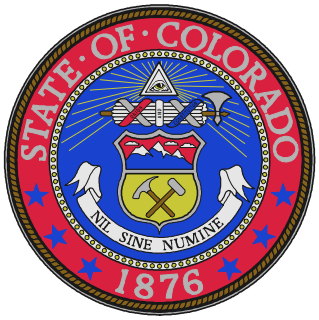
State of Colorado



Department of Health Care Policy & Financing

FY 06–07 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

June 2007

HSAG HEALTH SERVICES ADVISORY GROUP

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HSAG HEALTH SERVICES ADVISORY GROUP

CONTENTS

for **Colorado Health Partnerships, LLC**

Overview

The Balanced Budget Act (BBA) of 1997 (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 the compliance with requirements set forth in 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 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.

Study Topic

The study topic addressed CMS' requirements related to quality of and access to care and services. The study focused on reducing inpatient hospitalizations for children and adolescents in the **Colorado Health Partnerships, LLC** (**CHP**) population. *Mental Health: A Report of the Surgeon General* (1999) stated that inpatient hospitalization was the most restrictive and costliest form of treatment, as well as being a clinical intervention with the weakest research support. A new contract and the addition of the Pike's Peak region population led to an increase in youth admissions over the expected rate, which was based on previous inpatient trends for this

population. The inpatient rate increased 37 percent during the first reporting period of 2005. Since youths make up 60 percent of the total **CHP** Medicaid population, it was decided that interventions were required and that any interventions would benefit all consumers.

Study Methodology

Four study indicators were developed to collect data that would answer the study question. The indicators reported on inpatient admissions per 1,000 consumers and bed days per 1,000 admissions, as well as total inpatient days and total consumers admitted. These indicators will allow **CHP** to measure its inpatient admission and bed day rates. The study population included all eligible youth 17 years of age or younger in the **CHP** Medicaid capitation area. An admission was counted if the youth was authorized for an inpatient admission and was eligible for Medicaid on the date of admission. Administrative data were collected for this study every six months. 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.

Study Results

For the current validation cycle, the study had completed a second remeasurement of Study Indicators 1 and 2 and a first remeasurement of Study Indicators 3 and 4. Control charts were used to assess admissions per 1,000 consumers. While the initial quarter showed a sharp increase in admissions, subsequent remeasurements began to show a decreasing trend. For the current measurement period, there was an increase to 6.75 admissions per 1,000 consumers. Control charts were also used to assess bed days per 1,000 admissions, which also showed an initial sharp increase in the first quarter. Subsequent measurement periods showed downward trends; however, there was an increase to the current reported level of 53.23 bed days per 1,000 admissions for the measurement year, which was above the baseline goal of 39.18. Chi-square testing with a significance level of p=0.05 was used to compare the six-month admissions and bed days rates. The chi-square testing showed there was a statistically significant increase in six-month bed days from January–June 2006. Overall bed days increased from 2,063 in 2005 to 2,436 in 2006. There was also an increase in six-month admissions from January–June 2005 to January–June 2006; however, the increase was not statistically significant. Overall, six-month admissions increased from 257 in 2005 to 308 in 2006. As noted by **CHP,** the number of eligible youth from January–June 2006 increased to 86,829 in 2006 from 84,024 in 2005. The increases in six-month bed days and six-month admissions from July–December 2005 to July–December 2006 were significant. Six-month bed days increased from 1,911 in 2005 to 2,129 in 2006 and six-month admissions increased from 222 in 2005 to 271 in 2006. **CHP** noted that the number of eligible youth from July–December decreased to 84,695 in 2006 from 86,219 in 2005.

Scoring

HSAG validates a total of 10 activities for each PIP. The PIP is validated annually. The validation 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*.
  - 0 evaluation elements were *Partially Met.*
  - 4 evaluation elements were *Not Met*.
  - 15 evaluation elements were *Not Applicable (N/A).*
- 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 *N/A.*

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

Conclusions

For this validation cycle, the study provided a baseline and two remeasurements for Study Indicators 1 and 2 and a baseline and one remeasurement for Study Indicators 3 and 4 to address quality of and access to care and services. The baseline rate for admissions per 1,000 was 6.21, 5.63 for the first remeasurement, and 6.75 for the second remeasurement The baseline rate for bed days per 1,000 was 51.23, 46.69 for the first remeasurement, and 53.23 for the second remeasurement. Six-month admissions and six-month bed days rates also increased from baseline to the first remeasurement. Control charts and chi-square test results indicated that the current interventions were ineffective in reducing youth admissions and bed days rates. **CHP** noted in the PIP Summary Form that the interventions did not address the root cause or were not intensive enough. **CHP** plans to re-evaluate the interventions and either revise or discontinue the interventions.

Requirements

There were no requirements identified during this validation cycle.

Recommendations

HSAG recommends that **CHP** review additional data and causal/barrier analysis to identify if the interventions are addressing the root causes. The current interventions should be reevaluated and revised, or discontinued as needed. **CHP** has planned follow-up activities, including examining how residential treatment center (RTC) admissions affect readmissions and what impact a change in licensure levels for RTCs may have had on admissions. **CHP** reported that it is also considering changing the focus of the PIP to only include a specific, high-risk population, rather than including all youth 17 years of age and younger.

