons and timeframes in which families exited the evaluation. Individual site Data Directors compiled information on each family that exited the evaluation, including when the family exited and why the family exited, and this information was entered into an aggregate database with each site differentiated by an identification number. Individual site investigations indicated the following attrition rates: Cleveland (36%); Guilford (12%); Sandhills (43%); and aggregate (32%). Descriptive and frequency analyses across all sites indicated that families exited the evaluation for three major reasons: (a) the family refused to participate (32% of exits); (b) the family moved out of the area (25% of exits); or (c) the family could not be contacted (i.e., the families whereabouts were unknown; 20% of exits). Additional reasons for exiting the evaluation included problems with obtaining new consents from changed custody (4%), the child reached 18-years-old and refused to participate (1%), and the child passed away (1%).

To examine the timeframe in which the family exited (i.e., how many interviews did the family complete before exiting the evaluation), descriptive and frequencies analyses were computed. The largest number of exits occurred after only completing a baseline interview (46% of all exits).

Differential Attrition Across Sites

To determine if the characteristics of families that exited the evaluation differed across the NC FACES sites, a series of univariate analyses of variance (ANOVA) were conducted. Although there were different group sizes, the ANOVA statistical test is robust to such violations, making the adoption of a more stringent alpha level unnecessary (Gravetter & Wallnau, 2000). However, the effect size for detecting group mean differences was very large ($\eta^2 > .10$), which indicates that the ANOVA may not be powerful enough to detect true group differences because of the small sample sizes for each group. That is, these analyses may underestimate true group differences, providing further impetus for maintaining an alpha level of .05.

The first univariate ANOVA indicated that there were significant differences across sites regarding why families exited the evaluation, $F(2, 76) = 6.47$, $p < .01$. Although the preferred post-hoc test is Tukey HSD method, this method cannot be used with unequal sample sizes between groups (Gravetter & Wallnau, 2000). Therefore, the more conservative Scheffe' method was used, indicating significant group differences between the Cleveland and Guilford Sites ($p < .01$), and marginally significant differences between the Sandhills and Guilford Sites ($p < .06$). Investigation into reported explanations for exiting the evaluation revealed frequency differences across three main explanations (see Table 1). Both the Cleveland and Sandhills sites indicated a larger number of families exited the evaluation because the family refused to participate compared to the Guilford site. Additionally, a larger number of families exited because the family moved out of the area at both the Sandhills and Cleveland sites

Table 1
Major Reasons for Exiting the Longitudinal Evaluation Across NC FACES Sites

Reason	*Cleveland (N = 27)*	*Guilford (N = 9)*	*Sandhills (N = 42)*	*Aggregate (N = 78)*
Family refused	8 (30%)	2 (22%)	15 (35%)	25 (32%)
Moved out of area	9 (33%)	1 (11%)	10 (23%)	20 (25%)
Could not be contacted	10 (37%)	0 (0%)	6 (14%)	16 (20%)
Other	0 (0%)	7 (67%)	11 (27%)	17 (23%)

compared to the Guilford site. Finally, a greater portion of families could not be located at both the Cleveland and Sandhills sites compared to the Guilford site.

Univariate ANOVA also indicated that there were significant differences across sites regarding when the family exited the evaluation, $F(2, 76) = 11.81$, $p < .01$. As in the previous analyses, the more conservative Scheffe' method was used, which indicated that there were significant differences between the Cleveland and Guilford sites ($p < .01$), and the Sandhills and Guilford sites ($p < .01$; see Table 2). Investigation into group differences revealed that the majority of the discrepancy between the Guilford site compared to the Sandhills and Cleveland sites was the number of youth that exited after completing only a baseline interview (0 vs. 17 vs. 19, respectively).

Table 2
Completed Interviews Before Exiting the Longitudinal Evaluation Across NC FACES Sites.

Reason	*Cleveland (N = 27)*	*Guilford (N = 9)*	*Sandhills (N = 42)*	*Aggregate (N = 78)*
Baseline only	17	0	19	36
Baseline, 6	6	3	8	17
Baseline, 6, 12	3	1	5	9
Baseline, 6, 12, 18	1	1	3	5
Baseline, 6, 12, 18, 24	0	0	1	1
Baseline, 6, 12, 18, 24, 30	0	1	1	2
Baseline, 6, 12, 18, 24, 30, 36	0	3	2	5
Unknown	0	0	1	1

Note. 6 = 6-month interview; 12 = 12-month interview; 18 = 18-month interview; 24 = 24-month interview; 30 = 30-month interview; 36 = 36-month interview.

Although there were non-significant differences across sites regarding whether any interviews were skipped between intake and time of exiting the evaluation, univariate ANOVA indicated a significant difference regarding which interview was skipped across the NC FACES sites for those families that did skip an interview, $F(2,5) = 31.35$, $p < .01$. The more conservative Scheffe' method indicated that there were significant differences between the Cleveland and Guilford sites ($p < .01$), and the Sandhills and Guilford sites ($p < .01$). There were no significant differences between the Cleveland and Sandhills sites. Investigation of group frequency differences indicated that for both the Sandhills and Cleveland sites, all skipped interviews were at either the 6-or-12-month follow-up data collection point, whereas the Guilford site families skipped interviews at 30-months or later.

Differential Attrition Based on Demographics at Each Timeframe

To investigate whether youth who remained in the evaluation differed demographically from those who exited the evaluation, a series of independent samples *t*-tests were conducted (the categorical variables of sex and race were transformed to continuous variables). To run these analyses, two groups were created at each possible timeframe. For example, youth who exited the evaluation after completing a baseline and six-month interview were grouped together and compared to those youth who remained in the evaluation (excluding those who exited at previous timeframes).

Results were overwhelmingly nonsignificant regarding differences based on sex, race, income, or age between those who exited and those who remained in the evaluation. The only indication of possible differential attrition was found when comparing those who exited after completing a baseline, 6, 12, and 18-month interview with those who remained in the evaluation. Independent samples *t*-tests revealed a marginally significant difference in age of the youth, $t(209) = -1.85$, $p < .10$.

Comparison of group mean differences indicated that youth who exited the evaluation were younger than those who remained in the evaluation (*M* = 10.37, *SD* = 3.05 vs. *M* = 11.61, *SD* = 2.96). All additional results regarding differential attrition based on demographic factors were nonsignficant.

Initial Level of Functioning Predicting Attrition

To investigate whether youth functioning at intake to SOC predicts when and why a child and family exit the evaluation, hierarchical multiple regressions were conducted. Both the CAFAS and CBCL subscales were entered as separate predictors of attrition status, resulting in a total of 12 regressions conducted. Because the correlations between demographic variables (i.e., sex, gender, and income) were non-significant, they were not entered as controls for these analyses. All predictors were zero-centered before conducting analyses.

When the CAFAS subscales were entered as predictors of when the child and family exit the evaluation, two of the subscales indicated significant results (these results should be cautiously interpreted since Type I error predicts that 5% of analyses run will be chance findings). First, the community role subscale significantly predicted that the higher the level of functioning in the community, the longer the child stayed in the evaluation, *t* (47) = 2.04, *p* < .05 (ß = .29) (see Figure 1). Second, the home role subscale marginally predicted that the lower the level of functioning in the home, the longer the child and family remained in the evaluation, *t* (47) = -1.92, *p* < .10 (ß = -.27) (see Figure 2). All additional results regarding initial level of functioning predicting attrition were non-significant.

Figure 1
Community Role Subscale Predicting Timeframe of Exiting the Evaluation

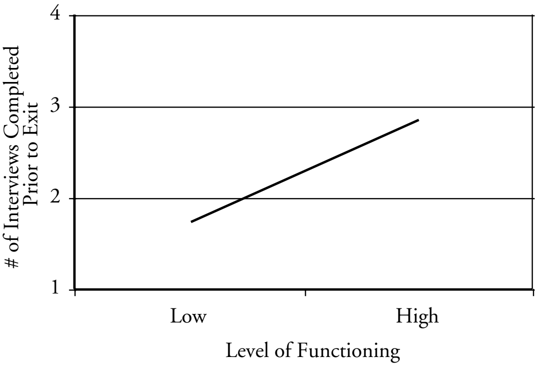
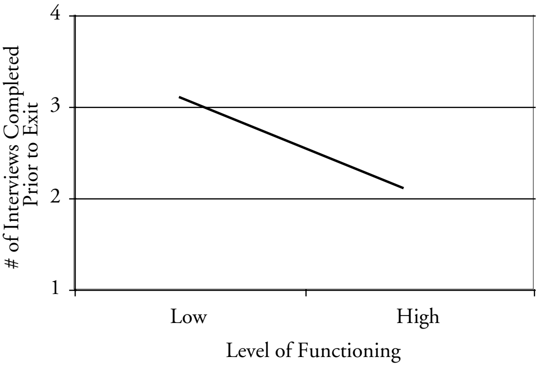


Figure 2
Home Role Subscale Predicting Timeframe of Exiting the Evaluation



Discussion

Attrition rates at NC FACES (32%) seemed to be mainly attributed to three major explanations: (a) family refusal, (b) family moved out of the area, and (c) family could not be contacted. Family refusal was most likely to occur at earlier timeframes within the evaluation, and was particularly salient after completing only a baseline interview. As the timeframe progressed, families were less likely to exit due to refusal and more likely to exit due to other reasons such as moved or could not be contacted. However, regardless of the explanation for exiting, the majority of exits occurred earlier in the evaluation (baseline, 6, or 12-month follow-ups) rather than later in the evaluation (30-month follow-ups).

Although differential attrition can pose a major problem for longitudinal studies, the present study does not appear to suffer from such limitations in some cases. The demographic characteristics (i.e., age, race, sex) for those who exited the evaluation were not strongly different from those who remained in the evaluation (although age and race were marginally significant). What did differ, however, were the reasons youth exited the evaluation and the timeframe youth exited the evaluation across NC FACES sites. Therefore, when looking at the aggregate data for NC FACES, there seem to be differential attrition based on site rather than on demographic characteristics.

There are numerous actions that North Carolina can take to decrease attrition across sites. First, because family refusal was the most commonly reported reason for exiting the evaluation, it would be helpful to probe further as to why families refused to participate. There may be specific things that families do not like that, if we become aware of, evaluators may be able to change. Second, evaluators can increase tracking efforts, with particularly more effort geared toward contacting families and discovering family whereabouts. Third, if necessary, evaluators can increase travel efforts across North Carolina to ensure that data at each data point are obtained regardless of family location (within reasonable areas). Fourth, individual sites can reassess their incentive procedures. It may be that by providing different incentives, youth and families would be more willing to remain in the evaluation. Fifth, evaluators can increase outcome reports, including the dissemination of these reports throughout the local community to increase investment into the SOC. Sixth, evaluators can extend efforts to increase family involvement within the evaluation to increase partnership within the SOC. Parent acceptance and participation in collecting data may be influential to other parents considering participation in the evaluation.

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Service Utilization and Child and Family Outcomes in Systems of Care

Robin E. Soler, Bhuvana Sukumar, Brigitte Manteuffel

Introduction

Understanding service utilization and its effectiveness within systems of care for children requires careful analysis of a complex set of relationships. Systems of care are designed to provide a broad array of services and a service mix that include services directed toward both children and their families. In addition, systems of care share the common goal of providing services in the least restrictive environment possible.

Lambert, Brannan, Breda, Heflinger, and Bickman (1998) provide an overview of some of the complexities involved in understanding patterns of service use in children's mental health. They examine how traditional Western mental health services cluster according to frequency of use of these services. Six utilization patterns emerged based upon level of intensity of the restrictive and non-restrictive services received. Characteristics of children in each cluster differed according to health indicators such as diagnosis of conduct disorder and level of functioning. The Lambert et al. study did not examine the broader system of care service array, so it is not known how services such as family support or respite might factor into an overall service cluster. The current study examines how traditional Western mental health services and innovative services more common in a system of care service mix cluster, describes these clusters and the children and families included in them, and examines change in child and family outcomes by cluster over a six-month period.

Methods

Data gathered through the national evaluation of the Comprehensive Community Mental Health Services for Children and Their Families Program, sponsored by the Center for Mental Health Services (CMHS) at the Substance Abuse Mental Health Services Administration (SAMHSA), are examined. Caregivers of children are interviewed at intake into services and every six months thereafter for up to 36 months as part of the longitudinal outcome study. In addition, youth ages 11 and older are interviewed according to this same time frame.

Sample

The current study included 1,138 children whose caregivers reported receiving services in the six-month follow up interview. The mean age of these children was 12.6 years and the majority were boys (69.5%). The racial makeup of this population consisted of 69% White; 20.1% Black; 1.1% Asian/ Pacific Islander; and 5.8% American Indian children. About 14% of the sample reported Hispanic ethnicity. A large number of the children (47.6%) were in the custody of single mothers and about 25.4% of the sample were in the custody of two parents. Slightly more than half of this sample (53.1%) lived in households with annual incomes above $15,000 per year.

Measures

Constructs included in this study were child and family service use variables, child symptoms and social functioning, and caregiver strain.

Multi-sector Service Contacts (MSSC). The MSSC provides standard descriptions for 22 types of services, with names of services and service settings customized for each site. Caregivers also report location, frequency, and sequencing of services received. For purposes of this study, services that are age dependent such as transition and independent living services were excluded. In addition, services offered in only a few grant communities (therapeutic foster care and crisis stabilization) and that may be used independent of therapeutic need (recreation and transportation) were excluded.

Child Behavior Checklist (CBCL; Achenbach, 1991). The CBCL was used to measure child symptomatology. The CBCL contains 17 social competence items and 113 emotional and behavioral symptoms. These symptoms represent two broadband syndromes of internalizing and externalizing behaviors. A total score may also be generated.

Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1990). Child social functioning was assessed using the CAFAS, which assesses the child's level of functioning in eight life domains (e.g., school/work, community, and behavior toward others).

Caregiver Strain Questionnaire (CGSQ; Brannan, Heflinger, & Bickman, 1998). The CGSQ was used to assess the degree to which caregivers experienced difficulties, strains, and other negative effects as the result of caring for a child with emotional or behavioral problems. The CGSQ has three subscales that measure the impact of caregiving on family and community life such as financial strain and lost work time, caregiver feelings such as anger and resentment, and internalized feelings such as worry, guilt, and fatigue.

Analysis

A series of K-Means Cluster Analyses using listwise deletion of cases was conducted to identify relatively homogeneous groups of cases based on service receipt in the past six months. Variables entered into the analysis included whether the child or family received assessment, case management, individual therapy, group therapy, family therapy, medication treatment and monitoring, family preservation, caregiver support, respite, flex funds, day treatment, residential treatment, inpatient hospitalization, wilderness camp or group home services. The final cluster solution was selected based upon cluster size and ability to discriminate according to (a) whether a service was received, (b) how frequently services were received, and (c) clinical characteristics of the youth included in the clusters. Chi Square and Analysis of Variance (ANOVA) techniques were used to compare resulting clusters with regard to child demographics including age and gender, functional, and behavioral characteristics (as measured by the CAFAS and CBCL), and caregiver strain at intake. General Linear Modeling (GLM) was used to examine whether children and families in each cluster experienced differential rates of change in their functional and behavioral characteristics and caregiver strain from intake to six months following services.

Results

Analyses resulted in a five-cluster solution based on service reports of 1,002 caregivers for whom complete service data were available. Children and families in the first cluster (n = 212) received above average amounts of restrictive care (e.g., residential treatment center or hospitalization) and therapeutic services (e.g., individual and group therapy). The second cluster (n = 170) was characterized by receipt of moderate levels, of restrictive and therapeutic services, and high levels of family support services (e.g., family preservation or caregiver support). Children and families in this cluster also used case management services more often than those in the other clusters. Those in the third cluster (n = 264) received average to below average amounts of all services included in the service array and were not distinguishable in any other way. Children and families in the fourth cluster (n = 230) did not use assessment services and used below average amounts of all other services. Similarly, children in the fifth cluster (n = 126) did not use case management services and received below average amounts of all other services (see Tables 1 and 2 for descriptions of service receipt by cluster).

The five clusters did not differ significantly with regard to child's gender, however, children in the clusters 1, 4, and 5 (mean ages 12.75, 12.36, and 12.12, respectively) were significantly older than those in clusters 2 and 3 (mean ages 11.78 and 11.58 respectively), $F(4,997) = 4.997$, $p < .001$. Caregivers of youth in the first two clusters reported the highest levels of functional impairment and externalizing and internalizing behavior problems, and the lowest levels of behavioral strengths, $F(4,930) = 11.92$, $p < .001$; $F(4,843) = 12.95$, $p < .001$; $F(4,843) = 6.42$, $p < .001$, and $F(4,873) = 4.46$, $p < .001$, respectively. Caregivers of children in the first two clusters reported the greatest levels of objective, subjective-externalized, and subjective-internalized strain on the CGSQ, $F(4,927) = 10.93$, $p < .001$; $F(4,923) = 9.52$, $p < .001$, and $F(4,924) = 4.11$, p < .005, respectively.

GLM analyses indicated that from intake to six months children experienced improvement in externalizing behaviors, though no differences emerged by cluster. When viewed in terms of clinically significant change, 43-48% of caregivers reported improvements in their children's overall strengths (not significant by cluster). In addition, over half of all caregivers reported clinically significant levels of change in overall behavior problems with a significantly larger percentage of those in clusters 4 and 5 experiencing improvements (57.2% and 66% vs. less than 48% for other clusters) and fewer experiencing deterioration in overall behavior problems (15.5% and 16.5% compared to 21.6 to 28% of children from other clusters).

Conclusion

System of care grant communities provide unique service opportunities for children and their families. Preliminary analyses suggest that these system of care communities are appropriately placing children with the greatest need in the most restrictive environments. Results also suggest, however, a more global trend of providing children with severe impairment a diverse and intense array of services in less restrictive settings. Interestingly, a large group of caregivers report receiving no assessment or case management services. These services may be received prior to entering the system of care or the service may not be recognized as such (e.g., the individual therapist serves as case manager but this is not known by the caregiver). Systems of care may serve children with both chronic and acute behavioral and emotional challenges. Those with chronic challenges may receive more services and show smaller

Table 1
Cluster Highlights: Percent Using Services*+

	Restrictive and Traditional Therapeutic (n = 212)	*Restrictive, Moderate Traditional, and Family Support (n = 170)*	*Average to Below-Average (n = 264)*	*Below-Average, No Assessment (n = 230)*	*Below Average, No Case Management (n = 126)*
Assessment	87.7%	87.6%	**100.0%**	**0.0%**	37.3%
Case Management	79.7%	**92.4%**	83.0%	83.5%	**0.0%**
Individual Therapy	**90.6%**	**89.4%**	70.8%	73.0%	61.1%
Day Treatment	**27.8%**	20.0%	7.2%	3.5%	3.2%
Residential Treatment	**20.3%**	10.0%	2.7%	3.9%	4.8%
Inpatient Hospitalization	**20.3%**	**21.5%**	8.7%	2.2%	0.0%
Family Therapy	59.9%	**85.3%**	5.7%	24.3%	21.4%
Caregiver Support	13.7%	**87.1%**	29.5%	24.3%	19.8%
Family Preservation	15.1%	**50.0%**	11.7%	6.5%	10.3%

* Cluster names are based upon average amounts of services use by all children and families in a cluster.
\+ All difference significant at *p* < 001.

Table 2
Cluster Highlights: Mean Service Use*+

	Restrictive and Traditional Therapeutic (n = 212)	*Moderate Restrictive, Traditional, and Family Support (n = 170)*	*Average to Below-Average (n = 264)*	*Below-Average, No Assessment (n = 230)*	*Below Average, No Case Management (n = 126)*
Assessment Times	2.6	2.4	2.7	**0.0**	0.4
Case Management Times	**15.7**	**22.8**	15.0	13.0	0.0
Individual Therapy Sessions	**17.6**	**16.7**	9.4	9.9	9.5
Day Treatment Days	**21.6**	13.1	4.6	2.4	2.3
Residential Treatment Days	**18.1**	6.4	1.4	2.5	4.5
Inpatient Hospitalization Days	8.1	4.0	1.1	0.2	**0.0**
Family Therapy Sessions	6.2	**10.4**	1.2	2.6	4.0
Caregiver Support Times	1.7	**14.1**	4.3	3.5	3.1
Family Preservation Times	3.8	**12.6**	3.3	1.2	1.8

* Cluster names are based upon average amounts of services use by all children and families in a cluster.
\+ All difference significant at *p* < 001.

increments of improvement whereas those with acute challenges receive few services for a brief period of time, but respond to these services and require little other assistance. The national evaluation of the CMHS Program is longitudinal and will continue for up to four more years. As data collection under this program progresses, sample size will increase providing for greater flexibility in interpretation.

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Symposium

Service Use and Costs in the Longitudinal Comparison Study of the National Evaluation of the Comprehensive Community Mental Health Services for Children and Their Families Program

Chair
E. Wayne Holden

Discussant
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Symposium Introduction

E. Wayne Holden

This symposium provided an illustration of differences in service utilization patterns and service costs as a function of service delivery approach in the longitudinal comparison study of the Comprehensive Community Mental Health Services for Children and Their Families Program funded by the Center for Mental Health Services (CMHS) at the Substance Abuse and Mental Health Services Administration (SAMHSA).

Following an examination of the influence of children's initial functional impairment on service utilization, a description was provided of differences in service use patterns in a system of care and a matched comparison community and their relationship to differences in outcomes. Subsequent presentations examined the effects of continuity of treatment on outcomes and the influence of prior service utilization on differences in costs between the two service delivery approaches.

