State of Colorado

Department of Health Care Policy & Financing

FY 06–07 PIP VALIDATION REPORT

Ambulatory Follow-up Within Seven Days of Hospital Discharge for Youth and Adults

for

Colorado Health Partnerships, LLC

June 2007

HSAG HEALTH SERVICES ADVISORY GROUP

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 study evaluated whether **Colorado Health Partnerships, LLC (CHP)** consumers had an ambulatory follow-up visit within seven days of hospital discharge.

Study Topic

The study addressed CMS' requirements related to the quality and timeliness of care and services. The topic looked specifically at ambulatory follow-up within seven days of hospital discharge for youths and adults. An ambulatory follow-up visit with a mental health professional after discharge is considered necessary to ensure that gains made during hospitalization are not lost. The study topic reflected a high-risk population, including consumers with special health care needs.

Study Methodology

One study indicator was developed to collect the data necessary to answer the study question. The data was collected from administrative data using claims and encounters. Inpatient cases were identified through data pulled from **CHP**'s data warehouse for claims paid for inpatient treatment with a discharge date that fell within the time frame being analyzed. **CHP** determined if qualifying follow-up visits occurred within seven days after the discharge date. The data was collected and analyzed on an annual basis. There was no sampling performed because the entire eligible population was used.

Study Results

In calendar year (CY) 2003, **CHP** changed its data collection and analysis methodology, which resulted in a new rate of 51.5 percent. The previously reported rate for CY 2003 had been 42.8 percent. Using the new methodology to calculate follow-up rates for the third measurement period (January 1, 2004–December 31, 2004) the rate increased from 51.5 percent to 57.5 percent, but the improvement was not statistically significant. Two rates were presented for the fourth remeasurement period. One included the Pikes Peak Mental Health population and one did not. Both showed statistically significant improvement. With the Pikes Peak population included, the follow-up rate was 68.1 percent (p=0.00583). When the rate was calculated without the Pikes Peak population the rate was 68.3 percent (p=0.01291). The follow-up rates showed improvement from January 1, 2003, to December 31, 2005, using the new methodology. For the current validation cycle, the fifth remeasurement data for CY 2006 showed that **CHP**'s ambulatory follow-up rate, including Pikes Peak, was 70 percent, an increase of 1.9 percentage points from the fourth remeasurement. While the increase was not statistically significant, the improvement from the third to the fifth remeasurement was statistically significant, and **CHP** sustained gains made in CY 2005 through CY 2006.

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:
  - ▪ 39 evaluation elements were *Met*.
  - ▪ 0 evaluation elements were *Partially Met.*
  - ▪ 0 evaluation elements were *Not Met*.
  - ▪ 14 evaluation elements were *Not Applicable (N/A).*
- ◆ The total number of <u>critical elements</u> 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 100 percent, a critical element score of 100 percent, and a *Met* validation status.

Conclusions

The ambulatory follow-up rate showed improvement from CY 2003 through CY 2006 after **CHP** updated its data collection and analysis methodology. Statistically significant improvement was seen between CY 2004 and CY 2005 for both populations, with and without Pikes Peak. The improvement from CY 2005 to CY 2006 was not statistically significant; however, **CHP** sustained the improvement gained in CY 2005 through CY 2006. HSAG recommends that this study be monitored internally by **CHP** and not submitted as a PIP for FY 2007-2008.

Requirements

There were no requirements identified during this review.

Recommendations

There were no recommendations identified during this review.

Comparison of Years 1 through 3

For Year 1, baseline (CY 2001) and two remeasurements (CY2002 and CY2003) of the study indicator were provided. The baseline rate was 43.7 percent. The rate decreased to 41.9 percent for the first remeasurement and increased to 42.8 percent for the second remeasurement. The benchmark for follow-up rates within seven days after a hospital discharge was *ValueOption*'s performance goal of 51 percent. For Year 2 of the PIP submission, **CHP** changed its data collection and analysis methodology which resulted in a new rate of 51.5 percent for the second remeasurement. **CHP** selected 56.6 percent as the new benchmark. Using the new methodology to calculate the follow-up rates for the third measurement period, the rate increased from 51.5 percent to 57.5 percent; however, the improvement was not statistically significant. Two rates were presented for the fourth remeasurement period. One included the Pikes Peak population, one did not, and both showed statistically significant improvement from the third remeasurement. For Year 3, the fifth remeasurement data showed **CHP**'s ambulatory follow-up rate, including Pike's Peak, was 70 percent for the CY 2006 measurement period. The increase of 1.9 percentage points from CY 2005 was not statistically significant; however, the statistically significant improvement achieved from the third to the fourth remeasurement was sustained to the fifth remeasurement for this PIP study.

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 *Ambulatory Follow-up Within Seven Days of Hospital Discharge for Youth and Adults*. Each activity has been reviewed and scored according to HSAG's validation methodology.

	Table 2-1—FY 06-07 Performance Improvement Project Scores for Ambulatory Follow-up Within Seven Days of Hospital Discharge for Youth and Adults 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	4	0	0	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	4	0	0	0	No Critical Elements				
X. Sustained Improvement Achieved	1	1	0	0	0	No Critical Elements				
Totals for All Activities	**53**	**39**	**0**	**0**	**14**	**11**	**8**	**0**	**0**	**3**

Table 2-2—FY 06-07 Performance Improvement Project Overall Score for Ambulatory Follow-up Within Seven Days of Hospital Discharge for Youth and Adults for Colorado Health Partnerships, LLC	
Percentage Score of Evaluation Elements Met*	**100%**
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 and timeliness of care and services. **CHP** used one study indicator to collect the data and assess the outcomes for this study. The study indicator measured post-hospitalization follow-up within seven days. **CHP** completed 10 activities for this validation cycle.

Activity I. Appropriate Study Topic

Study Topic

CHP continued the clinical PIP study topic of *Ambulatory Follow-up Within Seven Days of Hospital Discharge for Youth and Adults* for FY 06–07.

Finding(s)

Six of the six evaluations elements, including one critical element, were *Met* for this activity.

Strength(s)

The study topic assessed whether or not youths and adults were receiving ambulatory follow-up within seven days of a hospital discharge. This study reflected a high-risk population and had the potential to affect consumer health and functional status.

Requirement(s) (for Critical Elements)

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

Recommendation(s) (for Noncritical Elements)

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

Activity II. Clearly Defined, Answerable Study Question

Study Question(s)

CHP's study question, as stated in its PIP Summary Form, was:

"Will procedural changes and staff education focused on discharge planning/aftercare result in a significantly improved rate of ambulatory follow-up within seven days of a hospital discharge?"

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 improve ambulatory follow-up after hospital discharge for Medicaid consumers.

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 one indicator:

 * "Post-hospitalization ambulatory follow-up within seven days."

Finding(s)

Five of seven evaluation elements were *Met* for this activity, including three critical elements. Two evaluation elements were *Not Applicable* because the indicator was not a nationally recognized measure or based on practice guidelines.

Strength(s)

The well-defined, objective, and measurable study indicator was developed to answer the study question. The indicator measured health outcomes and the functional status of **CHP** consumers.

CHP explained that the indicator was based on a ValueOptions performance measure and had available data to be collected on the study indicator.

