Abbreviated Analysis:

Analysis of California Assembly Bill 391
Medi-Cal: Asthma Preventive Services

Summary to the 2017–2018 California State Legislature, April 4, 2017

CALIFORNIA HEALTH BENEFITS REVIEW PROGRAM

AT A GLANCE

The version of California Assembly Bill (AB) 391 that CHBRP analyzed (March 22, 2017) would amend the Welfare and Institutions Code to define "qualified asthma preventive service providers" as any individual who provides evidence-based asthma preventive services, including asthma education and environmental asthma trigger assessments for individuals with asthma, and who meets several requirements, including successful completion of an accredited training program. AB 391 requires that the Department of Health Care Services approve at least two governmental or nongovernmental accrediting bodies with expertise in asthma to review and approve training curricula for qualified asthma preventive services providers.

1. CHBRP estimates that if AB 391 applied only to Medi-Cal fee-for-service (FFS) in the first year, 1,519,000 enrollees in Medi-Cal FFS would have coverage subject to the bill. If AB 391 applied to all Medi-Cal enrollees in California, CHBRP estimates that 10,826,000 would have Medi-Cal coverage subject to AB 391 (includes FFS, Medi-Cal managed care, and County Organized Health Systems [COHS]).

2. **Background:** Asthma is a chronic inflammatory disorder of the airways and lungs that causes wheezing, restricted breathing, chest tightness, and late night or early morning coughing (CDC, 2017). Asthma symptoms can be mild to severe and may fluctuate in presentation and intensity over a person's lifetime.

3. **Prevalence of asthma.** Asthma is one of the most common chronic diseases among children in California, and the fourth most common among adults. In 2015, an estimated 5.7 million Californians (15.2%) reported having an asthma diagnosis in their lifetime (*lifetime asthma prevalence*), and over half (3.3 million) had current asthma symptoms, accounting for a statewide *current asthma prevalence* of 8.7%.

4. **State plan amendment.** Previously, Medicaid regulations limited coverage of preventive services to services that were directly provided by a physician or other licensed practitioner. However, as of January 2014, Medicaid may reimburse for preventive services delivered by a non-licensed health care professional, such as a community health worker, when the service is recommended by a physician or other licensed provider. This rule change applies to preventive services, including those furnished pursuant to section 4106 of the Affordable Care Act. Under this rule, states have the option to reimburse for preventive services provided by non-licensed health care professionals. To do so, states must issue a state plan amendment to reimburse these non-licensed providers. AB 391 is proposing a state plan amendment to cover non-licensed providers for the provision of asthma preventive services including asthma education and environmental asthma trigger assessments.

5. **Medical effectiveness.** CHBRP identified 17 randomized controlled trials (RCTs) that examined the impact of asthma education and environmental assessment interventions conducted by community health workers (CHWs) or other unlicensed personnel. CHBRP concludes there is a preponderance of evidence from eight RCTs that asthma education provided by unlicensed personnel improves use of quick-relief medications and controller medications for asthma and improves caregiver quality of life. There is a preponderance of evidence from nine RCTs that receiving both asthma education and environmental assessment provided by unlicensed personnel increases the likelihood that caregivers will perform behaviors that reduce children's exposure to asthma triggers in the home, reduces levels of allergens in homes, reduces frequency of asthma symptoms and activity limitations due to asthma, and improves' caregivers' quality of life.

6. **Cost literature on asthma preventive services.** In seven of the studies identified in the *Medical Effectiveness* section, the unit cost of asthma-related interventions ranged from $135 to $293 per home visit. CHBRP identified two studies that provided a return on investment (ROI) estimate for asthma education and home assessment interventions conducted by CHWs or other unlicensed personnel. One study determined an ROI of $1.90 in savings per $1.00 spent on the intervention, with cost savings stemming largely from estimated reductions in asthma-related hospitalizations. Another study estimated telephone-based peer coaching asthma education intervention for children with Medicaid had an ROI of $1.30 in savings per $1.00 spent on the intervention, also due in large part to estimated reductions in asthma-related hospitalization and emergency department visits.

BILL SUMMARY

AB 391 would amend the Welfare and Institutions Code to define "qualified asthma preventive service providers" as any individual who provides evidence-based asthma preventive services, including asthma education and environmental asthma trigger assessments for individuals with asthma, and who meets several requirements, including:

- Successful completion of a training program approved by an accrediting body that the Department of Health Care Services would appoint;
- Successful completion of at least 16 hours of face-to-face client interaction focused on asthma management and prevention within a 6-month period, observed by a licensed physician, nurse practitioner, or physician assistant;
- Four hours of continuing education annually;
- Provision of asthma preventive services under supervision of a licensed provider;[1]
- Be employed by or under contract with an entity or a supervising licensed provider that meets certain requirements;[2]
- Be 18 years of age or older with a high school education or equivalent.

AB 391 also defines and could require coverage for asthma preventive services, including:

- Asthma education — defined by the bill as "providing to a patient information about the basic facts of asthma, the use of medications, self-management techniques and self-monitoring skills, and actions to mitigate or control environmental exposures that exacerbate asthma symptoms."
- Environmental asthma trigger assessments — defined by the bill as "identification of environmental asthma triggers commonly found in and around the home and other locations, including allergens and irritants. This assessment shall guide the self-management education about actions to mitigate or control environmental exposures."

The full text of AB 391 can be found at the following link: California Legislative Info. For this report, CHBRP has analyzed the bill language amended on March 22, 2017.

[1] The bill language defines "supervision" or "supervising" as the supervision of a qualified asthma preventive services provider providing asthma preventive services, by any of the following Medi-Cal-rendering providers who is acting within the scope of his or her respective practices: (1) A licensed physician; (2) A licensed nurse practitioner; (3) A licensed physician assistant.The bill language does not specify parameters for the supervision of a licensed provider (e.g., general or direct supervision).

[2] The bill language states that: Any entity or supervising licensed provider who employs or contracts with a qualified asthma preventive services provider shall: (a) Maintain documentation that the qualified asthma preventive services provider has met all of the requirements described in Section 14047.4.; (b) Ensure that the qualified asthma preventive services provider is providing services consistent with Sections 14047.3 and 14047.6; (c) Maintain written documentation of services provided by the qualified asthma preventive services provider; (d) Ensure documentation of the provision of services is provided to the treating physician.

POLICY CONTEXT

The California Assembly Committee on Health has requested that the California Health Benefits Review Program (CHBRP)[3] conduct an evidence-based assessment of the medical and public health impacts of AB 391, Medi-Cal: Asthma Preventive Services.

If enacted, the law would affect the health insurance of Medi-Cal beneficiaries only, exempting commercial group and individual California Department of Managed Health Care (DMHC)-regulated plans, California Department of Insurance (CDI)-regulated policies, and other non–Medi-Cal state-regulated plans and policies, such as CalPERS HMOs.

