

Using Medicaid Data
to Track Asthma
in New England:
A Status Report

Produced by the



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INTRODUCTION

Based on an analysis of 2001 data from the CDC-based Behavioral Risk Factor Surveillance System (BRFSS), over 1.7 million New England residents -- including 411,000 children -- have been diagnosed with asthma in their lifetimes. This groundbreaking analysis was coordinated and conducted by the Asthma Regional Council of New England (ARC), utilizing pediatric asthma data that were, for the first time, uniformly collected across the six New England states. The results uncovered that New England residents had disproportionately high rates of asthma and that certain populations were at greatest risk across the New England states.

The value of this New England BRFSS report in highlighting these critical issues underlines the importance of asthma surveillance, which is still an evolving science. There remains a great need to create more sophisticated surveillance systems to track asthma prevalence and health care utilization in a consistent manner across state boundaries and at neighborhood/community levels – all with the eventual goal of integrating this health status data with outdoor and indoor environmental data in order to assess links between the disease and possible causes and/or triggers.

As health departments in New England and across the United States make strides to improve their asthma surveillance systems, more are turning to administrative databases, such as Medicaid, to learn about the health of asthmatics in the population. This report will review and assess the value of mining the Medicaid database for population-based asthma information, and, in doing so, will help illustrate some of the strengths and limitations of using Medicaid data for other public health purposes as well.

What is Asthma?

Asthma is characterized by chronic inflammation of the airways that causes episodes of wheezing, coughing, and difficulty in breathing. It is among the most common diseases in the U.S. today, with an estimated 20 million cases nationwide (CDC, 2001). The disease often begins in childhood and is one of the leading causes of school absenteeism, emergency room visits, and hospitalizations for children. Researchers are still searching for its cause, but there is increasing understanding of factors affecting asthma's severity. The total annual cost of asthma in the U.S. in 2000 was estimated to be \$12.7 billion, including \$3.2 billion for the cost of treating asthma in children less than 18 years of age (Weiss and Sullivan, 2001).

Why is Tracking Asthma Important?

Given the significant quality-of-life and economic implications of asthma, states and the federal government must have an overall picture of who has asthma; where, when and what type of health care they receive; and the demographic/environmental factors which are thought to influence the onset and course of the disease. Without this information, the public health agencies and the public and private health care systems are limited in their respective abilities to track, evaluate, and modify the expensive, and sometimes elaborate, clinical and public health interventions which are undertaken to address asthma. Our understanding of asthma must continue to evolve, which requires a reliable surveillance system, comparable across states, which helps us track trends and changes in the disease over time.

State health departments are obliged to monitor their progress towards reaching certain Healthy People 2010 goals with respect to asthma -- yet their ability to track this progress (or lack thereof) may be limited by the paucity of state-specific data on asthma-related health care utilization. National statistics are available from surveys (e.g., the National Ambulatory Medical Care Survey, National Hospital Medical Care Survey), but the sample size of these surveys makes it difficult to provide state-specific estimates. State-specific information on health care and asthma is typically derived from hospital discharge and emergency department data. However, these data are limited because many asthmatics, if their asthma is appropriately managed, are only rarely hospitalized, if at all.

One of the best tools at our disposal is the Behavioral Risk Factor Surveillance System (BRFSS). Developed under the leadership of the CDC, the BRFSS is used in some form in all states and provides good quality data by state on adult asthma prevalence, but it is not used by every state to track child asthma. Further, the BRFSS does not provide useful community-level data that can be integrated with environmental indicators. Using data from health insurance administrative databases, including Medicaid and private insurers, is one method recommended by the CDC for obtaining more complete state-specific asthma health care information (CDC, 1996).

What is Medicaid?

Medicaid was created in 1965 as Title XIX of the Social Security Act to provide health care services to low-income families. Medicaid is an entitlement program jointly administered and financed by the federal and state governments. The structure of Medicaid and guidelines for services are dictated at the federal level. States are required by federal guidelines to insure certain individuals, including those who are eligible for Temporary Assistance for Needy Families (TANF), pregnant women and children under age 6 with family incomes up to 133% of the federal poverty level, and children ages 6-19 with family incomes up to 100% of the federal poverty level. Beyond this, however, states establish their own eligibility standards, determine the scope of services offered, and set payment rates for providers.

Currently, Medicaid insures over 50 million people in the United States; about 50% are children (Kaiser, 2004). Medicaid is the primary mechanism for providing health insurance to low-income children under age 18. Coverage for uninsured kids was expanded in 1997, with the enactment of Title XXI, the State Children's Health Insurance Program (SCHIP). As of 2002, Medicaid covered more than 25 million children and SCHIP covered more than five million. Together, these two programs provide coverage to almost half of all low-income children in the United States (Kaiser, 2004). As of 2001, about 1.6 million people in New England were enrolled in Medicaid, including 730,000 children. *In New England, about 1 in every 4 children is insured by Medicaid.*

Why Use Medicaid Data?

Medicaid data are a potentially rich source of information for analyzing asthma-related health care, as well as geographic and demographic variations in asthma and asthma care. These data also have the potential for helping us examine the relationship between environmental changes and health care utilization because of the possibility for geographically coding (geo-coding) the data by residence.

It is important to note that Medicaid data consist mostly of what are called "claims" and "encounter" data -- both of which are used by Medicaid to account for billing, reimbursement and health care utilization, and neither of which was originally established to provide public health surveillance data. Although the different implications of these two types of data are discussed below, both of these categories of data

contain rich information with potentially significant public health value – information such as patient demographics, asthma-related primary care visits, outpatient visits, specialist visits, emergency room visits, hospitalizations, and medications prescribed and purchased (though not necessarily used).

Despite the fact that the federal government has encouraged states to use and share health data for public health surveillance, data collected by Medicaid agencies are frequently not shared with or used by their public health counterparts to track asthma. In 1999, HRSA, CMS, and CDC published a brief espousing the importance of data sharing between state agencies for public health purposes (HRSA News Brief, 1999). They cited the following benefits derived from data sharing:

1. Encouraging the development of integrated information systems at the state level to support the evolving role of state government in assuring appropriate, accessible, cost-effective care for underserved or vulnerable populations.
2. Enhancing the technical capacity of states to analyze data from multiple sources to support policy decision-making and program monitoring.
3. Promoting the development and implementation of common performance measures across multiple programs to improve effectiveness.
4. Improving public health surveillance to ensure appropriate care for those enrolled in the Medicaid program.

To encourage data sharing between Medicaid and public health, CMS, CDC, and HRSA published a model data agreement for states to use to ensure patient confidentiality in the data sharing process <http://www.cms.hhs.gov/states/letters/smd10228.asp>.

More recently, in 2002, CDC funded 17 states, including four in New England, to develop surveillance systems linking environmental and health data. For asthma, this is especially relevant because many environmental factors are considered to be “triggers” of asthma exacerbations and are therefore critical to control of asthma in children. Using these grants, innovative programs within and beyond New England have started moving towards linking data sources, including Medicaid, to enable environmental tracking of asthma triggers.

The goal of this report is to summarize existing and potential asthma surveillance efforts using Medicaid data in the six New England States. The six New England states are Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont. Specifically, this report will:

- (a) Review how public health departments in New England are currently accessing and analyzing Medicaid data.
- (b) Discuss the factors facilitating and hindering data sharing between state asthma programs and Medicaid agencies.
- (c) Highlight model initiatives using Medicaid data outside of New England.
- (d) Consider the general limitations and benefits of using Medicaid data to study asthma.