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

CHP's study population was defined as:

"All consumers discharged from inpatient care during the time period under evaluation who were Medicaid-eligible at the time of discharge. All age groups and diagnoses were included in the study. The enrollment criteria were that a consumer was eligible for Medicaid at the time of hospital discharge and that no period of continuous enrollment was required."

Finding(s)

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

Strength(s)

The study population was accurately and completely defined, including the enrollment requirement, and captured all consumers to whom the study question applied.

Requirement(s) (for Critical Elements)

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

Recommendation(s) (for Noncritical Elements)

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

Activity V. Valid Sampling Techniques

Sampling Technique(s)

CHP did not use sampling for this study. The entire eligible population was used.

Finding(s)

Six of six elements were *Not Applicable* for this activity, including the one critical element.

Strength(s)

The entire eligible population was used, which followed an acceptable principle of research design and statistical analysis.

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

Administrative data collection was used for this study.

Finding(s)

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

Strength(s)

The data elements were clearly defined with sources of data identified. **CHP** collected administrative claims and encounter data for the study indicator. Data were collected and analyzed annually. **CHP** provided a narrative description of the administrative data collection process, and the estimated degree of administrative data completeness was 95 to 98 percent.

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.

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Activity VII. Appropriate Improvement Strategies

Improvement Strategies

CHP's improvement strategies included the following:

- "Implemented a formal procedure to notify contracted providers of consumer admission and the expectation that providers participate in the discharge planning process.
- Implemented enhanced discharge planning procedures at the two largest mental health centers in **CHP**'s service delivery system.
- Produced reports of individuals who had not received a follow-up visit within seven days.
- Implemented a report at the **CHP** service center to gather information on the disposition of each discharge (transfer or actual discharge) and determined whether the discharged or transferred consumer should be included on the hospital discharge list.
- Developed action plans aimed at improving ambulatory follow-up rates that were implemented at each mental health center."

After the fourth remeasurement (CY 2005), **CHP** obtained feedback from its quality improvement steering committee and discharge planners regarding which interventions were successful. A second report identifying the reasons consumers were not completing follow-up visits was prepared and reviewed. **CHP** determined that based on the data, no new interventions were needed for CY 2006.

Finding(s)

All four evaluation elements were *Met* for this activity.

Strength(s)

CHP developed its interventions with assistance from the Quality Improvement Steering Committee and the Clinical Advisory/Utilization Management Committee. The interventions were related to causes/barriers identified through data analysis and quality improvement processes. **CHP**'s interventions were system changes that were likely to induce permanent change. **CHP** evaluated the interventions throughout the study and made revisions as necessary. Any interventions that were successful were standardized and monitored.

Requirement(s) (for Critical Elements)

There were no critical elements in 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

This study provided a baseline and five remeasurement periods of data analysis results and interpretation. **CHP** used chi-square testing to identify statistical differences between measurement periods, and *p* values were provided. The first remeasurement showed a slight decline, from 43.7 to 41.9 percent. The second, third, and fourth remeasurements showed an upward trend, with 51.5 percent, 57.5 percent, and 68.1 percent, respectively. The rate for the fourth remeasurement period was calculated two ways: with the Pikes Peak population and without the Pikes Peak population. The increase from the third to the fourth remeausurement was statistically significant. For the current validation cycle, the fifth remeasurement data for CY 2006 showed that **CHP**'s ambulatory follow-up rate, including Pikes Peak, was 70 percent, an increase of 1.9 percentage points from the fourth remeasurement. While the increase was not statistically significant, the improvement from the third to the fifth remeasurement was statistically significant, and **CHP** sustained gains made in CY 2005 through CY 2006.

Finding(s)

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

Strength(s)

Data analysis was conducted according to the plan in the study. Factors that threatened the internal or external validity of the findings were identified, and an interpretation of the extent to which the study was successful was included. The information was presented in a clear and easily understood format.

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

CHP provided statistical evidence demonstrating that real improvement was achieved for this PIP study.

Finding(s)

All four evaluation elements were *Met* for this activity.

Strength(s)

The methodology was updated for the third remeasurement and remained the same for the fourth and fifth remeasurements. As demonstrated by the results, there was documented improvement in outcomes of care, and the improvement appeared to be the result of the interventions. Statistically significant improvement was achieved from the third to the fourth remeasurement. Gains made in the fourth remeasurement were sustained in the fifth remeasurement for this PIP study.

Requirement(s) (for Critical Elements)

There were no critical elements in this activity.

Recommendation(s) (for Noncritical Elements)

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

Activity X. Sustained Improvement Achieved

Sustained Improvement Achieved

Repeated measurements over comparable time periods demonstrated sustained improvement.

Finding(s)

The one evaluation element for this activity received a *Met* score.

Strength(s)

Statistically significant improvement was seen between CY 2004 and CY 2005 for both populations, with and without Pikes Peak. The improvement from CY 2005 to CY 2006 was not statistically significant; however, **CHP** sustained gains made in CY 2005 through CY 2006.

Requirement(s) (for Critical Elements)

There were no critical elements in this activity.

Recommendation(s) (for Noncritical Elements)

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

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:	Ambulatory Follow-up Within Seven Days of Hospital Discharge for Youth and Adults		
Type of Study:	Clinical		
Date of Study:	1/1/2001 to 12/31/2006		
Type of Delivery System:	BHO	Number of Medicaid Consumers in BHO:	50,046
		Number of Medicaid Consumers in Study:	50,046
Year 3 Validation	Initial Submission		

EVALUATION ELEMENTS		SCORING	COMMENTS
Performance Improvement Project/Health Care Study Evaluation			
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-risk population.
	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	All eligible populations that met the study criteria were included.
	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.

* "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
Performance Improvement Project/Health Care Study Evaluation		

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.

EVALUATION ELEMENTS	SCORING	COMMENTS
Performance Improvement Project/Health Care Study Evaluation		
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.

EVALUATION ELEMENTS	SCORING	COMMENTS
Performance Improvement Project/Health Care Study Evaluation		
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 indicator was well-defined, objective, and measurable. Point of clarification: The definition of the study indicator included the term "calendar year 2001." The definition of the study indicator should be updated to reflect the current measurement period.
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 indicator was 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 indicator 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 indicator measured changes in consumer health outcomes 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 to be collected on the 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 indicator was not a nationally recognized measure.
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 the indicator was adopted 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
Performance Improvement Project/Health Care Study Evaluation		

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.

EVALUATION ELEMENTS	SCORING	COMMENTS
Performance Improvement Project/Health Care Study Evaluation		
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 period of continuous enrollment was required.
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.

EVALUATION ELEMENTS	SCORING	COMMENTS
Performance Improvement Project/Health Care Study Evaluation		
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.

EVALUATION ELEMENTS	SCORING	COMMENTS
Performance Improvement Project/Health Care Study Evaluation		
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 defined.
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 narrative 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
Performance Improvement Project/Health Care Study Evaluation		
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 administrative data completeness was 95 to 98 percent.

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
Performance Improvement Project/Health Care Study Evaluation		
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	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 as necessary.
4. Standardized and monitored if interventions were successful.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	Some of the interventions were standardized and monitored.

