



*THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF HEALTH AND HUMAN SERVICES*

DIVISION OF HEALTH CARE FINANCE AND POLICY

Two Boylston Street • Boston, MA 02116-4737
(617) 988-3100 • FAX (617) 727-7662 • TTY (617) 988-3175
www.mass.gov/dhcfp

MITT ROMNEY
GOVERNOR

RONALD PRESTON
SECRETARY

KERRY HEALEY
LIEUTENANT GOVERNOR

CHRISTINE C. FERGUSON
ASSISTANT SECRETARY - HEALTH

November 17, 2003

The Honorable Richard T. Moore
Commonwealth of Massachusetts
Massachusetts Senate
State House, Room 312D
Boston, MA 02133-1053

Dear Chairman Moore:

As requested, enclosed is the Division of Health Care Finance and Policy's review and evaluation of proposed legislation, SB 535 *An Act to Reduce Asthma Rates and Associated Costs in the Commonwealth*. The analysis was completed with information from some Massachusetts organizations and insurers, in addition to contracted actuarial services from The Lewin Group.

Please do not hesitate to contact Ian Lang, Chief of Staff, at 617-624-5200, if you have any questions. We hope this information is helpful to your Committee.

Sincerely,

Christine C. Ferguson

Enclosures

Cc: Senator Cheryl A. Jacques
Representative Jeffrey Sanchez

Commonwealth of Massachusetts
Mandated Benefit Review

**Review and Evaluation of Proposed Legislation Entitled:
“An Act to Reduce Asthma Rates and Associated Costs
in the Commonwealth”
Senate Bill No. 535**

Provided for:

Joint Committee on Health Care

**Division of Health Care Finance and Policy
Commonwealth of Massachusetts
November 17, 2003**

Table of Contents

Section	Page
Introduction.....	3
Overview of Proposed Legislation.....	3
Background of Issue.....	4
Organizations that Submitted Information to DHCFP.....	4
Diagnosing Asthma.....	4-5
Definitions.....	5-6
Current Coverage Levels.....	6-8
Cost of Asthma Supplies.....	8
Medical Efficacy.....	8-10
Financial Impact of Mandate.....	10-13
Legislative Activity in Other States.....	13
Conclusions.....	13
Endnotes.....	14
Appendix I: Report by The Lewin Group (actuarial assessment).....	1-15

According to Section 3 of Chapter 300 of the Acts of 2002: The Division of Health Care Finance and Policy (DHCFP) shall, upon request of a legislative committee that reports favorably on a mandated health benefit bill referred to them, conduct a review and evaluation of the bill.

INTRODUCTION

On August 19, 2003, the Joint Committee on Health Care referred proposed Senate Bill 535, named “*An Act to Reduce Asthma Rates and Associated Costs in the Commonwealth,*” to the Division of Health Care Finance and Policy for a review and evaluation. The bill’s lead sponsors are Senator Cheryl A. Jacques and Representative Jeffrey Sanchez.

OVERVIEW OF PROPOSED LEGISLATION

Senate bill 535 would require specified insurers¹ to provide coverage for certain asthma-related supplies, medication and services if those items are “within a category of benefits or services for which coverage is otherwise afforded, have been prescribed by a health care professional legally authorized to prescribe such items and if the items are medically necessary for the diagnosis or treatment of asthma.”

Such asthma-related items to be covered shall include, but shall not be limited to: peak flow monitors, spacers for inhalers, dual prescriptions for rescue inhalers, special bedding designed to reduce allergic reactions including but not limited to pillow cases and mattress encasings, and supplies and equipment approved by the Federal Drug Administration (FDA) for the purposes that they have been prescribed. The legislation does not limit the number or type of asthma supplies or medications mandated.

In addition, SB 535 would require coverage for asthma management training and education when provided by a certified asthma health care provider participating with the insurer or affiliated with a provider participating with the insurer. A “certified asthma health care provider” is defined as a licensed health care professional with expertise in asthma or an individual certified as an asthma educator by a nationally recognized certification program, including but not limited to the National Asthma Educator Certification Board. The bill would not require the insurer to contract with a certified asthma health care provider who is not already under contract.

¹ Specified insurers include Group Insurance Commission plans (covering active or retired state employees and dependents), Medicaid, individual or group blanket policies of accident and sickness insurance which provide hospital and surgical expense insurance, individual or group hospital service plans providing hospital and surgical expense insurance, subscription certificates under an individual or group medical service agreement that provides hospital and surgical expense insurance, and any individual or group health maintenance organization contract.

BACKGROUND OF ISSUE

Asthma has become a very common chronic disease in adults and children throughout the United States, steadily growing in annual prevalence from 31.4 people per 1000 in 1980 to 54.6 people per 1000 in 1996 (self-reported asthma prevalence during the preceding 12 months).¹ Although treatable, nearly 500,000 Americans are hospitalized for and more than 5,000 die of asthma annually.² Data from the 2002 Massachusetts Hospital Discharge Data Set (HDD) show that 12.2% of state residents' visits to emergency rooms had a primary diagnosis of asthma and 1.1% of inpatient admissions had this diagnosis. These data also show that the average charge per asthma-related emergency room visit was \$619 and the average charge per asthma-related hospitalization was \$6,734.

Most states do not have comprehensive systems to track asthma prevalence. Thus far, the best measure of prevalence is a CDC household survey on self-reported asthma rates. In 2001, the CDC survey found that the prevalence of asthma in adults age 18 and older was 7.2% nationally and 9.5% in Massachusetts (468,170 adults in Massachusetts with asthma). However, the American Lung Association estimated that in Massachusetts in 2000, 397,186 adults had asthma and 77,393 children age 17 and younger had asthma.³

Asthma occurs when the air passages to one's lungs, the bronchial tubes, become inflamed, causing minor to severe breathing problems, sometimes becoming life threatening. Over the past 20 years, treatments and medications have become more sophisticated, providing better symptom relief. In addition, providers now emphasize patient education and disease self-management, similar to their approach to diabetes, to avoid or reduce the frequency of asthma "flare-ups."

ORGANIZATIONS THAT SUBMITTED INFORMATION TO DHCFP

The following organizations, associations and insurers submitted information to the DHCFP to be considered for this analysis: Massachusetts Association of Health Plans, Boston Urban Asthma Coalition, Medicaid plans (Primary Care Clinician (PCC) Plan and Boston Medical Center Health Net Plan (BMCHP)), Group Insurance Commission self-funded plans (Commonwealth PPO and GIC Indemnity), Blue Cross and Blue Shield (BCBS), Tufts Health Plan, Fallon Community Health Plan, Harvard Pilgrim Health Care (HPHC), Health New England and Network Health.

DIAGNOSING ASTHMA

The National Committee for Quality Assurance (NCQA) maintains the Health Plan Employer Data and Information Set (HEDIS) which is "a set of standardized performance measures designed to ensure that purchasers and consumers have the information they need to reliably compare the performance of managed health care plans."