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METHODS

Participants in this project primarily included personnel from state health departments and Medicaid agencies in the six New England States. We also consulted the regional and headquarters offices of the Centers for Medicare and Medicaid Services (CMS) and the Centers for Disease Control and Prevention (CDC), as well as researchers working with Medicaid data. Two structured interviews were developed for state Departments of Health and state Medicaid personnel. At least three individuals in each state were contacted.

Across New England, state public health departments have various names (e.g. Bureau of Health, Department of Health and Human Services), but for the purposes of this report all health departments will be referred to as “Departments of Public Health (DPH).”

FINDINGS

A. States See Value in Using Medicaid Data for Asthma Surveillance

Asthma epidemiologists and asthma program managers in most of the New England states were interested in investing time and resources to analyze Medicaid data, but many pointed out that analyses of asthma based on Medicaid data should be part of a larger asthma surveillance system that included BRFSS, emergency department, hospitalization data, and school-based surveys. Medicaid data were considered a valuable piece of an asthma surveillance program, but most of those interviewed believed that these data needed to be supplemented with data from the general non-Medicaid population.

Motivation for accessing and using Medicaid data for asthma surveillance varied across the New England states. State health department personnel reported that Medicaid data could be useful for:

- Obtaining better information on asthma in low income populations
- Investigating asthma in children, especially among children between the ages of 0-4 who are not captured by school-based surveillance systems
- Aiding in the development of the state Asthma Plan which each state develops to guide its own asthma related priorities and activities
- Evaluating “asthma program” effectiveness
- Monitoring appropriateness of prescribed medications
- Examining the cost of asthma in order to encourage a focus on prevention
- Monitoring the use of patient-level written asthma management plans by providers
- Examining health care utilization including regular physician visits and acute visits, and the content of these visits

Currently state DPHs are primarily interested in using Medicaid data to examine asthma in children. However, several states see Medicaid data as a means to examine asthma in adults as well. Moreover, some state asthma programs expressed interest in obtaining Medicare data to examine asthma and chronic obstructive pulmonary disease (COPD) among the elderly.

B. States Vary in their Use of Medicaid Data for Asthma Surveillance

All six New England Departments of Public Health have asthma programs, designed to address asthma through various approaches in their state, but not all of them are currently using Medicaid data for asthma surveillance. Several programs have access to Medicaid data; some programs are in the process of obtaining Medicaid data; and most state asthma programs in New England believe that Medicaid data can supplement existing asthma surveillance efforts.

Of the 6 New England states surveyed:

- 3 state asthma programs currently have access to information on asthma based on Medicaid data:
 - The Maine DPH asthma program has had access to Medicaid data through a nonprofit organization contracted by the state. They have received aggregate Medicaid data from them as requested.
 - The Rhode Island DPH asthma program has access to tables on asthma prevalence and health care utilization in the Medicaid population created by personnel at Medicaid as requested.
 - Vermont DPH asthma epidemiologists have direct access to raw Medicaid data updated on a weekly basis, and are currently assessing how to use and analyze the data.
- The Connecticut DPH asthma program is working on an addendum expanding an existing Memorandum of Understanding (MOU) to begin receiving Medicaid data. The CT asthma program currently has access to information about asthma in the Medicaid population through a non-profit organization for children's health care funded by the state legislature.
- New Hampshire's DPH has developed a statewide decision support system for Medicaid data. Personnel in the state asthma program have recently starting using this database and anticipate creating asthma reports from the Medicaid data during the coming year.
- The Massachusetts asthma program is not currently using Medicaid for asthma surveillance, but may initiate an interagency agreement between the asthma program and the Medicaid agency in the future after evaluating available asthma data sources and their potential for program development. The state asthma program has recently hired an asthma epidemiologist who is in the process of examining data available for asthma surveillance in the state. There is a history of using Medicaid data in other public health programs (e.g. lead poisoning) within the Massachusetts DPH.

C. Accessing Medicaid Data Can Be Challenging

1. Barriers to Access

State asthma managers and epidemiologists who have access to Medicaid data, and those attempting to gain access, identified several barriers to obtaining Medicaid data:

- a. Issues of Confidentiality: Several states noted that with the passage of HIPAA, there is more caution surrounding release of data.
- b. Insufficient Resources: Due to the complexity of Medicaid data files, some DPH and Medicaid data analysts suggested that it may be too resource-intensive for states to conduct analyses of Medicaid data themselves.

- c. Funding Constraints: There are costs associated with paying an outside organization for Medicaid data or for state personnel to conduct analyses.
- d. Data Sharing Restrictions: Based on Section 1902(a) (7) of the Social Security Act, Medicaid data can only be released for purposes “directly connected with the administration of the plan.”

2. Catalysts Facilitating Medicaid Data Sharing with DPH Asthma Programs

Despite the impediments to accessing and using Medicaid data, several state DPH asthma programs are currently using or will have use of Medicaid data in the future. They discussed several factors that facilitated their ability to access and analyze Medicaid data.

- a. Organizational Structure of State Agencies: The process of accessing Medicaid data by asthma programs in New England differs from state to state in part due to variations in the structure of state government and state policies. In some states, the Medicaid agency is part of the same agency or division as the Department of Public Health, while in other states, the state Medicaid agency is separate from the DPH and personnel from the different divisions have little contact with each other. This has implications for data availability and accessibility. For example, in Vermont, Medicaid is administered as part of the Department of Prevention, Assistance, Transition, and Health Access, which is under the umbrella of the Agency of Human Services. Vermont’s Department of Health is also subsumed under the Agency of Human Services. Personnel in the Department of Health acknowledge that this arrangement has helped to facilitate access to Medicaid data.

A similar government structure exists in New Hampshire, where Medicaid and the Department of Public Health are part of the Department of Health and Human Services (DHHS). DHHS in New Hampshire initiated the creation of a decision support system for Medicaid data that will be accessible to public health personnel. Through the decision support system, NH’s asthma program will be able to analyze asthma-related Medicaid data, and eventually asthma data from commercial health plans as well.

New Hampshire and Vermont stand in contrast to New England states where the Medicaid agency is separate from the Department of Public Health. In states with separate agencies, DPH asthma personnel are less likely to have access to Medicaid data, and those who do have access receive aggregate data only.

- b. Political Will: In several states, legislative initiatives have improved DPH access to health data. For example, in 2001, the Maine State Legislature passed a bill creating the Maine Health Data Processing Center (MHDPC), which will maintain an all-payer, all provider health care claims database. MHDPC is expected to be operational in 2004 and will contain hospital discharge data, and commercial health plan and Medicaid data. Epidemiologists in Maine will be able to receive data from MHDPC for a fee.

In Vermont, the current governor has endorsed a chronic care initiative to help reduce the burden of chronic disease in the state, including asthma. Part of this initiative includes creating partnerships between public health agencies and the Vermont health care system. Personnel at the Vermont DPH and VT’s Medicaid agency believe that this initiative has helped encourage collaboration and allowed the asthma epidemiologists to start analyzing Medicaid data.

- c. Health Costs Are of Concern: In New Hampshire, a Decision Support System for health care data was developed primarily to help identify the main factors causing health costs to rise.