Results for Activity VII				
# of Elements				
Critical Elements**	**Met**	**Partially Met**	**Not Met**	**Not Applicable**
0	4	0	0	0

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

	EVALUATION ELEMENTS	SCORING	COMMENTS
	Performance Improvement Project/Health Care Study Evaluation		
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	Data analysis was conducted according to the plan in the study.
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 the 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	Information was presented in an accurate and easily understood way.
	6. Identifies initial measurement and remeasurement of study indicators.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	Baseline and remeasurements of the study indicator were provided.
	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.

* "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
Performance Improvement Project/Health Care Study Evaluation		

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
Performance Improvement Project/Health Care Study Evaluation		
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	The methodology was updated for the third remeasurement and remained the same for the fourth and fifth remeasurement.
2. There is documented improvement in processes or outcomes of care.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	As demonstrated by the results, there was documented improvement in outcomes of care.
3. The improvement appears to be the result of planned intervention(s).	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	The improvement appeared to be the result of the interventions.
4. There is statistical evidence that observed improvement is true improvement.	☑ Met ☐ Partially Met ☐ Not Met ☐ N/A	There was statistical evidence that observed improvement was true improvement. The increase of 1.9 percentage points from the fourth to the fifth remeasurement was not statistically significant; however, the improvement from the third to the fourth remeasurement was significant, and CHP sustained the gains made in the fourth remeasurement to the fifth remeasurement.

Results for Activity IX				
# of Elements				
Critical Elements**	Met	Partially Met	Not Met	Not Applicable
0	4	0	0	0

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

EVALUATION ELEMENTS	SCORING	COMMENTS
Performance Improvement Project/Health Care Study Evaluation		
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	Repeated measurements over comparable time periods demonstrated sustained improvement.

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

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

Table A-1—FY 06-07 PIP Validation Report Scores:
Ambulatory Follow-up Within Seven Days of Hospital Discharge for Youth and Adults
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	4	0	0	0	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	4	0	0	0	0	No Critical Elements			
X. Sustained Improvement Achieved	1	1	0	0	0	0	No Critical Elements			
Totals for All Activities	**53**	**39**	**0**	**0**	**14**	**11**	**8**	**0**	**0**	**3**

Table A-2—FY 06-07 PIP Validation Report Overall Scores:
Ambulatory Follow-up Within Seven Days of Hospital Discharge for Youth and Adults
for Colorado Health Partnership, LLC

Percentage Score of Evaluation Elements Met*	**100%**
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.

![HSAG Health Services Advisory Group logo]

Section 4: **Colorado FY 06-07 PIP Validation Tool:**
Ambulatory Follow-up Within Seven Days of Hospital Discharge for Youth and Adults
for Colorado Health Partnership, LLC

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 high confidence in the results.

Introduction

The appendices consist of documentation supporting the validation process conducted by HSAG using the CMS Protocol for validating PIPs. Appendix A is the study 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: *Ambulatory Follow-up Within Seven Days of Hospital Discharge for Youth and Adults*

- Appendix B: CMS Rationale by Activity

- Appendix C: Definitions and Explanations by Activity

Appendix A: PIP Summary Form:
Ambulatory Follow-up Within Seven Days of Hospital Discharge for
Youth and Adults
for Colorado Health Parternship, 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: Ambulatory Follow-up within Seven Days of Hospital Discharge for Youth and Adults

Type of Study: X Clinical   ☐ Nonclinical

Date of Study Period: From 1/1/2001 to 12/31/2006

50,046 (CY-2002 Average Monthly Eligibles)	Number of Medicaid Consumers served by BHO	**Section to be completed by HSAG** _____ Year 1 Validation _____ Initial Submission _____ Resubmission _____ Year 2 Validation _____ Initial Submission _____ Resubmission __X__ Year 3 Validation __X__ Initial Submission _____ Resubmission
50,046 (CY-2002 Average Monthly Eligibles)	Number of Medicaid Consumers in Project/Study	

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 Colorado Health Networks (CHN) Service Center is a 50/50 partner in two LLCs, with each LLC contracted with the State of Colorado to provide mental health services to Medicaid recipients. The second partner in each of the LLCs consists of individual mental health center providers (3 mental health centers in one LLC and 4 mental health centers in the other LLC). Colorado Health Networks also manages the contracts for a provider network outside of the mental health centers to service our Medicaid contracts. These contracts cover 40 of the 63 counties in Colorado and include significant rural and frontier areas. Approximately 70% of Medicaid clients seeking services are treated by our partner mental health centers, and our contracted network providers treat the other 30%.

Note that in January of 2005, CHN initiated a new partnership structure with the implementation of the new Medicaid contract. The new contract included an additional service area, the Pikes Peak region, which increased CHN's eligible population by approximately 55,000 members. The new partnership, Colorado Health Partnerships LLC (CHP) consists of eight mental health centers and ValueOptions, who are joint owners in the LLC. In January, CHP integrated Pikes Peak into this performance improvement project. Calculations of the ambulatory follow up rate will be presented in two ways – without the Pikes Peak area to allow appropriate comparison with the previous year's data, and with Pikes Peak to reflect the follow up rate within our new system.

Medicaid members who are hospitalized with a mental health diagnosis are a high-risk population. They represent the most severely ill psychiatric patient population and are most subject to re-hospitalization without proper follow-up. Severe symptoms, including the inability to provide for their own basic needs, make them a vulnerable population that requires frequent monitoring.

An ambulatory follow-up visit with a mental health professional after discharge is necessary to ensure that gains made during hospitalization are not lost. This follow-up care serves the critical function of promoting progress towards treatment goals, such as medication compliance and successful transition to community-based care, and home, work and school environments. It is an essential component to ensuring continuity of care and reducing the incidence of inpatient recidivism.

Prior to 2002, CHN was unable to produce a complete report with accurate data representing ambulatory follow-up, so the initial report submitted to the Quality Improvement Steering Committee (QISC) for review was for the first nine months of calendar year 2001 (presented in February 2002). Data for the full calendar year (2001) was presented at our April 2002 quality meeting. *ValueOptions* has adopted ambulatory follow-up within seven days of hospital discharge as a quality indicator following the national trend of acceptability as a critical component of clinical care. *ValueOptions* performance goal for ambulatory follow-up in the public sector is 51%. CHN's initial report indicated only 43.7% of discharged patients had completed a follow-up visit within seven days of hospital discharge (Adults=41%; Youth=45.5%). Upon review, QISC requested an additional breakdown of the data to allow a more exact analysis during the June QISC meeting.

Literature supports ambulatory follow-up after an acute episode of care as an important quality of care issue.

Boydell, K.M., Malcolmson, S.A., Sikerbol, K. Early rehospitalization. *Canadian Journal of Psychiatry*, 36 (10):743-745, 1991.