Bill-Specific Analysis of AB 391, Medi-Cal Asthma Preventive Services

Asthma is a chronic inflammatory disorder of the airways and lungs characterized by acute episodes (i.e., "asthma attacks") of wheezing, restricted breathing, chest tightness, and late night or early morning coughing, and may include ongoing symptoms of shortness of breath, wheezing, and cough on a chronic basis (NHLBI, 2014). Asthma symptoms and attacks can be mild to severe, potentially resulting in missed school or work, disruptions in sleep, restricted activity, and emergency department visits and hospitalizations. There is no cure for asthma, but people who experience asthma may manage their symptoms by avoiding known triggers and using medication. Some of the most common asthma triggers include tobacco smoke, dust mites, cockroach allergens, outdoor air pollution, pets, mold, and smoke from burning wood or grass (CDC, 2017).

The National Institutes of Health's Guidelines for the Diagnosis and Management of Asthma indicate that effective asthma management requires a combination of four essential components:

- Assessment and monitoring;
- Patient education;
- Control of environmental factors contributing to asthma severity; and
- Pharmacologic treatment (NHLBI, 2007).

Analytic Approach and Key Assumptions

This brief provides an overview and description of the medical effectiveness literature related to asthma education, environmental assessments related to asthma, and unlicensed providers of asthma preventive services. This brief also provides an overview of the cost effectiveness literature available for these topics. However, it does not provide benefit coverage, utilization, and cost impacts of the bill, because the Department of Health Care Services has been asked to estimate the bill's fiscal impact.

Interaction With Existing Requirements

Health benefit mandates may interact and align with the following state and federal mandates or provisions.

[3] CHBRP's authorizing statute is available at http://chbrp.org/faqs.php.

Federal Requirements

Preventive Services Rule Change

Previously, Medicaid regulations limited coverage of preventive services to services that were *directly provided by physician or other licensed practitioner*. However, as of January 2014, Medicaid may reimburse for preventive services delivered by a non-licensed health care professional, such as a community health worker, when the service is *recommended by a physician or other licensed provider* within their scope of practice under state law (CMS, 2013a, 2013b). [4] This rule change applies to preventive services, including those furnished pursuant to section 4106 of the Affordable Care Act (CMS, 2013b).

Under this rule, states have the option to reimburse for preventive services provided by non-licensed health care professionals. To do so, states must issue a state plan amendment to cover these non-licensed providers (CMS, 2013a, 2014).[5] AB 391 is proposing a state plan amendment to cover non-licensed providers for the provision of asthma preventive services.

Under this rule, states have the authority to:

- Define practitioner qualifications;
- Ensure appropriate services are provided by qualified practitioners;
- Define preventive services to be provided (within federal requirements of Section 4385 of the State Medicaid Manual); and
- Describe the reimbursement methodology (CMS, 2014).

Centers for Medicare & Medicaid (CMS) has clarified that this rule impacts the practitioners who may provide the service, but not the services themselves. CMS states that services must:

- Be medical or remedial in nature; and
- Involve direct patient care and be for the express purpose of diagnosing, treating, or preventing illness, injury or other impairments to an individual's physical or mental health (CMS, 2014).

CMS also states that non-medical preventive services addressing broader social or environmental concerns are not covered (e.g., lead abatement, smoke detectors, dust mite–proof bedding) (CMS, 2014).

According to CMS, there are five requirements of the Medicaid state plan:

- Amount, duration and scope (sufficient to reasonably achieve purpose of service; cannot be reduced based on diagnosis, type of illness or condition);
- Comparability;
- Statewideness;

[4] 42 CFR 440.130(c).

[5] The Medicaid state plan is a state's contract with CMS for administering the Medicaid program at a state level. According to CMS, state plan amendments are required for a state to make any changes to eligibility, coverage, or reimbursement.

- Any willing and qualified provider;
- Beneficiary freedom of choice of qualified provider (CMS, 2014).

Based on the requirement of "statewideness," CHBRP believes that the state plan amendment could change Medi-Cal benefits, not just for fee-for-service enrollees, but also for Medi-Cal managed care enrollees and County Organized Health System enrollees.

Any changes at the federal level may impact the analysis or implementation of this bill, were it to pass into law. However, CHBRP analyzes bills in the current environment given current law.

State Requirements

California law and regulations

The provision of asthma preventive services is consistent with the state's Welfare and Institutions Code (Section 14059.5), which states that a service is "medically necessary" or a "medical necessity" when it is reasonable and necessary to protect life, to prevent significant illness or significant disability, or to alleviate severe pain.

The state has several provisions related to asthma-related protocols (e.g., medication, asthma-related emergencies) in a school setting (AAFA, 2017). For example, California Education Code § 49422-49427 allows students to carry and self-administer medication by providing written statements from both a physician and a parent.[6]

Section 1367.06 of the Health and Safety Code requires that health care service plan contracts that cover outpatient prescription drug benefits shall include coverage for inhaler spacers when medically necessary for the management and treatment of pediatric asthma.[7,8] Specialized health care service plans are exempt from this section.

In April 2015, the California Department of Public Health published a Strategic Plan for Asthma in California with a focus on six areas related to asthma, including: 1) Partnership and Collaboration; 2) Surveillance and Research; 3) Work-Related Asthma; 4) Health Care; 5) Indoor Environments; and 6) Outdoor Environments (CDPH, 2015). The strategic plan is intended for use by policy makers, agencies, communities and individuals in California with an interest in addressing asthma (CDPH, 2015).

Similar requirements in other states

To date, only Missouri has used a state plan amendment to specifically address asthma preventive services. States may use other avenues to reimburse for asthma preventive services in their Medicaid programs (Childhood Asthma Leadership Coalition, 2016; National Center for Healthy Housing, n.d.,). However, the following focuses on state plan amendments as AB 391 proposes a state plan amendment.

In 2016, Missouri received approval from CMS for a state plan amendment that added asthma education and counseling and in-home asthma trigger assessments to Missouri's Medicaid state plan for enrollees aged 21 years and under (CMS, 2016). Under this plan amendment, asthma preventive education,

[6] California Education Code § 49422-49427.
[7] California Health and Safety Code § 1367.06.
[8] For a list of California codes addressing asthma, see the California Department of Public Health's resource: https://www.cdph.ca.gov/HealthInfo/discond/Documents/California%20Codes%20Addressing%20Asthma.pdf.

counseling, and in-home assessments require a referral or prescribed service by a physician. The services require prior authorization and may be provided by non-licensed practitioners (CMS, 2016). The amendment also establishes certification and training guidelines for two types of providers: educators for asthma education and counseling, and assessors for the in-home asthma trigger assessments.

Because Missouri's state plan amendment was recently approved in October 2016, there are no preliminary results or data available from this change of which CHBRP is aware.

BACKGROUND ON ASTHMA

Asthma is one of the most common chronic childhood diseases in the United States, and may persist, or develop, in adulthood. Asthma is a chronic inflammatory disorder of the airways and lungs that causes wheezing, restricted breathing, chest tightness, and late night or early morning coughing (CDC, 2017). Asthma symptoms and can be mild to severe and may fluctuate in presentation and intensity over a person's lifetime.

