Colorado Division of Mental Health: H.B. 00-1034 Program

The Community Based Management Pilot Programs for Persons with Mental Illness Who are Involved in the Criminal Justice System

Executive Summary

In 2000, the Colorado General Assembly passed legislation providing for "Intensive Treatment Management for Persons with Mental Illness." C.R.S 16-8-205 established The Community Based Management Pilot Programs for Persons with Mental Illness Who are Involved in the Criminal Justice System (hereafter referred to as H.B. 00-1034 Pilot Programs, or as "pilot programs"). The main purpose of this year's evaluation report was to provide additional analysis and review of past program evaluation findings to better understand the successful outcomes observed for youth directly to the programs implemented under this pilot. Because of the need to maximize use of those past evaluations and the additional research conducted this year to determine the future of the pilot, the Executive Summary of this Report first addresses the ultimate conclusions reached, and then outlines the overall body of report.

Summary and Conclusions

Past evaluations of the two pilot sites have documented some positive outcomes for youth served in these programs. However, the most extensive evaluation of the projects to date was unable to attribute positive outcomes of participating youth directly in the pilot component. In the January 2006 evaluation report, both the youth receiving pilot services and the comparison youth receiving more traditional mental health treatment showed similar positive outcomes. While the design of that evaluation did not allow for analysis of what would have happened had youth received no mental health services, it was generally encouraging that both groups receiving treatment (both pilot and comparison group youth) did show improved outcomes 12 months after participation in the program.

Continuing analysis of the two pilot programs along these lines, without additional refinement and specification, is not likely to provide any new information for the Division given the limitations of the evaluation design. In addition, available data have not been able to demonstrate that the youth being served by the pilot receive any additional benefit that would justify the increased resources associated with the current project. However, experiences and evaluation results related to the H.B. 00-1034 pilot program have offered preliminary evidence regarding the potential benefits of targeting services to youth with mental health needs who are involved in the juvenile justice system. This learning, combined with broader national research regarding effective practices with this population and the availability of new information on some specific interventions that have been proven to be effective (such as Multisystemic Therapy, Enhanced Multisystemic Therapy, and Dialectic Behavior Therapy), put the Division of Mental Health in a position to continue to refine and evolve their strategies for treating this population.

Background and Pilot Design

In 2001, two pilot sites were funded under H.B. 00-1034:

- The Sterling, Colorado program was established as a community mental health center treatment-based team in March of 2001 by Centennial Mental Health Center (Centennial MHC).
- In October, 2001 Colorado Access/Access Behavioral Care (ABC) established a Multisystemic Family Therapy (MST) Team in Denver, Colorado. In Fiscal Year 2005-06, a new contract for the Denver, Colorado area was established through the Mental Health Corporation of Denver (MHCD) who continued to provide MST services.

The initial evaluation design did not include comparison groups for the two pilots, but one was added for the January 2006 report. The revised design identified youth from comparable regions of the state to serve as a comparison group. These comparison youth were matched on mental health, demographic and legal factors, and they represented youth receiving traditional services from other mental health centers in comparable regions of the state (one metro Denver center and two northern rural centers).

In order to learn more about how services can effectively improve the outcomes of youth with serious mental health issues who are involved in the juvenile justice system, the current evaluation examines data from past evaluation findings, combined with additional comparisons using historical services data.

Despite the Division's desire to maximize the utility of evaluation findings across the entire five years of the project and to generalize findings to overall practice with this specific portion of youth, many evaluation questions remain unanswered given the original design of the evaluation and major gaps in data collection by providers.

Purpose and Scope of this Report

Previous evaluation reports on the H.B. 00-1034 pilot programs did demonstrate some encouraging program outcomes for those participating in this pilot effort (for example, decreased involvement in the juvenile justice system). However, design limitations of early evaluation reports (submitted in fiscal years 2002 through 2005) included a small sample of youth for whom outcomes were available and the lack of a viable comparison group of youth. This limited the ability of previous reports to attribute outcomes directly to the interventions provided by the pilot programs. In January of 2006, DMH submitted an evaluation report that did include the use of a comparison group. However, findings showed outcomes for pilot youth and comparison group youth to be comparable.

Because of these evaluation findings, the Division concentrated efforts of the Fiscal Year 2005-06 report on a more in-depth analysis of the services provided to both pilot and comparison group youth in order to explore the relationship between the services received by those youth and the subsequent outcomes that were reported in the previous year. This report contains two parts:

- **Part I** of the report describes the youth served by the two pilot sites during Fiscal Year 2005-06. This includes a description of demographics and mental health status for the youth served,

as well as a description of the outcomes experienced by the small group of youth who were discharged during the fiscal year.

- **Part II** of the report details results of the exploratory analysis of the services received by youth in previous pilot-comparison group study, as well as the relationship between those services and subsequent youth outcomes.

Part I – Youth Served During Fiscal Year 2005-06

During FY 2005-06, 44 youth were served by the two pilot programs.

Agency	**Number**	**Percent**
Centennial	25	57%
Mental Health Corporation of Denver	19	43%
Total	**44**	**100%**
Gender	**Number**	**Percent**
Male	36	82%
Female	8	18%
Total	**44**	**100%**
Race/Ethnicity	**Number**	**Percent**
African American/Black	2	6 %
Multi-racial	3	6%
Hispanic	18	51%
White (non-Hispanic)	17	37%
Total	**40**	**100%**
Missing (records missing ethnicity)	4	(9% of total)

As of June 30, 2006, 20 of the 45 youth served during the fiscal year were discharged from the two pilot programs[1]. Average Length of Stay (LOS) in the two pilot programs was 199 days.

Table 4: LOS in H.B. 00-1034

	N	Minimum	Maximum	Mean	Std. Deviation
LOS (in days) Both Sites	20	27 days	534 days	199 days	145 days

Site	N	Mean LOS	t-score	p value
Centennial	12	273 days	3.61	.002
MHCD	8	87 days		

[1] Excludes 5 youth who were discharged from the MHCD program because they became Medicaid eligible after being enrolled in the program and were, therefore, no longer eligible for program services within the H.B. 00-1034 pilot program.