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.
The authors note that appropriate follow-up care helps reduce the risk of repeat hospitalization for some people, and identifies those in need of further hospitalization before they reach a crisis point.   Dorwart, Robert A. & Hoover, Claudia W*., Hospital Services in Mental Health*, American Journal of Public Health, 84:1229-1234, 1994   Dowart et al note that many studies show the importance of aftercare services in improving the quality of life and reducing clinical symptoms "of patients who had a hospital admission and that these patients who attended follow-up care" will function better than "those who do not receive follow-up care"   Olfson, M., Mechanic, D., Boyer, C. A. and Hansell, S. Linking inpatients with schizophrenia to outpatient care. *Psychiatric Services* 49:911-917, 1998.   The authors note that "A failure to follow-up with outpatient care after leaving the hospital greatly increases the risk of relapse and re-hospitalization."   Nelson, E.A., Maruish M.E., Axler J.L. Effects of discharge planning and compliance with outpatient appointments on readmission rates. Psychiatric Services. 51(7):885-9, 2000.   " Hospitalized patients who did not comply with at least one outpatient appointment after discharge were two times more likely to be rehospitalized that those who kept at least one appointment after discharge".

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 procedural changes and staff education focused on discharge planning/aftercare result in a significantly improved rate of ambulatory follow-up within seven days of a hospital discharge?

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:	Post hospitalization ambulatory follow-up rates within seven days for calendar year 2001.
Numerator:	Number of discharged patients completing an outpatient follow-up visit within seven days of hospital discharge.
Denominator:	Number of qualifying hospital discharges occurring during 2001.
First Measurement Period Dates:	1/1/2001 through 12/31/2001
Baseline Benchmark:	
Source of Benchmark:	
Baseline Goal:	51% based on *ValueOptions* performance goal for public sector contracts
Study Indicator #2:	
Numerator:	
Denominator:	
First Measurement Period Dates:	
Benchmark:	
Source of Benchmark:	
Baseline Goal:	

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:	
Numerator:	
Denominator:	
First Measurement Period Dates:	
Benchmark:	
Source of Benchmark:	
Baseline Goal:	

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: Study Population: All clients discharged from inpatient care during the time period under evaluation, and who were Medicaid eligible at the time of their inpatient discharge. All age groups and diagnosis were included in the study. The enrollment criteria for the study are that a client is eligible for Medicaid at the time of their hospital discharge; no period of continuous enrollment is required.

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*)

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

_____

[X] Administrative data
    Data Source
       [X] Programmed pull from claims/encounters
       [ ] Complaint/appeal
       [ ] Pharmacy data
       [ ] Telephone service data /call center data
       [ ] Appointment/access data
       [ ] Delegated entity/vendor data _____
       [ ] Other _____
    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 _____

F. Activity VIb: Data Collection Cycle.	Data Analysis Cycle.
[X] Once a year	[☒] Once a year
[ ] Twice a year	[ ] Once a season
[ ] Once a season	[ ] Once a quarter
[ ] Once a quarter	[ ] Once a month
[ ] Once a month	[ ] Continuous
[ ] Once a week	[ ] Other (list and describe):
[ ] Once a day	
[ ] Continuous	
[ ] Other (list and describe):	

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

Inpatient cases are identified through data pulled from CHN's data warehouse for claims paid for inpatient treatment with a discharge data that falls within the time frame being analyzed. Encounter and claims data are then examined to determine if a qualifying follow up visit occurred within seven days after the discharge date Qualifying follow up visits include: partial hospitalization or intensive outpatient programs, medication management, individual, group or family psychotherapy, and face to face case management encounters. The data is also analyzed to determine if that member had been seen by either the Mental Health Center or an external provider within 90 days prior to the admission date for that member to determine "responsibility" for providing the ambulatory follow up. Analysis is then conducted on the proportion of discharges that receive ambulatory follow up within 7 days of discharge using a Chi Square for the difference in two proportions with the p. value set at 0.05. The data is pulled and analyzed after a 90 day claims run out to allow for the appropriate claims lag. Financial analysis of the outpatient claims lag data indicates that 95-98% of claims are processed within this 90 day time frame. To ensure accuracy and completeness of data, CHN monitors encounter data reported by our partner mental health centers using data report cards to confirm the number of records/encounters received. Each month the mental health centers submit encounters to the CHP IT Department, where the encounters are examined for completeness and accuracy. This process includes ensuring that the diagnosis and procedure codes submitted meet Medicaid contract specifications. When an encounters file fails the examination, a detailed error report is generated and sent to the MHC for correction. At the time of the data pull (90 days following the end of the quarter); the encounter data is 97.5% complete on average, based on analysis of encounter data submissions.

 To further ensure completeness and accuracy of the follow-up data a secondary process was added in 2003 (and explained in further detail below) in which the centers received a "pre-report" to review each individual case to identify any cases in which further data was available. This was done to compensate for any fragmentation in the system (such as members going to Department of Human Services (DHS) funded RTCs or other programs outside the CHN capitation contract. Because of the change in methodology during CY 2003, this remeasurement period was analyzed using both methods in order to provide like comparisons to the year prior and following year.

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

In January 2005, CHP integrated Pikes Peak into this performance improvement project. Incorporation of the Pikes Peak service area resulted in the addition of just over 51,000 eligible members to the CHP partnership (CHP total membership at approximately 154,000). Calculations of the ambulatory follow up rate have been presented in two ways – without the Pikes Peak area to allow appropriate comparison with the previous year's data, and with Pikes Peak to reflect the follow up rate within our expanded service area. This is important as the addition of such a large population to the service area during the second year of this PIP could impact the study in two ways: through the characteristics of the population added and necessary training (ensuring staff have knowledge of ambulatory follow-up requirements, discharge planning processes and appropriate processes for data reporting are in place). This education was addressed in early 2005 with Pikes Peak by CHP's Clinical Department (discharge planning), CHP's Quality Department (ambulatory follow-up tracking and expectations) and through the QISC/CAUMC and Discharge Planners meetings.

A change in the process of data submission for the inpatient facility at Colorado West was initiated on December 1, 2006. On December 1, the West Slope Regional Crisis Stabilization Unit began submitting claims rather than encounters for all clients currently in the facility, as well as newly admitted clients. We do not anticipate that this change would impact the validity of the data used in the calculation of the ambulatory follow-up rate for 2006.

G. Activity VII. Improvement Strategies. Real, sustained improvements in care result from a continuous cycle of measuring and analyzing performance, and developing and implementing system wide improvements in care. Describe interventions designed to change behavior at an institutional, practitioner, or consumer level.

Describe interventions.

Baseline to Remeasurement 1

Upon review at the April 2002 meeting, QISC requested an additional breakdown of the data to allow for a more exact analysis during the June QISC meeting.

As requested during the initial evaluation of the 2001 data by the Quality Improvement Steering Committee (QISC) in April 2002, a breakdown of the data to enhance the evaluation was provided in June 2002 to the QISC – as detailed below.

1. A breakdown of follow-up rates by mental health center area was provided (this consists of follow-up rates for both mental health center providers and non-mental health center providers). Eligibility information from the State of Colorado was used to assign clients by area. Follow-up rates were also calculated separately for adults and youth.
2. A "history" report was generated according to the following methodology: for each client hospitalized, the date of hospital admission was identified, and a search was done in our database (using claims and encounter data) for outpatient care provided during the six month time period prior to the admission. This helps in identifying who treated the client prior to the hospitalization: a network provider, a mental health center provider, neither, or both, and who, if anyone, was responsible for the follow-up care. This data is important in calculating the follow-up rates of our mental health center and non-mental health center providers, and in determining where in our system appropriate follow-up is not occurring.
3. Client data was given to each mental health center committee representative to "validate" whether the follow-up data for their mental health center is accurate according to mental health center records. The mental health center representatives were asked to report any inaccuracies to CHN, and to be prepared to discuss their findings, questions, ideas or recommendations for corrective action at the QISC meeting scheduled for August 29, 2002.

