

APPENDIX 7



California Prison Health Care Services
Monitoring and Improving Asthma Care

Asthma Performance Report

*An analysis of patients on Asthma medication from October 2010 - March 2011
Report Issued May 2011*

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Asthma Performance Report

*An analysis of patients on Asthma medication from October 2010 - March 2011
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Introduction

Within the California prison system, more than one in ten male inmates (approximately 12 percent) are prescribed medications commonly used to treat asthma; the number of female inmates taking asthma medications is one in five (about 21 percent). By comparison, the prevalence of asthma among all Californians is lower: 5.2 percent for men and 9.8 percent for women.¹ Nationally, the estimated prevalence of asthma among prison and jail inmates is 8.5 percent.²

Asthma is a chronic respiratory disease characterized by inflammation of the airways and lungs. Common symptoms include coughing, wheezing, difficulty breathing, and chest tightness; asthma can be triggered by factors such as exercise or allergies. Some patients with asthma have intermittent asthma, which results in minimal interference with daily activities. A subset of patients with asthma is diagnosed with **persistent asthma**, the more serious form of the disease. Patients with persistent asthma experience symptoms on a regular basis, as often as daily, and are at greater risk for a severe asthma attack, which may require repeated hospitalizations and may be life-threatening. Asthma remains the 6th leading cause of potentially avoidable Emergency Department visits and hospitalizations in the California prison system.

To improve outcomes for patients with asthma and enhance the quality and cost-effectiveness of treatment, California Correctional Health Care Services (CCHCS) issued guidelines for asthma treatment, based upon the National Institutes of Health recommendations from 2007.³ CCHCS treatment guidelines require the provider to 1) classify the severity of the patient's asthma and 2) determine whether the patient's asthma is under control. Asthma therapy is initiated and adjusted in a step-wise fashion.

¹ California Department of Public Health, *The Burden of Asthma in California*, 2007, <http://www.cdph.ca.gov/programs/CABreathing/Pages/default.aspx>

² National Commission on Correctional Health Care for the United States Congress, *The Health Status of Soon-to-Be-Released Inmates*, 2002, http://www.ncchc.org/pubs/pubs_stbr.html

³ Guidelines are derived from the National Asthma Education and Prevention Program (NAEPP) 2007 clinical practice guidelines. NAEPP is coordinated by the National Heart, Lung, and Blood Institute, one of the National Institutes of Health, and its guidelines are referenced by the American Thoracic Society, The Institute for Clinical Systems Improvement, and American College of Allergy, Asthma and Immunology.

The treatment of patients with persistent asthma centers around the use of inhaled corticosteroid (ICS) medications on a regular basis to control the underlying inflammation and prevent asthma attacks.⁴ Short acting beta agonist (SABA) medications are to be used only as needed, as a rescue inhaler.

Use of ICS therapy is associated with cost avoidance. When patients' asthma is well-controlled with ICS maintenance medication, they have fewer avoidable Emergency Room visits and community hospital admissions. It is estimated that ICS use reduces expenditures by \$180 per patient per year.⁵ Because ICS use is associated with positive patient outcomes, many health care organizations and agencies that support health care quality, such as the National Committee for Quality Assurance, monitor ICS use as a means of assessing the quality of asthma care.

In 2010, CCHCS began monitoring ICS prescribing for all asthma patients as part of its annual performance improvement objectives. The initial performance objectives were:

- The ratio of short-acting beta agonist (SABA) to inhaled corticosteroid (ICS) prescription for asthmatic patients will be less than 2:1.

In 2011, CCHCS reviewed performance data from other health care organizations, such as the national Healthcare Effectiveness Data and Information Set (HEDIS) and national Medicaid managed care plans, and, for better comparability, revised the performance objectives for asthma care based on HEDIS methodology, which focuses on ICS and SABA prescribing for patients with **persistent** asthma. (See Methodology.) Table I in the Appendix is a summary of comparative data from other health care organizations that was considered in updating this performance measure.

The 2011 performance objective for asthma care is as follows:

By December 31, 2011, greater than 85% of patients with **persistent** asthma will be prescribed an inhaled corticosteroid.

In addition to the above performance objective, CCHCS will continue to track the SABA to ICS prescribing ratio. This measure provides additional information that should be reviewed in conjunction with the performance objective data. The National Commission on Correctional Health Care Asthma Guidelines (2009) states:

Because asthma is a chronic inflammatory disease rather than one characterized solely by “reactive airways,” the use of ICS is an important cornerstone of treatment. Historically, in correctional settings as well as other health care settings, the overprescribing and overuse of SABA agents has been a problem both in the stable setting when ICS should be prescribed and in the urgent care setting when a 5- to 10-day course of burst (rather than taper) oral steroids should be prescribed.

⁴ Inhaled corticosteroids are generally not indicated for patients with true exercise-induced or intermittent asthma. At the same time, patients who meet the definition of either exercise-induced or intermittent asthma by definition should not be using large amounts of SABA medication.

⁵ J Allergy Clin Immunol 2003;112:1229-36

Currently there is no standard benchmark for the comparison of SABA prescribing to ICS prescribing. However, the ratio between SABA and ICS is recommended as one quality measure to monitor at a population level over time. This ratio typically should not exceed 2 SABA to 1 ICS at an institution and provider or team level.

CCHCS will also begin to actively monitor use of long-acting beta agonists (LABAs). The United States Food and Drug Administration (FDA) published a warning in February 2010 stating that long-acting beta agonists (LABAs) should never be used alone in the treatment of asthma in children or adults.⁶ In addition, CCHCS will review use of medications that combine LABA and ICS, such as Advair, to ensure expensive combination therapies have been initiated per guidelines and after the provider has first tried use of an ICS alone.