Comparison of Years 1 and 2

For Year 1, Activities I, Appropriate Study Topic, through VIII, Sufficient Data Analysis and Interpretation, were validated because the study had only completed intervention implementation and the early phases of data analysis at the time of the submission. For Year 2, the PIP was validated through Activity X, Sustained Improvement Achieved. From the first to the second remeasurement, youth admission rates per 1,000 consumers increased from 5.63 to 6.75. The baseline rate was 6.21 and the baseline goal was 4.8 admissions per 1,000 consumers. From the first to the second remeasurement, bed days rates per 1,000 admissions increased from 46.69 to 53.23. The baseline rate was 51.23 and the baseline goal was 39.18 bed days per 1,000 admissions. Additionally, chi-square testing showed there was a significant increase in six-month admissions from 222 to 271 between July to December 2005 and July to December 2006. There was also a significant increase in six-month bed days from 2,063 to 2,436 between January to June 2005 and January to June 2006, and from 1,911 to 2,129 between July to December 2005 and July to December 2006.

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:

Met	(1) All critical elements were *Met*, **and** (2) 80 percent to 100 percent of all critical and non-critical elements were *Met*.
Partially Met	(1) All critical elements were *Met*, and 60 percent to 79 percent of all critical and non-critical elements were *Met*, **or** (2) One critical element or more was *Partially Met*.
Not Met	(1) All critical elements were *Met*, and <60 percent of all critical and non-critical elements were *Met*, **or** (2) One critical element or more was *Not Met*.
Not Applicable (N/A)	*N/A* elements (including critical elements if they were not assessed) were removed from all scoring.

For FY 06–07, the BHOs were provided an opportunity to resubmit additional information and/or documentation. The plans were required to take action for any evaluation element receiving a score of *Partially Met* or *Not Met*. The action could include resubmission of additional PIP documentation prior to final scoring. Future annual PIP submissions should include all information pertinent to the PIP study to achieve a *Met* status.

PIP Scores

For this PIP, HSAG reviewed Activities I through X. 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 06-07 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 N/A	Total Possible Critical Elements	Total Critical Elements Met	Total Critical Elements Partially Met	Total Critical Elements Not Met	Total Critical Elements N/A
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	0	3	0	No Critical Elements				
X. Sustained Improvement Achieved	1	0	0	1	0	No Critical Elements				
Totals for All Activities	**53**	**34**	**0**	**4**	**15**	**11**	**8**	**0**	**0**	**3**

Table 2-2—FY 06-07 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 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 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 CMS rationale for each activity.

CHP's PIP evaluated 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 FY 06–07 validation cycle, **CHP** continued the 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*** as its clinical PIP topic.

Finding(s)

Six of the six evaluation elements, including one critical element, were *Met*.

Strength(s)

The study topic assessed quality of and access to care and services. The topic reflected a high-volume service, with 60 percent of **CHP**'s population being youth.

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)

CHP's study question, as stated in its PIP Summary Form, 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 stated the problem in simple terms and set the focus of the study, which was to lower inpatient hospital admission rates and/or bed days for Medicaid children and adolescents.

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)

CHP, as stated in its PIP Summary Form, had four study indicators:

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

Finding(s)

Five of seven evaluation elements were *Met*, including the three critical elements. Two evaluation elements were *Not Applicable* because the study indicators were not based on practice guidelines,

nor were they nationally recognized measures such as the Health Plan Employer Data and Information Set (HEDIS®).[1]

Strength(s)

The study indicators were developed to answer the study question and measure changes in health status. The study indicators were well-designed to address CMS requirements for evaluating quality of and access to care and services.

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 population used for the study included all eligible consumers 17 years of age and younger in the **CHP** Medicaid capitation program. There were no restrictions on enrollment or diagnosis criteria.

Finding(s)

All three evaluation elements, including the two critical elements, were *Met*.

Strength(s)

The study population was completely and thoroughly defined, including requirements for the length of a consumer's enrollment. It 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.

[1] **HEDIS®** refers to the Health Plan Employer Data and Information Set and is a registered trademark of the National Committee for Quality Assurance (NCQA).

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)

No sampling was used for this study because the entire eligible population for each indicator was used. The results of this study will 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) (for Noncritical Elements)

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

Activity VI. Accurate/Complete Data Collection

Data Collection

The data collection process used for the study was completely administrative. Authorization data were used to identify admissions and bed days for calculating the rates.

Finding(s)

Six of 11 evaluation elements were *Met* for this activity. Five evaluation elements, including the one critical element, were *Not Applicable* because the study did not use manual data abstraction to collect its data.

Strength(s)

The data collection process was thoroughly described and was appropriate for the study. The study report included algorithms that outlined the steps in the production of the study indicators, and the degree of data completeness was provided. **CHP** estimated the degree of authorization data to be 98 percent within 45 days, and eligibility data to be between 90 and 95 percent complete within 45 days.

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

From baseline to the first remeasurement, processes and systems were put in place to evaluate and determine whether youth met the criteria for inpatient admissions. Additional interventions included ensuring that crisis services were fully and appropriately staffed, educating crisis staff members about appropriateness of inpatient care, offering referral options, and educating staff members about the importance of coordinating services among all providers and agencies. **CHP** also established a task group to oversee the management of the performance improvement project. The focus of the PIP task group meetings included identifying problems and barriers that may have contributed to increasing admissions and/or bed days for youth. In April 2006, the task group evaluated more detailed data reports on the youths admitted and discovered that 26 percent of the admissions in 2005 were actually readmissions, and for some consumers, repeat readmissions. The task group initiated the development of an intervention to schedule a multidisciplinary staff meeting for each youth following a second admission that occurred within six months of a prior admission. It was determined that this intervention would address coordination of care and service planning. At the January 2007 task group meeting, other potential interventions were discussed, including 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.

