

Colorado Medicaid
Community Mental Health Services Program

FY 07–08 PIP VALIDATION REPORT

The Identification and Use of Alternative and/or
Crisis Services to Ensure Treatment at the Least
Restrictive Level of Care for Medicaid Children
and Adolescents

for
Colorado Health Partnerships, LLC

May 2008

*This report was produced by Health Services Advisory Group, Inc. for the
Colorado Department of Health Care Policy & Financing.*



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Overview

The Balanced Budget Act of 1997 (BBA), Public Law 105-33, requires that states conduct an annual evaluation of their managed care organizations (MCOs) and prepaid inpatient health plans (PIHPs) to determine the MCOs' and PIHPs' compliance with federal regulations and quality improvement standards. According to the BBA, the quality of health care delivered to Medicaid consumers in MCOs and PIHPs must be tracked, analyzed, and reported annually. The Colorado Department of Health Care Policy & Financing (the Department) has contractual requirements with each MCO and behavioral health organization (BHO) to conduct and submit performance improvement projects (PIPs) annually.

As one of the mandatory external quality review activities under the BBA, the Department is required to validate the PIPs. To meet this validation requirement, the Department contracted with Health Services Advisory Group, Inc. (HSAG), as an external quality review organization. The primary objective of the PIP validation is to determine compliance with requirements set forth in the Code of Federal Regulations (CFR), at 42 CFR 438.240(b)(1), including:

- ◆ Measurement of performance using objective quality indicators.
- ◆ Implementation of system interventions to achieve improvement in quality.
- ◆ Evaluation of the effectiveness of the interventions.
- ◆ Planning and initiation of activities for increasing or sustaining improvement.

The Centers for Medicare & Medicaid Services (CMS) publication, *Validating Performance Improvement Projects: A Protocol for Use in Conducting Medicaid External Quality Review Activities*, Final Protocol, Version 1.0, May 1, 2002, was used in the evaluation and validation of the PIPs.

Summary of Study

The purpose of the study topic was to ensure treatment at the least restrictive level of care for Medicaid children and adolescents by identifying and using alternative and/or crisis services. *Mental Health: A Report of the Surgeon General*¹⁻¹ stated that inpatient hospitalization was the most restrictive and costliest form of treatment, and also was the clinical intervention with the weakest research support. A new contract in 2005 increased the inpatient rate by 37 percent during the first reporting period. Since children and adolescents make up 60 percent of the total **Colorado Health Partnerships, LLC (CHP)** Medicaid population, it was decided that interventions were required, and that any interventions would benefit all consumers. Therefore, the study focused on reducing inpatient hospitalizations for children and adolescents in **CHP's** population.

¹⁻¹ The Substance Abuse and Mental Health Services Administration and the National Institute of Mental Health. *Mental Health: A Report of the Surgeon General*. 1999. <http://www.surgeongeneral.gov/library/mentalhealth/home.html>

Study Topic

The study topic addressed CMS' requirement related to quality of, and access to, care and services. **CHP** chose *The Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents* as its clinical PIP topic. The study focused on reducing inpatient hospitalizations for children and adolescents in **CHP's** population.

The PIP's study question was: "Will the identification and use of education, coordination and/or service interventions for youth result in lower inpatient hospital admission rates and/or bed days for Medicaid children and adolescents?"

Study Methodology

The PIP had four study indicators, which **CHP** defined as:

- ◆ "Admissions per 1,000"
- ◆ "Bed days per 1,000"
- ◆ "Six-month bed days"
- ◆ "Six-month admissions"

The study population included all eligible children and adolescents 17 years of age or younger in the **CHP** Medicaid capitation area. There were no restrictions made based on the enrollment period. Consumers had to be Medicaid-eligible at the date of admission.

Sources for data collection were authorization data and Admission/Discharge Report Forms (Colorado West only). Statistical process control charts were updated quarterly to evaluate process trends and determine whether processes were in or out of control, and if the interventions were successful. No sampling techniques were used in this PIP.

Study Results

CHP completed baseline and the first and second remeasurements for four study indicators; the third remeasurement was completed for two study indicators. There was statistical evidence that demonstrated that the improvement was true improvement for some, but not all, of the study indicators across all the measurement periods. None of the study indicators demonstrated sustained improvement over comparable time periods, although some study indicators demonstrated statistically significant increases (negative outcomes) during some time periods. However, Study Indicators 1 and 2 demonstrated statistically significant increases (negative outcomes) from the first remeasurement to the second remeasurement. Study Indicator 3 demonstrated statistically significant increases (negative outcomes) from both January through June and June through December from baseline to the first remeasurement period. The following tables illustrate data findings for all study indicators.

Table 1-1—Study Indicator 1 Results

Study Indicator 1	Baseline Results	Remeasurement 1 Results	Remeasurement 2 Results	Remeasurement 3 Results
	4/1/04–3/31/05	1/1/05–12/31/05	1/1/06–12/31/06	1/1/07–12/31/07
Admissions per 1,000	6.21	5.90	7.13	5.94

Table 1-2—Study Indicator 2 Results

Study Indicator 2	Baseline Results	Remeasurement 1 Results	Remeasurement 2 Results	Remeasurement 3 Results
	4/1/04–3/31/05	1/1/05–12/31/05	1/1/06–12/31/06	1/1/07–12/31/07
Bed days per 1,000	51.23	49.13	55.86	46.72

Table 1-3—Study Indicator 3 Results

Study Indicator 3	Baseline A	Baseline B	Remeasurement 1a Results	Remeasurement 1b Results	Remeasurement 2a Results	Remeasurement 2b Results
	1/1/05–6/30/05	7/1/05–12/31/05	1/1/06–6/30/06	7/1/06–12/31/06	1/1/07–6/30/07	7/1/07–12/31/07
Six-month bed days	2,063	1,960	2,440	2,209	1,915	1,872

Table 1-4—Study Indicator 4 Results

Study Indicator 4	Baseline A	Baseline B	Remeasurement 1a Results	Remeasurement 1b Results	Remeasurement 2a Results	Remeasurement 2b Results
	1/1/05–6/30/05	7/1/05–12/31/05	1/1/06–6/30/06	7/1/06–12/31/06	1/1/07–6/30/07	7/1/07–12/31/07
Six-month admissions	257	226	310	283	261	221

Scoring

HSAG validates a total of 10 activities for each PIP. PIP validation takes place annually and reflects activities that have been completed. A health plan (BHO) may take up to three years to complete all 10 activities. Each activity consists of elements necessary for the successful completion of a valid PIP. Evaluation elements are the key CMS Protocol components for each activity that reflect the intent of what is being measured and evaluated. Some of the elements are critical elements and must be scored as *Met* to produce an accurate and reliable PIP. Given the importance of critical elements, any critical element that receives a *Not Met* score results in an overall PIP validation status of *Not Met*. If one or more critical elements are *Partially Met*, but none is *Not Met*, the PIP will be considered valid with low confidence. Revisions and resubmission of the PIP would be required.

Summary of Validation Findings

- ◆ For this review, 10 activities with a total of 53 elements were validated. Of this number:
 - 34 evaluation elements were *Met*.
 - 3 evaluation elements were *Partially Met*.
 - 1 evaluation element was *Not Met*.
 - 15 evaluation elements were *Not Applicable (NA)*.
- ◆ The total number of critical elements that were evaluated equaled 11. Of this number:
 - 8 critical elements were *Met*.
 - 0 critical elements were *Partially Met*.
 - 0 critical elements were *Not Met*.
 - 3 critical elements were *NA*.

The final validation finding for **CHP's** PIP showed an overall score of 89 percent, a critical element score of 100 percent, and *Met* validation status.

Conclusions

For this validation cycle, the study provided results for baseline and three remeasurements for Study Indicators 1 and 2. Two six-month period baselines and two six-month remeasurement periods were provided for Study Indicators 3 and 4. Control charts and Chi-square test results indicated that, overall, the interventions were successful in improving processes, child and adolescent admissions, and bed-day rates for the last remeasurement period.

Requirements

There were no requirements identified during this review.

Recommendations

None of the four study indicators demonstrated sustained improvement. HSAG recommends that a causal/barrier analysis be completed in order to determine if new interventions could be developed in order to achieve the desired outcomes for the PIP. HSAG recommends that **CHP** monitor the data from this PIP internally for a longer period of time.

Comparison of Years 1 Through 3

CHP completed Activities I through VIII for the fiscal year (FY) 05–06 validation cycle. The rates for both admissions and bed days showed initial increases, but then began to decrease. **CHP** reported that it was premature to determine the success of the study. HSAG identified inconsistencies with the data analysis plan and the data interpretation. As the PIP moves forward, these inconsistencies need to be addressed.

For the FY 06–07 validation cycle, **CHP** progressed through Activity X, receiving scores of 89 percent for evaluation elements *Met*, 100 percent for critical elements *Met*, and a *Met* validation status. The PIP progressed to the point of reporting second remeasurement findings for Study Indicators 1 and 2, and first remeasurement findings for Study Indicators 3 and 4. The inconsistencies in the data analysis plan were addressed. The PIP results demonstrated increases in all four study indicators. HSAG suggested that **CHP** complete a causal/barrier analysis to determine improvement strategies in order to achieve its desired outcomes across all study indicators.

For the FY 07–08 validation cycle, **CHP** progressed through Activity X, receiving scores of 89 percent for evaluation elements *Met*, 100 percent for critical elements *Met*, and a *Met* validation status. During this period, the PIP progressed through reporting third remeasurement findings for Study Indicators 1 and 2, and second remeasurement findings for Study Indicators 3 and 4. None of the four study indicators demonstrated sustained improvement. Study Indicators 1 and 2 had statistically significant increases (negative outcomes) from the first remeasurement to the second remeasurement. The results for Study Indicators 3 and 4 were mixed, but still did not demonstrate sustained improvement. **CHP** reported that retrospective eligibility, trends in eligibility, and what appeared to be intermittent eligibility errors that occur at the State level, affected the calculation of the admission and bed-days rates because of the variation in consumer eligibility numbers across all measurement periods.

2. Scoring Methodology

for Colorado Health Partnerships, LLC

Validating PIPs involves a review of the following 10 activities:

- ◆ Activity I. Appropriate Study Topic
- ◆ Activity II. Clearly Defined, Answerable Study Question
- ◆ Activity III. Clearly Defined Study Indicator(s)
- ◆ Activity IV. Use a Representative and Generalizable Study Population
- ◆ Activity V. Valid Sampling Techniques (If Sampling Was Used)
- ◆ Activity VI. Accurate/Complete Data Collection
- ◆ Activity VII. Appropriate Improvement Strategies
- ◆ Activity VIII. Sufficient Data Analysis and Interpretation
- ◆ Activity IX. Real Improvement Achieved
- ◆ Activity X. Sustained Improvement Achieved

All PIPs are scored as follows:

<i>Met</i>	(1) All critical elements were <i>Met</i> and (2) 80 percent to 100 percent of all critical and noncritical elements were <i>Met</i> . No action required.
<i>Partially Met</i>	(1) All critical elements were <i>Met</i> and 60 percent to 79 percent of all critical and noncritical elements were <i>Met</i> or (2) One critical element or more was <i>Partially Met</i> . Requires revision and resubmission of the PIP.
<i>Not Met</i>	(1) All critical elements were <i>Met</i> and less than 60 percent of all critical and noncritical elements were <i>Met</i> or (2) One critical element or more was <i>Not Met</i> . Requires revision and resubmission of the PIP.
<i>NA</i>	Not Applicable elements (including critical elements if they were not assessed) were removed from all scoring.

PIP Scores

For this PIP, HSAG reviewed all Activities. Table 2-1 and Table 2-2 show **CHP’s** scores based on HSAG’s PIP evaluation of *The Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents*. Each activity has been reviewed and scored according to HSAG’s validation methodology.

**Table 2-1—FY 07–08 Performance Improvement Project Scores
for The Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents
for Colorado Health Partnerships, LLC**

Review Activity	Total Possible Evaluation Elements (Including Critical Elements)	Total Met	Total Partially Met	Total Not Met	Total NA	Total Possible Critical Elements	Total Critical Elements Met	Total Critical Elements Partially Met	Total Critical Elements Not Met	Total Critical Elements NA
I. Appropriate Study Topic	6	6	0	0	0	1	1	0	0	0
II. Clearly Defined, Answerable Study Question	2	2	0	0	0	1	1	0	0	0
III. Clearly Defined Study Indicator(s)	7	5	0	0	2	3	3	0	0	0
IV. Use a Representative and Generalizable Study Population	3	3	0	0	0	2	2	0	0	0
V. Valid Sampling Techniques	6	0	0	0	6	1	0	0	0	1
VI. Accurate/Complete Data Collection	11	6	0	0	5	1	0	0	0	1
VII. Appropriate Improvement Strategies	4	3	0	0	1	No Critical Elements				
VIII. Sufficient Data Analysis and Interpretation	9	8	0	0	1	2	1	0	0	1
IX. Real Improvement Achieved	4	1	3	0	0	No Critical Elements				
X. Sustained Improvement Achieved	1	0	0	1	0	No Critical Elements				
Totals for All Activities	53	34	3	1	15	11	8	0	0	3

**Table 2-2—FY 07–08 Performance Improvement Project Overall Score
for The Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents
for Colorado Health Partnerships, LLC**

Percentage Score of Evaluation Elements <i>Met</i> *	89%
Percentage Score of Critical Elements <i>Met</i> **	100%
Validation Status***	<i>Met</i>

* The percentage score is calculated by dividing the total *Met* by the sum of the total *Met*, *Partially Met*, and *Not Met*.

** The percentage score of critical elements *Met* is calculated by dividing the total critical elements *Met* by the sum of the critical elements *Met*, *Partially Met*, and *Not Met*.

*** *Met* equals confidence/high confidence that the PIP was valid.

Partially Met equals low confidence that the PIP was valid.

Not Met equals reported PIP results that were not valid.

Validations and Findings Summary

This section summarizes the evaluation of the activities validated for the PIP. A description of the findings, strengths, requirements, and recommendations is outlined under each activity section. See Appendix B for a complete description of the CMS rationale for each activity.

CHP's PIP evaluated the quality of, and access to, care and services. **CHP** used four study indicators to collect the data and assess the outcomes for this study. The study indicators measured admissions per 1,000 consumers, bed days per 1,000 consumers, six-month bed days, and six-month admissions. **CHP** completed 10 activities for this validation cycle.

Activity I. Appropriate Study Topic

Study Topic

For the fiscal year (FY) 07–08 validation cycle, **CHP** continued with *The Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents* as its clinical PIP topic.

Finding(s)

All evaluation elements for this activity were *Met*, including one critical element.

Strength(s)

The study topic reflected high-risk conditions and a broad spectrum of care and services over time. All eligible consumers who met the study criteria were included, and members with special health care needs were not excluded. The study topic had the potential to affect consumer health and functional status.

Requirement(s) (for Critical Elements)

There were no requirements identified for this activity during this review.

Recommendation(s) (for Noncritical Elements)

There were no recommendations identified for this activity during this review.

Activity II. Clearly Defined, Answerable Study Question

Study Question(s)

CHPs' study question was, "Will the identification and use of education, coordination and/or service interventions for youth result in lower inpatient hospital admission rates and/or bed days for Medicaid children and adolescents?"

Finding(s)

Both evaluation elements for this activity were *Met*, including one critical element.

Strength(s)

The study question was answerable and was stated in clear, simple terms.

Requirement(s) (for Critical Elements)

There were no requirements identified for this activity during this review.

Recommendation(s) (for Noncritical Elements)

There were no recommendations identified for this activity during this review.

Activity III. Clearly Defined Study Indicator(s)

Study Indicator(s)

The PIP had four study indicators, which **CHP** defined as:

- ◆ "Admissions per 1,000"
- ◆ "Bed days per 1,000"
- ◆ "Six month bed days"
- ◆ "Six month admissions"

Finding(s)

Five of the seven evaluation elements were *Met*, including three critical elements. Two elements were *Not Applicable* because the study indicators were not nationally recognized measures and were not based on current, evidence-based practice guidelines, pertinent peer review literature, or consensus expert panels.

Strength(s)

The study indicators were well-defined, objective, and measurable. They allowed the study question to be answered and measured changes (outcomes) in consumer health and functional status.

Requirement(s) (for Critical Elements)

There were no requirements identified for this activity during this review.