This report is the third performance report addressing the treatment of asthma within the California prison system. The purpose of this report is to evaluate progress toward meeting the 2011 performance objective for asthma care and provide institution health care staff with information to improve identification and management of patients with asthma.

The 3rd Asthma Performance Report is one component in a broader statewide initiative that includes decision support tools for primary care teams and staff development activities. Specifically, CCHCS has disseminated treatment guidelines (the Asthma Care Guide – revised May 2011) with treatment objectives, medication information, treatment algorithms, and patient self-management materials, and a Quality of Care Review Tool was developed to help providers review patient encounters and determine whether the care provided was consistent with CCHCS guidelines. Effective April 2010, physician supervisors began chart reviews of asthma patients to assess the quality of care using the Review Tool, and report findings. In addition, CCHCS will be providing statewide continuing medical education (CME) sessions on asthma care for primary care teams this summer.

Throughout these decision support tools and staff development activities, three main treatment strategies are emphasized:

- Avoid overuse of SABA inhalers through active tracking of SABA use by each patient and evaluating patients with unexpectedly high usage.
- Avoid underuse of ICS inhalers by appropriately identifying patients with persistent asthma and using an ICS as clinically indicated, per NIH guidelines.
- Use oral corticosteroids in the treatment of acute asthma exacerbations.

The results from the first two performance reports are summarized in Table 2 of the Appendix. A follow-up report will be issued in six months.

⁶ The FDA states, “These new requirements are based on FDA analyses of clinical trials showing that use of these long-acting medicines is associated with an increased risk of severe worsening of asthma symptoms, leading to hospitalization in both children and adults and death in some patients with asthma. The drugs involved include the single agent products Serevent and Foradil and combination medications Advair and Symbicort that also contain inhaled corticosteroids.”

Data Sources and Methodology

Guardian Pharmacy data and Distributed Data Processing System (DDPS) Inmate Locator Database information from October 2010 through March 2011 were used to identify patients who met the HEDIS definition of **persistent** asthma (see first bullet below). In addition, patients under 40 years of age using two or more anticholinergic inhalers were identified, as it is more likely these patients have asthma rather than Chronic Obstructive Pulmonary Disease (COPD). Please see second bullet below. This search identified patients with (probable) persistent asthma statewide and by facility.

For the purposes of this report, a California prison inmate was identified as having persistent asthma if he or she had been incarcerated for at least six months and met one of the following criteria:

- Age 18-49 years and received two or more asthma-related inhalers: SABA/ICS/LABA or a combination within the preceding six months
- Under age 40 years and received two or more “asthma-related” or anticholinergic (short or long acting) inhalers. (CCHCS selected out young patients on anticholinergic inhalers alone, as they are more likely to have asthma than COPD.)

In determining the percentage of patients who had received an ICS medication, institutions were considered to have satisfied the measure if a patient with persistent asthma had received at least one ICS inhaler within a six-month period. In both calculating the percentage of patients who had received an ICS medication and calculating each institution’s SABA to ICS prescribing ratio, CCHCS excluded patients who did not meet the definition of persistent asthmatic outlined above.

Provider prescribing lists will be provided with this report to identify providers who had more than 200 prescriptions of asthma inhalers in the past six months and whose SABA to ICS prescription ratio was greater than 2:1.

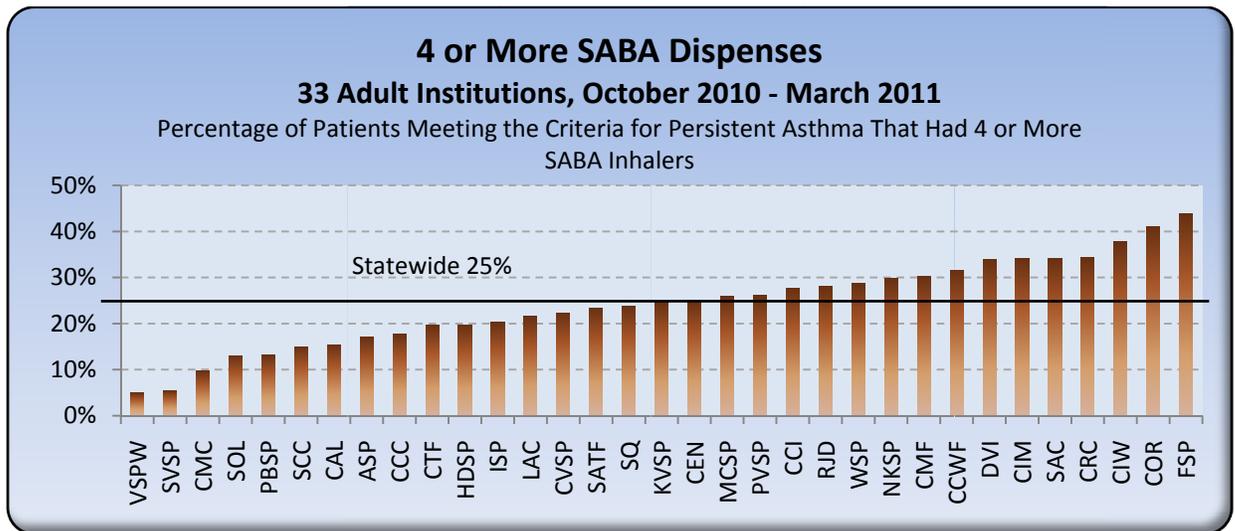
Note: It was determined that a few institutions are using an albuterol inhaler which contains 60 actuations rather than the more common 200 actuations. In this analysis, the smaller-dose inhalers were assigned a relative weight of 0.33 to ensure that SABA inhaler use was not inflated inappropriately when the smaller-dose inhalers were more frequently dispensed.