Managed care organizations use the HEDIS methodology to identify members with “persistent asthma” as follows:

Step 1. Identify members as having persistent asthma who, during the year prior to the measurement year, had any of the following:

- at least one Emergency Department (ED) visit based on specified visit codes, with asthma (ICD-9 code 493) as the principal diagnosis
- at least one acute inpatient discharge based on specified visit codes, with asthma as the principal diagnosis
- at least four outpatient asthma visits based on specified visit codes, with asthma as one of the listed diagnoses and at least two asthma medication “dispensing events” (one prescription of an amount lasting 30 days or less)
- at least four asthma medication dispensing events (i.e., an asthma medication was dispensed on four occasions)

Step 2. For a member identified as having persistent asthma because of at least four asthma medication dispensing events, and leukotriene modifiers were the sole asthma medication dispensed, the member must:

- meet any one of the other four criteria, or
- have at least one diagnosis of asthma in any setting in the year prior to the measurement year.

DEFINITIONS

(obtained from the Mayo Clinic’s website, mayoclinic.com, unless otherwise noted)

Asthma: A condition characterized by the inflammation and narrowing of the bronchial tubes as well as the production of excess mucus. These disturbances cause wheezing, coughing and difficulty breathing.

Dry powder inhaler: An inhaler that releases medication as a dry powder when breathed in rapidly (breath-actuated). The act of inhalation disperses the powder. See also inhaler, metered-dose inhaler and rescue inhaler.

Inhaler: A hand-held portable device that delivers medication directly to the patient’s lungs. Some inhalers deliver short-acting medications for immediate relief and others deliver long-term control medications that are taken on a regular basis. See also dry powder inhaler, metered-dose inhaler, and rescue inhaler.

Metered-dose inhaler: An inhaler that generally uses a chemical propellant to push doses of medication out of the inhaler. See also dry powder inhaler, inhaler and rescue inhaler.

Nebulizer: Nebulizers are designed for those who can’t use an inhaler, such as infants, young children and those who are seriously ill. The device works by converting medication into a mist and delivering it through a mask worn over the nose and mouth.

Peak expiratory flow rate: The speed with which one can breathe out (exhale), as measured by a peak flow meter. If one has asthma, the peak expiratory flow rate may be used to monitor lung

function. If the airways narrow due to asthma, the flow rate will fall and alert the patient to the change.

Peak flow meter/monitor: A hand-held device that measures peak expiratory flow rate.

Rescue inhaler: A rescue inhaler is one that delivers drugs called short-acting bronchodilators, including albuterol (Proventil, Ventolin) and pirbuterol (Maxair), which provide immediate relief of asthma symptoms. Those inhalers used to relieve the symptoms of asthma are known as *reliever* or "rescue" medications and those that reduce the inflammation of asthma are known as *controller* medications. Inhaled reliever medications are used on an as-needed basis, whereas inhaled controller medications are generally used on a fixed dosage—a specific number of puffs, a specific number of times per day. (American Academy of Allergy, Asthma and Immunology aaaai.org)

Spacer: A short tube that attaches to an inhaler to help improve delivery of the medication to the patient's lungs. The spacer acts as a holding chamber to prevent medication from escaping into the surrounding air. This allows a slower, more direct inhalation that increases the amount of medication reaching the patient's lungs rather than being deposited in their mouth or throat.

Triggers: Allergens, such as pollen and dust mites, or irritants, such as exercise and cigarette smoke, that cause an increase in asthma signs and symptoms.

CURRENT COVERAGE LEVELS

SB 535, if enacted as a state law, would be preempted by the federal Employee Retirement Income Security Act (ERISA) which precludes state laws from applying to self-insured benefit plans and their members. The 2001 Massachusetts Employer Health Insurance Survey showed that approximately 26% of Massachusetts employees enrolled in employer-sponsored health plans are covered by ones that are self-funded.

Most public and private Massachusetts insurers already cover many asthma drugs and supplies. Peak flow meters, spacers for inhalers, dual prescriptions for rescue inhalers and other products such as nebulizers are almost universally covered (as long as the member's plan includes that benefit category, for example, prescription drug or durable medical equipment coverage, and most do). Most insurers also cover asthma management training and education. However, items such as air purifiers and special bedding designed to reduce allergic reactions are less frequently covered.

Coverage for Certain Asthma Supplies and Products

(Items are covered under pharmacy, durable medical equipment or respiratory benefit categories.)

The list below shows current coverage policies concerning asthma for many of the large insurers in Massachusetts. The following plans/insurers responded to DHCFP's survey about coverage and cost of asthma supplies and services: Medicaid plans (Primary Care Clinician (PCC) Plan and Boston Medical Center Health Net Plan (BMCHP)), Group Insurance Commission self-funded plans (Commonwealth PPO and GIC Indemnity), Blue Cross and Blue Shield (BCBS), Tufts Health Plan, Fallon Community Health Plan, Harvard Pilgrim Health Care (HPHC), Health

New England and Network Health. Note: GIC members (state employees, retirees and dependents) enrolled in fully-insured managed care plans are subject to that insurers' policies. GIC's self funded plans would not have to abide by this mandate but their coverage policies are included for information purposes.

Coverage for Certain Asthma Supplies (✓ represents items covered by that insurer)

Insurer	Peak flow meters	Spacers for Inhalers	Dual Prescriptions for Rescue Inhalers	Special Bedding	Training and Education
DMA PCC Plan	✓	✓	✓	✓ (prior approval)	Not covered
DMA BMCHP	✓	✓	✓	✓ (prior approval)	✓
GIC Comm. PPO	✓	✓	✓	Not covered	✓
GIC Indemnity	✓	Not covered	Not covered	Not covered	✓
BCBS	✓	✓	✓	Not covered	✓
Tufts Health Plan	✓	✓	✓	Not covered	✓
Fallon Community Health Plan	✓	✓	✓	Not covered	✓
Harvard Pilgrim Health Care	✓	✓	✓	Not covered	✓
Health New England	✓	✓	✓	Not covered	✓
Network Health	✓	✓	✓	Not covered	✓

Note: Some plans responded that they covered nebulizers, DMA PCC Plan, DMA BMCHP, and Fallon; however, nobody volunteered that they did not cover the item.)

SB 535 also states that the list of items to be covered is not limited to the items specified in the bill. The bill states that any asthma-related items (within a category of benefits or services for which coverage is otherwise afforded) legally prescribed by a health care professional and those that are medically necessary for the diagnosis or treatment of asthma also must be covered. In addition, the bill requires coverage for “supplies and equipment approved by the Federal Drug Administration for the purposes of which they have been prescribed...” This mandate then is open-ended, making it difficult to determine the potential financial and medical effect of covering unspecified items. Current bill language would require coverage for new products or medications coming onto the market, some of which cost thousands of dollars. For example, a newly approved drug called Xolair, prescribed to prevent certain types of asthma attacks, is expected to cost approximately \$10,000 annually.

Our analysis concentrates on the items mentioned in the legislation: peak flow monitors, spacers for inhalers, dual prescriptions for rescue inhalers, special bedding and asthma management

training and education. Other items DHCFP researched for this report but cannot provide detailed analysis for include nebulizers, air purifiers, vaporizers, and inhalers.

COST OF ASTHMA SUPPLIES

Some insurers covering Massachusetts residents provided cost information for asthma supplies and medications; however, the reported cost of specific asthma supplies and medications sometimes varied significantly between plans. This cost variation may be due to slight product differences among similar items on the market.