Youth discharged from the Centennial pilot site, on average, had a length of stay that was more than three times that of the LOS for MHCD youth. The difference in LOS between the two sites was statistically significant.

Part II – Review of Previous Comparison Group Findings

The evaluation design for the previous (January 2006) data report included a comparison group of youth, matched to the pilot youth based on geographic region of the state, demographics (gender, race and age), mental health issues as identified by the legal, substance abuse and overall problem severity scores from the CCAR. The two groups of youth were also equivalent in terms of the numbers of delinquency filings and adjudications occurring in the 12 months before participation (in either the pilot program or in traditional mental health services). Both groups showed decreases in filings and adjudications in the 12 months directly following program participation.

Because some placements (DYC Commitment, DOC, Residential Treatment Centers [RTC], Detention) have such high per day costs, small numbers of youth who accumulate a large number of days can significantly drive cost differences observed. While both groups had lower costs in the 12 months following discharge than the 12 months prior to program admission, the decrease was larger for the comparison group.

Overall, youth participating in the pilot sites received a much greater number of units of service than did youth in comparison sites. However, the quantity of specific services did not predict any of the juvenile justice outcomes. That is to say using the types of services and quantity of each, the equations could not distinguish youth with positive outcomes from those with negative juvenile justice outcomes in any reliable way.

A few minor, but statistically significant improvements in mental health functioning (as measured by the CCAR), were associated with a greater provision of specific types of services. However, the types and intensity of services did not seem to be related to substantial change in the majority of CCAR problem severity subscales.

Colorado Division of Mental Health: H.B. 00-1034 Program

The Community Based Management Pilot Programs for Persons with Mental Illness Who are Involved in the Criminal Justice System

Background and Introduction

In 2000, the Colorado General Assembly passed legislation providing for "Intensive Treatment Management for Persons with Mental Illness." C.R.S 16-8-205 established The Community Based Management Pilot Programs for Persons with Mental Illness Who are Involved in the Criminal Justice System (hereafter referred to as H.B. 00-1034 Pilot Programs, or as "pilot programs"). The Legislative declaration reads:

> "(a) Juveniles who are involved in the criminal justice system and who are diagnosed with serious mental illness are more likely than persons without mental illness to reoffend and require repeated incarceration;
>
> (b) Although some community-based intensive treatment and management are currently available . . . these services are not available in all areas of the state;
>
> (c) Provision of community-based intensive treatment and management services for persons with serious mental illness has been shown to decrease the rate of recidivism and the need for multiple periods of incarceration and hospitalization;
>
> (d) Over the long term, the cost of providing services is more than offset by the decrease in incarceration and hospitalization and by the societal benefits realized by enabling these persons to function safely in the community;"

In 2001, two pilot sites were funded under H.B. 00-1034:

- The Sterling, Colorado program was established as a community mental health center treatment-based team in March of 2001 by Centennial Mental Health Center (Centennial MHC). The Sterling program continued through Centennial, although adjustments to the program were recommended in previous evaluation reports.
- In October, 2001 Colorado Access/Access Behavioral Care (ABC) established a Multisystemic Family Therapy (MST) Team in Denver, Colorado. In Fiscal Year 2005-06, a new contract for the Denver, Colorado area was established through the Mental Health Corporation of Denver (MHCD) who continued to provide MST services.

The authorizing legislation required that the program be jointly administered by the Colorado Division of Mental Health (DMH) and the Colorado Division of Criminal Justice (DCJ), with DMH

required to submit annual evaluation reports and DCJ required to submit reports bi-annually. Reporting categories required in the legislation are:

"(1) On or before October 1, 2002 and on or before each October 1 thereafter, each entity that is selected to operate a juvenile offender pilot program created pursuant to section 16-8-203 shall submit to the department information evaluating the program. The department shall specify the minimum information to be submitted, which information at a minimum should include:

(a) The number of persons participating in the program and an overview of the services provided;

(b) The number of persons participating in the program for whom diversion, parole, probation, or conditional release was revoked and the reasons for each revocation;

(c) The number of persons participating in the program who committed new offenses while receiving services and after receiving services under the program and the number and nature of offenses committed;

(d) The number of persons participating in the program who required hospitalization while receiving services and after receiving services under the program and the length of and reason for each hospitalization.

(2) On or before January 15, 2003, and on or before each January 15 thereafter, the department shall submit a compilation of the information received pursuant to subsection (1) of this section, with an executive summary, to the joint budget committee and the judiciary committees of the senate and the house of representatives of the general assembly. Said committees shall review the report and may recommend legislation to continue or expand the juvenile offender pilot program.

(3) The department shall forward the information received pursuant to subsection (1) of this section to the division of criminal justice in the department of public safety. The division shall review the operation of the pilot programs and submit a report on or before October 1, 2003, and on or before October 1 every two years thereafter. At a minimum, the report prepared by the division of criminal justice shall include identification of the cost avoidance or cost savings, if any, achieved by the pilot programs and the outcomes achieved by juveniles receiving services through the programs."

In order to learn more about how services can effectively improve the outcomes of youth with serious mental health issues who are involved in the juvenile justice system, the current evaluation report examines data from past evaluation findings, compared with historical services data, in order to determine if a specific type or intensity of services was associated with more positive outcomes.