Steps have been taken to exclude COPD patients from this analysis. It is possible that some patients with COPD were included in this analysis and in patient lists because these patients are prescribed some of the same medications used to treat patients with asthma. Later in 2011, CCHCS will conduct a separate analysis of COPD patients, as this condition is also a common cause for potentially avoidable hospitalizations.

Major Findings

- SABA inhalers are likely over-prescribed and over-dispensed within the California prison system, evidenced by both the much higher percentage of patients in the system taking asthma medications versus other correctional and non-correctional health care environments, and the large proportion of inmates who have had 4 or more SABA canisters dispensed in the past six months.
- Statewide, 25 percent of inmates that met the criteria for persistent asthma had four or more prescriptions for a SABA inhaler in the past six months. At roughly 200 actuations or “puffs” per canister, this equates to patients using four or more puffs per day. Refer to Figure 1 below and Table 3 in the Appendix.

Figure 1



- Approximately 8.4 percent or 8,400 of 100,000 inmates met the criteria for persistent asthma (Figure 2).
- There was considerable variation in the percentage of patients meeting the criteria for persistent asthma among the institutions – a range of 2 percent to 16 percent (Figure 2).
- The statewide average for the ratio of SABA to ICS prescribing is 1.4:1 (Figure 3).
- The statewide average for the percent of patients who met the criteria for persistent asthma and had appropriately received an ICS was 65 percent, well below the CCHCS statewide goal of greater than 85 percent, and below the 25th percentile of performance for national Medicaid health plans (Figure 4).

Recommendations

Managers and Supervisors

1. **Distribute this Report Widely.** Disseminate this report and discuss the findings at the Quality Management Committee and Pharmacy and Therapeutics Committee, and with primary care team members during different forums.
2. **Ensure that Primary Care Teams Have Access to Tools for Improving Asthma Care.** CCHCS has issued both patient lists and clinical guidelines to promote improvements in asthma care. Ensure primary care teams are aware that these tools are available on the Intranet for access in clinic. Post hard copies of clinical guidelines at clinic sites for easy reference.
 - There is an Asthma Patient List (registry) available which will be updated monthly. Please click here to access the [Patient Lists](#).
 - CCHCS has updated the **Asthma Care Guide** to remind primary care teams of asthma treatment guidelines and promote improvements in patient outcomes. The Asthma Care Guide offers a summary of current guidelines with medication information, treatment algorithms and patient education materials. Please click here to access the updated [Asthma Care Guide](#).
3. **Reinforce the Important Messages about Asthma Treatment with Clinical Staff.** Use forums such as weekly provider meetings, primary care team meetings, nursing staff meetings, and continuing education sessions to educate primary care team members about CCHCS guidelines for asthma care. In particular, remind them of the following:
 - Avoid underuse of ICS. ICS is generally indicated for a patient with persistent asthma.
 - Avoid overuse of SABA. Per NIH guidelines, a patient under good control would use approximately one SABA inhaler per year (200 puffs per inhaler, about 4 puffs per week).
 - Avoid use of LABA without ICS per the FDA warning, and optimize ICS use before adding LABA. Use a LABA/ICS combination inhaler only in patients with severe persistent asthma who have not responded to high-dose ICS therapy.

The Appendix provides more specific language that clinical managers or meeting facilitators might use in communicating these messages to providers.
4. **Conduct Routine Practice Reviews Using the Asthma Quality of Care Review Tool.** The Asthma Quality of Care Review Tool is a one-page document that can be used during chart reviews to determine whether the care provided during a specific patient encounter aligned with CCHCS and national guidelines. During weekly provider meetings, have providers use this tool for self-assessment or employ it to guide case conferences. Please click here to access the [Asthma Quality of Care Review Tool](#).
5. **Review Provider Prescribing Profiles with Provider Staff.** CCHCS has developed provider prescribing lists that identify providers who had more than 200 prescriptions of asthma inhalers in the past 6 months and whose SABA to ICS prescription ratio was 2:1 or higher. If a provider at your

institution appears on this list, meet with the provider to review their prescribing pattern. Providers that work in a Reception Center setting may have a higher number of prescriptions than average, but these providers should still show a ratio of SABA:ICS prescribing at less than 2:1, since patients new to our system with persistent asthma needing a SABA inhaler would be expected to also need their ICS inhaler prescribed.