Results of the ambulatory follow-up report were presented to the two LLC Boards in August and September. Due to concern regarding the low follow-up rates, the Board members recommended QISC further evaluate the results.

August 2002 meeting (a combined meeting of QISC and the Clinical Advisory/Utilization Management Committee [CAUMC}) Additional discussion regarding the findings occurred. Feedback was provided; barriers and further actions were identified. Based on feedback and discussion, the following barriers were identified:

1) Several of the youth discharges were to an RTC. Due to the structure of the Medicaid system, CHN only authorizes and pays for a portion of RTC admissions, so our data system does not have information for those clients not authorized through CHN.
2) The standard methodology for the ambulatory follow-up report does not include case management codes in the follow-up data extraction. In the public mental health system, case management is a critical component in addressing transitional needs of clients and ensuring continuity of care. This was of great concern to committee members as many of the clients hospitalized in our system have very serious mental illnesses and impaired functioning. The needs and goals of these individuals are basic and are better served through case management services than traditional therapy services. Case management contacts are often immediately initiated following discharge.

Prior to identifying any interventions, committee members recommended that face to face case management data be extracted and evaluated, as a potential

G. Activity VII. Improvement Strategies. Real, sustained improvements in care result from a continuous cycle of measuring and analyzing performance, and developing and implementing system wide improvements in care. Describe interventions designed to change behavior at an institutional, practitioner, or consumer level.

follow-up contact and also as a critical component of CHN's service delivery system. The committee felt recommendations could not be made without a more complete representation of our continuity of care system. Further discussion identified another potential barrier – consistency in coding case management contacts amongst the seven mental health centers. As a follow-up, CHN will extract case management units for all discharges and present a report to the committee at their next meeting.

Additionally, one intervention was identified and implemented at the CHN service center in August 2002. To improve continuity and coordination of care in the contracted provider network, the care managers at CHN, when authorizing inpatient care, began obtaining the name of the client's primary contracted network practitioner. A CHN member/provider services representative then informs the practitioner of the client's admission within one business day and the expectation of the practitioner to participate in the discharge planning process for the client. In addition, an article on this topic was included in the fall edition of CHN's provider newsletter. CHN anticipates an improvement in ambulatory follow up rates for the contracted provider network will occur within three to six months from the date of the intervention (November 2002-February 2003). Interim reports will be generated (allowing for the claims run-out period) in the first half of CY2003. Improvement will be evaluated in the QISC/CAUMC committee.

October 2002 QISC/CAUMC meeting. Data on case management was presented. In reviewing the case management codes used, variation in the code used to record case management was noted-that is, all mental health centers are not using the same code. Due to the variety of case management activities that occur, the mental health centers were asked to review charts and detail the type of case management that occurred during follow up. This is important because case management can be a face to face contact with a client, or a variety of other activities such as telephone calls. If case management is to be included as a follow up contact, the group felt strongly that the case management should be a direct contact with the patient.

December 2002 QISC/CAUMC meeting. Follow up discussion about case management coding occurred, as well as a variety of interventions. A report was presented that included case management codes in the seven-day follow up rate. Including case management did raise the follow up rate from 43.7% to 47.6%. However, additional interventions are necessary. As QISC reviewed the data for the partner mental health centers, it became evident that the two largest mental health centers (Spanish Peaks and Colorado West) account for a disproportionate number of the discharges that were clearly their responsibility based on prior visit history of the clients (126 of the total 174=72.4%). The remainder of the mental health centers are much smaller and annual discharges ranged from 4 to 19. It was determined that interventions should be initiated at the two largest centers. See Interventions Table, (January 2003) for specific information.

January 2003 QISC/CAUMC meeting. Discussion continued regarding the ambulatory follow-up rates; mental health center staff reported findings on individual cases not receiving follow-up. As recommended through QISC and the Discharge Planners meeting, a report is in development that identifies clients by mental health center who had not received follow up within 7 days. This report will be used by the mental health center to check the clinical record to gather information about what was happening in cases not receiving follow up. Because the system of care is somewhat fragmented, we felt it was important to obtain the best data possible to determine if our low rate was accurate and a problem truly exists, or if the rates were partially the result of incomplete data due to the follow-up care being provided by other agencies. In addition, this data could assist us in targeting problem areas by individual mental health center, such as appointment access or other systems issues.

G. Activity VII. Improvement Strategies. Real, sustained improvements in care result from a continuous cycle of measuring and analyzing performance, and developing and implementing system wide improvements in care. Describe interventions designed to change behavior at an institutional, practitioner, or consumer level.

April 2003 QISC/CAUMC meeting. Individual mental health center reports were distributed, along with instructions for use. QISC recommended distribution of these reports at the next Discharge Planners meeting for clinical record review and follow-up. The ambulatory follow up report for CY2002 was also distributed and reviewed at this meeting.

Remeasurement 1 to Remeasurement 2

Follow-up and Interventions based on Remeasurement 1 (calendar year 2002)

CHN's ambulatory follow-up report shows 41.9% of clients discharged from the hospital during this time period completed a follow-up visit within seven days of hospital discharge. This rate is below the performance goal of 51%.

Ambulatory follow up results for calendar year 2002 are well below the 51% benchmark, and slightly below the follow-up rate for 2001 (41.9% compared to 43.7%). This was not unexpected, however, as the interventions were not initiated until August and the fourth quarter of 2002. Interim follow up data is monitored on a quarterly basis to assist in identifying issues and trends as this quality activity moves forward.

The reports identifying individuals who had not received follow-up within 7 days were presented at the May 7, 2003 Discharge Planners meeting. The discharge planners agreed to evaluate these cases and report findings to CHN.

Follow up information from the discharge planners proved very helpful in assessing cases not receiving follow-up, and allowed us to remove cases from the discharge list that had been transferred directly to residential or other care that should not be counted as a discharged client eligible to receive follow-up.

In June 2003, a follow-up report was completed and reviewed for non-mental health center providers only to evaluate an intervention implemented by CHN's Care Management Department in August 2002. The report showed no clear improvement of follow-up rates. Following a review by CHN's Clinical Director, Call Center Manager, Quality Director and Clinical Quality Analyst, a decision was made to implement a weekly report of hospital discharges that would be reviewed by the Call Center Manager to determine, through clinical notes in our MHS clinical system, the disposition of each client discharged. The purpose of this intervention is to identify clients transferred to another level of care, or out of our system, who should not be included on our list of hospital discharges, ensuring a more accurate list of discharges.

Concurrently, CHN's Quality of Care Committee (QOCC), whose responsibility is to evaluate quality of care in the non-mental health center provider network, implemented an indicator to identify any provider who had two or more clients discharged from the hospital who did not complete a follow-up visit within 7 days, as reported on the ambulatory follow-up report.

These two interventions were presented at the July QISC meeting.

Note: Due to the implementation of new data systems, including electronic records at each of our seven mental health centers, and the transition of a HIPAA compliant data file and transfer process, complete data was not available from July 2003 to January 2004 (thus we were unable to calculate interim ambulatory follow-up rates during this time period).