Peak flow meters: Cost reported to range from \$2.18 to \$42.75

Spacers for inhalers: Cost reported to range from \$4.42 to \$75.75 (\$10 at National Allergy Supply, Inc.)

Inhalers: Cost reported for one inhaler is approximately \$15 (however, there could be large variability in price depending on the drug the inhaler administers)

Nebulizer: Cost reported is approximately \$100.25 (only one plan responded) (\$65 for Nebulizer system—listed on asthmafreedom.com)

Special Bedding: Massachusetts Association of Health Plans reported costs of Allersoft Cotton on the Allergy and Asthma Relief Store’s website at www.forallergy.com/allersoft_cotton.htm Cost on this website is: \$13.95 per standard pillow encasing, \$68.95 per twin mattress/box spring encasing, \$81.95 per full mattress/box spring encasing and \$96.95 per queen mattress/box spring encasing.

MEDICAL EFFICACY

The Division of Health Care Finance and Policy must report: 1) the expected impact of the benefit on the quality of patient care and the health status of the population, and 2) the results of any research demonstrating the medical efficacy of the treatment or service compared to alternative treatments or services or not providing the treatment or service.

For the purpose of this analysis, a recommendation by the National Institutes of Health (NIH) National Heart, Lung and Blood Institute (NHLBI) for a particular asthma supply or service constitutes sufficient evidence of medical efficacy. Information regarding the medical efficacy of items specifically mentioned in SB 535 follows:

1. Peak flow monitors:

As stated in Guidelines for the Diagnosis and Management of Asthma published by the NHLBI, medical literature states that “patients with moderate-to-severe persistent asthma should learn how to monitor their peak expiratory flow (PEF) and have a peak flow meter at home. Peak flow monitoring during exacerbation of asthma is recommended for patients

with moderate-to-severe persistent asthma to: determine severity of the exacerbation and guide therapeutic decisions in the home, clinician's office, or emergency department."⁴

2. *Spacers for inhalers:*

The NHLBI guidelines for asthma report that spacers/holding chambers are useful for all patients and are particularly recommended for young children and older adults and for use with inhaled corticosteroids.

3. *Dual prescriptions for rescue inhalers:*

The NHLBI guidelines state that patients with persistent asthma need both long-term control medications and quick-relief (rescue) medications. Rescue inhalers deliver short-acting medications necessary for immediate relief of asthma symptoms. Dual prescriptions would allow someone to have a control inhaler and a rescue inhaler.

4. *Special bedding designed to reduce allergic reactions including but not limited to pillow cases and mattress encasings:*

The New England Journal of Medicine recently published results from two studies that tested the clinical benefit of allergen-impermeable bed covers. Both studies found that these covers alone produced no significant improvement of clinical symptoms. The conclusion from one study reads, "Mite-proof bedding covers, as part of a structured allergy-control program, reduced the level of exposure to mite allergens. Despite the success of the intervention, this single avoidance measure did not lead to a significant improvement of clinical symptoms in patients with allergic rhinitis."⁵ The second study concluded, "Allergen-impermeable covers, as a single intervention for the avoidance of exposure to dust-mite allergen, seem clinically ineffective in adults with asthma."⁶

5. *Asthma management training and education when provided by a certified asthma health care provider (a licensed health care professional with expertise in asthma or an individual certified as an asthma educator):*

As stated in the NHLBI guidelines, four studies have found that comprehensive asthma management programs, including the use of peak flow monitors, achieved significant improvements in health outcomes.⁷ The guidelines recommend that "clinicians teach patients and families the essential information, medication skills, self-monitoring techniques, and environmental control measures."⁸

In addition, two local plans reported conducting studies that measured the cost effectiveness of their asthma self-management programs. The Boston Medical Center HealthNet Plan (BMCHP) evaluated its Asthma Health Management Program in 2002 to study the pre- and post-intervention resource utilization. The study found "a statistically significant decrease in asthma related hospitalizations, a statistically significant increase in the intensity of controller medication and inhaled rescue medication usage and a statistically significant decrease in oral steroid usage. The study also found that asthma related charges declined by 32% and

overall charges declined by 20%. The study concluded that the Asthma Health Management Program appears to be effective in reducing preventable health care utilization and costs.”⁹

Harvard Pilgrim Health Care instituted an Asthma Disease Management Program that they report resulted in reduced hospital and emergency department utilization by members with asthma.

FINANCIAL IMPACT OF MANDATE

DHCFP staff took into account the following points for the financial impact analysis:

- Most insurers in Massachusetts already cover peak flow monitors/meters, spacers for inhalers, dual prescriptions for rescue inhalers, and asthma management training and education.
- There is no clinical evidence that special bedding designed to reduce allergic reactions is medically effective in reducing symptoms. Only two insurers (Medicaid and Network Health, both through prior authorization) provide coverage for bedding.
- Asthma management training and education has been found to reduce asthma-related hospitalizations and charges. Therefore, we will provide a direct cost of the education mandate along with a net cost of this service including the savings that it might generate if all asthmatics in the state were trained. Presumably, those plans that offer training and education already realize the benefit of it in their members' utilization even if they have not conducted effectiveness studies.
- SB 535's language is open-ended, requiring coverage for any items legally prescribed by a health care professional and medically necessary for the diagnosis and treatment of asthma. However, many such services and products not specified in SB 535 exist, with a wide range of costs and limited testing for effectiveness, making a complete analysis of financial impact difficult. DHCFP also cannot predict the future cost of this mandate as new modalities of asthma treatment emerge.

A financial analysis performed by an actuary from The Lewin Group (contracted by DHCFP) found that employers and nongroup purchasers could see either a slight increase or decrease in cost per member per month due to this mandate depending on the use of high or low cost and savings estimates/projections. Lewin's results, briefly summarized in answers to the following questions, examine the cost per asthma patient and the cost per member per month, in addition to even more detailed cost information. Please refer to Appendix I for The Lewin Group's entire report.

DHCFP is required by Section 3 of Chapter 300 of the Acts of 2002 to answer the following questions:

1. *The extent to which the proposed insurance coverage would increase or decrease the cost of the treatment or service over the next 5 years.*

Since most items already are covered, except special bedding, this mandate would have little effect on the cost of the mandated items over time. The Lewin Group projected the annual cost/savings of the mandate and its affect on per insured/member per month insurance premiums for the next 5 years (through 2008). The projections do not include the cost for items new to the market in future years (due to the open-ended mandate). Please see pages 6-9 of Appendix I for their results.

2. *The extent to which the proposed coverage might increase the appropriate or inappropriate use of the treatment or service over the next 5 years.*

Since peak flow monitors/meters, spacers for inhalers and dual prescriptions for rescue inhalers are already covered by most Massachusetts insurers, this legislation would do little to increase coverage and use of these items. However, since special bedding generally is not covered by Massachusetts insurers, requiring its coverage could increase the use of this item unless physicians refuse to prescribe it, citing evidence of its ineffectiveness (please refer to the Medical Efficacy section of this report). We don't know whether there would be an increase in utilization of a newly mandated item if medical evidence existed that proved its ineffectiveness. More enrollees might request the item from their doctor but doctors would be left to balance the clinical evidence of its ineffectiveness with patient pressure and the implication of clinical effectiveness that a state mandate would erroneously imply.