Risk Factors and Diagnosis

The cause (or causes) of asthma are unknown; but research suggests that a person's risk for asthma is established early in life (when the immune system is still developing) due a range of genetic and environmental factors, including:

- Parents with a history of asthma;
- Level of inherited risk for allergies;
- Certain, or repeated, respiratory infections during infancy and childhood (e.g., respiratory syncytial virus); and
- Exposure to known environmental allergens (e.g., tobacco smoke, cockroach allergen) (NHLBI, 2007).

People of all ages are at risk for asthma; however, symptoms are most likely to develop in childhood, before the age of 5 years. As described above, children with chronic respiratory conditions, or who wheeze during infancy, are at the greatest risk of having asthma that persists beyond 6 years of age (NHLBI, 2007). The role of sex hormones in asthma development is not well established; however, males are more likely to develop asthma during childhood, whereas females are more likely to have asthma after puberty. Although development of asthma after childhood is less common, adults with allergies, obesity, or prolonged exposure to chemical/inhaled irritants in the workplace are at increased risk for adult onset asthma (NHLBI, 2007).

Diagnosis of asthma can be difficult. Up to a third of adults and children with asthma are misdiagnosed due to a range of factors including the wide variance in severity and duration of asthma symptoms between individuals, symptom overlap with other respiratory illnesses, and lack of confirmatory testing (Bakirtas, 2017; MacNeil et al., 2016). Therefore, although asthma symptoms are an early indicator of asthma onset, published practice guidelines state that patients must provide a medical history and undergo a lung function test — measuring airflow limitations and responsiveness to asthma medications — in order to receive a formal diagnosis of asthma (MacNeil et al., 2016).

The Principles of Asthma Control

There is no cure for asthma; however, the symptoms of asthma may be controlled with proper management and treatment. The National Heart, Lung, and Blood Institute's (NHLBI) third expert panel report on asthma (EPR-3) outlines four key components of asthma control:

- Objective diagnosis and clinical assessment of severity;
- Medication;

- Asthma education; and
- Control of environmental triggers (NHLBI, 2007).

AB 391 specifies coverage for asthma education and environmental asthma trigger assessments when provided by a qualified asthma preventive services provider to Medi-Cal enrollees. Therefore, CHBRP provides additional context for the two components enumerated in the bill below.

Asthma Education

Asthma education, as defined by the NHLBI (2007), is a targeted, patient-level intervention to introduce and continually reinforce asthma control concepts to help patients learn self-management of their asthma symptoms and improve their outcomes over time. Beginning at diagnosis and continuing throughout follow-up, asthma education is an integrated process, occurring in any setting where a patient receives asthma-related care including, but not limited to: medical clinics and offices, hospitals, emergency departments, pharmacies, homes, schools, and community centers. Accordingly, virtually any provider who delivers asthma care can administer self-management education.

Although asthma education is tailored to the individual, NHLBI guidelines (2007) identify three essential components that should comprise the framework of any asthma education intervention:

- Basic asthma information, medication skills (including inhaler use and proper dosage), and self-monitoring techniques;
- A written asthma action plan that includes 1) techniques and goals for daily management and 2) how to recognize and manage worsening asthma symptoms (recommended for patients with moderate to severe symptoms or poorly-controlled asthma); and
- Information on how to identify and remediate environmental triggers at home, school, or work that exacerbate asthma symptoms.

Despite the importance of asthma education, the proportion of asthma patients who receive instruction in self-management is decreasing. According to the National Ambulatory Medical Care Survey, the rate of asthma education during asthma-related primary care visits decreased from approximately 50% in 2001 to 2002, to 30.9% in 2007 to 2010 (Lee et al., 2016). Likewise, data from the Asthma Call-back Survey showed that only 30.1% of Californian adults with current asthma symptoms received an asthma management plan and only 33.7% were advised on how to make environmental changes to improve their asthma outcomes in 2013 (BRFSS, 2013). Several factors may contribute to the declining rates of asthma education in primary care settings, including a reduction in time spent with patients due to increasing physician case-loads, competing priorities during appointments, a rapidly changing evidence base that may impact physicians' ability to remain current with guideline recommendations, and possible offsets with school-based asthma education initiatives (Lee et al., 2016).

Environmental control with environmental asthma trigger assessments

The NHLBI guidelines state that identification and reduction of exposure to environmental asthma triggers is a key component of achieving well-managed asthma for patients at any level of asthma severity. Environmental control is a comprehensive, multicomponent process that should occur across the range of environments in which patients conduct activities of daily living. Exposure to known allergens or irritants, such as dust mites or mold, in the home environment has been estimated to account for up to 40% of asthma risk in childhood, and as much as 70% to 90% of severe asthma symptoms (Krieger et al., 2002;

Lanphear et al., 2001; Ponsonby et al., 2002); therefore, home-based assessments may have a large impact on asthma self-management and symptom severity.

CHBRP found no standardized criteria for asthma environmental trigger assessments; however, the Community Preventive Services Task Force defines these assessments as home-based multicomponent interventions characterized by:

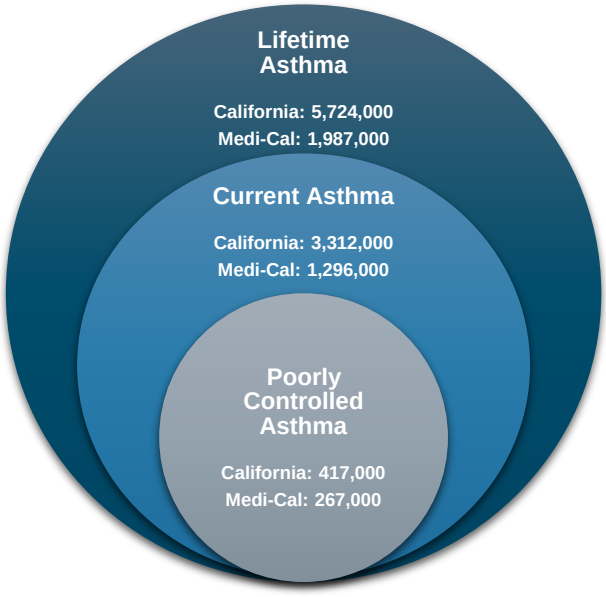
- Written documentation of common asthma triggers in a patient's residence including: dust mites, pets, moisture and mold, pests (i.e., cockroaches, mice, and rats), secondhand smoke, and other indoor hazards (i.e. wood stoves, asbestos);
- Patient and caregiver education regarding techniques or actions by which to reduce exposure to triggers in the home; and (sometimes)
- Remediation of exposures by physical alteration of the home to reduce or remove triggers identified in the initial assessment (Crocker et al., 2011).

Environmental assessments may be delivered by a wide range of providers with some task-specific training. See the *Medical Effectiveness* section for a discussion of the differential effectiveness of environmental asthma risk assessments when performed by varying provider types.