![HSAG HEALTH SERVICES ADVISORY GROUP]

Appendix A: PIP Summary Form:
Ambulatory Follow-up Within Seven Days of Hospital Discharge for Youth and Adults
for **Colorado Health Parternship, 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 system wide improvements in care. Describe interventions designed to change behavior at an institutional, practitioner, or consumer level.

April 2004 QISC/CAUMC meeting. Ambulatory follow-up data for Quarter 4, 2003 was presented. For the quarter, the rate for CHN increased.

Remeasurement 2 to Remeasurement 3

 Follow-up and Interventions based on Remeasurement 2 (calendar year 2003)Using the updated data methodology, CHN's ambulatory follow-up report shows 51.5% of clients discharged from the hospital during this time period completed a follow-up visit within seven days of hospital discharge. This rate meets the current performance goal of 51%. This improvement was statistically significant at the $p<0.05$ level using a Chi Square Test for the Difference in Two Proportions (p. value = 0.012081). However, this calculation was based on using data that incorporated the changes made to improve data accuracy. To ensure the two datasets tested were comparable, data from 2003 were re-calculated without including any of the changes made to improve the accuracy of the data. When calculating using the original methodology (i.e., the methodology used to calculate 2001 and 2002 data), the results are as follows:

Denominator (total discharges): 369

Numerator (number of completed follow-up visits): 158

Ambulatory follow-up rate: 42.82%

While there was a slight improvement for 2003, the improvement is not statistically significant at the $p < 0.05$ level.

While a variety of interventions were employed (discussed above), including procedural changes at the two largest mental health centers, increased involvement of the discharge planners and improvement in accuracy of the data used in the reports (appropriateness of discharges and information on clients who did not complete follow-up visits), the rate of ambulatory follow up for 2003 calculated using the original methodology and the updated methodology indicates that improvement in the follow up rate was primarily due the improved data techniques used in the intervention. To evaluate further, the data was broken out by mental health center to determine whether any mental health centers showed improvement, and to help identify areas in which to focus improvement interventions. The results are as follows:

(The data this clients Mental

July 2004

follow-
2003

were

| Mental Health Center | Using original data reporting methodology (MHC-Both) | | Using new reporting methodology |
	2002	2003	2003
CW	40/116 = 34.5%	58/137 = 42.3%	55/124 = 44.4%
MW	8/28 = 28.6%	9/26 = 34.6%	9/21 = 42.9%
SW	4/24 = 16.7%	4/21 = 19.1%	2/10 = 20%
SLV	4/9 = 44.4%	1/6 = 16.7%	1/3 = 33.3%
WC	11/17 = 64.7%	17/23 = 73.9%	17/19 = 89.5%
SP	52/137 = 40.0%	34/93 = 36.6%	37/73 = 50.7%
SE	3/8 = 37.5%	4/11 = 36.4%	4/6 = 66.7%

represented in table is only for seen at the Health Center**s**)

QISC/CAUMC meeting. The up rate for and the breakout data reviewed and

G. Activity VII. Improvement Strategies. Real, sustained improvements in care result from a continuous cycle of measuring and analyzing performance, and developing and implementing system wide improvements in care. Describe interventions designed to change behavior at an institutional, practitioner, or consumer level.

discussed at the QISC meeting. As CHN moves forward in developing interventions, the improved data reporting methodology will be used to measure change. Discussion regarding additional interventions occurred, and a recommendation was made to bring the report to the next Discharge Planners meeting for discussion and involvement in potential interventions.

August 2004 Discharge Planners meeting. The report was presented to the discharge planners in their August 4 meeting, and the discharge planner from West Central discussed the strategies being used to engage discharged clients for appointments.

This report was also presented to the West Slope Board of Managers on July 23. The mental health center Executive Directors agreed to develop action plans following the discussion with the discharge planners. The report was presented to the SyCare Board of Managers on August11, who recommended development of an action plan by Spanish Peaks, the largest mental health center in the SyCare system. Action plans are due September 1, 2004.

October 2004 QISC/CAUMC meeting. Action plans were reviewed at the QISC meeting, and were discussed at the November Discharge Planners meeting as well.

Remeasurement 3 to Remeasurement 4

Follow-up and Interventions based on Remeasurement 3 (calendar year 2004)

July 2005 QISC/CAUMC meeting. The ambulatory follow-up rate for 2004 was presented. The follow-up rate improved to 57.54% of discharged clients completing a follow-up visit within seven days of an inpatient discharge. This represents an increase of 6% over calendar year 2003, but the improvement has not yet reached a statistically significant level.

August 2005 Discharge Planners meeting. The results were also presented to the Discharge Planners. Following discussion of the results, a suggestion was made to include information on the report indicating the number of discharged clients who refused to attend a follow-up session. In a subsequent meeting, and at the September QISC meeting, a recommendation was made to track information for all clients who did not receive a follow up visit within seven days to evaluate the reasons why follow-up is not occurring. Analysis of this information may lead to the development of additional interventions. A form will be developed to gather this information.

Review of quarterly ambulatory follow-up data and discussion of issues in completing follow-up visits continued during the 2005 QISC and Discharge Planners meetings. These issues included actions targeted toward increasing follow-up rates, reviewing what is counted as "follow up" in the data, and clients who do not attend appointments that were scheduled within seven days, and clients who refuse care with the mental health center or another mental health practitioner, although those clients may follow up with their PCP where they feel more comfortable. However, we do not have reliable data on whether these appointments were completed or what the timeframe would have been for completion.

January 2006 QISC/CAUMC meeting; February 2006 Discharge Planners meeting. An interim ambulatory follow-up report for FY05 was reviewed, reflecting a

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continued increase in the follow-up rate. The increase may be attributed to corrective actions implemented by the mental health centers in the second quarter of FY05. While these actions varied by mental health center, they primarily centered around increased outreach to clients prior to hospital discharge, immediately following discharge and attending appointments.

The tracking form for gathering information on why clients were not completing follow up visits within seven days of hospital discharge was developed and implemented for use in the fourth quarter of FY2005, and presented at the QISC/CAUMC and Discharge Planners Meetings listed above. The information provided for the quarter, for those clients whose reason for not completing an appointment was known, validated the anecdotal information discussed periodically in the Discharge Planners and QISC meetings. The primary reasons for appointments not completed were cancellations or no-shows. It was acknowledged that these clients may have completed an appointment (through re-scheduling), but it would not have occurred within the seven-day timeframe. The second reason for appointments not completed was client or guardian refusal of follow-up appointment. Because the data for the number of clients not completing a follow-up visit was relatively small (15, plus an additional six where the reason was unknown), it was decided to continue gathering this information for another quarter before determining what, if any, intervention would be appropriate.