Recommendation(s) (for Noncritical Elements)

There were no recommendations identified for this activity during this review.

Activity IV. Use a Representative and Generalizable Study Population

Study Population

The study population included all eligible consumers 17 years of age or younger in the **CHP** Medicaid capitation area. There were no restrictions made based on the enrollment period. Consumers had to be Medicaid-eligible at the date of admission.

Finding(s)

All evaluation elements for this activity were *Met*, including two critical elements.

Strength(s)

The method for identifying the eligible populations was accurately and completely defined, and captured all consumers to whom the study question applied.

Requirement(s) (for Critical Elements)

There were no requirements identified for this activity during this review.

Recommendation(s) (for Noncritical Elements)

There were no recommendations identified for this activity during this review.

Activity V. Valid Sampling Techniques

Sampling Technique(s)

The entire eligible population for each indicator was used. No sampling was performed.

Finding(s)

All six evaluation elements, including the one critical element, were *Not Applicable*.

Strength(s)

The results for this study represent all **CHP** consumers who met the eligible population criteria.

Requirement(s) (for Critical Elements)

There were no requirements identified for this activity during this review.

Recommendation(s)

There were no recommendations identified for this activity during this review.

Activity VI. Accurate/Complete Data Collection

Data Collection

Sources for data collection were authorization data and Admission/Discharge Report Forms (Colorado West only). Statistical process control charts were updated quarterly to evaluate process trends and determine whether the process was in or out of control, and if the interventions were successful.

Finding(s)

Six of the 11 evaluation elements were *Met* for this activity. Five elements were *Not Applicable*, including one critical element, because manual data collection was not used for this PIP.

Strength(s)

A defined and systematic data collection process for the collection of baseline and remeasurement data was discussed in the PIP. The administrative data collection process was discussed, and the estimated degree of administrative data completeness was reported as 98 percent for authorization data and 90–95 percent for eligibility data.

Requirement(s) (for Critical Elements)

There were no requirements identified for this activity during this review.

Recommendation(s) (for Noncritical Elements)

There were no recommendations identified for this activity during this review.

Activity VII. Appropriate Improvement Strategies

Improvement Strategies

The original interventions were revised based on data analysis findings. **CHP** initiated task groups and meetings with the primary goal of reviewing various programs to identify best practice alternative programs. One group found that approximately 26 percent of the admissions during 2005 were actually readmissions; also, a number of these readmissions occurred directly from residential treatment centers (RTCs). Educational/training interventions (primarily for RTCs) and an increase in staffing were implemented, and resulted in a decrease in readmissions. Additionally, there was an average decrease of one day in the length of stay for post-intervention readmissions. There is a plan in place for interventions with the two highest-volume RTC admitters.

Finding(s)

Three of the four evaluation elements for this activity were *Met*. One evaluation element was *Not Applicable* because improvement across all study indicators did not occur; therefore, standardization of interventions had not taken place at the time of the review.

Strength(s)

The interventions were related to causes/barriers identified through data analysis and quality improvement processes. The system changes noted in the PIP were likely to induce permanent change.

Requirement(s) (for Critical Elements)

There were no requirements identified for this activity during this review.

Recommendation(s) (for Noncritical Elements)

There were no recommendations identified for this activity during this review.

Activity VIII. Sufficient Data Analysis and Interpretation

Data Analysis and Interpretation

CHP used process-control charting to track both admissions per 1,000 consumers and bed days per 1,000 consumers for each quarterly reporting period. **CHP** used Chi-square testing to determine statistical significance between measurement periods. **CHP** completed baseline and the first and second remeasurements for four study indicators; the third remeasurement was completed for two study indicators. The following tables illustrate data findings for all study indicators.

Table 3-1—Study Indicator 1 Results

Study Indicator 1	Baseline Results	Remeasurement 1 Results	Remeasurement 2 Results	Remeasurement 3 Results
	4/1/04–3/31/05	1/1/05–12/31/05	1/1/06–12/31/06	1/1/07–12/31/07
Admissions per 1,000	6.21	5.90	7.13	5.94

Table 3-2—Study Indicator 2 Results

Study Indicator 2	Baseline Results	Remeasurement 1 Results	Remeasurement 2 Results	Remeasurement 3 Results
	4/1/04–3/31/05	1/1/05–12/31/05	1/1/06–12/31/06	1/1/07–12/31/07
Bed days per 1,000	51.23	49.13	55.86	46.72

Table 3-3—Study Indicator 3 Results

Study Indicator 3	Baseline A	Baseline B	Remeasurement 1a Results	Remeasurement 1b Results	Remeasurement 2a Results	Remeasurement 2b Results
	1/1/05–6/30/05	7/1/05–12/31/05	1/1/06–6/30/06	7/1/06–12/31/06	1/1/07–6/30/07	7/1/07–12/31/07
Six-month bed days	2,063	1,960	2,440	2,209	1,915	1,872

Table 3-4—Study Indicator 4 Results

Study Indicator 4	Baseline A	Baseline B	Remeasurement 1a Results	Remeasurement 1b Results	Remeasurement 2a Results	Remeasurement 2b Results
	1/1/05–6/30/05	7/1/05–12/31/05	1/1/06–6/30/06	7/1/06–12/31/06	1/1/07–6/30/07	7/1/07–12/31/07
Six-month admissions	257	226	310	283	261	221

Finding(s)

Eight of the nine evaluation elements for this activity were *Met*, including one critical element. One critical element was *Not Applicable* because sampling techniques were not used in this PIP.

Strength(s)

The data analysis was conducted according to the analysis plan and the study. The data findings were presented in an accurate, clear, and easily understood format. **CHP** identified factors that threatened the internal and external validity of the findings, and factors that affected the ability to compare measurement periods were discussed in the PIP. Statistical differences between measurement periods were identified.

Requirement(s) (for Critical Elements)

There were no requirements identified for this activity during this review.

Recommendation(s) (for Noncritical Elements)

There were no recommendations identified for this activity during this review.

Activity IX. Real Improvement Achieved**Real Improvement Achieved**

There was statistical evidence that demonstrated that the improvement was true improvement for some, but not all, of the study indicators across all the measurement periods.

Finding(s)

One evaluation element for this activity was *Met*. Three evaluation elements were *Partially Met*.

Strength(s)

The remeasurement methodology was the same as the baseline methodology. There was statistical evidence that demonstrated that the improvement was true improvement for some of the study indicators.

There was statistical evidence that demonstrated that the improvement was true improvement for Study Indicators 1 and 2 from the second remeasurement to the third remeasurement. Study Indicator 3 demonstrated statistical evidence of true improvement for remeasurement 1a/1b and remeasurement 2a/2b; however, Study Indicator 4 demonstrated true improvement for remeasurement 1b to remeasurement 2b only. The improvement for remeasurement 1a/2a was not statistically significant.

The improvement appeared to be the result of the planned interventions for those indicators that demonstrated improvement; however, not all study indicators demonstrated improvement across all remeasurement periods.

Requirement(s) (for Critical Elements)

There were no requirements identified for this activity during this review.

Recommendation(s) (for Noncritical Elements)

CHP may consider monitoring the data internally for a longer period of time in order to see if interventions result in sustained improvement.

Activity X. Sustained Improvement Achieved

Sustained Improvement Achieved

None of the study indicators demonstrated sustained improvement over comparable time periods, although some study indicators demonstrated statistically significant increases (negative outcomes) during some time periods.

Finding(s)

The evaluation element for this activity was *Not Met*.

Strength(s)

Study Indicators 1 and 2 demonstrated statistically significant increases (negative outcomes) from the first remeasurement to the second remeasurement. Study Indicator 3 had statistically significant increases (negative outcomes) from both January through June and June through December from baseline to the first remeasurement period.

Requirement(s) (for Critical Elements)

There were no requirements identified for this activity during this review.

Recommendation(s) (for Noncritical Elements)

None of the study indicators demonstrated sustained improvement over comparable time periods. HSAG recommends that **CHP** monitor data internally for a longer period of time to see if interventions produce sustained improvement across all indicators.

Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC

DEMOGRAPHIC INFORMATION

Health Plan Name:	Colorado Health Partnership, LLC		
Study Leader Name:	Erica Arnold-Miller	Title:	Director of Quality Management
Phone Number:	(719) 538-1450	E-mail Address:	erica.arnold-miller@valueoptions.com
Name of Project/Study:	Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents		
Type of Study:	Clinical		
Date of Study:	4/1/2005 to 12/31/2007		
Type of Delivery System:	BHO	Number of Medicaid Consumers in BHO:	155,003
		Number of Medicaid Consumers in Study:	94,053
Year 3 Validation:	Initial Submission		
Results:	Remeasurement 2		

**Section 4: Colorado FY 07-08 PIP Validation Tool:
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of
Care for Medicaid Children and Adolescents
for Colorado Health Partnership, LLC**

EVALUATION ELEMENTS		SCORING	COMMENTS
I.	Appropriate Study Topic: Topics selected for the study should reflect the Medicaid enrollment in terms of demographic characteristics, prevalence of disease, and the potential consequences (risks) of the disease. Topics could also address the need for a specific service. The goal of the project should be to improve processes and outcomes of health care. The topic may be specified by the State Medicaid agency or on the basis of Medicaid consumer input.		
	1. Reflects high-volume or high-risk conditions (or was selected by the State). NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The study topic reflected a high-risk condition.
	2. Is selected following collection and analysis of data. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The study topic was selected following the collection and analysis of data.
	3. Addresses a broad spectrum of care and services (or was selected by the State). The score for this element will be Met or Not Met.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The study topic addressed a broad spectrum of care and services over time.
	4. Includes all eligible populations that meet the study criteria. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	All eligible consumers who met the study criteria were included in the PIP.
	5. Does not exclude consumers with special health care needs. The score for this element will be Met or Not Met.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	Consumers with special health care needs were not excluded.
C*	6. Has the potential to affect consumer health, functional status, or satisfaction. The score for this element will be Met or Not Met.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The study topic had the potential to affect consumer health and functional status.

Results for Activity I				
# of Elements				
Critical Elements**	Met	Partially Met	Not Met	Not Applicable
1	6	0	0	0

* "C" in this column denotes a critical evaluation element.

** This number is a tally of the total number of critical evaluation elements for this review activity.

Section 4: Colorado FY 07-08 PIP Validation Tool:
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC

EVALUATION ELEMENTS		SCORING	COMMENTS
II.	Clearly Defined, Answerable Study Question: Stating the study question(s) helps maintain the focus of the PIP and sets the framework for data collection, analysis, and interpretation.		
	1. States the problem to be studied in simple terms. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The study question was stated in clear, simple terms, and maintained the focus of the PIP.
C*	2. Is answerable. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The study question was answerable.

Results for Activity II				
# of Elements				
Critical Elements**	Met	Partially Met	Not Met	Not Applicable
1	2	0	0	0

* "C" in this column denotes a critical evaluation element.

** This number is a tally of the total number of critical evaluation elements for this review activity.

Section 4: Colorado FY 07-08 PIP Validation Tool:
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC

EVALUATION ELEMENTS		SCORING	COMMENTS
III. Clearly Defined Study Indicator(s): A study indicator is a quantitative or qualitative characteristic or variable that reflects a discrete event (e.g., an older adult has not received a flu shot in the last 12 months) or a status (e.g., a consumer's blood pressure is or is not below a specified level) that is to be measured. The selected indicators should track performance or improvement over time. The indicators should be objective, clearly and unambiguously defined, and based on current clinical knowledge or health services research.			
C*	1. Are well-defined, objective, and measurable. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The study indicators were well-defined, objective, and measurable.
	2. Are based on current, evidence-based practice guidelines, pertinent peer review literature, or consensus expert panels.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input checked="" type="checkbox"/> NA	The study indicators were not based on current, evidence-based practice guidelines, pertinent peer review literature, or consensus expert panels.
C*	3. Allow for the study question to be answered. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The study indicators allowed for the study question to be answered.
	4. Measure changes (outcomes) in health or functional status, consumer satisfaction, or valid process alternatives. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The study indicators measured changes (outcomes) in consumer health and functional status.
C*	5. Have available data that can be collected on each indicator. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	There were data available to be collected on each study indicator.
	6. Are nationally recognized measures such as HEDIS specifications, when appropriate. The scoring for this element will be Met or NA.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input checked="" type="checkbox"/> NA	The study indicators were not nationally recognized measures.
	7. Includes the basis on which the indicator(s) was adopted, if internally developed.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The basis on which each study indicator was adopted was provided.

Results for Activity III				
# of Elements				
Critical Elements**	Met	Partially Met	Not Met	Not Applicable
3	5	0	0	2

* "C" in this column denotes a critical evaluation element.

** This number is a tally of the total number of critical evaluation elements for this review activity.

Section 4: Colorado FY 07-08 PIP Validation Tool:
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC

EVALUATION ELEMENTS		SCORING	COMMENTS
IV.	Use a representative and generalizable study population: The selected topic should represent the entire eligible Medicaid enrollment population with systemwide measurement and improvement efforts to which the PIP study indicators apply.		
C*	1. Is accurately and completely defined. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The method for identifying the eligible study population was completely and accurately defined.
	2. Includes requirements for the length of a consumer's enrollment in the BHO.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The method for identifying the eligible study population reported that there were no restrictions made based on the enrollment period. Consumers must be Medicaid-eligible at the date of admission.
C*	3. Captures all consumers to whom the study question applies. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The method for identifying the eligible study population captured all consumers to whom the study question applied.

Results for Activity IV				
# of Elements				
Critical Elements**	Met	Partially Met	Not Met	Not Applicable
2	3	0	0	0

* "C" in this column denotes a critical evaluation element.

** This number is a tally of the total number of critical evaluation elements for this review activity.

Section 4: Colorado FY 07-08 PIP Validation Tool:
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC

EVALUATION ELEMENTS	SCORING	COMMENTS
V. Valid Sampling Techniques: (This activity is only scored if sampling was used.) If sampling is to be used to select consumers of the study, proper sampling techniques are necessary to provide valid and reliable information on the quality of care provided. The true prevalence or incidence rate for the event in the population may not be known the first time a topic is studied.		
1. Consider and specify the true or estimated frequency of occurrence.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input checked="" type="checkbox"/> NA	Sampling techniques were not used in this PIP.
2. Identify the sample size.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input checked="" type="checkbox"/> NA	Sampling techniques were not used in this PIP.
3. Specify the confidence level.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input checked="" type="checkbox"/> NA	Sampling techniques were not used in this PIP.
4. Specify the acceptable margin of error.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input checked="" type="checkbox"/> NA	Sampling techniques were not used in this PIP.
C* 5. Ensure a representative sample of the eligible population.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input checked="" type="checkbox"/> NA	Sampling techniques were not used in this PIP.
6. Are in accordance with generally accepted principles of research design and statistical analysis.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input checked="" type="checkbox"/> NA	Sampling techniques were not used in this PIP.

Results for Activity V				
# of Elements				
Critical Elements**	Met	Partially Met	Not Met	Not Applicable
1	0	0	0	6

* "C" in this column denotes a critical evaluation element.

** This number is a tally of the total number of critical evaluation elements for this review activity.

Section 4: Colorado FY 07-08 PIP Validation Tool:
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC

EVALUATION ELEMENTS	SCORING	COMMENTS
VI. Accurate/Complete Data Collection: Data collection must ensure that the data collected on the PIP indicators are valid and reliable. Validity is an indication of the accuracy of the information obtained. Reliability is an indication of the repeatability or reproducibility of a measurement.		
1. Clearly defined data elements to be collected. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The data elements collected were identified in the PIP.
2. Clearly identified sources of data. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The sources for data collection were specified as authorization data and Admission/Discharge Report Forms (Colorado West only).
3. A clearly defined and systematic process for collecting data that includes how baseline and remeasurement data will be collected. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	A defined and systematic data collection process for the collection of baseline and remeasurement data was discussed in the PIP.
4. A timeline for the collection of baseline and remeasurement data. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	A timeline that included both the collection of baseline and remeasurement data was provided.
5. Qualified staff and personnel to abstract manual data.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input checked="" type="checkbox"/> NA	Manual data collection was not used in this PIP.
C* 6. A manual data collection tool that ensures consistent and accurate collection of data according to indicator specifications.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input checked="" type="checkbox"/> NA	Manual data collection was not used in this PIP.
7. A manual data collection tool that supports interrater reliability.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input checked="" type="checkbox"/> NA	Manual data collection was not used in this PIP.
8. Clear and concise written instructions for completing the manual data collection tool.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input checked="" type="checkbox"/> NA	Manual data collection was not used in this PIP.
9. An overview of the study in written instructions.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input checked="" type="checkbox"/> NA	Manual data collection was not used in this PIP.
10. Administrative data collection algorithms/flow charts that show activities in the production of indicators.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	A description of the administrative data collection process was included.

