

State of Colorado



Department of Health Care Policy and Financing

FY 06–07
COLORADO ASTHMA MEDICATION
MANAGEMENT FOCUSED STUDY

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Introduction

Asthma is a chronic disease of the lungs characterized by sudden, recurring attacks of difficult breathing, wheezing, and coughing. This chronic disease has been on a steep rise since 1980 and is estimated to affect nearly 20 million Americans, including 6.3 million children. The Colorado Medicaid 2003–2004 Quality Strategy Work Plan identified asthma as one of the top 10 diagnoses for the Medicaid managed care population. Based on Colorado Hospital Association data, there were nearly 3,400 hospitalizations in Colorado due to asthma in 2005.¹⁻¹ According to the American Lung Association’s State of the Air: 2007 report, an estimated 92,458 children have asthma in Colorado.¹⁻²

The FY 06–07 Colorado Asthma Medication Management Focused Study was conducted for the Colorado Department of Health Care Policy & Financing (the Department) by Colorado Medicaid’s external quality review organization, Health Services Advisory Group, Inc. (HSAG). This focused study evaluated the services received by Colorado Medicaid beneficiaries in four Colorado Medicaid programs who had been diagnosed with asthma, and assessed the use of appropriate medications for the treatment of asthma and the overuse of inhaled, short-acting beta-agonists. The study will allow the Department and Colorado Medicaid programs to assess their rates compared with national statistics and monitor appropriate and inappropriate use of medications for the treatment of asthma.

This FY 06–07 asthma focused study was built on the findings of the FY 03–04 study by reporting asthma care. The study included four Colorado Medicaid programs: the Colorado Medicaid Primary Care Physician Program (PCPP), the unassigned fee-for-service (FFS) program, and two health plans—Denver Health Medicaid Choice (DHMC) and Rocky Mountain Health Plans (RMHP).

Methodology

The study population consisted of Medicaid beneficiaries between 5 and 56 years of age as of December 31, 2006, who were continuously enrolled and identified as having persistent asthma during 2005 and 2006. Based on the 2007 Health Plan Employer Data and Information Set (HEDIS[®]) technical specifications, the following focused study defined persistent asthma as any of the following events:

- ◆ At least four asthma medication dispensing events
- ◆ At least one emergency department visit with a primary diagnosis of asthma
- ◆ At least one hospitalization with a primary diagnosis of asthma
- ◆ At least four outpatient visits with a corresponding diagnosis of asthma and at least two asthma medication dispensing events

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

Two indicators were evaluated and reported in the current focused study. These measures were based on administrative data and used the entire eligible population; no sampling was employed. Further, the results were stratified by the following age groups: 5 to 9 years of age, 10 to 17 years of age, and 18 to 56 years of age. Also, when appropriate, comparisons were made to the original FY 03–04 Colorado Medicaid asthma baseline study. However, due to population changes in the distribution of members across Colorado Medicaid programs, caution should be used when interpreting differences in performance between study years.

The first measure, *Use of Appropriate Medications for People With Asthma*, is an NCQA HEDIS measure. This indicator evaluates whether Colorado Medicaid members with persistent asthma are being prescribed medications acceptable as primary therapy for long-term control of asthma. The second measure evaluates the overuse of inhaled, short-acting beta-agonists. Several studies along with the National Institutes of Health (NIH) National Asthma Education and Prevention Guidelines indicate that using one or more canisters per month of beta-agonists correlates with poor control of asthma and its consequences.^{1-3,4,5,6} Both of these measures were evaluated in the original FY 03–04 Colorado Medicaid asthma focused study.

Summary of Findings

Overall, the eligible population consisted of 2,246 Colorado Medicaid beneficiaries with persistent asthma between 5 and 56 years of age. Colorado Medicaid members 5 to 9 years of age had the smallest population (26.0 percent). The two oldest age groups each accounted for more than one-third of the total asthmatic population (10 to 17 years of age = 35.8 percent, and 18 to 56 years of age = 38.1 percent). Considerable variation in the distribution of members by age was identified across individual Colorado Medicaid programs.

Table 1-1 displays the results of the first measure, *Use of Appropriate Medications for People With Asthma*. Overall, the Colorado Medicaid rate (84.4 percent) for the current study was 12.4 percentage points higher than the FY 03–04 Colorado Medicaid rate (72.0 percent). However, while an improvement in the use of appropriate asthma medications was noted across all Medicaid programs and age groups, the overall Colorado Medicaid rate was somewhat lower than the NCQA 2006 HEDIS national Medicaid 50th percentile (87.1 percent). None of the Colorado Medicaid programs met this standard. Only the rate for children 5 to 9 years of age (92.6 percent) was higher than the national 50th percentile for its age group (90.2 percent).

| Table 1-1—Use of Appropriate Medications for People With Asthma | | | | | | | |
|-----------------------------------------------------------------|----------------------------------|--------------------------|------------------------|------------------------|------------------------|--------------------------|------------------------------------------------------------|
| Age Group | FY 03–04 Colorado Medicaid | FY 06–07 | | | | | NCQA 2006 HEDIS National Medicaid 50th Percentile |
| | | Colorado Medicaid | DHMC | RMHP | PCPP | FFS | |
| 5 to 9 Years | 69.4% N=736 | 92.6% N=685 | 90.9% N=22 | 97.4% N=39 | 90.9% N=154 | 93.0% N=370 | 90.2% |
| 10 to 17 Years | 72.3% N=949 | 86.7% N=805 | 85.2% N=27 | 79.5% N=39 | 87.8% N=205 | 86.9% N=534 | 87.4% |
| 18 to 56 Years | 72.9% N=1,657 | 76.5% N=856 | 77.9% N=86 | 85.9% N=99 | 75.9% N=266 | 74.3% N=405 | 84.9% |
| Overall (5 to 56 Years) | 72.0% N=3,342 | 84.4% N=2,246 | 81.5% N=135 | 87.0% N=177 | 83.5% N=625 | 84.7% N=1,309 | 87.1% |

The results of the second measure, *Overuse of Inhaled, Short-Acting Beta-Agonists*, are displayed in Table 1-2. Short-acting beta-agonists remain an effective treatment of choice for relieving acute asthma episodes. Daily use is generally not recommended. In general, using one or more canisters per month (or more than 12 canisters per year) of an inhaled, short-acting beta-agonist is an indication of poor control of asthma. As such, a lower percentage equates to better control of asthma. There are no national benchmarks available for this measure.

| Table 1-2—Overuse of Inhaled, Short-Acting Beta-Agonists | | | | | | |
|----------------------------------------------------------|----------------------------------|--------------------------|------------------------|------------------------|------------------------|------------------------|
| Age Group | FY 03–04 Colorado Medicaid | FY 06–07 | | | | |
| | | Colorado Medicaid | DHMC | RMHP | PCPP | FFS |
| 5 to 9 Years | 4.6% N=736 | 5.0% N=585 | 0.0% N=22 | 2.6% N=39 | 5.2% N=154 | 5.4% N=370 |
| 10 to 17 Years | 7.6% N=949 | 11.3% N=805 | 29.6% N=27 | 12.8% N=39 | 13.7% N=205 | 9.4% N=534 |
| 18 to 56 Years | 12.7% N=1,657 | 18.5% N=856 | 31.4% N=86 | 18.2% N=99 | 16.5% N=266 | 17.0% N=405 |
| Overall (5 to 56 Years) | 9.5% N=3,342 | 12.4% N=2,246 | 25.9% N=135 | 13.6% N=177 | 12.8% N=625 | 10.6% 1,309 |

Note: Low rates are better for this measure. At this time, there are no national benchmarks established for this measure.

Table 1-2 shows that 12.4 percent of the Colorado Medicaid population with persistent asthma used 12 or more canisters of an inhaled, short-acting beta-agonist in FY 06–07. This result represents a 2.9 percentage point increase from the rate in FY 03–04 (9.5 percent) and a small decline in overall performance. In general, overuse of beta-agonists was most prevalent among adults 18 to 56 years of age (18.5 percent), with children 5 to 9 years of age exhibiting the least amount of overuse (5.0 percent). While this age-based pattern was consistent across all Colorado Medicaid programs, considerable variation was noted across total plan rates.

Table 1-3 shows the average number of canisters of inhaled, short-acting beta-agonists prescribed to Colorado Medicaid members.

| Table 1-3—Average Number of Prescribed Short-Acting Beta-Agonists | | | | | | |
|--------------------------------------------------------------------------------------------------------|-------------------|----------------|----------------|----------------|---------------------------|----------------|
| | Colorado Medicaid | RMHP | DHMC | PCPP | All Health Plans and PCPP | FFS |
| Average Number of Prescribed Short-Acting Beta-Agonist Canisters for All Members With Asthma | 5.2 Canisters | 6.2 Canisters | 9.0 Canisters | 5.0 Canisters | 5.7 Canisters | 4.8 Canisters |
| Average Number of Prescribed Short-Acting Beta-Agonist Canisters for Members With 12 or More Canisters | 16.3 Canisters | 16.7 Canisters | 17.1 Canisters | 16.0 Canisters | 16.4 Canisters | 16.3 Canisters |

Conclusions and Recommendations

The main findings from this focused study showed:

- ◆ Slightly more than 8 of every 10 Colorado Medicaid members with asthma 5 to 56 years of age (84.4 percent) had evidence of appropriate use of medication during FY 06–07. While this rate was 12.4 percentage points higher than the rate in FY 03–04 (72.0 percent), the Colorado Medicaid rate was slightly lower than the NCQA 2006 HEDIS national Medicaid 50th percentile of 87.1 percent. Children 5 to 9 years of age exhibited the highest rate (92.6 percent) followed by children 10 to 17 years of age and adults 18 to 56 years of age (86.7 percent and 76.5 percent, respectively). Some variation in performance was noted across the health plans and age groups.
- ◆ Among Colorado Medicaid members with persistent asthma, 12.4 percent exhibited overuse (i.e., 12 or more canisters) of inhaled, short-acting beta-agonists during FY 06–07. This rate suggests a small decrease in performance compared with the Colorado Medicaid rate in FY 03–04 (9.5 percent). Three Colorado Medicaid programs showed similar rates, ranging from 10.6 percent to 13.6 percent, while one health plan displayed a considerably higher rate of overuse (25.9 percent).
- ◆ The average Colorado Medicaid member with persistent asthma received 5.2 canisters of an inhaled, short-acting beta-agonist during the study period compared with 3.9 canisters in FY 03–04. While this represented an increase of approximately one canister per year, the overall use of short-acting beta-agonists was well below the threshold of 12 canisters per year. Further, the average number of canisters used by members prescribed 12 or more canisters was 16.3 canisters per year, or 2 canisters fewer than in FY 03–04. Individual Colorado Medicaid program rates ranged from 4.8 canisters to 9.0 canisters.
- ◆ In general, the results from the first two quality measures indicate that Colorado Medicaid members with asthma appear to be receiving appropriate asthma medications. However, for members who used more than 12 canisters of an inhaled, short-acting beta-agonist, the results suggest that more intense case management may be appropriate.