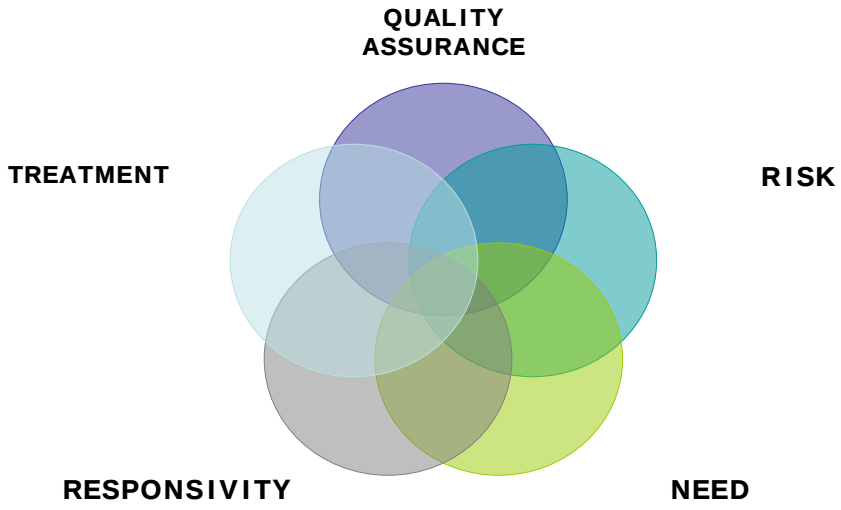
As will be detailed later, in Part II of this report, despite the Division's desire to maximize the utility of evaluation findings across the entire five years of the project and to generalize findings to overall practice with this specific portion of youth, many evaluation questions remain unanswered.

However, in the five years that this program has been in place, the existing body of literature around effective juvenile justice practices for youth (including those with significant mental health needs)

has grown considerably. Emerging national best practice standards for treatment services for juvenile justice-involved youth include a focus on each of the following principles:[2]

- Risk Principle: Target intensive services on higher risk youth.
- Need Principle: Treat risk factors associated with offending behavior.
- Treatment Principle: Employ evidence-based treatment approaches as available.
- Responsivity Principle: Use individualized case management to tailor treatments to meet special needs.
- Quality Assurance (Fidelity) Principle: Monitor implementation quality and treatment fidelity.

As depicted in the figure below, these principles are inter-related and must be implemented together in order to maximize the outcomes of treatment services.



The principles of risk and need stress the importance of isolating the factors that are directly associated with a youth's offending behavior. These risk factors have been noted broadly in national research reports. They include circumstances and characteristics in a number of areas or domains that can be changed through treatment, including substance abuse, behavior, attitudes, personality, peer associations, the family, and circumstances at school. Although the dynamics involved are not fully understood, research indicates that youth who enter the juvenile justice system with challenges in many of these areas are more at risk to re-offend than those who present with only a few—the effects are additive. By focusing on these characteristics, youth may be differentiated into high- and low-risk categories.

[2] **National Institute of Corrections**: Implementing Evidence-Based Practices in Community Corrections (B. Bogue, N. Campbell, M. Carey, E. Clawson, D. Faust, K. Florio, L. Joplin, G. Keiser, B. Wasson, W, Woodward, 2003)
Washington State Institute for Public Policy: Washington State's Experience With Research-Based Juvenile Justice Programs (Barney Barnoski, 2005)

For youth with mental health issues, those issues are likely one factor that is associated with their risk for further involvement in the juvenile justice system, but it may not be the only factor. Treating one factor and not the others will be unlikely to prevent re-offending. In addition, even though a youth has severe mental health needs, he or she may still remain in the low-risk category for re-offending. Many, however, will be a high or moderate risk for re-offending. It is important that the services delivered and the outcomes measured for youth are appropriate to these levels of risk. For example, a youth at low risk for re-offending is unlikely to benefit from intervention aimed at preventing further involvement in the juvenile justice system. Program strategies, therefore, should focus on mental health treatment and outcomes measured should be similarly focused. However, a youth at high risk of re-offending may have many other risks in addition to mental health issues. Programs strategies should target other risk factors in addition to mental health needs and outcomes should focus both on mental health function and juvenile justice involvement.

Tools for assessing youths' risk to re-offend have become common and are used in the Colorado Juvenile Justice System, in the form of the Colorado Youth Level of Service Inventory (CYO-LSI). These tools can distinguish low from high risk (for re-offending) youth reliably. In addition a new generation of assessment tools are designed to not only assess a youth's relative risk for re-offending, but also to create a profile of the youth's risks and treatment needs that can be used in case planning and monitoring.[3]

Placements and services may have a positive effect, no effect, or even in some cases result in increased rates of re-offending. Effective treatment strategies use the results of assessment of individual criminogenic risk and needs to match youth to appropriate evidence-based treatments. Specific types of intervention strategies that have demonstrated successful outcomes for youth at risk for juvenile justice system involvement have the following basic features in common[4]:

- Sound theoretical model and focus on criminogenic risk factors,
- Briefer and intense **clinical interventions** (with **prevention** programs being more long-term; delivered over multiple years)
- Multi-modal and multi-contextual.

Effective strategies focus on specific risk factors that contribute to offending behavior, in order to tailor the intensity and duration of supervision and treatment for each youth. This approach leads to a more efficient utilization of services by ensuring that youth receive supervision and treatment that matches their criminogenic risks and needs, and takes into account responsivity issues such as personality and learning characteristics and other factors that constitute barriers to treatment such as a lack of motivation, anxiety, reading levels, and other barriers that may be associated with their mental health functioning.

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[3] See for example, the Washington State Juvenile Court Assessment (WCJRA). Washington State Institute for Public Policy (2001). http://www.wsipp.wa.gov.

[4] **National Institute of Corrections**: Implementing Evidence-Based Practices in Community Corrections (B. Bogue, N. Campbell, M. Carey, E. Clawson, D. Faust, K. Florio, L. Joplin, G. Keiser, B. Wasson, W, Woodward, 2003)
University of Cincinnati: Impediments to Conducting Successful Program Evaluations (Ed Latessa, 2004)

Purpose and Scope of this Report

Previous evaluation reports on the H.B. 00-1034 pilot programs did feature some encouraging program outcomes (for example, decreased involvement in the juvenile justice system) for those participating in this pilot effort. However, design limitations of early evaluation reports, including a small sample of youth for whom outcomes were available and the lack of a viable comparison group of youth, limited their ability to attribute outcomes directly to the interventions provided by the pilot programs.