However, this system will also provide information on how frequently individual health care providers perform certain procedures, and, through a combination of pharmaceutical, doctor, and hospital claims, it will help identify where certain diseases, like asthma, are most prevalent. Reports from this system, including a report on asthma cost trends and average cost per asthma episode, will be generated on a regular basis. Designated individuals will be given access to these data, and they will be able to run their own queries. The DPH asthma program in NH has permission to access the decision support system.

- d. Established Relationships Between Agencies: Several DPH personnel noted that ongoing relationships with Medicaid personnel are essential to facilitate data sharing. An illustration is the relationship between Rhode Island's DPH and the state Medicaid agency. In Rhode Island, personnel from Medicaid and DPH work together on a regular basis. The trust and personal relationships built between the two agencies enables the RI DPH asthma program to request data tables from the RI Medicaid agency for DPH reports on asthma in the state.
- e. Previous Successful Data-sharing Arrangements: In some states, interagency data-sharing agreements between DPH and Medicaid were developed between other public health programs (e.g. lead) and the Medicaid agency. State asthma programs are able to benefit from these existing agreements. In Connecticut, there is a general Memorandum of Understanding (MOU) between the Department of Social Services, which houses the state Medicaid program, and the state DPH. The existence of this MOU simplifies the process of releasing data to other programs within DPH. When individual programs, such as the state asthma program, desire access to Medicaid data, they submit an addendum to the existing MOU. Currently, CT's asthma program is in the process of developing an MOU addendum covering the release of Medicaid data.

In Massachusetts, separate individual interagency agreements are completed between programs within Massachusetts DPH and the Medicaid office. Although an agreement between the Massachusetts asthma program and Medicaid does not currently exist, there is precedent for data sharing between the Mass DPH lead program and Medicaid.

D. Medicaid Data for Surveillance Have Limitations and Benefits

The value of using Medicaid data for asthma surveillance is still being realized by New England states. Some states that have yet to obtain Medicaid data are unsure whether the costs associated with analyzing it are justified by their value to public health surveillance. The following are some limitations and strengths of Medicaid data, as identified by DPH personnel, as well as those identified in research studies:

1. Limitations

- a. Research Limitations: State DPH personnel working on asthma noted that Medicaid data are limited in the types of surveillance questions that can be addressed. Examples included:
 - Medicaid claims data and encounter data are not produced or collected for the purposes of epidemiology, but for costs, reimbursement, utilization management, and fraud detection. Therefore, they may be limited in their accuracy to answer epidemiologic questions.
 - Severity of disease cannot be easily determined.
 - Completeness and accuracy of encounter data cannot be assessed; changes in prevalence may be due to fluctuations in data quality.

- Prevalence is based on health care utilization, but not all patients suffering symptoms will seek treatment.
- Examining adherence to medication based on Medicaid pharmacy data is difficult. Medicaid pharmacy data provide information on the number of prescriptions filled by each individual. However, it is unclear whether patients are actually using medications or getting prescriptions refilled for other reasons (e.g., lost inhaler).
- Charges recorded in Medicaid data are reimbursements the government makes to providers and do not accurately reflect the actual total cost of services.
- Medicaid data may be more effective in identifying uncontrolled or poorly controlled asthma rather than pinpointing how many cases of asthma truly exist or how effectively these cases are being managed and controlled. This may become more of a challenge as asthma care improves over time.

b. Data Quality Limitations: In addition to limitations in the types of questions that can be addressed with Medicaid data, Medicaid databases are complicated and can be difficult to work with. There can be several sources of inaccuracy in claims and encounter data. (Hicks, 2003). Many of these problems, outlined below, can be attributed to claims data in general, and are not necessarily specific to Medicaid claims. Medicaid claims use the prevailing coding system for health care reimbursement, which is the International Classification of Diseases, Clinical Modification (ICD-9-CM). It is used to code and classify morbidity data from inpatient and outpatient records, and physician offices. Problems with the quality of Medicaid data include:

- Codes may be incorrect or absent from claims files due to human error in transcribing or miscoding conditions.
- Codes in medical records may be absent from claims files as a result of health plan reimbursement policies, including capitation under managed care.
- In outpatient settings, physicians may not know the diagnostic codes well and may make mistakes in recording patient diagnoses. In addition, a diagnostic code is a “point-in-time” judgment. It does not get changed when additional information becomes available. For example, a child may present with wheezing and be diagnosed with asthma, but later information may prove that this was an incorrect diagnosis. The claim is still submitted as asthma because that was the primary diagnosis for the visit and the prescribed treatment at that time. (Hicks, 2003).
- Comparisons of claims data and medical records reveal that about 30% of claims are not documented in medical records and the prevalence of some conditions is 50% lower in claims data than medical records (Steele-Friedlob, 2002).
- Pharmacy claims data must also be interpreted cautiously. Filling a prescription for a medication cannot be equated with medication use. For instance, children who fill several prescriptions over a short time period may have multiple inhalers or lose inhalers; they are not necessarily using the medication at a higher rate.
- There is a lack of information on disease severity in Medicaid data. ICD-9-CM codes do not differentiate between mild, moderate, and severe asthma. They also are unable to distinguish between suspected and confirmed diagnoses, and whether a diagnosis is new or previously existing (Hicks, 2003). Moreover, rules governing ICD-9-CM coding often lack specific clinical definitions. A patient presenting with respiratory distress may be incorrectly coded as having respiratory distress syndrome instead of asthma.
- Enrollment in Medicaid is variable, and enrollment can be unstable due to changes in eligibility resulting from state budget constraints. Changes in enrollment, access to care, and quality of care can affect prevalence estimates of asthma that are based on health care utilization data. However, it is worth noting that amidst this general unpredictability with

respect to the adult population enrolled in Medicaid, children's Medicaid eligibility has not changed significantly over time despite recent budget cuts.

All Medicaid personnel in New England states with whom we spoke indicated that the quality of Medicaid data is a concern, as with any large data system, but felt confident about the quality control measures which are in place to address data accuracy concerns. State Medicaid agencies are required by the Balanced Budget Act of 1997 to contract with an external quality review organization (EQRO) to provide an external, independent review of the quality of services provided by Medicaid managed care organizations (MCOs).

Many states also have internal quality review procedures. For example, Rhode Island has extensive quality checks that have confirmed the accuracy of their encounter data. These quality checks include comparing encounter data to medical records. In Connecticut, encounter data are one of the factors the state uses to determine actuarially sound capitation rates, so MCOs are motivated to have accurate data. Connecticut's Voices for Children (formerly the Children's Health Council) has also worked with the state's data contractor to improve the quality of the data by analyzing the consistency of the data over time and publishing reports on child health care that compare health plans.

2. Benefits

Beyond the limitations described above, many state DPH and Medicaid personnel agreed that Medicaid data can be a valuable source of information on asthma prevalence and health care utilization. Administrative databases, such as Medicaid, are generally readily available, uniformly coded, inexpensive to acquire, computer readable, and include large populations (Iezonni, 1997). They take less time to analyze than medical chart reviews do, and patient identifiers are easily removed, minimizing privacy and HIPAA concerns.