Overall Recommendations

Based on the findings of this focused study, HSAG makes the following recommendations:

- ◆ HSAG recommends that future studies measure consistent use of inhaled corticosteroids, along with the current HEDIS asthma measures, as an appropriate use of asthma medication.
- ◆ The Department should work with the Colorado Medicaid programs to ensure that all providers understand national guidelines for appropriate asthma care. Additionally, ongoing communication designed to provide practitioners and their office staff with best practices may help to increase the provision of appropriate asthma care.
- ◆ HSAG recommends that the data from this study be used to identify members overusing short-acting beta-agonists for targeted intervention. Patients who overuse short-acting beta-agonists may be more likely to use less cost-effective resources such as the emergency department, urgent care, and inpatient services. Targeted interventions could then follow recommendations outlined in Healthy People 2010, including encouraging providers to establish an asthma action plan. The asthma action plan should explain when and how to take medicines correctly, as well as what to do when asthma worsens. Additionally, self-management skills to manage and control the disease should be included in the plan.
- ◆ Colorado Medicaid programs should encourage providers to evaluate member compliance with prescribed medications at every office visit.

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Introduction

Asthma is a chronic disease of the lungs, characterized by sudden, recurring attacks of difficult breathing, wheezing, and coughing. These attacks, usually triggered by allergens and irritants such as animals, dust, cigarette smoke, and fragrances, can range from mild to life threatening. This chronic disease has been on a steep rise since 1980 and is estimated to affect nearly 20 million Americans, including 6.3 million children.

The FY 06–07 Colorado Asthma Medication Management Focused Study was conducted for the Department by Colorado Medicaid’s external quality review organization, HSAG. This focused study evaluated the services received by Colorado Medicaid beneficiaries in four Colorado Medicaid programs who had been diagnosed with asthma, and assessed the use of appropriate medications for the treatment of asthma and the overuse of inhaled short-acting beta-agonists. The study will allow the Department and Colorado Medicaid programs to assess their rates compared with national statistics and monitor appropriate and inappropriate use of medications for the treatment of asthma.

Background

Although asthma affects Americans of all ages, races, and ethnic groups, low-income and minority populations experience significantly higher rates of emergency room visits, hospital admissions, and death due to the disease. The Colorado Medicaid 2003–2004 Quality Strategy Work Plan identified asthma as one of the top diagnoses for the Medicaid managed care population. Asthma is the third-most-common inpatient diagnosis in the Colorado Medicaid managed care population, constituting 10.4 percent of total inpatient claims. It is also the fifth-most-common ambulatory diagnosis, constituting 9.3 percent of total ambulatory claims in the Medicaid managed care population.

The Centers for Disease Control and Prevention (CDC) estimates that asthma accounts for more than 14 million outpatient clinic visits and nearly 2 million emergency department visits each year. The CDC also identifies asthma as the most common serious chronic disease of childhood, accounting for one-third of all pediatric emergency room visits, and is the fourth-most-common cause of pediatric visits to the doctor’s office.²⁻¹

According to the 2004 Behavioral Risk Factor Surveillance System report, the asthma prevalence rate self-reported by adults in Colorado was 8.7 percent of the population, compared with 7.7 percent in 2002. The rate for the U.S. population was 8.1 percent in 2004, up from 7.5 percent reported in 2002.²⁻²

As the prevalence of asthma continues to rise, the impact on health and the economy is substantial. Recent analysis of the economic impact of asthma, commissioned by the American Lung Association, cited annual estimated costs of \$16.1 billion in 2004. Prescription drugs represented the largest single direct medical expenditure, at \$5 billion.²⁻³ Management of asthma is critical.

Neglect of the condition frequently results in hospitalization, emergency room (ER) visits, and missed work and school days.

Successful management of asthma can be accomplished for most asthmatics if they take medications that provide long-term control. Learning how to manage asthma as a chronic disease is a major challenge for people with asthma and their families. Numerous approaches have been developed and implemented in a variety of community settings, including schools, clinics, and homes. These approaches include comprehensive strategies such as education, skill development, counseling, and environmental control strategies.

Study Goals and Objectives

The goal of the asthma medication management focused study was to evaluate the extent to which Colorado Medicaid members with asthma received appropriate medication management. The asthma study assessed utilization of short-acting beta-agonists to complement the HEDIS asthma measure and allowed the Department and the Medicaid programs to monitor overuse of inhaled, short-acting beta-agonists, defined as 12 or more canisters per year.

Comparing the results of the FY 06–07 study with the results of the FY 03–04 study will help the Department and Colorado Medicaid programs assess the success of any intervention plans that may have been implemented since the last study. The study results can be used to help identify areas of increased, sustained, and needed improvement.

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Overview

This focused study was the remeasurement of the baseline focused study conducted in FY 03–04 and included an assessment of the use of short-acting beta-agonists to complement the HEDIS asthma measure. This study will allow the Department and Colorado Medicaid programs to monitor use of inhaled, short-acting beta-agonists and the appropriate use of medications for the treatment of asthma, as defined by the HEDIS measure on asthma. When appropriate, comparisons were made to the original FY 03–04 Colorado Medicaid asthma baseline study. However, due to population changes in the distribution of members across Colorado Medicaid programs, caution should be used when interpreting differences in performance between study years.

The NCQA HEDIS measure, *Use of Appropriate Medications for People With Asthma*, was reported using the administrative method only. This measure evaluated whether members with persistent asthma were being prescribed medications acceptable as primary therapy for long-term control of asthma. In addition to the HEDIS measure, one important indicator of the inappropriate use of asthma medications was the overuse of short-acting beta-agonists. Children receiving six or more bronchodilators per year are five times more likely to be admitted to the hospital and three times more likely to visit the ER compared with those receiving one to three prescriptions. Several studies, and the National Institutes of Health (NIH) National Asthma Education and Prevention Guidelines, indicate that using one or more canisters per month of beta-agonists correlates with poor control of asthma and its consequences.^{3-1,2,3,4} Studies suggest that the regular use of short-acting beta-agonists can lead to decreased lung function, increased airway responsiveness, and decreased asthma control.³⁻⁵

The asthma study focused on members enrolled in one of the following Colorado Medicaid programs: Primary Care Physician Program (PCPP), fee for service (FFS), Denver Health Medicaid Choice (DHMC), or Rocky Mountain Health Plan (RMHP). The study population was limited to beneficiaries between 5 and 56 years of age as of December 31, 2006, who were continuously enrolled and identified as having persistent asthma during 2005 and 2006. Optional exclusions were applied for emphysema and chronic obstructive pulmonary disease. Persistent asthma was defined in the *HEDIS 2007 Technical Specifications, Volume 2* by any of the following events (during 2005 and 2006):

- ◆ At least four asthma medication dispensing events.
- ◆ At least one emergency department visit with a primary diagnosis of asthma.
- ◆ At least one hospitalization with a primary diagnosis of asthma.
- ◆ At least four outpatient visits with a corresponding diagnosis of asthma and at least two asthma medication dispensing events.

A complete description of the *HEDIS 2007 Technical Specifications* for identifying members with asthma can be found in Appendix A.

Measures

Two measures were evaluated and reported.

Use of Appropriate Medications for People With Asthma (HEDIS 2007) was calculated as the percentage of members in the study population who received at least one dispensed prescription for inhaled corticosteroids, nedocromil, cromolyn sodium, leukotriene modifiers, or methylxanthines during FY 06–07. Results were evaluated and reported for ages 5 to 9, 10 to 17, and 18 to 56, as well as for the combined study population (5 to 56).

Overuse of Inhaled, Short-Acting Beta-Agonists was calculated as the percentage of members in the study population who received dispensed prescriptions for 12 or more canisters of inhaled, short-acting beta-agonists during FY 06–07. (Note: More than one canister may have been dispensed on any given date in FY 06–07 and all of them would have been counted for this measure.)

Only short-acting, beta-agonist-type inhalers were included for this numerator. The following were specifically excluded: long-acting beta-agonists, inhaled corticosteroids, inhaled anti-inflammatories, methylxanthines, nebulized medications, oral bronchodilators, leukotriene modifiers, and mast cell stabilizers. The list of medications for this numerator is provided as Attachment A. Results were evaluated and reported for ages 5 to 9, 10 to 17, 18 to 56, as well as for the combined study population (ages 5 to 56). Results were also reported by the number of canisters used.

Data Collection

Each health plan provided a database to HSAG containing the population of members enrolled in the health plan who had asthma, along with pharmacy claims information. For the PCPP and FFS population, HSAG obtained the information from the Department and determined the asthma population using the specified criteria.

HSAG examined administrative and pharmacy claims data provided by the Department, RMHP, and DHMC to evaluate use of appropriate medications for the treatment of asthma and potential overuse of short-acting beta-agonists. The list of inhaled, short-acting beta-agonists used in this report can be found in Appendix B.

Limitations

Providers who are not paid on a fee-for-service basis (e.g., capitated providers) may render services, but may neglect to submit the encounter to the managed care plan. In addition, providers dispensing sample medications would not submit encounter data. Since this focused study relied on encounter data, rates may actually be higher than what was reported in the Results section. The eligible population of members who had asthma was identified using the *HEDIS 2007 Technical Specifications*, which calls for the use of both claims/encounter data and pharmacy data. Underreporting of encounter data for capitated providers may result in fewer members with asthma identified as part of the eligible population.

The results of this focused study were not adjusted based on the asthma severity level or health status of members. The level of severity or any comorbid conditions for members with asthma in the four different populations (i.e., DHMC, RMHP, PCPP, and FFS) was unknown. It was possible members in one health plan may have had more health-related issues (e.g., a higher percentage of smokers) or different levels of severity in their asthma and, therefore, required more intense treatment. This might have resulted in higher utilization of services. For example, members with a higher level of asthma severity may have used more inhaled, short-acting beta-agonists.