3. *The extent to which the insurance coverage may affect the number and types of providers of the mandated treatment or service over the next 5 years.*

Since most of the large insurers in Massachusetts already cover most of these products, the mandate probably will not increase the number of providers prescribing their use. However, if the legislation causes more beneficiaries to be educated and trained to self-manage, more licensed health professionals with expertise in asthma might be needed unless the treating physician has time to assume this new role.

4. *The extent to which the mandated treatment or service might serve as an alternative for more expensive or less expensive treatments or services.*

If more asthmatics are trained to self-manage, the education and training might contribute to a reduction in emergency room visits and hospitalizations (as seen in the studies performed by BMCHP and HPHC). Thus, self-management training could produce some cost offsets.

5. *The effects of the mandated benefit on the cost of health care, particularly the premium, administrative expenses and indirect costs of large and small employers, employees and non-group purchasers.*

Excluding items already covered by Massachusetts insurers, The Lewin Group estimates that using high cost and low savings projections, the newly covered items (including items specified in the bill, cost savings from education, and nebulizers, vaporizers, humidifiers, aero masks and nebulizer sets) would cost \$.20 per insured person per month. However, using low cost and high savings projections the newly covered items would actually save \$.18 per insured person per month. Therefore, the range of cost per insured per month is between \$.20 and $-\$.18$. The Lewin Group's report shows estimates using intermediate cost and savings projections as well.

The Lewin Group estimates that the total cost of the newly covered items per asthma patient per month is between \$2.67 and $-\$2.33$.

Please see Appendix I for The Lewin Group's report which includes detailed estimates as well as the methodology used to calculate the numbers.

6. *The potential benefits and savings to large and small employers, employees and non-group purchasers.*

Most of the items specified in bill language already are covered, so there would not be any incremental costs, benefits or savings from mandating their coverage. In addition, since special bedding has been proven to be medically ineffective in reducing clinical symptoms, there isn't likely to be any benefit or savings from mandating its coverage. If asthma self-management training were instituted for all asthmatics (including the DMA PCC plan, which currently does not cover it) there is a potential for cost savings due to a reduction in emergency room visits, doctor's visits, and hospitalizations of that plan's asthmatic members. Results from the Boston Medical Center and HPHC's studies on the success of education and training support this conclusion.

In addition, employers might benefit by seeing a reduction in employees' use of sick time and an increase in productivity if their condition were better managed. This, however, has not been proven.

7. *The effect of the proposed mandate on cost-shifting between private and public payers of health care coverage.*

This mandate applies to both private and public (Medicaid) insurers; therefore cost-shifting likely will not become a problem. In addition, again, most large insurers in the state already cover most of these products.

8. *The cost to health care consumers of not mandating the benefit in terms of out-of-pocket costs for treatment or delayed treatment.*

Since most large insurers in the state already cover most of these benefits, there would be little cost to consumers if the legislature does not enact the bill. Special bedding is the only

benefit not generally covered (it also is proven not to be effective in reducing asthma symptoms); therefore, in the absence of a mandate, if consumers wish to purchase it, they would have to continue to pay for it themselves as they presumably do currently.

9. *The effects on the overall cost of the health care delivery system in the Commonwealth.*

This mandate would have a minimal effect on the cost of the delivery system because most benefits already are covered by Massachusetts insurers. Please see the answer to question number 5 for more information and refer to The Lewin Group's report (Appendix I).

LEGISLATIVE ACTIVITY IN OTHER STATES

As of January 2003, few states had introduced legislation to mandate coverage for specific asthma supplies, services or drugs and no state appears to have such a law in place. According to the National Conference of State Legislatures, approximately 20 bills related to insurance and asthma and 43 bills related to medical concerns regarding asthma were introduced in 2002. These bills included language on various issues including covering annual physical exams for asthma, requiring Medicaid reimbursement for certain drugs without requiring prior authorization, and a Connecticut bill that would have required managed care organizations to provide coverage for treatment and devices for people with asthma.

Seven states have statutes related to insurance and asthma including a law in Georgia requiring insurers to cover asthma as a medical emergency. Twenty-two states have statutes related to medical treatment and asthma.¹⁰

CONCLUSIONS

Most items specifically listed in Senate bill 535 are already covered by insurers in Massachusetts, except bedding; therefore, this legislation would not affect cost or coverage for these items already covered. The cost of items not already covered would add between \$.20 PMPM to -\$.18 PMPM (a savings) depending on the use of high versus low savings/cost estimates. Asthma management training and education would be the source for the savings from this mandate; however, all major insurers surveyed already provide this service except Medicaid's Primary Care Clinician (PCC) plan. Therefore, there are minimal savings left to be gained through mandating coverage for training and education.

Finally, Senate bill 535's language is open-ended, requiring coverage for any asthma-related items legally prescribed by a health care professional and medically necessary for the diagnosis and treatment of asthma (if such items are within a category of benefits or services that the plan already covers). This implies that other asthma-related items not specified also must be covered and that as asthma-related drugs or devices are approved by the FDA, they must be covered by the state's insurers. Therefore, future costs due to this open-ended mandate remain unknown.

ENDNOTES

¹ Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report, “Surveillance for Asthma – United States, 1980-1999; March 29, 2002/51 (SS01); 1-13.

² Mayo Clinic website, www.mayoclinic.com

³ American Lung Association, “Estimated Prevalence of Lung Disease by Lung Association Report, May 2002.”

⁴ National Institutes of Health, National Heart, Lung and Blood Institute, Clinical Practice Guidelines—Guidelines for the Diagnosis and Management of Asthma; NIH Publication #: 97-4053, October 1997, page 28.

⁵ The New England Journal of Medicine, “Evaluation of Impermeable Covers for Bedding in Patients with Allergic Rhinitis,” Volume 349: 237-246, Number 3, July 17, 2003.

⁶ The New England Journal of Medicine, “Control of Exposure to Mite Allergen and Allergen-Impermeable Bed Covers for Adults with Asthma,” Volume 349:225-236, Number 3, July 17, 2003.

⁷ National Institutes of Health, National Heart, Lung and Blood Institute, Clinical Practice Guidelines—Guidelines for the Diagnosis and Management of Asthma; NIH Publication #: 97-4053, October 1997, page 28.

⁸ National Institutes of Health, National Heart, Lung and Blood Institute, Clinical Practice Guidelines—Guidelines for the Diagnosis and Management of Asthma; NIH Publication #: 97-4053, October 1997, page 125.

⁹ DHCFP asthma survey response from Boston Medical Center HealthNet Plan.

¹⁰ National Conference of State Legislatures, “Legislative Actions Related to Asthma,” updated January 2003.