Functional Impairment at Intake and Subsequent Service Utilization

Hoang Thanh Nguyen & Tim Connor

Introduction

Understanding the relationship between functional impairment and subsequent service use is important for clinical supervision and program planning. Some studies have reported that more service use is related to higher functional impairment. Other studies have found no differences in clinical outcomes between high users and low users of mental health services (Bickman, Summerfelt, & Noser, 1997; Salzer, Bickman, & Lambert, 1999). To complicate the picture, children with the same functional impairment at intake do not necessarily improve at the same rate.

From a system perspective, planners are concerned with children who require a lot of resources for a prolonged period of time, and would like to know the variables that can predict which children would require long-term services. Functional impairment is a key variable, but is not sufficient by itself in predicting long-term service use (Hodges & Wong, 1997).

Results from the literature on service use and outcome are lacking. More research is needed to better understand how functional impairment drives subsequent service use and the resulting effect of service use on functional impairment. The purpose of this presentation is to address two main questions. First, what is the relationship between functional impairment and service use? Second, is the relationship between functional impairment and service use the same across two communities in Ohio? The two communities of interest are Stark County and Mahoning County.

Stark County received a federal grant to implement a system of care approach to treat children with serious emotional disturbances. Mahoning County did not receive a federal grant to implement a system of care. Mahoning County was selected as the comparison community because it served children who were demographically similar to those being served in Stark County.

Method

Study Sample

Children were eligible for the study if they were between the ages of 6 and 17.5 and presented with serious emotional or behavioral problems. Children and families recruited for the study were asked to participate for up to two years after entering the study. Stark County recruited 229 children, and Mahoning County recruited 217 children into the study. The present analysis limited the time frame to an 18-month period. There were 180 children in Stark and 198 children in Mahoning who had an intake assessment and service information for the entire 18-month period. The analysis was conducted on this subset of children.

Child and Family Outcome Assessments

The child and family outcome assessments included the Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1990) and the Child Behavior Checklist (CBCL; Achenbach, 1991). Children and families were interviewed at intake into services and at six-month intervals for up to two years.

Services Data

Service data were collected from the community mental health centers (CMHC) through which children were enrolled into the study in Stark and Mahoning Counties. Each CMHC has a computerized management information system (MIS) used for internal management purposes and to bill insurance companies, Medicaid organizations, families, and other parties responsible for payment. Services data were collected for the entire study period from January 1997 through November 2000. A range of services were provided. These services included evaluation, individual counseling, group counseling, family counseling, medication monitoring, case management, crisis residential care, and day treatment. The total hours of service use for each six-month period was calculated for each child relative to his or her baseline assessment date. Based on the intake date, service data covered at least the first 18 months for each child. If the database did not have a service record for a child, it was because the child did not use any services.

Analysis

For each community, children were stratified post hoc into one of two groups based on their level of functional impairment at baseline. Children with an overall CAFAS 8-scale total score of 100 or higher at study intake were placed in a high impairment group, and children with a score of less than 100 were placed in a low impairment group. A score of 100 or more corresponded to the CAFAS categories of Marked and Severe impairment. SAS Proc GLM (SAS Institute, 1999) was used to conduct a repeated measures analysis of variance to compare the changes in service use over time among children in the functional impairment groups.

In addition, children who continued to use services at 12 months and beyond were defined as long-term users. Children who used services within the first 12 months only were considered short-term users. Logistic regression was used to explore predictors of long-term use.

Results

In Stark, 102 children were in the high impairment group, and 78 children were in the low impairment group. In Mahoning, 124 children were in the high impairment group, and 74 children were in the low impairment group.

Differences in the mean hours of service use for each of the four groups over the 18 months were examined first. Over the first 18 months after study entry, the average hours of service continually decreased for children in both communities, regardless of the levels of functional impairment at intake. Results from the repeated measures ANOVA show significant differences in mean hours of service use between the two communities. Children in Stark used significantly more services than children in Mahoning, *F*(1,374) = 15.1, $p < .0001$. Differences in hours of service use between impairment groups were statistically significant. Children in the higher functional impairment group used significantly more services than children in the lower functional impairment group, *F*(1,374) = 5.5), $p < .01$. Service use was significantly higher in the first six months compared to service use at 6-12 months and at 12-18 months after intake, *F*(2,748) = 35.0, $p < .0001$. The interaction between the communities and the impairment groups was significant, *F*(1,374) = 4.68, $p < .05$, with children in the low functional impairment group in Stark using more hours of service than children in the high functional impairment group in Mahoning. The hours of service use differed significantly by functional impairment group over time, *F*(2,748) = 5.0, $p < .01$. Basically, the hours of service use by the high functional impairment group in Stark drove most of these differences. Children in Stark with high functional impairment at intake used on the average almost two times as many service hours as children in the other three groups.

Because children with high functional impairment at intake used significantly more hours of service than children with low functional impairment, further analysis focusing on these children was conducted. The analyses examined the impact of service use on subsequent outcomes for the group of children with high functional impairment. A repeated measures ANOVA was used to examine statistically significant differences between the long-term and short-term users in Stark and Mahoning over time. All children showed significant improvement over time based on their CBCL scores, *F*(3,519) = 54.4, $p < .0001$. Short-term users showed significantly more improvement than long-term users over time, *F*(3,519) = 5.22, $p < .001$, even though they were at the same high functional impairment level at intake. Furthermore, short-term users in Stark showed significantly greater improvement than short-term users in Mahoning, *F*(1,88) = 5.58, $p < .02$.

The last set of analyses attempts to identify significant predictors of long-term service use. A series of logistic regression models was built with long-term use as the dependent variable and demographic and outcome measures as the predictor variables. A demographic model with site, age, sex, race, and income as the predictor variables showed that only a child's age significantly predicted long-term service use. Younger children were more likely than older children to continue to use services beyond a year. The CAFAS and the CBCL were both significant predictors of long-term service use. However, when the CAFAS and CBCL were included in the same model, the CBCL was a stronger predictor of long-term service use than the CAFAS. The simplest and most powerful predictor model of long-term service use contains only two variables: age and CBCL score at 12 months.

Discussion

This presentation examined the relationship between functional impairment and service use. As expected, children with greater functional impairment used more services than children with less functional impairment. Children with high and low functional impairment scores at intake improved at different rates. Some children remained significantly impaired through 18 months, while other children recovered by six months. Children in Stark used more hours of service than children in Mahoning. Within the high impairment group, there were no differences in outcome between children in Stark and children in Mahoning for long-term users. But for short-term users, children in Stark had significantly better outcomes than children in Mahoning.

These results suggest that the relationship between service use and outcome is not a simple one. Other variables such as a child's initial impairment level and whether a child has an acute or chronic problem need to be considered. Finally, predicting service use is complicated by a variety of factors including the developmental stage of a child and whether a child's problems will be alleviated by the services provided. Services have an impact on outcomes, which in turn, have an impact on subsequent service use. Future research on service use and outcome needs to address this feedback mechanism in a more sophisticated mathematical model than the one used in the current study.

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Service Delivery Approach, Service Utilization Patterns, and Their Influence on Children's Outcomes

Robert L. Stephens & Qinghong Liao

Introduction

A core value of the Comprehensive Community Mental Health Services for Children and Their Families Program is that the "system of care must be child-centered and family-focused, with the needs of the child and family dictating the types and mix of services provided" (p. xxii, Stroul & Friedman, 1986). A guiding principle is that "children with emotional disturbances should have access to a comprehensive array of services that address the child's physical, social, and educational needs" (p. xxiv, Stroul & Friedman, 1986). If services are provided in a manner that adheres to these system-of-care principles, then one would expect differences between service use patterns in system-of-care communities and communities than deliver services as usual. These differences should exist both for the types of services provided and the patterns of service use. In addition, these differences could be linked to child and family outcomes to provide a more comprehensive understanding of the impact of service delivery for children and families served in systems of care (SOC) and how it differs from services-as-usual (SAU) systems.

Linking service use to outcomes requires a clear understanding of how different demographic and functional indicators at entry influence the services that are used. Children differing in their presentation at entry may require different combinations of services (Mitchell & Smith, 1981). For example, those with higher levels of behavioral symptoms or functional impairment may participate in a wider range and higher intensity of services. It is important to understand how different groups of children are being served before attempting to understand the general impact of services on outcomes. The relationship between intake characteristics such as the type of services delivered, amount of service, duration, continuity of care, and service combinations should be addressed. Once the impact of intake characteristics on service delivery patterns is understood, then the relationship between service use patterns and outcomes can be explored. This paper examines individual differences in service use patterns and predictors of these pattern differences as a preliminary step to evaluating outcome differences between a SOC and a SAU in two communities in Ohio.

Methods

Participants. Children between the ages of 6 and 17.5 with serious emotional or behavioral problems were eligible for the study. In addition, at least one of the following four criteria had to be met by the child: (a) a diagnosis of a mental health disorder and a clinical or functional assessment score above the clinical range; (b) a history of services received from multiple child-serving agencies (e.g., juvenile justice, education, child protective services, or substance abuse); (c) currently at risk of, or past history of, out-of-home placement; or (d) participation in a special education program for children with serious emotional disturbances. A total of 232 children were recruited into the study from the SOC site, and 217 children were recruited from the SAU site. Demographic characteristics of the sample at entry in to services are presented in Table 1.

Table 1
Demographics of Children at Intake into Services by Site

	SOC	*SAU*
Age	(*n* = 232)	(*n* = 216)
Mean (*SD*)	11.5 (3.1)	11.1 (3.3)
Gender	(*n* = 232)	(*n* = 216)
Male	64.7%	69.0%
Female	35.3%	31.05
Race*	(*n* = 232)	(*n* = 216)
White	69.4%	38.4%
Non-white	30.6%	61.6%
Family Income	(*n* = 229)	(*n* = 215)
Below $15,000	54.6%	69.8%
Above $15,000	45.4%	30.2%

*$p < 0.01$

Service data. Service data were obtained from a number of management information systems (MIS) in both communities for all children participating in the longitudinal comparison study. These MIS data included the identification of mental health services delivered by the primary community mental health centers in each community as well as services provided through other child-serving agencies. For purposes of this paper, the service use data were used to create a series of dichotomous variables for each child indicating whether a particular service had been received during the first six months after intake. This initial examination of service use patterns focuses on use of individual counseling, medication monitoring, case management, group/family counseling, and residential treatment/day treatment/inpatient hospitalization.

Outcome measures. To assess the relative effectiveness of a system of care to affect change in emotional and behavioral symptoms and functional impairment for children with serious emotional disturbance, the Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1990) and the Child Behavior Checklist (CBCL; Achenbach, 1991) were administered at each data collection wave up to 24 months after intake into services.

Analysis. Latent class analysis (LCA) was used to classify children in each of the service delivery systems in terms of their service use during the first six months of treatment. The LCA examined how the probabilities of these observed indicator variables varied across groups of individuals where group membership was an unobserved latent categorical variable (Muthen & Muthen, 2000). These latent class memberships were then used to examine differences in outcomes as a function of service use patterns.

Results and Discussion

Service use during the first six months in the two service systems differed most dramatically in the use of group counseling, family counseling and individual counseling. A larger percentage of children served in the SOC than in the SAU received group counseling (30.0% vs. 8.3%) and family counseling (58.7% vs. 0.5%), and a smaller percentage of children served in the SOC received individual counseling (60.0% vs. 89.4%). Also noteworthy is that a smaller percentage of children served in the SOC than in the SAU received residential treatment (0.9% vs. 4.1%).

The use of LCA involved an initial enumeration of latent classes. Fit indices indicated that a two-class solution provided the best fitting model. The two classes were distinguished by the relative proportions of individuals who used each of the services. Members of Class 1 had a lower probability of using each service. This class was termed the *low use class*. Members of Class 2 had a higher probability of using each service, and this class was termed the *high use class*. Differences between classes were most dramatic for the proportion of individuals who used medication monitoring, case management, and individual counseling (Table 2).

Next we examined potential predictors of the two latent classes. Covariates included race, family income, gender, baseline CAFAS, baseline CBCL, and service delivery approach (SOC vs. SAU). Results indicated that CBCL Total Problems and CBCL Internalizing scores significantly predicted latent class membership. None of the other covariates were significant. In both cases, probability of membership in the low use class decreased with increasing symptom scores. For CBCL Total Problems scores, exp(ß) = .981, *p* < .05; and for CBCL Internalizing scores, exp(ß) = .966, *p* < .01.

Table 2
Latent Class Indicator Probabilities

Type of Service	*Class 1 Low Use (N=293)*	*Class 2 High Use (N=154)*
Individual Counseling	0.670	0.872
Medication Monitoring	0.032	0.885
Case Management	0.339	0.682
Group/Family Counseling	0.395	0.428
Residential Treatment/Day Treatment/Inpatient Hospitalization	0.030	0.164

In addition to predictors of the latent class variable, the direct effects of the covariates on the indicator variables were examined. Table 3 presents the coefficients (in exp(ß) terms) for these direct effects. In general, demographic variables and service delivery approach were associated with receiving group or family counseling during the first six months following entry into services, and baseline clinical outcome measures were associated with receiving case management.

Table 3
Coefficients for the Direct Effects of Baseline Covariates on Service Use Indicators

	Race (White/ Non-White)	*Family Income*	*Service Delivery Approach*	*CBCL Total Problems*	*CBCL Internalizing*	*CBCL Externalizing*	*CAFAS Total*
Individual Counseling	----	----	.120**	----	----	----	----
Medication Monitoring	----	----	----	----	----	----	----
Case Management	----	----	----	1.011*	----	1.027*	1.007*
Group/Family Counseling	2.325**	.565**	27.623**	----	----	----	----
Residential Treatment/Day Treatment/Inpatient Hospitalization	3.025**	----	----	----	----	----	1.015**

* *p* < .05, ***p* < .01

Hansson and Sandlund (p. 255, 1992) indicated that "an analysis of the effectiveness of utilization and of specific patterns of care requires measurement of the benefits or outcome of care." Our next step in the analysis included the use of the clinical outcome change scores as predictors of latent class membership. Again, direct effects of the covariates on the latent class indicators were included in the model. Change scores were calculated by subtracting the baseline outcome scores from the six-month outcome scores. Results indicated that change in clinical outcomes did not significantly predict latent class memberships. However, there were significant direct effects of the covariates on the indicator variables (Table 4). Increases in CBCL Total Problems and Externalizing change scores (i.e., less improvement) were associated with a greater likelihood of having received residential treatment, day treatment or inpatient hospitalization during the first six months of service. Further, increases in CAFAS Total change score (i.e., less improvement) were associated with a greater likelihood of having received individual counseling; medication monitoring; case management; and residential treatment, day treatment or inpatient hospitalization. In addition, the interaction between service delivery approach and CAFAS Total score significantly predicted receipt of medication monitoring and residential treatment, day treatment, or inpatient hospitalization. Exploration of the interaction effect revealed that children using these services in the SAU system were less likely to show improvement in CAFAS scores than children using these services in the SOC.

Some limitations of these findings should be noted. Examination of the effects of service use pattern differences needs to be more refined. The use of difference scores as predictors of previous

Table 4
Coefficients for the Direct Effects of Six-month Change Score (Six-months Minus Baseline) Covariates on Service Use Indicators

	CBCL Total Problems	*CBCL Internalizing*	*CBCL Externalizing*	*CAFAS Total*	*Service Delivery Approach X CAFAS Interaction*
Individual Counseling	----	----	----	1.007*	----
Medication Monitoring	----	----	----	1.029*	0.913**
Case Management	----	----	----	1.009*	----
Group/Family Counseling	----	----	----	----	----
Residential Treatment/Day Treatment/Inpatient Hospitalization	1.025*	----	1.053*	1.013*	0.981*

* $p < .05$, **$p < .01$

service use could be improved upon by using a more sophisticated modeling strategy. Other alternative analysis strategies include the use of latent class membership as a covariate in a hierarchical linear model of changes in clinical outcomes. In addition, the use of structural equation modeling could allow for more accurate specification of the complex relationships between service use and outcomes that likely exist.

Discussion

The findings indicate that the SOC and SAU system differed substantially in the use of individual, group and family counseling. This difference likely resulted from the emphasis on family-focused services in the SOC. Furthermore, the LCA results revealed the existence of two classes of individuals whose service use patterns were distinct. While these differences in service delivery patterns were unrelated to demographic characteristics of the samples, they were related to clinical symptoms at entry into services. These findings suggest that, in both service systems, more types of services were provided to children with higher behavioral symptom scores. While previous research has found improved functioning for some children as a result of residential treatment services (e.g., Rivera & Kutash, 1994), the characteristics of the service delivery system and of the children that are associated with improved functioning need to be clearly specified. One of the most important findings in this study is that the use of medication monitoring and restrictive services, like residential treatment, was much less likely in the SOC than in the SAU system, and use of these services was associated with improvements only for children served in the SOC. This may reflect a more targeted delivery of these services in the SOC with concomitant improvement in outcomes for those children for whom these services were deemed appropriate.

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Service Dose Effects on Children's Outcomes in System of Care and Comparison Communities

Tim Connor & Robert L. Stephens

Introduction

Several studies have found that more services do not necessarily lead to better children's mental health outcomes (Smyrnios & Kirkby, 1993; Weisz, Walter, Weiss, Fernandez, & Mikow, 1990; Weisz & Weiss, 1993). Using data from the Fort Bragg Demonstration Project, Salzer and his colleagues (Salzer, Bickman, & Lambert, 1999) reported that increasing outpatient sessions for children did not significantly predict their mental health outcomes. When service dose is measured as duration of services, research still indicates that dosage is unrelated to clinical outcomes (Casey & Berman, 1985). In addition, Steenbarger (1994) suggests that brief treatments may be as effective as extended ones. However, the literature is not without debate. When dose is measured as service intensity, dose has been linked to outcomes for children (Target & Fonagy, 1994a) and adults with anxiety disorders or depression (Target & Fonagy, 1994b). Further, in a secondary analysis of data from the Fort Bragg Demonstration using instrumental variables estimation, Foster (2000) found that additional outpatient therapy sessions were related to improvements in child functioning, but not symptomatology. The current paper re-examines the effect of service dose on children's mental health outcomes by examining the following two questions:

- How is service dose best measured?
- Does service dose have a differential effect on children's mental health outcomes in system of care versus non-system of care communities?

These questions were addressed using data from the longitudinal comparison study of the national evaluation of the Comprehensive Community Mental Health Services for Children and Their Families Program.

Methods

In the longitudinal comparison study, three system of care grantee communities funded by CMHS in 1993 and 1994 were paired with three non-system of care communities. One of the pairs included the Stark County, Ohio system of care matched to the more traditional Mahoning County, Ohio service system. From August 1997 through October 1999, 232 children and families were enrolled into the study in the Stark County system of care and 217 children and families were enrolled in the traditional Mahoning County system.

Participants

Children were eligible for the study if they were between the ages of 6 and 17.5 and presented with serious emotional or behavioral problems. A comparison of baseline demographic characteristics revealed that children enrolled in the study in the two communities were fairly similar. Children's age and gender distributions did not differ. However, children in the two communities did differ with regard to race/ethnicity, $\chi^2 = 46.82$, $df = 3$, $p < .001$, and family income, $\chi^2 = 11.32$, $df = 1$, $p < .001$. Children in the system-of-care community were more likely to be White and to report family incomes greater than $15,000 per year.

Measures

Outcome data were collected through face-to-face interviews with children and their primary caregiver at intake and then 6, 12, 18, and 24 months after intake. Only outcome data through 12 months are used for these analyses. Clinical symptomatology was measured using the Child Behavior Check List (CBCL; Achenbach, 1991). Functional impairment was measured with the Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1997). The service utilization data were collected from electronic billing systems from the community mental health centers (CMHCs) that served the children in the two communities. Service data were available for all 217 children served at the Mahoning County CMHC and for 229 children served at the Stark County CMHC. Service utilization data for the first 12 months of service for each child in the study are used in these analyses.

Most previous work has measured dose as outpatient sessions, which is only one of many components of a child's service experience. For purposes of this study, service dose was measured in three ways. Total service hours was the first measure of dose used. The second measure of dose was service duration defined as the number of days between the first and last service. The third measure of dose was service intensity defined as the mean number of service hours per month during the duration of the entire episode (a minimum of a 14-day episode was required for this measure).

Analysis

A series of multiple regression models was calculated to examine how demographic characteristics, treatment type (SOC vs. non-SOC), and dosage explain variance in behavioral symptoms and functional impairment. Demographic characteristics included as predictors in all models were the child's gender, age, and race, as well as family income. One series of models predicted functional impairment using the three measures of dosage as predictors in three separate sets of regression models. The first series involved using the CAFAS 8-Scale Total Score at 12 months as the dependent variable and entered the following predictors in a single block: (a) the 6-month total CAFAS score, (b) age, (c) treatment site, (d) race/ethnicity, (e) gender, (f) family poverty status, and (g) total hours of service in the first 12 months. Similar regression models were then calculated using service intensity and service duration as predictors in place of total hours of service. This entire set of regression models was repeated using CBCL Total Problems Score as the dependent variable and entering the same set of predictors in a single block. A second series of similar models used six-month CAFAS and CBCL scores as dependent variables and substituted baseline CAFAS and CBCL scores and six-month dosage measures, respectively. The fourth series of models again used six-month CAFAS and CBCL scores as dependent variables, but the dosage measures were based on the 1-3 month and 4-6 month periods after intake.

Results and Discussion

Dosage as measured by average hours of service in the 12 months after intake varied significantly between children served in the two communities. Children in the SOC received an average of 43.7 hours of service compared to 25.6 for children served in the non-SOC, $t(442) = -3.90$, $p < .001$. The intensity of services was also higher in the SOC than in the non-SOC (5.6 vs. 3.1 hours/month), $t(442) = -3.40$, $p < .001$; although the average duration of children's episodes was similar at about 180-200 days.