The HEDIS specifications changed from the baseline study performed in FY 03–04. Members in the FY 03–04 study only had to have persistent asthma during the measurement year. For the current study, members had to have had persistent asthma for the measurement year and the preceding year. This may have reduced the number of members entered into the study. The effects of this could not be determined in this study.

This focused study addressed members with persistent asthma who were enrolled in Colorado Medicaid. Results should not be extrapolated to the general asthma population.

References

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Study Population Characteristics

The age and gender distribution for the Colorado Medicaid programs—the health plans, the PCPP, and the FFS program—are presented in Table 4-1 below. The majority (38 percent) of eligible Colorado Medicaid members were in the 18-to-56-year-old age group, closely followed by the 10-to-17-year-old age group (36 percent). The 5-to-9-year-old age group had the least amount of members (26 percent). The majority (54 percent) of the members were female.

For the health plans and the PCPP, the majority of eligible members were in the 18-to-56-year-old age group, except for the FFS program, which had the majority of eligible members in the 10-to-17-year-old age group. Both the DHMC and RMHP populations had a higher percentage of members in the 18-to-56-year-old age group than the PCPP and FFS program. Both health plans, the PCPP, and the FFS program had a larger percentage of females than males. DHMC and RMHP showed a higher percentage of females than the PCPP and the FFS program.

Overall, the FFS population was the largest (1,309 members out of 2,246 total members in the study). The PCPP (625 cases) had the second-largest population, followed by RMHP (177 cases) and DHMC (135 cases). Because the FFS population accounted for 58.3 percent of the eligible population, compliance by FFS members influenced the overall Colorado Medicaid results.

Table 4-1—Age and Gender Distribution by Colorado Medicaid Program

| Demographic | Colorado Medicaid | | RMHP | | DHMC | | PCPP | | FFS | |
|----------------------------|-------------------|---------------|------------|---------------|------------|---------------|------------|---------------|--------------|---------------|
| | N | % | N | % | N | % | N | % | N | % |
| Age | | | | | | | | | | |
| 5 to 9 Years | 585 | 26.0% | 39 | 22.0% | 22 | 16.3% | 154 | 24.6% | 370 | 28.3% |
| 10 to 17 Years | 805 | 35.8% | 39 | 22.0% | 27 | 20.0% | 205 | 32.8% | 534 | 40.8% |
| 18 to 56 years | 856 | 38.1% | 99 | 55.9% | 86 | 63.7% | 266 | 42.6% | 405 | 30.9% |
| Total 5 to 56 Years | 2,246 | 100.0% | 177 | 100.0% | 135 | 100.0% | 625 | 100.0% | 1,309 | 100.0% |
| Gender | Colorado Medicaid | | RMHP | | DHMC | | PCPP | | FFS | |
| Male | 1,033 | 46.0% | 67 | 37.9% | 48 | 35.6% | 280 | 44.8% | 638 | 48.7% |
| Female | 1,213 | 54.0% | 110 | 62.1% | 87 | 64.4% | 345 | 55.2% | 671 | 51.3% |

Measure 1: Use of Appropriate Medications for People With Asthma

The *Use of Appropriate Medications for People With Asthma—Ages 5 to 56 Years* calculates the percentage of members 5 to 56 years of age who had been continuously enrolled for the measurement year and the year prior to the measurement year and who were identified as having persistent asthma during the year prior to the measurement year. This measure evaluates whether members with persistent asthma are being prescribed medications acceptable as primary therapy for long-term control of asthma. The NCQA HEDIS 2006 national 50th percentile was used as a benchmark for this focused study.

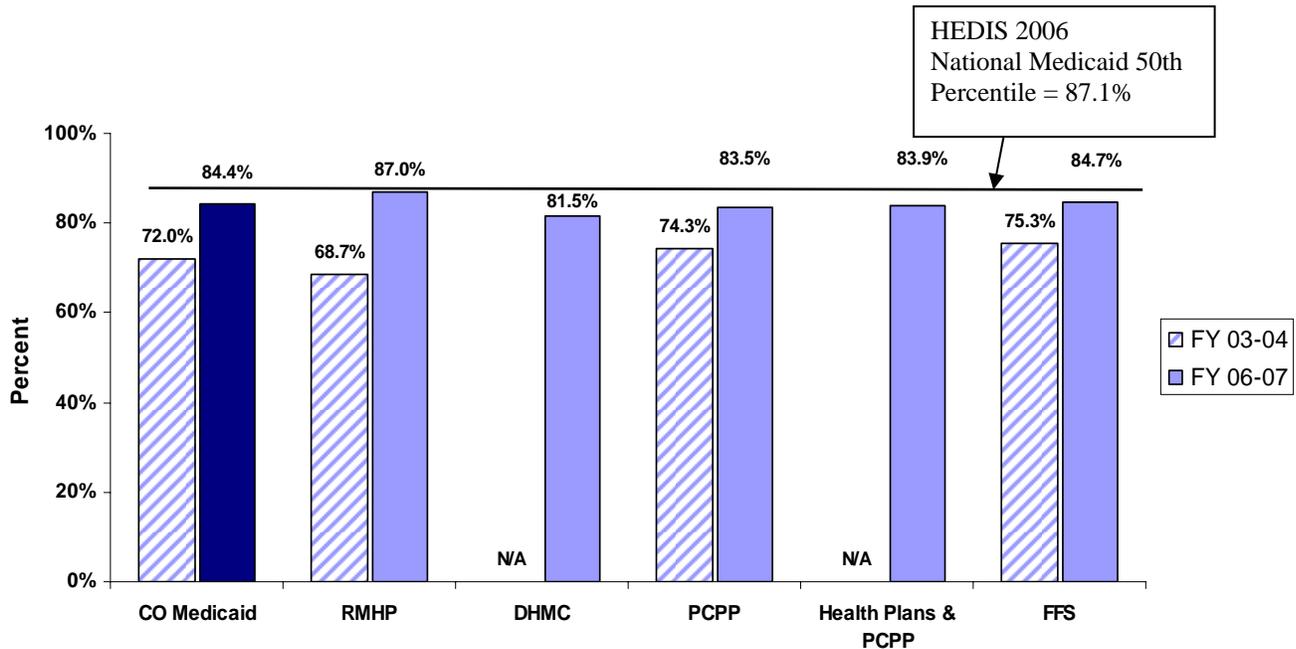
Table 4-2 shows the percentage of Medicaid members 5 to 56 years of age who received at least one dispensed prescription for inhaled corticosteroids, nedocromil, cromolyn sodium, leukotriene modifiers, or methylxanthines during FY 06–07.

| Table 4-2—Use of Appropriate Medications for People With Asthma | | | | | |
|-----------------------------------------------------------------|-------------------|-----------------------------------------------|--------------|--------------|--------------|
| Age Group | Colorado Medicaid | NCQA HEDIS 2006 National Medicaid Percentiles | | | |
| | | 25th | 50th | 75th | 90th |
| 5 to 9 Years (N = 585) | 92.6% | 86.7% | 90.2% | 93.4% | 95.8% |
| 10 to 17 Years (N = 805) | 86.7% | 83.3% | 87.4% | 91.1% | 93.5% |
| 18 to 56 years (N=856) | 76.5% | 80.3% | 84.9% | 88.0% | 90.8% |
| Overall (5 to 56 Years, N = 2,246) | 84.4% | 84.0% | 87.1% | 89.7% | 92.5% |

Overall, Colorado Medicaid, at 84.4 percent, was 2.7 percentage points below the Medicaid NCQA HEDIS 50th percentile. Only the 5-to-9-year-old age group had a rate (92.6 percent) that was above the Medicaid NCQA HEDIS 50th percentile. The rate for the 10-to-17-year-old age group (86.7 percent) was slightly below the 50th percentile, and the rate for the 18-to-56-year-old age group (76.5 percent) was 8.4 percentage points below the 50th percentile. The results indicate that focusing interventions on the 18-to-56-year-old age group will most likely yield the greatest improvement in the overall Colorado Medicaid rate.

Figure 4-1 illustrates program and year-to-year comparisons for the *Use of Appropriate Medications for People With Asthma* measure for the combined rate (5 to 56 years of age) for all health plans and the PCPP, including and excluding FFS.

Figure 4-1—Use of Appropriate Medications for People With Asthma, 5 to 56 Years of Age



NOTE: DHMC was not included in the original focused study in FY 03-04.

The eligible population in the FY 06–07 study ranged from 135 cases for DHMC to 1,309 cases for the FFS population. The total eligible Colorado Medicaid population consisted of 2,246 cases. The FFS population had the largest percentage of members, which influenced the overall Colorado Medicaid rate.