Prevalence of Asthma in California

Because a person's asthma status and symptom severity may change over time, asthma prevalence is commonly presented as a series of cascading measures (Figure 1). A person has *lifetime asthma* if they have ever received a diagnosis of asthma from a health care provider, whereas a person with *current asthma* has received a diagnosis and reports still having asthma or asthma symptoms in the past year. Additionally, a person with *poorly controlled asthma* has a recent history (within the past 12 months) of asthma-related emergency room use (Milet, 2017).

Figure 1. Categories of Asthma Prevalence in California Overall and for Medi-Cal Beneficiaries, 2015



Source: California Health Interview Survey, 2015

According to the 2015 California Health Interview Survey (CHIS) — the most recent year for which data were available — an estimated 5.7 million Californians (15.2%) have a lifetime asthma diagnosis, and over half (3.3 million) had current asthma symptoms, accounting for a statewide current asthma prevalence of 8.7% (CHIS, 2015). In comparison (Figure 1), an estimated 2 million Medi-Cal enrollees (17.1%) had a lifetime asthma diagnosis in 2015, and 11.1% (almost two thirds of those with a prior diagnosis) reported having current asthma. The prevalence of asthma in California increased between 1980 and 2000, but has not changed significantly since 2001 (Milet, 2017).

Poorly Controlled Asthma

CHBRP assumes that the state plan amendment proposed in AB 391 will most likely be provided to Medi-Cal enrollees with poorly controlled asthma; therefore, CHBRP has estimated this population using 2015 CHIS data regarding asthma-related emergency room use in the prior year among current asthmatics.

As described in Figure 1, 12% (417,000) of the estimated 3.3 million current asthmatics in California reported an asthma-related emergency room or urgent care visit in 2015. Comparatively, among the almost 1.3 million Medi-Cal enrollees with current asthma, 20.6% (267,000) reported an emergency room or urgent care visit for asthma. Although Medi-Cal enrollees represent only about a third of the population with current asthma in California (Figure 1), they account for almost 65% of the burden of poorly controlled asthma.

Asthma-Related Health Disparities[9] in California and Medi-Cal

"'Health disparity' denotes differences, whether unjust or not. 'Health inequity' on the other hand, denotes differences in health [status or] outcomes that are systematic, avoidable, and unjust." (Wyatt et al., 2016). In the case of AB 391, CHBRP found differences and disparities in asthma prevalence and the asthma health outcomes by gender, age, and race/ethnicity.

Age and Gender

Prevalence and incidence of asthma varies between adults and children. In 2015, 15.6% of adults and 13.8% of children in California reported a lifetime asthma diagnosis; 8.6% of adults (2.5 million) and 9.2% of children (796,000) had current asthma (CHIS, 2015). The lifetime and current prevalence of asthma in California is highest among children aged 5 to 17 years, about 30% higher than among adults (Milet, 2017). Young children (ages 0 to 4 years) have the lowest prevalence of asthma owing to the high rate of respiratory infections in young children that may confound accurate diagnosis (Milet, 2017). In both Medi-Cal enrollees and the state population overall, children are twice as likely as adults to have poorly controlled asthma; however, a larger proportion of children in Medi-Cal (31.1%) reported asthma-related emergency room visits in 2015 as compared with California overall (20.1%). Among adults and children with poorly controlled asthma in California, 82% of children and 52% of adults are enrolled in Medi-Cal (Table 1).

As discussed previously, women are more likely to have asthma as adults, whereas men are more likely to have asthma as children. In California, adults account for over three-quarters of persons with current

[9] Several competing definitions of "health disparities" exist. CHBRP relies on the following definition:
Health disparity is defined as the difference in health outcomes between groups within a population. While the terms may seem interchangeable, "health disparity" is different from "health inequity." "Health disparity" denotes differences, whether unjust or not. "Health inequity," on the other hand, denotes differences in health [status or] outcomes that are systematic, avoidable, and unjust." Wyatt et al., 2016.

asthma; accordingly, in 2015, females were almost twice as likely to have current asthma in California as compared with males. In 2015, women in California overall and low-income women in Medi-Cal were more than 30% more likely to have poorly controlled asthma as compared with men (Table 1). Among women with poorly controlled asthma in California, 63% (180,000) are enrolled in Medi-Cal.

Race/Ethnicity

Disparities in asthma prevalence and diagnosis by race and ethnicity are well-documented in California. Data from the 2015 CHIS showed that, compared with the statewide average of 8.7%, African Americans and American Indians/Alaska Natives have the highest prevalence of current asthma (14.8% and 15.5%, respectively), almost twice the rate of whites (8.9%), whereas Asians and Hispanics have the lowest (6.2% and 8.2%). Although Hispanics have one of the lowest asthma prevalence rates of all ethnic groups, there are important differences in prevalence by Hispanic subgroup; when disaggregated, Puerto Ricans have the highest asthma prevalence (35%) of any ethnic group in California (Milet, 2017).

Racial and ethnic disparities are also present in asthma symptom severity among Californians with current asthma. As described in Table 1, African Americans were more than four times as likely as whites to report asthma-related emergency room use in 2015, whereas Latinos and Asians were approximately two times as likely to report asthma-related emergency department use as compared with whites. When compared with the state, all racial/ethnic groups in Medi-Cal had higher than average prevalence of poorly controlled asthma. In 2015, Asian and African American Medi-Cal enrollees were most likely to report asthma-related emergency room use than whites or Latinos; however, Latinos represented 55% of poorly controlled asthma cases (Table 1).

Table 1. Prevalence of Poorly Controlled Asthma Among Medi-Cal Enrollees With Current Asthma as Compared With the State of California by Selected Demographics, 2015

Demographic	Medi-Cal	California
TOTAL	**20.6% (267,000)**	**12.6% (417,000)**
Age		
Child (0–17 years)	*31.1% (132,000)*	*20.1% (160,000)*
0–4 years	48.4% (45,000) (a)	48.2% (56,000)
5–17 years	26.3% (87,000)*	15.2% (103,000)
Adult (18+ years)	*15.5% (135,000)*	*10.2% (258,000)*
18–64 years	14.9% (111,000)	10.0% (204,000)
65 years and older	19.0% (25,000) (a)	11.2% (53,000)
Gender		
Male	16.6% (87,000)	10.4% (134,000)
Female	23.4% (180,000)	14.0% (283,000)
Race/ethnicity		
White	9.6% (31,000)	6.6% (88,000)
Latino	23.6% (148,000)	16.7% (202,000)
African American	29.9% (59,000)	24.6% (78,000)
Asian	34.4% (23,000)	13.7% (42,000)
Other (b)	6.9% (5,000)*	5.1% (8,000)

Source: California Health Interview Survey, 2015.

Note: Poorly controlled asthma was identified by a "Yes" response among current asthmatics when asked "During the past 12 months, have you {child/teen} had to visit a hospital emergency room or urgent care clinic because of your {child's/teen's} asthma?" in the 2015 California Health Interview Survey.

(a) Not statistically stable.