The first multiple regression model revealed that children who received relatively more services in the 12 months after intake had higher levels of functional impairment than children who received fewer services, ß = .13, $p < .001$. Males' level of functional impairment at 12 months was about 11 points higher on the CAFAS than females, ß = 10.87, $p < .01$. As expected, functional impairment at six months explained most of the variance in 12-month functional impairment, ß = .62, $p < .001$).

The same variables were then modeled to explain levels of functional impairment at six months, but the results were slightly different. Again, receiving more services from entry to six months was predictive of high functional impairment at six months, ß = .229, $p < .001$. Males and children with higher CAFAS scores at baseline again also had higher CAFAS scores after six months relative to other children. However, controlling for these variables and the other demographic characteristics, children in the SOC had lower functional impairment than children in the non-SOC, ß = -8.99, $p < .05$. Similar results were found at six and 12 months when predicting clinical symptomatology with the CBCL. Results were also the same regardless of whether total service hours or service intensity were used as the measure of dosage. Duration had no relationship to outcomes.

A third model explored the possibility that doses of specific types of services were related to outcomes. The individual dosage was calculated for assessment, individual counseling, group and family counseling, medication monitoring, day treatment, case management, and residential treatment. Results showed that children receiving more case management (ß = .21, $p < .05$) and residential services (ß = .20, $p < .05$) in the first 12 months had higher levels of functional impairment at 12 months. While many previous studies have focused only on the effect of outpatient sessions on outcomes (Howard, Kopta, Krause, & Orlinsky, 1986; Salzer, Bickman, & Lambert, 1999), our results suggest that case management and residential treatment are important aspect s of service that should be included in the measurement of dosage.

Thus far, our results have indicated that more services do not result in better outcomes. A final model was calculated which examined 12-month outcomes only for children who were discharged in the first six months after intake. Results revealed that children discharged in the first six months who had received relatively more services during that period had slightly lower levels of clinical symptoms 12 months after intake than those receiving fewer services (ß = -.15, $p < .05$).

This presentation has two important findings. First, measures of service dose may not be complete if services such as case management and residential treatment are not included. Second, children who receive a relatively high number of services do not necessarily have better outcomes 12 months after intake. However, when those children discharged in the first six months were examined, those who received relatively more services had slightly better 12-month outcomes. One limitation of the present study is the absence of information on children's presenting problems or diagnoses. Our findings highlight the importance of conducting future research that considers the influence of these individual characteristics on children's treatment trajectories.

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The Full Costs of the System of Care: Cost-shifting Across Child-serving Agencies

E. Michael Foster, Tim Connor, & Hoang Nguyen

Introduction

Results from the Fort Bragg Demonstration suggest that improvements in the delivery of mental health services are not necessarily self-financing: better services are not necessarily less expensive (Foster, Summerfelt, & Saunders, 1996). Even after allowing for between-site differences in access, service expenditures at the Demonstration were substantially greater than at the comparison sites. Critics have argued that this perspective is somewhat narrow (Pires, 1997); it does not reflect potential cost-shifting and cost-offset in other child-serving sectors generated by the Demonstration. The Fort Bragg study could offer only limited evidence on this score. The study did include self-reports of involvement in other child-serving sectors, such as special education and juvenile justice. In addition to potential inaccuracies related to self-reports, those results are difficult to interpret because of large between-site differences at baseline (Bickman et al., 1995). The study did include insurance claims data concerning the child's use of health services and the use of mental health services by other family members. The effect of the Demonstration on those expenditures was very modest and did not offset increased expenditures on mental health services for children served at the Demonstration (Foster & Bickman, 2001). While one would expect any potential cost savings to be mediated by between-site differences in mental health outcomes, it remains possible that the greater expenditures on mental health services were offset to some extent by cost savings not otherwise captured.

For this reason, a key question underlying the national evaluation of the Comprehensive Community Health Services for Children and their Families Program involves the impact of improved service delivery on expenditures by other child-serving agencies. Unlike the Fort Bragg Demonstration, the grantees are true systems of care that actively involve other agencies, such as child welfare, juvenile justice and special education. For that reason, the impact on expenditures by those agencies is potentially even greater.

This summary reports final findings from a study of the impact of systems of care on children's involvement in other child-serving sectors. These efforts have been focused on one of the comparison pairs, the two Ohio Sites. This paper updates our 2001 presentation (Foster, Connor, & Nguyen, 2002) by: (a) providing expenditure figures for the other child-serving sectors, and (b) using propensity score analysis to adjust for between-site differences in the children served (particularly their past involvement with community agencies).

Method

The National Evaluation collects management information system data from the mental health agencies in study communities. These databases are available for both Stark County (the grantee) and Youngstown (the comparison site). However, those databases suffer from key omissions—namely, they provide data on neither residential psychiatric care nor on other child-serving agencies.

For this reason, we undertook a series of record reviews at the major residential service providers and key child-serving agencies in the study communities. This record review covered service use from 1997 through 2000. The data cover only those services received while participants lived in study communities; services received by individuals who moved to other areas of Ohio or out of state are not included.

Participating agencies and providers include four local residential providers (two in each community) as well as agencies in the juvenile justice, child welfare and special education sectors. In the case of juvenile justice, data were obtained from county juvenile court as well as from the regional juvenile corrections authority. Information on out-of-home placements were obtained from the county child welfare offices. School districts in the cities and counties involved provided data on special education placements.

All agencies contacted provided data, either in the form of a management information system or a hard copy summary. Information provided included date and types of service. In some instances, information on expenditures on those services was also available.

Results and Discussion

Looking just at the core mental health service providers, we find that expenditures were $1579 higher at Stark (*n* = 232) than at Youngstown (*n* = 218). However, data from other community agencies and providers suggest possible cost savings in other child-serving sectors. In the 12 months following study entry, we find that children at the comparison site were substantially more likely to have been involved in county juvenile court (*p* = .08) as well as private inpatient care (*p* = .04). (Significance levels were determined using the two-sided Fisher's exact test.)

We use budgetary information from these communities to calculate expenditures on services provided in the other child-serving sectors. We find that those expenditures are higher at the comparison site and partially offset increased expenditures at Stark, reducing the between-site difference to $868. Further exploration of the agency data, however, reveals that past involvement with community agencies was substantially greater at the comparison. When we use propensity score analyses to adjust for those differences, the between-site difference in total expenditures disappears (-$102). The corresponding confidence interval is quite large. Treating the confidence interval as a posterior distribution, one can calculate that the chance the true effect of the system of care is to reduce public expenditures is 65%. These findings suggest that when comparable children are compared across sites, total expenditures are comparable.

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Symposium Discussion

Gregory A. Aarons

It is an understatement that evaluating the impact of youth and family involvement in systems of care is a difficult task. Overarching issues include understanding differences in service systems, direction of effects, complexity of data sources (e.g., sectors of care), consumer characteristics, and site differences in data collection methods, to name a few. The papers presented here take stock of some of these issues and move us forward in understanding how service involvement affects outcomes, service utilization, and economic benefit to service systems and society. These studies highlight the importance of what we ask, and how we ask our questions in order to better understand the critical determinants of both clinical and economic benefits of services.

Together, these papers focus our attention on some important questions in evaluating and understanding the complexity of youth systems of care. However, additional questions are raised. For example, the issue of causality is important for mental health service system research. I stress the word "system" here because it is not just that a youth and family enters a system, but rather, the youth and family become part of the system. There appear to be reciprocal relationships at play. Another question concerns how service providers can be most responsive to the needs of children and families while remaining competitive and viable in the mental health care marketplace. The cost savings of services should be further explored and defined. However, there are likely factors beyond type and dose of service that influence how well service providers are able to engage youth and families. For example, how do we provide a service environment that will help to insure that those who are providing services have both the interpersonal and organizational resources needed to engage children and families and provide the most effective services possible? While there is a high degree of complexity addressed by these studies, it is also clear that they provide a high degree of opportunity for better understanding how systems of care can and do help youth and families.

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Children's Mental Health Benchmarking Project: Year Two of a National Research Effort

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Introduction

The Children's Mental Health Benchmarking project was developed by Dougherty Management Associates (DMA) in 1999 and has received support from the Annie E. Casey Foundation, the Center for Health Care Strategies and The Robert Wood Johnson Foundation. The project, which has now completed its second year, systematically reviews and analyzes data on the performance of public mental health systems for children throughout the country. The goal of this work is to offer state and county systems the ability to benchmark, or compare, their systems of care for children. Although systems differ significantly from one another, making comparisons challenging, we believe it is quite useful for mental health authorities and other stakeholders to learn how their own programs measure up against those being implemented elsewhere.

Method

In the year 2000, the mental health authorities (MHAs) of nine states, three counties and the District of Columbia submitted data to this project on a set of indicators related to access, utilization, financial performance, and intersystem involvement.

During 2001 a revised version of the data collection instrument was sent to all 50 state MHAs, most state Medicaid agencies, and selected counties. The instrument, a paper survey, consisted of two parts; one was devoted exclusively to MHA data and the other to Medicaid data. MHA respondents who lacked access to Medicaid data were asked to send the Medicaid instrument to their counterparts in that agency, and vice versa. As in the first year, we requested data on a series of indicators that had been developed by significant national groups, such as the National Association of State Mental Health Program Directors (NASMHPD) and the Mental Health Statistics Improvement Project (MHSIP). Specific indicators include: penetration rate, inpatient utilization, readmission rates, expenditures per capita, juvenile justice system involvement, and out-of-home placement rate. Using these indicators, the project seeks to answer three basic questions: (a) how many children are served, (b) in what settings, and (c) at what cost?

Thirty-six different jurisdictions—31 states (out of the 50 from which we requested information), four counties and the District of Columbia—submitted data in the second year; eighteen provided both MHA and Medicaid data. The data submitted enabled DMA to compare a number of indicators across jurisdictions.

Results

The project's findings suggest significant variation among states and counties on most of the dimensions examined. Highlighted below are key indicators; one from each domain.

Access: Children Served per 1,000 Population.

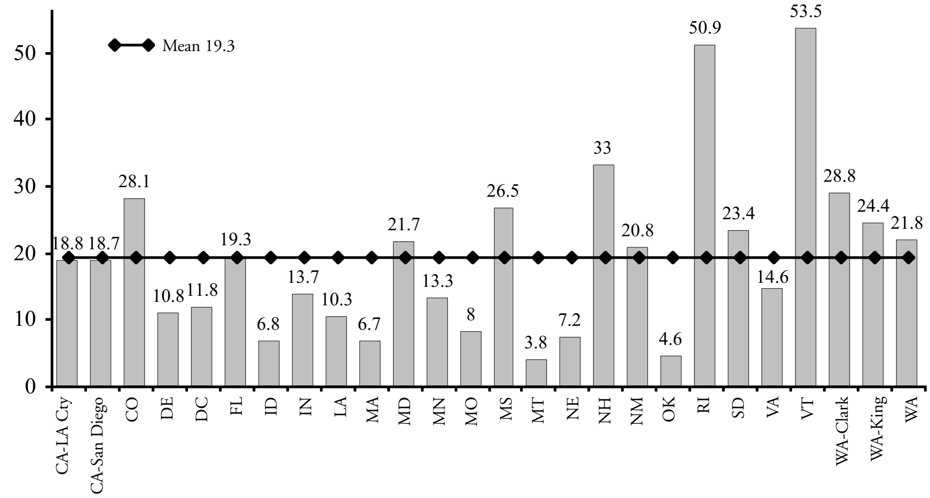
As Figures 1 and 2 show, the average number of children served by 26 MHAs, per 1000 population under 18, was 19.3, while the average number of children served by 25 Medicaid agencies, per 1000 population under 18, was 21.2.

Utilization: Readmission to Inpatient Care

Five MHAs provided data on readmissions to state hospitals within 30 and 90 days following discharge. The 30-day MHA readmission rates range from 2.9% to 12.7%, with a mean of 6.2%; the

Figure 1
Mental Health Authority: Children Served per 1,000 Population

Number of children receiving a mental health service per 1,000 population under 18



FY 01– DE, FL, IKN, LA, MA, MO, NE, NM, RI, SD, WA-Clark
FY 00 – CA-LA City, CA-San Diego, CO, DC, ID, MD, MN, MS, NH, OK, VA, VT, WA-King, WA
CY 00 – MO

Source: Population Data: 2000 US Census
Median = 18.8, *SD* = 12.6

90-day rates range from 6.3% to 21.5%, with a mean of 10.6%. Five Medicaid agencies submitted data on readmissions for psychiatric hospitalization. The 30-day Medicaid agency readmission rates range from 4.2% to 10.6%, with an average of 8.4%; the 90-day rates range from 8.6% to 15.5%, with a mean of 13.4%.

Expenditures: Inpatient Expenditures as a Proportion of Total Expenditures

Sixteen MHAs devoted, on average, slightly more than 22% of their expenditures to inpatient hospital care and 78% to all other types of services. Twenty-one Medicaid agencies reported, on average, a similar proportion (24%) and range of expenditures for inpatient care. Specifically, the proportion of inpatient expenditures for MHAs ranged from 1% to 62%, while for Medicaid agencies the proportion ranged from 3% to 58%.

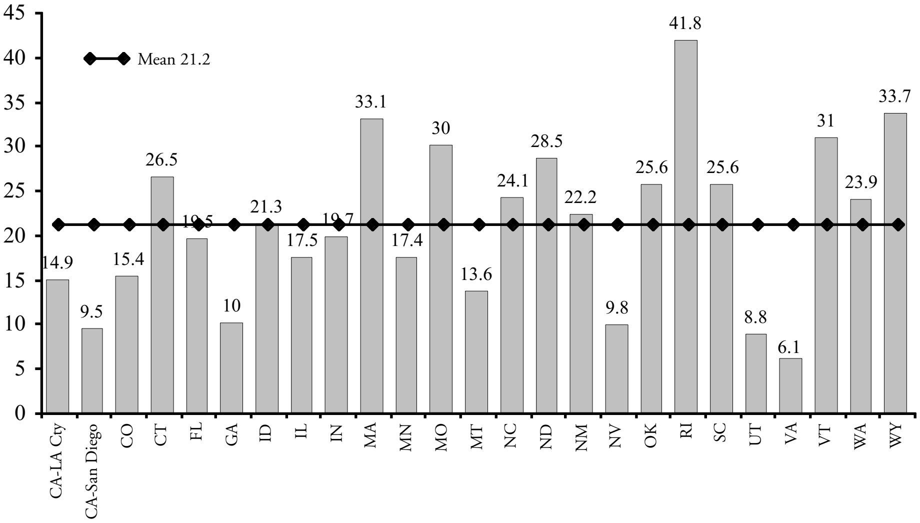
Intersystem Involvement: MHA Percentage of Children in Out-of-Home Placement

Nine sites reported on the proportion of children who received MHA services and were in foster care or other out-of-home placement during the year. These rates ranged from 4.1% to 16.7%, with a mean of 10.5%.

When considering the project's findings, it is important to recognize that each jurisdiction has its own system for providing and funding mental health services for children, and even for dividing responsibility between its MHA and its Medicaid agency. Examples of the many elements that may

Figure 2
Medicaid: Children Served per 1,000

Number of children receiving a mental health service(s) per 1,000 population under 18



FY 01 – MO, RI, SC, VT, WY
FY 00 – CA-LA City, CA-San Diego, CO, FL, ID, IN, IL, MA, MN, MT, NC, NM, OK, UT, VA, WA
FY 99 – CT
CY 00 – GA, NC, NV

Source: Population Data: 2000 US Census
Median = 21.3, *SD* = 9.1

vary include funding, financing methods, benefits, population demographics, and type of managed care system. For all these reasons, comparison of data between sites should be considered preliminary, and used only to identify areas for further inquiry or quality improvement.

Discussion

This project aims to provide data to states and counties that they can actually use to enhance their understanding of their own systems of care. This project is unique in three respects: its focus on children, its effort to collect and publish for purposes of comparison specific state and county level data provided by the jurisdictions themselves and its inclusion of both MHA and Medicaid data. Despite extensive and long-term discussions in the field about the value of collecting data and developing benchmarks, there are still few data available specifically on children's mental health services in the public sector. What data there are do not tend to report separately for children and do not include both Medicaid and mental health authority (non-Medicaid) data. We continue to find that it is challenging for states and counties to provide timely and accurate data that permit cross-site comparisons. Moreover, we recognize that considerable allowance needs to be made for the differences in the structure and organization of state service delivery and financing systems that complicate interpretation of the data. Nevertheless, this project is moving toward the goal of enabling states and counties to compare their performance with one another.

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Symposium

An Overview of the Six-year Nebraska Family Central System of Care: The Use of Evaluation Data to Reform Services

Chair
William E. Reay

Authors
William E. Reay et al.
Jill Schubauer et al.
Mark DeKraai
Eileen Dakan et al.

Symposium Introduction

William E. Reay

The Nebraska Family Central System of Care approach to evaluation was directly influenced by the important and controversial scholarship of Leonard Bickman. According to many leaders in the applied research community, the Fort Bragg and Stark County studies conducted by Bickman are among the best evaluations (Weisz, Han, & Valeri, 1997). Fort Bragg and Stark County findings prompted a major re-evaluation of how the mental health profession should provide care, and how that care should be evaluated. As a consequence, the Nebraska Family Central System of Care adopted a very aggressive approach to evaluation and attended to some of the criticisms proffered by Bickman (Bickman, 1996).

Although the Nebraska Family Central System of Care was developed pursuant to the Center for Mental Health Services (CMHS), and receives a formal evaluation program through ORC Macro, the leadership of the Nebraska site decided that the customary evaluation methods offered through the CMHC process did not address many of the treatment and system evaluation issues identified by Bickman. Therefore, an internal program evaluation system was developed to support decision making at all levels of the system. This symposium presented current evaluation findings at different levels of the Nebraska Family Central System of Care.

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The Nebraska Evaluation Model: Practice and Policy Decisions Informed by Case and Program Specific Data: What We Have Learned from Fort Bragg, Stark County, and Len Bickman

William E. Reay, Calvin P. Garbin, & Mario Scalora

Introduction

The Substance Abuse and Mental Health Services Administration (SAMHSA), through the Center for Mental Health Services (CMHS), as well as the Research and Training Center in Tampa, Florida have been promoting the System of Care (SOC) concept for better than 12 years. Enormous amounts of federal and state funds have been, and continue to be expended on developing systems of mental health care. However, evaluation data associated with these projects have prompted many policy makers and researchers to take a closer look, not only at system variables such as coordination, but at treatment and case-specific variables such as treatment approach, as well. Unfortunately, the federally funded SOC sites have not necessarily adopted evaluation systems that permit detailed evaluation of youth and family cases embedded within the system.

The SOC site in Nebraska is one exception. Nebraska adopted an approach to evaluation that uses a single-subject design that is embedded within a multivariate evaluation system. The case-specific clinical documentation associated with each case is very detailed; therefore specific intervention processes can easily be identified. This permits researchers to investigate case information through the method of "serial slicing" (i.e., daily, weekly, monthly, yearly) in an attempt to identify both potent therapeutic activities and doses of activities related to positive, negative, and null outcomes.

The Nebraska evaluation system permits a comprehensive analysis of various individually designed therapeutic activities that take place within a coordinated SOC. In addition to providing substantially more information about the effectiveness of large organized mental health systems, this approach also provides direct information related to intervention services aimed at specific clinical problems. Through this process, positive, negative, and null case outcomes are more informative to both system-based and case-specific researchers, and to policy makers and clinicians.

While this paper evaluates outcome data for youth served by Nebraska Family Central, Table 1 represents a list of the assessment instruments used, overall, by different levels of the Nebraska Family Central system. The timelines or frequency of administration, and the source of information include multiple informants at different times during treatment or service.

Table 1
Assessment Instruments and Schedule of Administration

Assessments	*Timeline*	*Source of info*
IRB Consent and Assent Forms	Intake	Caregiver & Youth
Address Tracking Form	Intake, every 6 months	Caregiver
Descriptive Inform Question	Intake, every 6 months	Caregiver
CBCL	Intake, every 6 months	Caregiver
ROLES-R	Intake, every 6 months	Caregiver
Education Questionnaire	Intake, every 6 months	Caregiver
CAFAS	Intake, every 6 months	Staff (reliable raters)
Family Assessment Device	Intake, every 6 months	Caregiver
Family Resource Scale	Intake, every 6 months	Caregiver
Care Giver Strength Questionnaire	Intake, every 6 months	Caregiver
Youth Self Report	Intake, every 6 months	Youth
Family Assessment Device	Intake, every 6 months	Youth
Substance Use Survey, Parts A & B	Intake, every 6 months	Youth
Delinquency Survey	Intake, every 6 months	Youth
Behavioral and Emotional Rating Scale	Intake, every 6 months	Caregiver
Teacher's Report Form	Intake, every 6 months	Teacher
Eyberg Child Behavior Inventory	Monthly	Caregiver
Sutter-Eyberg Behavior Inventory	Monthly	Teacher
Risk Factor Tracking Form	Monthly	Staff Person
Weekly Adjustment Indicator Checklist	Weekly (logged daily)	Staff/Caregiver
Graduation Checklist	Discharge	Staff

At the direct care level, information from the Weekly Adjustment Indicator Checklist (Burchard, 1990; Reay & Garbin, 1996), the Sutter-Eyberg, and Eyberg Child Behavior Checklists (Eyberg, 1992), were provided to the child and family teams. Monthly aggregate data informed the direct management team as well as the fiscal and policy-level management personnel.