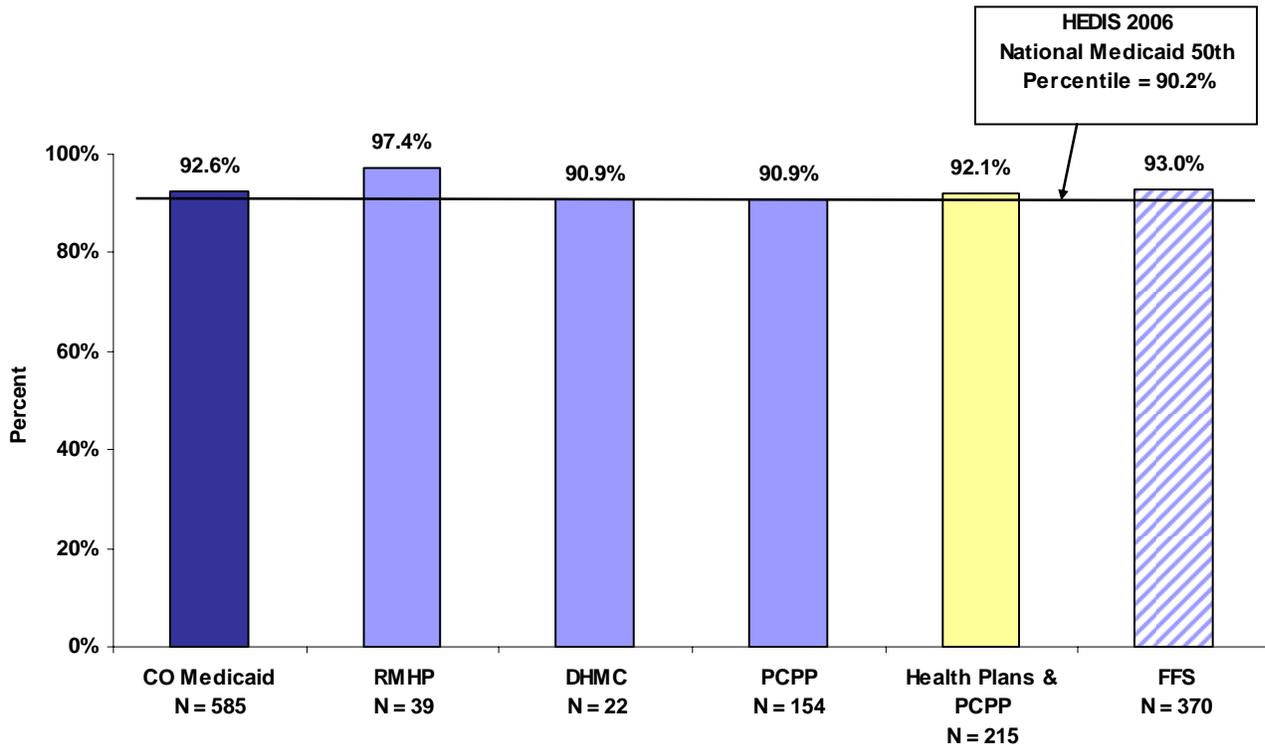
The overall Colorado Medicaid rate increased 12.4 percentage points from 72.0 percent in FY 03–04 to 84.4 percent in FY 06–07. Rates for RMHP, the PCPP and FFS all increased from their FY 03–04 baseline results, ranging from increases of 9.2 percentage points (PCPP) to 18.3 percentage points (RMHP). DHMC became a new managed care organization (MCO) in 2004 and, therefore, was unable to participate in the baseline focused study.

The overall Colorado Medicaid rate (84.4 percent) was slightly below the NCQA HEDIS 2006 national Medicaid 50th percentile of 87.1 percent. Nonetheless, the Colorado Medicaid rate indicates that 8 out of 10 asthmatics use appropriate medications.

RMHP’s rate was closest to the NCQA HEDIS 2006 national Medicaid 50th percentile, at 87.0 percent. DHMC recorded the lowest rate, at 81.5 percent. Rates for DHMC, the PCPP and FFS were similar, ranging from 81.5 percent to 84.7 percent. The combined rate for all health plans and the PCPP, excluding FFS, was 83.9 percent.

Figure 4-2 presents program comparisons for the *Use of Appropriate Medications for People With Asthma* measure for members 5 to 9 years of age for all health plans and the PCPP, including and excluding FFS.

Figure 4-2—Use of Appropriate Medications for People With Asthma, 5 to 9 Years of Age



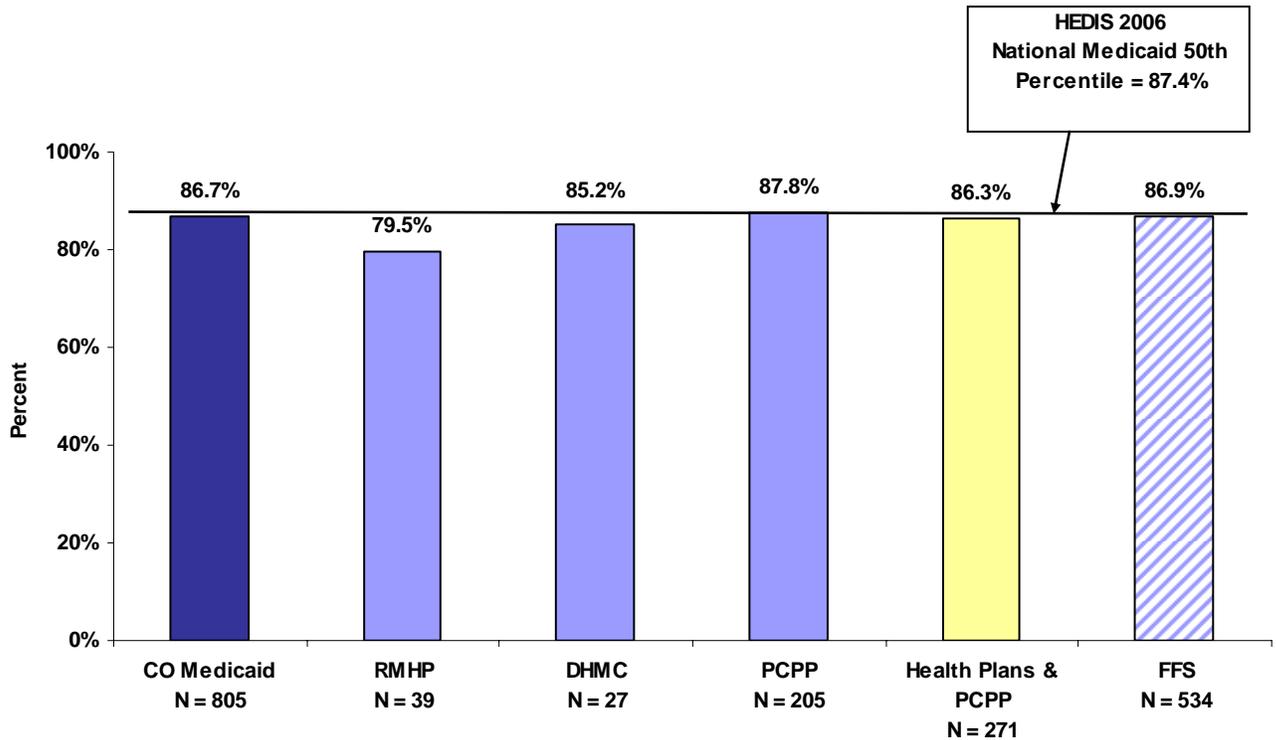
The eligible population shown in Figure 4-2 ranged from 22 cases for DHMC to 370 cases for the FFS population. The total eligible Colorado Medicaid population for the 5-to-9-year-old age group consisted of 585 cases. The FFS program, which had the largest proportion of members in its population, influenced the overall results for this age group.

The overall Colorado Medicaid rate for the 5-to-9-year-old age group was 92.6 percent, or 2.4 percentage points higher than the NCQA HEDIS 2006 national Medicaid 50th percentile of 90.2 percent. This may be due to the age group’s contact with the Colorado Medicaid program through other recommended services, such as well-child visits, as well as parental control.

The rates ranged from 97.4 percent (RMHP) to 90.9 percent (DHMC and the PCPP). All programs were above the NCQA HEDIS 2006 national Medicaid 50th percentile of 90.2 percent. Rates for RMHP and FFS were higher than rates for the PCPP and DMHC, which were the same. The combined rate for all health plans and the PCPP, excluding FFS, was 92.1 percent.

Figure 4-3 presents program comparisons for the *Use of Appropriate Medications for People With Asthma* measure for members 10 to 17 years of age for all health plans and the PCPP, including and excluding FFS.

Figure 4-3—Use of Appropriate Medications for People With Asthma, 10 to 17 Years of Age



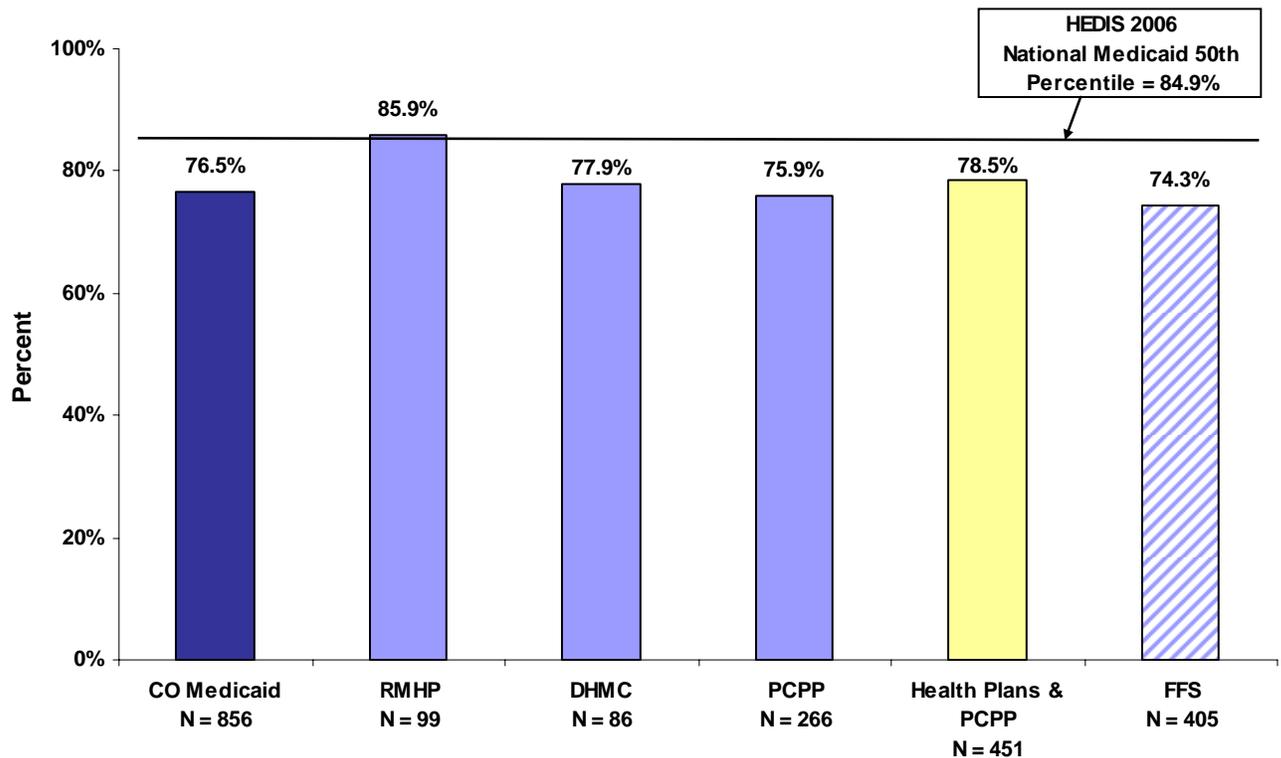
The eligible population shown in Figure 4-3 ranged from 27 cases for DHMC to 534 cases for the FFS population. The total eligible Colorado Medicaid population for the 10-to-17-year-old age group consisted of 805 cases. With 66.3 percent of Colorado Medicaid members, the FFS program had the greatest influence on rates for the 10-to-17-year-old age group.