APPENDIX I:

ACTUARIAL ASSESSMENT BY THE LEWIN GROUP

**PROPOSED SENATE BILL NO. 535: “AN ACT TO REDUCE
ASTHMA RATES AND ASSOCIATED COSTS IN THE
COMMONWEALTH”**



The LEWIN GROUP

Actuarial Assessment of Massachusetts Senate Bill No. 535: “An Act to Reduce Asthma Rates and Associated Costs in the Commonwealth”

Prepared for:

**Division of Health Care Finance and Policy
Commonwealth of Massachusetts**

November 13, 2003

I. SUMMARY AND RESULTS 1

II. METHODS, ASSUMPTIONS, AND SOURCES 10

I. SUMMARY AND RESULTS

The Massachusetts Division of Health Care Finance and Policy retained The Lewin Group to perform an actuarial assessment of the potential costs and savings associated with Senate Bill No. 535, "An act to reduce Asthma Rates and Associated Costs in the Commonwealth. The assessment includes estimates of the following:

- The number of insured persons that would be affected by the legislation
- The number of persons with asthma among the affected insured population (i.e., those insured persons who would be affected by the legislation)
- The unit costs for the special benefits for asthma patients that would be mandated by the legislation (including benefits mentioned in the legislation: peak flow monitors, spacers for inhalers, dual prescriptions for rescue inhalers, special bedding, asthma management training and education; and unspecified supplies and equipment that have been approved by the federal Food and Drug Administration for the purposes for which they have been prescribed: including nebulizers, nebulizer sets, vaporizers, humidifiers, and aero masks)
- The likely utilization rates among asthma patients for the special benefits
- The direct cost of the special benefits per asthma patient
- The portion of the direct cost that is already being paid by health plans because they already provide some of the special benefits
- The gross savings in health care costs that is expected to result from the provision and utilization of the special benefits, per asthma patient
- The portion of the gross savings that is already being realized by health plans because they result from the utilization of benefits that the plans already provide
- The net cost (or savings) of the special benefits per asthma patient (i.e., direct cost minus gross savings), both for the benefits that health plans already are providing and for benefits that would be newly provided as a result of the legislation
- The net cost (or savings) *per insured person affected by the legislation*, both for the benefits that health plans already are providing and for benefits that would be newly provided as a result of the legislation.

The assessment also includes projections of the cost and savings amounts described above over the next five years, i.e., through 2008.

* * * * *

A summary of the results of our analysis for four different scenarios are presented in Tables 1 through 4 below. **All amounts in these tables are in 2002 dollars.**

- Table 1 presents the worst case scenario: relatively high costs combined with relatively low savings.
- Table 2 presents the best case scenario: relatively low costs combined with relatively high savings.
- Table 3 presents one of the intermediate (i.e., more likely) scenarios: intermediate costs (closer to the low end than to the high end of the cost range) combined with relatively high savings. This is a revised version of the scenario described in items 4 through 6 of the November 7 e-mail from Lewin to the Division.
- Table 4 presents another intermediate scenario: intermediate costs combined with intermediate savings (closer to the high end than to the low end of the savings range).

TABLE 1: High Cost / Low Savings Estimates

MONTHLY AMOUNTS	Currently Provided Special Benefits	Newly Provided Special Benefits	Total
Cost per Asthma Patient	\$24.67	\$4.33	\$29.00
Savings per Asthma Patient	\$10.33	\$1.67	\$12.00
Net Cost / (Savings) per Asthma Patient	\$14.33	\$2.67	\$17.00
Cost per Insured Person	\$1.87	\$0.33	\$2.20
Savings per Insured Person	\$0.78	\$0.13	\$0.91
Net Cost / (Savings) per Insured Person	\$1.09	\$0.20	\$1.29

TABLE 2: Low Cost / High Savings Estimates

MONTHLY AMOUNTS	Currently Provided Special Benefits	Newly Provided Special Benefits	Total
Cost per Asthma Patient	\$6.83	\$1.67	\$8.50
Savings per Asthma Patient	\$20.00	\$4.00	\$24.00
Net Cost / (Savings) per Asthma Patient	(\$13.17)	(\$2.33)	(\$15.50)
Cost per Insured Person	\$0.52	\$0.13	\$0.64
Savings per Insured Person	\$1.51	\$0.30	\$1.82
Net Cost / (Savings) per Insured Person	(\$1.00)	(\$0.18)	(\$1.17)

TABLE 3: Intermediate Cost / High Savings Estimates

MONTHLY AMOUNTS	Currently Provided Special Benefits	Newly Provided Special Benefits	Total
Cost per Asthma Patient	\$12.75	\$2.58	\$15.33
Savings per Asthma Patient	\$20.42	\$3.58	\$24.00
Net Cost / (Savings) per Asthma Patient	(\$7.67)	(\$1.00)	(\$8.67)
Cost per Insured Person	\$0.97	\$0.20	\$1.16
Savings per Insured Person	\$1.55	\$0.27	\$1.82
Net Cost / (Savings) per Insured Person	(\$0.58)	(\$0.08)	(\$0.66)

TABLE 4: Intermediate Cost / Intermediate Savings Estimates

MONTHLY AMOUNTS	Currently Provided Special Benefits	Newly Provided Special Benefits	Total
Cost per Asthma Patient	\$12.75	\$2.58	\$15.33
Savings per Asthma Patient	\$16.33	\$2.83	\$19.17
Net Cost / (Savings) per Asthma Patient	(\$3.58)	(\$0.25)	(\$3.83)
Cost per Insured Person	\$0.97	\$0.20	\$1.16
Savings per Insured Person	\$1.24	\$0.21	\$1.45
Net Cost / (Savings) per Insured Person	(\$0.27)	(\$0.02)	(\$0.29)

* * * * *

Our projections of the population affected by the legislation (total insured and number of asthma patients) and the baseline per capita health care costs (i.e., under current law, without the proposed legislation) are shown in Exhibit A. Projections of the costs and savings associated with the special benefits, corresponding to each of the tables above, are shown in Exhibits B-1 through B-4.

EXHIBIT A: Population and Baseline Cost Projections

	2002	2003	2004	2005	2006	2007	2008
Population							
Number of insured persons affected *							
<i>Children</i>	1,155,000	1,163,085	1,171,227	1,179,425	1,187,681	1,195,995	1,204,367
<i>Adults (18+)</i>	2,840,000	2,859,880	2,879,899	2,900,058	2,920,359	2,940,801	2,961,387
<i>Total</i>	3,995,000	4,022,965	4,051,126	4,079,484	4,108,040	4,136,796	4,165,754
Number of asthma patients affected							
<i>Children</i>	63,203	63,645	64,091	64,540	64,991	65,446	65,904
<i>Adults (18+)</i>	239,311	240,986	242,673	244,372	246,082	247,805	249,540
<i>Total</i>	302,514	304,632	306,764	308,911	311,074	313,251	315,444
Population growth rate		0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
Per Capita Health Care Costs (under current law)							
Gross annual premiums **							
<i>Children</i>	1,535	1,689	1,797	1,911	2,033	2,163	2,301
<i>Adults (18+)</i>	3,119	3,433	3,652	3,885	4,132	4,396	4,676
Net benefit costs							
Non-asthmatics							
<i>Children</i>	1,310	1,442	1,533	1,631	1,735	1,846	1,963
<i>Adults (18+)</i>	2,658	2,925	3,112	3,310	3,521	3,745	3,984
Asthma patients							
<i>Children</i>	2,262	2,489	2,648	2,817	2,996	3,187	3,390
<i>Adults (18+)</i>	3,641	4,007	4,262	4,534	4,823	5,130	5,457
Wtd avg for all insured persons *							
<i>Children</i>	1,362	1,499	1,594	1,696	1,804	1,919	2,041
<i>Adults (18+)</i>	2,741	3,016	3,209	3,413	3,631	3,862	4,108
Health care cost trend		10.1%	6.4%	6.4%	6.4%	6.4%	6.4%

* Excludes persons covered by self-insured employer-sponsored plans.