Finding(s)

Three of four evaluation elements were *Met* for this activity. One evaluation element related to standardizing and monitoring interventions was scored *Not Applicable* because **CHP** was still in the process of determining the success or failure of the interventions at the time of the PIP submission.

Strength(s)

CHP performed a causal/barrier analysis to identify possible interventions for the study. The interventions were related to data analyzed as part of the quality improvement process. The implemented interventions were likely to induce permanent change over time.

Requirement(s) (for Critical Elements)

There were no critical elements for this activity.

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 and bed days per 1,000 for each quarterly reporting period. In addition to the process control methods, **CHP** compared data over time using a chi-square test.

Finding(s)

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

Strength(s)

The data analysis was conducted according to the plan in the study. **CHP** identified factors that threatened the internal or external validity of the findings and factors that affected the ability to compare measurements. Statistical differences between measurements were identified and an interpretation of the extent to which the study was successful was included.

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 were no improvements in rates for either youth admissions or bed days.

Finding(s)

One evaluation element was *Met* and the remaining three evaluation elements were *Not Met*.

Strength(s)

Remeasurement methodology was the same as baseline methodology. **CHP** completed statistical testing; however, the control charts and chi-square testing showed no improvements in rates for youth admissions or bed days.

Requirement(s) (for Critical Elements)

There were no critical elements for this activity.

Recommendation(s) (for Noncritical Elements)

The PIP needs to show statistically significant improvement in the outcomes of care, and a link between the improvement and the interventions.

Activity X. Sustained Improvement Achieved

Sustained Improvement Achieved

Repeated measurements over comparable time periods did not demonstrate sustained improvement.

Finding(s)

The one evaluation element for this activity received a *Not Met* score.

Strength(s)

CHP identified factors that may have impacted the remeasurements and described follow-up activities in the PIP study, including: further analysis of admissions and readmissions, evaluation of admissions and bed days, determining what impact RTC admission patterns have on readmissions, identifying additional root causes and barriers, and possibly changing the baseline goal. **CHP** plans to reevaluate and revise or discontinue interventions as needed following additional data analysis, root cause analysis, and identification of additional or previously unidentified barriers. **CHP** is also considering changing the focus of the PIP to only include a specific, high-risk population, rather than including all youth 17 years of age and younger.

Requirement(s) (for Critical Elements)

There were no critical elements for this activity.

Recommendation(s) (for Noncritical Elements)

Follow-up activities as planned should be completed, including additional data and causal/barrier analysis to identify if the interventions are addressing the root causes. The current interventions should be reevaluated and revised or discontinued as needed. **CHP** should complete data analysis to determine if the focus of the PIP should be changed. By changing the focus of the PIP to a specific, high-risk population, **CHP** could achieve real improvement in outcomes of care for its consumers.

Section 4: Colorado FY 06-07 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

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 3/31/2007		
Type of Delivery System:	BHO	Number of Medicaid Consumers in BHO: Number of Medicaid Consumers in Study:	155,003 94,053
Year 2 Validation	Resubmission		

Section 4: Colorado FY 06-07 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). N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The study topic reflected a high-volume and high-risk condition.
	2. Is selected following collection and analysis of data (or was selected by the State). N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	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 scoring for this element will be Met or Not Met.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The study topic addressed a broad spectrum of care and services.
	4. Includes all eligible populations that meet the study criteria. N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The study topic included all eligible populations that met the study criteria.
	5. Does not exclude consumers with special health care needs. The scoring for this element will be Met or Not Met.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	Consumers with special health care needs were not excluded.
C*	6. Has the potential to affect consumer health, functional status, or satisfaction. The scoring for this element will be Met or Not Met.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	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 06-07 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. N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The study question stated the problem to be studied in simple terms.
C*	2. Is answerable. N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	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 06-07 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. N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	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.	☐ Met ☐ Partially Met ☐ Not Met ☑ N/A	The study indicators were not based on practice guidelines.
C*	3. Allow for the study question to be answered. N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	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. N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The study indicators measured changes in consumer health and functional status.
C*	5. Have available data that can be collected on each indicator. N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	There were available data 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 N/A.	☐ Met ☐ Partially Met ☐ Not Met ☑ N/A	The study indicators were not nationally recognized measures.
	7. Includes the basis on which the indicator(s) was adopted, if internally developed.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The basis on which each study indicator was adopted was included.

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 06-07 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. N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The study population was accurately and completely defined.
	2. Includes requirements for the length of a consumer's enrollment in the BHO.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	No restrictions were made based on the enrollment period other than the consumer having to be Medicaid-eligible at the date of admission.
C*	3. Captures all consumers to whom the study question applies. N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The 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 06-07 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.	☐ Met ☐ Partially Met ☐ Not Met ☑ N/A	Sampling was not used.
	2. Identify the sample size.	☐ Met ☐ Partially Met ☐ Not Met ☑ N/A	Sampling was not used.
	3. Specify the confidence level.	☐ Met ☐ Partially Met ☐ Not Met ☑ N/A	Sampling was not used.
	4. Specify the acceptable margin of error.	☐ Met ☐ Partially Met ☐ Not Met ☑ N/A	Sampling was not used.
C*	5. Ensure a representative sample of the eligible population.	☐ Met ☐ Partially Met ☐ Not Met ☑ N/A	Sampling was not used.
	6. Are in accordance with generally accepted principles of research design and statistical analysis.	☐ Met ☐ Partially Met ☐ Not Met ☑ N/A	Sampling was not used.