In January 2006 DMH released a cumulative evaluation report which matched the pilot youth with a comparison group of youth with similar demographic, mental health, and legal problems characteristics. The study included pilot youth who were enrolled from the beginning of the project and had been discharged for at least a year at the conclusion of Fiscal Year 05-06. Comparison group youth were not served in the pilot programs, but, rather, received traditional services at other community mental health centers (CMHCs) that were demographically similar to the pilot sites and were discharged from services in the same time period. Findings of this study did indicate some positive outcomes for youth participating in the pilot. However, similar positive outcomes were also experienced by youth receiving more traditional mental health services.

Because of these evaluation findings, DMH concentrated efforts of the Fiscal Year 2005-06 report on a more in-depth analysis of the services provided to both pilot and comparison group youth in order to explore the relationship between the services received by those youth and the subsequent outcomes that were reported in the previous year.

This report contains two parts:

- **Part I** of the report meets the statutory reporting requirements outlined on page one. It describes the youth served by the two pilot sites during Fiscal Year 2005-06. This includes a demographic and mental health status description of the youth served, as well as a description of the outcomes experienced by this small group of youth who were discharged during the fiscal year.
- **Part II** of the report details results of the exploratory analysis of the services received by youth in the previous pilot-comparison group study, as well as the relationship of those services and subsequent youth outcomes.

Part I: Youth Served in Fiscal Year 2005-06

The first section of this report provides a description of youth served during this fiscal year and their experiences during program participation (length of service, diversion/parole/probation revocations, new offenses, hospitalizations, other out-of-home placements, and school involvement), as outlined in the statutory requirements outlined on page two of this report. This analysis does not repeat the previous evaluation effort of comparing the experiences and outcomes of pilot youth to that of a comparison group.

During FY 2005-06, 44 youth were served by the two pilot programs. Of these, 19 were served at the Denver site (MHCD) and 25 were served by the Sterling site (Centennial). It should be noted, however, that MHCD is a newly funded site this year, so all youth served were admitted during the fiscal year. Of the 25 Centennial youth served, 10 were admitted in FY05. Only 15 youth were admitted in FY06.

The majority of youth served (82%) were male, and the remainder female. Half of all youth served (51%) were Hispanic. The remaining youth served were White, non-Hispanic (37%), African American (6%), or Multi-Racial (6%).

Table 1: Youth Served by H.B. 00-1034 Pilot Programs

Agency	**Number**	**Percent**
Centennial	25	57%
Mental Health Corporation of Denver	19	43%
Total	**44**	**100%**
Gender	**Number**	**Percent**
Male	36	82%
Female	8	18%
Total	**44**	**100%**
Race/Ethnicity	**Percent**	**Gender**
African American/Black	2	6 %
Multi-racial	3	6%
Hispanic	18	51%
White (non-Hispanic)	17	37%
Total	**40**	**100%**
Missing(records missing ethnicity)	4	(9% of total)

There were small differences between the two programs in the demographic characteristics of youth served, but none of these differences were statistically significant.[5]

Boys made up the majority of youth served by both programs. The programs also served similar proportions of African American and Hispanic youth. However, the Denver (MHCD) site served a

[5] Gender differences: Chi-Square=1.47; p=.23. Ethnicity differences: Chi-Square=6.18; p=.19

lower proportion of White youth than did Centennial (Sterling site), with the difference being made up by youth reporting multiple races or ethnicities.

Table 2, below, shows the demographic breakdown of youth served by each of the two H.B. 00-1034 pilot sites.

Table 2: Demographics of Youth Served, by Pilot Site

	Centennial (n=25)		MHCD (n=19)	
Gender	**Number**	**Percent**	**Number**	**Percent**
Male	22	88%	14	74%
Female	3	12%	5	26%
Total	**25**	**100%**	**19**	**100%**
Race/Ethnicity	**Number**	**Percent**	**Number**	**Percent**
African American/Black	1	4%	1	7%
Hispanic	9	39%	9	53%
White (non-Hispanic)	12	52%	5	28%
Multi-racial	1	4%	2	12%
Total	**23**	**99%***	**17**	**100%**
Missing (records missing ethnicity)	2	(8% of total)	2	(11% of total)

* The actual value of this sum is 100%. Total does not add to 100% due to rounding to the nearest whole number.

Mental Health Profiles of Youth Served

Program admission data from the Colorado Client Assessment Record (CCAR) for both groups of youth were analyzed to create an average mental health profile for youth served at each site. Because MHCD only began providing services in FY 2005-06, we limited our analysis to the 15 youth admitted to the Centennial program during FY 2005-06, for an appropriate comparison to the youth admitted in FY 2005-06 at the MHCD site (n=19).

At both sites, youth had an average Overall Problem Severity score between 5 and 6, indicating a problem severity that is between “Moderate” and “Moderate to Severe,” based on the CCAR scoring manual.

Table 3, on page 8, shows the average scores for the CCAR problem severity subscales for each of the two pilot sites. Means that are bolded and highlighted in yellow showed a statistically significant difference between the two sites (based on an independent samples t–test).

Table 3: CCAR Problem Severity Scores, by Pilot Site

CCAR Subscale	Centennial n=14	MHCD N=19	Test for significant difference in means	
	Mean	Mean	t value	p
Emotional Withdrawal Problem Severity	3.50	3.61	-.21	.84
Depressive Issues Problem Severity	4.07	4.00	.13	.87
Anxiety Problem Severity	2.15	3.67	-2.2	.037
Manic Issues Problem Severity	2.43	3.11	-1.1	.28
Attention Issues Problem Severity	3.57	3.83	-.46	.65
Suicide-Danger to Self Problem Severity	1.50	1.94	-1.1	.27
Thought Processes Problem Severity	1.21	2.39	-2.5	.017
Cognitive Problems Problem Severity	3.50	3.06	.60	.55
Self Care Problem Severity	1.14	1.78	-2.3	.032
Resistiveness Problem Severity	3.57	3.67	1.14	.90
Socialization Issues Problem Severity	5.21	5.33	-.24	.82
Legal Problem Severity	4.57	4.78	-.38	.72
Aggressive-Danger to Others Problem Severity	4.14	4.17	-.04	.97
Family Issues and Problems Problem Severity	5.00	5.78	-1.82	.079
Interpersonal Problem Severity	3.21	4.11	-1.7	.10
Role Problem Severity	4.71	4.94	1.5	.14
Alcohol Use Problem Severity	3.21	1.67	2.8	.009
Drug Use Problem Severity	3.29	2.67	.896	.38
Medical-Physical Problem Severity	1.29	2.22	-2.4	.023
Security-Management Issues Problem Severity	2.14	4.44	-3.9	.000
Overall Degree of Problem Severity	**4.86**	**5.78**	**-2.33**	**.027**