At the most aggregate level, this approach allows us to examine all variables across any grouping variable of interest. For example, Nebraska has been utilizing two specific promising practices, and has been using those practices in various combinations. This evaluation design allows us to examine those practices separately and in combination.

Participants

The Nebraska site has served over 500 youth and families. Complete clinical and program evaluation data, clinical records, and outcome data exist for 456 cases. The average age of the youth served in the system was 13.3 years of age (range: 3.4 to 21 years), and about 50% of the youth were males. All youth served had a diagnosis consistent with the definition of serious emotional disturbance (SED) and required multi-agency involvement.

Treatment Groups

Wraparound. The wraparound sample (*n* = 271) had an average age of 13 years, and also approached an equal distribution of males and females. The treatment offered by this program was an individualized system-of-care model, commonly known as wraparound. Complete data were available on 104 subjects across a 12-month period.

Multi-systemic Therapy (MST). The MST sample (*n* = 157) had an average age of 14 years. Males dominated this group (72%). The treatment offered to this group was traditional MST, a short-term intensive home-based treatment program (Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 1998). Complete data were available on 38 subjects across a 12-month period.

Wraparound & MST. This group received a combination of wraparound and MST (*n* = 28). The average age for this group was 14 years, and the distribution between males and females was virtually equal. Complete data were available on 20 subjects across a 12-month period.

Instruments

The Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1990) was completed on each youth at intake, and every six-months thereafter. All staff received direct training in the use of the CAFAS by qualified trainers, and received acceptable reliability ratings. Results below pertain to CAFAS results only.

Results

Mean CAFAS scores for the three groups are presented in Table 2. From a simple, visual inspection of the mean scores, youth in all three groups demonstrated improvement in functional behavior over the 12-month period, with all scores decreasing. Elevated intake CAFAS scores associated with the Wrap/MST condition were expected because youth referred to that condition were assessed as having the greatest need, and they presented the most complex clinical symptomatology. It should be noted that the intake score associated with the Wrap/MST condition was statistically different from both the Wraparound and the MST alone conditions. In other words, the Wrap/MST group of youth represented a far different clinical picture at intake than did the other two groups.

Table 2
CAFAS Scores at Intake
6 Months and 12 Months Follow-up
(*N* = 162)

Treatment Group	*Intake*	*6 Months*	*12 Months*
Wraparound *n* = 104	109.23 (38.35)	85.38 (47.15)	70.00 (41.89)
MST *n* = 38	107.10 (34.86)	74.73 (51.08)	73.94 (46.00)
Wrap/MST *n* = 20	134.00 (40.44)	89.50 (61.59)	93.50 (54.31)

SD = ( )

A test of the between-subjects effects for treatment condition indicated no significant treatment effects between any of the three groups, *F*(2,159) = 2.322, *MSE* = 3926, *p* = .028. Table 3 presents the results of the tests of within-subjects effects across time. As indicated in Table 3, there was a main effect for time, and no time by condition interaction effect. In other words, the passage of time was associated with *equivalently* improved CAFAS scores, regardless of treatment condition. Clearly, youth in all three groups improved on the CAFAS measure.

Table 3
Within-Subjects Effects Across Time

Source	*Type III Sum of Squares*	*df*	*MS*	*F*	*Sig.*	*Partial Eta Squared*
Time						
Sphericity Assumed	89356.33	2	44678.16	44.95	<.001	.220
Time x Condition						
Sphericity Assumed	6413.80	4	1603.45	1.61	.171	.020

Discussion

Current research efforts are underway to control for various variables and to analyze the aggregate data in an attempt to determine specific items associated with positive, negative, and null CAFAS score changes across all treatment conditions. More precise information is necessary for a clear picture of MST and wraparound. Principles associated with wraparound have not been defined to the extent necessary for comprehensive research. Challenges associated with defining discrete elements within wraparound services also present enormous difficulties. It is also possible that differential treatment effects are being masked by the CAFAS. As a result of this possibility, efforts are currently underway to analyze the same data using endorsed items associated with each sub-scale.

Limitations. The participants in this evaluation were neither randomly selected nor assigned, nor was there random assignment of the various components of the treatment or by whom the treatments were delivered. Additionally, this study was conducted in a single community. Thus, generalizations of these findings to other communities and participants are limited. It is hoped that this study will soon be replicated in other communities with larger numbers of participants in the combined treatment group of MST and wraparound.

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Using Case-specific Information in Support of Wraparound Teams

Jill Schubauer & Dave Hoyt

Introduction

The following is an example of a case involving an actual youth enrolled in the wraparound program (Professional Partner Program) through Nebraska Family Central. How the child/family team uses assessment information to make informed decisions, identify strengths and needs, and the measurement of progress toward identified goals will be presented in the sequence in which it occurred in the actual case. The data presented are actual program data.

The Professional Partner Program began in 1995 and targeted children and adolescents with serious emotional disorders. On October, 1997 Region III Behavioral Health Services in partnership with the Department of Health and Human Services, Division of Health and Wellbeing was awarded a CMHS grant to enhance the mental health system for families in central Nebraska which became known as Nebraska Family Central. As a result of the grant the Professional Partner Program was able to become part of the initiative in Central Nebraska and allowed Region III to dramatically expand the program.

Subject

Ned (pseudonym) is a 16-year old male diagnosed with ADHD, ODD, and Depressive Disorder. He resides with his mother and younger sister in a small rural community in Nebraska. Ned attends a consolidated high school in a neighboring town where he is in the 10th grade. He has special education verification of behavioral impairment, and receives special considerations within the school. In the past he has received outpatient therapy for his depressive episodes. There is also a history of substance abuse in his biological family.

An area mental health provider referred Ned to the Professional Partner Program. At referral he was identified with the following presenting problems: depression, non-compliance, physical aggression, suicidal ideation, verbal abuse, low self esteem, poor academic performance, property damage, theft and police contact. On the Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1990), for which higher scores indicate greater impairment, he scored in the severely impaired range in the areas of Home, Community, Moods/Emotions and Self-Harm. The CAFAS indicated moderate impairment in the areas of School and Behavior Towards Others. The total CAFAS score (using eight subscales) was 160.

At intake, the Weekly Adjustment Indicator Checklist (WAI; Burchard,1990) and both the Sutter-Eyberg (Eyberg, 1992) and the Eyberg Child Behavior Checklist (Eyberg, 1992) assessments were completed to identify Ned's most pressing behavioral needs. The WAI indicated that he engaged in far more undesirable behaviors than positive (with a negative score of 14 and a positive score of 6). The Eyberg Child Behavior Checklist intensity score was 188, with 27 problems identified. Likewise, the Sutter-Eyberg intensity score was 121, and indicated the presence of 22 problems. The assessments indicated a concern around compliance, lack of self-confidence, extreme verbal abuse, sadness, and anxiousness.

After the initial assessment, the family began to identify who they wanted to be part of the child/family team. They identified Ned's mother, his sister, his grandparents, a friend of Ned's, the MST therapist, the resource teacher, and a mentor/tutor. At the first child/family team meeting, and at the several that followed monthly, the team formulated goals and interventions from the strengths and needs that were identified. The primary goals were to decrease verbal abuse toward family members to one time per week by utilizing new response strategies; this was measured by the WAI. A second goal was to achieve passing grades in all classes by utilizing a mentor/tutor to help with homework and reading skills. Achievement in this area was measured monthly, using the Sutter-Eyberg. Another goal was to create a PowerPoint presentation what would communicate his strengths, abilities, and frustrations to teachers and peers; learning this skill would also help Ned build self-confidence. The WAI measured the Ned's performance related to this goal.

The team also created a safety plan to help Ned address verbal abuse, physical aggression, and self-harmful behaviors; the WAI informed the team of his progress in this area, as well. Later in the process the team added two final goals. One was to increase compliance in taking medication, and to acquire extra spending money by gaining employment at an electronics shop. Again, both achievements were measured by the WAI.

To further assess progress with Ned's functional impairment, the CAFAS was administered at intake and every six months thereafter. At intake the CAFAS score (using eight subscales) was 160, at six months the total score decreased to 120, and at 12 months it had further decreased to 30.

Over time the team was able to see significant changes in Ned's behaviors. As indicated previously, the child/family team primarily used the Sutter-Eyberg, Eyberg Child Behavior Checklist, and the WAI to measure their progress toward goals. Figures 1-3 represent changes in Ned's behavior over time.

Figure 1
Weekly Adjustment Indicator Average Scores

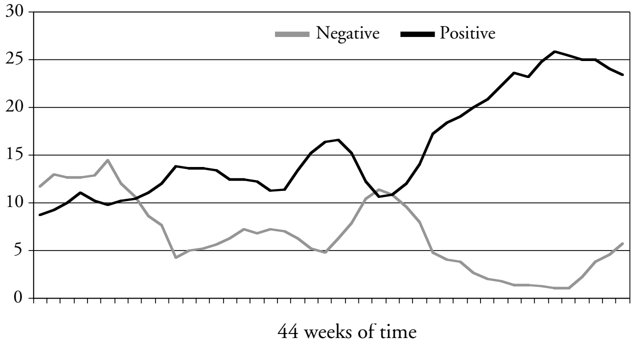


Figure 2
Eyberg Total Scores for 2001

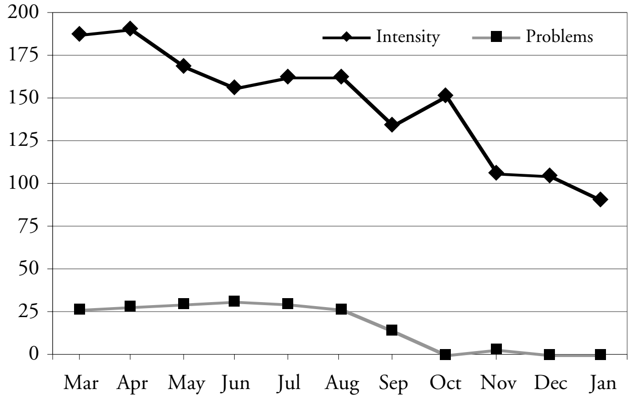
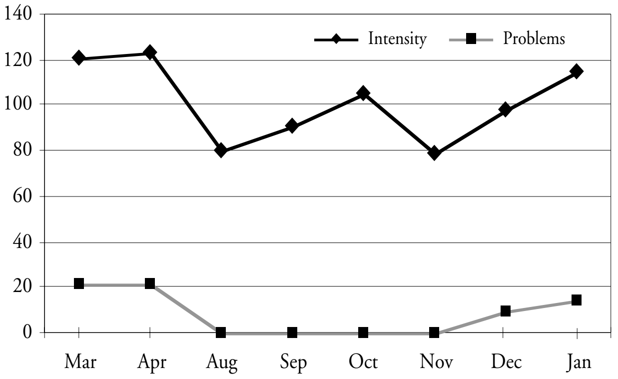


Figure 3
Sutter-Eyberg Score for 2001



Currently, Ned and his family have successfully completed MST therapy and are planning on graduating from the Professional Partner Program in May, 2002. The child/family team is pleased with the progress the family has achieved over a fairly short period of time; The team feels that they have gained the skills needed to progress without the assistance of the program. Ned and his family will continue to meet as necessary with the child/family team that they developed.

Discussion

Child/family teams have a very real need to have timely, accurate data to support their interventions. At this level, assessment results are used to determine the youth and family's progress toward identified goals, to establish minimum acceptability levels for at-risk behaviors, and to identify discharge parameters. These results also help provide structure to the child/family team meetings, from identifying what topics are to be discussed, to who should be on the team. The assessments also effectively capture what the caregiver and/or youth feel about each other and about participating in services.

The same assessments utilized by the child/family team play a key role at the level of the program manager, as well. Data are used to assure that those enrolled in services continue to meet eligibility requirements while participating in services, to assure adherence to office policies and procedures, and to show direct evidence as to how the form of service delivery works and to offer possible explanations when it does not. Information obtained is also beneficial for deriving and driving quality improvement goals. The Nebraska Family Central system of care has demonstrated how, through the use of assessments, those we serve stand a much better chance of achieving success.

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Using Case Specific Information for Quality Improvement, Policy Development and Financial Sustainability

Mark DeKraai

Introduction

The Nebraska Family Central system of care (SOC) began in 1997 with a comprehensive children's mental health grant from the Center for Mental Health Services. This six year, $8.5 million grant covers 22 rural and frontier counties in central Nebraska. The Nebraska Family Central SOC includes the following components: (a) individualized care through a wraparound process; (b) effective interventions including Multisystemic Therapy; (c) family involvement at all levels, from child and family teams to governance; (d) interagency collaboration involving child-serving agencies to integrate funding and policy development; and (e) program evaluation, which informs decisions at all levels and uses data to drive practice as well as systems change.

The goals of the SOC include the following:

- Demonstrate improved outcomes for children and families
- Sustain the SOC beyond grant funding
- Expand the SOC to other parts of the State

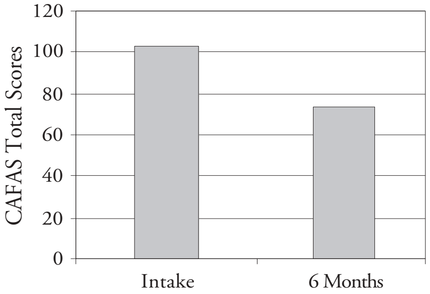
The hope of the project was that, by showing positive outcomes for children and families, new funding would be available to sustain and expand the SOC. Unfortunately, in Nebraska, as in many other states, the economic situation had forced the State to look more closely at budget cuts than service expansion. Given this reality, the Nebraska Family Central strategy for sustainability focused on using existing resources more effectively. The challenge was to shift resources from traditional approaches to the SOC. Good evaluation information became critical in this effort.

In Nebraska, the child welfare and juvenile justice systems were facing financial difficulties. The number of children being served by the system was increasing at 17% per year and costs for services were increasing significantly. Many children were being served in higher levels of expensive residential care because of the lack of community alternatives, and there was a belief that these residential services were not producing positive outcomes for children and their families. The state's juvenile justice facilities were overcrowded and additional beds were being added to the state psychiatric hospitals to handle the overflow from juvenile corrections. Ninety percent of youth confined in the juvenile facilities had a diagnosable mental heath or substance abuse disorder. The situation in the child welfare and juvenile justice systems presented an opportunity to promote the SOC as an alternative approach to services.

Method

In 1999, Nebraska Family Central submitted a concept paper to State policy makers proposing to serve youth in high-level care through the SOC including the use of the wraparound approach and community services such as Multisystemic Therapy. The proposal suggested that this shift in service delivery could serve youth at lower cost with better outcomes. Nebraska Family Central used an extensive database of outcome measures to demonstrate positive outcomes for youth served in the SOC. These outcomes were shown by improvements in standardized scores through decreased scores on the Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1990), and by low rates of residential placement and improvement in school attendance/performance. Figure 1 presents data from CAFAS scores, indicating positive outcomes.

Figure 1
CAFAS Scores at Intake and After Six Months of Service in the System of Care



Convincing policy makers that the SOC could produce these outcomes for children and families, while at the same time saving costs, was a major challenge to Nebraska Family Central. To meet this challenge, Nebraska Family Central developed a cost analysis and case rate reimbursement proposal. The first step in this process involved identifying the target population. A point-in-time survey of all children in the region who were in out-of-home placements in April, 2000 was conducted in order to identify youth who could benefit from wraparound services. The survey included demographic information, guardianship status, diagnosis, and placement. The survey found that 610 children were in out-of-home placements in the region. Some of these children were living with relatives or foster families. Recognizing that a relatively small number of youth in high levels of care were using a disproportionate amount of resources, the target population was narrowed to youth in facility-based programs (e.g., group homes, residential treatment centers) and in treatment foster care. Table 1 reflects the placements of youth in these levels of care. Of the 214 youth in high levels of care, 201 were in the custody of the State; these 201 youth became the target population.

Table 1
Number of Youth by Placement Type

Placement	*Number of Youth*	*Percentage*
Treatment Foster Care	109	50.9
Group Home	64	29.9
Residential Treatment	32	14.0
Shelter Care	9	4.2
TOTAL	214	100.0

The next step was to identify current costs for the target population. Initially, we intended to include both Medicaid, child welfare and juvenile justice funding. However, since Medicaid was administered by a Managed Care Organization and since the State faced a fiscal crisis in the child welfare and juvenile justice systems, we believed the best strategy was to focus on child welfare and juvenile justice costs, at least initially. We obtained cost data for the 201 youth over the six months prior to the point in time survey. Since some children in the target population were not in the system the full six months, we averaged costs of children in the system over the 201 youth, which resulted in a per-month per-child average cost.

The third step was to use this cost information to establish a proposed case rate. We subtracted from the average monthly cost some types of service costs (i.e., education funding and certain subsidies) that would not be the responsibility of the SOC. Next, we added in a rate increase, which had been appropriated for the coming year. Finally, we proposed that the final case rate should be 95% of costs, which would allow the state to save money. We also proposed that any cost savings beyond the 95% could be reinvested in the SOC. Table 2 shows the proposed case rate and the total annual costs for the target population.

Table 2
Budget for Current and Proposed Systems

	Current System	*Proposed System*
Per Child Per Month	$2,101.84	$1,996.75
Total Annual Costs	$5,069,638.00	$4,816,156.00

To help demonstrate that the SOC could serve youth at a lower cost than the current system, we used information from the SOC to project placements of the 201 youth if a wraparound approach was used in their treatment. We then used service utilization and cost information for youth who had been served in wraparound to project costs for the target population by types of services. Based on this analysis, we estimated that the target population could be served at 87% of the proposed case rate or 82% of current costs. The proposal included these cost projections as well as a plan to reinvest projected cost savings into the SOC.

Discussion

In June 2001, a cooperative agreement was signed to begin serving the 201 youth in the SOC. Two types of information were crucial in reaching this agreement: detailed data concerning how the system of care improved the lives of children and their families, and valid cost information by individual child. This information was essential to show that the SOC could produce better outcomes at lower costs.

The initiative has been successful. Youth in the initiative have shown substantial improvement in functioning and behavioral measures, and have moved into less restrictive settings. Costs for services are close to projections, thereby producing significant savings. In fact, the initiative has been so successful that the State is planning to reproduce the SOC statewide. Two areas of the state are scheduled to begin implementing similar initiatives in fall 2002, with two additional areas to come on board in spring 2003. These five areas represent about 85% of the State's population. Program evaluation information played an important part in sustainability of the project and expansion of the SOC to the rest of Nebraska.

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Nebraska Family Central Evaluation Program—Presenting the Parent Voice Through Data

Eileen Dakan & Monica Sleicher

Introduction

Nebraska Family Central is a collaborative effort between Region III Behavioral Health Services, the Nebraska Department of Health and Human Services and the Nebraska Department of Education. Nebraska Family Central serves 22 counties in central and south central Nebraska. Nebraska Family Central has developed a comprehensive approach to serving youth and families that allows children and adolescents with emotional and/or behavioral challenges the ability to remain in their home, school and community. By coordinating public and private funding and policy development across health, education, child welfare and juvenile justice systems, Nebraska Family Central ensures that families are equal partners in the care of their children. It provides a comprehensive array of effective services by highly trained staff through an organized delivery system and provides individualized care and coordination of services.

The Department of Health and Human Services, the Public Health Service, the Substance Abuse and Mental Health Services Administration, the Center for Mental Health Services, the Nebraska Health and Human Services and the Region III Behavioral Health Services fund Nebraska Family Central through grant CFDA No. 93.104. Grant funding was first awarded in October of 1997 and is scheduled to continue until November 2003.

One of the goals for evaluation in Central Nebraska is to build a partnership where families can be the evaluators, and not just data collectors, to gather and promote the family voice. The primary vehicle for making this vision a reality has been through collaboration with Families CARE.

Families CARE (Families for Child Advocacy, Resources and Education) is a family-centered organization governed by a board of directors and operated by volunteers and staff who are family members themselves. The mission of Families CARE is to promote families as the most important voice in their children's lives, and to support and empower families and their children to be successful by nurturing and respecting the unique culture of each family in their home and community. Families CARE encourages families and communities to build mutually empowering relationships. The Family Evaluation Program is run by Families CARE to gather and promote the parent voice in assessing and improving children's mental health services.

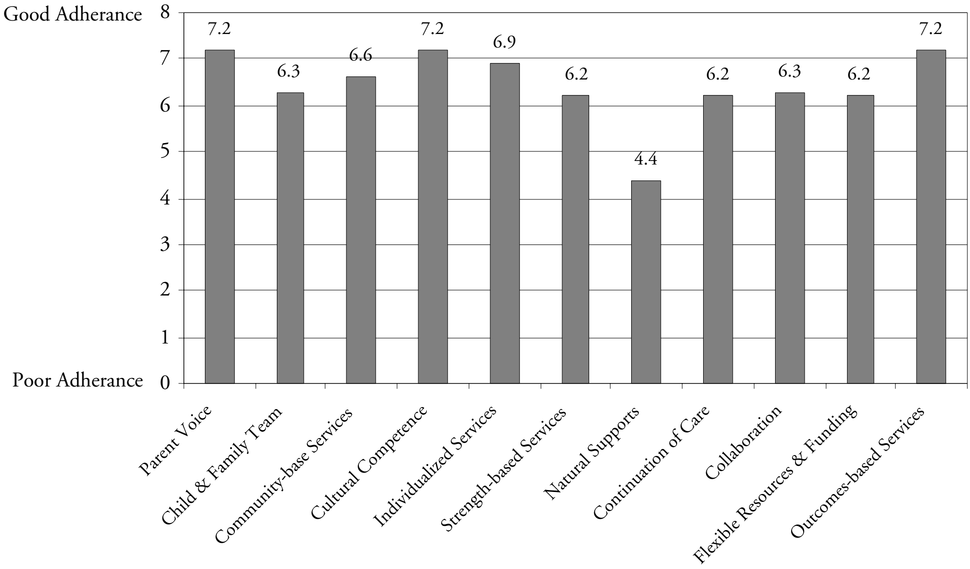
The goal of the Family Evaluation Program is to provide timely feedback to families of Central Nebraska who have children with emotional, mental and/or behavioral challenges in order to strengthen the family voice at all levels of the system of care (SOC). Through a collaborative evaluation process, families are more active not only in their children's service plans, but as advocates for all families within the SOC. This is also an important mechanism for sustaining a permanent role for Families CARE within the SOC.