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 06-07 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. N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The data elements collected were identified.
	2. Clearly identified sources of data. N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The sources of data were specified.
	3. A clearly defined and systematic process for collecting data that includes how baseline and remeasurement data will be collected. N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The process for collecting data was defined and systematic.
	4. A timeline for the collection of baseline and remeasurement data. N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	A timeline for the collection of data was included.
	5. Qualified staff and personnel to abstract manual data.	☐ Met ☐ Partially Met ☐ Not Met ☑ N/A	Manual data collection was not used.
C*	6. A manual data collection tool that ensures consistent and accurate collection of data according to indicator specifications.	☐ Met ☐ Partially Met ☐ Not Met ☑ N/A	Manual data collection was not used.
	7. A manual data collection tool that supports interrater reliability.	☐ Met ☐ Partially Met ☐ Not Met ☑ N/A	Manual data collection was not used.
	8. Clear and concise written instructions for completing the manual data collection tool.	☐ Met ☐ Partially Met ☐ Not Met ☑ N/A	Manual data collection was not used.
	9. An overview of the study in written instructions.	☐ Met ☐ Partially Met ☐ Not Met ☑ N/A	Manual data collection was not used.
	10. Administrative data collection algorithms/flow charts that show activities in the production of indicators.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	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.

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	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The estimated degree of authorization data completeness was reported as 98 percent within 45 days. Eligibility data were estimated to be 90-95 percent complete within 45 days.

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.

	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. N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The interventions were related to causes/barriers identified through data analysis and quality improvement processes.
	2. System changes that are likely to induce permanent change.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The interventions were system changes that were likely to induce permanent change.
	3. Revised if the original interventions were not successful.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The interventions were revised.
	4. Standardized and monitored if interventions were successful.	☐ Met ☐ Partially Met ☐ Not Met ☑ N/A	At the time of the evaluation, CHP was still in the process of determining the success or failure of the interventions.

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.

	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. N/A is not applicable to this element for scoring.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The data analysis was conducted according to the data analysis plan.
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 N/A.	☐ Met ☐ Partially Met ☐ Not Met ☑ N/A	A sample was not selected.
	3. Identifies factors that threaten internal or external validity of findings.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	Factors that threatened the internal or external validity of findings were identified.
	4. Includes an interpretation of findings.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	An interpretation of findings was included.
	5. Is presented in a way that provides accurate, clear, and easily understood information.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The measurements for Study Indicators 3 and 4 were confusing. Baseline and Remeasurement 1 for both study indicators were taken from different six-month periods, while Remeasurement 2 included both six-month periods. Rereview April 2007 For the resubmission, CHP included both 2005 six-month periods for the baseline measurement of Study Indicators 3 and 4, and both 2006 six-month periods for the first remeasurement to ensure comparable time periods. As a result, this evaluation element was changed from Partially Met to Met.

* "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.

	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.**		
	6. Identifies initial measurement and remeasurement of study indicators.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	Baseline and Remeasurement 1 for Study Indicators 3 and 4 were taken from different six- month periods. Remeasurement 2 included both six-month periods. Rereview April 2007 For the resubmission, CHP included both 2005 six-month periods for the baseline measurement of Study Indicators 3 and 4, and both 2006 six-month periods for the first remeasurement to ensure comparable time periods. As a result, this evaluation element was changed from Partially Met to Met.
	7. Identifies statistical differences between initial measurement and remeasurement.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	Statistical differences between measurements were identified.
	8. Identifies factors that affect the ability to compare initial measurement with remeasurement.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	Factors that affected the ability to compare measurements were identified.
	9. Includes interpretation of the extent to which the study was successful.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	An interpretation of the extent to which the study was successful was included.

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.

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.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	Baseline and Remeasurement 1 for Study Indicators 3 and 4 were taken from different six-month periods. Remeasurement 2 included both six-month periods. Rereview April 2007 For the resubmission, CHP included both 2005 six-month periods for the baseline measurement of Study Indicators 3 and 4, and both 2006 six-month periods for the first remeasurement to ensure comparable time periods. As a result, this evaluation element was changed from Partially Met to Met.
	2. There is documented improvement in processes or outcomes of care.	☐ Met ☐ Partially Met ☑ Not Met ☐ N/A	This study reported results that demonstrated increases rather than a reduction in admissions and bed-day rates.
	3. The improvement appears to be the result of planned intervention(s).	☐ Met ☐ Partially Met ☑ Not Met ☐ N/A	There were no improvements in youth admission and bed-day rates.
	4. There is statistical evidence that observed improvement is true improvement.	☐ Met ☐ Partially Met ☑ Not Met ☐ N/A	Statistical testing was completed; however, the control charts and chi-square testing showed no improvements in the youth admission or bed-day rates.

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

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

Section 4: Colorado FY 06-07 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.	☐ Met ☐ Partially Met ☑ Not Met ☐ N/A	Control charts and chi-square tests indicated that the current interventions were ineffective in reducing youth admission and bed-day rates.

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 06-07 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 A-1—FY 06-07 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 N/A**	**Total Possible Critical Elements**	**Total Critical Elements Met**	**Total Critical Elements Partially Met**	**Total Critical Elements Not Met**	**Total Critical Elements N/A**
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	0	3	0	0	No Critical Elements			
X.	Sustained Improvement Achieved	1	0	0	1	0	0	No Critical Elements			
Totals for All Activities		**53**	**34**	**0**	**4**	**15**	**11**	**8**	**0**	**0**	**3**

Table A-2—FY 06-07 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.