The youth served by MHCD had a statistically significant higher average score on Overall Problem Severity than did youth served by the Centennial site. In addition the MHCD youth had higher average scores than Centennial youth on the Thought Process, Anxiety, Self Care, Medical-Physical and Security Management Issues Problem Severity scales.

Centennial youth had higher average scores on the Alcohol Problem Severity subscale of the CCAR.

Discharge Experiences of Youth Served

As of June 30, 2006, 20 of the 45 youth served during the fiscal year were discharged from the two pilot programs[6]. Average Length of Stay (LOS) in the two pilot programs was 199 days.

Table 4: LOS in H.B. 00-1034

	N	Minimum	Maximum	Mean	Std. Deviation
LOS (in days) Both Sites	20	27 days	534 days	199 days	145 days

Site	N	Mean LOS	t-score	p value
Centennial	12	273 days	3.61	.002
MHCD	8	87 days		

Youth discharged from the Centennial pilot site, on average, had a length of stay that was more than three times that of the LOS for MHCD youth. The difference in LOS between the two sites was statistically significant.

The reasons for discharge from the pilot program varied considerably between the two programs, largely due to the nature of the differences in services between the two sites, which will be discussed in more detail in Part II of this report. The only common reason for discharge between the two sites was successful program completion. Approximately, one-third of youth at the Centennial site and two-thirds of the youth at the MHCD site were discharged upon successful completion.

Reasons for discharge were available for all 20 youth discharged in Fiscal Year 2005-06. In Centennial, the highest proportion of youth were discharged because their probation ended prior to program completion (42%), while 33% successfully completed. The remaining youth were discharged because of court case dismissal (8%), because the youth was incarcerated on new charges (8%), or because the program was seeking an out-of-home (OOH) placement for the youth (8%).

[6] Excludes 5 youth who were discharged from the MHCD program because they became Medicaid eligible after being enrolled in the program and were, therefore, no longer eligible for program services within the H.B. 00-1034 pilot program.

In Denver (MHCD), a higher proportion (62%) of youth were discharged after successful completion. The remaining youth were discharged due to "completed" treatment that was not labeled as successful (25%) or because of an out of home placement (13%).[7]

Table 5: Differences in Average LOS between Pilot Sites[8]

	Centennial		MHCD	
Discharge Reason	**Frequency**	**Percent**	**Frequency**	**Percent**
Case Dismissed	1	8%	--	--
Completed Treatment**	--	--	2	25%
Incarcerated on New Charges	1	8%	--	--
Placement	--	--	1	13%
Probation ended	5	42%	--	--
Seeking OOH Placement	1	8%	--	--
Successfully Completed	4	33%	5	62%
Total Discharged	**12**	**99%***	**8**	**100%**

*The actual value of this sum is 100%. Total does not add to 100% due to rounding to the nearest whole number.
**Treatment that was completed but not labeled as successful.

Juvenile Justice Issues During and Directly Following Treatment[9]

For those youth served during the fiscal year (including those who were discharged), some experienced additional juvenile justice contact either during or directly following (within the fiscal year) their treatment. However, drawing conclusions from this data is difficult due to significant variations in program length of stay and due to an end date for outcome data collection that was fixed (June 30, 2006), rather than a standard that could have been applied equally to all youth (e.g., data collection for all youth at 12 months post-discharge).

[7] Significance tests for differences not computed because of lack of comparability of categories between the two sites.
[8] Excludes five (5) youth removed completely from the discharge analysis (LOS and reason for discharge) because they were discharged after becoming Medicaid eligible after being enrolled in the program.
[9] Events occurring during and after treatment are combined because the ending date for events is not a fixed time, but is based on the end of the fiscal year. Depending on if and when they are discharged, youth do not have equal amounts of (if any) time post-program in which to measure outcomes.

Table 6: Juvenile Justice and Child Welfare Outcomes for Youth Served FY 2005-06

Site	Centennial MHC (Sterling)			MHCD (Denver)		
	Number of Events	Number of Youth	Percent of Youth Served **N=25**	Number of Events	Number of Youth	Percent of Youth Served **N=19**
Parole/Probation/Diversion Revocations	2	2	8%	0	0	--
New Offenses	4	6	24%	0	0	--
New Delinquency Filings	2	2	8%	0	0	--
Number of Detentions	9	6	28%	2	1	5%
Average LOS (by episode)	14.9 days			18.4 days		
DYC Commitments	0	0	--	0	0	--
Other OOH Placements	4	2	8%	1	1	5%
Average LOS	LOS not calculated due to missing data.			8 days		

Part II: Exploratory Analysis of Previously Collected and Reported Data: Services and Outcomes

Part II of this report focuses more closely on the specific services (type, intensity and duration) received by program and comparison group youth samples from past reports. Analysis of service profiles and associated outcomes includes all youth (program and comparison group) included in the Fiscal Year 2004-05 outcomes analysis (N=166). This includes youth served in the two pilot sites (Denver and Sterling) as well as those in the comparison community mental health sites.

New data were collected using service encounters submitted to the DMH by both the pilot and control sites. These data were analyzed in conjunction with the outcomes already reported in previous evaluation reports, incorporating analyses that were conducted by previous evaluation contractors. Some of the findings of past reports were replicated based on legacy data files in order to serve as checks on the new sets of analysis.