6. **Notify Primary Care Teams about the Asthma Update CME Session.** A CME session will be offered in July 2011 for health care staff to facilitate local staff development activities. Physician managers should use the training presentation to provide education and development of staff in assessing and providing appropriate care for patients with persistent asthma.
7. **Establish a Quality Improvement Team to Improve Asthma Care.** Assign a Quality Improvement Team with representation from nursing, pharmacy, medical, custody, and other areas to develop initiatives to improve asthma care that might be tested and potentially implemented institution-wide. Some institution have implemented initiatives such as:
 - A Metered-Dose Inhaler (MDI) exchange, requiring that an empty canister be turned in whenever an asthma inhaler is refilled, which can reduce the risk of hoarding and decrease waste.
 - Extending the “expiration date” of an albuterol prescription to avoid confiscation by custody before the canister has been emptied. (If a prescription is written for “x 90 days,” the label on the inhaler will specify a “stop date” or expiration date of 90 days. Because patients are not to have expired medications, the inhaler may be retrieved before it is fully used).
 - Developing a tracking mechanism to monitor SABA refills and routinely notify providers when a patient exceeds defined refill limits.
 - Partnering with custody staff to ensure that correctional officers and health care staff involved in inmate transfers are informed of the policy relative to inhalers. Per policy, inmates transferring from one institution to another, or transferring to an administrative segregation unit, are allowed to keep their inhalers with them during transit. Correctional officers unfamiliar with this policy may retrieve inhalers along with other medications, which could result in unnecessary refills of inhalers and potential gaps in medication for asthmatic inmates.
8. **Encourage Primary Care Teams to Follow the Panel Management Steps Below.** The following section outlines a process Primary Care Teams can use to regularly monitor and manage asthma patients. Ensure that all Primary Care Teams are aware of this proposed process and encourage them to adopt these steps to improve asthma outcomes.

Primary Care Teams – Panel Management and Patient Care

1. **Review Patient Lists During Primary Care Team Huddles on a Regular Basis.** At least monthly, meet and review the Asthma Patient List to monitor the status of patients assigned to the Primary Care Team's panel. (The Asthma Patient List, like most patient lists, is updated and released on the fourth Wednesday of each month.)
2. **Identify and Discuss Patients with Red or Orange Flags.** CCHCS has provided each institution with a list of all patients on asthma medications, with flags (highlighting in red or orange) for patients who have:
 - Received more than 2 SABA inhalers within a six-month period (canisters providing 60 puffs were weighted 0.33), and have not been dispensed an ICS inhaler.
 - Patients with 4 or more SABA inhaler refills in the past six months are highlighted in orange.
 - A SABA to ICS ratio of greater than 2:1.
 - Been prescribed a LABA without an ICS.

Discuss these patients among team members to find out if any of these patients were recently evaluated in the Triage and Treatment Area (TTA) or sent out to the community hospital for treatments. The Licensed Vocational Nurse (LVN) staff who administer medications and deliver inhalers to patients may have additional information.

Please click here to access the [Patient Lists](#).

3. **Schedule Patients with Red or Orange Flags for Evaluation.** Arrange clinical encounters during which the following activities may occur:

Primary Care Provider:

- Reassess patients who have received two or more SABA inhalers in the past six months without an ICS prescription should be reassessed to determine if they indeed have persistent asthma and need an ICS. If the assessment determines that the patient actually has exercise-induced or intermittent asthma, then it would be important to determine the reasons for frequent requests for SABA refills. See the Appendix for important messages providers should consider when evaluating asthma patients.
- Evaluate the patient's inhaler technique to ensure effective administration of medication. For patients with poor inhaler technique or unexplained poor asthma control, consider use of a spacer device with prescribed inhalers. **In November 2008, CCHCS and the Division of Adult Institutions issued a joint memorandum to the field authorizing use of specific spacer and peak flow meter equipment for asthma patients.** (Please see the Appendix for a copy of this memorandum.)
- Provide patient education and work with the patient to develop a self-management plan. See the Asthma Care Guide for handouts and forms that might be used during these activities.

Registered Nurse:

- Evaluate the patient's inhaler technique to ensure effective administration of medication. The Asthma Care Guide has been updated to provide patient education handouts relative to proper inhaler and spacer use. Provide those handouts to each patient during encounters for asthma care.
- Provide patient education. Train patients in the proper use of inhalers to optimize medication administration, or consider group education sessions (with peer educators, if available).
- Monitor the patient's progress towards objectives in the patient's self-management plan and provide feedback. See the Asthma Care Guide for handouts and forms that might be used to support these activities.