EVALUATION OF THE OVERALL VALIDITY AND RELIABILITY OF PIP/STUDY 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. Determining when an accumulation of threats to validity and reliability, and PIP design problems, reach a point at which the PIP findings are no longer credible is always a judgment call.

***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

*	**	***
X		
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 study, HSAG's assessment determined confidence in the results.

Appendices

for Colorado Health Partnerships, LLC

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 submitted to HSAG for review, Appendix B is 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 and 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 3/31/07		

155,003 eligible consumers	Average Monthly Number of Medicaid Consumers (all ages) in BHO for Q1 CY2005	Children and Adolescents constitute 60% of the total eligible Medicaid population managed by Colorado Health Networks.
94,053 eligible youth (<18)	Average Monthly Number of Medicaid Consumers in Project/Study (<18 years of age) for Q1 CY2005	**Section to be completed by HSAG** _____ Year 1 Validation _____ Initial Submission _____ Resubmission __X__ Year 2 Validation _____ Initial Submission __X__ Resubmission _____ Year 3 Validation _____ Initial Submission _____ Resubmission

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 Selected Study Topic. Topics selected for 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 nonclinical service. The goal of the project should be to improve processes and outcomes of health care for the full affected population. The topic may be specified by the State Medicaid agency or on the basis of Medicaid consumer input.

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 4.3 per 1,000 youth during the previous reporting period but increased 37% to 5.9 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 there 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.

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

B. Activity II: The Study Question. 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?

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

C. Activity III: Selected Study Indicators. A study indicator is a quantitative or qualitative characteristic or variable that reflects a discrete event (e.g., rates of hospital readmissions within 30 or 90 days), or a status (e.g., percent of consumers reporting that they actively participate in treatment planning) that is to be measured. The selected indicators should be appropriate for the study topic and question as well as 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
Baseline Benchmark:	
Source of Benchmark:	
Baseline Goal:	**4.8 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:	39.18 Bed Days/1,000 (Based upon UCL for previous four reporting periods) with four successive reporting periods "in control".)

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

C. Activity III: Selected Study Indicators. A study indicator is a quantitative or qualitative characteristic or variable that reflects a discrete event (e.g., rates of hospital readmissions within 30 or 90 days), or a status (e.g., percent of consumers reporting that they actively participate in treatment planning) that is to be measured. The selected indicators should be appropriate for the study topic and question as well as 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:	1,841 Bed Days based upon upper control limit for previous four reporting periods (39.18 bed days/1000 as specified above)
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:	226 Admissions based upon upper control limit for previous four reporting periods (4.8 Admits/1000 as specified above)

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

D. Activity IV: Identified Study Population. The study population should be clearly defined to represent the entire population to which the PIP study question and indicators apply. The length of consumer enrollment should be considered and defined. All selection criteria should be listed here. Once the population is identified, a decision must be made whether to review data for the entire population or a sample of that 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.

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

E. Activity V: 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 for the first time a topic is studied. In this case, an estimate should be used and the basis for that estimate indicated.

Measure	Sample Error and Confidence Level	Sample Size	Population	Method for Determining Size (*describe*)	Sampling Method (*describe*)

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

F. Activity VIa: Data Collection Procedures. 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.

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
Dan Leslie, B.S, – Business Analyst
Scott Jones, M.Ed., LPC – Clinical Business Analyst

[X] 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 _____
[X] Other Authorization Data

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 _____

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

F. Activity VIb: Data Collection Cycle.	Data Analysis Cycle.
[☐] Once a year [☐] Twice a year [☐] Once a season [X] Once a quarter [☐] Once a month [☐] Once a week [☐] Once a day [☐] Continuous [☐] Other (list and describe): Also, once every six months for annual comparison	[☒] Once a year [☐] Once a season [☒] Once a quarter [☐] Once a month [☐] Continuous [☐] Other (list and describe): The statistical process control charts will be updated quarterly 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.

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

F. Activity VIc. Data Analysis Plan and Other Pertinent Methodological Features

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 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.

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

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

F. Activity VIc. Data Analysis Plan and Other Pertinent Methodological Features

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 measurements[2]. A 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 "one 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.

Indicators 1 and 2 were calculated using a baseline period of 4/1/2004-3/31/2005 to demonstrate, through the control charting process, the dramatic trend of increasing youth admissions and bed days during that time period, which coincides with the addition of the Pikes Peak service area (January 1, 2005), as seen in the attached Control Charts (Attachments A and B). The trend reflects that the number of admissions and bed days which were previously "in control" moved "out of control" (i.e., beyond the control limits) for the timeframe that included the quarter beginning January 2005. While the baseline time period differs 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 slightly 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 will be collected 45 days after each reporting period.

Data Analysis

In addition to process control methods, CHP will compare the data over time using a Chi-Square with the level of significance set at $p. < 0.05$ to determine if differences seen represent a significant decrease. 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 will be used in calculating these Chi-Square 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 this same period. In this manner, the same six-month periods for each year can be compared. A Chi-Square for the difference in two proportions can be applied to determine if there are significant changes over time, and to allow a more frequent evaluation of progress. 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 will be spread over both periods. Further analysis will be conducted to determine the impact of any seasonal effects on the data and analysis of the data will include year to year comparisons of the same time periods.