The purpose of this more in-depth analysis was to explore associations between specific service profiles (including the amount of services received) and positive juvenile justice and mental health outcomes. The process of conducting this exploratory analysis was iterative. The guiding over-arching research question posed was: Why did comparison group and pilot group youth demonstrate similar outcomes in the cumulative January 2006 Evaluation Report?

However, as data was gathered and analyzed, more specific questions emerged. These questions form the basis of the structure of Part II of this Evaluation Report and were formulated after consideration of previous evaluation findings. In order to provide context for this report, some previous evaluation findings are summarized here.

Emerging Research Questions:

1. How did outcomes differ between youth (both pilot and comparison) served in rural areas versus those served by Urban mental health agencies?
2. What were the differences in the type and intensity of services delivered to pilot vs. comparison group sites?
3. Is there a relationship between the type and intensity of services and previously reported youth outcomes?

Review of Previous Comparison Group Findings

This subsection summarizes findings from the previously submitted January 2006 data report that was authored by DMH in conjunction with an evaluation contractor different from the current evaluator. These specific findings were included as requested by DMH because they drove the formulation of research questions underlying this evaluation. While some summary statistics were able to be replicated by the current evaluator based on legacy data files available to this evaluation, all comparison findings reported remain as they were originally put forth, and have not been independently tested in total by this evaluator. Additional questions related to these analyses should be directed to the January 2006 report.

The evaluation design for the January 2006 data report included a comparison group of youth, matched to the pilot youth based on geographic region of the state, demographics (gender, race and age), mental health issues as identified by the legal, substance abuse and overall problem severity scores from the CCAR. The two groups of youth were also equivalent in terms of the numbers of delinquency filings and adjudications occurring in the 12 months before participation (in either the pilot program or in traditional mental health services). As seen in Table 8, both groups showed decreases in filings and adjudications in the 12 months directly following program participation.

Table 8: Juvenile Justice Events, Pilot and Comparison Youth

Event	12 Months Pre		12 Months Post		% Change Pre-Post	
Filings	Pilot	Comp	Pilot	Comp	Pilot	Comp
Number of Youth	36 (43%)	34 (41%)	26 (31%)	24 (29%)	-28%	-29%
Number of Filings	53	57	44	29	-17%	-49%
Adjudications	Pilot	Comp	Pilot	Comp	Pilot	Comp
Number of Youth	33 (40%)	31 (37%)	21 (25%)	16 (19%)	-36%	-48%
Number of Filings	40	42	25	19	-38%	-57%

(Table reproduced from previous evaluation findings).

An important component of the authorizing legislation was to reduce costs to the juvenile justice and child welfare systems through the provision of effective treatment. As part of the January 2006 report, costs associated with juvenile justice and child welfare events were calculated by multiplying the number of days in placement/sentence by average cost per day for the service.

Table 9 shows the cost calculation results for the two groups across those specific time periods and the overall pre-post treatment cost difference.

Table 9: Cost Calculations and Differences: Pre and Post Treatment

Event Costs	12 Months Pre		12 Months Post		$ Change Pre-Post	
	Pilot	Comp	Pilot	Comp	Pilot	Comp
Regular Probation	$71,400	$76,640	$20,440	$13,840	-$50,960	-$62,800
Intensive Supervision	$14,035	$15,330	$28,105	$15,300	$14,070	-$30
Detention	$178,929	$195,849	$162,573	$100,392	-$16,356	-$95,457
Commitment	$920,010	$672,854	$445,536	$510,146	-$474,474	-$162,708
Dept. of Corrections	0	0	$166,440	$27,740	$166,440	$27,740
Jail	$49,500	$3,780	$35,370	$18,180	-$14,130	$14,400
Res. Treatment Center	$163,878	$327,613	$508,079	$347,633	$344,201	$20,020
Total	**$1,397,752**	**$1,292,066**	**$1,366,543**	**$1,033,231**	**-$31,209**	**-$258,835**

(Table reproduced from previous evaluation findings).

Because some placements (DYC Commitment, DOC, Residential Treatment Centers [RTC], Detention) have such high per day costs, small numbers of youth who accumulate a large number of days can significantly drive cost differences observed. While both groups had lower costs in the 12 months following discharge than the 12 months prior to program admission, the decrease was larger for the comparison group.

Cost Differences in Rural vs. Urban Sites

The original comparison group outcome analysis matched youth based on geographic locations. That is to say, youth served in the Sterling, Colorado pilot site were matched with other youth receiving treatment from other rural mental health centers. Youth served by MHCD were matched with other youth served in the Denver Metro area. However, the January 2006 outcome analysis did not break out cost differences between rural and urban areas. One important question that emerged in examining the details around the link between service delivery and outcomes was the degree to which there were outcome differences between rural and urban youth.

Tables 10 and 11 on the following pages, show cost differences for pilot vs. comparison group youth, broken out by geographic (rural or urban) location of the site.

Table 10: Rural Site Cost Calculations and Differences: Pre and Post Treatment

Event Costs	12 Months Pre		12 Months Post		$ Change Pre-Post	
	Pilot	Comp	Pilot	Comp	Pilot	Comp
Regular Probation	$22,492	$36,760	$10,220	$10,220	-$12,272	-$26,540
Intensive Supervision	$6,370	$10,220	$28,105	$5,110	$21,735	$5,110
Detention	$95,598	$70,641	$81,921	$34,898	-$13,677	-$35,743
Commitment	$263,536	$294,112	$260,806	$158,522	-$2,730	-$135,590
Dept. of Corrections	$0	$0	$166,440	$0	$166,440	$0
Jail	$49,500	$0	$29,970	$12,780	-$19,530	$12,780
Res. Treatment Center	$84,799	$103,818	$217,789	$108,251	$132,990	$4,433
Total	**$522,295**	**$515,551**	**$795,251**	**$329,781**	**$272,956**	**-$185,770**