The Family Evaluator, who is parent of a child with a serious emotional disorder, gathers outcome data from the families that are served by the Region III Professional Partner Program and school-based wraparound teams. School-based wraparound teams consist of an educator and a social worker/mental health worker who work together to coordinate services for families utilizing the wraparound approach. In addition, the Family Evaluator collects satisfaction surveys to provide a voice for the families regarding the services that they receive. The Family Evaluator role has been expanded to include: (a) collection, management and reporting the findings of the Wraparound Fidelity Index 2 (WFI; Bruns, Suter, & Burchard, 2002) to program managers; (b) compilation, input and interpretation of assessments for the Family Care Partner Program; (c) compilation of the training evaluations for Families CARE, and; (d) coordination, management and reporting, locally and statewide, of findings from the Family & Friends survey, developed by Families CARE. The findings and utilization of the WFI and the Family & Friends survey are described below.

Wraparound Fidelity Index 2 (WFI)

Families CARE, Inc. administers the WFI to all families actively involved with the Professional Partner Program and the school-based wraparound teams. The WFI is used to assess the fidelity of the wraparound approach for serving children with emotional and behavioral challenges and their families. The items on the WFI assess adherence to eleven core elements of wraparound, including: (a) parent voice and choice, (b) child and family team, (c) community based services and supports, (d) cultural competence, (e) individualized services and supports, (f) strength-based services and supports, (g) natural supports, (h) continuation of care, (i) collaboration, (j) flexible resources and funding, and (i) outcome-based services and supports. Figure 1 presents the averages in each of the eleven subscales for 65 caregivers during the Fiscal year 2001. Good adherence (greater than 6 on the 8 point scale) was achieved in the areas of: parent voice, child & family team, community based

Figure 1
Wraparound Fidelity Index, FY01 Professional Partner Program Caregiver Responses (*n* = 65)



services, cultural competence, individualized services, strength based services, continuation of care, collaboration, flexible resources and funding, and outcome based services.

As a result of this process, aggregate reports are given to the Professional Partners and their supervisors to identify areas of strength or needed improvements in facilitation skills for coordinating child-family teams. Areas in which the Professional Partners are exceptional at facilitating wraparound include: (a) supporting parent voice and choice, (b) supporting cultural competence, and (c) developing individualized services and supports. An area for improvement exists in the identification and utilization of natural supports and services.

Families & Friends Survey

The Families & Friends survey is intended to gather feedback from families and caregivers within Region III and across the state. The survey asks for input regarding the services that families currently receive, helps in identifying service gaps, and enables parents to name the most critical issues facing their families and children.

In the spring of 2001, 174 surveys were mailed out to families who were in attendance at the 3rd Annual Nebraska Federation of Families for Children's Mental Health Statewide Family Conference in September, 2000. One hundred and twenty-five surveys were returned, for a response rate of 71.8%. Caregivers answered questions regarding services and supports available to them in their communities. Table 1 shows the most needed supports and most critical issues identified by parents on the Family & Friends survey.

Table 1
Families & Friend Survey, 2001 (*n* = 125)

Top Five Needed Supports	*Most Critical Issues Families Are Facing*
1. parent to parent support	1. coping strategies
2. support groups for parents	2. knowledge about child's disability
3. school advocacy by family partners	3. getting appropriate mental health care
4. parent representation in state legislation	4. establishing good working relationships with professionals
5. training for parents	5. accessing educational services

Summary

The results of the Family & Friends survey have been distributed to parents in regional family organizations, schools and special education departments, community teams and community leaders, and service providers such as Health and Human Services, Professional Partner programs throughout the state, and therapists. The results were also presented to the Governor of the state of Nebraska and State senators.

Building on the successful relationship between Nebraska Family Central and Families CARE in the utilization of evaluation data, the Family Evaluation Program was expanded to include the evaluation of families and youth served through a pilot project with the state of Nebraska. Families CARE was also invited to actively participate in the development of a quality assurance plan with this pilot project in the coming year.

In conclusion, it has been extremely important to evaluate the quality of services that children and families receive from the system of care both locally and statewide. Through the collaboration with Families CARE, Nebraska Family Central provides a collective family voice to professionals and policy makers regarding the needs, barriers, service gaps and opportunities for families to affect system changes.

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Assessing Local Service Systems for Children and Youths with Serious Emotional Disturbances in Northwest Indiana: Challenges Confronting a New System of Care

Thomas W. Pavkov
Elizabeth Greenwald

Introduction

This paper describes a study in Northwest Indiana to assess service providers' opinions of their local service system. The Assessing Local Service Systems for Children and Youths with Serious Emotional Disturbances in Northwest Indiana Longitudinal Study is one element of the local evaluation. The purpose of the survey reported on here is to document system of care development in Northwest Indiana related to the new *Circle Around Families* Child Mental Health Initiative. The survey instrument is adapted from Morrissey's work with the Robert Wood Johnson Foundation's Program on Chronic Mental Illness, and is one instrument used for the local evaluation of the Center for Mental Health Services' (CMHS) system of care grant-funded site in Northwest Indiana. Further information about instrument development is available in Morrissey, Johnsen, and Calloway (1997), and Morrissey, Calloway, Johnsen, and Ullman (1997).

The State Division of Mental Health estimates that 3,979 youth with a serious emotional disturbance (SED) live at or below 200% of the federal poverty level in Lake County, Indiana. In 2000, the county community mental health centers served 38.4% of those youth. This suggests that over 60 % of youth and families went without services that year. This first annual survey provides baseline data for the ongoing evaluation process of the project. The Discussion section of this paper addresses second year cross-sectional results, with special emphasis on seven of the eleven sub-elements of the survey.

Method

Year One. One hundred and two surveys were sent out in November 2000 to professionals who work in agencies mainly in Lake County, Indiana and who are knowledgeable about, and interested in, services used by youth who have SED. Twenty-seven surveys made up the response percentages for a 26.5 % return rate. The survey contained 117-elements that asked respondents for their opinions about current and past (i.e., within the last two years) functioning of the mental health system and related services for youth, and the extent to which services are provided in a coordinated and comprehensive manner.

Year Two: Cross sectional data. A great deal of effort was made to expand the data base to include representatives from juvenile justice, the Lake County Office of Family and Children (OFC), schools, family members/parents and those who work within a continuum of services for youth with SED. Emphasis was placed on identifying respondents from the grant area; that is, the cities of Gary, Hammond, and East Chicago. These cities are in the northern industrialized region of the county. Surveys were sent to 476 professionals in December 2001 and 70 of those were returned, representing a 14.7 % return rate. Table 1 identifies respondents by stakeholder group.

Table 1
Stakeholders Represented in Year 2 Data

Stakeholder Group	*(n)*	*% returned*
Schools	24	36.9
Mental Health	11	16.9
Welfare	11	16.9
Juvenile Justice	4	6.2
Parent/Family Members	7	10.8
Other	8	12.3

Note: Five respondents had missing data in section 4.

Analysis. Responses to the survey items were organized using a Likert-type scaling system. For reporting purposes, response options were collapsed; responses at the positive side and negative side of the response scales were combined. Response items were combined to provide *good*, *adequate*, *poor* and *don't know* response frequencies.

Results and Discussion

Seven of the eleven sub-elements received over 50% poor performance scores from stakeholders. These seven elements, shown in Table 2, have been grouped into the following themes: (a) information, (b) joint planning, and (c) system goals. These items are presented in a way that may assist the Northwest Indiana grant site in future efforts. Although not depicted here, breakdown by stakeholder group is also available to support system change.

Table 2
System of Care Survey: Section 4
Current Service System Performance

Current Service System Performance	*% Good*	*% Adequate*	*% Poor*	*% Don't Know*
Information Sharing Related Elements				
4.15 Developing mechanisms to share clear and up-to-date information on what kinds of assistance agencies offer	3.2	14.5	62.9	19.4
4.21 Developing agreements among agencies at the direct service delivery level to avoid needless duplication	4.6	16.9	61.5	16.9
Joint Planning Related Elements				
4.16 Creating opportunities for joint planning between mental health, education, social service, and juvenile justice agencies	6.2	16.9	69.2	7.7
4.18 Fostering a "big picture" understanding of the service system and the roles/responsibilities of the agencies that constitute that system.	6.2	23.1	56.9	13.8
Elements related to System Goals				
4.17 Preventing youths and families who require multiple services from "falling through the cracks" between agencies.	4.6	13.8	72.3	9.2
4.14 Using a common system for tracking services to youths with SED across provider agencies.	4.6	15.4	52.3	27.7
4.24 Coordinating services across agencies to meet the individual needs of youths with SED and their families	3.1	20.0	56.9	20.0

Information Sharing

Stakeholders indicated that they need more information about service agencies and that they need to share what information they do have. Most respondents (62.9%) perceived that the system of care performs poorly relative to the element, *Developing mechanisms to share clear and up-to-date information on what kinds of assistance agencies offer* (question 4.15 on Table 2). Over half of the respondents (61.5%) perceived that the system of care performs poorly relative to the item *Developing agreements among agencies at the direct service delivery level to avoid needless duplication* (question 4.21).

Joint Planning

Numerous respondents (69.2%) indicated that the system of care performs poorly relative to the element, *Creating opportunities for joint planning between mental health, education, social service and juvenile justice agencies* (question 4.16). This element is succinct. How the grant community structures future planning processes will be the next challenge.

Over half (56.9%) of respondents gave a *poor* rating for the item, *Fostering a 'big picture' understanding of the service system and the roles/responsibilities of the agencies that constitute that system* (question 4.18). These responses may point to the need to develop relationships between agencies as well as to reduce perceptions of competition. As relationships are developed, collaborative goals and objectives can be identified, and measures related to the uniqueness of Northwest Indiana can be put into place.

System Related Goals

Three elements seem to address system related goals. First, element 4.17 (see Table 2), which reads, *Preventing youth & families who require multiple services from falling through the cracks between agencies*, received the highest percentage of responses (72.3%) in the *poor* category. Because most respondents from juvenile justice (100%), the OFC (72.7%), and mental health (81.8%), tend to see children with high levels of acuity, it is not surprising these are among the highest figures for this item.

Second, element 4.14, *Using a common system for tracking services to youths with SED across provider agencies*, received a *poor* performance rating from 52.3% of the respondents. Most parent or family member respondents (71.4%) indicated that agencies were *adequate* in meeting this aspect of the service system, while only some OFC stakeholders (18.2%) rated this element as *adequate*. Over half of the remaining stakeholders viewed this element of system performance as *poor*.

Element 4.24 is the last element discussed by stakeholders in this section of the survey. The item, *Coordinating services across agencies to meet the individual needs of youths with SED & their families,* received a *poor* rating by 56.9% of respondents; 45% of OFC stakeholders felt this element was *good* to *adequate*. The other five stakeholder groups reported between 50% to 81% *poor* performance for this system element. This element may point to the need for other tasks to occur simultaneously with information collecting and joint planning. This information will continue to support planning and initiatives developed by the Child Mental Health Initiative, Circle Around Families in Northwest Indiana.

Conclusion

Many CMHS grant sites struggle with system of care development. In the past nine months local stakeholders have had to refocus after losing two key grant personnel. As local goals and objectives are developed and initiatives implemented, it is anticipated that improvements will be seen in these areas. Additional data collection may need to be considered to identify opportunities and barriers to service and information coordination.

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Estimating Unmet Need for Mental Health Services: A System of Care Approach

Tom Barrett
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Introduction

This project was funded by the Colorado State Legislature to identify unmet need for mental health services among the Colorado population, and is based on measures of access to mental health services in each of the state's 17 service areas. While the Colorado Division of Mental Health Services has conducted similar analyses in the past, this project utilizes the newest available statistical technology for estimating the number of individuals who received services from a public sector agency during a year (utilization). This technology is also able to estimate the number of individuals in the population with serious mental disorders (prevalence). Differences between prevalence and utilization produced estimates of a certain dimension of unmet need for persons with a serious emotional disturbance (SED) who are not receiving services in any public system.

The portion of the study reported on here includes youth under the age of 21 who have serious disorders and who would therefore qualify for public funding of services; these are young people with SED whose families live under 300% of federal poverty guidelines.

This project is unusual in emphasizing service utilization beyond mental health to include other public sectors. Employment of this strategy depends on administrators having a broad public service focus, to include reaching out beyond traditional administrative silos. Employment of this strategy also depends on a methodological approach that addresses the increasingly important issues of personal privacy and the confidentiality of medical records.

Method

Estimated Prevalence

Results from national epidemiological surveys and research studies were used to generate synthetic prevalence estimates in the population of interest in accordance with federal definitions. A model to predict prevalence of SED was constructed based on these epidemiological studies, and applied in each service area. Estimates were developed for counties and demographic groups using 2000 Census population data to the extent available. The estimated prevalence of SED in developmental disability programs was 13%, youth corrections was 24%, child welfare was 25%, substance abuse was 50%, and special education programs for significant identifiable emotional disability (SIED) was 100%.

Probabilistic Population Estimation

Cross sector utilization rates were determined using existing administrative databases in conjunction with the statistical method of Probabilistic Population Estimation (PPE). Probabilistic Population Estimation provides valid and reliable estimates of the number of people represented in data sets that do not share unique personal identifiers (Banks & Pandiani, 2001). These estimates are based on a comparison of the distribution of dates of birth that are observed in the data sets with the distribution that is expected, based on knowledge of the distribution of dates of birth in the general population. Because no personal identifiers are used in this procedure, personal privacy is protected and the confidentiality of medical records is assured (Pandiani, Banks, & Schacht,1998).

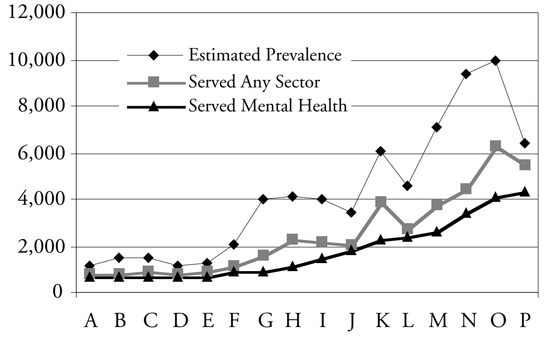
Notes: The State of Colorado report on this project is available at: www.cdhs.state.co.us/ohr/mhs/PIN%20Report/home.html. Information regarding Probabilistic Population Estimation is available at: www.thebristolobservatory.com

For the PPE, anonymous data base extracts were obtained from six state service sectors: (a) child welfare, (b) youth corrections, (c) special education programs for children with SIED, (d) developmental disabilities, (e) substance abuse, and (f) children's mental health programs. Caseload overlap between the mental health service sector and each of the other service sectors was determined for every region of the state. The number of young people on each agency's caseload who were also served by the local mental health program was subtracted from the estimated prevalence of SED in that agency's caseload. The number of young people with SED in each of these service sectors who were not served by mental health was considered to be need that was met by the other service sector. The sum of the need for services that was met by the mental health sector and the need that was met by each other service sector was considered to be the met need for the region. The difference between that met need and the estimated prevalence for each region provided the estimate of unmet need for each region of the state. Because this procedure required no special purpose data collection, the study was much more economical than would otherwise have been the case.

Results

Estimates of the number of young people with SED in Colorado regions ranged from 1,162 to 9,954. The number of young people who received services in the mental health service sector ranged from 636 to 4,344. The number of young people with SED who received services in any of these sectors ranged from 756 to 6,254. Unmet need, the difference between estimated prevalence and the number served in any sector, ranged from 346 to 4,906. The total number of young people with SED who did not receive services in the State of Colorado during this year was 30,155. (See Figure 1.)

Figure 1
Prevalence and Utilization



Discussion

This project has provided important information about unmet need for children's mental health services in the State of Colorado. First, our estimate of the number of young people with SED who received services increased by more than one-third when the other service sectors were considered. This increase varied from less than 20% in three regions to more than 100% in one region. The addition of these five service sectors had a profound effect on our understanding of the magnitude and distribution of unmet need for services in Colorado's system of care.

These findings have proved to be useful in a number of ways. They have been useful for planning services for geographic areas and for demographic and clinical sub-populations. They have been useful for advocacy. They have been useful for policy discussion regarding target populations and interpretation of findings. The State of Colorado is using these findings in relation to contracting for services to target populations. Finally, we expect that these findings, when compared over time, will be useful for monitoring provider performance and interagency coordination in different regions of the state.

This project has also raised a number of other questions and concerns. One of these issues regards the relative contribution of other service sectors, including private sector mental health services and general medical services toward meeting the needs of children and adolescents. These findings also raise questions about variation in met and unmet need for different age, gender, and racial/ethnic groups. Finally, information regarding the type and amount of service and the quality of care that is provided to different groups in different regions of the state should be the subject of further investigation.

Fortunately, the data required to address these and other questions are widely available in administrative and operational databases in Colorado and other states. Systematic pursuit of the lines of inquiry that were outlined above in diverse systems of care has the potential to advance our understanding of the functioning of existing systems of care and to contribute to the improvement of systems of care in the nation as a whole.

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Children's Mental Health Programs As Seen By Other Child Serving Agencies

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Alice G. Maynard

Introduction

Since interagency collaboration is a key principle of systems of care, it is important to seek the views of fellow professionals in other child serving agencies when evaluating mental health program performance. This paper reports on two recent studies that surveyed professionals in external agencies to evaluate the performance of Vermont's ten regional Child and Adolescent Mental Health Programs. One study surveyed case workers and supervisors employed by the state child protection and juvenile justice agency, and the other surveyed educators. Together, the surveys provide a unique insight into how other professionals view their local community mental health programs and how those programs perform as partners helping children in need of services.

Method

For each study, surveys were sent to select stakeholders in each group. For the child protection service sector, the mailing included all case workers, supervisors, and district directors at each regional office of Vermont's child protection and juvenile justice agency during FY2000. Completed surveys were received from 124 of these child protection workers. For the education sector, the mailing included principals (or an educator nominated by the principal) of all public and approved private schools in Vermont serving children attending grades K-12 or any subset thereof, and the special education administrators for each supervisory union. Completed surveys were received from 364 educators.

Rather than using a sampling technique, we invited all possible respondents to participate. This strategy allows all stakeholders in a given group to have an opportunity to be heard; it also decreases the statistical uncertainty associated with the outcomes of interest. The high proportion of all potential respondents who returned usable questionnaires (78% of child protection workers and 60% of educators) reduces confidence intervals even for the smallest programs.

For valid comparisons between the views of different stakeholders, the questions asked were, as far as possible, the same. The questionnaires were based on the Mental Health Statistics Improvement Program (MHSIP) Consumer Survey developed by a multi-state work group (National Association of State Mental Health Program Directors [NASMHPD], 2002) and were modified using input from Vermont stakeholders. Each questionnaire included fixed alternative and open-ended items. All responses were coded and analyzed using SPSS. An overall scale score was calculated from the positive (favorable) responses to all survey items and three subscale scores were calculated to measure positive responses to items relating to (a) staff, (b) service quality, and (c) outcomes. Internal consistency of these scales, as measured by average inter-item correlation of responses (Cronbach's Alpha) ranged from .85 to .98 on the child protection workers' survey, and from .91 to .97 on the educators' survey.

The surveys were confidential but not anonymous. Each questionnaire was clearly marked with an identifying number. The cover letter explained the purpose of this number and assured confidentiality of responses. The identifying number was used for two reasons. First, it identified non-respondents to the first mailing for a follow-up mailing. Second, it allowed state-level staff to contact the respondent if the completed survey included any serious complaints or indications of serious problems for the consumers or others. One complaint arose from the child protection workers' survey, and five were reported in the educators' survey; all problems were resolved and none were child-specific.

Data analysis incorporated a *finite population correction* (Pandiani, Schacht & Banks, 1998). This technique provides a more powerful basis for comparison of the performance of the ten community programs by adjusting for the high proportion of all potential respondents who returned useable questionnaires. When a substantial proportion of all potential respondents complete a survey, standard techniques for determining confidence intervals overstate the uncertainty of the results. Yet for studies in which a substantial proportion of all potential respondents is represented, a finite population correction can be added to the computation. The statistical significance of all findings reported here has been computed using this finite population correction.

Results

Statewide, educators rated the Child and Adolescent Mental Health Programs overall more favorably than did child protection workers (46% vs. 37% favorable). Similar differences were evident for evaluations of mental health staff, where 62% of educators and 46% of child protection workers had favorable ratings. Educators also rated service quality favorably (40%) more often than did child protection workers (28%), as well as outcomes (27% vs. 23%, respectively). Despite significant differences in scale scores, however, evaluations from both groups of professionals showed the same pattern: staff received the highest ratings ahead of services, and outcomes received the lowest rating. There was a significant correlation between child protection workers' and educators' overall scores for the regional programs ($r = 827$, $p < .01$). Similarly, significant correlations between scores on the two surveys for regional programs were found for the staff scale ($r = .660$, $p < .05$) and the outcomes scale ($r = .881$, $p < .01$). The correlation between survey scores for the service quality scale ($r = .549$) failed to reach statistical significance.