The overall Colorado Medicaid rate for the 10-to-17-year-old age group was 86.7 percent, almost equaling the NCQA HEDIS 2006 national Medicaid 50th percentile of 87.4 percent. This may be due to the group’s contact with the Colorado Medicaid program through other recommended services such as well-child visits.

All of the individual program rates were below the HEDIS 2006 national Medicaid 50th percentile, except for the PCPP, at 87.8 percent. Compliance ranged from 87.8 percent (the PCPP) to 79.5 percent (RMHP). Rates for DHMC (85.2 percent), the PCPP, and FFS (86.9 percent) were similar. The rates for RMHP and DHMC were slightly below the rates for the PCPP and FFS. The combined rate for all health plans and the PCPP, excluding FFS, was 86.3 percent.

Figure 4-4 presents program comparisons for the *Use of Appropriate Medications for People With Asthma* measure for members 18 to 56 years of age for all health plans and the PCPP, including and excluding FFS.

Figure 4-4—Use of Appropriate Medications for People With Asthma, 18 to 56 Years of Age



The eligible population shown in Figure 4-4 ranged from 86 cases for DHMC to 405 cases for the FFS population. The total eligible Colorado Medicaid population for the 18-to-56-year-old age group consisted of 856 cases. The FFS program, with 47.3 percent of the members, influenced the overall results for the 18-to-56-year-old age group.

The overall Colorado Medicaid rate for the 18-to-56-year-old age group was 76.5 percent, or 8.4 percentage points lower than the NCQA HEDIS 2006 national Medicaid 50th percentile of 84.9 percent. This result indicates an opportunity to focus interventions on this age group.

The individual program rates ranged from 6 to more than 10 percentage points below the HEDIS 2006 national Medicaid 50th percentile, except for RMHP, which exceeded the 50th percentile by 1 percentage point. FFS had the lowest rate, at 74.3 percent, followed by the PCPP, at 75.9 percent, and DHMC, at 77.9 percent. The combined rate for all health plans and the PCPP, excluding FFS, was 78.5 percent. The results indicate that all programs except RMHP have an opportunity to increase the use of appropriate medications for asthmatics in the 18-to-56-year-old age group.

Measure 2: Use of Short-Acting Beta-Agonists

Short-acting beta-agonists remain the most effective treatment of choice for relieving acute asthma episodes. Daily use is generally not recommended. In fact, regular use may produce a reduction in the member’s asthma control and lung function. This measure examines poor utilization; therefore, low rates should be considered better than high rates. There is no national benchmark available for this measure.

Table 4-3 below displays the frequency of the most commonly prescribed inhaled, short-acting beta-agonists among Colorado Medicaid members who are persistent asthmatics. Using one or more canisters per month (or more than 12 per year) of inhaled, short-acting beta-agonists correlates with poor control of asthma.

The average number of canisters used by Colorado Medicaid members increased by approximated 1 canister from FY 03–04 to FY 06–07. RMHP, the PCPP, and FFS all increased from their FY 03–04 baseline results, ranging from an increase of 1.7 canisters for the PCPP to 2.4 canisters for RMHP. DHMC became a new MCO in 2004 and, therefore, was unable to participate in the baseline focused study.

The average Colorado Medicaid member with persistent asthma received 5.2 canisters per year. This number was well below the threshold of 12 canisters per year. For members who received 12 or more canisters during the year, each member received 16.3 canisters per year on average, or about 2.7 canisters every two months. The average number of canisters used by members prescribed more than 12 canisters per year for all health plans and the PCPP, excluding FFS, was 16.4.

The FFS program had the lowest use of canisters per year, at 4.8, while DHMC had the highest, at 9.0 canisters per year. RMHP averaged 6.2 canisters per year while the PCPP program averaged 5.0 canisters per year. The average number of canisters used per year for all health plans and the PCPP, excluding FFS, was 5.7.

For members averaging more than 12 canisters per year, DHMC had the highest use, at 17.1, with the other programs averaging between 16.0 and 16.7 canisters per year.

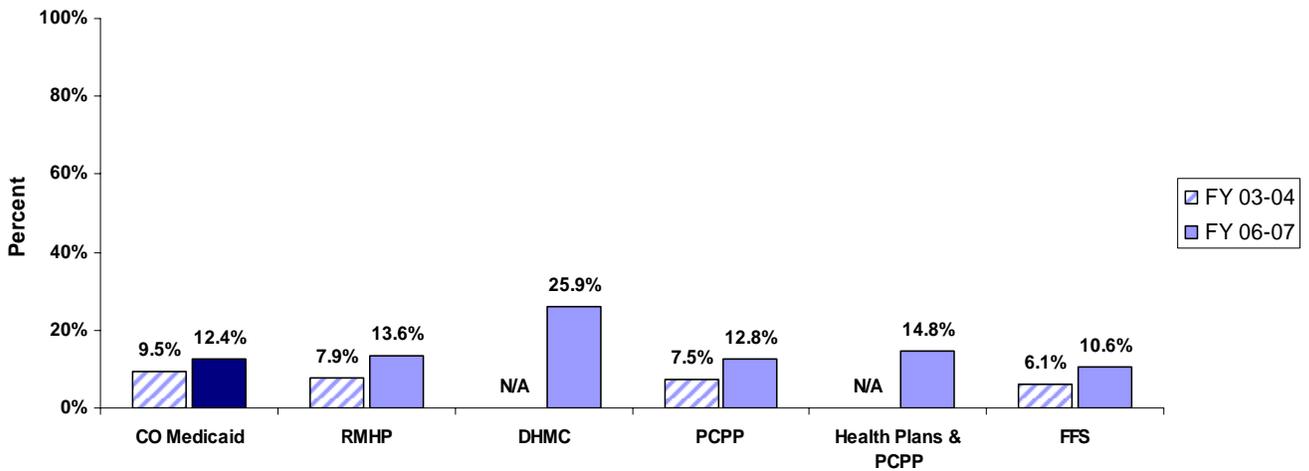
The results indicate that the majority of members with asthma appear to be using short-acting beta-agonists appropriately, as defined by this focused study. However, for members who used more than 12 canisters per year, the results indicate that these members may need intense case management.

Table 4-3—Average Number of Prescribed Short-Acting Beta-Agonists

| | Measurement Year | Colorado Medicaid | RMHP | DHMC | PCPP | Health Plans and PCPP | FFS |
|--------------------------------------------------------------------------------------------------------|------------------|-------------------|----------------|----------------|----------------|-----------------------|----------------|
| Average Number of Prescribed Short-Acting Beta-Agonist Canisters for All Members With Asthma | FY 03–04 | 3.9 Canisters | 3.8 Canisters | N/A | 3.3 Canisters | N/A | 3.0 Canisters |
| | FY 06–07 | 5.2 Canisters | 6.2 Canisters | 9.0 Canisters | 5.0 Canisters | 5.7 Canisters | 4.8 Canisters |
| Average Number of Prescribed Short-Acting Beta-Agonist Canisters for Members With 12 or More Canisters | FY 03–04 | 18.3 Canisters | 17.3 Canisters | N/A | 18.1 Canisters | N/A | 17.2 Canisters |
| | FY 06–07 | 16.3 Canisters | 16.7 Canisters | 17.1 Canisters | 16.0 Canisters | 16.4 Canisters | 16.3 Canisters |

Figure 4-5 shows the percentage of asthmatics using 12 or more canisters of short-acting beta-agonists per year. A lower percentage equates to better control of asthma. Program comparisons are presented for *Overuse of Inhaled, Short-Acting Beta-Agonists* for the combined rate (5 to 56 years of age) for all health plans and the PCPP, including and excluding FFS.

Figure 4-5—Overuse of Inhaled, Short-Acting Beta-Agonists, 5 to 56 Years of Age



NOTE: DHMC was not included in the original focused study in FY 03-04.

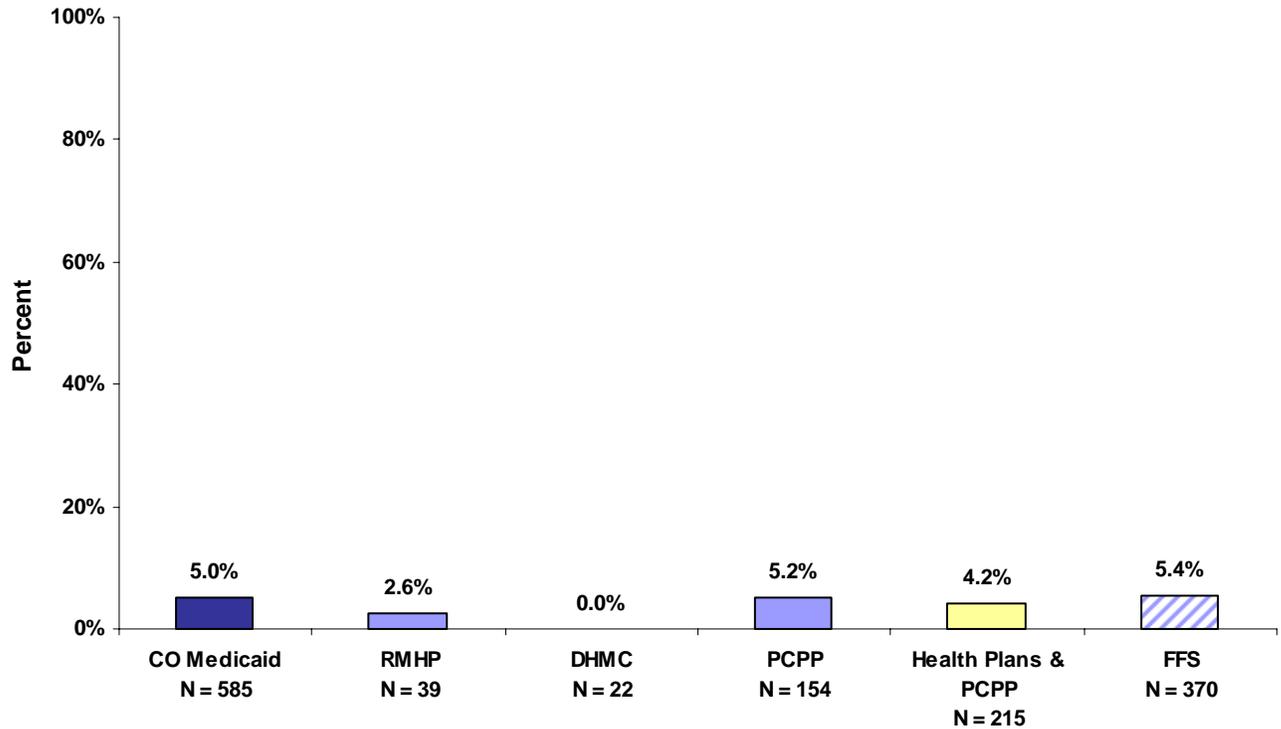
The eligible population in the FY 06–07 study ranged from 135 cases for DHMC to 1,309 cases for the FFS population. The total eligible Colorado Medicaid population consisted of 2,246 cases. The FFS population had the largest percentage of members, which influenced the overall Colorado Medicaid rate.