(b) Category includes: American Indian/Alaska Native, Native Hawaiian/Pacific Islander, and Two or More Races.

Social Determinants of Health[10] in Asthma

Social determinants of health (SDoH) include factors outside of the traditional medical care system that influence health status and health outcomes (e.g., income, education, geography). In the case of AB 391, evidence shows that housing quality and health literacy may contribute to the prevalence of poorly controlled asthma and utilization of asthma-related health care within the Medi-Cal population, and ultimately contribute to the aforementioned gender, age, and racial and ethnic disparities.

[10] CHBRP defines social determinants of health as conditions in which people are born, grow, live, work, learn, and age. These social determinants of health (economic factors, social factors, education, physical environment) are shaped by the distribution of money, power, and resources and impacted by policy (adapted from Healthy People 2020 [ODPHP, 2015]; CDC, 2014). See CHBRP's SDoH white paper for further information: http://www.chbrp.org/analysis_methodology/docs/Incorporating Relevant Social_Determinants of Health in CHBRP Analyses Final to WEBSITE 033016.pdf.

Housing Type and Home Allergen Exposure

Housing type and conditions have been associated with asthma prevalence and severity. Children in public housing, with its greater likelihood of harboring cockroaches, rodents, and water leaks, have been found to be more likely to have a diagnosis of asthma than children in private housing (Northridge et al., 2010). Moreover, of the predominantly minority (African American and Hispanic) and low income children with asthma enrolled in the National Cooperative Inner-City Asthma Study, 85% lived in homes with signs of poor repair (i.e., leaky roofs, broken windows, peeling paint). Two thirds of homes had signs of roach infestation; bedroom exposure to cockroach allergen in this cohort was correlated with higher rates of asthma morbidity, including hospitalizations and unscheduled medical visits (Rosenstreich et al., 1997). In addition to experiencing a greater burden of poor housing conditions, racial and ethnic minorities with asthma are less likely to use environmental control practices to reduce allergen exposure in the home. A four-state sample (including California) of data from the 2003 National Asthma Survey showed that African Americans and Hispanics with asthma were less likely to use pillow and mattress covers to reduce dust exposure (recommended by the NHLBI) (Roy and Wisnivesky, 2010).

Health Literacy

Asthma prevalence and outcomes may be mediated by a patient or caregiver's health literacy. Mancuso and Rincon (2006) determined that decreased health literacy was associated with decreased quality of life, reduced physical function, and greater use of emergency services among patients with asthma in a univariate analysis. However, when they examined health literacy in a multivariate model, the relationship was attenuated. They concluded that decreased health literacy was very closely correlated with knowledge regarding asthma. Thus, decreased health literacy impedes gaining knowledge about asthma, which is associated with poorer outcomes for patients. Another study examined parents' health literacy and its association with their children's asthma management. Although parents with lower health literacy worried more about their children's asthma and felt a greater burden in caring for them, this perception was not associated with worse asthma management outcomes (Shone et al., 2009). If enacted, AB 391 would expand the workforce available to deliver targeted asthma education and perform environmental assessments for Medi-Cal enrollees. Given that racial and ethnic minorities are disproportionately represented in Medi-Cal,[11] a population that is, by definition, low income, it is likely that the provisions proposed in AB 391 would target those with the most acute need for asthma-related services and potentially reduce the prevalence of poorly controlled asthma in California.

[11]See CBRPS paper estimating the racial/ethnic composition of Medi-Cal enrollees: http://www.chbrp.org/analysis_methodology/docs/Estimating%20Impacts%20on%20Racial%20and%20Ethnic%20Disparities%20FINAL.pdf.

MEDICAL EFFECTIVENESS

As indicated in the *Background* section, the goal of asthma education and environmental assessment is to reduce preventable asthma-related morbidity by giving people with asthma and their caregivers the knowledge and tools they need to control asthma.

CHBRP's review of literature on the medical effectiveness of asthma education and environmental assessment interventions addresses interventions delivered by community health workers (CHWs) or other unlicensed personnel, because they are the persons most likely to pursue training as qualified asthma preventive service providers if AB 391 is enacted. Licensed health professionals, such as physicians, registered nurses, respiratory therapists, and licensed clinical social workers, are already authorized to provide asthma education under existing law. There are also billing codes that physicians can use to bill Medi-Cal and other insurers for providing asthma education. In addition, systematic reviews of studies of asthma education and environmental assessment interventions provided by licensed health professionals have been conducted, and findings from these systematic reviews indicate that asthma education provided by licensed health professionals improves health outcomes (Coffman et al., 2008; Crocker et al., 2011; Wolf et al., 2003).

CHBRP also limited its literature review to studies conducted in the United States that included a comparison group. Limiting the review to studies with a comparison group enables one to rule out the possibility that changes in asthma outcomes are due to other changes that occurred at the same time as the asthma education or environmental assessment intervention.

Research Approach and Methods

The search was limited to abstracts of studies published in English from 2006 to present. Studies of asthma education and environmental assessment interventions conducted by CHWs and other unlicensed personnel were identified through searches of PubMed, the Cochrane Library, EMBASE, Web of Science, and the Cumulative Index of Nursing and Allied Health Literature. Websites that produce and/or index meta-analyses and systematic reviews were also searched.[12] Of the 1,941 articles found in the literature review, 55 were reviewed for potential inclusion in this report on AB 391, and a total of 17 studies were included in the medical effectiveness review for this report. Two articles that presented findings from studies that combined home-based asthma education and environmental assessment with structural improvements in homes, such as weatherization, improvement in ventilation, and removal of water-damaged building materials (Breysse et al., 2014; Kercsmar et al., 2006) were not included in CHBRP's review because AB 391 would not require Medi-Cal to cover remediation of environmental triggers in homes. Nine studies of asthma education or environmental assessment interventions provided by unlicensed personnel were not included because the studies did not include a comparison group (Fisher-Owens et al., 2011; Margellos-Anast, 2012; Mitchell et al., 2012; Postma et al., 2011; Reddy et al., 2017; Shani et al., 2015; Turcotte et al., 2014; Turyk et al., 2013; Zuniga et al., 2012).The other 38 articles were eliminated because they addressed provision of asthma education or environmental assessment by a licensed health professional, such as a registered nurse or a pharmacist, were not conducted in the United States, or did not report research findings.

[12] These websites include the Agency for Healthcare Research and Quality (AHRQ), the International Network of Agencies for Health Technology Assessment (INAHTA), the National Health Service (NHS) Centre for Reviews and Dissemination, the National Institute for Health and Clinical Excellence (NICE), and the Scottish Intercollegiate Guideline Network.

Outcomes Assessed

Studies of asthma education and environmental assessment interventions address interventions delivered by community health workers (CHWs) or other unlicensed personnel have assessed multiple outcomes. Table 2 lists the seven major categories of outcomes that have been studied and provides examples of outcomes in each category. These categories were used in a systematic review of studies of environmental assessment interventions aimed at reducing exposure to multiple triggers of asthma symptoms (Crocker et al., 2011).