* "C" in this column denotes a critical evaluation element.

** This number is a tally of the total number of critical evaluation elements for this review activity.



Section 4: Colorado FY 07-08 PIP Validation Tool:
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC

EVALUATION ELEMENTS	SCORING	COMMENTS
VI. Accurate/Complete Data Collection: Data collection must ensure that the data collected on the PIP indicators are valid and reliable. Validity is an indication of the accuracy of the information obtained. Reliability is an indication of the repeatability or reproducibility of a measurement.		
11. An estimated degree of administrative data completeness. Met = 80 - 100% Partially Met = 50 - 79% Not Met = <50% or not provided	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The estimated degree of administrative data completeness was reported as 98 percent for authorization data and 90-95 percent for eligibility data. The process used to determine this percentage was discussed in the PIP.

Results for Activity VI				
# of Elements				
Critical Elements**	Met	Partially Met	Not Met	Not Applicable
1	6	0	0	5

* "C" in this column denotes a critical evaluation element.

** This number is a tally of the total number of critical evaluation elements for this review activity.

Section 4: Colorado FY 07-08 PIP Validation Tool:
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC

EVALUATION ELEMENTS	SCORING	COMMENTS
VII. Appropriate Improvement Strategies: Real, sustained improvements in care result from a continuous cycle of measuring and analyzing performance, and developing and implementing systemwide improvements in care. Interventions are designed to change behavior at an institutional, practitioner, or consumer level.		
1. Related to causes/barriers identified through data analysis and quality improvement processes. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The improvement strategies (interventions) were related to causes/barriers identified through data analysis and quality improvement processes.
2. System changes that are likely to induce permanent change.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The system changes noted in the PIP were likely to induce permanent change.
3. Revised if the original interventions were not successful.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The original interventions were revised based on data analysis findings.
4. Standardized and monitored if interventions were successful.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input checked="" type="checkbox"/> NA	Improvement across all study indicators did not occur; therefore, standardization of interventions had not taken place at the time of the review.

Results for Activity VII				
# of Elements				
Critical Elements**	Met	Partially Met	Not Met	Not Applicable
0	3	0	0	1

** This number is a tally of the total number of critical evaluation elements for this review activity.

Section 4: Colorado FY 07-08 PIP Validation Tool:
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC

EVALUATION ELEMENTS		SCORING	COMMENTS
VIII. Sufficient Data Analysis and Interpretation: Describe the data analysis process on the selected clinical or nonclinical study indicators. Include the statistical analysis techniques used.			
C*	1. Is conducted according to the data analysis plan in the study design. NA is not applicable to this element for scoring.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The data analysis was conducted according to the analysis plan in the PIP.
C*	2. Allows for the generalization of results to the study population if a sample was selected. If no sampling was performed, this element is scored NA.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input checked="" type="checkbox"/> NA	Sampling techniques were not used in this PIP.
	3. Identifies factors that threaten internal or external validity of findings.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	Factors that threatened the internal and external validity of the findings were discussed in the PIP documentation.
	4. Includes an interpretation of findings.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	An interpretation of the findings was included.
	5. Is presented in a way that provides accurate, clear, and easily understood information.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The data was presented in a clear, accurate, and easily understood format.
	6. Identifies initial measurement and remeasurement of study indicators.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The initial measurement and remeasurement for each study indicator were identified.
	7. Identifies statistical differences between initial measurement and remeasurement.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	Statistical differences between initial measurement and remeasurement were identified.
	8. Identifies factors that affect the ability to compare initial measurement with remeasurement.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The PIP discussed factors that affected the ability to compare measurement periods.
	9. Includes interpretation of the extent to which the study was successful.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	An interpretation of the extent to which the study was successful was provided.

* "C" in this column denotes a critical evaluation element.

** This number is a tally of the total number of critical evaluation elements for this review activity.



Section 4: Colorado FY 07-08 PIP Validation Tool:
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC

EVALUATION ELEMENTS	SCORING	COMMENTS
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Results for Activity VIII				
# of Elements				
Critical Elements**	Met	Partially Met	Not Met	Not Applicable
2	8	0	0	1

* "C" in this column denotes a critical evaluation element.

** This number is a tally of the total number of critical evaluation elements for this review activity.

Section 4: Colorado FY 07-08 PIP Validation Tool:
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC

EVALUATION ELEMENTS	SCORING	COMMENTS
IX. Real Improvement Achieved: Describe any meaningful change in performance observed and demonstrated during baseline measurement. Discuss any random year-to-year variation, population changes, and sampling error that may have occurred during the measurement process.		
1. Remeasurement methodology is the same as baseline methodology.	<input checked="" type="checkbox"/> Met <input type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The remeasurement methodology was the same as the baseline methodology.
2. There is documented improvement in processes or outcomes of care.	<input type="checkbox"/> Met <input checked="" type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	There was documented improvement in processes of care for some, but not all, study indicators across all measurement periods.
3. The improvement appears to be the result of planned intervention(s).	<input type="checkbox"/> Met <input checked="" type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	The improvement appeared to be the result of the planned interventions for those indicators that demonstrated improvement. Not all study indicators demonstrated improvement across all remeasurement periods.
4. There is statistical evidence that observed improvement is true improvement.	<input type="checkbox"/> Met <input checked="" type="checkbox"/> Partially Met <input type="checkbox"/> Not Met <input type="checkbox"/> NA	There was statistical evidence that demonstrated improvement was true improvement for Study Indicators 1 and 2 from the second remeasurement to the third remeasurement. Study Indicator 3 demonstrated statistical evidence of true improvement for remeasurement 1a/1b and remeasurement 2a/2b; however, Study Indicator 4 demonstrated true improvement for remeasurement 1b to remeasurement 2b only. The improvement for remeasurement 1a/2a was not statistically significant.

Results for Activity IX				
# of Elements				
Critical Elements**	Met	Partially Met	Not Met	Not Applicable
0	1	3	0	0

** This number is a tally of the total number of critical evaluation elements for this review activity.

Section 4: Colorado FY 07-08 PIP Validation Tool:
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC

EVALUATION ELEMENTS	SCORING	COMMENTS
X. Sustained Improvement Achieved: Describe any demonstrated improvement through repeated measurements over comparable time periods. Discuss any random year-to-year variation, population changes, and sampling error that may have occurred during the remeasurement process.		
1. Repeated measurements over comparable time periods demonstrate sustained improvement, or that a decline in improvement is not statistically significant.	<input type="checkbox"/> Met <input type="checkbox"/> Partially Met <input checked="" type="checkbox"/> Not Met <input type="checkbox"/> NA	<p>None of the study indicators demonstrated sustained improvement over comparable time periods. Study Indicators 1 and 2 demonstrated statistically significant increases (negative outcomes) from remeasurement 1 to remeasurement 2.</p> <p>The results for Study Indicators 3 and 4 were mixed and had not shown sustained improvement over comparable time periods. Study Indicator 3 had statistically significant increases (negative outcomes) for both January to June and June to January from baseline to the first remeasurement.</p>

Results for Activity X				
# of Elements				
Critical Elements**	Met	Partially Met	Not Met	Not Applicable
0	0	0	1	0

** This number is a tally of the total number of critical evaluation elements for this review activity.

Section 4: Colorado FY 07-08 PIP Validation Tool:
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC

Table 4-1—FY 07-08 PIP Validation Report Scores:											
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC											
Review Activity		Total Possible Evaluation Elements (Including Critical Elements)	Total Met	Total Partially Met	Total Not Met	Total NA	Total Possible Critical Elements	Total Critical Elements Met	Total Critical Elements Partially Met	Total Critical Elements Not Met	Total Critical Elements NA
I.	Appropriate Study Topic	6	6	0	0	0	1	1	0	0	0
II.	Clearly Defined, Answerable Study Question	2	2	0	0	0	1	1	0	0	0
III.	Clearly Defined Study Indicator(s)	7	5	0	0	2	3	3	0	0	0
IV.	Use a representative and generalizable study population	3	3	0	0	0	2	2	0	0	0
V.	Valid Sampling Techniques	6	0	0	0	6	1	0	0	0	1
VI.	Accurate/Complete Data Collection	11	6	0	0	5	1	0	0	0	1
VII.	Appropriate Improvement Strategies	4	3	0	0	1	0	No Critical Elements			
VIII.	Sufficient Data Analysis and Interpretation	9	8	0	0	1	2	1	0	0	1
IX.	Real Improvement Achieved	4	1	3	0	0	0	No Critical Elements			
X.	Sustained Improvement Achieved	1	0	0	1	0	0	No Critical Elements			
Totals for All Activities		53	34	3	1	15	11	8	0	0	3

Table 4-2—FY 07-08 PIP Validation Report Overall Scores:	
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC	
Percentage Score of Evaluation Elements Met*	89%
Percentage Score of Critical Elements Met**	100%
Validation Status***	Met

- * The percentage score is calculated by dividing the total Met by the sum of the total Met, Partially Met, and Not Met.
- ** The percentage score of critical elements Met is calculated by dividing the total critical elements Met by the sum of the critical elements Met, Partially Met, and Not Met.
- *** Met equals confidence/high confidence that the PIP was valid.
 Partially Met equals low confidence that the PIP was valid.
 Not Met equals reported PIP results that were not credible.

Section 4: Colorado FY 07-08 PIP Validation Tool:
Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents for Colorado Health Partnership, LLC

EVALUATION OF THE OVERALL VALIDITY AND RELIABILITY OF PIP RESULTS

HSAG assessed the implications of the study's findings on the likely validity and reliability of the results based on CMS Protocols. HSAG also assessed whether the State should have confidence in the reported PIP findings.

***Met = Confidence/high confidence in reported PIP results**

****Partially Met = Low confidence in reported PIP results**

*****Not Met = Reported PIP results not credible**

Summary of Aggregate Validation Findings

* **Met**

** **Partially Met**

*** **Not Met**

Summary statement on the validation findings:

Activities I through X were assessed for this PIP Validation Report. Based on the validation of this PIP, HSAG's assessment determined confidence in the results.

Introduction

The appendices consist of documentation supporting the validation process conducted by HSAG using the CMS Protocol for validating PIPs. Appendix A is the study **CHP** submitted to HSAG for review, Appendix B is the CMS rationale for each activity, and Appendix C includes PIP definitions and explanations.

- ◆ Appendix A: **Colorado Health Partnerships, LLC's** PIP Study: *The Identification and Use of Alternative and/or Crisis Services to Ensure Treatment at the Least Restrictive Level of Care for Medicaid Children and Adolescents*
- ◆ Appendix B: CMS Rationale by Activity
- ◆ Appendix C: Definitions and Explanations by Activity



Appendix A: PIP Summary Form:
The Identification and Use of Alternative and/or Crisis Services to
Ensure Treatment at the Least Restrictive Level of Care for Medicaid
Children and Adolescents
for **Colorado Health Partnerships, LLC**

DEMOGRAPHIC INFORMATION

BHO Name or ID: Colorado Health Partnerships

Study Leader Name: Erica Arnold-Miller Title: Director of Quality Management

Telephone Number: (719) 538-1450 E-Mail Address: erica.arnold-miller@valueoptions.com

Name of Project/Study: The identification and use of alternative and/or crisis services to ensure treatment at the least restrictive level of care for Medicaid children and adolescents

Type of Study: Clinical Nonclinical

Date of Study Period: From 4/1/05 to 12/31/2007

155,003 Average Monthly Number of Medicaid Consumers (all ages) in BHO for Q1 CY2005

94,053 eligible youth (<18) Average Monthly Number of Medicaid Consumers in Project/Study (<18 years of age) for Q1 CY2005

Children and Adolescents constitute 60% of the total eligible Medicaid population managed by Colorado Health Networks.

Section to be completed by HSAG

____ Year 1 Validation ____ Initial Submission ____ Resubmission
 ____ Year 2 Validation ____ Initial Submission ____ Resubmission
X Year 3 Validation X Initial Submission ____ Resubmission

Section to be completed by HSAG

____ Baseline Assessment ____ Remeasurement 1
X Remeasurement 2 ____ Remeasurement 3

**Appendix A: PIP Summary Form:
The Identification and Use of Alternative and/or Crisis Services to
Ensure Treatment at the Least Restrictive Level of Care for Medicaid
Children and Adolescents
for Colorado Health Partnerships, LLC**

A. Activity I: Choose the study topic. PIP topics should target improvement in relevant areas of services and reflect the population in terms of demographic characteristics, prevalence of disease, and the potential consequences (risks) of the disease. Topics may be derived from utilization data (ICD-9 or CPT coding data related to diagnoses and procedures; NDC codes for medications; state HCPC codes for medications, medical supplies, and medical equipment; adverse events; admissions; readmissions; etc.); grievances and appeals data; survey data; provider access or appointment availability data; consumer characteristics data such as race/ethnicity/language; other fee-for-service data; local or national data related to Medicaid risk populations; etc. The goal of the project should be to improve processes and outcomes of health care or services in order to have a potentially significant impact on consumer health, functional status, or satisfaction. The topic may be specified by the State Medicaid agency or CMS and be based on input from consumers. Over time, topics must cover a broad spectrum of key aspects of consumer care and services, including clinical and nonclinical areas, and should include all enrolled populations (i.e., certain subsets of consumers should not be consistently excluded from studies).

Study Topic: The identification and use of alternative and/or crisis services to ensure treatment at the least restrictive level of care for Medicaid children and adolescents.

Inpatient Hospitalization is cited as the most restrictive and costliest form of treatment in the Surgeon General's Report (1999) while at the same time being "the clinical intervention with the weakest research support". It is very disruptive to the lives of the youths admitted as well as to their families. It consumes financial resources that could best be allocated to other less restrictive interventions of equal or better effectiveness. The Surgeon General also goes on to discuss the importance and efficacy of other, community based, interventions including crisis intervention services, intensive case management, home based services, and other alternatives to inpatient treatment. These alternative types of services can be more effective clinically and much less disruptive to the youths and their families. CHN routinely monitors inpatient admission and utilization data to evaluate the effectiveness of our efforts to provide adequate crisis interventions and appropriate clinical alternatives to inpatient treatment through our Bed Days reporting. With the onset of new contract and the addition of the Pike's Peak population, an increase in youth admissions was seen over expectation based upon previous inpatient trends for this population. The inpatient admission rate was 4.7 per 1,000 youth during the previous reporting period but increased 35% to 6.21 per 1,000 during the first reporting period of 2005. Youth consumers requiring inpatient hospitalization are either at serious risk for hurting themselves or others or have symptoms which critically impact their ability to function at home, school or in the community and are therefore a high-risk population. Due to the high-risk nature of this population and the fact that youth comprise 60% of the total CHN Medicaid population (high volume) it was decided that interventions were required and that any interventions established would benefit all consumers. Therefore the CHN PIP will focus on all youth and not just those in the added capitation area.

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B. Activity II: Define the study question(s). Stating the question(s) helps maintain the focus of the PIP and sets the framework for data collection, analysis, and interpretation.

Study Question: Will the identification and use of education, coordination and/or service interventions for youth result in lower inpatient hospital admission rates and/or bed days for Medicaid children and adolescents?

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C. Activity III: Select the study indicator(s). A study indicator is a quantitative or qualitative characteristic or variable that reflects a discrete event (e.g., an older adult has not received an influenza vaccination in the last twelve months), or a status (e.g., a consumer's blood pressure is/is not below a specified level) that is to be measured. The selected indicators should track performance or improvement over time. The indicators should be objective, clearly and unambiguously defined, and based on current clinical knowledge or health services research.

Study Indicator 1	Admissions per 1,000
Numerator	Formula (Admits/Eligible Member Months) x 1000 x 12: (Total number of child and adolescent admissions to an inpatient level of care) X 1,000 X 12
Denominator	(Total eligible youth member months)
First Measurement Period Dates	04/01/2004 through 03/31/2005
Benchmark	
Source of Benchmark	
Baseline Goal	4.9 Admits/1,000 (Based upon UCL for previous four reporting periods) with four successive reporting periods “in control”
Study Indicator 2	Bed days per 1,000
Numerator	Formula (Total bed days/Eligible Member Months) x 1000 x 12: (Total bed days) X 1,000 X 12
Denominator	(Total eligible youth member months)
First Measurement Period Dates	04/01/2004 through 03/31/2005
Benchmark	
Source of Benchmark	
Baseline Goal	41.97 Bed Days/1,000 (Based upon UCL for previous four reporting periods) with four successive reporting periods “in control”.)