Table 11: Urban Sites Cost Calculations and Differences: Pre and Post Treatment

Event Costs	12 Months Pre		12 Months Post		$ Change Pre-Post	
	Pilot	Comp	Pilot	Comp	Pilot	Comp
Regular Probation	$48,908	$39,880	$10,220	$3,620	-$38,688	-$36,260
Intensive Supervision	$7,665	$5,110	$0	$10,190	-$59,714	$5,080
Detention	$83,331	$125,208	$80,652	$65,494	-$2,679	-$59,714
Commitment	$656,474	$378,742	$184,730	$351,624	-$471,744	-$27,118
Dept. of Corrections	$0	$0	$0	$27,740	$0	$27,740
Jail	$0	$3,780	$5,400	$5,400	$5,400	$1,620
Res. Treatment Center	$79,079	$223,795	$290,290	$239,382	$211,211	$15,587
Total	**$875,457**	**$776,515**	**$571,292**	**$703,450**	**-$304,165**	**-$73,065**

When separating the urban pilot and comparison sites from the rural sites, differences are seen in overall post program costs. Also, it is very important to note that the actual program costs are not included here and that the pilot programs cost a great deal more ($8,000 per youth) than the comparison group youth ($3,018 per youth). In the Denver site, $304,165 in costs were avoided in the 12 months post treatment, where it cost $376,000. This means that $1.20 was spent for every $1

avoided in the 12 months post treatment. For comparison group youth, $73,065 in costs were avoided in the 12 months post program, compared with $94,000 in program costs, which translates to $1.30 spent for every $1 in cost avoided.

In the rural areas, comparison group youth in rural areas showed a decrease in cost between the two periods (12 months pre admission and post enrollment). In comparison, the rural pilot youth served by Centennial actually showed a cost increase post-treatment.

In the urban areas, both the pilot and comparison sites showed decreases in post-treatment costs, over pre-treatment. However, the pilot site showed a greater net decrease in cost than the comparison group youth.

Descriptive/Exploratory Analysis of Services Provided

Because both comparison group youth and pilot youth seemed to show some improvements overall across juvenile justice encounters and costs outcomes, this evaluation undertook an analysis of the services received by each group. Data for this were gathered from service encounter data submitted to DMH by the mental health providers (both comparison and pilot sites). These encounters were verified by hand review of the charts at the pilot and comparison sites. However, because of billing differences for Access Behavioral Care (ABC) (the Denver pilot site during the evaluation period addressed here) services, individual encounter data were not available. Where possible, estimates have been made and used, based on national averages for MST services published by Multisystemic Therapy, Inc.

Table 12: Average Total Service Units per Youth

Group	N	Average Service Units Per Youth
Urban Pilot	46	60
Urban Comparison	46	20.8
Rural Pilot	37	80.8
Rural Comparison	37	14.0

Overall, youth participating in the pilot sites received a much greater number of units of service than did youth in comparison sites. However, it is important to note that the duration of a particular unit can vary greatly. For example, Individual or Brief Therapy is usually between 30 minutes to 2 hours, where Day Therapy involves service provision over an entire day (6 to 8 hours). Similarly, the intensity of service provision (in terms of contact time directed at an individual client or families and the type activity) can also vary a great deal. For example, family or individual therapy can involve more focused and directed efforts and better specified goals, whereas group therapy which touches more individuals is usually more diffuse in the subjects and targets of the therapy.

Table 13 shows the breakdown of services for each of the groups by specific type of service.

Table 13: Average Total Service Units per Youth, by Type of Activity

Type of Service	Rural Pilot	Rural Comparison	Urban Pilot[10]	Urban Comparison
Case Management	15.9	4.3		9.6
Individual/Brief Therapy	10.9	7.5		9.6
Group	41.4	0.7		0.2
Day Therapy	2.0	0.1		0.0
Family Therapy	0.9	0.0	N/A[11]	0.7
Inpatient	0.5	0.3		0.0
Other	9.2	1.1		0.7

As mentioned previously, youth served in pilot sites, overall, received larger quantities of service units than did comparison youth. The types of services however, were quite distinctive, particularly between the two pilot sites. It is also clear that a given unit means very different things in each system.

The Centennial youth received a great deal of group therapy as their primary method of treatment, along with case management and other treatment services. During the five years of program implementation the Centennial site was encouraged to increase its family therapy services, and some parent support and parent groups were added. However, the program remained very focused on a group therapy and day treatment model of service delivery. Evidence-based practice literature over the past five years has not shown day treatment as an effective intervention with youth with mental health needs at risk for juvenile justice system involvement.

Alternatively, the urban site, which provided Multisystemic Therapy (a family-based model) was based on an evidence-based practice that has demonstrated positive outcomes with youth at risk for involvement or recurring involvement in the juvenile justice system. However, a FY 2004-05 implementation report from Colorado MST Support Services showed mixed adherence to the MST model for the program in question, with low fidelity scores on therapist adherence measures that have been shown in the past to strongly correlate with positive juvenile justice outcomes. In addition, the program was geared towards a group of youth with more severe mental health needs than youth traditionally served by MST. In the years since this program was implemented, a new enhanced MST

[10] Because the overall MST treatment philosophy around service delivery, these categories are not useful in showing service units. However, almost all MST services would fall into the family therapy category based on DMH definitions.
[11] While overall units of service for MST can be estimated based on the MST model, it is not appropriate to disaggregate those units into the categories listed here. Based on these categories, most of the MST services would fall into the "family therapy" category.

model has begun to show promise with this group. However, the Denver youth were served under the traditional model.

Analysis of Links between Service Delivery and Outcomes

Based on the above discussion, it was hypothesized that service delivery may correlate with the outcomes for youth. However, data analysis to test this theory was limited because individual service unit data, matched to youth, was only available for both pilot and comparison group sites in the rural areas. As previously explained, data was available for the urban comparison group, but not the pilot site. To try to compensate for this, regression analyses were conducted to test whether services predicted the following specific outcomes in only the rural sites: filings, convictions, probation revocations, detention days, RTC days and changes in mental health functioning.