DPH personnel also cited the following benefits of using Medicaid data to examine asthma in their state:

- Information on health care utilization, appropriate medication use, and prevalence within the Medicaid population is included (with understood limitations as noted above).
- Almost all treatments over a specified amount of time for a large number of patients are covered by Medicaid, allowing for surveillance among cohorts and over time.
- The data are not based on self-reported asthma, which can be unreliable.
- Using physician visit data provides a more accurate picture of asthma prevalence in children than institutional data does. Although many states have access to hospital discharge data and emergency room data, if asthma is properly managed, it is rare for children to end up in a hospital due to an asthma episode; physician visit data thus become key to ensuring a complete picture of who has asthma.
- It may be possible to examine geographic variation in health care utilization, and target areas of high concern for intervention by using geo-coding that links Medicaid's residential data to census data.
- Medicaid data can be linked to other data sources (e.g. vital records, census data, hospital discharge, EPSDT, environmental).
- State level information on asthma health care can be gathered because Medicaid data are collected at the state level.

E. New England Medicaid Programs Differ from State to State

Medicaid programs vary among states in terms of their eligibility requirements and their program delivery structures. It is important to be cognizant of these differences in order to understand how these differences impact data collection and analyses.

1. Variability in Medicaid and SCHIP Eligibility

As noted previously, states have flexibility in determining Medicaid eligibility beyond the required federal guideline minimums. Table 1 provides a summary of the numbers of persons enrolled in Medicaid across the New England states and state eligibility requirements for Medicaid. Variation in Medicaid eligibility exists across New England, although all states at least insure children with family income up to 185% of the Federal Poverty Level (FPL).

In 1997 the federal government created a new children's health insurance program called the State Children's Health Insurance Program (SCHIP). This program provides additional funding to the states to decrease the number of children without health insurance. SCHIP is a state administered program and each state sets its own guidelines regarding eligibility and services. States generally use SCHIP funds in one of three ways: (1) to expand their Medicaid eligibility, (2) to create a separate program for eligible children, or (3) a combination of the first two options by creating a separate program and expanding Medicaid eligibility.

The structure of the SCHIP program differs across the New England states and this has implications for the availability of SCHIP data and for composition of the population of children captured by the available claims data.

In three New England states -- Maine, Massachusetts, and New Hampshire -- SCHIP funds were used to create a separate SCHIP program as well as expand Medicaid eligibility. In Maine and Massachusetts, SCHIP funds were used to allow children with family income up to 200% of FPL to be eligible for Medicaid. In New Hampshire, children are eligible with family income up to 300% of FPL. In Rhode Island, SCHIP funds were used to expand the Medicaid program such that children with family incomes up to 250% of FPL are eligible for Medicaid. In Maine, Massachusetts, New Hampshire, and Rhode Island, Medicaid claims data include children enrolled in Medicaid and those whose insurance is paid for by SCHIP.

In two states, Vermont and Connecticut, SCHIP is separate from Medicaid. However, in Vermont, although SCHIP is technically a separate program, all children with family income up to 300% of the federal poverty level are insured as part of the same program, which is called Dr. Dynasaur. Therefore, Medicaid claims data in Vermont include all Medicaid and SCHIP enrolled children. However, in Connecticut, children with family income under 185% of the FPL are enrolled in HUSKY A, the state Medicaid program for children. Children with family income between 185% and 300% of FPL are enrolled in HUSKY B, the state's SCHIP program. The state does not have Medicaid data for the children in HUSKY B.

Table 1: Summary of Medicaid and SCHIP eligibility in New England

State	Number of persons enrolled in Medicaid as of FFY 2000 (in thousands)	Children (18 and under) enrolled in Medicaid as of FFY 2000 (in thousands)	Age	Eligibility for Children by family income as % of FPL	Type of SCHIP program	Eligibility under SCHIP
Connecticut	303.4	212.5	0-1 1-5 6-19	185% 185% 185%	Separate	300%
Maine	208.2	93.0	0-1 1-5 6-19	200% 150% 150%	Combo	200%
Massachusetts	1103.7	452.9	0-1 1-5 6-19	200% 150% 150%	Combo	200%
New Hampshire	110.2	67.3	0-1 1-5 6-19	300% 185% 185%	Combo	300%
Rhode Island	182.1	83.8	0-1 1-5 6-19	250% 250% 250%	Medicaid expansion	No separate SCHIP
Vermont	147.8	65.8	0-1 1-5 6-19	300% 300% 300%	Separate	300%

Source: Urban Institute and Kaiser Commission on Medicaid and the Uninsured estimates based on data from Medicaid Statistical Information System reports from the Centers for Medicare and Medicaid Services, 2004 <http://www.statehealthfacts.kff.org>.

FPL= Federal Poverty Level

2. Variability in Program Delivery Structures

Traditionally, Medicaid providers were reimbursed on a fee-for-service basis. In recent years, states have been turning to managed care programs to provide services for Medicaid clients. States have been given flexibility to change Medicaid eligibility when implementing managed care through Section 1115 waivers. These waivers allow states to waive requirements of the Social Security Act to alter eligibility and benefits and to expand the use of mandatory enrollment in managed care organizations (MCOs). Increased use of managed care models for Medicaid enrollees was also facilitated by the Omnibus Budget Reconciliation Act (1981; NCBHS, 1999)

In 1991, about 10% of Medicaid recipients were enrolled in managed care programs nationally. In 2001, 56% of Medicaid beneficiaries were enrolled in managed care (Kaiser, 2001). Currently 5 of 6 states in New England rely partially on managed care. New Hampshire is the only state in New England that does not have Medicaid beneficiaries enrolled in managed care plans.

There are two primary types of managed care arrangements between states and managed care organizations: (1) full-risk and (2) primary care case management program (PCCM). In full-risk or capitated plans, managed care organizations (MCOs) or providers are paid a global fixed fee per enrollee per month for delivering a defined set of health services, and the MCO or providers assume full financial risk for delivery of these Medicaid-covered services (Deal, Shiono, & Behrman, 1998). In primary care case management plans (PCCMs), states assume financial risk for Medicaid clients, and the payments to providers resemble traditional fee-for service, but care coordination is assumed by primary care providers (Deal, Shiono, & Behrman, 1998). States pay providers a small fixed fee for managing the care of Medicaid clients, but services themselves are paid for on a fee-for-service basis.

There is variability between states in New England in the extent of enrollment in managed care and in the types of managed care plans offered (Table 2). In the five states offering managed care arrangements, on average, 65% of Medicaid beneficiaries are enrolled in managed care plans. In 2 of the 6 New England states (Rhode Island, Connecticut), among those enrolled in managed care, 100% are enrolled in full-risk plans. In 2 states (Maine, Vermont), 100% are enrolled in primary care case management, and in 1 state (Massachusetts), about two-thirds are enrolled in full-risk, and one-third are in PCCM.

Table 2: Summary of Medicaid Program Delivery Structures in New England

State	Medicaid Managed Care Enrollees as % of Medicaid as of FFY 2003	Enrollment in full-risk plans as of 2003	Enrollment in PCCM, as of 2003
Connecticut	73.2%	100%	0%
Maine	60.6%	0%	100%
Massachusetts	62.3%	66%	34%
New Hampshire	0%	NA	NA
Rhode Island	68.3%	100%	0%
Vermont	65.3%	0%	100%

Source: Urban Institute and Kaiser Commission on Medicaid and the Uninsured estimates based on data from Medicaid Statistical Information System reports from the Centers for Medicare and Medicaid Services, 2004 <http://www.statehealthfacts.kff.org>.