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C. Activity III: Select the study indicator(s). A study indicator is a quantitative or qualitative characteristic or variable that reflects a discrete event (e.g., an older adult has not received an influenza vaccination in the last twelve months), or a status (e.g., a consumer's blood pressure is/is not below a specified level) that is to be measured. The selected indicators should track performance or improvement over time. The indicators should be objective, clearly and unambiguously defined, and based on current clinical knowledge or health services research.

Study Indicator 3	Six Month Bed Days
Numerator	Total Inpatient Days
Denominator	Average eligible youth members months
First Measurement Period Dates	01/01/2005 through 06/30/2005; 7/01/05 through 12/31/05
Benchmark	
Source of Benchmark	
Baseline Goal	Rate of 41.97 Bed Days per 1000 eligibles, based upon the upper control limit for the previous five reporting periods
Study Indicator #4	Six Month Admissions
Numerator:	Total Number of Admissions
Denominator:	Average eligible youth member months
First Measurement Period Dates:	1/1/2005 through 6/30/2005; 7/1/05 through 12/31/05
Benchmark:	
Source of Benchmark:	
Baseline Goal:	Rate of 4.9 Admissions per 1000 eligibles, based upon the upper control limit for previous five reporting periods.

Use this area for the provision of additional information:

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D. Activity IV: Use a representative and generalizable study population. The selected topic should represent the entire Medicaid enrolled population, with system wide measurement and improvement efforts to which the study indicators apply. Once the population is identified, a decision must be made whether to review data for the entire population or a sample of that population. The length of a consumer's enrollment needs to be defined in order to meet the study population criteria.

Study population:

Identified Study Population: The population to be used in this study includes all eligible youth members (17 or under) in the CHN Medicaid Capitation area. Numerator: An admission will be counted if the youth is authorized for an inpatient admission, is eligible for Medicaid on the date of admission, and is 17 years of age or younger on the date of admission. No restrictions will be made based on enrollment period (other than to be Medicaid eligible at the date of admission). No restrictions will be made based on diagnosis or other criteria. Denominator: The PIP will be based upon the entire CHN youth population. An "Eligible Youth Member Month" is any and all youth who were eligible at any time during the month as reported to CHN by the State.

No sampling will be used.

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E. Activity V: Use sound sampling methods. If sampling is to be used to select consumers of the study, proper sampling techniques are necessary to provide valid and reliable information on the quality of care provided. The true prevalence or incidence rate for the event in the population may not be known the first time a topic is studied.

Measure	Sample Error and Confidence Level	Sample Size	Population	Method for Determining Size (<i>describe</i>)	Sampling Method (<i>describe</i>)

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F. Activity VIa: Use valid and reliable data collection procedures. Data collection must ensure that the data collected on study indicators are valid and reliable. Validity is an indication of the accuracy of the information obtained. Reliability is an indication of the repeatability or reproducibility of a measurement.

Data Sources

- Hybrid (medical/treatment records and administrative)
- Medical/Treatment Record Abstraction
 - Record Type
 - Outpatient
 - Inpatient
 - Other _____
 - Other Requirements
 - Data collection tool attached
 - Data collection instructions attached
 - Summary of data collection training attached
 - IRR process and results attached
- Other data

Description of data collection staff (include training, experience and qualifications):

Dan Leslie, B.S., – Business Analyst

 Scott Jones, M.Ed., LPC – Clinical Business Analyst

 Michael Denhof, PhD – Clinical Business Analyst

- Administrative Data
 - Data Source
 - Programmed pull from claims/encounters
 - Complaint/appeal
 - Pharmacy data
 - Telephone service data /call center data
 - Appointment/access data
 - Delegated entity/vendor data _____
 - Other Authorization Data, Admission/Discharge Report Forms (Colo West only)
 - Other Requirements
 - Data completeness assessment attached
 - Coding verification process attached
- Survey Data
 - Fielding Method
 - Personal interview
 - Mail
 - Phone with CATI script
 - Phone with IVR
 - Internet
 - Other _____
 - Other Requirements
 - Number of waves _____
 - Response rate _____
 - Incentives used _____

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F. Activity VIb: Determine the data collection cycle.	Determine the data analysis cycle.
<input type="checkbox"/> Once a year <input type="checkbox"/> Twice a year <input type="checkbox"/> Once a season <input checked="" type="checkbox"/> Once a quarter <input type="checkbox"/> Once a month <input type="checkbox"/> Once a week <input type="checkbox"/> Once a day <input type="checkbox"/> Continuous <input type="checkbox"/> Other (list and describe): Also, once every six months for annual comparison <hr/> <hr/> <hr/> <hr/>	<input checked="" type="checkbox"/> Once a year <input type="checkbox"/> Once a season <input checked="" type="checkbox"/> Once a quarter <input type="checkbox"/> Once a month <input type="checkbox"/> Continuous <input type="checkbox"/> Other (list and describe): <hr/> <p>The statistical process control charts will be updated at least annually to evaluate process trends and whether the process is in or out of control. In addition, admission and bed days data for a six month period will be tested against the same six month period in the next year to determine whether interventions are effective.</p> <hr/> <hr/>

F. Activity VIc. Data analysis plan and other pertinent methodological features. Complete only if needed.

Estimated percentage degree of administrative data completeness: _____ percent.

Supporting documentation:

Data Collection Methodology

CHP routinely evaluates inpatient utilization using the industry norms of Admits/1,000 & Bed Days/1,000. These indicators were adopted because they are standard measures within the industry to trend inpatient utilization. The “per 1,000” calculations provide the ability to compare different areas or eligibility categories by accounting for differences in population sizes. Because these reports are pulled for a one year time frame on a rolling quarter basis, each reporting period is made up of one year’s data, and

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F. Activity VIc. Data analysis plan and other pertinent methodological features. Complete only if needed.

any seasonal fluctuations are accounted for. When a CHN member meets the criteria for inpatient treatment and is admitted to an inpatient facility, a clinical care manager enters an “authorization” for this treatment into our integrated computer system (MHS). MHS combines the eligibility information provided by the state (including effective and end dates of eligibility), the member demographic information (including date of birth), authorization information (including the admission date and subsequent days authorized) and claims information. Any authorizations that are “pending” obtaining additional clinical information or current eligibility information are converted to an authorization once this information is obtained. If an inpatient admission is denied for administrative reasons (failure to notify us or provide clinical information) the clinical care manager will enter “DCC” in the reason code. Because the admission may have been clinically appropriate but denied only for administrative reasons, these cases are captured in the Bed Days report series as well. This also includes cases in which only part of an episode of care is denied for administrative rather than clinical reasons. However, if an episode is denied due to lack of clinical justification, the case is not captured in the reporting series. The authorization and eligibility information is downloaded into our Data Warehouse on a weekly basis and available for reporting each Monday. Record counts are maintained on the amount of data in the warehouse and any records added to insure that no records are lost and maintain data integrity. To ensure the accuracy of the authorization data, a weekly “auth error report” is run to identify any cases in which an invalid authorization code is used for an inpatient auth type or if there are any discrepancies in the number of units versus the dates entered. Any errors found are corrected or will show up when the report is re-run. Admit/1,000 reporting captures all unique admissions (member & admission date) with an auth type of “I” (Inpatient) and a reason code of “A” (Approved) or “DCC”. Bed Days/1,000 captures all inpatient days authorized (or “DCC”) during this stay. Eligibility information is provided by the State to CHP and is also available in our data warehouse. This information contains the required Medicaid eligibility effective dates, term dates, Medicaid ID, and date of birth. Age is determined by difference in the admit date and the birth date. Pikes Peak MHC data was annualized for the initial three reporting periods in order to allow for more accurate comparative analysis with the other mental health centers in the CHP partnership.

Beginning in December 2006, CHP began to collect data from the West Slope Regional Crisis Stabilization Unit (WSRCSU) through faxed admission/discharge forms, rather than using authorizations to identify admissions and discharges. This change would potentially impact only one month of the 2006 data. As the WSRCSU has moved to claims submission from encounter-based data submission, we are able to verify the accuracy of the faxed information against the claims filed to ensure all admissions and discharges are being accurately reported. For 2007, CHP continued to use admission/discharge forms received from the West Slope Regional Crisis Stabilization Unit (WSRCSU) to track youth admissions and discharges for that facility only. Data collected through the forms was compared to data on youth admissions received through claims for the year; the comparison showed a data accuracy rate of 97%.

Control Charts

Process control charting will be used to track both Admits/1,000 and Bed Days/1,000 for each quarterly reporting period using the rolling quarter method described above. Statistical Process Control has been described as “the use of statistical methods to monitor the functioning of a process so that you can adjust or fix it when necessary and can leave it alone when it is working properly”¹ While control charting has been used historically in the manufacturing industries to monitor product and process control, it has gained acceptance in the healthcare field as a viable measurement for processes related to patient care and safety. The Joint Commission on Accreditation of Healthcare Organizations has used process control methods since 1997 and in their February 2002 journal issue published their use of control charting for performance measurements². A

¹ Siegel, A. F. (1990). *Practical Business Statistics with StatPad*. (pp. 728). Boston, MA. Irwin.

² Kwan, L. & McGreevey, C. (2002). Using Control Charts to Assess Performance Measurement Data. *Joint Commission Journal on Quality and Patient Safety*, 28,no. 2, pp. 90-101.

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F. Activity VIc. Data analysis plan and other pertinent methodological features. Complete only if needed.

control chart for each measure (Admits/1,000 and Bed Days/1,000) will be generated to trend the data with control limits set at “two sigma” or one standard deviation. Control charting allows data to be trended over time and identifies when a process (in this cases admissions and/or bed days) is “out of control”. This statistical process will enable CHP to set benchmarks and goals based on the data and determine if continued progress is met by maintaining the measures within the control limit over the specified time frame.

Admission and Bed Day rates were calculated for the time periods leading up to the introduction of a new service area and population—the Pike’s Peak service area, covering three counties in Colorado Springs. (See Attachments A and B). As the charts show, Admission and Bed Day rates moved above the Upper Control Limit (UCL) of previous rates (which constitute our baseline). While the baseline time period differs slightly from the re-measurement period timeframes, it is still a one-year measure and includes comparable seasonal data to allow consistent measurement and comparison. The re-measurement period timeframes differ because we felt it was important to align the re-measurement period with contract start date since the addition of the Pikes Peak service area was associated with the increase in youth admissions and bed days.

Data was collected 45 days after each reporting period.

Data Analysis

In addition to process control methods, CHP will assess comparable 6-month time periods for statistically significant changes. Since the Admits/1,000 and Bed Days/1,000 numbers are formulas and do not lend themselves to accurate statistical measurement, the raw data used as the basis for calculating these formulas was used to calculate the Chi-Square test statistics. Total Admissions and Inpatient Bed Days will be calculated for each six-month period and used in conjunction with the average eligibility for youth during the same periods. In this manner, the same six-month periods for each year can be compared. The Chi-Square test assesses for the difference in two proportions (i.e., admissions or bed days divided by the average number of eligible youth for a given time period). Historically, inpatient utilization has been lower during the summer months. By looking at the data from January – June and July – December and comparing these data to the same time periods in subsequent years, the summer months were spread over both periods. Further analysis was conducted to determine the impact of any seasonal effects on the data. Note: At the end of 2007, significance testing was conducted on yearly time periods as well.

Data was collected 45 days after each reporting period. Data collection was based on authorization and eligibility data. Estimated completeness of authorization data is 98% within 45 days; eligibility data is estimated to be 90-95% complete within 45 days. However, due to issues surrounding the implementation of the Colorado Benefits Management System in late 2004 (described in Step 8B), eligibility data was run repeatedly over time to produce the most accurate figures possible. Eligibility data is obtained from the State and is subject to retrospective eligibility adjustments by the State. Changes resulted in adjustments to both numerator and denominator values used to calculate admission and bed day rates throughout the study’s total time frame.

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G. Activity VIIIb: Implement intervention and improvement strategies. Real, sustained improvements in care result from a continuous cycle of measuring and analyzing performance, and developing and implementing systemwide improvements in care. Describe interventions designed to change behavior at an institutional, practitioner, or consumer level.

Describe interventions:

As previously discussed, an increase in admissions and bed days for youth was observed following the addition of the Pikes Peak service area in January 2005. However, other mental health centers in the service area also routinely struggled to ensure alternative services were available to effectively support youth in crisis who are risk for hospitalization. Interventions were initially focused in the Pikes Peak region, which showed the greatest volume increase in youth admissions and bed days.

Pikes Peak Mental Health Center initially concentrated on learning a new process and system for evaluating and determining, in collaboration with the Care Management Department at CHP, whether youth met the criteria for an inpatient admission. This adjustment included taking a leadership role in establishing working relationships with community hospitals to evaluate youth in crisis, and identifying the full continuum of community resources to support youth in crisis, as Pikes Peak had a limited capacity to manage the volume of youth needing crisis support services at that time.

Shortly after the beginning of the new contract, two fundamental steps were taken to assure appropriate hospital placement for youth: ensuring crisis services were fully and appropriately staffed; and educating crisis staff about appropriateness for inpatient care, referral options and the importance of coordination of services amongst all providers and agencies. Training was conducted by clinical program leadership.

Over the next several months, a variety of program enhancements, expansions and additions were initiated to assure an appropriate array of services were available and accessible to those children and adolescents in crisis. These included:

April 2005

- Staff began making reminder calls for all crisis appointments – 48 hours prior to the appointment.

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August 2005

- Initiated discussions of child/adolescent inpatient admissions in the monthly crisis staff meetings to identify and address issues.
- Through addition of psychiatric time, psychiatric appointments were made available within one to two days of crisis assessment, increasing access to medication appointments for children and adolescents in crisis.
- Adolescent wrap-around services, including direct access to family preservation services, were expanded. This included hiring a new clinician dedicated to these services; increasing age-appropriate groups (previously 18-20, now 37) that varied in type, were evidence-based, and open, to allow almost immediate access. In addition, “parallel” groups were implemented for parents.
- A brief orientation for families was initiated that occurs just prior to intake. This time is used to educate families on treatment expectations, available services, etc.

At the May 20, 2005 QISC meeting, a task group was established to oversee the management of this performance improvement project. The task group included staff from the CHN service center as well as mental health center representatives, including representatives from mental health centers seeking more effective alternative and crisis services for youth. The task group began meeting in June 2006. The focus of the PIP task group meetings included identifying problems and barriers in that may contribute to increasing admissions and/or bed days for youth, such as the viability of using certain crisis programs in different parts of the service area, lack of effectiveness of some programs, certain facilities that are difficult to work with for various reasons, lack of appropriate alternatives, the special needs of dually diagnosed youth, hospitalizations outside of the CHP service area, etc. In addition, the task group worked on identifying all current alternative crisis services, and interventions or new services implemented, as well as establishing a process for gathering information and reviewing and identifying best practice alternatives and crisis programs across the CHP system. This process will include a review to determine why less effective programs have been unsuccessful. The ultimate goal of the review of these programs is to identify best practice alternative programs and key components present in the most effective alternatives, and to ensure all programs in our system targeted to youth crisis alternatives include these components. The process of identifying the key successful program components is vital in the CHP system, due to the nature of our service area. The varying sizes and population densities (urban, rural and frontier) of our geographic areas make the feasibility of using a single program-based intervention unlikely to be successful. A program that works for an urban center may not work at all in a rural area – but the identification and incorporation of key success components poses a greater likelihood of effectiveness across all regions. Completion of the identification of these components occurred during spring of 2006, with dissemination and implementation immediately following.