Asthma education and environmental assessment could improve health outcomes through the following mechanisms: Persons with asthma and their caregivers who receive asthma education and environmental assessment could improve their performance of behaviors known to reduce frequency of asthma symptoms, such as taking medications to control symptoms as directed and reducing exposure to allergens. If medications are used properly and exposure to asthma triggers is limited, persons with asthma may have fewer asthma exacerbations (i.e., asthma attacks), better quality of life, and better lung function. Having fewer asthma exacerbations and better lung function could reduce use of acute care services (e.g., hospitalizations, emergency department (ED) visits, unscheduled clinic visits) and reduce absences from work or school.

Table 2. Outcomes Assessed by Studies of Asthma Education or Home Assessment Provided by Unlicensed Personnel

Type of Outcome	Examples
Asthma management behaviors	• Correctly dispensing medications to relieve asthma symptoms (often called quick-relief medications or rescue medications) • Taking medications to prevent asthma symptoms (often called controller medications) • Using pillow and mattress covers
Levels of allergens	• Dust concentration
Asthma control	• Number of asthma exacerbations (i.e., asthma attacks) • Frequency of use of medications to relieve asthma symptoms
Quality of life	• Number of days or nights with asthma symptoms • Scores on instruments that measure quality of life across multiple domains
Physiologic outcomes	• Results of tests of lung function, such as forced expiratory volume
Use of health care services	• Number of emergency department visits
Productivity	• Number of days of school or work missed

Study Findings

Fifteen studies evaluated asthma education or environmental assessment interventions that CHWs or other unlicensed personnel provided to children with asthma and their caregivers (Bryant-Stephens and :Li, 2008; Campbell et al., 2015; Canino et al., 2008; Clark et al., 2010; Eggleston et al., 2005; Fisher et al., 2009; Garbutt et al., 2015; Horner and Fouladi, 2008; Krieger et al., 2005, 2009; Morgan et al., 2004; Parker et al., 2008; Rice et al., 2015; Seid et al., 2010; Williams et al., 2006).Two studies assessed interventions provided to adults with asthma (Krieger et al., 2015; Martin et al.2009). Due to the larger number of studies of children, CHBRP has greater confidence in findings regarding the impact of asthma education or home assessment on children with asthma than on adults with asthma.

Most studies compared persons who received asthma education or asthma education plus environmental assessment to persons who received no intervention or a minimal intervention, such as pamphlets about how to manage asthma or lists of organizations in the community that help people manage asthma (Bryant-Stephens and Li, 2008; Campbell et al., 2015; Canino et al., 2008; Clark et al., 2010; Eggleston et al., 2005; Fisher et al., 2009; Garbutt et al., 2015; Horner and Fouladi, 2008; Krieger et al., 2015; Martin

et al., 2009; Morgan et al.,2004; Parker et al., 2008; Rice et al., 2015; Williams et al., 2006).[13] A few studies compared different asthma education and environmental assessment interventions (Krieger et al., 2005, 2009; Seid et al.,2010). All studies of environmental assessment interventions addressed interventions provided in the homes of persons with asthma.

Findings are reported separately for studies in which CHWs or other unlicensed personnel only provided asthma education and studies in which unlicensed personnel provided both asthma education and environmental assessments because persons who received environmental assessments as well as asthma education received a wider range of services aimed at reducing asthma morbidity.

Asthma Management Behaviors

There is a preponderance of evidence from three RCTs that *asthma education* provided by unlicensed personnel improves use of quick-relief medications and controller medications for asthma (Clark et al., 2010; Horner and Fouladi, 2008; Rice et al., 2015). There is a preponderance of evidence from three RCTs that receiving both *asthma education and environmental assessment* provided by unlicensed personnel increases the likelihood that caregivers will perform behaviors that reduce children's exposure to asthma triggers in the home, such as using a vacuum cleaner, using pillow and mattress covers, changing sheets every week, removing carpeting, and reducing exposure to rodents (Bryant-Stephens and Li, 2008; Krieger et al., 2005; Parker et al., 2008).

Levels of Allergens

There is a preponderance of evidence from four RCTs that *asthma education and environmental assessment* provided by unlicensed personnel reduces levels of dust mite, cockroach, cat, and dog allergens in the home, although the specific allergens affected by the intervention vary across studies (Eggleston et al., 2005; Morgan et al., 2004; Parker et al., 2008; Williams et al., 2006). CHBRP did not identify any studies that examined the impact of asthma education alone provided by unlicensed personnel on exposure to asthma triggers in the home.

Asthma Control

Asthma control is typically measured by counting the number of asthma exacerbations (also called asthma attacks) that a person has and the number of times he or she uses medications to relieve asthma symptoms. Asthma symptoms are usually treated with a quick-relief medication that is dispensed through an inhaler or nebulizer. Frequent use of quick-relief medications is a sign that a persons' asthma is poorly controlled. If symptoms are severe, a person may also be treated with oral corticosteroid medication.

There is a preponderance of evidence from four RCTs that receipt of *asthma education* alone from unlicensed personnel does not affect the frequency of use of quick-relief medications or oral corticosteroids (Canino et al., 2008; Garbutt et al., 2015; Martin et al., 2009; Rice et al., 2015), but a single RCT suggests that asthma education is associated with improvement in a multi-component measure of asthma control that incorporates frequency of activity limitations and use of acute care services (Canino et al., 2008). Evidence about the effect of *asthma education plus environmental assessment* provided by unlicensed personnel asthma control is conflicting. Findings differ depending on whether the intervention is compared to no intervention or a less intensive intervention and on whether

[13] In some cases, persons in the control group received the intervention after the study was completed.to ensure that all participants received the intervention and, thus, an opportunity for improvement in asthma outcomes. Data on the effects of the intervention on the control group were not collected or analyzed.

the RCT examined a single measure of asthma control versus a multi-dimensional measure (Bryant-Stephens and Li, 2008; Campbell et al., 2015; Krieger et al., 2005, 2009, 2015).

Quality of Life (Including Frequency of Symptoms)

There is conflicting evidence from five RCTs about the effect of *asthma education* provided by unlicensed personnel on frequency of asthma symptoms depending on the outcome assessed and the group (child with asthma, adult with asthma, or asthma caregivers) affected (Canino et al., 2008; Clark et al., 2010; Garbutt et al., 2015; Martin et al., 2009; Seid et al., 2010). There is a preponderance of evidence from three RCTs that asthma education provided by unlicensed personnel does not improve quality of life for children with asthma (Clark et al., 2010; Rice et al., 2015; Seid et al., 2010). A single RCT found that asthma education provided by unlicensed personnel improves quality of life for adults with asthma (Martin et al., 2009). The preponderance of evidence from three RCTs suggests that asthma education provided by unlicensed personnel improves quality of life for caregivers of children with asthma (Canino et al., 2008; Garbutt et al.,2015; Seid et al., 2010).