** Gross premiums (i.e., net benefit costs plus insurers' expenses and margins) for all persons, including asthma patients.

EXHIBIT B-1: High Cost / Low Savings Projections

	2002	2003	2004	2005	2006	2007	2008
Costs and Savings for Proposed Legislation							
Annual cost of special benefits (high cost scenario)							
Per asthma patient							
<i>Currently provided</i>	296.00	325.79	346.55	368.63	392.12	417.11	443.69
<i>New coverage</i>	52.00	57.23	60.88	64.76	68.89	73.28	77.95
Per insured person *							
<i>Currently provided</i>	22.41	24.67	26.24	27.91	29.69	31.58	33.60
<i>New coverage</i>	3.94	4.33	4.61	4.90	5.22	5.55	5.90
Total cost (\$000s)							
<i>Currently provided</i>	89,544	99,245	106,308	113,874	121,979	130,660	139,959
<i>New coverage</i>	15,731	17,435	18,676	20,005	21,429	22,954	24,587
Annual gross savings (low savings scenario)							
Per asthma patient							
<i>Currently realized</i>	124.00	136.48	145.18	154.43	164.27	174.74	185.87
<i>New coverage</i>	20.00	22.01	23.42	24.91	26.49	28.18	29.98
Per insured person *							
<i>Currently realized</i>	9.39	10.33	10.99	11.69	12.44	13.23	14.07
<i>New coverage</i>	1.51	1.67	1.77	1.89	2.01	2.13	2.27
Total cost (\$000s)							
<i>Currently realized</i>	37,512	41,576	44,534	47,704	51,099	54,736	58,632
<i>New coverage</i>	6,050	6,706	7,183	7,694	8,242	8,828	9,457
Annual net cost/(savings)							
Per asthma patient							
<i>Currently realized</i>	172.00	189.31	201.37	214.20	227.85	242.37	257.82
<i>New coverage</i>	32.00	35.22	37.46	39.85	42.39	45.09	47.97
Per insured person *							
<i>Currently realized</i>	13.02	14.34	15.25	16.22	17.25	18.35	19.52
<i>New coverage</i>	2.42	2.67	2.84	3.02	3.21	3.41	3.63
Total cost (\$000s)							
<i>Currently realized</i>	52,032	57,669	61,774	66,170	70,880	75,924	81,328
<i>New coverage</i>	9,680	10,729	11,493	12,311	13,187	14,125	15,131

* Excludes persons covered by self-insured employer-sponsored plans.

EXHIBIT B-2: Low Cost / High Savings Projections

	2002	2003	2004	2005	2006	2007	2008
Costs and Savings for Proposed Legislation							
Annual cost of special benefits (low cost scenario)							
Per asthma patient							
<i>Currently provided</i>	82.00	90.25	96.00	102.12	108.63	115.55	122.91
<i>New coverage</i>	20.00	22.01	23.42	24.91	26.49	28.18	29.98
Per insured person *							
<i>Currently provided</i>	6.21	6.83	7.27	7.73	8.23	8.75	9.31
<i>New coverage</i>	1.51	1.67	1.77	1.89	2.01	2.13	2.27
Total cost (\$000s)							
<i>Currently provided</i>	24,806	27,493	29,450	31,546	33,791	36,196	38,772
<i>New coverage</i>	6,050	6,706	7,183	7,694	8,242	8,828	9,457
Annual gross savings (high savings scenario)							
Per asthma patient							
<i>Currently realized</i>	240.00	264.15	280.98	298.89	317.94	338.20	359.75
<i>New coverage</i>	48.00	52.83	56.20	59.78	63.59	67.64	71.95
Per insured person *							
<i>Currently realized</i>	18.17	20.00	21.28	22.63	24.08	25.61	27.24
<i>New coverage</i>	3.63	4.00	4.26	4.53	4.82	5.12	5.45
Total cost (\$000s)							
<i>Currently realized</i>	72,603	80,469	86,196	92,330	98,902	105,941	113,480
<i>New coverage</i>	14,521	16,094	17,239	18,466	19,780	21,188	22,696
Annual net cost/(savings)							
Per asthma patient							
<i>Currently realized</i>	(158.00)	(173.90)	(184.98)	(196.77)	(209.31)	(222.65)	(236.83)
<i>New coverage</i>	(28.00)	(30.82)	(32.78)	(34.87)	(37.09)	(39.46)	(41.97)
Per insured person *							
<i>Currently realized</i>	(11.96)	(13.17)	(14.01)	(14.90)	(15.85)	(16.86)	(17.93)
<i>New coverage</i>	(2.12)	(2.33)	(2.48)	(2.64)	(2.81)	(2.99)	(3.18)
Total cost (\$000s)							
<i>Currently realized</i>	(47,797)	(52,975)	(56,746)	(60,784)	(65,110)	(69,744)	(74,708)
<i>New coverage</i>	(8,470)	(9,388)	(10,056)	(10,772)	(11,539)	(12,360)	(13,239)

* Excludes persons covered by self-insured employer-sponsored plans.

EXHIBIT B-3: Intermediate Cost / High Savings Projections

	2002	2003	2004	2005	2006	2007	2008
Costs and Savings for Proposed Legislation							
Annual cost of special benefits (medium cost scenario)							
Per asthma patient							
<i>Currently provided</i>	153.00	168.40	179.13	190.54	202.68	215.60	229.34
<i>New coverage</i>	31.00	34.12	36.29	38.61	41.07	43.68	46.47
Per insured person *							
<i>Currently provided</i>	11.59	12.75	13.56	14.43	15.35	16.33	17.37
<i>New coverage</i>	2.35	2.58	2.75	2.92	3.11	3.31	3.52
Total cost (\$000s)							
<i>Currently provided</i>	46,285	51,299	54,950	58,861	63,050	67,537	72,344
<i>New coverage</i>	9,378	10,394	11,134	11,926	12,775	13,684	14,658
Annual gross savings (high savings scenario)							
Per asthma patient							
<i>Currently realized</i>	245.00	269.65	286.84	305.12	324.56	345.24	367.24
<i>New coverage</i>	43.00	47.33	50.34	53.55	56.96	60.59	64.45
Per insured person *							
<i>Currently realized</i>	18.55	20.42	21.72	23.10	24.58	26.14	27.81
<i>New coverage</i>	3.26	3.58	3.81	4.06	4.31	4.59	4.88
Total cost (\$000s)							
<i>Currently realized</i>	74,116	82,145	87,992	94,254	100,962	108,148	115,845
<i>New coverage</i>	13,008	14,417	15,443	16,543	17,720	18,981	20,332
Annual net cost/(savings)							
Per asthma patient							
<i>Currently realized</i>	(92.00)	(101.26)	(107.71)	(114.57)	(121.88)	(129.64)	(137.90)
<i>New coverage</i>	(12.00)	(13.21)	(14.05)	(14.94)	(15.90)	(16.91)	(17.99)
Per insured person *							
<i>Currently realized</i>	(6.97)	(7.67)	(8.16)	(8.68)	(9.23)	(9.82)	(10.44)
<i>New coverage</i>	(0.91)	(1.00)	(1.06)	(1.13)	(1.20)	(1.28)	(1.36)
Total cost (\$000s)							
<i>Currently realized</i>	(27,831)	(30,846)	(33,042)	(35,393)	(37,912)	(40,611)	(43,501)
<i>New coverage</i>	(3,630)	(4,023)	(4,310)	(4,617)	(4,945)	(5,297)	(5,674)

* Excludes persons covered by self-insured employer-sponsored plans.