Remeasurement 1 to Remeasurement 2:

During the April 14, 2006 Task Group meeting, the group evaluated more detailed data reports on the youth admitted, and discovered that approximately 26% of the admissions during 2005 were actually readmissions – in some cases, several readmissions for some clients. Seventy unique members had multiple (two or more) admissions during calendar year 2005, for a total of 123 readmissions. Types and amounts of services provided between readmissions were also reviewed. One hundred-four (85%) of the 123 readmissions had some type of encounter between admissions; 66% of the 123 readmissions had a follow-up contact within seven days of discharge. This prompted questions about how high-risk

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youth were identified and tracked within the care delivery system, and whether these youth were getting the most effective services available as early as possible. The group then initiated the development of an intervention to schedule a multi-disciplinary staffing for each youth following a second admission that occurs within six months of a prior admission. This will address the multiple agencies/systems that are often involved in care for the youth, such as Departments of Social Services (DSS) and improve coordination of care and service planning. The staffing is arranged by a Discharge Planner who is notified of the admission by a CHN Care Manager following the readmission of the youth, and a form was developed that outlined several areas to be addressed during the staffing, as well as instructions on potential participants, timelines, etc. Information from the staffing was reported to CHN and tracked in a database, and can be used along with the youth admissions measure to determine the effectiveness of this intervention. The proposed intervention was discussed during the May 19 2006 QISC meeting. Educational calls regarding the intervention were held on June 28 and June 30, 2006. This intervention was implemented on July 10, 2006.

An interim youth admissions report was presented at the August 18, 2006 QISC meeting; it was noted that the goal was not being met and discussion would continue in the PIP Task Group meeting. Updates on the status and progress of the staffing intervention were presented at the July 21 and October 20 QISC meetings.

An interim utilization report was presented to the Task Group on 11/15/2006 comparing youth admissions and bed days for January – June of 2005 to January – June of 2006. While there was a very slight decrease in admissions for the first six months of 2006 (7.9 vs. 8.0), the report showed an 18% increase in bed days during the 2006 time period. The increase was statistically significant, although it was noted that this interim measurement occurred prior to the readmission intervention that began in July 2006. The group suggested implementing an additional intervention because, although there are no data yet to determine the success of the intervention implemented in July, that intervention is focused mainly on readmissions and concern was expressed about whether that intervention would have a significant enough impact on overall admissions and days in the community. The interim reports were also presented to QISC at the December meeting, along with a Task Group update.

The Task Group met again on January 5, 2007, and other potential interventions were discussed. One Mental Health Center developed a home and community-based Crisis Care Coordination Program designed to address the need for an intensive treatment intervention for youth who are deteriorating or in crisis. This program coordinated closely with the Outpatient Services and Crisis Screening Units of the mental health center. This program was fully implemented on January 8, 2007. The Task Group agreed that this has potential to be an effective intervention for two reasons: it is being implemented at a large mental health center with the highest volume of youth admissions, and that if it is effective, it could serve as a model for other mental health centers where appropriate.

The second intervention discussed was based on readmission data indicating that a number of readmissions were occurring directly from residential treatment centers (RTCs), the use of which is often funded through County DSS offices, and not through the BHO. Additional data will be compiled that identifies which RTCs are involved, to determine whether educational and/or training interventions are needed for the higher volume RTCs. Also, the group discussed reviewing the eligibility categories for the readmitted youth, to verify their belief that foster care youth represent the highest number of readmissions.

Remeasurement 2 to Remeasurement 3:

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Describe interventions.

Baseline to Remeasurement 1

As previously discussed, an increase in admissions and bed days for youth was observed following the addition of the Pikes Peak service area in January 2005. However, other mental health centers in the service area also routinely struggled to ensure alternative services were available to effectively support youth in crisis who are risk for hospitalization. Interventions were initially focused in the Pikes Peak region, which showed the greatest volume increase in youth admissions and bed days.

Pikes Peak Mental Health Center initially concentrated on learning a new process and system for evaluating and determining, in collaboration with the Care Management Department at CHP, whether youth met the criteria for an inpatient admission. This adjustment included taking a leadership role in establishing working relationships with community hospitals to evaluate youth in crisis, and identifying the full continuum of community resources to support youth in crisis, as Pikes Peak had a limited capacity to manage the volume of youth needing crisis support services at that time.

Shortly after the beginning of the new contract, two fundamental steps were taken to assure appropriate hospital placement for youth: ensuring crisis services were fully and appropriately staffed; and educating crisis staff about appropriateness for inpatient care, referral options and the importance of coordination of services amongst all providers and agencies. Training was conducted by clinical program leadership.

Over the next several months, a variety of program enhancements, expansions and additions were initiated to assure an appropriate array of services were available and accessible to those children and adolescents in crisis. These included:

April 2005

- Staff began making reminder calls for all crisis appointments – 48 hours prior to the appointment.

August 2005

- Initiated discussions of child/adolescent inpatient admissions in the monthly crisis staff meetings to identify and address issues.
- Through addition of psychiatric time, psychiatric appointments were made available within one to two days of crisis assessment, increasing access to medication appointments for children and adolescents in crisis.

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- Adolescent wrap-around services, including direct access to family preservation services, were expanded. This included hiring a new clinician dedicated to these services; increasing age-appropriate groups (previously 18-20, now 37) that varied in type, were evidence-based, and open, to allow almost immediate access. In addition, “parallel” groups were implemented for parents.
- A brief orientation for families was initiated that occurs just prior to intake. This time is used to educate families on treatment expectations, available services, etc.

At the May 20, 2005 QISC meeting, a task group was established to oversee the management of this performance improvement project. The task group included staff from the CHN service center as well as mental health center representatives, including representatives from mental health centers seeking more effective alternative and crisis services for youth. The task group began meeting in June 2006. The focus of the PIP task group meetings included identifying problems and barriers in that may contribute to increasing admissions and/or bed days for youth, such as the viability of using certain crisis programs in different parts of the service area, lack of effectiveness of some programs, certain facilities that are difficult to work with for various reasons, lack of appropriate alternatives, the special needs of dually diagnosed youth, hospitalizations outside of the CHP service area, etc. In addition, the task group worked on identifying all current alternative crisis services, and interventions or new services implemented, as well as establishing a process for gathering information and reviewing and identifying best practice alternatives and crisis programs across the CHP system. This process will include a review to determine why less effective programs have been unsuccessful. The ultimate goal of the review of these programs is to identify best practice alternative programs and key components present in the most effective alternatives, and to ensure all programs in our system targeted to youth crisis alternatives include these components. The process of identifying the key successful program components is vital in the CHP system, due to the nature of our service area. The varying sizes and population densities (urban, rural and frontier) of our geographic areas make the feasibility of using a single program-based intervention unlikely to be successful. A program that works for an urban center may not work at all in a rural area – but the identification and incorporation of key success components poses a greater likelihood of effectiveness across all regions. Completion of the identification of these components occurred during spring of 2006, with dissemination and implementation immediately following.

Remeasurement 1 to Remeasurement 2

During the April 14, 2006 Task Group meeting, the group evaluated more detailed data reports on the youth admitted, and discovered that approximately 26% of the admissions during 2005 were actually readmissions – in some cases, several readmissions for some clients. Seventy unique members had multiple (two or more) admissions during calendar year 2005, for a total of 123 readmissions. Types and amounts of services provided between readmissions were also reviewed. One hundred-four (85%) of the 123 readmissions had some type of encounter between admissions; 66% of the 123 readmissions had a follow-up contact within seven days of discharge. This prompted questions about how high-risk youth were identified and tracked within the care delivery system, and whether these youth were getting the most effective services available as early as possible. The group then initiated the development of an intervention to schedule a multi-disciplinary staffing for each youth following a second admission that occurs within six months of a prior admission. This will address the multiple agencies/systems that are often involved in care for the youth, such as Departments of Social Services (DSS) and improve coordination of care and service planning. The staffing is arranged by a Discharge Planner who is notified of the admission by a CHN Care Manager following the readmission of the youth, and a

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form was developed that outlined several areas to be addressed during the staffing, as well as instructions on potential participants, timelines, etc. Information from the staffing was reported to CHN and tracked in a database, and can be used along with the youth admissions measure to determine the effectiveness of this intervention. The proposed intervention was discussed during the May 19 2006 QISC meeting. Educational calls regarding the intervention were held on June 28 and June 30, 2006. This intervention was implemented on July 10, 2006.

An interim youth admissions report was presented at the August 18, 2006 QISC meeting; it was noted that the goal was not being met and discussion would continue in the PIP Task Group meeting. Updates on the status and progress of the staffing intervention were presented at the July 21 and October 20 QISC meetings.

An interim utilization report was presented to the Task Group on 11/15/2006 comparing youth admissions and bed days for January – June of 2005 to January – June of 2006. While there was a very slight decrease in admissions for the first six months of 2006 (7.9 vs. 8.0), the report showed an 18% increase in bed days during the 2006 time period. The increase was statistically significant, although it was noted that this interim measurement occurred prior to the readmission intervention that began in July 2006. The group suggested implementing an additional intervention because, although there are no data yet to determine the success of the intervention implemented in July, that intervention is focused mainly on readmissions and concern was expressed about whether that intervention would have a significant enough impact on overall admissions and days in the community. The interim reports were also presented to QISC at the December meeting, along with a Task Group update.

The Task Group met again on January 5, 2007, and other potential interventions were discussed. One Mental Health Center developed a home and community-based Crisis Care Coordination Program designed to address the need for an intensive treatment intervention for youth who are deteriorating or in crisis. This program coordinated closely with the Outpatient Services and Crisis Screening Units of the mental health center. This program was fully implemented on January 8, 2007. The Task Group agreed that this has potential to be an effective intervention for two reasons: it is being implemented at a large mental health center with the highest volume of youth admissions, and that if it is effective, it could serve as a model for other mental health centers where appropriate.

The second intervention discussed was based on readmission data indicating that a number of readmissions were occurring directly from residential treatment centers (RTCs), the use of which is often funded through County DSS offices, and not through the BHO. Additional data will be compiled that identifies which RTCs are involved, to determine whether educational and/or training interventions are needed for the higher volume RTCs. Also, the group discussed reviewing the eligibility categories for the readmitted youth, to verify their belief that foster care youth represent the highest number of readmissions.

Remeasurement 2 to Remeasurement 3

The Task Group meetings continued with additional analysis and tracking of the staffing readmission intervention, reviewing updated trending reports on youth hospital admissions and bed days, and discussing other potential interventions and whether the interventions were focused in the right areas, given that no improvement was seen to date.

Qualitative and quantitative data from the readmission staffing forms was compiled and summarized to determine what additional information this might provide in terms of

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evaluating the current interventions and identifying other potential issues/barriers to address. During the March 14 Task Group meeting, the aggregate information based on readmission staffings was reviewed. This report provided breakout information on the number of staffings completed by age group, turn-around time for staffings, whether alternative services were added, barriers identified/resolved, whether a crisis plan was in place, and other information. In addition, a report by eligibility category of youth readmitted was reviewed. Additional breakout information was requested for presentation at the April meeting, as the Task Group was evaluating whether or not to continue (or revise) the readmission staffing intervention, based on its effectiveness.

In addition, comparison of admission data from July 2005 – December 2005 with admission data from July 2006-December 2006 was presented. As the readmission intervention was initiated in July 2006, the group had hoped to see a downward trend in overall hospital admissions; however the data did not reflect a downward trend. The group requested that a report of readmissions for the same timeframes be compiled and presented at the April meeting.

Several reports were presented at the April Task Group meeting.

1) A trend analysis provided aggregate information for readmitted youth that included age, diagnosis, gender; the top diagnoses for youth readmitted (by volume) were Bipolar and Schizoaffective Disorders (23), Major Depressive Disorders/Depression NOS (12), followed by PTSD (5), ADHD (5), and a variety of others. Age analysis showed that readmission volume was also higher for adolescent youth.

2) Additional breakout detail was presented at the meeting, as requested in March. This report generated discussion regarding types of barriers, family issues, participation, etc. Included in the report was comparative data for the number of readmissions pre- and post-intervention for comparative time periods.

- July-Dec 2005 = 98 readmissions
- July-Dec 2006 = 69 readmissions

The comparative data showed that although overall admissions had increased for the 2006 time period, readmissions had decreased. This indicated to the Task Group that the intervention was having a positive impact, but because it was focused on only on youth readmitted, there was not a significant impact on overall youth admissions. The group made a recommendation to review the results at the May 2 Discharge Planners meeting (the group responsible for completing the staffings), and get input and recommendation for changes in the readmission staffing process and/or form.

Pikes Peak Mental Health reported that their Crisis Care Coordination Program, implemented in January, appears to be having a positive effect on improving management of admissions and helping maintain youth in the community.

Building on the analysis of the readmission intervention, data was presented comparing the length of stay for readmissions prior to and post-intervention at the May meeting. The data showed that there was an average decrease of one day in the length of stay for post-intervention readmissions; the group believed this was likely due to the readmission staffing intervention.

Recommendations/input from the Discharge Planners meeting was also reviewed; revisions to the form were made and distributed for use effective July 1. The group determined that the analysis showed enough improvement to continue the readmission staffing intervention for another six months to one year, with a review planned for the next comparative

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six-month period. The group discussed other potential interventions targeted to youth to address admission rates. One area analyzed was youth admitted to inpatient care from residential treatment centers; a decision was made to further analyze this type of admission to determine if there were higher volume admissions from certain residential treatment centers (RTCs).

In July, following a review of inpatient admissions made directly from RTCs, a plan was developed for intervention with the two higher volume RTCs to discuss treatment expectations for management of youth, implemented by the CHN Clinical Director.

In addition, 17 month trending charts (Jan 05 – May 07) for inpatient bed days and admissions were reviewed. The group noted a slight downward trend over the past few months; however, due to variation in some of the service areas, a suggestion was made to identify outliers (those with lengthy inpatient stays and multiple admissions) to see if this might show whether a true downward trend existed. The group remained concerned about the level of impact of the interventions thus far, however, and opted to track the data a little longer to see if improvement might finally occur, or whether major changes in the population, study question, or interventions were warranted. Additional interventions were considered; concerns about system fragmentation in Colorado for youth were discussed, and the resulting limitations around influencing care that is provided outside of our system.

At the September Task Group meeting, the trend data was reviewed with the outliers removed. While removing the outliers did flatten out the spikes seen in admissions and bed days, the effect was not robust enough to conclusively indicate a downward trend.

The Task Group meetings continued with additional analysis and tracking of the staffing readmission intervention, reviewing updated trending reports on youth hospital admissions and bed days, and discussion regarding other potential interventions and whether current interventions were focused in the right areas, given that no definite improvement was seen to date.

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H. Activity VIIIa. Data analysis: Describe the data analysis process in accordance with the analysis plan and any ad hoc analysis done on the selected clinical or nonclinical study indicators. Include the statistical analysis techniques used and *p* values.

Data analysis process:

Baseline Measurement:

Study Indicator #1 Admissions per 1,000 for Baseline Period: 04/01/2004 through 03/31/2005 = **6.21**

Study Indicator #2 Bed Days per 1,000 for Baseline Period: 04/01/2004 through 03/31/2005 = **51.23**

Study Indicator #3: Six Month Bed Days for Period 01/01/2005 through 06/30/2005 = **2063 Bed Days/80, 769 Eligible Youth**; Six Month Bed Days for Period 07/01/2005 through 12/31/2005 = **1960 Bed Days/83,006 Eligible Youth**.

Study Indicator #4: Six Month Admissions for Period 01/01/2005 through 06/30/2005 = **257 Admits/80, 852 Eligible Youth**; Six Month Admissions for Period 07/01/2005 through 12/31/2005 = **226 Admits/83,006 Eligible Youth**.

Remeasurement 1:

Study Indicator #1 Admissions per 1,000 for Baseline Period: 01/01/2005 through 12/31/2005 = **5.90**

Study Indicator #2 Bed Days per 1,000 for Baseline Period: 01/01/2005 through 12/31/2005 = **49.13**

Study Indicator #3: Six Month Bed Days for Period 01/01/2006 through 06/30/2006 = **2440 Bed Days/83,677 Eligible Youth**; Six Month Bed Days for Period 07/01/2006 through 12/31/2006 = **2209 Bed Days/ 82,771 Eligible Youth**.

Study Indicator #4 Six Month Admissions for Period 01/01/2006 through 06/30/2006 = **310 Admits/83,677 Eligible Youth**; Six Month Admissions for Period 07/01/2006 through 12/31/2006 = **283 Admits/82,771 Eligible Youth**.