Remeasurement 4 to Remeasurement 5

Follow-up and Interventions based on Remeasurement 4 (calendar year 2005)

May 19, 2006 QISC/CAUMC Meeting: The Ambulatory Follow-up PIP was presented, including final results for Calendar Year 2005**.** Using the same methodology as in CY 2004, 170 (68.2%) of the 249 inpatient cases (excluding Pikes Peak) had a qualifying ambulatory follow up visit within seven days of discharge. With the Pikes Peak area included there were 278 (68.1%) of the total 408 inpatient cases that received follow up. Both percentages exceed the goal of 56.5% and both increases reach a level of statistical significance with p. = 0.01291 with PPMHC excluded and p. = 0.00583 with PPMHC included. . QISC agreed to continue to try and maintain this rate, as well as to evaluate additional information that might be helpful in continuing to improve the follow-up rate.

Per request from the Department Health Care Policy and Finance, this PIP will be continued for another year to ensure CHP's ability to maintain the improved rate.

Information summarizing which strategies were used to improve follow-up, and which were successful and unsuccessful is included below, based on input from the Discharge Planners, and QISC representatives.

Feedback from the Discharge Planners on successful/unsuccessful strategies for increasing follow-up rates of hospitalized members:

Successful:

- Knowledge and tracking of which clients are in the hospital to ensure continuity of care
- Ensuring a psychiatric appointment is scheduled prior to client's hospital discharge, as well as a clinical appointment
- Setting appointments the day following discharge – improves continuity and if client doesn't show for appointment it allows additional time to re-engage client and ensure follow up occurs
- Contacting the treating clinician about hospitalization – who then may contact involved family members and adjust the treatment plan accordingly

G. Activity VII. Improvement Strategies. Real, sustained improvements in care result from a continuous cycle of measuring and analyzing performance, and developing and implementing system wide improvements in care. Describe interventions designed to change behavior at an institutional, practitioner, or consumer level.

- Picking clients up from hospital and taking them to appointment at the mental health center
- Making reminder calls for appointments prior to the scheduled appointment date

Unsuccessful:
- Telling client to call for an appointment – gets forgotten or lost in transition from hospital

A second report identifying reasons why clients were not completing follow-up visits was prepared and reviewed. While some additional clarifying information was requested, it was determined that the data did not support any additional interventions at this time as there were no clear patterns identified. While analysis of additional information occurred during 2006, no new interventions were implemented.

Interim results for Quarters 2 and 3 of FY06 were reviewed by QISC/CAUMC in May 2006, September 2006, and January 2007, as well as at the Discharge Planners meeting. Quarterly results appear generally consistent with annual results.

Interventions Table

Date Implemented (MM / YY)	Check if Ongoing	Interventions	Barriers Interventions Address
August, 2002	X	Service Center Care Management Department Procedure Change – implementing formal procedure to notify contracted provider of member admission and expectation for participation in discharge planning process.	Improving continuity and coordination of care; increasing ambulatory follow-up rate for clients treated in the contracted provider network.
Quarter 4, 2002		Provider Newsletter Article for Quarter 4, calendar year 2002 about continuity/coordination of care and ambulatory follow-up.	Improving continuity and coordination of care; increasing ambulatory follow-up rate for clients treated in the contracted provider network.
January 2003	X	Implementing enhanced discharge planning procedures at the two largest mental health centers in CHN's service delivery system, Spanish Peaks Mental Health Center and Colorado West Regional Mental Health Center.	Improving continuity and coordination of care; increasing ambulatory follow-up rate for clients treated at CHN's two largest mental health centers.

G. Activity VII. Improvement Strategies. Real, sustained improvements in care result from a continuous cycle of measuring and analyzing performance, and developing and implementing system wide improvements in care. Describe interventions designed to change behavior at an institutional, practitioner, or consumer level.

April 2003	X	Began producing reports by mental health center identifying individuals who have not had a follow-up visit within 7 days. The clinical record is then reviewed to determine the reason.	Improves accuracy of data; provides information to identify problem areas. Identifies where breakdowns in system may be occurring and why	
June 2003	X	Implemented an indicator tracking non-mental health center providers who have 2 or more discharges that show no completed follow-up within 7 days. These providers are contacted with the information.	Improve continuity and coordination of care Provides systematic tracking for non-mental health center providers.	
July 2003	X	Implemented a report at the CHN service center to gather information on the disposition of each discharge (transfer or actual discharge) and determine whether the discharged client should be included on the hospital discharge list.	Improves accuracy of data where clients leave our system and move into other systems that do not provide data to CHN.	
September 2004	X	Action plans aimed at improving ambulatory follow rates were implemented at each mental health center.	As each mental health center within the CHN partnership has some variation in their process for managing ambulatory follow-up, it was determined that mental health center-specific interventions would be more effective at addressing the barriers each center experiences, with the ultimate goal of improving the number of completed follow-up visits within seven days of hospital discharge.	

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

The initial pull of data for all inpatient treatment with discharge dates from 01/01/2001 to 12/31/2001 identified 542 cases. Of these 542 cases, 237 were identified as having a qualifying ambulatory follow up visit within 7 days of the discharge date. This is equivalent to 43.7% and was used as the baseline.

Remeasurement 1

The first remeasurement was conducted for inpatient cases with discharge dates between 01/01/2002 and 12/31/2002. This data was pulled over 90 days beyond the end of the period to account for any claims lag and to ensure MHC encounter data had been submitted for the time period under review. Of the 405 inpatient cases identified, 170 (41.9%) were identified as having a qualifying ambulatory follow up visit. A Chi Square for the difference in two proportions (the proportion of those receiving follow up) was conducted comparing this remeasurement period with the baseline. While the percentage of cases receiving ambulatory follow up decreased, the difference was not significant during this period (p. = 0.733472)

Remeasurement 2

During this remeasurement time frame (01/01/2003 to 12/31/2003) CHN updated our data collection methodology as described in detail above. This data was pulled over 90 days beyond the end of the period to account for any claims lag and to ensure MHC encounter data had been submitted for the time period under review. Using this new methodology the percentage of cases receiving follow up increased to 51.5% (155 out of 301 discharges) and this difference was significantly different than the previous year (p.=0.12081. When the data was analyzed using the original methodology, the results were different. Of the 369 cases identified, 158 (42.82%) were identified as having a qualifying ambulatory follow up visit. A Chi Square for the difference in two proportions (the proportion of those receiving follow up) was conducted comparing this remeasurement period with the baseline. While the percentage of cases receiving ambulatory follow up increased slightly, the difference was not significant during this period (p. = 0.864348). A Chi Square for the difference in two proportions was also conducted comparing this remeasurement period with remeasurement period #1 (CY2002). While the percentage of cases receiving ambulatory follow up increased the difference was not significant during this period (p. = 0.88013).

Remeasurement 3

The third remeasurement was conducted for inpatient cases with discharge dates between 01/01/2004 and 12/31/2004. This data was pulled over 90 days beyond the end of the period to account for any claims lag and to ensure MHC encounter data had been submitted for the time period under review. Using the updated methodology, 145 (57.54%) of the 252 inpatient cases identified had a qualifying ambulatory follow up visit within seven days of discharge. While this percentage exceeds the new goal of 56.5%, it falls short of statistical significance (p. = 0.155314).

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.