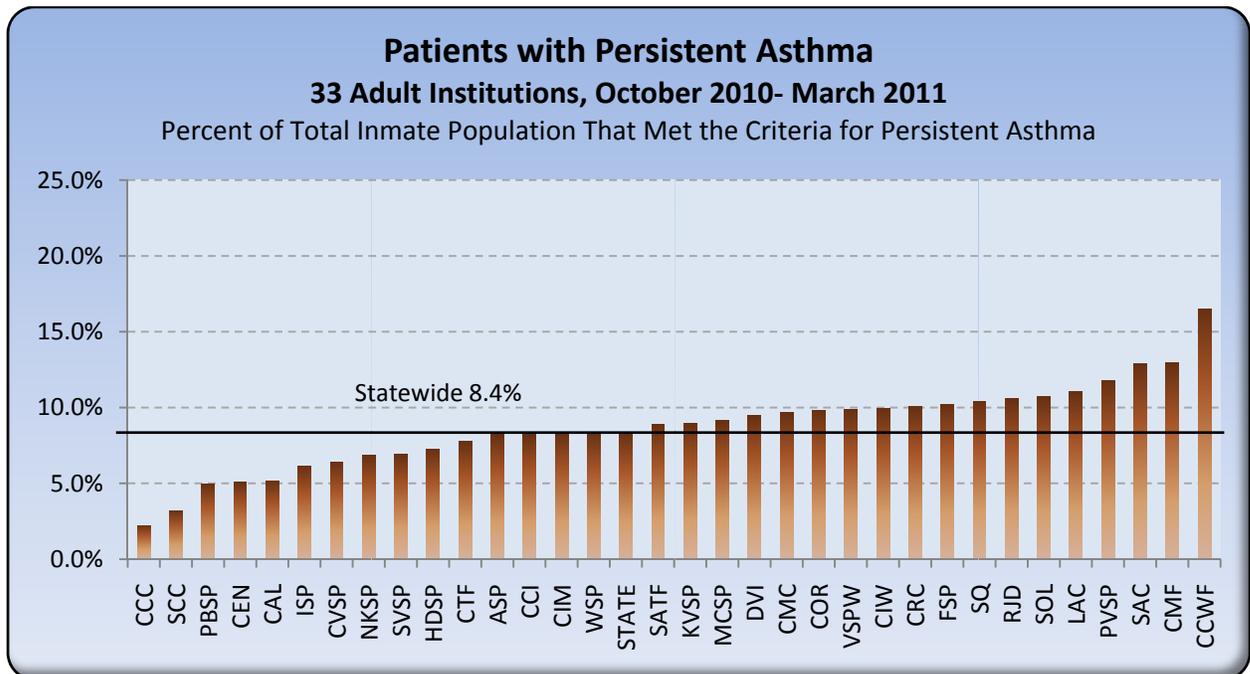
Findings by Category

Patients Meeting the Criteria for Persistent Asthma

- Statewide, there were 8,400 patients age 18 to 49 who met the criteria for probable persistent asthma diagnosis, about **8.4 percent of the eligible inmate population**. Please see Figure 2 below and Appendix Table 4.
- The two institutions which support Fire Camps, CCC and SCC, had particularly low rates of persistent asthmatic patients, at 2.2 percent and 3.2 percent, respectively.
- One of the three women’s institutions, CCWF, had particularly high rates of patients meeting the prescribing criteria for persistent asthma at 16.5 percent. The other two women’s prisons, CIW and VSPW, were closer to the statewide average at 10 percent and 9.9 percent, respectively.
- In addition to CCWF, CMF and SAC have at least 50 percent more patients who met the criteria for persistent asthma, related in part to the high volume of patients prescribed SABA inhalers over a six month period.

Note: Patients who received two or more dispenses of SABA inhalers may artificially inflate the number of patients who meet the criteria for persistent asthma based on HEDIS methodology.

Figure 2



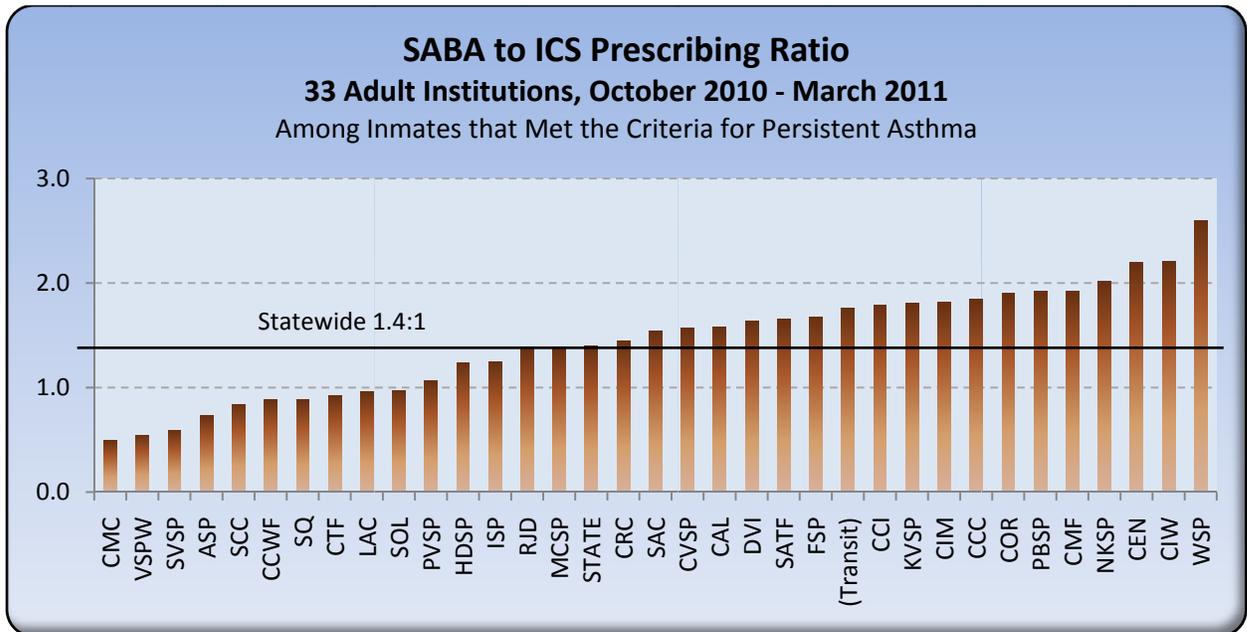
Ratio of SABA to ICS Medications

- The statewide average ratio of SABA to ICS medications is 1.4:1, which is similar to the 1.43:1 ratio of April through Sept 2010. Please see Figure 3 below and Appendix Table 5.
- Institutions with the lowest (desired) ratio include CMC (0.5:1), VSPW (0.5:1), and SVSP (0.6:1).
- Three institutions had a SABA to ICS prescribing ratio of 2:1 or greater, including WSP (2.6:1), CIW (2.2:1), and CEN (2.2:1).

Most institutions with the higher SABA to ICS ratios had more than one provider identified with greater than 200 dispenses of asthma inhalers and a SABA to ICS ratio of greater than 2:1.

Note: The ratio provided represents data of patients housed at a particular institution during the six-month period, so does not represent prescribing practices from other institutions. Patients not at an institution for at least six months are included in the large “Transit” category below.