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Remeasurement 2:

Study Indicator #1 Admissions per 1,000 for period: 01/01/2006 through 12/31/2006 = **7.13**

Study Indicator #2 Bed Days per 1,000 for period 01/01/2006 through 12/31/2006 = **55.86**

Study Indicator #3: Six Month Bed Days for Period 01/01/2007 through 06/30/2007 = 1915 **Bed Days**/81,188 **Eligible Youth** ; Six Month Bed Days for Period 07/01/2007 through 12/31/2007 = 1872 **Admits**/80,899 **Eligible Youth**

Study Indicator #4 Six Month Admissions for Period 01/01/2007 through 06/30/2007 = 261 **Admits**/81,188 **Eligible Youth** ; Six Month Admissions for Period 07/01/2007 through 12/31/2007 = 221 **Admits**/80,899 **Eligible Youth**

Remeasurement 3:

Study Indicator #1 Admissions per 1,000 for period: 01/01/2007 through 12/31/2007 = 5.94

Study Indicator #2 Bed Days per 1,000 for period 01/01/2007 through 12/31/2007 = 46.72

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H. Activity VIIIb. Interpretation of study results: Describe the results of the statistical analysis, interpret the findings, discuss the successfulness of the study, and indicate follow-up activities. Also, identify any factors that could influence the measurement or validity of the findings.

Interpretation of study results:

Address factors that threaten internal or external validity of the findings for each measurement period.

Baseline Measurement:

The baseline measurements listed below for Study Indicators 1 and 2 reflect the four quarters of admissions and bed days for youth that, when using control chart measurement, reflect a process that was, for the most part, effectively in control prior to the addition of the Pikes Peak service area on January 1, 2005, when admissions and bed days spiked upward, suggesting that the process had deteriorated and ceased to be effective (out of control.) Because the control charts used to determine the results for Indicators 1 and 2 are set up on a rolling annual basis with quarterly measurement, seasonality is adjusted for, since the most recent four subsequent quarters are used in each calculation.

Study Indicator #1 Admissions per 1,000 for Baseline Period: 04/01/2004 through 03/31/2005 = **6.21**

Study Indicator #2 Bed Days per 1,000 for Baseline Period: 04/01/2004 through 03/31/2005 = **51.23**

Study Indicator #3: Six Month Bed Days for Period 01/01/2005 through 06/30/2005 = **2063 Bed Days/80, 769 Eligible Youth**; Six Month Bed Days for Period 07/01/2005 through 12/31/2005 = **1960 Bed Days/83,006 Eligible Youth**.

Study Indicator #4: Six Month Admissions for Period 01/01/2005 through 06/30/2005 = **257 Admits/80, 769 Eligible Youth**; Six Month Admissions for Period 07/01/2005 through 12/31/2005 = **226 Admits/83,006 Eligible Youth**.

The overall number of admissions were found to have decreased when comparing the consecutive 2005 six month periods (January – June and July – December 2005) from 257 to 226 admissions. While this decrease is evident in the admission and bed days control charts, it is possible that some of this decrease is due to seasonal factors affecting the data. The admission and bed days per 1,000 measurements above are based upon annual data pulled quarterly (rolling quarter basis) and therefore account for seasonal influences by always looking at a one year period. The Six Month Admit and Bed Days measures for 2005, however, represent two successive six month periods and could therefore be impacted by the lower inpatient utilization that is often seen during the summer months.

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It is worth noting that the baseline goal is based on performance of the BHO prior to adding the Pikes Peak area. It is difficult to know whether the baseline numbers would have differed had the Pikes Peak service area been a part of CHP for the past few years along with the other CHP service areas. There was no indication, when reviewing the Pikes Peak service area eligibility categories and numbers that the population was substantially different from the remainder of the CHP population, although the effects of increasing any population to such a large extent (approximately 50,000 members) may have an unanticipated impact or systemic effect that would be difficult to predict. As the upward trend in admissions and bed days was noted, training, staffing and programmatic interventions were initiated as described in G. Step 7, above.

There was concern that the periodic eligibility issues experienced by the State would impact the overall calculations, unrelated to the interventions. Such changes could potentially increase or decrease admission or bed day rates. It is also possible that the addition or loss of an inpatient resource (e.g., hospital opening or closure) could affect admission patterns. This issue will be examined more thoroughly as data are analyzed.

Remeasurement 1

Attachment A. (Admits per 1,000 Control Chart) identifies an initial sharp increase in admission rate during the initial quarter of the new contract year to 6.21. This increase represented a degree of departure from the typical rate suggesting an “out of control” process in the language of control chart tracking. The subsequent four measurement periods showed a decreasing trend to the current level of 5.94 for quarter one to quarter four of 2007.

Attachment B. (Bed Days per 1,000 Control Chart) also identifies a notably high spike in bed day rates for the measurement period spanning from quarter one of 2006 to quarter four of 2006. Subsequent periods showed a downward trend in bed days to the current level of 46.72 days per 1,000. This period remains above the baseline goal of 41.98 days per 1,000 which was determined by taking the upper control limit of the bed day’s process prior to the beginning of the new contract. It does, however, show a downward trend and appears to be in more control.

Study Indicator #3: Six Month Bed Days for Period 01/01/2006 through 06/30/2006 = **2440 Bed Days/83,677 Eligible Youth**; Six Month Bed Days for Period 07/01/2006 through 12/31/2006 = **2209 Bed Days/ 82,771 Eligible Youth**.

Study Indicator #4: Six Month Admissions for Period 01/01/2006 through 06/30/2006 = **310 Admits/83,677 Eligible Youth**; Six Month Admissions for Period 07/01/2006 through 12/31/2006 = **283 Admits/82,771 Eligible Youth**.

Interpretation of Findings

Comparison of Six Month Bed Days 2006 to Six Month Bed Days 2005

January – June 2005 to January – June 2006: A Chi Square test showed a significant increase ($p < .01$) in the bed days rate, based on the proportion of youth bed days to overall eligible youth members across the two time periods. The number of bed days increased from 2063 in 2005 to 2440 in 2006, an increase of 377 bed days (note that the number of eligible youth increased from 80,769 (2005) to 83,677 (2006) during the same period, an increase of 2,908 eligible youth).

July – December 2005 to July – December 2006: A Chi Square test showed a significant increase ($p < .01$) in the bed days rate across the two time periods. Bed days increased by 11% from this period in 2005 to the same period in 2006. Eligible youth dropped slightly from 2005 to 2006, by a total of 235 members.

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Comparison of Six Month Admissions 2006 to Six Month Admissions 2005

January – June 2005 to January – June 2006: A Chi Square test indicated a non-significant increase in admissions rate when comparing the first six months of 2005 to the first six months of 2006. Overall admissions showed an increase of 53 while the total average eligible youth members increased by 2,908 from January – June 2005 to the same six-month period in 2006.

July - December 2005 to July – December 2006: A Chi Square test showed a significant increase ($p < .01$) in youth admissions rate when comparing the two time periods, with an overall increase of 57 admissions. The number of eligible youth decreased by 235 from 2005 to 2006.

Unfortunately, the chi square testing showed no improvements in the youth admissions and bed days rates. In fact, three of the four chi-square tests indicated significant change in the opposite direction of what was intended. Admissions for the first six-month period of 2006 compared to 2005 did not significantly increase, however.

Remeasurement 2:

Study Indicator #1 Admissions per 1,000 for period: 01/01/2006 through 12/31/2006 = **7.13** (See Attachment A. Admits per 1,000 Control Chart)

Study Indicator #2 Bed Days per 1,000 for period 01/01/2006 through 12/31/2006 = **55.86** (See Attachment A. Bed Days per 1,000 Control Chart)

Interpretation of Findings

Attachment A. (Admits per Thousand Control Chart) During 2006, the control chart shows increasing bed day and admission rates from one measurement time period to the next. Admissions per thousand increased over the 2005 rate of 5.90 per thousand to 7.13 per thousand, which is well above the baseline UCL of 4.9 per thousand. With the readmission staffing intervention described above, we had anticipated a decrease in the admission rate for the last quarter of 2006.

Attachment B. (Bed Days per Thousand Control Chart) Data points for the rolling annual quarters of 2006 show increased bed days for each quarter, with a rate of 55.86 for the year. The bed days rate increased by 6.73 from 2005 (49.13), and remained above the baseline goal of 41.97.

Unfortunately, the control charts and the chi square testing conducted for admissions and bed days for the six-month periods of 2006 compared to 2005 showed no improvements. Programmatic revisions/adaptations, education, and a staffing intervention directed toward youth who are readmitted have not, at least thus far, had a positive impact on the study measures, described above. The staffing intervention was initiated in July 2006; however, the six-month admissions and bed days measures for July – December 2006 (described in Remeasurement 1) do not reflect a decrease when compared to the July-December 2005 measures, nor was any drop in the rates seen during the 4th quarter of 2006, when we believed the results of the readmission staffing intervention would be evident. The readmission staffing intervention was intended to 1) identify youth at high risk for hospitalization as soon as possible (during the first readmission); 2) to evaluate services provided at this point in treatment, evaluate additional needs, and initiate services targeted toward high risk youth (e.g., crisis groups, intensive case management, wrap-around services, increased frequency of services) as soon as possible; and 3) to involve all providers and agencies involved in the youth's treatment. To fully evaluate the success of this intervention on the subset of youth that are readmitted, an analysis comparing the proportion of readmissions

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to admissions for July – December 2005 to the proportion of readmissions to admissions for July-December 2006 was planned. Also, the information submitted on the readmission staffing forms collected over the past six months was put into an aggregate report and reviewed to determine whether the information gathered might be helpful in revising the intervention or developing additional interventions. Other factors that may have influenced admissions and bed days measures are listed below.

Factors potentially influencing measurement or validity of the data:

During late 2004 and 2005, a new Medicaid enrollment system, the Colorado Benefits Management System, was implemented and there were numerous problems associated with it. Retroactive changes in eligibility of Medicaid members were necessary due to updated eligibility status information from the state during the time periods in this study. In addition, the re-organization of the MHASAs into BHOs beginning in January 2005 and the associated changes in service areas, etc., may also have contributed to inaccuracies in the eligibility data,

Youth Eligibility Data	Jan – June 2005	July – December 2005
Initial Data Extract: Late 2005-early 2006	92,282 Eligible Youth	94,240 Eligible Youth
Subsequent Data Extract	84,024 Eligible Youth	86,219 Eligible Youth
Late 2007 Extract	80,769 Eligible Youth	83,006 Eligible Youth

In addition, the retrospective eligibility process itself may impact overall calculations by not capturing youth who were admitted because of ineligibility at the time of hospital admission, yet were retrospectively identified as being eligible.

One factor that may have impacted the increase in admissions was the change in the State Residential Treatment Center (RTC) licensure effective July 1, 2006. This change resulted in fewer RTCs qualifying for reimbursement under state guidelines, thus youth who were previously eligible for RTC admission may have been admitted to inpatient care.

Another factor that may have influenced admissions on the Western Slope was the opening of the West Slope Regional Crisis Stabilization Unit (WSRCSU), and the closure of the Hilltop Residential Treatment Center (RTC) for Youth. The closure of the RTC level of care may have resulted in an increase in admissions and bed days at the WSRCSU. While an increase in admissions is less likely, given that those youth would not necessarily meet criteria for an inpatient hospitalization, any who were admitted might have had a longer stay, resulting in a longer stay (thus increasing bed days).

Changes in the number of eligible youth during 2006 have some impact on the indicator calculations (admissions per thousand and bed days per thousand) by inflating the rate due to the change in the denominator (eligible youth) used in the calculation formulas. Data on retrospectively eligible members overall reflect a 9-10% increase in total eligibles annually, impacting the admission and bed days rates from one time period to the next, making it more challenging to evaluate improvement efforts and gains over time. This also introduces a barrier in that the ability to manage those admissions is compromised if eligibility of a youth admitted to a hospital is not known at the time.

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In addition, one change in data collection occurred in December 2006 for admissions to the West Slope Regional Crisis Stabilization Unit. Beginning in December 2006, CHP began to collect data through faxed admission/discharge forms, rather than using authorizations to identify admissions and discharges. This change would potentially impact only one month of the 2006 data. As the WSRCSU has moved to a claims submission from an encounter data submission, we are able to verify the accuracy of the faxed information against the claims filed to ensure all admissions and discharges are being accurately reported.

Follow-up Activities

- Further analysis of readmissions vs. admissions to fully evaluate what impact, if any, the readmission staffing intervention has had; review six months of aggregate data gathered through the Readmission Staffing Forms to identify barriers or other opportunities identified through this process. If the data shows little or no impact, the intervention will be revised or discontinued.
- Complete further analysis on admissions, to include eligibility categories of youth admitted, which may identify specific populations, ages or diagnoses which may be significant drivers of the admission and bed days rates, or identify other potential interventions.
- Evaluate admissions and bed days by mental health center area to determine whether there have been significant changes during the year in one or more CHP service area.
- Follow up on RTC information to determine what impact RTC admission patterns may have on readmissions, and what impact the change in licensure levels for RTCs may have had on admissions.
- Analyze interim admission and bed days measures to evaluate the impact of the mental health center Home and Community-based Crisis Care Coordination Program which was implemented in January 2007.
- Depending on the data, root causes and barriers identified through the activities listed above, the study question may be revisited and revised.
- Based on the findings from the activities above, as well as the assumptions made in identifying the baseline goal (discussed in the baseline measurement section, above), changes in the baseline goal may be considered.

Study Indicator #3: Six Month Bed Days for Period 01/01/2007 through 06/30/2007 = 1915 **Bed Days**/81,188 **Eligible Youth** ; Six Month Bed Days for Period 07/01/2007 through 12/31/2007 = 1872 **Bed Days**/80,899 **Eligible Youth**

Comparison of Six Month Bed Days 2007 to Six Month Bed Days 2006

January – June 2006 to January – June 2007: A Chi Square test showed a significant decrease (p. <.01) in the proportion of youth bed days to overall eligible youth members when comparing the two time periods. Overall bed days decreased from 2440 in 2006 to 1915 in 2007, a decrease of 525 bed days (note that the number of eligible youth decreased 3%, from 83,677 [2006] to 81,188 [2007] during the same period, a decrease of 2,489 eligible youth).

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July – December 2006 to July – December 2007: A Chi Square test showed a significant decrease ($p < .01$) in 2007 when comparing the bed days for these two time periods. The decrease in bed days for this time period during 2007 was 337, a decrease of 8.5% over 2006. There was also a decrease in eligible youth from the 2006 to 2007 time period (2.3%).

Study Indicator #4 Six Month Admissions for Period 01/01/2007 through 06/30/2007 = 261 **Admits**/81,188 **Eligible Youth** ; Six Month Admissions for Period 07/01/2007 through 12/31/2007 = 221 **Admits**/80,899 **Eligible Youth**

Comparison of Six Month Admissions 2007 to Six Month Admissions 2006

January – June 2006 to January – June 2007: A Chi Square test indicated a non-significant decrease in admissions when comparing the first six months of 2006 to the first six months of 2007. Overall admissions showed a decrease of 49, while average eligible youth members decreased by 2,489 from January – June 2006 to the same six-month period in 2007.

July - December 2007 to July – December 2007: A Chi Square test showed a significant decrease ($p < .01$) in youth admissions when comparing the two time periods, with an overall decrease of 62 admissions. However, the number of eligible youth decreased by 1,872 from 2006 to 2007.

The comparison of six-month bed day and admission measures for both time periods in 2007 to both time periods in 2006 demonstrate that improvement in both admissions and bed days occurred during 2007. Chi Square tests show a significant decrease in bed days when comparing both the January – June and July – December 2006 time periods to the corresponding 2007 time periods. When comparing the same time periods for admissions, both time periods show a decrease in admission rates from 2006 to 2007, although only the July – December time period represents a significant decrease ($p < .01$). However, neither the bed days nor admissions measures have reached the performance goals established for the six-month measures (41.97 bed days; 4.9 admissions/1000 eligible youth). These performance goals, which were established based on admission and bed days measures prior to the addition of the Pikes Peak region, may need to be re-evaluated by the PIP Task Group, and a revision considered.

Pikes Peak continued to have the highest volume of youth admissions and bed days across the CHN service area; several interventions were implemented, as described in G., Step 7 above. Bed day and admission rates for the Pikes Peak area during 2007 indicate that the home and community-based Crisis Intervention Program, an intervention implemented by Pikes Peak Mental Health in January 2007 has had a positive impact in reducing youth admissions. In addition, analyses conducted using the readmission staffing forms, described in G. Step 7, Remeasurement 2 to Remeasurement 3, showed that the readmission staffing intervention was effective in reducing readmissions across the CHP system, and therefore was continued throughout 2007. Interventions with two Residential Treatment Centers that focused on managing crises with youth may also have had some impact; however, those interventions occurred later in 2007 so the full impact may not be evident in the 2007 measures. An additional review of data for 2006, looking at the proportion of youth admitted (as a percent) to the number of youth in treatment (as opposed to the number of eligible youth), showed a downward trend over time. This indicates that education, coordination and/or service interventions for those youth who were in treatment at the time of admission may be positively impacting the overall admission rate.