Responses to individual survey items also showed considerable agreement between agencies. Both child protection workers and educators were the most positive about liking the mental health staff who worked with them, and were least positive about the ability of their local mental health center to provide enough services to satisfy the needs of children and families in the region.

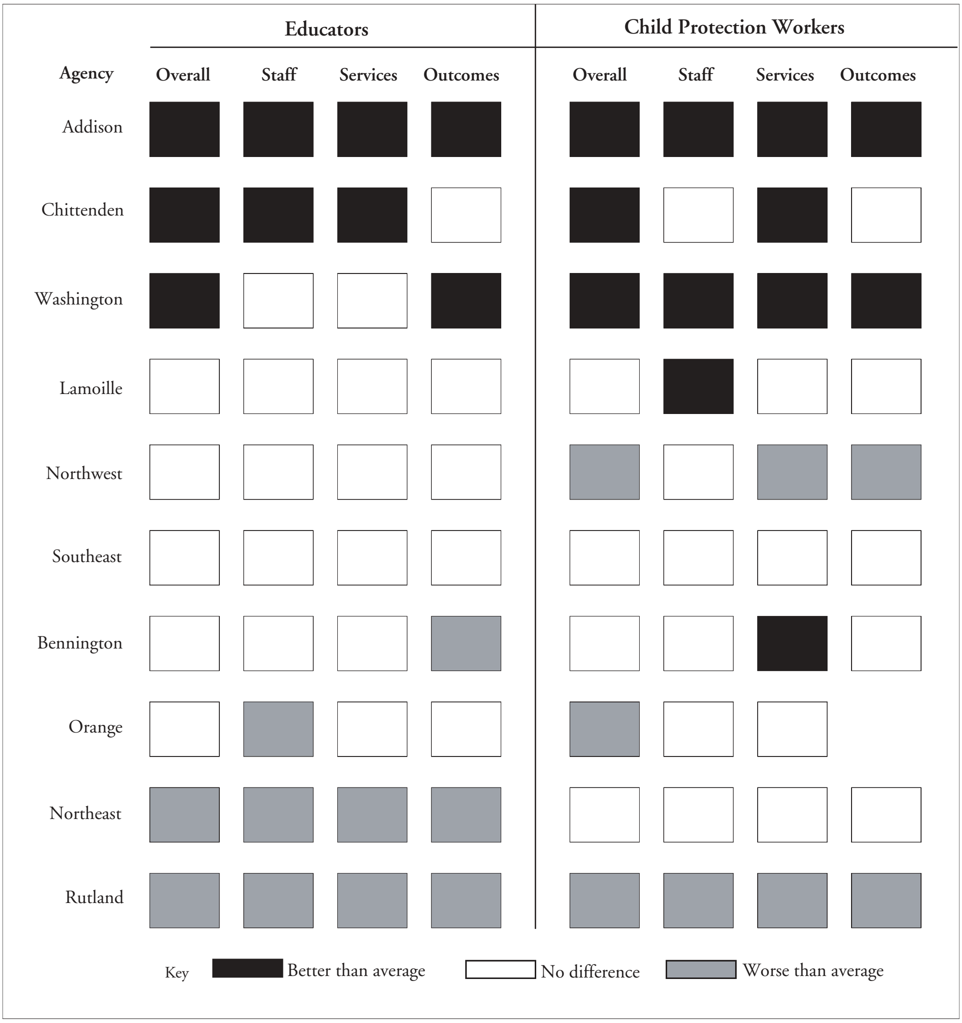
Regionally, there were significant differences in the evaluations of the individual community mental health programs among both child protection workers and educators. The pattern of ratings evident at state-level was repeated in each of the state's ten regions. Child protection workers and educators always gave staff the highest evaluation and gave outcomes the lowest. To evaluate the perceptions of child protection workers with educators on a regional basis, the scale scores for each region were compared to the statewide median score for each scale. In the report card presentation in Figure 1, each scale score was designated for the respondent group as being significantly higher than the statewide median score, significantly lower, or no different. As can be seen, regions receiving the highest and lowest evaluations were similar for both sets of human service professionals.

Discussion

These surveys aimed to provide a clearer picture of how our partners in the children's system of care view child and adolescent community mental health programs in their regions. Along with the quantitative data gathered on the clients served and services received, this information was collected to help program planners at the state level identify regional strengths and weaknesses. At the regional level, it informed local mental health administrators about which successful aspects of their local programs provide their clients with the most seamless and efficient system of care, and which programs require further attention.

Comparison of the findings of these two studies shows first that there is considerable room for improvement, and second that professionals from the education sector rate community mental health programs more favorably than do their fellow professionals in the child protection sector. However, perhaps the most striking finding is the relative consistency of responses across the agencies in terms of which regional mental health programs were most and least favorably rated, and the order of ratings of the different aspects of the community mental health programs.

Figure 1
Evaluation of Community Mental Health Programs
by Educators and Child Protection Workers in Vermont



	Educators				Child Protection Workers			
Agency	Overall	Staff	Services	Outcomes	Overall	Staff	Services	Outcomes
Addison	■	■	■	■	■	■	■	■
Chittenden	■	■	■	□	■	□	■	□
Washington	■	□	□	■	■	■	■	■
Lamoille	□	□	□	□	□	■	□	□
Northwest	□	□	□	□	▨	□	▨	▨
Southeast	□	□	□	□	□	□	□	□
Bennington	□	□	□	▨	□	□	■	□
Orange	□	▨	□	□	▨	□	□	
Northeast	▨	▨	▨	▨	□	□	□	□
Rutland	▨	▨	▨	▨	▨	▨	▨	▨

Key ■ Better than average □ No difference ▨ Worse than average

These two surveys were part of a cycle, which also includes surveys of young consumers and parents (Bramley, Maynard, Pandiani, & Banks, 2001). Since the cycle of stakeholder surveys was initiated, a "data culture" and awareness has developed among community mental health personnel. Initial reactions ranged from defensive to skeptical. However, as more surveys were completed and the findings published and explored, the utility of the findings both at state and regional levels has been increasingly recognized.

State administrators have used the data to obtain an overall picture of interagency relationships within the system of care. They have also used it as input in the formal departmental processes of program review and agency designation currently in progress. At a more detailed level, the findings have also led to technical assistance for individual programs.

Reports of proactive field use of the findings have come from a number of the community mental health programs that were evaluated. These have included increased interagency meetings to promote better working relationships, sharing between community programs on what works and even changes in staffing infrastructures. Individual community programs have used narrative comments to clarify the quantitative analysis or to pinpoint specific regional issues not easily revealed by a more generalized survey.

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A Comparison of Approaches Used in Developing Systems of Care

Mary E. Evans

Introduction

Children with multiple special needs, particularly those with complex emotional and behavioral disorders, have not been served well by the traditional fragmented approach to care. In the last 15 years there has been a move to encourage collaboration among child-serving organizations to increase the efficacy and improve the outcomes associated with care (Hodges, Nesman, & Hernandez, 1999). This paper reports on a study of the policy instruments used by states in creating systems of care for children requiring services from multiple child-serving agencies. The purpose of this study is to determine the relationships among policy development, policy implementation, and the development of collaboration in systems of care. Collaboration is thought to be a critical factor in the development of systems of care that may influence the relationship between the mechanism used to establish systems of care and the resulting child and family outcomes. The major study hypotheses are:

- Policies that have been developed and implemented using a backward mapping approach (or beginning with the system location where the maximal impact is desired; Elmore, 1979/1980), will be more successful in producing effective collaborative systems at the community level than policies that have been developed using a forward mapping approach.
- Policies that have used capacity-building and system change instruments for implementation will be more successful than policies that have used mandates.
- Collaboration is more likely to occur when policies reflect system of care principles, have clearly articulated goals and target populations, and provide adequate human and financial resources.

Method

This study, a project in the Research and Training Center at the Louis de la Parte Florida Mental Health Institute, has two phases. Phase 1 comprised a national survey of state directors of children's mental health that requested information on the policy instruments (e.g., legislation, mandates, inducements) used to establish systems of care for these children and their families. The principal child mental health representative for each state was contacted twice by letter and once by phone if they did not respond to our written request for information about the development of system(s) of care within their state. They were asked to submit all materials establishing the system(s) of care within their state.

Of the 50 states, 39 (78%) sent materials regarding their systems of care, of which 5 (12%) indicated that they did not have a system of care. Two raters independently coded the data from each state on a number of dimensions including the policy instrument or mechanism that established the system(s) of care, when the initiative occurred, the foundational principles of the system (Stroul & Friedman, 1986), and the child-serving agencies involved. Differences in coding among raters were reconciled through presentation to the five member study team and required a second review by the study team. Data were entered into a computerized file.

Results

Of the respondents 68% (*n* = 34) reported the development of a system of care that was verified by the researchers based on the materials submitted. Allowing for multiple approaches, 82% of responding states used legislation, 15% used inducements, 41% used capacity building, and 44% used other methods including mandates.

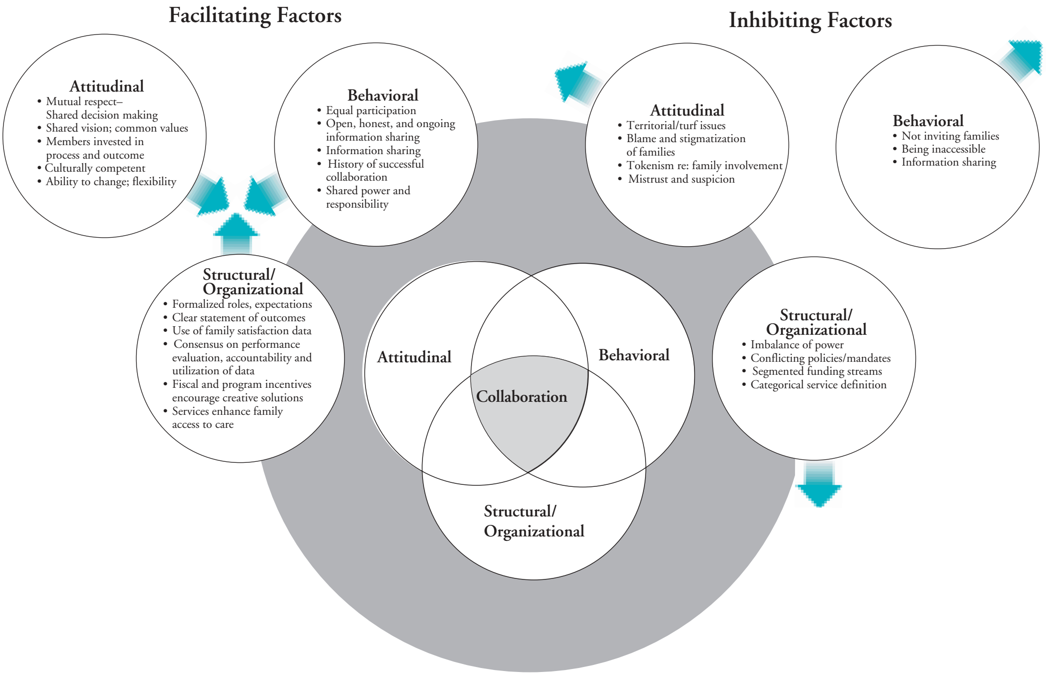
This study was funded in part by the National Institute on Disability and Rehabilitation Research (CFDA: 84-133B-7).

The data were subjected to cluster analysis using Clustan (Clustan, Ltd., 1998). The optimal solution produced five clusters each with similar approaches to developing systems of care. In each cluster an exemplar state was identified as being most representative of the policy instrument used, the agencies involved in the effort, and the principles of care identified as important in the state's effort. There were 8 states in Cluster 1, which had the most comprehensive list of agencies involved. Cluster 2 contained 9 states that identified education and 4 of the principles of a system of care, while Cluster 3 had 7 states that focused on families, used a system change instrument and included juvenile justice. Cluster 4 contained 4 states that had a multi-system approach, while states in Cluster 5 reported no specific guiding principles, type of policy instrument or agency involvement.

During Phase 2 each of the five exemplar sites will be visited. At each site the researchers will meet first with families, then with care coordinators at a local site(s). They will then meet with administrative staff at the local site(s) before interviewing administrative and policy staff at the state level. During each site visit standard protocols will be used to interview participants either individually (administrative staff) or in a focus group format (parents/caregivers).

The heuristic model underlying this research is presented in Figure 1. This model indicates that there are both facilitating and inhibiting factors related to collaboration in systems of care. We will ask key stakeholders to respond to an instrument on collaboration designed by Greenbaum and Brown (2001) to assess their perceptions of the level of collaboration that has developed in each site at both the local and state levels. Our heuristic model of factors facilitating and inhibiting collaboration is shown in Figure 1.

Figure 1
Facilitating and Inhibiting Factors Related to Collaboration



This figure indicates that there are attitudinal, behavioral and structural/organizational factors that either facilitate or inhibit the development of collaboration. Phase 1 has given us some preliminary data on these factors. During Phase 2 we will collect additional data on the attitudinal, behavioral and structural/organizational factors that have facilitated or inhibited the development of collaboration within five types of systems of care.

Discussion

The importance of the anticipated results includes an empirical test of the policy framework developed within the Research and Training Center for assessing the impact of polices on children with emotional disturbance and their families. The results are also expected to enrich our understanding of the processes that exist between state level policy and local implementation. We also intend to identify critical mediating and contextual variables that play an important part in establishing systems of care and influencing their outcomes. Finally we hope to provide information to guide efforts to develop more effective policies and to foster more effective collaborations within systems of care.

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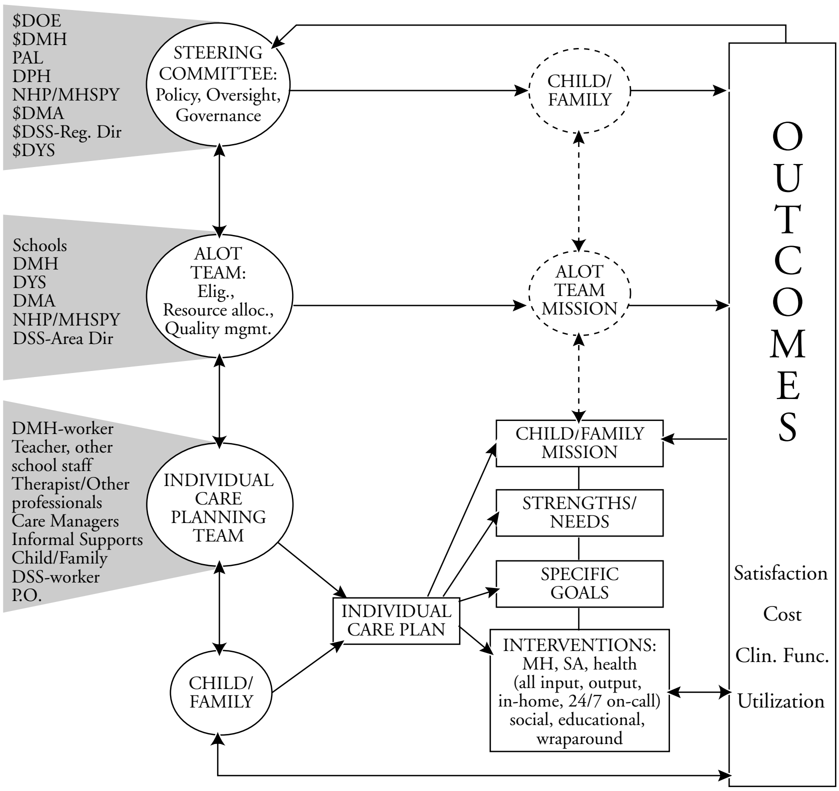
Building on Success: MA-MHSPY Replication Strategies for Integrated Systems of Care for Children and Families

Katherine E. Grimes
Allison Appleton

Introduction

"Best practices" or model systems of care cannot be imported into new settings and expected to survive without significant modification. Adjustments are necessary for cultural competency and sustainability. Only a system of care that is truly designed by, supported by, and glued together by local stakeholders will be able to withstand the multiple shearing forces from the business-as-usual activities of the systems around it. At the same time, demonstration projects that display significantly better outcomes than expected for the populations they serve hold possible benefits for others to learn from. Rarely in our evaluations or analyses of child mental health program results, including those for systems of care, do we see evidence at the level of key programmatic elements responsible for successful outcomes. Yet this is exactly what is needed to achieve sustainability of best practices or clinical systems innovations. Clear explications, allowing for active selection of reproducible methods for service system enhancement, with documented benefits to the target population, appear to be a successful strategy to extend lessons learned from pilot programs to the larger population of children with serious mental illness. See Figure 1 for the MA-MHSPY systems model.

Figure 1
MA-MHSPY



Rate includes any and all interventions for unlimited time period
(except Steering Committee determination that Acute Res. ≤ 30 days)

Methods

Typically, health researchers struggle to make research applicable to practice. The gap between research and practice is arguably the largest in the area of child mental health, where so many variables of parental and community circumstances impact upon how care is delivered. In this instance, the MA-MHSPY model offers an alternate example. The MA-MHSPY is a clinical practice innovation that has struggled from its onset to deliver research-level results in support of expanding the knowledge base and to facilitate potential replication. Using principles drawn from Total Quality Management (Berwick, 1996; Juran, 1979), the first phase of this project involved the careful development of definitions of: (a) needs (e.g., the type of population where improvement was sought, type of services desired), (b) resources (e.g., stakeholders, dollars, specialized resource access), and (c) outcomes (e.g., changes in child and family functioning, level of services required, community and school participation, cost to stakeholders).

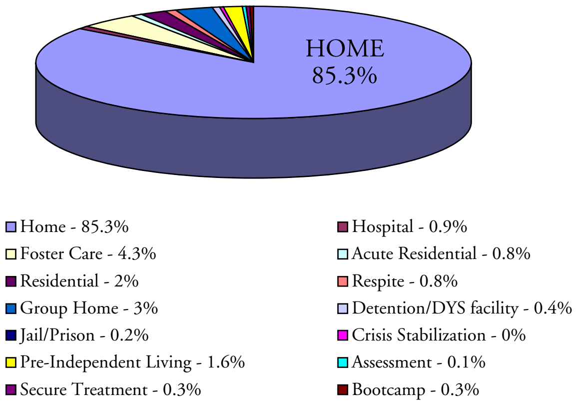
This process resulted in the documentation of agreements among these three areas prior to the first family referral to the program. This document created the template for a "start-up" negotiation and stakeholder contracting process, complete with a definition of intent, for future replication efforts to be based on. A consensus process was used to identify stakeholder needs within the program's Steering Committee. The Steering Committee includes representatives from the Massachusetts Division of Medical Assistance, the separate state agencies of Social Service, Mental Health, Youth Service, Education and Public Health, as well as community leaders, providers and family members. Additionally, due to the desire to have useful, transferable, process results, the MA-MHSPY has attempted to capture data elements often lost in average, expectable clinical practice. These data elements allow the MA-MHSPY to analyze the care planning and decisionmaking processes that match specific interventions to specific treatment goals.

This strategy has required the development of a closely linked Comprehensive Enrollee Record and an MA-MHSPY program database system that tracks, along with financial and demographic data, a level of detail regarding participants, goals, actions and outcomes not usually available to families or providers. The database also provides continuous quality improvement opportunities at both program and case-specific levels. Further analysis is currently underway to obtain a deeper understanding of what types of children and what types of goals can be most successfully addressed in an integrated system of care. This strategy will enrich the replication process insofar as successive generations of interventions may become more specific and reliable for their intended audiences.

Results

MA-MHSPY has been in operation for the last three years in the absence of any federal service dollars, and has much to contribute to discussions about sustainability, as opposed to reliance upon existing resources. Although 100% of the enrolled children belong to more than one state agency, with 50% receiving services from more than three state agencies at the time of referral, costs over time in the program have reliably dropped. All children referred to the program are defined as being "at risk of out of home placement," and one-third of the children spend at least one day out of home while in the program. Nonetheless, 85% of all days of enrollment in the program are spent at home (see Figure 2). Even though 76% of the children are already identified as being in need of special education services at the time of enrollment, the vast majority go on to attend their neighborhood schools. These results, combined with positive anecdotal reports from community members (e.g., police, school principals), have fueled interest and enthusiasm in nearby communities about replication of the program. For example, stakeholders and purchasers took less than six months to approve expansion of the program to three new towns, rather than the two years it took to create the initial degree of willingness necessary at program start-up.

Figure 2
MHSPY Placement
Distribution of Days
March 1998 - September 2001



Data and accounts of personal experience that can be shared with new players have contributed enormously to the ease with which the program model has been adapted to new sites. In some cases, innovations in the new communities have made existing processes obsolete within the older model. In other cases, we have found that existing administrative practices will need to change significantly for adaptation to be successful. In either situation, the advantage of having existing processes and outcomes to work from cannot be overestimated.

Discussion

Beyond the practical, financial, and other resource challenges inherent in expansion and/or replication, there are the conceptual challenges as well. For example, when there is a request for replication of the model, it is not always evident which model is desired, since the model itself changes over time. In the early phases of the system of care initiatives, there was high degree of "movement" level interest in promulgating a process change. Therefore, replication within new communities was externally driven and was focused on process. Subsequently, questions have been raised about the outcomes of some of these initiatives, with heated disagreements about very different understandings of the objectives of the system of care (Bickman, 1999; Friedman, Kutash, & Duchnowski, 1996). Furthermore, while there may be philosophical arguments, not necessarily inaccurate but necessarily broad, which speculate on the reasons for both positive and negative outcomes, services researchers need to focus, instead, on developing programs that ensure fidelity of replication. Once each element of the replication process remains true to the original model, outcomes may then be ascertained insofar as they do, or do not, follow from the replication.