FPL= Federal Poverty Level

3. Variability of Claims Data vs. Encounter Data

As noted above, the New England states vary in their use -- both extent and type -- of managed care for Medicaid enrollees. This has consequences for Medicaid data and their analysis in each state. In general, data files generated from fee-for-service (FFS) encounters are “claims” data, and itemize specific services for which payment is requested by providers. Data from managed care organizations are generally “encounter” data, which quantify the kind of visit or interaction a patient has with the health care system, such as a primary care physician visit or an emergency room visit. All FFS claims data and managed care encounter data must be collected by all states and transmitted to the federal CMS office via a Medicaid Management Information Systems (MMIS) as required by federal law. Therefore both types of data are available at the state level. However, some research suggests that the two types of data may be of different quality and contain different information because they are collected for different reasons.

Claims data represent the primary mechanism for fee-for-service reimbursement. Providers submit claims in order to be paid a fee for all reimbursable services. On the other hand, in risk or capitated systems, MCOs/providers are paid under a global per-member-per-month fee arrangement for all patients and are not paid for each service. Providers in MCOs, especially full-risk plans, are therefore generally not dependent on submitting encounter data for reimbursement and do not have to submit specific claims for each patient encounter. As a result, encounter data may be less complete or accurate because there is less financial incentive for providers to record all services provided as no reimbursement is dependent on providing data for that visit. Encounter data are generally collected by commercial health plans primarily for monitoring the workload and productivity of providers, allocating resources, negotiating capitation rates, or satisfying accreditation requirements (Steele-Friedlob, 2002) – but not for reimbursing individual bills for service. Therefore, some state Medicaid personnel in New England stressed that the motivation for submitting claims data -- as in FFS -- and encounter data -- as with managed care arrangements-- is different, which may result in diminished utility of certain data for surveillance purposes.

In New England, state Medicaid personnel noted that quality assurance checks required by the states for MCOs with Medicaid clients give them confidence that the encounter data in this region are highly accurate. A Medicaid data analyst also noted that although states pay MCOs a predetermined amount per patient, reimbursement to individual providers *within* MCOs may be done on a fee-for-service basis, thereby increasing providers’ motivation for providing accurate encounter data even in a managed care setting.

In one study, the California Department of Health Statistics compared the timeliness, validity, accuracy, and completeness of MCO encounter data and fee-for-service (FFS) data (Klein, 2002). They found that although managed care encounter data were submitted in as timely a manner as FFS data and the rates of asthma appeared similar in both types of data, managed care data were less complete and less consistent over time compared with FFS data.

4. Variability in Asthma Case Definitions in the Medicaid Program

In addition to determining the quality and accuracy of the Medicaid data, several DPH asthma programs in New England are struggling with establishing an asthma case definition using Medicaid data. Within the Medicaid claims and encounter data, there are two main ways to define asthma:

- a. Discharge Diagnosis Code: ICD-9 codes listing asthma as a primary or secondary discharge diagnosis (ICD-9-CM Code: 493.0-493.9) or other asthma-related diagnoses in younger children. As noted earlier this is the standard coding system used by providers for claims.
- b. Service Utilization Measure: The HEDIS definition of asthma is based on medication use and use of certain health care services, and measures the proportion of persons on long-term control medication.¹ “HEDIS 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. The performance measures in HEDIS are related to many significant public health issues such as cancer, heart disease, smoking, asthma and diabetes” (<http://www.ncqa.org/Programs/HEDIS>). HEDIS is supported, sponsored, and maintained by the National Committee for Quality Assurance (NCQA). All major MCO’s collect and report HEDIS data in order to meet the demands of their purchasers

Data analysts across state Medicaid and DPH agencies use different definitions to identify asthma cases in Medicaid data files. In some states, the HEDIS definition is used. In other states, a child is identified as asthmatic if they receive a primary diagnosis of asthma at a single encounter based on ICD-9 codes. In some cases pharmacy data are used to supplement physician diagnoses.

Beyond identifying an asthma “case” in Medicaid files, defining the denominator for analyses of asthma in the Medicaid population is equally challenging. Part of the difficulty in using Medicaid data, as expressed by several state personnel, is the fluctuation in Medicaid enrollment. The population enrolled in Medicaid is constantly changing as people move in and out of Medicaid eligibility. To address this issue, some states include only those participants who are continually enrolled in Medicaid for a full-year in order in the analyses. The HEDIS definition requires participants to be enrolled in Medicaid for two years, which can be problematic since many people move into and out of Medicaid coverage over time. In some states outside of New England, including Oregon and New York, analyses of asthmatics enrolled in Medicaid are being conducted using several different enrollment criteria and the results are being compared.

F. Medicaid Asthma Tracking Outside New England

Issues, benefits, and limitations of using Medicaid data for asthma surveillance have become part of a national discussion in recent years, with much experimentation around the country. Some of the creative

¹ HEDIS definition of persistent asthma includes having ANY of the following in the year prior to the measurement year:

1. at least four asthma medication dispensing events (i.e., an asthma medication was dispensed on four occasions) OR
2. at least one Emergency Department (ED) visit based on certain visit codes with asthma (ICD-9 code 493) as the principal diagnosis OR
3. at least one hospitalization based on certain visit codes with asthma (ICD-9 code 493) as the principal diagnosis OR
4. at least four outpatient asthma visits based on certain visit codes with asthma (ICD-9 code 493) as one of the listed diagnoses AND at least two asthma medication dispensing events.

ways which states outside New England have begun using Medicaid data to track asthma may be of interest within in this region. A summary of some of these initiatives is below.

1. National Coordination

Since 2002, a national working group of public health personnel with an interest in using Medicaid data for asthma surveillance has been meeting via conference calls. These meetings are facilitated by the Centers for Disease Control and Prevention (CDC). The group initially started to examine the usefulness of the Council of State and Territorial Epidemiologists (CSTE) definition of asthma for analyzing Medicaid data. Their belief was that many physicians were not diagnosing asthma based on the definition (i.e., sometimes asthma was diagnosed as airway obstruction). They wanted to assess whether asthma diagnoses in Medicaid were being coded correctly.

The initial purpose of the group has expanded to helping state DPHs access and use Medicaid data. Currently, approximately 18 states are involved in conference calls every 6-7 weeks. They discuss a variety of issues related to accessing and using Medicaid data. Most states that participate are currently using fee-for-service, hospitalization, emergency room, and pharmacy data.

2. Federal Medicaid Data ²

In 1997, as part of the Balanced Budget Act, the Federal Centers for Medicare and Medicaid services (CMS) implemented provisions requiring states to report both their fee-for-service and managed care encounters for all Medicaid-covered services to CMS through a Medicaid Statistical Information System (MSIS). Thus, the federal government now has access to Medicaid data, even though the Medicaid data systems are actually managed at the state level. The federal CMS office is involved in evaluating the accuracy and completeness of state-level data. The federal government takes Medicaid data which states are required to report and constructs MAX (Medicaid Analytic Extract) files, formerly called SMRF (State Medicaid Research Files). SMRF files include fee-for-service data from 28 states from 1995 – 1998. MAX files, which supplanted SMRF files in 1999, are similar, but are available for all 50 states.