Comparison of the 2007 bed days measures with the 2005 measures shows a significant decrease ($p < .05$) in bed days when comparing the January through June time periods, and a

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H. Activity VIIIb. Interpretation of study results: Describe the results of the statistical analysis, interpret the findings, discuss the successfulness of the study, and indicate follow-up activities. Also, identify any factors that could influence the measurement or validity of the findings.

non-significant decrease when comparing the July through December time period; a comparison of admissions for the 2005/2007 time periods shows a non-significant increase in 2007 for the first six months (a total increase of four admissions), and a non-significant decrease in 2007 for the second six-month period (a total decrease of five admissions). Thus, 2007 bed days show a decrease when compared to like time periods in 2005, and admissions for 2007 are now more consistent with the numbers from the baseline measurement period. The tables below provide a summary comparison of the six-month measures.

Indicator 3: Comparison of Six-Month Bed Days Measures using Chi-Square Test: 2005-2007

Years Compared	Time Period	Result	Time Period	Result
2005 to 2006	January – June	Sig Increase (p<.01)	July – December	Sig Increase (p<.01)
2005 to 2007	January – June	Sig Decrease (p<.05)	July – December	Non-Significant Decrease
2006 to 2007	January – June	Sig Decrease (p<.01)	July – December	Sig Decrease (p<.01)

Indicator 4: Comparison of Six-Month Admission Measures using Chi-Square Test: 2005-2007

Years Compared	Time Period	Result	Time Period	Result
2005 to 2006	January – June	Non-Significant Increase	July – December	Sig Increase (p<.05)
2005 to 2007	January – June	Non-Significant Increase	July – December	Non-Significant Decrease
2006 to 2007	January – June	Non-Significant Decrease	July – December	Sig Decrease (p<.01)

Overall, results for 2007 indicate that interventions were successful when compared with the 2006 measures and to some degree the 2005 bed days measures as well.

Remeasurement 3:

Study Indicator #1 Admissions per 1,000 for period: 01/01/2007 through 12/31/2007 = 5.94

Indicator 1: Comparison of Admission Rates Across Measurement Periods

Time Period	Baseline	Remeasurement 1 (2005)	Remeasurement 2 (2006)	Remeasurement 3 (2007)
Rate/1000 Youth	6.21	5.90	7.13	5.94
Performance Goal = 4.9 Admits/1000 Youth				

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Study Indicator #2 Bed Days per 1,000 for period 01/01/2007 through 12/31/2007 = 46.72

Indicator 2: Comparison of Bed Days Rates Across Measurement Periods				
Time Period	Baseline	Remeasurement 1 (2005)	Remeasurement 2 (2006)	Remeasurement 3 (2007)
Rate/1000 Youth	51.23	49.13	55.86	46.72
Performance Goal = 41.97 Bed Days/1000 Youth				

Interpretation of Findings:

The 2007 results for Indicators #1 and 2 represent a decrease that is significant ($p < .01$) when using a Chi-Square test to compare the 2006/2007 results. These results show improvement in the youth bed days and admission rates over the 2006 rates, and clearly indicate that the interventions described in Section G, above, were effective.

A comparison of the 2007 bed days rate to the 2005 rate (remeasurement 1) also reflects a significant ($p < .05$) decrease; a decrease is also evident ($p < .01$) when comparing the 2007 bed days rate to the baseline measure. The 2007 rate of 46.72 bed days/1000 youth still remains above the established performance goal of 41.97 bed days/1000 youth.

Results are more variable when comparing the 2007 admission rate to the other years. When comparing the 2007 results to the 2005 results, a non-significant increase is seen; a comparison of the 2007 rate to the baseline rate results in a non-significant variance in youth admissions. The 2007 rate of 5.94 admissions/1000 youth remains above the performance goal of 4.9 admissions/1000 youth. See Tables below summarizing the Chi-Square Test Results by Measurement Period.

Indicator 1: Comparison of Annual Admission Measures using Chi-Square Test: Baseline - 2007			
Measurement Period	Result	Measurement Period	Result
Baseline to Remeasurement 1	Non-significant Decrease	Remeasurement 1 to Remeasurement 2	Sig Increase ($p < .01$)
Baseline to Remeasurement 2	Sig Increase ($p < .05$)	Remeasurement 1 to Remeasurement 3	Non-significant Increase
Baseline to Remeasurement 3	Non-significant Decrease	Remeasurement 2 to Remeasurement 3	Sig Decrease ($p < .01$)

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Indicator 2: Comparison of Annual Bed Days Measures using Chi-Square Test: Baseline - 2007			
Measurement Period	Result	Measurement Period	Result
Baseline to Remeasurement 1	Non-significant Decrease	Remeasurement 1 to Remeasurement 2	Sig Increase (p<.01)
Baseline to Remeasurement 2	Sig Increase (p<.01)	Remeasurement 1 to Remeasurement 3	Sig Decrease (p<.05)
Baseline to Remeasurement 3	Sig Decrease (p<.01)	Remeasurement 2 to Remeasurement 3	Sig Decrease (p<.01)

As discussed above, a re-evaluation of the baseline goal is planned for the upcoming year. In general, however, we believe the impact of the readmission staffing intervention, implemented during the second six months of 2006, along with the home and community-based Crisis Intervention Program implemented during January 2007 are reflected in the lower bed days and admission rates for 2007, and that these coordination and service interventions have been successful in lowering these rates for 2007.

Factors potentially influencing measurement or validity of the data:

For 2007, CHP continued to use admission/discharge forms received from the West Slope Regional Crisis Stabilization Unit (WSRCSU) to track youth admissions and discharges for that facility only. To evaluate the accuracy of the data, data collected through the forms was compared to data on youth admissions received through claims for the year (97% accuracy). Forms are reviewed when received for missing information, and the facility is contacted to obtain any missing information. The WSRCSU accounts for approximately 9-11.5% of total CHP youth admits annually.

In addition, retrospective eligibility and potential errors in eligibility continue to have some impact on admission and bed days rates from one time period to the next.

Follow-up Activities:

- Re-evaluate performance goals for bed days and admissions, to determine whether these goals are realistic; and whether the goals should be revised
- More fully evaluate the impact of the Pikes Peak home and community-based Crisis Intervention Program on Pikes Peak admissions and bed days; also determine whether to re-evaluate population mix in the Pikes Peak service area vs. the remainder of the CHP service area for differences not previously identified
- Complete analysis of data contained in the readmission staffing forms at the one-year point from the 2007 analysis

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- Evaluate data on admissions from RTC to inpatient to determine impact of the intervention
- Continue to monitor bed days and admission rates and evaluate trends; share with Discharge Planners or other staff and gather input as to whether any additional interventions are warranted or may be beneficial.

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I. Activity IX: Report improvement. Describe any meaningful change in performance observed and demonstrated during baseline measurement.

Quantifiable Measure No. 1:

Time Period Measurement Covers	Baseline Project Indicator Measurement	Numerator	Denominator	Rate or Results	Industry Benchmark	Statistical Test and Significance* Test statistic and p-value
04/01/04 - 03/31/05 (B)	Baseline:	(538)*1000*12	1,039,116	6.21		B vs. R1 = Non-signif Decrease
01/01/05 – 12/31/05 (R1)	Remeasurement 1	(483)*1000*12	982,648	5.90		B vs. R2 = Signif Increase (p<.05)
01/01/06-12/31/06 (R2)	Remeasurement 2	(593)*1000*12	998,687	7.13		B vs. R3 = Non-signif Decrease
01/01/07-12/31/07 (R3)	Remeasurement 3	(482)*1000*12	972,521	5.94		R1 vs. R2 = Signif Increase (p<.01)
	Remeasurement 4	(538)*1000*12	1,039,116	6.21		R1 vs. R3 = Non-signif Increase
	Remeasurement 5					R2 vs. R3 = Signif Decrease (p<.01) *All tests of significance were conducted using the Pearson Chi-square test *See Attachment A for a control chart illustration of the data over time

Quantifiable Measure No. 2:

Time Period Measurement Covers	Baseline Project Indicator Measurement	Numerator	Denominator	Rate or Results	Industry Benchmark	Statistical Test and Significance* Test statistic and p-value
04/01/04 - 03/31/05 (B)	Baseline:	(4436)*1000*12	1,039,116	51.23		B vs. R1 = Non-signif Decrease
01/01/05 – 12/31/05 (R1)	Remeasurement 1	(4023)*1000*12	982,648	49.13		B vs. R2 = Signif Increase (p<.01)
01/01/06-12/31/06 (R2)	Remeasurement 2	(4649)*1000*12	998,687	55.86		B vs. R3 = Signif Decrease (p<.01)
01/01/07-12/31/07 (R3)	Remeasurement 3	(3787)*1000*12	972,521	46.72		R1 vs. R2 = Signif Increase (p<.01)
	Remeasurement 4					R1 vs. R3 = Signif Decrease (p<.05)
	Remeasurement 5					*All tests of significance were conducted using the Pearson Chi-square test *See Attachment A for a control chart illustration of the data over time

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Quantifiable Measure No. 3:

Time Period Measurement Covers	Baseline Project Indicator Measurement	Numerator	Denominator	Rate or Results	Industry Benchmark	Statistical Test and Significance* Test statistic and p-value
01/01/05 – 06/30/05 (Ba) 07/01/05 – 12/31/05 (Bb)	Baseline:	2063 1960	80,769 83,006			Ba vs. R1a = Signif. Increase (p<.01) Ba vs. R2a = Signif. Decrease (p<.05)
01/01/06-06/30/06 (R1a) 07/01/06-12/31/06 (R1b)	Remeasurement 1	2440 2209	83,677 82,771			Bb vs. R1b = Signif. Increase (p<.01) Bb vs. R2b = Non-signif Decrease
01/01/07-06/30/07 (R2a) 07/01/07-12/31/07 (R2b)	Remeasurement 2	1915 1872	81,188 80,899			R1a vs. R2a = Signif. Decrease (p<.01) R1b vs. R2b = Signif. Decrease (p<.01) *All tests of significance are based on the Pearson Chi-square test
	Remeasurement 3					
	Remeasurement 4					
	Remeasurement 5					

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I. Activity IX: Report improvement. Describe any meaningful change in performance observed and demonstrated during baseline measurement.

Quantifiable Measure No. 4:

Time Period Measurement Covers	Baseline Project Indicator Measurement	Numerator	Denominator	Rate or Results	Industry Benchmark	Statistical Test and Significance* Test statistic and p-value
01/01/05 – 06/30/05 (Ba) 07/01/05 – 12/31/05 (Bb)	Baseline:	257 226	80,769 83,006			Ba vs. R2a = Non-signif. Increase
01/01/06-06/30/06 (R1a) 07/01/06-12/31/06 (R1b)	Remeasurement 1	310 283	83,677 82,771			Bb vs. R1b = Signif. Increase (p<.05)
01/01/07-06/30/07 (R2a) 07/01/07-12/31/07 (R2b)	Remeasurement 2	261 221	81,188 80,899			Bb vs. R2b = Non-signif. Decrease
	Remeasurement 3					R1a vs. R2a = Non-signif. Decrease
	Remeasurement 4					R1b vs. R2b = Signif. Decrease (p<.01)
	Remeasurement 5					*All tests of significance are based on the Pearson Chi-square test

* Specify the test, p value, and specific measurements (e.g., baseline to remeasurement 1, remeasurement #1 to remeasurement 2, etc., or baseline to final remeasurement) included in the calculations.

There is no statistical evidence of improvement from Baseline to Remeasurement 1. Control charts and chi square tests indicate that current interventions have not only been ineffective in reducing youth admissions and bed days, but some of these measures have increased significantly during 2006. Results indicate that the interventions are not addressing the appropriate root cause, or that the interventions are not intensive enough to have an overall impact on youth admissions and bed days. Current interventions will be re-evaluated, and revised or discontinued as indicated, following additional data analysis, root cause analysis, and identification of additional or previously unidentified barriers. Follow-up actions are described in more detail in Step 8.B.

Remeasurement 3 (2007 results) for indicators 1 and 2 and Remeasurement 2 (2007 results) for Indicators 3 and 4 show mixed improvement. Indicators 1 and 2 show significant improvement when compared to the previous year's results; Indicator 2 also shows a significant decrease when compared to Remeasurement 1 and when compared to the baseline measure; note that the 2007 bed days rate is the lowest of the three measurement periods (see the table above, and the tables in Section H.8b). Also see Attachment A representing control chart measures for Indicators 1 and 2.

Indicators 3 and 4 show significant decreases when compared to the previous year's data (i.e., 2007 results compared to 2006 results), except that Indicator 4 shows a non-significant decrease when comparing the first six months of 2007 to the first six months of 2006. When 2007 results are compared to the results for the baseline measurement periods, the results are mixed, although the bed days measures (Indicator 3) do show more evidence of improvement than the admission measures (Indicator 4). See tables below for a summary comparison.

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Indicator 3: Comparison of Six-Month Bed Days Measures using Chi-Square Test: 2005-2007

Years Compared	Time Period	Result	Time Period	Result
2005 to 2006	January – June	Sig Increase (p<.01)	July – December	Sig Increase (p<.01)
2005 to 2007	January – June	Sig Decrease (p<.05)	July – December	Non-Significant Decrease
2006 to 2007	January – June	Sig Decrease (p<.01)	July – December	Sig Decrease (p<.01)

Indicator 4: Comparison of Six-Month Admission Measures using Chi-Square Test: 2005-2007

Years Compared	Time Period	Result	Time Period	Result
2005 to 2006	January – June	Non-Significant Increase	July – December	Sig Increase (p<.05)
2005 to 2007	January – June	Non-Significant Increase	July – December	Non-Significant Decrease
2006 to 2007	January – June	Non-Significant Decrease	July – December	Sig Decrease (p<.01)

Overall, results indicate that the interventions have demonstrated success, impacting the processes (becoming more “in control” as depicted in the control charts) and impacting both the youth admissions and bed day’s rates for the most recent measurement period. As discussed previously in this document, as well as in our PIP Task Group, we believe the impact of the readmission staffing intervention, implemented during the second six months of 2006, along with the home and community-based Crisis Intervention Program implemented during January 2007 are reflected in the lower bed days and admission rates for 2007, and that these coordination and service interventions have been the most successful in lowering these rates for 2007. Other interventions, such as education with Residential Treatment Centers, may also have contributed. However, improvement isn’t currently significant across all measures; while the bed days rates have shown a stronger improvement compared to the baseline rates, admission rates have not improved as dramatically, and are more consistent with those from the baseline measurement period. The 2007 results have not yet reached the performance goals established, which will be re-evaluated as discussed in H. Step 8.B. (Remeasurement sections 2 and 3); other planned follow-up actions and additional discussion of 2007 results may be found in that section as well..

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J. Activity X: Describe sustained improvement. Describe any demonstrated improvement through repeated measurements over comparable time periods. Discuss any random year-to-year variation, population changes, sampling error, or statistically significant declines that may have occurred during the remeasurement process

Sustained improvement:

No significant improvements noted from Baseline to Remeasurement 1 or Remeasurement 2. Factors that may have impacted the re-measurements are discussed in H. Step 8.B., above.

While significant improvement has been demonstrated for most measures when comparing the 2007 results (Remeasurement 2 for Indicators 3 and 4; Remeasurement 3 for Indicators 1 and 2) to the previous measurement period results, sustained improvement over time has not yet been demonstrated. As mentioned throughout this document, retrospective eligibility, trends in eligibility and what appear to be intermittent eligibility errors that occur at the state level do impact calculation of the admission and bed days rates because of the variation in member eligibility numbers across time periods.

Appendix B. **CMS Rationale by Activity** *for Colorado Health Partnerships, LLC*

PIPs provide a structured method of assessing and improving the processes, and thereby the outcomes, of care for the population that a BHO serves. This structure facilitates the documentation and evaluation of improvements in care or service. PIPs are conducted by the BHOs to assess and improve the quality of clinical and nonclinical health care services received by consumers.