The MA-MHSPY is making some progress with this, at least in terms of what elements support replicability. In the 2000 Center for Mental Health Services (CMHS) annual report to Congress, Koyanagi (2000), states that sites which appear to be most successful at making the transition from grant funding into something more sustainable, articulates five principles important to replication:

- Interagency linkages with coordination and collaboration across management and administrative structures
- Family involvement at the level of case planning and in the areas of advocacy and governance
- Coordination of a wide service array, including community-based services
- Culturally competent services
- The use of evaluative feedback as a mechanism for further development of systems of care

Along with family members and providers, and others who have traditionally been interested in clinical innovations, many of the current proponents for systems of care replication (i.e., those who have been stakeholders or purchasers of earlier models), are now looking for evidence of transferability of outcomes. Only by understanding our current results at the research level of explanatory variables and significantly associated outcomes, will those in the field of mental health services able to demonstrate optimal methods for replication. Such methods should include local facilitation and recognition of principles for a system of care, and should offer a knowledge base regarding specific interventions with associated clinical effectiveness.

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Brief Symposium

Opportunities for Enhanced Effectiveness via Continuity of Intent

Chair
Katherine Grimes

Authors
Katherine Grimes
Jacquelyn Subberra
Brian Mullin

Discussant
Sheila Pires

Symposium Introduction

Katherine Grimes

The Massachusetts-Mental Health Services Program for Youth (MA-MHSPY) is now in its third year, and is beginning to analyze services results in a context of previous evaluations of systems of care. While the data are not exactly comparable from site to site, sufficient evidence is emerging from the MA-MHSPY pilot to suggest enhanced opportunities for clinical effectiveness from this clinically intensive model, with its emphasis on continuity of intent. The MA-MHSPY process requires intensive coordination of child, family, school and community interests on behalf of the child's needs, all of which takes place within an overall integrated system of care. It is based on the premise that alignment of goals and methods across systems and services, or "continuity of intent," is directly correlated with enhanced child and family functioning. "Continuity of intent" has been defined by Dr. Grimes as the deliberate process of alignment of: 1) shared vision at the leadership level, 2) active collaboration at the community operations level, and 3) coordinated clinical implementation at the individual family level. This brief symposium describes clinical processes and outcome measurement methods made by the MA-MHSPY, with discussion and commentary based on national experience, by Sheila Pires.

Coordination of Clinical Support and Wraparound Services

Katherine E Grimes & Jacquelyn Subberra

Introduction

The Massachusetts Mental Health Services Program for Youth (MA-MHSHY) was developed with great reliance on the previous work done, respectively, by John Vandenberg (1996) regarding wraparound concepts, and by Stroul and Friedman (1986), regarding principles for children's mental health service systems of care. Subsequent training regarding the role of parent partners (Collins, 1990) has further influenced the program design. At the same time, the program's location within an HMO, giving enrollees full access to primary and specialty care, and the program's leadership having included a child psychiatrist and a social worker, secured the significance of clinical care in the MA-MHSPY model.

Methods

Clinical

Care Managers and the Care Planning Team

Each child and family is assigned an individual care manager upon entry into the MA-MHSPY program, and a needs/strength assessment is done. The initial assessment helps shape the membership of the combined professional and non-professional care planning team. MA-MHSPY care managers use their clinical experience to assess the strengths and challenges in families, and to facilitate the creation of a dedicated group of individuals identified by the family to participate in the Care Planning Teams. The Care Planning Team includes relatives, friends, teachers, state agency representatives, pediatricians and clinicians, child serving agencies, schools, juvenile justice staff and others; together they define their "mission" for the child and identify specific, measurable goals and strength-based interventions designed to help address the needs of the child and family.

The primary objective for care managers is to provide services based on the family's individualized needs, rather than providing a predetermined benefit package. Each care manager is a Master's level clinician with small caseloads, which affords an intensive working relationship with families resulting in the development of a highly individualized, flexible care package. One of the greatest challenges of the care manager is to support the voice of the family in the system while working collaboratively with each of the other system stakeholders. Care managers work closely with the families to identify needs and specify goals, build on strengths, and identify community resources to help families and their children meet the full range of their needs and goals. A major benefit of locating the program within a managed care organization is that care managers are given full authority to approve services that the child and family need. The depth and intensity of the care manager/client relationship is one of the most important aspects of the MA-MHSPY program.

The care manager's position includes three interrelated functions. First, the care manager offers direct care, that is, support and therapeutic relationship to the children and families via a wraparound process, which combines traditional and non-traditional services. Second, the care manager provides care coordination, a leadership role essential to helping the collaborating agencies create a community-based system of care, which is a key element of the MA-MHSPY mission. Third, the care manager is responsible for case administration, or the documentation and execution of decisions made by the Care Planning Team regarding family needs and identified goals. The mission chosen by the steering committee for the team, and the services selected for inclusion in the pilot MHSPY program, reflect the goals and responsibilities shared by the participating agencies. Therefore, services include resources for medical care, mental health and substance abuse, social services, education, and public safety. The availability of flexible dollars supports this shared agenda. Flexible dollars are accessed as needed by using a wraparound approach to care planning.

Care managers serve as liaisons to the participating state agencies. In response to an evident need for continuous MA-MHSPY/agency communication regarding the functions of the project, the role of agency liaison was added into the care manager's job description. Now, in addition to clinical duties, care managers are responsible for training agency staff, identifying how the program can help serve the needs of the agency, encouraging referrals to the program, and bringing agency concerns and suggestions into the program itself.

The Parent Coordinator and Parent Partners

The MA-MHSPY actively encourages the close involvement of families both in the oversight of their children's care and in the administration of the program itself. The parent coordinator fulfills a number of roles within the MA-MHSPY program and actively empowers families in negotiating a complex system of agency intervention and care. MA-MHSPY's parent coordinator, a mother of children with special health care needs, is a peer counselor working directly with new MA-MHSPY families to explain and guide them through the program and to act as a support system. The parent coordinator ensures that parent voices are heard at all decision-making venues for their own child's needs.

The parent coordinator is not alone in offering guidance and support. There is also a team of parent partners who work to maintain a high level of interaction with MA-MHSPY parents. Parent partners have children with special mental health care needs as well, and they help families set and attain goals for the children. Parent partners meet regularly with both families and care managers to discuss goals, concerns and responsibilities.

The parent coordinator organizes regular activities for the families, both for recreation and support purposes. Examples include picnics, multicultural events, and educational topics (e.g., parental responses to September 11), fire safety, and cooking for family members with diabetes or hypertension. The parent coordinator also facilitates parent support groups bimonthly where parents are free to discuss any issue of concern. Topics are variable and include sharing concerns about medications, special education and behavior management, as well as friendly support for ordinary issues, such as holidays.

Data Collection

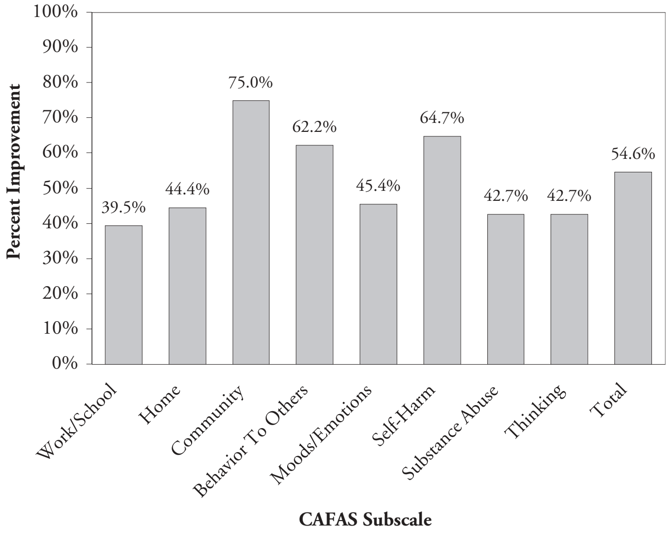
Once a child is referred to the MA-MHSPY program, the Enrollment Coordinator determines the child's eligibility. Eligibility requirements limit enrollment to individuals who are Medicaid recipients, between the ages of 3-18, experience persistent symptoms of serious emotional disturbance, are at risk of out of home placement, eligible for services from at least two state agencies, and have parent/guardian consent to participate. Also, MA-MHSPY enrollees must score a 40 or above on the Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1997). Once eligibility is determined and the family agrees to participate, the Enrollment Coordinator assembles records from previous agency involvement and the child is assigned to a Care Manager. From the time of the child's enrollment in the program though twelve months post disenrollment, the Enrollment Coordinator continues to meet with the family at six-month intervals to collect data on level of functioning with a variety of standardized assessment scales. In addition to the CAFAS, measures include: Achenbach's (1991) Child Behavior Check List (CBCL), Youth Self Report (YSR), and Teacher Report Form (TRF); Family Centered Behavior Scale (FCBS; Allen, 1995); Family Support Scale (FSS; Dunst, 1994); Family Adaptability and Cohesion Evaluation Scales (FACES II; Olson, 1989); Children's Global Assessment Scale (CGAS; Shaffer, 1983); and the Patient Assessment Tool (PAT; Grimes, 1990); and MA-MHSPY baseline and exit satisfaction scales (for youth, family and referring agency).

Results

The intensive clinically driven care management process, integrated with ongoing provision of medical and mental health services, and the steady development of informal supports offers enhanced effectiveness via "continuity of intent." This is facilitated via the availability of Parent Partners. Beneficial impacts from these interwoven strategies are demonstrated in the measures of percent improvement for clinical functioning over time and in the satisfaction surveys.

One scale used to measure improvement in clinical functioning is the Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1997). As shown in Figure 1, CAFAS scores from baseline to two years improved in the eight domains: Work/school, home, community, behavior to others, moods/emotions, self-harm, substance abuse, and thinking. Greatest improvements were

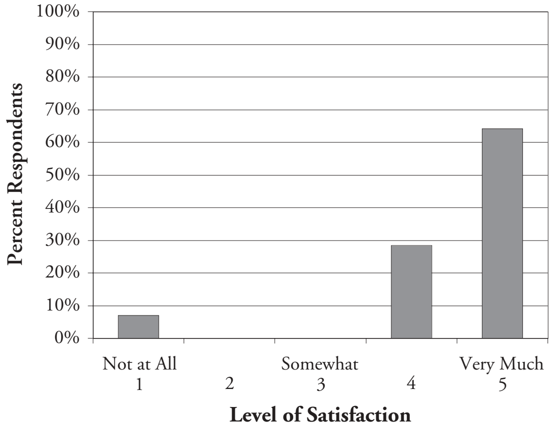
Figure 1
MHSPY Percent Improvement in CAFAS From Baseline to 2 Years
March 1998 - September 2001
(*N* = 12)



reported in community (75%), self-harm (64.7%), behavior to others (62.2%), and moods/emotions (45.4%).

Administered in survey form at baseline and exit, satisfaction data is collected separately from children, families and referring agencies. Questions ask survey takers to rate items such as how much their Care Manager listens to them, and their overall degree of program satisfaction. Almost all (93%) parents/guardians surveyed reported feeling satisfied or very satisfied with the overall help they received in the MA-MHSPY program (see Figure 2).

Figure 2
"Overall, how satisfied are you with the help you got in this program?" (Q6)
***N* = 14**



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Coordination of Data Management and Analysis Across Systems

Katherine E. Grimes & Brian Mullin

Introduction

When planning for a system of care (SOC), the presumption of a unified database is often implied, but is rarely specified. There are insurmountable obstacles to planning SOCs, due in part to historical differences in the use of the data typically collected, data source and ownership difficulties, and requests that new data be gathered that are not typically collected. Over the last three years, the Massachusetts-Mental Health Services Program for Youth (MA-MHSPY) has struggled to create a system that allows for the integration of: (a) medical and mental health information, (b) purchaser and vendor information, and (c) clinical and administrative information.

MA-MHSPY has also needed a database that can generate reports at either the individual or program level for existing enrollees, for purposes of clinical quality management, internal control or health policy outcomes research. The team working to create this system has included a lead agency project manager from the Division of Medical Assistance (DMA), an enrollment coordinator from the DMA, a MA-MHSPY data analyst, and MA-MHSPY/ Neighborhood Health Plan administrative staff. The author acted as the principal investigator. This team has encountered complexities ranging from clarification of data ownership to issues of formatting, data manipulation skill levels, reporting requirements, and consent and access. This level of integrated information is vital for the kind of process and outcomes measurements required for research and evaluation, and to accommodate expectations held by each of the stakeholders (e.g., the use of Medicaid information for proper reimbursement); it is also necessary for the many system operations and processes (e.g., mailing a membership card to an enrollee, or making sure that the right provider gets paid). As desirable as all of this is, systems integration is extremely difficult to achieve and appears to require energetic collaboration and mutual consultation, as well as continuous refinement and updating.

Methods

Through a series of collaborations, an increasingly responsive and specific database has been developed that is now designed to meet the needs of system of care purchasers, clinical and administrative program staff, and outcome researchers. Development of the database has involved the merging, and sometimes replacement, of existing databases, as well as the creation of new data collection systems and processes. Some of the system modifications have been transient, and some have become the basis for standardized MA-MHSPY program reporting features. Some modifications have required detailed procedural directions that cut across agencies, political leaderships, and financing authorities.

Modifications

Examples of modifications made over time from the DMA include: (a) the development of unique methods for tracking cap payments into a specialized program nested within a larger contracted health maintenance organization; (b) the creation and documentation of separate consent forms and permission to share data; (c) the collection of enrollee-specific historical data from outside the Medicaid system to accompany enrollee records into the program for the research database; (d) the creation of mechanisms for capturing sequential functional measures for the purpose of outcomes measurements that are not usually gathered by DMA; and (e) the development of creative ways to manage lapses of membership due to program circumstances (e.g., child moved from foster care to pre-independent living), requiring a kind of "handholding" of the enrollment database.

Examples of modifications made over time from the Harvard Pilgrim Health Care/Neighborhood Health Care Systems include: (a) the creation of a unique tracking system for cap revenue and expenses to be calculated only for the MA-MHSPY enrollees; (b) the addition of non-traditional providers and payment of claims for non-traditional services, to include "handholding" the claims database; and (c) reporting integrated costs for mental health, substance abuse and physical health within what is now a carve-out context.

Modifications have also been made to the internal MA-MHSPY database itself, to include: (a) the creation of ways to track child placement regardless of payor; (b) the development of methods for reporting level of functioning via instruments entered into system directly by clinical staff; (c) the establishment of a weekly quality indicator, via review of clinical crisis plans and revisions of member data for existing enrollees; (d) the creation of clinical reminder systems for missing data or information due; and (e) a process for linking all data, administrative and clinical, medical and mental health, to a unique research ID# for each child so that information can be followed at the individual level and reports can be created on an as-needed basis

Results/Discussion

The enrollment coordinator for the DMA serves as the major collector of baseline and follow-up individualized clinical functioning data. The MA-MHSPY care managers compile and enter the clinical data, and financial reports are drawn from both the Neighborhood Health Plan claims system and overall program expense reporting. Analysis of some outcome variables such as satisfaction or clinical functioning is done via a contract between the DMA and the University of Massachusetts Medical School. Others analyses are performed by internal program staff and statistical consultants. All of these data items require intense coordination and tracking to create comprehensive reports that are capable of reflecting program outcomes.

Two examples of MA-MHSPY reports are shown in the figures below. As shown in Figure 3, complex assessments can be made of individualized costs, organized by stakeholder or referring agency and mapped against capitation rates and average per member per month costs. These combined datasets serve to inform ongoing discussions about financial viability and case variation. Capitation based and fee for service costs, for both mental health and physical health, are combined to indicate service utilization reported as a percentage of aggregate service dollars spent (Figure 4). Additional types of information reported include: percent of improvement in a variety of functional measures, percent of non-professionals at Care Planning Team meetings, types of informal supports used and degree of restrictiveness in levels of care. These items provide necessary information at the level of individual data elements to:

- Facilitate individualized clinical care management, tracking interventions against individual goals
- Guide stakeholder decisionmaking regarding their satisfaction with the system of care itself
- Provide the substrate for sophisticated meta-analysis to further understanding of what aspects or processes within the system of care account for the greatest amount of effect modulation in the results

There are still multiple systems that hold information regarding enrollees in the MA—MHSPY, but a gradual process of centralization and coordination has fostered greater data integration, with consequent benefits to the quality of information generated. It is noteworthy that, in the context of financial and power incentives, issues of ownership and control plague the data system development process just as they do the clinical program development process.

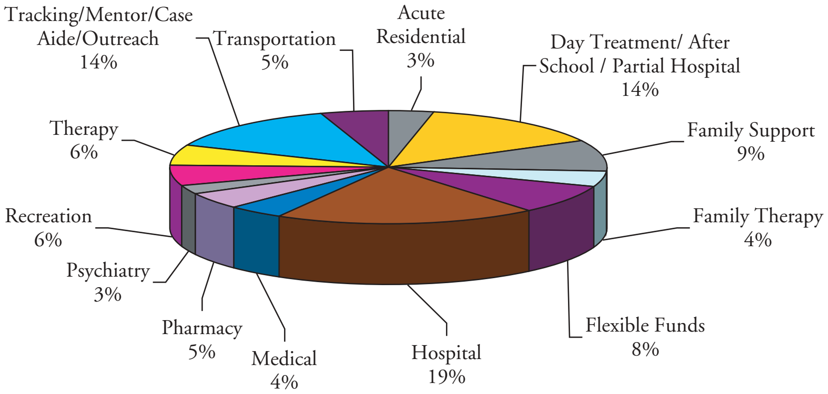
However, it is our experience that similar responses of patience, mutual education and flexibility are useful in this realm as well, and that the added value to children and families of claims-clinical-financial-policy data all "talking to each other" can be one of the system of care's major contributions to the improved mental health of children and their families.

Symposium Discussion

Shelia Pires

The organizational structure of the Massachusetts Mental Health Services Program for Youth with its combined effort to blend funding and share governance while delivering intensive, family based clinical care, offers a rich example for study of a "best practice." The fact that medical care is provided with the benefits for this vulnerable population is a unique feature that potentially offers the deciding factor in the alignment of goals and continuity of intent that define this program.

Figure 4
MHSPY Distribution of
Clinical Service Types (By Dollars)
October 1999 - September 2001



Family Support - includes crisis intervention, parent partner, family support, family advocacy, parent support, family stabilization team, parent education.

Therapy - includes individual, group, and art therapy.

Tracking/Mentor/Case Aide/Outreach - composed of tracking, mentor, case aide, and outreach counseling services.

Recreation - includes both day and overnight services, activities therapy, and family night.

Flexible Funds - includes individualized services such as in-home respite, member incentives, clothing and accessories.

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The Armstrong County System of Care: A Case Study Evaluation

James Gaggini, Ed.D.

Introduction

This qualitative case study evaluation of the Armstrong County System of Care is grounded in the theoretical precepts of *systems thinking* (Senge, 1990). The case study compared what the Child and Adolescent Service System Program (CASSP) is supposed to do (the *espoused theory*) to what the program actually does (the *theory in use*) in the planning and in the delivery of mental health services. Further, we examined how state policy initiatives have impacted the planning and the delivery of services in the local system of care. Data from semi-structured interviews, three group dialogue sessions, observations, and agency archives were aggregated, sorted to form patterns, and used to discuss the following questions:

- What services are provided?
- How are these services funded?
- How does the local CASSP conform to the PACASSP core principles?
- How does the planning and delivery of services reflect best practices?
- What is the extent of collaboration among the participating agencies?

The primary issue emerging from this research focused on changes to local CASSP procedures after the Pennsylvania Department of Public Welfare (PADPW) implemented the managed care Health Choices program in January 1999.

Method

Data were gathered from semi-structured interviews and three group dialogue sessions (GDS) with ten representatives from the primary child serving agencies who were active participants in the local system of care. The interviews were used to construct knowledge of the participant's involvement in the system of care and to identify the individual's perception of strengths and weaknesses in the local CASSP.

Through dialogue, the participants were able to reflect on their beliefs and explore the complex issues surrounding the administration and implementation of the CASSP process. Through this process, participants openly shared their views and construct knowledge about their assumptions (Isaacs, 1999) to unearth their mental models of the local CASSP.

Results

The Armstrong County CASSP does provide the full continuum of services recommended by PADPW. Mental Health Services are primarily funded by the PADPW through Medical Assistance, CYS, and county mental health providers. These services may be provided through the base service unit, or through broker agencies. In order for a child to receive wraparound or behavioral mental health services (BHRS), they must be MA eligible. From a systems perspective, Senge (1990) postulates that interrelated actions or relationships form patterns of interaction, which in turn form the structure of the system.

Theoretically, mental models guide peoples' actions and in turn demonstrate their theory-in-use. The participants' discussions elaborated on, and substantiated perceived strengths, weakness and structural barriers that were unearthed during the interviews and were then crosschecked and validated in the GDS.

As shown in Table 1, eight of the ten participants in the three group dialogue sessions agreed that the following items are strengths of the CASSP: (a) Involvement of the Family, (b) Regularly Scheduled CASSP Meetings before managed care, (c) Collaboration/working together, and (d) Community-based services in the county.