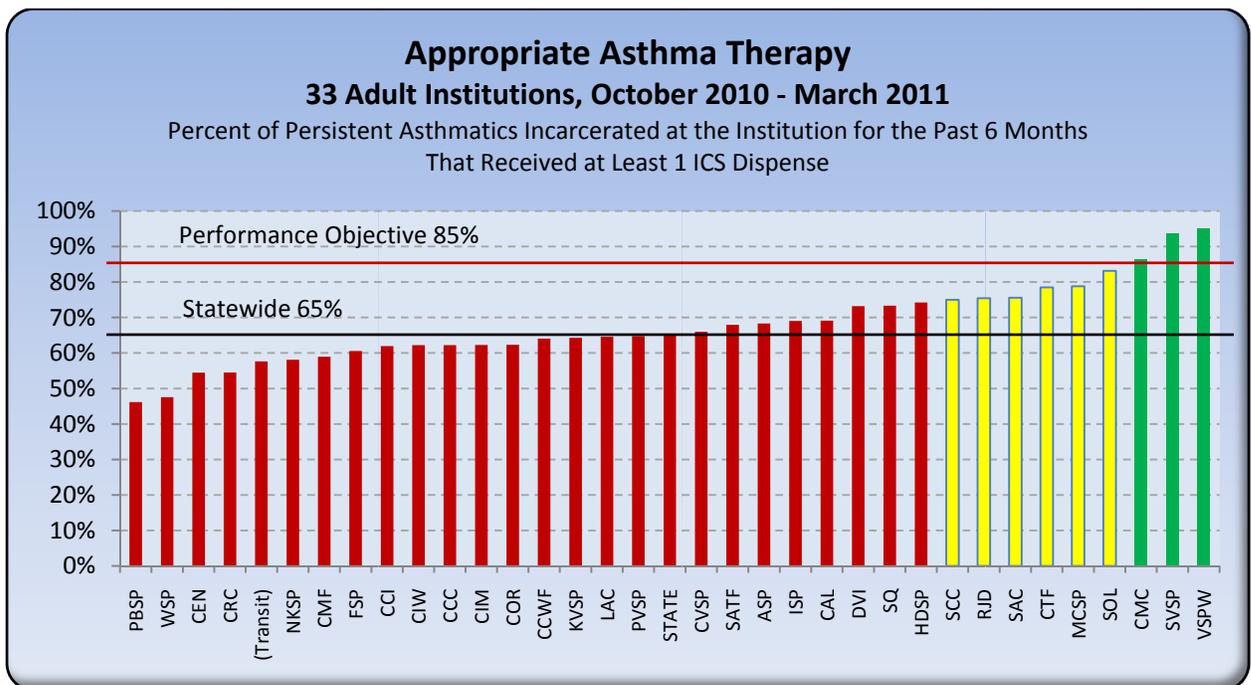
Figure 3.



Patients with Persistent Asthma Who Receive Appropriate Asthma Therapy

- Statewide average of patients receiving “appropriate asthma therapy” (defined as dispensed at least one ICS during the six-month measurement period) equaled 65 percent. Please see Figure 4 below and Appendix Table 6.
- Institutions with the best performance included VSPW (95 percent), SVSP (94 percent), and CMC (86 percent). All of these institutions met the performance objectives of 85 percent or more patients with persistent asthma receiving appropriate therapy.⁷
- Institutions with the lowest performance included PBSP (46 percent) and WSP (48 percent).

Figure 4.



⁷ CMC has a policy of “requiring” that a SABA inhaler given to an asthmatic should last at least two months. This is included in the sig by the pharmacist unless the provider specifies otherwise. If a patient requests a refill sooner, he is evaluated by a provider that same day to determine why he has used so much SABA in such a short time.

Appendix

Comparative Data

As noted in the statewide memo April 1, 2011 (Public Dashboard Release and Disease Management/Prevention Benchmarks) the CCHCS benchmarks have been redefined to mirror the percentile ranking from the HEDIS and other publically available sources. Where available the national Medicaid managed care plans are the “community” upon which our benchmarks are based.

Table 1: Performance Data from CCHCS and Other Healthcare Organizations Regarding ICS Prescribing

Measure	CCHCS Current	Community 75 th Percentile	Community 25 th Percentile	Medi-Cal Managed Care (2008)	National Medicaid (2009)
Appropriate Asthma Medication (ICS)	62%	89.1%	83.8%	88.6%	86.0%

CCHCS Performance Data From This and Previous Asthma Reports

Table 2: Asthma Performance Data from This Report and Previous Reports

Time Period	Statewide ratio SABA:ICS All Asthma Patients	Statewide ratio SABA:ICS Persistent* Asthma Patients	Percentage of All Asthma patients receiving ICS inhaler	Percentage of Persistent* Asthma patients receiving ICS inhaler
November 2009 – January 2010	2:1			
June 2010 – August 2010	1.75:1		50%	
April 2010 – Sept 2010		1.43:1		63%

* California prison inmates identified as persistent asthmatics were either:

- Age 18-49 years, who, in 6-months period of incarceration, have received two or more asthma-related inhalers: SABA/ICS/LABA or a combination (HEDIS definition).
- Under age 40 years who, in a six-month period of incarceration, have received two or more “asthma-related” or anticholinergic (short or long acting) inhalers. (CCHCS selected out young patients on anticholinergic inhalers alone, as they are more likely to have asthma than COPD.)