Remeasurement 4

The fourth remeasurement was conducted for inpatient cases with discharge dates between 01/01/2005 and 12/31/2005. This data was pulled over 90 days beyond the end of the period (4/4/2005) to account for any claims lag and to ensure MHC encounter data had been submitted for the time period under review. Separate data pulls were conducted which either excluded the Pikes Peak service area or included Pikes Peak to determine if the addition of 51,000 new members in the Pikes Peak area had an impact on the findings. Using the same methodology as in CY 2004, 170 (68.2%) of the 249 inpatient cases (excluding Pikes Peak) had a qualifying ambulatory follow up visit within seven days of discharge. With the Pikes Peak area included there were 278 (68.1%) of the total 408 inpatient cases that received follow up. Both percentages exceed the goal of 56.5% and both increases reach a level of statistical significance with p. = 0.01291 with PPMHC excluded and p. = 0.00583 with PPMHC included. (See 8B for further information.)

Remeasurement 5

The fifth remeasurement was conducted for inpatient cases with discharge dates between 01/01/2006 and 12/31/2006. This data was pulled over 90 days beyond the end of the period (4/6/2007) to account for any claims lag and to ensure MHC encounter data had been submitted for the time period under review. Of the 463 total inpatient discharges during this period, 324 (70%) had a qualifying ambulatory follow up visit within seven days of discharge. This percentage continues to exceed the goal of 56.5% and demonstrates that the significant improvement noted during the fourth remeasurement period was sustained during the fifth remeasurement period. The sustained improvement seen continues to be statistically significant when compared to remeasurement period three (CY2004) with p. = 0.000824.

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

01/01/2001 – 12/31/2001

Remeasurement 1

01/01/2002 – 12/31/2002 – No significant effects of the interventions were found. The interventions did not begin to occur until late in the year (August 2002) and this may have not allowed enough time for any impact of the interventions to have occurred.

Remeasurement 2

01/01/2003 – 12/31/2003 – When using the updated methodology, the goal of 51% was met for this time period. However, when the same period was examined using the original methodology, this difference was not seen and appears to have been a factor of the data collection changes rather than an effect of the interventions implemented to date. Using the original methodology there was a slight increase in follow up noted from the previous year, this increase was not statistically significant, nor was it higher than the baseline year and therefore was probably due to annual fluctuations in the data. With the implementation of a more specific data collection process, it is possible that the discharge planners, who have become very committed to this process, believed that the lack of improvement was really a problem with the data (and not any lack of effort or strategy on their part) that accounted for the low follow up rate. This may have resulted in less attention to strategy in this area during the year. In addition, several of the mental health centers implemented electronic records during 2003.There was concern about the completeness of the encounter data reported following this implementation and possible effects on the validity of the rate. While some of the data was received later than the due date,, only one problem was identified regarding completeness of the data. In that case, case management units were under-reported, however, case management codes are not included in the data pull for this report (these services are only included if manually verified in the clinical record that a face to face case anagement contact occurred), thus there was no impact on the validity of the report data.

Remeasurement 3

01/01/2004 – 12/31/2004 –Data was collected for this time period using the updated methodology. Fragmentation of the Colorado mental health system creates work-arounds for data gathering when Departments of Social or Human Services are providing funding for treatment, as well as dual diagnosis cases that receive follow up treatment through chemical dependency programs that are not in our system. To obtain complete information, manual data collection is required, and at times we are not aware that additional services are being provided. Because of the change in methodology, this period could not be compared to the baseline period. It could, however, be compared to the previous reporting period using the same methodology. Because the updated methodology appears to have had a positive impact on the numbers, the baseline goal was also raised from 51% to 56.5%. Using the new methodology, the baseline goal was exceeded during this remeasurement period with 57.54% of cases receiving follow up. While this represents a 6% increase over the previous year, this difference is not statistically significant. The corrective actions implemented by the mental health centers in September 2004 may have contributed to the increase; however three to four months is not a sufficient amount of time to truly determine the effectiveness of the interventions. Based upon the results from this data collection period, it appears there interventions may have positively impacted the follow-up rate, but statistical analysis shows this is not definite and we do not yet know whether the interventions were successful. In light of the progress seen it is recommended that this PIP be continued for an additional year to determine if continued progress is made and maintained.

I. Activity IX. Study Results Summary and Improvement: List study results and describe any meaningful change in performance observed during the time period of analysis.

#1 Quantifiable Measure:

Time Period Measurement Covers	Baseline Project Indicator Measurement	Numerator	Denominator	Rate or Results	Industry Benchmark	Statistical Test and Significance*
1/1/01 – 12/31/01	*Baseline:*	237	542	43.7%	51%	
1/1/02 – 12/31/02	**Remeasurement 1:**	170	405	41.9%	51%	
1/1/03 – 12/31/03	**Remeasurement 2:**	158	369	42.82%	51%	
1/1/04 – 12/31/04	**Remeasurement 3:** using updated methodology	145	252	57.54%	56.5%	
1/1/05-12/31/05 (WO PP)	**Remeasurement 4:**	170	249	68.3%	56.5%	Chi Square – p. = 0.01291 vs. R3.
1/1/05-12/31/05 (With PP)	**Remeasurement 4:**	278	408	68.1%	56.5%	Chi Square – p. = 0.00583 vs. R3.
1/1/06-12/31/06 (With Pikes Peak)	**Remeasurement 5:**	324	463	70.0%	56.5%	Chi Square – p. =0.000824 vs. R3.

I. Activity IX. Study Results Summary and Improvement: List study results and describe any meaningful change in performance observed during the time period of analysis.

#2 Quantifiable Measure:

Time Period Measurement Covers	Baseline Project Indicator Measurement	Numerator	Denominator	Rate or Results	Industry Benchmark	Statistical Test and Significance*
	Baseline:					
	Remeasurement 1:					
	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.

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.

Remeasurement 4

Although the ambulatory follow-up rate over the last measurement periods were trending upward, no statistically significant improvements had been gained until the most recent measurement period (calendar year 2005). During calendar year 2003, we identified a more refined methodology for data capture, thus a comparison with years prior to 2003 would not be appropriate. Using the updated methodology implemented during calendar year 2003, which is a more accurate reflection of ambulatory follow up in our service area, the results are as follows:

CY2003: 51.5%
CY2004: 57.54%
CY2005: 68.3% without Pikes Peak and 68.1% with Pikes Peak

For calendar year 2005, an additional service area (Pikes Peak) was added to the study which resulted in an additional eligible population of over 51,000 members; however, calculations have been completed with and without the Pikes Peak service area to address any methodological and population concerns, and to allow appropriate comparison with previous data. The annual rates of follow-up shown above represent gradual movement toward the statistically significant improvement demonstrated in the most recent measurement period.

Remeasurement 5

Remeasurement 5 data shows CHP's ambulatory follow-up rate at 70% for the 2006 measurement period (an increase of 1.9% over 2005, which is not significant). Results of chi square testing comparing the data from Remeasurement 5 to Remeasurement 3 continue to demonstrate a statistically significant improvement in the rate, and that CHP has sustained the improvement originally gained in 2005 through 2006. Thus, the study question, "Will procedural changes and staff education focused on discharge planning/aftercare result in a significantly improved rate of ambulatory follow-up within seven days of a hospital discharge?" has been answered positively.
We have noted that the data shows an increase in hospitalizations during 2006 and that this increase is consistent with other monitoring reports and appears to be due to random variation, and not due to data issues or population changes.

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 an 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 an 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 Partnerhips, 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).

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[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.