The percentage of asthmatics using more than 12 canisters per year for the overall Colorado Medicaid program increased approximately 2.9 percentage points from FY 03–04 to FY 06–07. RMHP, the PCPP, and FFS all increased from their FY 03–04 baseline results, ranging from an increase of 4.5 percentage points for FFS to 5.7 percentage points for RMHP. DHMC became a new MCO in 2004 and, therefore, was unable to participate in the baseline focused study.

The overall Colorado Medicaid rate for this measure was 12.4 percent. The program rates ranged from 10.6 percent for the FFS population to 25.9 percent for DHMC. Except for DHMC, the program rates were similar. The rate for all health plans and the PCPP, excluding FFS, was 14.8 percent. The FFS rate influenced the Colorado Medicaid rate, which was lower than the health plans’ and the PCPP rate. Lower rates for this measure are linked with a higher rate for *Use of Appropriate Medications for People With Asthma*.

Figure 4-6 presents program comparisons for *Overuse of Inhaled, Short-Acting Beta-Agonists* for members 5 to 9 years of age for all health plans and the PCPP, including and excluding FFS.

Figure 4-6—Overuse of Inhaled, Short-Acting Beta-Agonists, 5 to 9 Years of Age

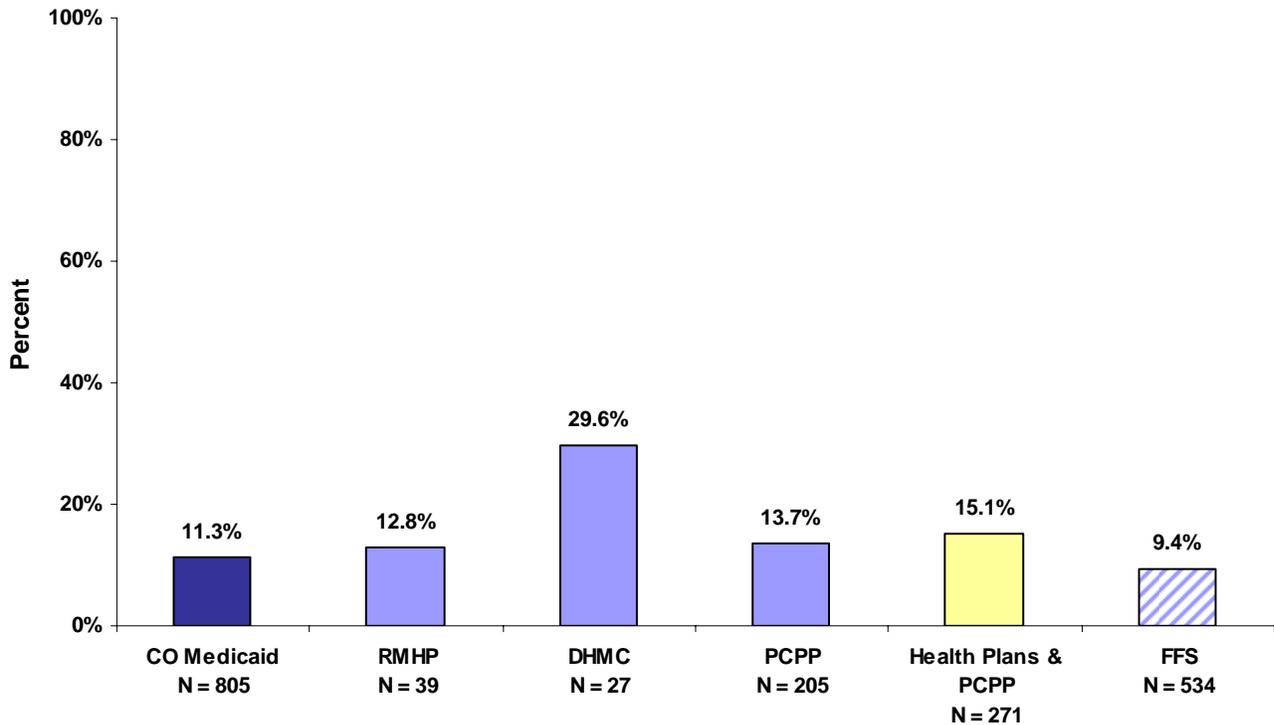


The eligible population is shown in Figure 4-6 and ranged from 22 cases for DHMC to 370 cases for the FFS population. The total eligible Colorado Medicaid population for the 5-to-9-year-old age group consisted of 585 cases. The FFS population, which had the largest proportion of members, influenced the results for this age group.

For the 5-to-9-year-old age group, the Colorado Medicaid rate was 5.0 percent. The health plan rates ranged from 0.0 percent for the DHMC population to 5.4 percent for the FFS program. The rate for both FFS and the PCPP were greater than the rates for RMHP and DHMC. The rate for all health plans and the PCPP, excluding FFS, was 4.2 percent. DHMC has achieved excellent results for this age group, which could be used to identify best practices.

Figure 4-7 below presents program comparisons for *Overuse of Inhaled, Short-Acting Beta-Agonists* for members 10 to 17 years of age for all health plans and the PCPP, including and excluding FFS.

Figure 4-7—Overuse of Inhaled, Short-Acting Beta-Agonists, 10 to 17 Years of Age

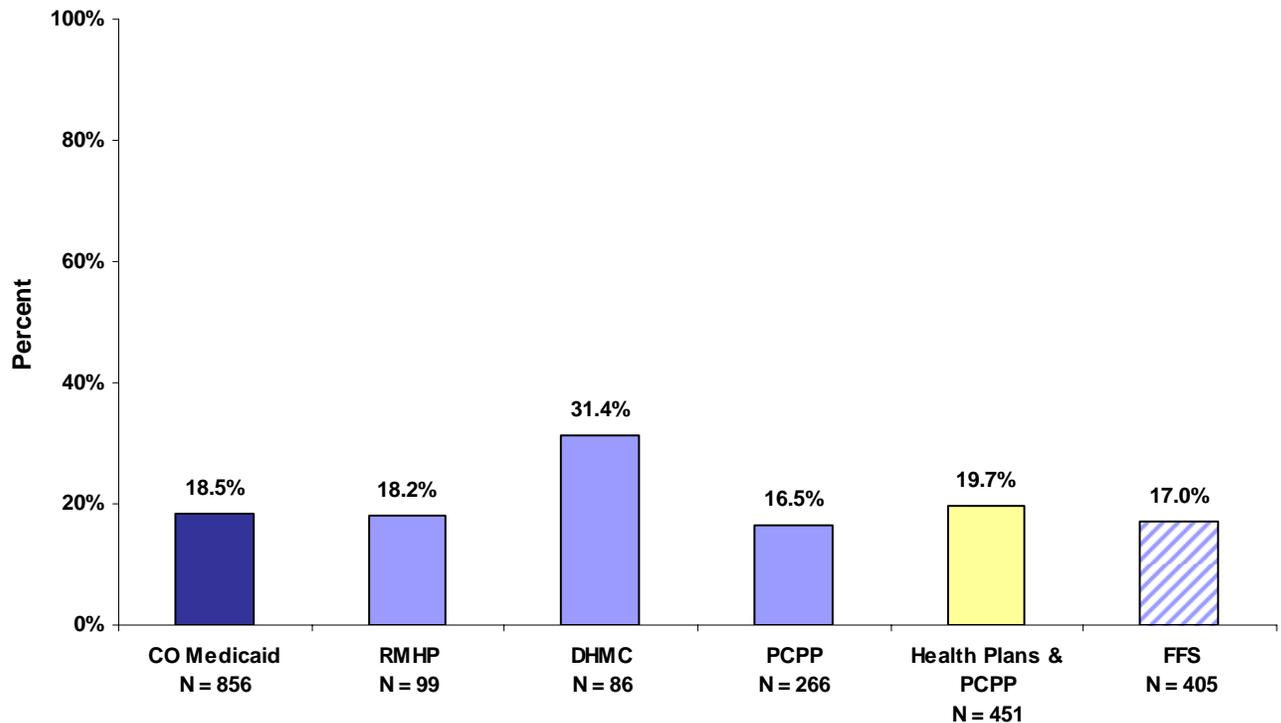


The eligible population is shown in Figure 4-7 and ranged from 27 cases for DHMC to 534 cases for the FFS population. The total eligible Colorado Medicaid population for the 10-to-17-year-old age group consisted of 805 cases. With 66.3 percent of members in its population, the FFS program had the greatest influence on rates for the Colorado Medicaid 10-to-17-year-old age group.

The Colorado Medicaid rate was 11.3 percent for the 10-to-17-year-old age group. The rate was more than twice the percentage of members in the 5-to-9-year-old age group overusing short-acting beta-agonists. The health plan rates ranged from 9.4 percent for the FFS population to 29.6 percent for DHMC, with similar rates for RMHP and PCPP. Compared with rates for the 5-to-9-year-old age group, rates for the 10-to-17-year-old age group were at least twice as high across all Colorado Medicaid programs. DHMC has an opportunity to decrease overuse of short-acting beta-agonists by focusing interventions on the 10-to-17-year-old age group. The rate for all health plans and the PCPP, excluding FFS, was 15.1 percent, which reflects the influence of the FFS program the Colorado Medicaid rate.

Figure 4-8 below presents program comparisons for *Overuse of Inhaled, Short-Acting Beta-Agonists* for members 18 to 56 years of age for all health plans and the PCPP, including and excluding FFS.