Table 1
Patterns of Perceived Strengths of Armstrong County CASSP

	Sally	*Barb*	*Dave*	*John*	*Joe*	*Mandy*	*Jo*	*Pam*	*Kayla*	*Jack*
Involvement of the Family	X	XX	XX	XX		XX	X	XX		X
Regularly Scheduled CASSP Meetings before managed care		XX	XX	XX		XX	X	XX	X	XX
Collaboration / working together	X	XX	XX	XX	XX	XX		XX	XX	XX
Community-based / services in the county	X	XX	X	X			X	XX	X	XX
Developing new programs	X			X					X	X
Demographics of county			X						X	

X Indicated in interview; X Indicated in dialogue session; XX Indicated in both interviews and dialogue sessions

Table 2 illustrates weaknesses of the CASSP that were also identified in the group dialogue sessions. In particular, "Communication among agencies" and "Procedural changes since the implementation of managed care" were identified as weaknesses by all participants in the study. Additionally, all participants agreed that conflicting policies, conflicting mandates, and conflicting regulations represented significant structural barriers to the operation and administration of the system of care.

Table 2
Patterns of Perceived Weaknesses of Armstrong County CASSP

	Sally	*Barb*	*Dave*	*John*	*Joe*	*Mandy*	*Jo*	*Pam*	*Kayla*	*Jack*
Communication among agencies (since managed care)	XX	XX	XX	X	X	XX	X	XX	X	XX
Procedural changes (since managed care)	X	XX	XX	XX	X	XX	X	XX	X	XX
Gaps in services	X						X		X	X
Child centered services								XX		X
Transportation	X							X		

X Indicated in interview; X Indicated in dialogue session; XX Indicated in both interviews and dialogue sessions

The Old CASSP Process

Prior to the change to managed care, the Armstrong County CASSP met weekly, and the members who regularly participated in those meetings had constructed very positive mental models of the *old CASSP* process. Under the old CASSP, all the child serving agencies, parents and children, if appropriate, were invited to attend these meetings. Parents met with all of the agencies and a holistic plan was discussed, developed, and coordinated. Because these meetings were scheduled regularly it was possible to plan and to arrange schedules so that each agency could have a representative in attendance. Prior to January 1, 1999 (i.e., the old CASSP), the theory-in-use of the Armstrong County CASSP was congruent with its espoused theory, and agencies actively participated in collaborative planning.

Implications for the Armstrong County CASSP

Procedural changes initiated with the change to managed care and the implementation of the Interagency Team Meeting (ITM) process have resulted in significant changes in CASSP procedures at the local level. The study participants believed that the procedural changes were caused by the shift to managed care, and that the shift to managed care was responsible for the implementation of the ITM process. However the implementation of the ITM process (specifically the timelines) was the result of a policy change at the state level.

The primary reason cited for the change to managed care was the general movement to managed care health systems in an effort to control costs. This movement was perceived by the participants to be motivated by the need to control costs by limiting services, particularly wraparound services, and is accurate from an event explanation perspective. However, in June 1999, the Disabilities Law Project filed a class action lawsuit against the PADPW; the suit charged DPW with violating the federal rights of the plaintiffs because behavioral mental health services (BHRS) were not being provided in a timely manner. A tentative settlement resulted and was responsible, in part, for the move away from weekly CASSP meetings.

From a systemic structural perspective, the tentative settlement required the state to provide BHRS within sixty days, if a child or adolescent is eligible for services. During the sixty-day period, county mental health providers must conduct an evaluation, an interagency team meeting, and a review of the request for services.

Changes to the System

Several inter-related events have changed patterns of behaviors and the structure of the local CASSP. In January, 1999 the DPW's southwest region implemented the managed care Health Choices program, and in June, 1999 a class action lawsuit was filed to assure that requests for BHRS services were delivered in a timely manner. A tentative agreement mandated that all requests for BHRS services be processed within sixty days of the request for an evaluation. Additionally, the *Armstrong County CASSP Policy and Procedures Manual* (Armstrong-Indiana County, 1999) was revised in September 1999 to reflect these procedural changes. Concurrently, a series of changes occurred in the CASSP Coordinator's position. The coordinator, who had been in that position since the summer of 1994, left the agency in January of 1999 and two replacements were appointed between January 1999 and September 1999. Contextually, all of these factors contributed to changes in the structure of the old CASSP system.

Finally, the study participants believe that these changes have made it confusing for themselves and for parents who are seeking assistance, and that they have caused additional fragmentation and created new issues with regard to structural barriers within the system. In an effort to implement the ITM process, the old CASSP process (characterized by weekly meetings and interagency collaboration), has been discontinued.

Discussion

The information and recommendations from this case study evaluation were shared with the study participants in a fourth GDS. We are hopeful that, through the continuation of inquiry and reflection, the CASSP process can be redesigned to improve multi-system planning. Changes that have severely limited the opportunity to engage in inter-agency collaboration include: (a) the need to comply with the 60 day timeline, (b) the fact that parents often neglect to identify the schools and other child serving agencies as being involved, and (c) the fact that ITM meetings are randomly scheduled with little advanced notice from the managed care provider. Additionally, the purpose of an ITM meeting is to identify a medical necessity for BHRS services only; however, because many of the child serving agencies are not typically in attendance at the ITM, there is often no one in attendance to advocate for the child. Therefore, parents may not be aware that other mental health services are available. We believe that this is counterproductive for a system envisioned by Stroul and Friedman to be "seamless" (1986; Stroul et al., 1996). It appears that the Armstrong County system of care has developed cracks through which children and families may fall.

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Measuring Interagency Involvement and Referral Patterns in Systems of Care

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Susan Zaro
John Gilford
Bob Stephens

Introduction

Funded by the Center for Mental Health Services (CMHS), the Comprehensive Community Mental Health Services for Children and Their Families Program began funding services in 1994 to meet the needs of children with serious emotional disturbances and their families through a system-of-care approach to mental health services delivery. All grantees are required to have an interagency structure to include, at a minimum, representatives from mental health, education, juvenile justice, child welfare, and public health (CMHS, 1999), and are expected to involve these agencies at the policy-making level as well as the direct services level.

Broad interagency participation can help develop a more complete picture of community needs and, thus, benefit a wider array of children. It can provide greater visibility for issues, challenges and successes of services for children and a greater collective voice (Hodges, Nesman & Hernandez, 1999). In an era of managed care and increased accountability, an interagency approach to service delivery should minimize duplication of services and increase efficiency, decrease spending, and improve outcomes (Nelson & Pearson, 1991). Translating this approach to the direct service level, it can help overcome differences in service delivery philosophy and strategy (Hodges et al., 1999). In addition, research has shown that such an approach can lead to improved access and tracking of services through coordination at the administrative level and reduced barriers for families at the service level (Bruner, 1991).

Research Questions

This study addresses: (a) the nature and extent of interagency involvement in systems of care; (b) what approaches are used to enlist interagency involvement in system of care governance, program operations, and direct services; (c) what challenges impede interagency involvement; and (d) the relationship between interagency involvement and referral patterns.

Method

As part of the national evaluation of the Comprehensive Community Mental Health Services for Children and Their Families Program, system-level data are collected during an annual 3- to 4-day visit to each grant community. Two trained site visitors conduct approximately 25 semi-structured interviews with a variety of stakeholders and review 6 to 10 randomly selected case records. The site visitors use a system-level assessment tool that was developed for the national evaluation and addresses the organizational arrangements, activities, and processes of children's mental health service delivery systems in terms of eight system-of-care principles, including the principle of interagency involvement. A scoring matrix captures the intersection of the organizational arrangement, activities, and processes, and the system-of-care principles. Each cell in the scoring matrix contains measures of system performance that are generated from a series of questions asked of respondents. This information is used by the site visitors to quantitatively rate each grant community in terms of the eight system-of-care principles on a 1 (*lowest*) to 5 (*highest*) scale. This study includes data obtained from 19 grant communities during their first assessment visit, which occurs 12 to 18 months after initial funding.

Data on referral sources are collected as part of the cross-sectional descriptive study component of the national evaluation. For this component, demographic and other descriptive data on children enrolled in the system of care are collected by grant community staff through record reviews. These data were available for 12 of the 19 grant communities (for the other communities data on referral sources were incomplete or had not yet been submitted). To analyze referral patterns, the grant communities were divided into two subgroups using a median split–those scoring high on interagency involvement and those scoring low on interagency involvement.

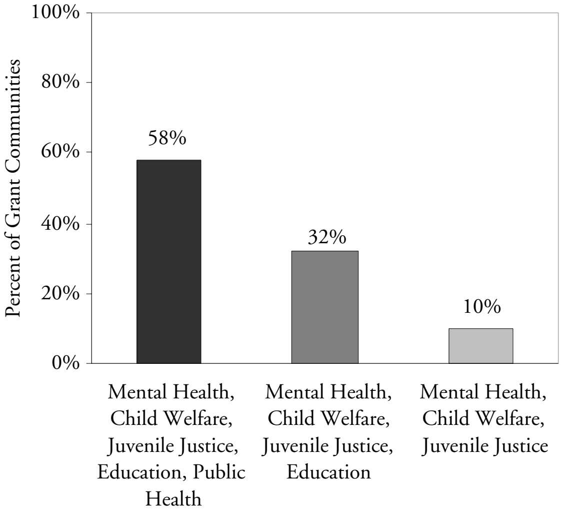
Results

Interagency Involvement

None of the 19 grant communities had scores of 4 or 5 for the interagency involvement principle. Approximately two-thirds (68%) had scores between 3.0 and 3.9, indicating that efforts were in place to elicit involvement from multiple child-serving agencies, but that more work needed to be done to achieve full involvement of the agencies. The remaining third of the grant communities had scores between 2.0 and 2.9, indicating that efforts had been made to elicit interagency involvement, but had been minimally effective.

Grant communities have employed a range of approaches to involving the child-serving agencies in program policymaking, operations, and direct service delivery. The most common approach was to include representatives from these agencies as members on the grant's governing body. Eleven (58%) of the grant communities had successfully elicited the involvement of all five of the core public child-serving agencies, and an additional six (32%) had involved all agencies except public health. Among these 17 grant communities some concerns were raised by respondents that the commitment was not as strong as they would like to see among some of the agencies. In addition, respondents in two communities indicated that although some school districts were involved, not all of the school districts relevant to the population served were involved. Two grant communities (10%) had representation from mental health, child welfare, and juvenile justice, but not from education or public health (Figure 1).

Figure 1
Type and Extent of Child-Serving Agencies in System of Care
(*N* = 19 Communities)



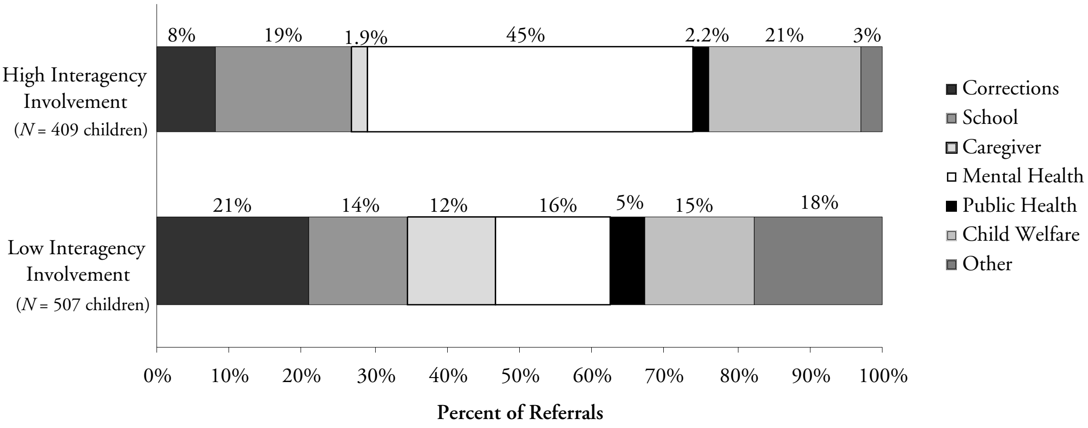
Approaches to integrating administrative functions across agencies in order to have some continuity in operations were fairly limited. Six grant communities (32%) had no administrative processes that were shared across agencies. Among the 13 grant communities that had sharing processes in place, six (46%) had developed forms that were used across agencies, and two others had plans in place to develop shared forms. Only two (15%) were collaborating with other agencies in their staff hiring and recruitment strategies, and seven (54%) had created blended funding systems. Communities that scored higher were engaged in multiple efforts to integrate administrative functions and were formally involving staff from child-serving agencies in service planning for children and families. Agency staff were formally involved in the service planning meetings convened by grant staff in all but two communities. However, in approximately half (53%) of the grant communities, involvement was reported to be uneven in terms of which agencies typically participated or how routinely they participated.

Grant communities recognized the importance of making efforts to help the direct service staff across agencies become more integrated in their approach to serving children and families and addressed this primarily through joint training and stationing mental health staff within other child-serving agencies (i.e., outstationing). Joint training efforts were in place in 16 grant communities (84%). Outstationing staff was a central strategy used by 13 grant communities (68%). Reported factors that impeded efforts to develop a high level of interagency involvement included poor communications among staff across the multiple agencies, confusion in roles, and lack of top administration buy-in.

Referral Patterns

Children in the communities that had the higher scores in interagency involvement were referred into the system of care by mental health agencies and programs far more often than any other referral source (45.2% of all referrals). Child welfare was the next most common referral source, accounting for 20.5% of referrals. Schools were responsible for directing 18.6% of the children into the system of care. In grant communities that had lower scores for interagency involvement, the referral patterns were much more evenly distributed across several sources. Corrections referred the largest percentage (20.9%), followed by other sources (17.9%), mental health agencies/providers (16%), child welfare (14.6%), and schools (14.4%). (See Figure 2).

Figure 2
Referral Patterns for Grant Communities by Interagency Involvement Score



Discussion

It is a daunting task to create and maintain a working and effective mental health service delivery system for children. Publicly funded agencies compete for the same limited resources, and each has unique purposes and structures that shape and mitigate the overall development of a system of care. The success of system development is enhanced, or limited, according to the extent to which these agencies can be melded into a policy-making and service delivery body. This study shows that the grantees have put efforts in place early in their development to achieve interagency involvement, but that more can be done to achieve full involvement of the key child-serving agencies in systems of care.

Referral pattern findings were somewhat surprising. Some of the differences in referral patterns can be explained by the unique focus of several grant communities, e.g., three of the grant communities with low interagency involvement scores have a focus on serving youth involved with juvenile justice and/or at risk of becoming involved. One of these communities focuses exclusively on youth who are in correctional facilities and returning home, thus corrections is the single referral source. The other two communities include youth at risk of becoming involved in the juvenile justice system and take referrals from other sources, however one-third to one-half of their referrals come from the juvenile justice system.

Among the grant communities that had higher interagency involvement scores, two include as their focus children who are placed in out-of home treatment facilities and, thus for this portion of their population, referrals come from mental health providers. Another of the communities in the higher scoring group has developed a school based program and up to 90 percent of referrals come from the schools.

Even when taking into account the unique focus of some of the grant communities, the disproportionate number of mental health referrals among the higher scoring grant communities may be indicative of another trend. As systems of care become more involved with other agencies and as more mental health staff are outstationed in other agencies, they may begin to have more direct access to children in need of services and rely less on agency to agency referrals. However, it is difficult to generalize from these finding for several reasons. The sample size is small; only 12 grant communities had data available from the system-level assessment on referral source patterns. In addition, as noted earlier, none of the grant communities had particularly high interagency involvement scores, reflecting the relatively early stage of development of the grant communities at their first assessment point. Given that scores did not differ substantially between the lower scoring and higher scoring groups, attributing differences in referral patterns to the strength of interagency involvement is probably premature. With more grant communities in the sample and as additional assessments are conducted, interagency involvement can be examined in more depth and over time.

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Building Bridges: Linking Research and Policy Makers

Joan Sykora

Introduction

Established in 1991, the *Children, Youth and Family Consortium* (CYFC) connects researchers, policy makers, and educators with practitioners and other individuals at the community level to work toward the common goal of strengthening families and communities. These connections are critical bridges to greater understanding and more deliberate action on behalf of children and their families.

The Consortium provides a model for how universities can be responsive and open to the concerns of their communities. Over 10,000 individuals and organizations are affiliated with the Consortium, and are vital to its day-to-day operations. They receive a range of helpful information, including newsletters, briefing papers, and other materials, and are eligible for membership in the CYFC Advisory Council, the Family Policy Work Group, and various partnership groups that explore areas of concern to university faculty. In many ways, the Consortium has come to exemplify the spirit of collaboration and active engagement around children, youth and family issues.

History

As a land-grant institution, the University of Minnesota has a history of addressing children, youth and family issues by connecting related activities within the University and forging links with the community. Yet building meaningful community partnerships is challenging for an institution of higher education.

In late 1990, there was growing awareness that increasing threats to the welfare of children, youth, and families meant that new partnerships were needed. Collaboration was no longer a choice—it became a necessity. In response to these changes, a group of concerned faculty and community representatives established a steering committee to host a planning retreat. Thirty-nine faculty and 11 community representatives participated in the day-and-a-half retreat and created a set of guiding principles to develop a consortium on children, youth and families. From that effort the mission of the Consortium evolved:

> *…to bring together the varied competencies of the University of Minnesota and the vital resources of Minnesota's communities to enhance the ability of individuals and organizations to address critical health, education, and social policy concerns in ways that improve the well-being of Minnesota children, youth and families.* (CYFC, 2002)

Purpose

The Consortium is a public, voluntary affiliation of individuals committed to learning, sharing knowledge, and taking action. The day-to-day work includes: (a) connecting researchers with community members, (b) deciphering research findings so they are meaningful to decision makers, (c) providing outreach, (d) creating forums for discussion around public policy issues, (e) sharing information, and (f) supporting teaching, education and research involving children, youth and family issues.

Target audiences include policy makers at all levels of government, interagency collaboratives, private and not-for-profit agencies, and all individuals interested in improving the lives of children, youth and families. Through the extensive Consortium website, information and materials are available to a world-wide population.

Policy Education

Since the Fall of 2000, the Consortium has placed a special emphasis on public policy education. Led by an advisory group of community providers, educators, researchers and policy makers, priorities for public education have included children's mental health, out of home placements, affordable housing, and welfare reform. Efforts on behalf of children's mental health are guided by a faculty work group of about 40 faculty from across the University, representing the areas of psychiatry, pediatrics, social work, adolescent health, clinical services to children with disabilities, public health, child psychology and infant development.

An important aspect of the CYFC mission is to synthesize credible research and compile it in user-friendly and easily accessible formats. This work varies, depending on the needs of a given audience, but examples include:

- *The Children, Youth and Family Consortium website* includes research-based information such as policy briefing papers, research summaries and presentations. The site includes extensive links to research findings and other information on children, youth and family issues, and includes a calendar of current and upcoming events, an electronic clearinghouse, a comprehensive list of University experts by content area, and numerous other resources. Currently the website receives an average of 175,000 visitors per month. All publications discussed in this summary are available at the Consortium website: http://www.cyfc.umn.edu/welcome.html
- *Printed publications including newsletters, conference proceedings, policy briefing papers and other documents*, are routinely distributed to the CYFC mailing list of over 10,000 individuals and organizations.
- *Special events and initiatives*, including presentations, seminars, policy forums and planning sessions. Speakers, facilitators, or consultants are available to provide assistance with conferences, workshops, venues for collaborative discussions, and other educational efforts.

How We Do Our Work

Multiple perspectives are an expected and accepted part of the Consortium's work. People have differing perspectives, needs and political agendas. The relatively neutral role—and ground—that the Consortium provides creates a bridge between the University and community. The CYFC offers its partners at the University and in the communities across Minnesota a wide range of products, tools, publications, seminars, meetings, and advisory services. The CYFC supports and creates opportunities for dialog about public policy and credible research findings and encourages policy relevant research that provides decision makers with the information they need to do their jobs effectively. Table 1 provides an example of Consortium publications.

Evaluation

Because the work of the Consortium is both process- and product-oriented, the measurement of outcomes can be difficult. Tracking use of products, participation, or new learning about recent research findings and their use in public policy can be challenging. Measuring the difference made by these efforts in the lives of children and families is even more difficult, and yet something we are committed to doing.

A summative evaluation was done by an outside researcher after the Consortium had been in existence about five years. This evaluation report offered lessons learned and areas for improvement, as well as a great deal of positive feedback from many individuals affiliated with the Consortium. Currently, efforts are in place to create a more systematic evaluation system.

Table 1
Limited Compendium of Products offered by the Children, Youth, and Family Consortium

Product type	*Title*	*Description*
Public Policy Briefing Paper	*Mental Heath and Families*	This brief discusses definitions of mental health and mental illness, how mental health affects family well-being and other family policy issues, as well as the current policy status and recommendations for sound mental health public policies based on current research. Provides a concise analysis of the issues involved, while focusing on recommendations for informed policy making.
Public Policy Briefing Paper	*Out-of-home Placements*	The placement of children outside of their homes is a tremendously complex issue that spans multiple child and family needs, numerous service delivery systems, and a wide array of public policies and family laws. This brief offers an overview of some of the policies, a concise analysis of the laws and issues, along with relevant data and research findings. Recommendations for informed public policy making are included.
Newsletter	*Consortium Connections: Mental Health Over the Life Span*	This issue focuses on mental health at all stages of life. Topics covered include aging, adolescent mental health, depression and suicide, and mental health and parenting and more. These issues are discussed through interviews, study reports, and brief articles.
Newsletter	*Consortium Connections: Family Policy*	This issue explores the wide and sometimes stormy shores of public policy. From interviews with local legislators, to looking at how research can be integrated into policy and planning, and considering the differing needs of rural and urban families, the many facets of family policy are explored and examined.
Publication produced by the University of Minnesota's Maternal and Child Health program	*Healthy Generations*	Articles discuss risk and protective factors associated with children's mental health, promoting mental health in early childhood, depression and suicide as well as the connection between good mental health and good public policies. This issue offers a glimpse of some of the most current issues in public policy of mental health care.

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