EXHIBIT B-4: Intermediate Cost / Intermediate Savings Projections

	2002	2003	2004	2005	2006	2007	2008
Costs and Savings for Proposed Legislation							
Annual cost of special benefits (medium cost scenario)							
Per asthma patient							
<i>Currently provided</i>	153.00	168.40	179.13	190.54	202.68	215.60	229.34
<i>New coverage</i>	31.00	34.12	36.29	38.61	41.07	43.68	46.47
Per insured person *							
<i>Currently provided</i>	11.59	12.75	13.56	14.43	15.35	16.33	17.37
<i>New coverage</i>	2.35	2.58	2.75	2.92	3.11	3.31	3.52
Total cost (\$000s)							
<i>Currently provided</i>	46,285	51,299	54,950	58,861	63,050	67,537	72,344
<i>New coverage</i>	9,378	10,394	11,134	11,926	12,775	13,684	14,658
Annual gross savings (medium savings scenario)							
Per asthma patient							
<i>Currently realized</i>	196.00	215.72	229.47	244.09	259.65	276.19	293.79
<i>New coverage</i>	34.00	37.42	39.81	42.34	45.04	47.91	50.96
Per insured person *							
<i>Currently realized</i>	14.84	16.34	17.38	18.48	19.66	20.91	22.25
<i>New coverage</i>	2.57	2.83	3.01	3.21	3.41	3.63	3.86
Total cost (\$000s)							
<i>Currently realized</i>	59,293	65,716	70,393	75,403	80,770	86,518	92,676
<i>New coverage</i>	10,285	11,400	12,211	13,080	14,011	15,008	16,076
Annual net cost/(savings)							
Per asthma patient							
<i>Currently realized</i>	(43.00)	(47.33)	(50.34)	(53.55)	(56.96)	(60.59)	(64.45)
<i>New coverage</i>	(3.00)	(3.30)	(3.51)	(3.74)	(3.97)	(4.23)	(4.50)
Per insured person *							
<i>Currently realized</i>	(3.26)	(3.58)	(3.81)	(4.06)	(4.31)	(4.59)	(4.88)
<i>New coverage</i>	(0.23)	(0.25)	(0.27)	(0.28)	(0.30)	(0.32)	(0.34)
Total cost (\$000s)							
<i>Currently realized</i>	(13,008)	(14,417)	(15,443)	(16,543)	(17,720)	(18,981)	(20,332)
<i>New coverage</i>	(908)	(1,006)	(1,077)	(1,154)	(1,236)	(1,324)	(1,419)

* Excludes persons covered by self-insured employer-sponsored plans.

II. METHODS, ASSUMPTIONS, AND SOURCES

The worksheet that we used to produce our cost and savings estimates is shown in Exhibits C-1 through C-3.

We used the following method, with the sources noted, to derive the number of insured persons who would be affected by the proposed legislation:

1. We took the 2002 population estimates for Massachusetts, for children (age 0-17) and non-elderly adults (age 18-64), from the U.S. Census Bureau's *American Community Survey Change Profile, 2000-2002*. There were approximately 1,433,000 children and 3,970,000 non-elderly adults in Massachusetts in 2002.
2. We subtracted out the uninsured, based on the uninsured percentages (3.2% for children and 9.2% for non-elderly adults) from the report entitled *Health Insurance Status of Massachusetts Residents (Third Edition)*, which the Division published in January 2003.
3. We used Table A-2 from the publication entitled *Health Insurance Coverage in the United States: 2002*, published by the U.S. Census Bureau in September 2003, to determine the portion of the insured population that were covered by direct-purchase policies (6.0% for children and 8.8% for non-elderly adults) and the portion that were covered by employer-sponsored plans (71.3% for children and 81.8% for non-elderly adults). We applied adjustment factors to these percentages (about 0.88 for children and 0.97 for adults) so that the number of remaining insured persons would match the number and age distribution of non-elderly Massachusetts residents covered by Medicaid/SCHIP, as reported in (a) the publication entitled *MassHealth 1115 Demonstration Project Annual Report SFY02*, and (b) the Kaiser Family Foundation's "State Health Facts Online" web site.
4. We estimated the portion of employer-insured persons who were in self-funded plans by using the 26.7% figure reported in the Division's *2001 Employer Health Insurance Survey*.

The number of insured persons affected by the proposed legislation is equal to the total number of insured persons minus the number covered by employer-sponsored self-insured plans, derived in the manner described above.

The baseline annual gross premiums for health insurance for adults in 2002 were derived from the family health insurance premiums used in "The Economic Burden of Health Care and Illness on Typical Massachusetts Families," a report written by Dryfoos, Kuhlthau, Bigby, Hanrahan, Lassen, and Robinson and sponsored by the Women's Education and Industrial Union, Boston, MA. Separate amounts for employer-sponsored plans (\$8,300) and individually purchased policies (\$11,400) were used. We derived the single (i.e., non-family) premiums for adults by using the ratio of the average family premium to the average single premium reported in *Employer Health Benefits: 2003 Annual Survey*, published by the Kaiser Family Foundation and the Health Research and Educational Trust. We assumed that the individual cost for children would be half of the individual cost for adults, based on the child-to-adult cost ratios that we have seen in the health plans that we have worked with.

The net benefit costs were derived by assuming that 10% of the gross premium for employer-sponsored plans and 25% of the premium for individually purchased policies was used to cover

the health insurers' expenses and margins. The cost distribution by type of service was taken from the 2003 *Tillinghast HealthMAPS Medical Rate Manual and Software*.

The asthma prevalence rates were calculated by dividing (a) the American Lung Association's estimates of the number of children and adults in Massachusetts who had asthma in 2000, by (b) the total Massachusetts population in 2000 for the corresponding age groups as reported by the U.S. Census Bureau.

The additional health cost burden attributable to asthma was assumed to be \$900 per patient, for both children and adults. This was consistent with the amounts and/or ratios reported in the following publications:

- *Trends in Asthma Morbidity and Mortality*, published by the American Lung Association in March 2003
- *Data Fact Sheet: Asthma Statistics*, published by the National Heart, Lung, and Blood Institute
- "Health Care Utilization and Cost in Children with Asthma and Selected Comorbidities," by Grupp-Phelan, Lozano, and Fishman, published in the *Journal of Asthma* 38(4) in 2001.