Data will be collected 45 days after each reporting period. Data collection is 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 Activity VIII B. Remeasurement 2 below (see Factors potentially influencing measurement or validity of data), 2006 eligibility data will be run again in late 2007 and compared to the 2006 eligibility numbers in this PIP to ensure the 2006 measures are based on the most accurate data available. Eligibility data is obtained from the State and is subject to retrospective eligibility information provided by the State.

[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.

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

G. Activity VII. 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.

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.

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

G. Activity VII. 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.

- 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.

The impact of these interventions is reflected in the decrease of child/adolescent admissions and bed days as reported quarterly; however the downward trend is gradual. Work continues to identify, evaluate, and implement best practice services to ensure children and adolescents are not hospitalized unnecessarily and that effective programs are available to meet their needs.

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

G. Activity VII. 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.

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 is reported to CHN and tracked in a database, and will 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 has 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 will coordinate very closely with the Outpatient Services and Crisis Screening Units of the mental health center. This program will be 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

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

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

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/84,024 Eligible Youth;** Six Month Bed Days for Period 07/01/2005 through 12/31/2005 **= 1911 Bed Days/86,219 Eligible Youth.**

Study Indicator #4: Six Month Admissions for Period 01/01/2005 through 06/30/2005 **= 257 Admits/84,024 Eligible Youth:** Six Month Admissions for Period 07/01/2005 through 12/31/2005 = **222 Admits/86,219 Eligible Youth**.

Remeasurement 1

Study Indicator #1 Admissions per 1,000 for Baseline Period: 01/01/2005 through 12/31/2005 = **5.63**

Study Indicator #2 Bed Days per 1,000 for Baseline Period: 01/01/2005 through 12/31/2005 = **46.69**

Study Indicator #3: Six Month Bed Days for Period 01/01/2006 through 06/30/2006 = **2436 Bed Days/86,829 Eligible Youth;** Six Month Bed Days for Period 07/01/2006 through 12/31/2006 **= 2129 Bed Days/ 84,695 Eligible Youth.**

Study Indicator #4 Six Month Admissions for Period 01/01/2006 through 06/30/2006 = **308 Admits/86,829 Eligible Youth**; Six Month Admissions for Period 07/01/2006 through 12/31/2006 = **271 Admits/84,695 Eligible Youth**.

Remeasurement 2

Study Indicator #1 Admissions per 1,000 for period: 01/01/2006 through 12/31/2006 **= 6.75**

Study Indicator #2 Bed Days per 1,000 for period 01/01/2006 through 12/31/2006 = **53.23**

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

H. Activity VIIIb. Interpretation of study results: Describe the results of the statistical analysis, interpret the findings, and 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.

Baseline Measurement

The baseline measurements listed below for Study Indicators 1 and 2 reflect the three quarters of admissions and bed days for youth that, when using control chart measurement, reflect a process that was effective (in control) prior to the addition of the Pikes Peak service area on January 1, 2005, when admissions and bed days spiked upward, indicating 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/84,024 Eligible Youth;** Six Month Bed Days for Period 07/01/2005 through 12/31/2005 **= 1911 Bed Days/86,219 Eligible Youth.**

Study Indicator #4: Six Month Admissions for Period 01/01/2005 through 06/30/2005 **= 257 Admits/84,024 Eligible Youth;** Six Month Admissions for Period 07/01/2005 through 12/31/2005 = **222 Admits/86,219 Eligible Youth**.

The overall number of admissions also decreased when comparing the consecutive 2005 six month periods (January – June and July – December 2005) from 257 to 222 admissions. While this decrease is also depicted 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. In light of this, it will be necessary to remeasure during January – June 2006 so that the same time periods in successive years can be compared to control for any seasonal influences.

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. Any differences may become more apparent as the PIP progresses and additional analyses are completed. As the upward trend in admissions and bed days was noted, training, staffing and programmatic interventions were initiated as described in G. Activity VII, above.

There is concern that the periodic eligibility issues experienced by the State may impact the overall calculations, unrelated to the interventions. This could impact the validity of the calculations by ultimately not capturing youth admitted because they were not eligible at the time of authorization. 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.

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

H. Activity VIIIb. Interpretation of study results: Describe the results of the statistical analysis, interpret the findings, and 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.

Remeasurement 1

Attachment A. (Admits per 1,000 Control Chart) identifies the initial sharp increase in admission rates during the initial quarter of the new contract year to 6.21. This process was "out of control". The subsequent measurement periods show a decreasing trend to the current level of 5.63 with the last two quarterly measurements being more in control. The current measure is still above the baseline goal of 4.8 admits per 1,000 which was determined by taking the upper control limit of the admission process using the data prior to the beginning of the new contract.

Attachment A. (Bed Days per 1,000 Control Chart) also identifies the initial sharp increase and out of control process during the first quarterly period of the new contract. Subsequent periods also show downward trends in bed days to the current level of 46.69 days per 1,000. This period remains above the baseline goal of 39.18 days per 1,000 which was determined by taking the upper control limit of the bed days process prior to the beginning of the new contract but does 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 = **2436 Bed Days/86,829 Eligible Youth;** Six Month Bed Days for Period 07/01/2006 through 12/31/2006 **= 2129 Bed Days/ 84,695 Eligible Youth.**

Study Indicator #4: Six Month Admissions for Period 01/01/2006 through 06/30/2006 = **308 Admits/86,829 Eligible Youth**; Six Month Admissions for Period 07/01/2006 through 12/31/2006 = **271 Admits/84,695 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 (with level of significance set at p. = 0.05) showed a significant increase (p. = 0.00001068095836555) in the proportion of youth bed days to overall eligible youth members when comparing the two time periods (January – June 2005 and January – June 2006). Overall bed days increased from 2063 in 2005 to 2436 in 2006, an increase of 373 bed days (note that the number of eligible youth increased from 84,024 (2005) to 86,829 (2006) during the same period, an increase of 2,805 eligible youth).