SMRF and MAX files include: enrollment, hospitalization, ambulatory care, long-term care, and prescription drug. CMS constructs a uniform record layout for each file type and it maps the state codes into this federal uniform record layout. Claims for multiple services during any given hospitalization or emergency department visit are not counted as separate visits. For a description of the benefits of using MAX files, see Box 1.

For those interested in using Medicaid data, CMS has training centers at Morehouse School of Medicine in Atlanta and the University of Minnesota.

² This information provided by Dr. Beth Benedict, one of the CMS headquarters personnel involved in using these data for national asthma surveillance. Dr. Benedict is the CMS asthma representative to the Department of Health and Human Services and the NIH/NAEPP Federal Liaison Group on Asthma (FLGA). She is a health services researcher and participates in the construction of the CMS State Research Medicaid files.

Medicaid Analytic Extract Files (MAX)

The website of the Centers for Medicaid and Medicare (<http://www.cms.hhs.gov/researchers/max/features.asp>) describes the benefits of using MAX files as follows:

MAX was developed to support research and policy analysis on Medicaid populations. MAX data are needed because it is difficult to use MSIS data for many research and policy analysis applications. There are important differences between MSIS and MAX. First, MAX files are organized by calendar year while MSIS data are organized by Federal Fiscal year. Second, MAX services data are organized by dates of service while MSIS services are organized by date of payment adjudication. Third, the unit of observation in the MAX services files is a final action event (e.g. hospital stay, visit, service, monthly nursing home stay record). Interim claims (initial bills, voids and other adjustments) have been combined.

The following is a list of MAX data features (which apply for all states):

- Selected eligibility/demographic data are added to each MAX record so that users need not link back to eligibility files for all uses.
- For each eligible individual, eligibility data are augmented with a summary of Medicaid payments and utilization for selected types of services. This results as a MAX Person Summary File (PSF) for each state and year.
- MAX data are linked to the Medicare Enrollment Data Base (EDB) to improve the identification of individuals who are dual (Medicare and Medicaid) eligibles.
- An indicator is added to the MAX eligibility data for women who have experienced a delivery in the year.
- Therapeutic usage data are added to each prescription drug record. These therapeutic codes are proprietary products of First Data Bank (FDB) and Facts and Comparisons (F&C) and are releasable only to parties that have valid license agreements with FDB and/or F&C.
- Summary data are prepared for each file, known as validation reports and anomalies reports. The validation reports are often used to determine data quality for many of the key data elements in each file. The anomalies reports tell users about any abnormalities in the data. The report includes information about legitimate breaks in time series data, idiosyncrasies in the data from a particular state and errors that cannot be fixed.

BOX 1

Although accessing data from the federal government appears to be an ideal means for states to use Medicaid data for public health research and surveillance, these data are limited in several ways:

- The data are much delayed. Most recent available data are 1999.
- States in which a large percentage of the Medicaid population is enrolled in capitated plans will not always be able to obtain complete Medicaid data. Although the federal government mandates that all Medicaid data (FFS and Managed Care) be submitted to the Centers for Medicaid and Medicare Services, incomplete data from states with high capitation rates are common.

3. Examples of Medicaid/Public Health Collaborations Outside New England

- a. Oregon – Oregon has an asthma data workgroup that includes representative from HMOs and other third party payers serving the Medicaid and general population. The group, which has been active for two years, includes representatives from every health care plan that has Medicaid enrollees. Together the group has collaborated to create common indicators to examine asthma care. As part of the commitment to the group, all member organizations conduct analyses using the common indicators and bring the data to the group for comparison. The health plans were motivated to join and actively participate in this workgroup when it became clear that 20% of Oregon’s insured (Medicaid or commercial) population changes health plans each year. Thus, a committed focus on preventive care for asthma is globally beneficial, as health plan A’s patient this year may be health plan B’s patient the following year, and vice versa. The healthier the overall population is (as monitored through better surveillance), the better and less expensive health care will be for all citizens and all health plans. Oregon is also starting a new effort to create a chronic disease data clearinghouse. Minutes from Oregon’s asthma work group can be found online <http://www.dhs.state.or.us/publichealth/asthma/datagrpfm>
- b. New York State - In New York, Medicaid became part of the public health department in 1994. However, there remain restrictions on access to Medicaid data and currently only Medicaid programmers have access. The health department is working on a data exchange agreement to allow others to access the data.

New York has started working on two projects using Medicaid data. The first, a surveillance system using Medicaid data, has three goals: (1) Examine asthma prevalence and health care use by asthmatics, including types of medications filled. They hope to look at these statistics longitudinally to examine how prevalence and health care use changes over time. From the Medicaid agency’s perspective, this surveillance system has great utility if it can help the agency pinpoint issues which will reduce the growing costs of treating asthma; (2) Examine the costs of asthma care; and (3) Ensure that quality assurance efforts encompass FFS clients as well as managed care clients.

The second New York Medicaid data project is a pilot “linking” initiative in which the state hopes to connect high-risk children (as defined by Medicaid data) to existing asthma coalition case managers. These case managers work for one of nine regional asthma coalitions funded by the state in collaboration with the American Lung Association. Using Medicaid data, the state will identify “high-risk” child asthmatics. Once these children are identified, the state Drug Utilization Board will send letters to their primary care provider suggesting that the children be referred to one of the state asthma coalitions.

- c. Nebraska – In Nebraska, data analysis is routinely completed using HEDIS measures for the one PCCM and one HMO serving Nebraska Medicaid subscribers. The state of Nebraska has produced a statewide asthma report including Medicaid data (Asthma in Nebraska, published in March 2001 <http://www.hhs.state.ne.us/epi/asthma.pdf>).

G. Exploring Other Opportunities for Asthma Surveillance

1. Getting Managed Care Plans Involved

In 5 of 6 states in New England, at least some Medicaid recipients are enrolled in managed care plans. Several state departments of health have successfully engaged some of these plans in programs to help improve the quality of care asthma patients receive. These collaborations have also paved the way for states to receive data regarding the asthma population enrolled in these plans, whether insured by Medicaid or commercial plans.

Vermont and Maine are two states that have ongoing relationships with the managed care plans in their states. In both of these states, these collaborations are encouraged by existing legislation. About six years ago, Vermont passed “Rule 10”, a patient bill of rights that required all managed care plans in Vermont to submit data on quality and access to the state health department. This included a measure of appropriate use of asthma medication and the use of asthma management plans. Rule 10 also requires chart reviews and surveys of doctors that include a subset of questions on asthma. Health care plans are working together with the state health department to agree on the exact asthma questions that will be asked consistently by each plan and the methodology that will be used. They hope to track these indicators over time. All plans will define asthma cases in the same way using the same data elements. They will submit reports with raw numbers, but the plans do not want to be compared to each other.

2. SLAITS- State and Local Area Integrated Telephone Survey

SLAITS is a nationally representative telephone survey through the National Center for Health Statistics. <http://www.cdc.gov/nchs/slaits.htm> It is designed to supplement “current national data collection strategies by providing in-depth state and local area data to meet various program and policy needs in an ever-changing health care system. SLAITS provides a mechanism to collect data quickly on a broad range of topics at the national, state, and local levels.” (CDC.gov/nchs). A National Asthma Survey, using SLAITS, was conducted in calendar year 2003, sponsored by the National Center for Environmental Health (NCEH), Centers for Disease Control and Prevention. The survey examines the health, socioeconomic, behavioral, and environmental predictors that relate to better control of asthma. This study will also help to characterize the content of care and health care experiences of persons with asthma. Data will be available in late 2004.