Figure 4-8—Use of Inhaled, Short-Acting Beta-Agonists, 18 to 56 Years of Age



The eligible population is shown in Figure 4-8 and ranged from 86 cases for DHMC to 405 cases for the FFS population. The total eligible Colorado Medicaid population for the 18-to-56-year-old age group consisted of 856 cases. With 47.3 percent of members in its population, the FFS program influenced rates for the Colorado Medicaid 18-to-56-year-old age group.

The Colorado Medicaid rate for members 18 to 56 years of age was 18.5 percent. The rate was 7.2 percentage points more than the rate for the 10-to-17-year-old age group and 13.5 percentage points more than the rate for the 5-to-9-year-old age group. The health plan rates ranged from 16.5 percent for the PCPP population to 31.4 percent for DHMC. Rates for RMHP, the PCPP and FFS were similar, while DHMC's rate was almost double the rates for these programs. Similar to the 10-to-17-year-old age group, DHMC has an opportunity to focus on the 18-to-56-year-old age group to decrease the number of asthmatics overusing short-acting beta-agonists. The rate for all health plans and the PCPP, excluding FFS, was 19.7 percent. The health plan rates for this age group were generally higher than the other two age groups. This may indicate an increased need for asthma education among the adult population.

5. Overall Medicaid Conclusions and Recommendations

Introduction

This FY 06–07 asthma focused study was built on the findings of the FY 03–04 study by reporting asthma care. The study included the PCPP, the unassigned FFS program, a Medicaid MCO (DHMC), and a prepaid inpatient health plan (RMHP).

Overall Conclusions

The main findings from this focused study showed:

- ◆ Slightly more than 8 of every 10 Colorado Medicaid members with asthma 5 to 56 years of age (84.4 percent) had evidence of appropriate use of medication during FY 06–07. While this rate was 12.4 percentage points higher than the rate in FY 03–04 (72.0 percent), the Colorado Medicaid rate was slightly lower than the NCQA 2006 HEDIS national Medicaid 50th percentile of 87.1 percent. Children 5 to 9 years of age exhibited the highest rate (92.6 percent) followed by children 10 to 17 years of age and adults 18 to 56 years of age (86.7 percent and 76.5 percent, respectively). Some variation in performance was noted across health plans and age groups.
- ◆ Among Colorado Medicaid members with persistent asthma, 12.4 percent exhibited overuse (i.e., 12 or more canisters) of inhaled, short-acting beta-agonists during FY 06–07. This rate suggests a small decrease in performance compared with the Colorado Medicaid rate in FY 03–04 (9.5 percent). Three Colorado Medicaid programs showed similar rates, ranging from 10.6 percent to 13.6 percent, while one health plan displayed a considerably higher rate of overuse (25.9 percent).
- ◆ The average Colorado Medicaid member with persistent asthma received 5.2 canisters of an inhaled, short-acting beta-agonist during the study period compared with 3.9 canisters in FY 03–04. While this increase represented an increase of approximately one canister per year, the overall use of short-acting beta-agonists was well below the threshold of 12 canisters per year. Further, the average number of canisters used by members prescribed 12 or more canisters was 16.3 canisters per year, or 2 canisters fewer than in FY 03–04. Individual Colorado Medicaid program rates ranged from 4.8 canisters to 9.0 canisters.
- ◆ In general, the results from the first two quality measures indicate that Colorado Medicaid members with asthma appear to be receiving appropriate asthma medications. However, for members who used more than 12 canisters of an inhaled, short-acting beta-agonist, the results suggest that more intense case management may be appropriate.

Overall Recommendations

Based on the findings of this focused study, HSAG makes the following recommendations:

- ◆ HSAG recommends that future studies measure consistent use of inhaled corticosteroids, along with the current HEDIS asthma measures, as an appropriate use of asthma medication.
- ◆ The Department should work with the Colorado Medicaid programs to ensure that all providers understand national guidelines for appropriate asthma care. Additionally, ongoing communication designed to provide practitioners and their office staff with best practices may help to increase the provision of appropriate asthma care.
- ◆ HSAG recommends that the data from this study be used to identify members overusing short-acting beta-agonists for targeted intervention. Patients who overuse short-acting beta-agonists may be more likely to use less cost-effective resources such as the emergency department, urgent care, and inpatient services. Targeted interventions could then follow recommendations outlined in Healthy People 2010, including encouraging providers to establish an asthma action plan. The asthma action plan should explain when and how to take medicines correctly, as well as what to do when asthma worsens. Additionally, self-management skills to manage and control the disease should be included in the plan.
- ◆ Colorado Medicaid programs should encourage providers to evaluate member compliance with prescribed medications at every office visit.

HEDIS 2007 Technical Specifications, Volume 2

For the *Relative Resource Use for People With Asthma* measure, comorbidity is defined as outlined in the *HEDIS 2007 Technical Specifications, Volume 2*. The derivation of each comorbidity is presented below.

Cardiovascular Conditions

Identify members for cardiovascular condition comorbidity in one of two ways: event or diagnosis occurring during the measurement year or the year prior to the measurement year. The MCO must use both criteria to identify comorbidity status.

- ◆ *Event*. Discharged alive for AMI, CABG or PTCA. Use the codes listed in Table A-1 below to identify AMI, PTCA, and CABG. AMI and CABG cases should be from inpatient claims only. All cases of PTCA should be included, regardless of setting (e.g., inpatient, outpatient, emergency room).

| Description | CPT | HCPCS | ICD-9-CM Diagnosis | ICD-9-CM Procedure | DRG |
|-----------------------|------------------------------------------------------------------|-------------|--------------------|-------------------------------------------------|-----------------------------|
| AMI (inpatient only) | | | 410.x1 | | 121, 122, 516 |
| PTCA | 33140, 92980-92982, 92984, 92995, 92996 | | | 00.66, 36.01, 36.02, 36.05, 36.06, 36.07, 36.09 | 516, 517, 526, 527, 555-558 |
| CABG (inpatient only) | 33510-33514, 33516-33519, 33521-33523, 33533-33536, 35600, 33572 | S2205-S2209 | | 36.1, 36.2 | 106, 107, 109, 547-550 |

- ◆ *Diagnosis.* At least one outpatient, nonacute inpatient, acute inpatient or emergency department (ED) visit with any diagnosis of IVD. Use the codes in Table A-2 to identify an IVD diagnosis and Table A-3 to identify the visit type.

| Table A-2—RDI-G: Codes to Identify IVD | | |
|----------------------------------------|-----------------------------------------------------------------------|---------------|
| Description | ICD-9-CM Diagnosis | DRG |
| IVD | 411, 413, 414.0, 414.8, 414.9, 429.2, 433-435, 440.1, 440.2, 444, 445 | 140, 524, 559 |

| Table A-3—RDI-E: Codes to Identify Inpatient or Outpatient Care Using Claim/Encounter Data | | |
|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Description | CPT | UB-92 Revenue |
| Outpatient | 92002, 92004, 92012, 92014, 98925-98929, 98940-98942, 99201-99205, 99211-99215, 99217-99220, 99241-99245, 99341-99345, 99347-99350, 99381-99387, 99391-99397, 99401-99404, 99411, 99412, 99420, 99429, 99455, 99456, 99499 | 051x, 052-0523x, 0526-0529, 057x-059x, 077x, 082x-085x, 088x, 0982, 0983 |
| Nonacute inpatient | 99301-99313, 99315, 99316, 99318, 99321-99328, 99331-99337 | 0118, 0128, 0138, 0148, 0158, 019x, 0524, 0525, 055x, 066x |
| Acute inpatient | 99221-99223, 99231-99233, 99238, 99239, 99251-99255, 99261-99263, 99291 | 010x, 0110-0114, 0119, 0120-0124, 0129, 0130-0134, 0139, 0140-0144, 0149, 0150-0154, 0159, 016x, 020x-022x, 072x, 080x, 0987 |
| Emergency department | 99281-99285 | 045x, 0981 |

Diabetes

Two methods are provided to identify diabetic members:

1. Pharmacy data
2. Claim/encounter data

The MCO must use both methods to identify a member as diabetic; however, a member only needs to be identified in one method to be included in the comorbid category. Members may be identified as having diabetes during the measurement year or the year prior to the measurement year.

- ◆ *Pharmacy data.* Members who were dispensed insulin or oral hypoglycemics/antihyperglycemics during the measurement year or the year prior to the measurement year on an ambulatory basis. Refer to Table A-4.

| Table A-4—CDC-A: Prescriptions to Identify Diabetics | | | | |
|------------------------------------------------------|---------------------|-----------------|-------------------|--------------------|
| Description | Prescriptions | | | |
| Insulin | Mix 50/50 | Humalog | Levemir (detemir) | Novolog |
| | Mix 70/30 | Humulin | Lantus (glargine) | Penfill |
| | Mix 75/25 | Iletin | Lispro | Semilente |
| | Apidra (glulisine) | Insulin pen | Multiple daily | Ultralente |
| | Continuous | Insulin pump | injections | Velosulin |
| | subcutaneous | Regular insulin | Novolin | |
| | infusion of insulin | NPH Lente | | |
| | Exubera | | | |
| Oral hypoglycemic/ antihyperglycemic | Acetohexamide | Diabeta | Glynase Glyset | Precose |
| | Actos ActosPlus | Diabinese | Metaglip | (Acarbose) |
| | Met Amaryl | Dymelor | (Glipzide- | Rezulin |
| | Avandamet | Glimepiride | Metformin) | Rosiglitazone |
| | (Metformin- | Glipzide | Micronase | Starlix Tolazamide |
| | Rosiglitazone) | Glipzide XL | Miglitol | Tolamide |
| | Avandaryl | Glucamide | Nateglinide | Tolbutamide |
| | (Glimepiride- | Glucotrol | Orinase Orimide | Tolinase |
| | Rosiglitazone) | Glucotrol XL | Pioglitazone | Troglitazone |
| | Avandia | Glucovance | Prandin | |
| | Byetta (Exenatide)— | (Glyburide- | (Repaglinide) | |
| | Oral | Metformin) | | |
| | Chlorpropamide | Glyburide | | |

- ◆ *Claim/encounter data.* Members who had two face-to-face encounters with different dates of service in an ambulatory setting or nonacute inpatient setting, or one face-to-face encounter in an acute inpatient or emergency room setting during the measurement year or the year prior to the measurement year with a diagnosis of diabetes. The MCO may count services that occur over both years. Use the codes in Table A-5 and Table A-6 to identify ambulatory or nonacute inpatient and acute inpatient or ED encounters.