July – December 2005 to July – December 2006: A Chi Square test (with significance level p = 0.05) showed a significant increase (p = 0.00007807551627147) when comparing the bed days for these two time periods. The increase in bed days for this time period during 2006 was 218, an increase of 11.4% over 2005. Eligible youth also dropped from 2005 to 2006, by a total of 1,524.

H. Activity VIIIb. Interpretation of study results: Describe the results of the statistical analysis, interpret the findings, and 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.

Comparison of Six Month Admissions 2006 to Six Month Admissions 2005

January – June 2005 to January – June 2006: A Chi Square test (with significance level of p = 0.05) showed an increase (p = 0.07965495040474560) in admissions when comparing the first six months of 2005 to the first six months of 2006, although the increase was not statistically significant. Overall admissions showed an increase of 51, although average eligible youth members increased from 84,024 for the January – June 2005 six-month period to 86,829 for the same six-month period in 2006, an increase of 2,805 eligible youth members.

July - December 2005 to July – December 2006: A Chi Square test with the level of significance set at p = 0.05 showed a significant increase (p = 0.01632973417911920) in youth admissions when comparing the two time periods, with an overall increase of 49 admissions. A decrease in the number of eligible youth also occurred during this time period (1,524 for the 2006 six-month time period vs. 2005).

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

Remeasurement 2

Study Indicator #1 Admissions per 1,000 for period: 01/01/2006 through 12/31/2006 **= 6.75 (**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 = **53.23** (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 the process again moving out of control after the first quarter, as each successive quarter shows an increase to 6.75 admissions per thousand youth for the year. Admissions per thousand have increased over the 2005 rate of 5.63 per thousand, and considerably above the baseline goal of 4.8 admits per thousand which was determined by taking the upper control limit of the admission process using the data prior to the beginning of the new contract (January 2005). With the readmission staffing intervention described above, we 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 to 53.23 for the year. Total bed days have increased by 6.54 days as compared to 2005 (46.69), and remain above the baseline goal of 39.18.

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

H. Activity VIIIb. Interpretation of study results: Describe the results of the statistical analysis, interpret the findings, and 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.

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 to admissions for July – December 2005 to the proportion of readmissions to admissions for July-December 2006 is planned. Also, the information submitted on the readmission staffing forms collected over the past six months will be put into an aggregate report and reviewed to determine whether the information gathered may 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:

When eligibility data for the initial PIP submission was pulled in late 2005 and early 2006, current eligibility numbers for the two 6-month indicator timeframes in 2005 were used in the indicator calculations. However, during late 2004 and into 2005, a new Medicaid enrollment system, the Colorado Benefits Management System, was implemented and there were numerous eligibility problems associated with it. Correction of these problems took several months, and a re-pull of the 2005 eligibility data shows very different results, as indicated in the table below. 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

We believe these factors significantly account for the difference in the eligibility numbers for 2005, and we are confident that the updated eligibility data for 2005 is much more accurate. Thus, we have re-calculated the 2005 indicator measures contained in this PIP. This discovery will likely result in a re-pull of the eligibility data for the 2006 indicators late in 2007 to see if there is additional significant change or if this was a one-time occurrence.

In addition, the retroactive eligibility process itself may impact overall calculations by not capturing youth who were admitted because of ineligibility at the time of hospital admission.

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.

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

H. Activity VIIIb. Interpretation of study results: Describe the results of the statistical analysis, interpret the findings, and 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.

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.

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.

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

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

#1 Quantifiable Measure:

Time Period Measurement Covers	Baseline Project Indicator Measurement	Numerator	Denominator	Rate or Results	Industry Benchmark	Statistical Test and Significance*
04/01/04 - 03/31/05	***Baseline:***	(538)*1000*12	1,039,116	6.21		See Attachment A
01/01/05 – 12/31/05	**Remeasurement 1:**	(479)*1000*12	1,021,464	5.63		
01/01/06 - 12/31/06	**Remeasurement 2:**	(579)*1000*12	1,029,144	6.75		
	Remeasurement 3:					
	Remeasurement 4:					
	Remeasurement 5:					

#2 Quantifiable Measure:

Time Period Measurement Covers	Baseline Project Indicator Measurement	Numerator	Denominator	Rate or Results	Industry Benchmark	Statistical Test and Significance*
04/01/04 – 03/31/05	***Baseline:***	(4436)*1000*12	1,039,116	51.23		See Attachment A
01/01/05 – 12/31/05	**Remeasurement 1:**	(3974)*1000*12	1,021,464	46.69		
01/01/06- 12/31/06	**Remeasurement 2:**	(4565)*1000*12	1,029,144	53.23		
	Remeasurement 3:					
	Remeasurement 4:					
	Remeasurement 5:					

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

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

#3 Quantifiable Measure:

Time Period Measurement Covers	Baseline Project Indicator Measurement	Numerator	Denominator	Rate or Results	Industry Benchmark	Statistical Test and Significance*
01/01/05 – 06/30/05 07/01/05 – 12/31/05	***Baseline:***	2063 1911	84,024 86,219			Baseline. to Remeasure 1 Chi Square, Jan-June 05 vs. 06 (p.=0.00001068095836555) Baseline to Remeasure 1. Chi Square, July-Dec 05 vs 06 (p.=0.00007807551627147)
01/01/06-06/30/06 07/01/06-12/31/06	**Remeasurement 1:**	2436 2129	86,829 84,695			
	Remeasurement 2:					
	Remeasurement 3:					
	Remeasurement 4:					
	Remeasurement 5:					

#4 Quantifiable Measure:

Time Period Measurement Covers	Baseline Project Indicator Measurement	Numerator	Denominator	Rate or Results	Industry Benchmark	Statistical Test and Significance*
01/01/05 – 06/30/05 07/01/05 – 12/31/05	***Baseline:***	257 222	84,024 86,219			Baseline. to Remeasure 1 Chi Square, Jan-June 05 vs 06 (p.=0.07965495040474560) Baseline to Remeasure 1 Chi Square, July-Dec 05 vs 06 (p.=0.01632973417911920)
01/01/06-6/30/06 07/01/06-12/31/06	**Remeasurement 1:**	308 271	86,829 84,695			
	Remeasurement 2:					
	Remeasurement 3:					
	Remeasurement 4:					
	Remeasurement 5:					

***** If used, 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.

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

I. Activity IX: Report improvement. Describe any meaningful change in performance observed during baseline measurement that was demonstrated.
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 Activity VIII.B.

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

J. Activity X. Sustained improvement: 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.
No significant improvements noted from Baseline to Remeasurement 1 or Remeasurement 2. Factors that may have impacted the re-measurements are discussed in H. Activity VIII.B., above.

PIPs provide a structured method of assessing and improving the processes, and thereby 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 be used to 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 PIP 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 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. 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, 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.
3. The number of data collection staff used for a given project affects the reliability of the data. A smaller number of staff members promotes 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. Appropriate interventions must be identified and/or developed for each PIP to ensure the likelihood of causing measurable change.

If repeat measures 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 this protocol does not specify a level of statistical significance that must be met, it does require that EQROs assess the extent to which any changes in performance reported by a BHO can be found to be statistically significant. States may choose to establish their own numerical thresholds for finding reported improvements to be significant (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.

Definitions and Explanations	
Activity I. Appropriate Study Topic	
Broad Spectrum of Care	◆ 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	◆ May be defined as consumers who meet the study topic parameters.
Selected by the State	◆ If the study topic was selected by the state Medicaid agency, this information is included as part of the description under Activity One: Choose the Selected Study Topic in the PIP tool.
Activity II. Clearly Defined, Answerable Study Question	
Study Question	◆ 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: 1. Does outreach immunization education 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?

Definitions and Explanations	
Activity III. Clearly Defined Study Indicator(s)	
Study Indicator	◆ 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	◆ 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	◆ Refers to consumers who are included in the study. ◆ Includes age, conditions, enrollment criteria, and measurement periods. ◆ Example: the eligible population includes all children ages 0–2 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	◆ This may not be known the first time a topic is studied. In this case, assume that a maximum sample size is needed to establish a statistically valid baseline for the study. HSAG will review whether the BHOs defined the impact the topic has on the population or the number of eligible consumers in the population.
Sample Size	◆ Indicates the size of the sample to be used.
Representative Sample	◆ Refers to the sample resembling the entire population.
Confidence Level	◆ 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®** refers to the Health Plan Employer Data and Information Set and is a registered trademark of the National Committee for Quality Assurance (NCQA).

Definitions and Explanations	
Activity VI. Accurate/Complete Data Collection	
Data Elements	◆ Identification of data elements includes unambiguous definitions of data that will be collected (e.g., the numerator/denominator, laboratory values).
Interrater Reliability (IRR)	◆ 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 of a minimum-percentage review? ◆ Examples: a policy that includes how IRR is tested, documentation of training, and instruments and tools used.
Algorithms	◆ 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 looks for the BHOs 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	◆ 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 the data has a high degree of data 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.

Definitions and Explanations	
Activity VII. Appropriate Improvement Strategies	
Causes and Barriers	◆ Interventions for improvement are identified through evaluation or barrier analysis. If there was no improvement, what problem-solving processes were 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	◆ If the interventions have resulted in successful outcomes, the interventions should continue and the BHO should monitor to assure the outcomes remain. ◆ Examples: if an intervention is the use of practice guidelines, then the BHOs continue to use them; if mailers are a successful intervention, then the BHOs continue the mailings and monitor outcomes.
Activity VIII. Sufficient Data Analysis and Interpretation	
Analysis Plan	◆ 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	◆ Study results can be applied to the general population with the premise that comparable results will occur.
Factors that Threaten Internal and External Validity	◆ 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	◆ 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	◆ Clearly identify in the report which measurement period the indicator results reflect.
Statistical Differences Between Initial Measurement and Remeasurement Periods	◆ The HSAG review team looks for evidence of a statistical test (e.g., a t-test, or chi square test).
Identification of the Extent to Which the Study Was Successful	◆ The HSAG review team looks for improvement over several measurement periods. ◆ Both interpretation and analysis should be based on continuous improvement philosophies such that the BHO document data results and what follow-up steps will be taken for improvement.

Definitions and Explanations	
Activity IX. Real Improvement Achieved	
Remeasurement Methodology Is the Same as Baseline	◆ The HSAG review team looks to see that the study methodology remained the same for the entire study.
Documented Improvement in Processes or Outcomes of Care	◆ The study report 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	◆ 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.