There is a preponderance of evidence from eight RCTs that *asthma education combined with environmental assessments* provided by unlicensed personnel reduces the frequency of symptoms and activity limitations among children with asthma and improves caregivers' quality of life (Bryant-Stephens anad Li, 2008; Campbell et al., 2015; Eggleston et al., 2005; Krieger et al., 2005, 2009; Morgan et al., 2004; Parker et al., 2008; Williams et al., 2006). The finding from Krieger et al. (2009) is especially noteworthy because the study compared caregivers in an intervention group that received both clinic-based asthma education from nurses and home-based education and home assessment from CHWs to receiving clinic-based, nurse led education alone. This study's finding of higher quality of life among caregivers who received both interventions suggests that there may be benefits to adding home-based asthma education and environmental assessment to clinic-based education.

Physiologic Outcomes (i.e., Results of Tests of Lung Function)

There is a preponderance of evidence from three RCTs that *asthma education and environmental assessment* provided by unlicensed personnel does not improve lung function among persons with asthma (Krieger et al., 2015; Morgan et al., 2004; Parker et al., 2008). However, lung function may be influenced by many factors such as medication adherence, appropriate prescription of medications and other environmental allergens or irritants outside the home setting. CHBRP did not identify any studies that examined the impact of unlicensed personnel providing *asthma education* alone on persons with asthma's lung function.

Use of Health Care Services

There is conflicting evidence from four RCTs as to whether the provision of asthma education alone by unlicensed personnel reduces hospitalizations, ED visits, and unscheduled outpatient visits (Canino et al., 2008; Fisher et al., 2009; Garbutt et al., 2015; Seid et al., 2010). There is conflicting evidence from nine RCTs as to whether the provision of *asthma education plus environmental assessment* by unlicensed personnel reduces hospitalizations, ED visits, and unscheduled outpatient visits (Bryant-Stephens and Li, 2008; Campbell et al., 2015; Eggleston et al., 2005; Krieger et al., 2005, 2009, 2015; Morgan et al., 2004; Parker et al., 2008; Williams et al., 2006).

Productivity

One RCT finds that children with asthma who receive *asthma education* from unlicensed personnel had better grades than children in a control group (Clark et al., 2010). There is a preponderance of evidence

from four RCTs that *asthma education and environmental assessment* provided by unlicensed personnel do not reduce absences from school or work but this finding should be interpreted with caution because characteristics of intervention and comparison groups varied substantially across the RCTs that examined this outcome (Krieger et al., 2005, 2009, 2015; Morgan et al., 2004).

Summary of Findings

The charts in this section summarize CHBRP's findings regarding the strength of the evidence for the effects of specific medications, treatments, and services addressed by AB 391. Separate charts are presented for asthma education alone and for asthma education plus home assessment.

Figure 2. Asthma Education Provided by Unlicensed Personnel

Conclusion

CHBRP concludes that there is a preponderance of evidence based on eight RCTs that the provision of asthma education by unlicensed personnel increases the likelihood that people will use asthma medications properly and improves caregiver quality of life. However, evidence regarding effects of this type of intervention on other important outcomes, such as frequency of asthma symptoms and frequency of hospitalizations, ED visits, and unscheduled clinic visits, is conflicting. In addition, no RCTs have assessed the impact of this type of intervention on levels of allergens in the home or lung function.

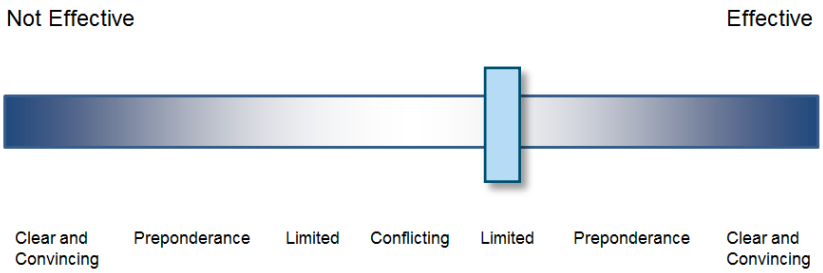
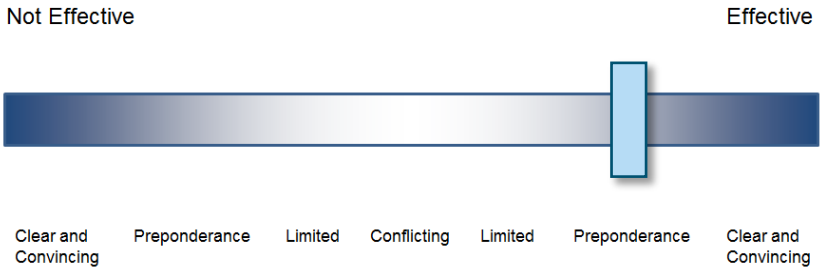


Figure 3. Asthma Education and Home Assessment Provided by Unlicensed Personnel

Conclusion

CHBRP concludes that there is a preponderance of evidence based on nine RCTs that the provision of asthma education plus environmental assessment in homes by unlicensed personnel increases the likelihood that caregivers will perform behaviors that reduce exposure to asthma triggers in the home, reduces levels of allergens in the home, reduces frequency of asthma symptoms and activity limitations, and improves caregivers' quality of life. There is conflicting evidence about the impact of this type of interventions on frequency of asthma exacerbations, absences from school or work, and hospitalizations, ED visits, and unscheduled clinic visits for asthma. The evidence suggests that this type of intervention has no effect on lung function. However, lung function may be influenced by many factors such as medication adherence, appropriate prescription of medications and other environmental allergens or irritants outside the home setting.



COST-RELATED LITERATURE ON ASTHMA PREVENTIVE SERVICES

As discussed in *Medical Effectiveness*, CHBRP identified 17 studies completed in the U.S., with a comparison group, which examined asthma education and home assessment interventions conducted by CHWs or other unlicensed personnel. Of these 17 studies, 7 studies included any information pertaining to the costs of the reported intervention (Table 3) (Bryant-Stephens and Li, 2008; Campbell et al., 2015; Eggleston et al., 2005; Garbutt et al., 2015; Kattan et al., 2005[14]; Krieger et al., 2005, 2015).

Unit Cost

Five interventions reported the unit cost of their interventions; these ranged from $135 to $293 per home visit (Bryant-Stephens and Li, 2008; Campbell et al., 2015; Eggleston et al., 2005; Kattan et al., 2005; Krieger et al., 2015). The unit costs of all 5 interventions include the cost of in-home asthma education along with varying degrees of home environmental remediation supplies, such as bedding covers, and, in some cases, HEPA (high-efficiency particulate air) air purifiers. Although unit-cost information from the body of the literature may be helpful in understanding how much interventions of this nature may cost, it is important to note many of these studies were conducted over 5 to 10 years ago, and unit-cost calculations take into account environmental remediation measures that vary from intervention to intervention.

Cost Effectiveness and Return on Investment

One study examined cost effectiveness of their program targeted to inner city children and estimated that over 2 years — 1 year of intervention and another of follow-up — the intervention cost was $27.57 per additional asthma symptom-free day gained (Kattan et al., 2005).