| Table A-5—CDC-B: Codes to Identify Diabetes | | |
|---------------------------------------------|----------------------------------|----------|
| Description | ICD-9-CM Diagnosis | DRG |
| Diabetes | 250, 357.2, 362.0, 366.41, 648.0 | 294, 295 |

| Table A-6—CDC-C: Codes to Identify Visit Type | | |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Description | CPT | UB-92 Revenue |
| Outpatient | 92002-92014, 99201-99205, 99211-99215, 99217-99220, 99241-99245, 99341-99345, 99347-99350, 99384-99387, 99394-99397, 99401-99404, 99411, 99412, 99420, 99429, 99455, 99456, 99499 | 051x, 052x, 0520-0523, 0526-0529, 057x-059x, 077x, 082x-085x, 088x, 0982, 0983 |
| Nonacute inpatient | 99301-99313, 99315, 99316, 99318, 99321-99328, 99331-99337 | 0118, 0128, 0138, 0148, 0158, 019x, 0524, 0525, 055x, 066x |
| Acute inpatient | 99221-99223, 99231-99233, 99238, 99239, 99251-99255, 99261-99263, 99291 | 010x, 0110-0114, 0119, 0120-0124, 0129, 0130-0134, 0139, 0140-0144, 0149, 0150-0154, 0159, 016x, 020x-022x, 072x, 080x, 0987 |
| Emergency department | 99281-99285 | 045x, 0981 |

Major Depression

Identify all eligible members who, during the measurement year or the year prior to the measurement year, had any of the following:

- ◆ At least one principal diagnosis of major depression (refer to Table A-7) in any setting (e.g., outpatient visits, emergency room visits, inpatient discharges, or partial hospitalizations)
- ◆ At least two secondary diagnoses of major depression (refer to Table A-7) on different dates of service in any outpatient setting (e.g., outpatient or emergency room visits)
- ◆ At least one secondary diagnosis of major depression (refer to Table A-7) associated with any inpatient discharge

Note: Lab claims should not be included in the identification of members with depression.

| Table A-7—AMM-A: Codes to Identify Major Depression | | |
|-----------------------------------------------------|------------------------------------------------------|-------|
| Description | ICD-9-CM Diagnosis | DRG |
| Major depression* | 296.2, 296.3, 298.0, 300.4, 309.1, 311 | 426** |
| Prior depressive episodes | 296.2-296.9, 298.0, 300.4, 309.0, 309.1, 309.28, 311 | 426** |

* Brief depressive reaction (309.0) is not used for diagnosis since it includes grief reaction (believed to be the most common use of that code). Additionally, other possible codes that could indicate depression diagnosis (296.4–296.9, 309.0, 309.28) are not included in this list because these codes are less specific in identifying eligible members.

** The MCO must *exclude* members with this code if the principal diagnosis is ICD-9-CM Code 301.12.

Chronic Obstructive Pulmonary Disease (COPD)

Identify all eligible members who, during the measurement year or the year prior to the measurement year, had at least two diagnoses of COPD in any setting. Use Table A-8 to identify COPD.

| Table A-8—SPR-A: Codes to Identify COPD | |
|-----------------------------------------|--------------------|
| Description | ICD-9-CM Diagnosis |
| Chronic bronchitis | 491 |
| Emphysema | 492 |
| COPD | 496 |

Hypertension

Identify eligible members with hypertension. A member is considered hypertensive if there are at least two outpatient encounters (Table A-9) on different dates of service during the measurement year or the year prior to the measurement year with a diagnosis of hypertension (Table A-9). Codes in Table A-9 must occur in conjunction with codes in Table A-10.

| Table A-9—RDI-H: Code to Identify Hypertension | |
|------------------------------------------------|--------------------|
| Description | ICD-9-CM Diagnosis |
| Hypertension | 401 |

| Table A-10—RDI-I: Codes to Identify Outpatient Visits | |
|-------------------------------------------------------|-----------------------------------------------------------------|
| Description | CPT |
| Office or other outpatient services | 99201-99205, 99211-99215, 99241-99245, 99384-99387, 99394-99397 |

Appendix B. **NDC Codes for Short-Acting Beta-Agonists**

Appendix B contains tables that present the NDC codes for short-acting beta-agonists.

| NDC Code | Brand Name | Generic Drug Name | Therapeutic Category |
|-------------|------------|------------------------------------------------------|----------------------------|
| 00047299711 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting beta agonists |
| 00085061510 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting beta agonists |
| 00364263217 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting beta agonists |
| 00364263298 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting beta agonists |
| 00403177118 | Albuterol | Albuterol 90 mcg/inh inhalation | short-acting beta agonists |
| 00403225118 | Albuterol | Albuterol 90 mcg/inh inhalation | short-acting beta agonists |
| 00472126478 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 00536041612 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting beta agonists |
| 00536041613 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting beta agonists |
| 00536121612 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting beta agonists |
| 00536121613 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting beta agonists |
| 00603100475 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting beta agonists |
| 00603100499 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting beta agonists |
| 00677154970 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting beta agonists |
| 00677154971 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting beta agonists |
| 00781750287 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting beta agonists |
| 00781750288 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting beta agonists |
| 00904287534 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/DOSE | short-acting beta agonists |
| 00904287557 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/DOSE | short-acting beta agonists |
| 00904507868 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 52493084701 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 52493084717 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 52555059417 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting beta agonists |
| 52555059418 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting beta agonists |
| 52959112100 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 52959129301 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 52959142103 | Albuterol | Albuterol Inhal Aerosol 90 MCG/ACT | short-acting beta agonists |

| NDC Code | Brand Name | Generic Drug Name | Therapeutic Category |
|-------------|---------------|---------------------------------------------------------------|---------------------------------------|
| 53002090264 | Albuterol | Albuterol 90 mcg/inh inhalation | short-acting beta agonists |
| 53002090265 | Albuterol | Albuterol 90 mcg/inh inhalation | short-acting beta agonists |
| 54569100800 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 54569101100 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 54569462100 | Albuterol 6.7 | Albuterol Sulfate Inhal Aero 120 MCG/ACT (100MCG Base Equiv) | short-acting beta agonists |
| 54977069501 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 54977070601 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 55045148605 | Albuterol | Albuterol 90 mcg/inh inhalation | short-acting beta agonists |
| 55175256801 | Albuterol | Albuterol 90 mcg/inh inhalation | short-acting beta agonists |
| 55175257201 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 55175257501 | Albuterol | Albuterol Inhal Aerosol 90 MCG/ACT | short-acting beta agonists |
| 55953005101 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting beta agonists |
| 55953005153 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting beta agonists |
| 57362011601 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 58016605901 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting beta agonists |
| 58016605917 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting beta agonists |
| 58016620501 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting beta agonists |
| 58016631617 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting beta agonists |
| 59723012201 | Albuterol | Albuterol 90 mcg/inh inhalation | short-acting beta agonists |
| 60346033176 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 60346038476 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 60346039476 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 60346040876 | Albuterol | ALBUTEROL INHAL AEROSOL 90 MCG/ACT | short-acting beta agonists |
| 00085113202 | Albuterol 6.7 | albuterol sulfate 108 mcg/inh inhalation aerosol with adapter | short-acting beta agonists |
| 00172439018 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 00172439019 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 00247034817 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |

| NDC Code | Brand Name | Generic Drug Name | Therapeutic Category |
|-------------|---------------|---------------------------------------------------------------|---------------------------------------|
| 00472126463 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 00839760807 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 00839760880 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 00904507834 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 00904507934 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 17270072101 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 49502030317 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 49502030327 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 49502033317 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 49502033327 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 50111080131 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 50111080132 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 52959009403 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 54569424500 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 54868370900 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 54868373900 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 57866005101 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 58016656901 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 59772617501 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 59772617502 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 59930156001 | Albuterol | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 59930156002 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 62037079444 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 63874074917 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 66267099517 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 68115099517 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 59310057920 | Albuterol HFA | albuterol CFC free 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |

| NDC Code | Brand Name | Generic Drug Name | Therapeutic Category |
|-----------------|-------------------|---------------------------------------------------------------|---------------------------------------|
| 59310017920 | Albuterol HFA | albuterol CFC free 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 58980010817 | Albuterol | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 00089079021 | Maxair | pirbuterol 0.2 mg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 54569225300 | Maxair | pirbuterol 0.2 mg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 54569461500 | Maxair | pirbuterol 0.2 mg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 00089081521 | Maxair | pirbuterol 0.2 mg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 00089081710 | Maxair | pirbuterol 0.2 mg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 54868282101 | Maxair | pirbuterol 0.2 mg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 52493086926 | Maxair | PIRBUTEROL INHAL AEROSOL 200 MCG | short-acting beta agonists |
| 55175520501 | Maxair | Pirbuterol Acetate Breath Activated Inhal Aerosol 200MCG/INH | short-acting beta agonists |
| 60346020797 | Maxair | PIRBUTEROL INHAL AEROSOL 200 MCG | short-acting beta agonists |
| 00085061402 | Proventil | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 00085061403 | Proventil | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 00247008417 | Proventil | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 00247008486 | Proventil | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 52959029300 | Proventil | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 54569005200 | Proventil | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 54868104101 | Proventil | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 00085113201 | Proventil HFA | albuterol CFC free 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 52959056901 | Proventil HFA | albuterol CFC free 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 00173032188 | Ventolin | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 00173032198 | Ventolin | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 00173046300 | Ventolin | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 52959058801 | Ventolin | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 54569100300 | Ventolin | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 54868073001 | Ventolin | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |
| 54868190300 | Ventolin | albuterol 90 mcg/inh inhalation aerosol | short-acting, inhaled beta-2 agonists |

| NDC Code | Brand Name | Generic Drug Name | Therapeutic Category |
|-----------------|-------------------|------------------------------------------------------------------|---------------------------------------|
| 58016609901 | Ventolin | albuterol 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 00173068200 | Ventolin HFA | albuterol CFC free 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 00173068220 | Ventolin HFA | albuterol CFC free 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 68115076917 | Ventolin HFA | albuterol CFC free 90 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |
| 63402051001 | Xopenex HFA | levalbuterol CFC free 45 mcg/inh inhalation aerosol with adapter | short-acting, inhaled beta-2 agonists |