The PIP evaluation is based on CMS guidelines as outlined in the CMS publication, *Validating Performance Improvement Projects: A Protocol for Use in Conducting Medicaid External Quality Review Activities*, Final Protocol, Version 1.0, May 1, 2002 (CMS PIP Protocol).

This document highlights the rationale for each activity as established by CMS. The protocols for conducting PIPs can assist the BHOs in complying with requirements.

CMS Rationale

Activity I. Appropriate Study Topic

All PIPs should target improvement in relevant areas of clinical care and nonclinical services. Topics selected for study by Medicaid managed care organizations must reflect the BHO's Medicaid enrollment in terms of demographic characteristics, prevalence of disease, and the potential consequences (risks) of disease (CMS PIP Protocol, page 2).

Activity II. Clearly Defined, Answerable Study Question

It is important for the BHO to clearly state, in writing, the question(s) the study is designed to answer. Stating the question(s) helps maintain the focus of the PIP and sets the framework for data collection, analysis, and interpretation (CMS PIP Protocol, page 5).

Activity III. Clearly Defined Study Indicator(s)

A study indicator is a quantitative or qualitative characteristic (variable) reflecting a discrete event (e.g., an older adult has/has not received an influenza vaccination in the last 12 months) or a status (e.g., a consumer's blood pressure is/is not below a specified level) that is to be measured.

Each project should have one or more quality indicators for use in tracking performance and improvement over time. All indicators must be objective, clearly and unambiguously defined, and based on current clinical knowledge or health services research. In addition, all indicators must be capable of objectively measuring either consumer outcomes, such as health status, functional status, or consumer satisfaction, or valid proxies of these outcomes.

Indicators can be few and simple, many and complex, or any combination thereof, depending on the study question(s), the complexity of existing practice guidelines for a clinical condition, and the availability of data and resources to gather the data.

Indicator criteria are the set of rules by which the data collector or reviewer determines whether an indicator has been met. Pilot or field testing is helpful in the development of effective indicator criteria. Such testing allows the opportunity to add criteria that might not have been anticipated in the design phase. In addition, criteria are often refined over time based on results of previous studies. However, if criteria are changed significantly, the method for calculating an indicator will not be consistent and performance on indicators will not be comparable over time.

It is important, therefore, for indicator criteria to be developed as fully as possible during the design and field testing of data collection instruments (CMS PIP Protocol, page 5).

Activity IV. Use a Representative and Generalizable Study Population

Once a topic has been selected, measurement and improvement efforts must be systemwide (i.e., each project must represent the entire Medicaid-enrolled population to which the study indicators apply). Once that population is identified, the BHO must decide whether to review data for that entire population or use a sample of that population. Sampling is acceptable as long as the samples are representative of the identified population (CMS PIP Protocol, page 8). (See Activity V. Valid Sampling Techniques.)

Activity V. Valid Sampling Techniques

If the BHO uses a sample to select consumers for the study, proper sampling techniques are necessary to provide valid and reliable (and, therefore, generalizable) information on the quality of care provided. When conducting a study designed to estimate the rates at which certain events occur, the sample size has a large impact on the level of statistical confidence in the study estimates. Statistical confidence is a numerical statement of the probable degree of certainty or accuracy of an estimate. In some situations, it expresses the probability that a difference could be due to chance alone. In other applications, it expresses the probability of the accuracy of the estimate. For example, a study may report that a disease is estimated to be present in 35 percent of the population. This estimate might have a 95 percent level of confidence, plus or minus 5 percentage points, implying a 95 percent certainty that between 30 percent and 40 percent of the population has the disease.

The true prevalence or incidence rate for the event in the population may not be known the first time a topic is studied. In such situations, the most prudent course of action is to assume that a maximum sample size is needed to establish a statistically valid baseline for the project indicators (CMS PIP Protocol, page 9).

Activity VI. Accurate/Complete Data Collection

Procedures used by the BHO to collect data for its PIP must ensure that the data collected on the study indicators are valid and reliable. Validity is an indication of the accuracy of the information obtained. Reliability is an indication of the repeatability or reproducibility of a measurement. The BHO should employ a data collection plan that includes:

- ◆ Clear identification of the data to be collected.
- ◆ Identification of the data sources and how and when the baseline and repeat indicator data will be collected.
- ◆ Specification of who will collect the data.
- ◆ Identification of instruments used to collect the data.

When data are collected from automated data systems, development of specifications for automated retrieval of the data should be devised. When data are obtained from visual inspection of medical records or other primary source documents, several steps should be taken to ensure the data are consistently extracted and recorded:

1. The key to successful manual data collection is in the selection of the data collection staff. Appropriately qualified personnel with conceptual and organizational skills should be used to abstract the data. However, their specific skills should vary depending on the nature of the data collected and the degree of professional judgment required. For example, if data collection involves searching throughout the medical record to find and abstract information or judge whether clinical criteria were met, experienced clinical staff members, such as registered nurses, should collect the data. However, if the abstraction involves verifying the presence of a diagnostic test report, trained medical assistants or medical records clerks may be used.
2. Clear guidelines for obtaining and recording data should be established, especially if multiple reviewers are used to perform this activity. The BHO should determine the necessary qualifications of the data collection staff before finalizing the data collection instrument. An abstractor would need fewer clinical skills if the data elements within the data source are more clearly defined. Defining a glossary of terms for each project should be part of the training of abstractors to ensure consistent interpretation among project staff members.
3. The number of data collection staff members used for a given project affects the reliability of the data. A smaller number of staff members promote interrater reliability; however, it may also increase the amount of time it takes to complete this task. Intrarater reliability (i.e., reproducibility of judgments by the same abstractor at a different time) should also be considered (CMS PIP Protocol, page 12).

Activity VII. Appropriate Improvement Strategies

Real, sustained improvements in care result from a continuous cycle of measuring and analyzing performance and developing and implementing systemwide improvements in care. Actual improvements in care depend far more on thorough analysis and implementation of appropriate solutions than on any other steps in the process.

An improvement strategy is defined as an intervention designed to change behavior at an institutional, practitioner, or consumer level. The effectiveness of the intervention activity or activities can be determined by measuring the BHO's change in performance according to predefined quality indicators. Interventions are key to an improvement project's ability to bring about improved health care outcomes. The BHO must identify and develop appropriate interventions for each PIP to ensure the likelihood of measurable change.

If repeated measurements of quality improvement (QI) indicate that QI actions were not successful (i.e., the QI actions did not achieve significant improvement), the problem-solving process begins again with data analysis to identify possible causes, propose and implement solutions, and so forth. If QI actions were successful, the new processes should be standardized and monitored (CMS PIP Protocol, page 16).

Activity VIII. Sufficient Data Analysis and Interpretation

Review of the BHO data analysis begins with examining the BHO's calculated plan performance on the selected clinical or nonclinical indicators. The review examines the appropriateness of, and the BHO's adherence to, the statistical analysis techniques defined in the data analysis plan (CMS PIP Protocol, page 17).

Activity IX. Real Improvement Achieved

When a BHO reports a change in its performance, it is important to know whether the reported change represents real change, is an artifact of a short-term event unrelated to the intervention, or is due to random chance. The external quality review organization (EQRO) will need to assess the probability that reported improvement is actually true improvement. This probability can be assessed in several ways, but is most confidently assessed by calculating the degree to which an intervention is statistically significant. While the protocol for this activity does not specify a level of statistical significance that a reported change in performance must meet, it does require that EQROs assess the extent to which any performance changes reported by a BHO can be found to be statistically significant. States may choose to establish their own numerical thresholds for the significance of reported improvements (CMS PIP Protocol, page 18).

Activity X. Sustained Improvement Achieved

Real change results from changes in the fundamental processes of health care delivery. Such changes should result in sustained improvements. In contrast, a spurious, one-time improvement can result from unplanned accidental occurrences or random chance. If real change has occurred, the BHO should be able to document sustained improvement (CMS PIP Protocol, page 19).

Appendix C. Definitions and Explanations by Activity for Colorado Health Partnerships, LLC

This document was developed by HSAG as a resource to assist BHOs in understanding the broad concepts in each activity related to PIPs. The specific concept is delineated in the left column, and the explanations and examples are provided in the right column.

Concepts	Definitions and Explanations
Activity I. Appropriate Study Topic	
Broad spectrum of care	<ul style="list-style-type: none"> ◆ Clinical focus areas: Includes prevention and care of acute and chronic conditions and high-volume/high-risk services. High-risk procedures may also be targeted (e.g., care received from specialized centers). ◆ Nonclinical areas: Continuity or coordination of care addressed in a manner in which care is provided from multiple providers and across multiple episodes of care (e.g., disease-specific or condition-specific care).
Eligible population	<ul style="list-style-type: none"> ◆ May be defined as consumers who meet the study population parameters.
Selected by the State	<ul style="list-style-type: none"> ◆ If the study topic was selected by the state Medicaid agency, this information is included as part of the description under Activity I: “Choose the Selected Study Topic” in the PIP Summary Form.
Activity II. Clearly Defined, Answerable Study Question	
Study question	<ul style="list-style-type: none"> ◆ The question(s) directs and maintains the focus of the PIP and sets the framework for data collection, analysis, and interpretation. The question(s) must be measurable and clearly defined. ◆ Examples: <ol style="list-style-type: none"> 1. Does educational outreach about immunizations increase the rates of immunizations for children 0–2 years of age? 2. Does increasing flu immunizations for consumers with chronic asthma impact overall health status? 3. Will increased planning and attention to follow-up after inpatient discharge improve the rate of mental health follow-up services?

Concepts	Definitions and Explanations
Activity III. Clearly Defined Study Indicator(s)	
Study indicator	<ul style="list-style-type: none"> ◆ A quantitative or qualitative characteristic reflecting a discrete event or status that is to be measured. Indicators are used to track performance and improvement over time. ◆ Example: The percentage of enrolled consumers who were 12–21 years of age who had at least one comprehensive well-care visit with a primary care practitioner or an obstetrician-gynecologist during the measurement year.
Sources identified	<ul style="list-style-type: none"> ◆ Documentation/background information that supports the rationale for the study topic, study question, and indicators. ◆ Examples: HEDIS^{®1} measures, medical community practice guidelines, evidence-based practices, or provider agreements. ◆ Practice guideline examples: American Academy of Pediatrics and American Diabetes Association.
Activity IV. Use a Representative and Generalizable Study Population	
Eligible population	<ul style="list-style-type: none"> ◆ Refers to consumers who are included in the study. ◆ Includes age, conditions, enrollment criteria, and measurement periods. ◆ Example: The eligible population includes all children 0–2 years of age as of December 31 of the measurement period, with continuous enrollment and no more than one enrollment gap of 30 days or less.
Activity V. Valid Sampling Techniques	
True or estimated frequency of occurrence	<ul style="list-style-type: none"> ◆ This may not be known the first time a topic is studied. In this case, the BHO should assume the need for a maximum sample size to establish a statistically valid baseline for the study. HSAG will review whether the BHO defined the impact the topic has on the population or the number of eligible consumers in the population.
Sample size	<ul style="list-style-type: none"> ◆ Indicates the size of the sample to be used.
Representative sample	<ul style="list-style-type: none"> ◆ Refers to the sample reflecting the entire population.
Confidence level	<ul style="list-style-type: none"> ◆ Statistical confidence is a numerical statement of the probable degree of certainty or accuracy of an estimate (e.g., 95 percent level of confidence with a 5 percent margin of error).

¹ HEDIS[®] is a registered trademark of the National Committee for Quality Assurance (NCQA).

Concepts	Definitions and Explanations
Activity VI. Accurate/Complete Data Collection	
Data elements	<ul style="list-style-type: none"> ◆ Identification of data elements includes unambiguous definitions of data that will be collected (e.g., the numerator/denominator, laboratory values).
Interrater reliability (IRR)	<ul style="list-style-type: none"> ◆ The HSAG review team evaluates if there is a tool, policy, and/or process in place to verify the accuracy of the data abstracted. Is there an over-read (IRR) process for the review of a minimum percentage of records? ◆ Examples: A policy that includes how IRR is tested, documentation of training, and instruments and tools used.
Algorithms	<ul style="list-style-type: none"> ◆ The development of any systematic process that consists of an ordered sequence of steps. Each step depends on the outcome of the previous step. ◆ The HSAG review team expects for the BHO to describe the process used in data collection. What are the criteria (e.g., what Current Procedural Terminology and/or source codes were used)?
Data completeness	<ul style="list-style-type: none"> ◆ For the purposes of PIP scoring, data completeness refers to the degree of complete administrative data (e.g., encounter data or claims data). BHOs that compensate their providers on a fee-for-service basis require a submission of claims for reimbursement. However, providers generally have several months before they must submit the claim for reimbursement, and processing claims by the health plan may take several additional months, creating a claims lag. Providers paid on a capitated or salaried basis do not need to submit a claim to be paid, but should provide encounter data for the visit. In this type of arrangement, some encounter data may not be submitted. ◆ PIPs that use administrative data need to ensure that the data has a high degree of completeness prior to its use. Evidence of data completeness levels may include claim processing lag reports, trending of provider submission rates, policies and procedures regarding timeliness requirements for claims and encounter data submission, encounter data submission studies, and comparison reports of claims/encounter data versus medical record review. Discussion in the PIP should focus on evidence at the time the data was collected for use in identifying the population, sampling, and/or calculation of the study indicators. Statements such as, “Data completeness at the time of the data pull was estimated to be 97.8 percent based on claims lag reports (see attached Incurred But Not Reported report),” along with the attachment mentioned, usually (but not always) are sufficient evidence to demonstrate data completeness.

Concepts	Definitions and Explanations
Activity VII. Appropriate Improvement Strategies	
Causes and barriers	<ul style="list-style-type: none"> ◆ Interventions for improvement are identified through evaluation or barrier analysis. If there is no improvement, what problem-solving processes are put in place to identify possible causes and proposed changes to implement solutions? ◆ It is expected that interventions associated with improvement of quality indicators will be system interventions.
Standardized	<ul style="list-style-type: none"> ◆ If the interventions result in successful outcomes, the interventions should continue and the BHO should monitor them to ensure that the outcomes remain. ◆ Examples: If an intervention is the use of practice guidelines, then the BHO continues to use them. If mailers are a successful intervention, then the BHO continues the mailings and monitors the outcomes.
Activity VIII. Sufficient Data Analysis and Interpretation	
Analysis plan	<ul style="list-style-type: none"> ◆ Each study should have a plan for how data analysis will occur. ◆ The HSAG review team will ensure that this plan was followed.
Generalization to the study population	<ul style="list-style-type: none"> ◆ Study results can be applied to the general population with the premise that comparable results will occur.
Factors that threaten internal and external validity	<ul style="list-style-type: none"> ◆ Did the analysis identify any factors (internal or external) that would threaten the validity of study results? ◆ Example: There was a change in record extraction (e.g., a vendor was hired or there were changes in HEDIS methodology).
Presentation of the data analysis	<ul style="list-style-type: none"> ◆ Results should be presented in tables or graphs with measurement periods, results, and benchmarks clearly identified.
Identification of initial measurement and remeasurement of study indicators	<ul style="list-style-type: none"> ◆ Clearly identify in the report which measurement period the indicator results reflect.
Statistical differences between initial measurement and remeasurement periods	<ul style="list-style-type: none"> ◆ The HSAG review team looks for evidence of a statistical test (e.g., a <i>t</i> test or Chi-square test).
Identification of the extent to which the study was successful	<ul style="list-style-type: none"> ◆ The HSAG review team looks for improvement over several measurement periods. ◆ Both interpretation and analysis should be based on continuous improvement philosophies, with the BHO documenting data results and the follow-up steps that will be taken for improvement.

Concepts	Definitions and Explanations
Activity IX. Real Improvement Achieved	
Remeasurement methodology is the same as baseline	<ul style="list-style-type: none"> ◆ The HSAG review team looks to see that the study methodology remains the same for the entire study.
Documented improvement in processes or outcomes of care	<ul style="list-style-type: none"> ◆ The study should document how interventions were successful in impacting system processes or outcomes. ◆ Examples: There was a change in data collection or a rate increase or decrease demonstrated in graphs/tables.
Activity X. Sustained Improvement Achieved	
Sustained improvement	<ul style="list-style-type: none"> ◆ The HSAG review team looks to see if study improvements have been sustained over the course of the study. This needs to be demonstrated over a period of several (more than two) remeasurement periods.