Two studies reported on the return on investment, or ROI, of the interventions (Campbell et al., 2015; Garbutt et al., 2015). ROI is a measure that compares the savings that a program achieves to the cost of administering the program. An ROI below 1:1 means the program costs more than the health care savings that were achieved. An ROI above 1:1 indicates savings were achieved that exceeded the program's costs. The ROI of a CHW asthma education and home assessment program in King County, Seattle, was determined to be 1.9:1.0, with cost savings stemming largely from estimated reductions in asthma-related hospitalizations (Campbell et al., 2015). The other study estimated their telephone-based peer coaching asthma education intervention for children with Medicaid had an ROI of 1.3:1.0, also due large in part to estimated reductions in asthma-related hospitalization and ED visits (Garbutt et al., 2015).

The body of the literature on the cost effectiveness and return on investment of CHW asthma education and home assessment interventions is small, but suggests these interventions may be have cost savings or positive ROI. To fully evaluate the potential cost savings stemming from the use of qualified asthma preventive service providers, it would be necessary to clearly define which individuals would participate in the asthma preventive service training programs, the costs associated with training, salary, and delivery of services, the likely case load of enrollees using these services, how eligible enrollees would be identified, the ability of Medi-Cal to gain participation by providers to use the services, participation by enrollees, and change in measurable outcomes.

[14] Kattan et al. (2005) examines the cost effectiveness of the same intervention reported on in Morgan et al. (2005), which is reviewed in CHBRP's Medical Effectiveness review in this report.

Table 3. Reported Cost Information From Intervention Studies on Asthma Education and Home Assessment Interventions Conducted by CHWs or Other Unlicensed Personnel

Reference	Participants	Intervention	Number and Unit Cost of Intervention	ROI
Bryant-Stephens and Li (2008)	Children (2–16 years) Participants from Children's Hospital of Philadelphia	-In-home asthma education (a) -Environmental remediation (b)	-Number of visits: 5 -Unit cost: $675 per participant CHBRP calculates $135 per home visit	Not reported
Eggleston et al. (2005)	Children (6–12 years) Participants from school-based asthma education program in Baltimore public schools	-In-home asthma education (a) -Environmental remediation (b)	-Number of visits: 3 home visits + 1 telephone call -Unit cost: $492 per participant CHBRP calculates appox. $160 per home visit	Not reported
Campbell et al. (2015)	Children (3–17 years) Participants from King County, Washington, Medicaid-enrolled children	-In-home asthma education (a) -Environmental remediation (b)	-Number of visits: 4 home visits + 2 telephone calls -Unit cost: $205 per visit/consultation	1.9:1.0
Garbutt et al. (2015)	Children (3–12 years) Participants from primary care pediatric practices in the St. Louis metropolitan area	-Telephone based asthma management training using peer trainers	-Number of calls: 18 (median) -Unit cost: not reported	1.3:1.0
Kattan et al. (2005) (c)	Children (6–11 years) Participants from: Inner-City Asthma Study (d)	-In-home asthma education (a) -Environmental remediation (b)	-Number of visits: 5 (median) -Unit cost: $1469 per participant CHBRP calculates $293 per home visit	ROI not reported, but authors estimated intervention cost was $27.57 per additional asthma symptom-free day
Krieger et al. (2005)	Children (4–12 years) Participants from: King County, Washington w/ income less than 200% federal poverty level or child in	-In-home asthma education (a) -Environmental remediation (b)	-High intensity intervention: 7 home visits + environmental remediation -Low intensity intervention: 1 home visit + limited	ROI not reported, but authors estimated decrease in 2-month urgent care costs between baseline and end of intervention ranged from $201 to $334

Reference	Participants	Intervention	Number and Unit Cost of Intervention	ROI
	Medicaid		resources -Unit cost: not reported	per child (high-intensity intervention) and $185 to $315 per child (low-intensity intervention)
Krieger et al. (2015)	Adults (18-65 years) Participants from: King County, Washington, w/ income less than 250% federal poverty level	-In-home asthma education (a) -Environmental remediation (b)	-Number of visits: 4.9 (mean) -Unit cost: $260 per home visit	Not reported

Source: CHBRP, 2017.

(a) Asthma home education could include education regarding asthma trigger avoidance and asthma management.

(b) Environmental remediation could include vacuum cleaner, bags, cleaning supplies, roach abatement supplies, and bedding covers; filters for homes with pets, and inhaler spacer, medication box.

(c) Examines cost effectiveness of Morgan et al. (2005), which is reported on in CHBRP's medical effectiveness review

(d) Multicity study: Boston, Chicago, Dallas, New York City, Seattle, Tacoma, and Tucson.

Societal Burden of Poorly Controlled Asthma

Medi-Cal enrollees account for about 30% of the state population and had approximately 90,000 asthma related emergency room visits in 2009. This is 50% of total statewide emergency visits for asthma (Milet, 2013). Although Medi-Cal enrollees had fewer asthma-related hospitalizations than emergency room visits, asthma hospitalizations are more costly and are an indicator of very poorly controlled asthma. In 2010, there were 14,500 asthma-related hospitalizations among the Medi-Cal population (40% of statewide asthma hospitalizations), which cost Medi-Cal an estimated $267 million (Milet, 2013). Moreover, hospital readmissions due to asthma — multiple asthma hospital admissions for a single enrollee over a year — cost Medi-Cal $53.4 million in 2010, which was 34% of the total cost of statewide asthma-related readmissions for that year.

Poorly controlled asthma may also result in missed school or work, potentially impacting educational attainment and wages earned. In California, adults with poorly managed asthma are 2.5 times more likely to miss work, and children with poorly controlled asthma are 70% more likely to miss school than individuals with properly managed asthma. As shown above, Medi-Cal enrollees are disproportionately affected by poorly and very poorly controlled asthma, and are therefore likely to be disproportionately represented among persons with missed work or school due to asthma. California data from the 2010 national Asthma Call-back Survey showed that approximately 129,000 children with current asthma missed, on average, 5 days of school due to asthma, for an estimated total of 1.2 million days of school lost to asthma. Likewise, approximately 649,000 adults (aged 18 to 69 years) missed an average 6.6 days of work or usual activities due to asthma symptoms, accounting for an estimated total of 11.8 million work days lost to asthma in 2010 (Milet, 2013).

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A group of faculty and staff undertakes most of the analysis that informs reports by the California Health Benefits Review Program (CHBRP). The CHBRP Faculty Task Force comprises rotating representatives from multiple University of California (UC) campuses. In addition to these representatives, there are other ongoing contributors to CHBRP from UC. This larger group provides advice to the CHBRP staff on the overall administration of the program and conducts much of the analysis.

CHBRP staff coordinates the efforts of the Faculty Task Force, works with Task Force members in preparing parts of the analysis, and coordinates all external communications, including those with the California Legislature.

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CHBRP assumes full responsibility for the report and the accuracy of its contents. All CHBRP bill analyses and other publications are available at www.chbrp.org.

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