The first step of the analysis was to isolate external units of service (those provided by someone other than the mental health provider, either pilot or comparison) where the youth was admitted. This was a very small number of services in rural areas and was not a significant predictor of any of the outcomes listed above.

After determining that external service units were a small number of the overall service mix and were not influential on outcomes, the "Overall Service Intensity" of each youth's treatment was measured by the total number of internal service units received by a youth. We found that this did not predict juvenile justice outcomes or days spent in Residential Treatment post-program in any of the regression models.

- Overall Service Intensity (measured by total internal service units) was a significant predictor of improvements in the Depression problem severity scale of the CCAR at the $p>.05$ level, indicating that an increase in service units resulted in a small increase in the prediction that a youth would demonstrate an improvement in depression problem severity.[12] This result should be interpreted with caution, however, given the vast majority of analyses yielded no significant results.

Logistic and Linear Regressions were also run for specific services. Case Management, Group Therapy, and Individual/Brief Therapy were used as independent variables to predict outcomes because most youth received at least one unit of these services. For the most part, the types of services provided were not able to predict any of the outcomes in the analysis. A very small number of significant findings did occur.

- Individual and Brief Therapy units were correlated with the number of RTC days accrued following program discharge. An increase in one unit of brief or individual therapy units was actually associated with a slight increase (.44) in the number of RTC days accrued by a youth following program participation. This is not a surprising finding given that higher risk youth would have been more likely to receive more intensive therapy units, and the finding should not be interpreted as a causal relationship.

[12] (Wald Chi-Square = 3.94).

- In addition more units of Group Therapy were associated with improvements in anxiety and in substance abuse problem severities[13]. A larger number of Group Therapy units predicted improvements in the Anxiety and Substance Abuse Problem Severity subscales. Results of the logistic regression were nearly identical for both groups. Given that the vast majority of analyses show no significant relationships, these findings do not provide a great deal of information about the total impact of the programs.

The quantity of specific services did not predict any of the juvenile justice outcomes. That is to say using the types of services and quantity of each, the data were not able to distinguish youth with positive outcomes from those with negative juvenile justice outcomes in any reliable way.

Summary and Conclusions

In the past five years the H.B. 00-1034 pilot program has provided treatment and intervention services to youth with serious mental illness who have been involved with the juvenile justice system at two program sites: Sterling, Colorado (Centennial MHC) and Denver, Colorado (Access Behavioral Care FY 2001-2002 through FY 2005-06, then Mental Health Corporation of Denver).

Past evaluations of the two pilot sites have illustrated positive experiences and documented some positive outcomes for youth served in these programs. However, the most extensive evaluation of the projects was unable to attribute positive outcomes of participating youth directly to the programs. In the January 2006 evaluation report, both the youth receiving pilot services and the comparison youth receiving traditional mental health treatment showed similar positive outcomes. While the design of that evaluation did not allow for conclusions regarding what would have happened had youth received no mental health services, it is generally encouraging that both groups receiving treatment did show improved outcomes 12 months after participation in the program.

The current evaluation report examines data from past evaluation findings, compared with historical services data in order to determine if a specific type or intensity of services was associated with more positive outcomes. Few significant associations were found, although limitations of data available for analysis limited the range of analyses. First, no individual youth-level service data was available for the Denver site, which limited the analysis only to pilot and comparison group youth treated at rural sites. Second, while information was available on numbers of service units delivered, only general quantities of services could be described, without evidence of quality of service or more detailed accounting of the nature of the services delivered. This is a common obstacle in retrospective evaluations when analysis must rely on data collected in the past for other purposes.

Experiences and evaluation results related to the H.B. 00-1034 pilot program have offered preliminary encouraging impressions regarding the potential benefits of targeting services to youth with mental health needs who are involved in the juvenile justice system. This learning, combined with emerging national research regarding effective practices with this population and the availability of new information on some specific interventions (such as Multisystemic Therapy, Enhanced Multisystemic Therapy, and Dialectic Behavior Therapy) that have been proven to be effective, put

[13] Chi-Square=5.7 and p=.02

the Division of Mental Health in a position to continue to refine and evolve their strategies for treating this population.

Continuing the two pilot programs, without additional refinement and specification, is not likely to provide any new information for the Division. In addition, available data have not been able to demonstrate that the youth being served by the pilot receive any additional benefit that warrants the increased resources associated with the current project. However, resources allotted under H.B. 00-1034 could be effectively used in the spirit in which they were intended in order to continue to develop and refine a system of care that provides the best and most relevant treatment services to youth with serious mental illness who are involved with the juvenile justice system. Resources can be used in different ways, but the following three seem to fit both with the information available to date and with the goals of the authorizing legislation:

1. **Use resources to more broadly treat youth with serious mental illness using traditional services**. This would be an appropriate way to more broadly meet the needs of youth with serious mental illness who, because of mental health issues, may be at risk for juvenile justice system involvement. However, this will not address all of the criminogenic factors youth may experience. Therefore, this option would focus on improving youth's mental health functioning but would not necessarily translate into observable cost avoidance for the juvenile justice system.

2. **Target resources to two groups of youth, based on risk for re-offending**. One group would be young people with serious mental illness, but who have few additional risk factors for re-offending. The main goal of services directed at these youth would be to improve mental health and to prevent early juvenile justice involvement. The second group would be youth with both serious mental illness and also at moderate to high risk for re-offending. Much more intensive and targeted service delivery focusing on first mental health and second the other crimonogenic risk factors would likely produce better juvenile justice outcomes than a focus on mental health alone.

3. **Focus only on the highest need youth**. Target services to those youth both with serious mental illness and who are at moderate to high risk to re-offend.

Regardless of the direction prioritized by the Division and other stakeholders, it is strongly recommended that all future efforts follow the five principles outlined on page 3 of this report. Doing so does require that some resources that would be used for services be used for planning, implementation and monitoring. However, using this model to assure that the appropriate type and levels of services are delivered to youth that directly address the behavior to be changed has been shown to drastically improve outcomes leading to a much more effective use of funds.