Memorandum

Date : NOV 20 2008

To : Associate Directors, Division of Adult Institutions
Institution Wardens
Regional Medical Directors
Regional Directors of Nursing
Health Care Regional Administrators
Chief Medical Officers
Health Care Managers
Directors of Nursing

Subject : HEALTH CARE APPLIANCES FOR CHRONIC DISEASE MANAGEMENT

Inmates identified through the chronic disease management program as requiring specific health care appliances such as aero-chamber spacers and peak flow meters are authorized to keep these appliances in their possession. Health Care clinicians will document the requirement on a CDCR 128-C, Medical/Dental/Psychiatric Chrono.

The **AeroChamber-Plus manufactured by Monaghan Medical Corporation, item #79710** has been reviewed and is recommended for use in all Adult institutions. **The Pocket Peak Teleflex Medical reference # 1801 50-720 LPM Bar Code #65845 01801** has been reviewed and recommended for use in all adult institutions.

When a patient requests a replacement of either a holding chamber or a peak flow meter, the device should be issued on a one for one exchange of the old unit for the new. The purpose of this exchange is to monitor the possible alteration of the device. Please dispose of the used product in an infectious waste container. In the event that the patient does not have the used inhaler to exchange:

- The patient will be given a replacement device
- The patient's name, CDCR#, date and time, and reason given by patient for the absence of the device must be noted in a log book (see attached) to be kept in the medication room.

This log will be reviewed monthly by the Access to Care Custody Officer assigned to that clinic. The purpose of this exchange policy is to prevent abuse and is *not* to prevent patients from receiving refills on devices intended to manage that patient's chronic illnesses.

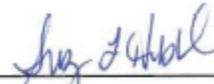
Associate Directors, Division of Adult Institutions
Institution Wardens
Regional Medical Directors
Regional Directors of Nursing
Health Care Regional Administrators
Chief Medical Officers
Health Care Managers
Directors of Nursing
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If you have any questions, please contact Tom Bzoskie, M.D., Clinical Manager, Chronic Disease Management Program, at (916) 508-0816 or thomas.bzoskie@cdcr.ca.gov.



DWIGHT WINSLOW, M.D.
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Attachments

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Alan Frueh, M.D.

Scott Kernan
Access to Care Core Team

Table 3: Patients Meeting the Criteria for Persistent Asthma that Had 4 SABA Dispenses, 33 Adult Institutions, October 2010 – March 2011

Current Institution	Number of Patients with 4 or More SABA Dispenses	Number of Inmates with Persistent Asthma*	Percent of Persistent Asthmatics with 4 or More SABA Dispenses
ASP	35	205	17%
CAL	21	136	15%
CCC	8	45	18%
CCI	43	155	28%
CCWF	81	256	32%
CEN	28	112	25%
CIM	39	114	34%
CIW	31	82	38%
CMC	23	235	10%
CMF	34	112	30%
COR	107	260	41%
CRC	61	178	34%
CTF	41	209	20%
CVSP	21	94	22%
DVI	33	97	34%
FSP	81	185	44%
HDSP	26	132	20%
ISP	23	113	20%
KVSP	69	280	25%
LAC	45	209	22%
MCSP	39	151	26%
NKSP	22	74	30%
PBSP	12	91	13%
PVSP	78	298	26%
RJD	48	171	28%
SAC	77	225	34%
SATF	54	231	23%
SCC	12	80	15%
SOL	34	261	13%
SQ	43	180	24%
SVSP	7	128	5%
VSPW	7	140	5%
WSP	35	122	29%
STATE	1318	5361	25%

*Persistent asthmatics defined here as two or more SABA, LABA, ICS dispenses within the 6 month period Oct. 2010 through March 2011 and ages 18-49 housed at current institution (min. 6 months). SAAC & LAAC dispenses included for inmates < 40 years of age.

Table 4: Prevalence of Persistent Asthma, 33 Adult Institutions, October 2010 through March 2011

Current Inst.	*Number of Inmates with Persistent Asthma	†Total Population	Percent of Inmates with Persistent Asthma
ASP	302	3677	8.2%
CAL	184	3554	5.2%
CCC	93	4162	2.2%
CCI	300	3640	8.2%
CCWF	330	1998	16.5%
CEN	179	3506	5.1%
CIM	333	3996	8.3%
CIW	147	1474	10.0%
CMC	373	3851	9.7%
CMF	197	1524	12.9%
COR	387	3930	9.8%
CRC	291	2891	10.1%
CTF	307	3950	7.8%
CVSP	137	2133	6.4%
DVI	196	2069	9.5%
FSP	278	2716	10.2%
HDSP	230	3162	7.3%
ISP	193	3131	6.2%
KVSP	368	4104	9.0%
LAC	332	3010	11.0%
MCSP	215	2349	9.2%
NKSP	144	2103	6.8%
PBSP	130	2633	4.9%
PVSP	389	3299	11.8%
RJD	296	2796	10.6%
SAC	291	2253	12.9%
SATF	378	4249	8.9%
SCC	133	4144	3.2%
SOL	347	3242	10.7%
SQ	270	2588	10.4%
SVSP	215	3105	6.9%
VSPW	195	1975	9.9%
WSP	252	3004	8.4%
STATE	8412	100218	8.4%

* Persistent asthma defined here as two or more SABA, LABA, ICS dispenses within the 6 month period Oct. 2010 through Mar. 2011. Ages 18-49 currently incarcerated by CDCR (min. 6 months). SAAC & LAAC dispenses included for inmate < 40 years of age.

† Total population: Inmates age 18-49 currently incarcerated by CDCR (min. 6 months).