3. New Federal Guidelines for Medicaid Disease Management

In February 2004, the Centers for Medicare and Medicaid Services clarified how they would allow states flexibility in running disease management programs aimed at improving health outcomes. Asthma is one of the chronic diseases that CMS identified that would benefit from coordinated care.

<http://www.cms.hhs.gov/media/press/release.asp?Counter=967> This is likely to lead to additional asthma data discussions.

CONCLUSION

With respect to Medicaid data, the CDC has stated, “Medicaid claims data provide important information about the cost of asthma, the medications being prescribed for asthma, and the severity of asthma for low income populations.” Despite the limitations inherent in using Medicaid data, for many states, including those in New England, Medicaid data can be a rich source of information on the health of asthmatics.

Based on the interviews conducted for this report, New England state DPH and Medicaid agency personnel expressed:

- An interest in having Medicaid data as a piece of their surveillance efforts, with the understanding of the limitations and complexities;
- A desire to develop a uniform definition of asthma that can be used consistently within states and perhaps regionally;
- A recognition that comparability between states may be problematic due to differences in Medicaid eligibility, but that there still exists a value in working together and learning from one another’s experiences using the data over time.

What Can ARC do to Help the New England States Use Medicaid Data for Asthma Surveillance?

The Asthma Regional Council is committed to an asthma surveillance agenda which includes the development of regional estimates and/or state comparisons of asthma. Recent ARC reports documenting high rates of asthma in New England suggest that a regional perspective on the problem could be beneficial

Based on the synthesis of agency personnel feedback described in this report and summarized above, ARC is committed to facilitating Medicaid data analysis in New England through:

- A. Organizing training sessions specifically in the structure of Medicaid files, the types of data available, and types of analyses to conduct
- B. Facilitating discussions that cover topics such as:
 - appropriate denominators and numerators to use for specific analyses
 - experiences working with public health, Medicaid and managed care personnel
 - asthma case definitions
- C. Ensuring the dissemination of publications using Medicaid data
- D. Sharing copies of MOUs, legislation, or other mechanisms states used to obtain Medicaid data
- E. Investigating the possibilities of linking environmental data to Medicaid claims to explore whether environmental or geographic variability may be influencing asthma rates or exacerbations

On October 29, 2004, ARC will host its first New England wide training on using Medicaid data for asthma surveillance. ARC will continue to work with its partners on promoting improved asthma surveillance in the region through the promotion of enhanced learning opportunities and data coordination, as well as working toward the linkage of asthma epidemiological data with potential environmental indicators.

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APPENDICES

Appendix A - New England Asthma Publications Using Medicaid Data

Some New England states publish asthma trends using Medicaid data. In these states, a publication by the state health department or state Medicaid agency is available documenting asthma prevalence and/or health care utilization in the Medicaid population. Below are summaries of these reports, including definitions of asthma used and findings.

Connecticut

In 1995, the Children's Health Council was created by the Connecticut General Assembly to monitor children's health care in the Medicaid program. In a recent publication, *Asthma in Children Enrolled in Husky A*, the Council reported on asthma among children continuously enrolled in Medicaid over a 1-year period. Asthma cases were identified using ICD-9-CM code 493.0-493.9 as the primary or other diagnosis. Using these data, the Children's Health Council reported on three-year prevalence of asthma, health care utilization including number of visits for ambulatory care, hospitalizations, and emergency visits. One aspect of quality of care, follow-up after emergency room or hospital discharge, was also assessed by examining the percent of children who had an office or clinic visit within 2-4 weeks after emergency care or hospital discharge. These measurements were reported by age, gender, race/ethnicity, language, city of residence, and health plan.

The data from the Children's Health Council report was used by the CT DPH to develop their state asthma plan and was included in a 2001 report on asthma in Connecticut (<http://www.dph.state.ct.us/Publications/BCH/EEOH/AsthmaRpt.pdf>) and a 2003 updated asthma report (http://www.dph.state.ct.us/Publications/BCH/EEOH/asthma_update.pdf).

The most recent report by the Children's Health Council can be found on the website for Connecticut Voices for Children: www.ctkidslink.org

Maine

The *Asthma Status Report, 2002*, published by the Maine Bureau of Health, uses data from Behavioral Risk Factors Surveillance Survey (BRFSS), vital records, hospital discharge records, emergency department records, Medicaid (MaineCare) and managed care insurance claims to describe the prevalence of asthma in Maine and other outcomes related to asthma. In Maine, Medicaid data and data from the commercially insured population used for this report were available through the Maine Health Information Center, a non-profit data repository.

Using the HEDIS algorithm, asthma rates were calculated for persons between the ages of 5-56 years. The denominator was based on those enrolled continuously for 2 consecutive years with a gap of no more than 45 days during each year of continuous enrollment. The authors of the report acknowledge that the HEDIS definition of asthma does not identify those with a clinical diagnosis and may underestimate the prevalence of asthma in this population.

In their report, using Medicaid data, the Maine Bureau of Health found that the burden of asthma was greater among Medicaid recipients compared to other Maine residents and Medicaid recipients were more likely to be hospitalized for asthma compared to other Maine residents. They also found that 60-75% of Maine's insured population (Medicaid and commercial) fills prescriptions for the indicated appropriate medications for persons with persistent asthma. Differences by gender, age, and insurance status were also examined.

This report provides baseline information on deaths, prevalence, medical care, and asthma management in the state. Maine's asthma program hope to continue these types of analyses in the future to examine trends over time and geographic patterns in an effort to address the Healthy People 2010 objectives for asthma. The report effectively describes the limitations of each type of data used. The report is available through the Maine Asthma Program. Contact: Dwight Littlefield (dwight.littlefield@state.me.us).

Massachusetts

In Massachusetts, the state Medicaid agency has developed a partnership with the Center for Health Evaluation and Research at the University of Massachusetts. In 2001, they published a report on HEDIS measures in Medicaid managed care plans. The goal of this report was to use HEDIS definitions to assess the performance of five health care plans in Massachusetts that provide care to Medicaid enrollees. HEDIS measures in this report included an assessment of appropriate medications for people with asthma. The results indicated that Medicaid managed care members received appropriate medication for asthma at a rate similar to Medicaid recipients nationally. HEDIS measures on asthma were collected by the plans in 2003 and will be released in another report in 2004.

New Hampshire

In the report, "Asthma in New Hampshire, 1990-2001," outpatient and inpatient hospital discharge data were used to characterize the distribution of hospitalization charges by payer. Asthma was defined using ICD-9 codes 493.0-493.9 with asthma as the primary discharge diagnosis. Medicaid accounted for approximately 14% of emergency department visit charges; private insurance accounted for 54.2% of charges, and self-pay and other primarily made up the difference. With the launch of a decision support system in 2004, the New Hampshire asthma program anticipates incorporating more Medicaid data into their asthma reports.