The distribution of the asthma cost burden by type of service was derived from the cost statistics reported in *Trends in Asthma Morbidity and Mortality*.

The cost per patient for peak flow meters, spacers, rescue inhalers, and other supplies and equipment not specified in the legislation is based on the numbers reported to the Division by the Boston Medical Center HealthNet Plan.

The unit cost for special bedding was assumed to be \$97, based on the price for a pillow encasing and mattress encasing, averaged between the standard/twin size and the queen size versions, as reported on www.forallergy.com. The utilization of this benefit among asthma patients was assumed to be 5%.

The \$328 cost per patient for asthma management training was the middle estimate provided to the Division by the health plans that it surveyed. Utilization of this benefit among asthma patients was assumed to be 25%, 50%, or 100%, depending on the scenario.

The savings (as a percentage of cost by type of service) associated with the special asthma benefits, for (a) inpatient costs and (b) other costs, were chosen so that the "high scenario" total estimated savings percentage was consistent with the results reported by the Boston Medical Center HealthNet Plan. The "low scenario" estimated savings percentages were set at half of the "high scenario" percentages. In general, the low, medium, and high savings estimates are consistent with the range of benefit-to-cost ratios reported in the September 1996 report of the National Asthma Education and Prevention Program Task Force on the Cost Effectiveness, Quality of Care, and Financing of Asthma Care (NIH Publication No. 55-807).

* * * * *

The population growth rate for the projections is equal to the average annual growth rate for the population of Massachusetts between 2000 and 2002, as reported by the U.S. Census Bureau. The health care cost trend (i.e., the annual increase in per-capita costs) is taken from the most recent health spending projections produced by the Office of the Actuary at the Centers for Medicare and Medicaid Services.

EXHIBIT C-1: Cost and Savings Worksheet (Page 1)

	Children	Adults		
	0-17	18-64	65 & up	Total
Total population #'s	1,433,401	3,969,801	807,375	6,210,578
Age distribution	23%	64%	13%	100%
	0-18	19-64		
Uninsured %	3.2%	9.2%		
Insured %	96.8%	90.8%		
Insured #	1,388,000	3,605,000		
	0-17	18-64		
Direct purchase %	6.0%	8.8%		
Adjustment factor	0.8810	0.9713		
Direct purchase #	73,000	308,000		
				adjustment factors (to match other data sources)
				0.952381 1.05 0.925
Employer-insured %	71.3%	81.8%		
Adjustment factor	0.8810	0.9713		
Employer-insured #	872,000	2,866,000		
				⌋ ⌋ ⌋ ⌋ ⌋ ⌋ ⌋ ⌋ ⌋ ⌋ ⌋ ⌋ ⌋
ER self-insured %	26.7%	26.7%		
ER self-insured #	233,000	765,000		
ER non-SI #	639,000	2,101,000		
Direct purchase #	73,000	308,000		
Public insured #	443,000	431,000	874,000	
	51%	49%	100%	

Insured persons affected by bill			Total
ERNSI & PI	1,082,000	2,532,000	3,614,000
Direct purchase	73,000	308,000	381,000
Total	1,155,000	2,840,000	3,995,000

"ERNSI" refers to persons covered by employer-sponsored non-self-insured plans.

"PI" refers to publicly insured persons (generally Medicaid, since we're focusing on the non-elderly population).

"Direct purchase" refers to persons covered by non-group insurance policies.

EXHIBIT C-2: Cost and Savings Worksheet (Page 2)

	Children	Adults	
Average gross annual premiums			
ERNSI & PI	\$1,500	\$3,000	
Direct purchase	\$2,050	\$4,100	
Cost distribution %			
Hospital: IP	19.0%	26.9%	
ER	1.6%	1.5%	
OP	22.0%	19.6%	
Phys: IP	5.4%	8.8%	
OP	26.0%	18.7%	
Rx	13.5%	13.6%	
Other	12.5%	10.9%	
Total	100.0%	100.0%	
Asthma patients			
Prevalence	5.5%	8.4%	7.6%
ERNSI & PI #	59,208	213,358	272,566
Direct purchase #	3,995	25,953	29,948
Total	63,203	239,311	302,514
Asthma burden per patient			
ERNSI & PI	\$900	\$900	
Direct purchase	\$900	\$900	

admin	net benefit costs:	
10.0%	\$1,350	\$2,700
25.0%	\$1,538	\$3,075

blended per capita amts. (based on dist.of insured persons affected by bill)					
gross premiums			net benefit costs		
children	adults	both	children	adults	both
\$1,535	\$3,119	\$2,661	\$1,362	\$2,741	\$2,342

blended per capita amounts (based on distribution of asthma patients)					
gross premiums			net benefit costs		
children	adults	both	children	adults	both
\$1,535	\$3,119	\$2,788	\$1,362	\$2,741	\$2,453

(NOT INCLUDING ASTHMA BURDEN [i.e., extra asthma costs])

extra asthma costs:	% of net costs for each category of patient:	
% of average costs	67%	33%
32% of gross	59%	29%
37% of net		

EXHIBIT C-3: Cost and Savings Worksheet (Page 3)

	Children	Adults						
Asthma cost distribution \$						1.00005	1.001	adjustment factors
Hospital: IP	\$386	\$386	ALA estimates	4,030.0	4,030.2			42.9%
ER	\$73	\$73	for total asthma	762.3	762.3			8.1%
OP	\$47	\$47	costs in US by	491.7	491.7			5.2%
Phys: IP	\$36	\$36	type of service	377.3	377.3			4.0%
OP	\$86	\$86	(\$billions)	896.6	896.6			9.5%
Rx	\$273	\$273		2,841.6	2,841.7			30.3%
Other	\$0	\$0		--	0.0			0.0%
Total	\$900	\$900		9,399.5	9,400.0			100.0%
DM cost per patient			% cov'd already					
peak flow monitors	\$0.12	\$0.12	100%					
spacers	\$0.12	\$0.12	92%			utilization	unit	
rescue inhalers	\$0.96	\$0.96	96%			rate	cost	
special bedding	\$4.85	\$4.85	15%			5%	\$97	
other sup./equip.	\$14.28	\$14.28	58%					
AM training	\$164.00	\$164.00	87%			50%	\$328	asthma management training: util rate = 25%, 50%, or 100%
Total	\$184	\$184	\$153	83%				
			\$31 = new cost					
DM savings per patient			savings %:					
Hospital: IP	\$154	\$154	40.0%	low: 25%, medium: 40%, high: 50%				
ER	\$29	\$29	40.0%					
OP	\$4	\$4	8.0%	low: 5%, medium: 8%, high: 10%				
Phys: IP	\$14	\$14	40.0%					
OP	\$7	\$7	8.0%					
Rx	\$22	\$22	8.0%					
Other	\$0	\$0	8.0%					
Total	\$230	\$230	\$196	85%				
			\$34 = new savings					
						benefit-to-cost ratios:		
						1.4 to 1 (on AM training)		
						1.3 to 1 (on total cost)		
						1.1 to 1 (on total cost; new cost & savings only)		