Table 5: Ratio of SABA to ICS Medications, 33 Adult Institutions, October 2010 through March 2011

Current Inst.	*Persistent Asthmatics: Number of SABA Dispenses	†Persistent Asthmatics: Number of ICS Dispenses	SABA to ICS Ratio
ASP	484	658	0.7 : 1
CAL	319	202	1.6 : 1
CCC	111	60	1.8 : 1
CCI	475	265	1.8 : 1
CCWF	766	868	0.9 : 1
CEN	327	149	2.2 : 1
CIM	378	208	1.8 : 1
CIW	292	132	2.2 : 1
CMC	443	895	0.5 : 1
CMF	348	181	1.9 : 1
COR	882	464	1.9 : 1
CRC	669	461	1.5 : 1
CTF	543	587	0.9 : 1
CVSP	264	168	1.6 : 1
DVI	328	200	1.6 : 1
FSP	656	392	1.7 : 1
HDSP	338	273	1.2 : 1
ISP	277	223	1.2 : 1
KVSP	837	462	1.8 : 1
LAC	570	594	1 : 1
MCSP	422	307	1.4 : 1
NKSP	238	118	2 : 1
PBSP	223	116	1.9 : 1
PVSP	843	792	1.1 : 1
RJD	487	355	1.4 : 1
SAC	768	499	1.5 : 1
SATF	663	401	1.7 : 1
SCC	187	222	0.8 : 1
SOL	546	561	1 : 1
SQ	461	522	0.9 : 1
SVSP	205	347	0.6 : 1
VSPW	212	388	0.5 : 1
WSP	379	146	2.6 : 1
STATE	10412	5915	1.8 : 1

* Persistent asthma defined here as two or more SABA, LABA, ICS dispenses within the 6 month period Oct. 2010 through Mar. 2011. Ages 18-49 currently incarcerated by CDCR (min. 6 months). SAAC & LAAC dispenses included for inmate < 40 years of age.

† Total population: Inmates age 18-49 currently incarcerated by CDCR (min. 6 months).

Table 6: Persistent Asthma Patients Receiving Appropriate Asthma Therapy (At Least One ICS Dispense),
33 Adult Institutions, October 2010 through March 2011

Current Inst.	Persistent Asthmatics Receiving an ICS	*Total Number of Persistent Asthmatics	Percent of Persistent Asthmatics Receiving an ICS
ASP	140	205	68.3%
CAL	94	136	69.1%
CCC	28	45	62.2%
CCI	96	155	61.9%
CCWF	164	256	64.1%
CEN	61	112	54.5%
CIM	71	114	62.3%
CIW	51	82	62.2%
CMC	203	235	86.4%
CMF	66	112	58.9%
COR	162	260	62.3%
CRC	97	178	54.5%
CTF	164	209	78.5%
CVSP	62	94	66.0%
DVI	71	97	73.2%
FSP	112	185	60.5%
HDSP	98	132	74.2%
ISP	78	113	69.0%
KVSP	180	280	64.3%
LAC	135	209	64.6%
MCSP	119	151	78.8%
NKSP	43	74	58.1%
PBSP	42	91	46.2%
PVSP	193	298	64.8%
RJD	129	171	75.4%
SAC	170	225	75.6%
SATF	157	231	68.0%
SCC	60	80	75.0%
SOL	217	261	83.1%
SQ	132	180	73.3%
SVSP	120	128	93.8%
VSPW	133	140	95.0%
WSP	58	122	47.5%
<i>(Transit)</i>	1768	3067	57.6%
STATE	5474	8428	65.0%

* Persistent asthma defined here as two or more SABA, LABA, ICS dispenses within the 6 month period Oct. 2010 through Mar. 2011. Ages 18-49 housed at current institution (min. 6 months). SAAC & LAAC dispenses included for inmate < 40 years of age. (Transit)- Inmates who were housed at multiple institutions during the measurement period Oct. 2010 through Mar. 2011.

Table 7: Number of Doses Per Inhaler/ Diskus

Name	Number of Doses per Canister	Typical dose/days available using canister with 200 puffs		Approximate Retail Price
Albuterol (Proventil, Ventolin)	200 or 60	2 puffs 2x/wk	> 11 months	\$44-58 per 200 puff canister
		2 puffs/day	3 months	
		2 puffs qid	25 days	
Ciclesonide (Alvesco) Will be the formulary ICS soon 80 mcg or 160 mcg/actuation	60	1 puff bid	30 days	\$166 per canister
<i>Fluticasone</i> (Flovent HFA) Will become NF	120	1 puff bid	60 days	44 mcg/act: \$119.99 110mcg/act: \$152.98 220 mcg/act: \$246.99
Fluticasone + Salmeterol (Advair Diskus) On Formulary	60	1 puff bid	30 days	500-50 mcg: \$285.99 250-50 mcg: \$215.99 100-50 mcg: \$185.99
<i>Fluticasone + Salmeterol</i> (<i>Advair HFA-NF</i>)	120	1 puff bid	60 days	\$198-230 per canister
Salmeterol (Serevent Diskus)	60	1 puff bid	30 days	\$180 per diskus
<i>Ipratropium bromide and Albuterol sulfate</i> (<i>Combivent</i>) NF	200	1 puff 4x/day	50 days	\$190 per diskus
		2 puffs 4x/day	25 days	
Ipratropium (Atrovent HFA)	200	2 puffs bid	50 days	\$172 per canister
		2 puffs 4x/day	25 days	
<i>Tiotropium</i> (<i>Spirivia</i>)NF	Capsules 1 box of 30	1 capsule/day	30 days	30 doses: \$230