Rhode Island

In January 2003, the Rhode Island Department of Human Services' Center for Child and Family Health published a report on asthma surveillance between 1998-2002 in RIte Care, the state's managed health care program for families on Medicaid. Data for this report were based on encounter data files submitted to the state by MCOs with Medicaid enrollees on a quarterly basis. A diagnosis of asthma was defined using ICD-9 codes (493.xx). Asthma did not have to be the primary diagnosis to be included. In this report, asthma-related ambulatory services, hospital services, and pharmaceutical management were examined. The authors compared asthma prevalence in RIte Care and asthma-related health care utilization to national rates and benchmarks for utilization. Results indicated higher rates of asthma among Rhode Island's RIte Care population, compared to national averages. A copy of this report is available through Bill McQuade at the Center for Child and Family Health, wmcquade@qw.dhs.state.ri.us.

The Rhode Island DPH also publishes an asthma "burden document" on a regular basis. Statistics from the RIte Care population are included in this report using the same definition as used by RIte Care.

Vermont

In 2002, Vermont's EQRO, the Vermont Child Health Improvement Program, in collaboration with the Vermont Program for Quality in Health Care, Inc. (VPQHC) published an analysis of data from Medicaid population enrolled in Vermont's PCPlus program. The data for this report came from raw Medicaid files supplied by their Medicaid data contractor, EDS (Electronic Data Systems) to VPQHC on a quarterly basis. The HEDIS definition for persistent asthma was used to define asthma cases. Based on this definition about 5% of Vermont's Medicaid population was identified as having

asthma. The report examines the geographic distribution of asthma in Vermont by county, the health care costs associated with asthma, hospitalization and emergency department admissions, and use of appropriate medications. They were also able to compare Medicaid recipients enrolled in PCPlus compared to those in traditional fee-for-service.

Appendix B- Research Using Medicaid Data: Selected Annotated Bibliography

A literature review of asthma research using Medicaid data was conducted to examine the types of information that can be gathered from Medicaid data and the definitions of asthma used. These studies are summarized below.

Bronstein, J.M., Santer, L., & Johnson, V. (2000). *The use of Medicaid claims as a supplementary source of information on quality of asthma care.* *Journal of Healthcare Quality, 6, 13-18.* This study examined the correspondence between medical records and Medicaid claims to determine whether claims are a valid source of data for monitoring quality of asthma care. Claims failed to identify 29% of encounters with asthma diagnoses and 45% of nebulization procedures administered during encounters. About 30% of documented asthma prescriptions were not associated with filed claims and 30% of filed claims for asthma medication were not documented in medical records.

Buescher, P.A., & Jones-Vessey, K. (1999). *Using Medicaid data to estimate state- and county-level prevalence of asthma among low-income children.* *Maternal and Child Health Journal, 3, 211-216.* Using Medicaid claims data from North Carolina, the authors estimated the prevalence of asthma in this population. The denominator for this estimate included the number of children enrolled in Medicaid over a 1-year period for at least one month. Cases were defined using ICD-9 code 43 with any mention of a diagnosis of asthma, and pharmacy claims for drugs that are used to treat asthma. Based on these data, 12.4% of children between the ages of 0-14 had a diagnosis of asthma or were prescribed a medication to treat asthma. The highest rates of asthma were found for children between 0 and 5 (16%). The amount paid by Medicaid for asthma-related medical services and drugs during this year was more than \$23 million, or an average of \$335 per child with asthma. They also found that asthma rates varied by county. Additional analyses revealed that using solely a diagnosis for asthma would likely underestimate the prevalence in this population. Supplementing diagnoses with pharmacy claims can help identify those missed, including children who have their asthma under control and did not seek medical attention for asthma during the study period.

Jaffe, D., Singer, M. & Rimm, A.A. (2002). *Air pollution and emergency department visits for asthma among Ohio Medicaid recipients.* *Environmental Research, 91, 21-28.* Medicaid data from Ohio between 1991-1996 were analyzed in conjunction with ambient air quality data collected by the Ohio Environmental Protection Agency for three cities. Encounter claims for physician, ED, or hospital services were used to identify asthma cases using ICD-9 code 493. The cohort included in the analysis were persons ages 5-34 years with a primary diagnosis of asthma (n=4416). The primary outcome measure was ED visits per day. The authors found a positive relationship between outdoor air pollutants and asthma episodes among Medicaid enrolled asthmatics. Specifically nitrogen dioxide levels were associated with ED asthma episodes when exposure lagged by 1 day, and ozone and sulfur dioxide increased the number of ED visits in all three cities when exposure lagged by 2 or 3 days. The authors concluded that the air pollution-asthma association found in other research remains positive after controlling for insurance status and economic status.

Piccoro, L.T., Potoski, M., Talbert, J.C., & Doherty, D.E. (2001). *Asthma prevalence, cost, and adherence with expert guidelines on the utilization of health care services and costs in a state Medicaid population.* *Health Services Research, 36, 357-371.* The authors of this study had access to claims history for 530,000 Kentucky Medicaid recipients during the calendar year of 1996. Patients included in the analyses needed to have at least one Medicaid claim containing a primary diagnosis of asthma as defined by ICD-9-CM codes (493, 493.0, 493.00, 493.01, 493.1, 493.10, 493.11, 493.9, 493.90 and 493.91). Using pharmacy provider, and institutional claims data, the authors of this study present findings on prevalence of asthma in this population, asthma-related and total health care costs incurred by asthmatics during the study year, and medications prescribed for asthma. In their sample, the overall

prevalence of asthma was 4.6%. They found that the majority of asthmatics were not receiving therapy in accordance with the National Asthma Education and Prevention Program.

Shields, A.E., Comstock, C., Finkelstein, J.A., & Weiss, K. (2003). Comparing asthma care provided to Medicaid-enrolled children in a primary care case manager plan and a staff model HMO. *Ambulatory Pediatrics, 3, 253-262.* Using Medicaid and HMO claims data for 2365 children with asthma enrolled in Massachusetts Medicaid in 1994, this study examined differences in care between children in a PCCM and those in an HMO in Massachusetts. There were no differences in primary care visits, pharmacotherapy, or follow-up care after asthma hospitalization between the two groups. However, children in the HMO had fewer asthma-related hospitalizations and emergency department visits and they were also less likely to meet the definition of persistent asthma. Children in the HMO were almost three times more likely than children in the PCCM to receive timely follow-up care after an emergency department visit, and they were more likely to see a specialist. The authors concluded that the HMO served a less sick pediatric population, but the HMO provided more access to asthma specialists and timely follow-up care.

Wennberg, D., Agger, M., DiMillo, J., Kilbreth, B. (1998). The goals of this study were to assess asthma prevalence among children ages 2-17 in the Maine Medicaid population, examine how asthma was managed pharmacologically, and whether treatment was in accordance with NHLBI (National Heart, Lung, and Blood Institute) guidelines. The authors also examined geographic differences in the management of asthma, the frequency of hospital admission of children with asthma, and the association between asthma management and hospital admission. Two definitions of asthma were used. "All asthma" was defined as any Medicaid claim with ICD-9 code 493.XX or any asthma related drug claim. "Strict asthma" was defined as children with two or more asthma claims within a 6 month period at least 20 days apart. Claims included both doctor visits and drug claims. The population included in these analyses included all Medicaid eligible children between ages 2-17 during calendar year 1993. Results indicated a prevalence rate of 111 asthma cases per 1,000 Medicaid pediatric patients; 59 per 1,000 were "strict asthmatics." The authors found differences in the prevalence, treatment patterns, and admission rates across populations. Based on their results, the authors made several policy recommendations including educating clinicians to reduce the use of "outmoded" treatment plans.

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