

1998 CSTE ANNUAL MEETING

CSTE POSITION STATEMENT # EH/CD 1

COMMITTEE: Environmental and Chronic Disease Committees

TITLE: Asthma Surveillance and Case Definition

ISSUE: National surveillance data indicate that asthma prevalence and mortality are increasing.

Asthma is responsible for an estimated \$6 billion in direct (medical) and indirect (loss of productivity) costs each year. Disability and death due to asthma is largely preventable with close medical management. Many environmental triggers are known and are amenable to intervention. State surveillance for asthma is needed to describe disease burden in the population, and to target and evaluate interventions. At a minimum, asthma mortality and hospitalizations should be under nationwide surveillance.

A standard case definition is needed to improve comparability of asthma surveillance data. A review of the current literature on asthma failed to identify scientific consensus on a clinical definition of asthma, although standards of care have been published. A specific surveillance case definition that can be applied to data collected from mortality and hospital discharge databases, survey-self report and clinical and laboratory data provides states with a uniform approach to describe different aspects of the burden of asthma. CSTE is not endorsing physician reporting and registry type surveillance for asthma. The clinical and laboratory case definition included here is intended as an adjunct tool to assist those who wish to include a validation component in their asthma surveillance. Beyond surveillance it may also prove useful in cluster investigations and as a basis for discussion with health care providers.

POSITION TO BE ADOPTED:

CSTE recommends:

- 1) That asthma mortality (ICD-9: 493 as underlying cause of death) and hospital discharges (ICD-9-CM: 493.0-493.9 as primary diagnosis) be placed under nationwide surveillance as part of the National Public Health Surveillance System (NPHSS).
- 2) Adoption of a case definition for asthma which includes uniform case classification for a variety of surveillance methods. States with resources to conduct asthma prevalence surveys, validation studies or investigations are encouraged to collaborate with the Centers for Disease Control and Prevention (CDC) to apply and improve the case definition.
- 3) That the asthma case definition approved by CSTE be published in Morbidity and Mortality Weekly Report(MMWR) along with the other CSTE-approved noninfectious disease/condition surveillance definitions.

BACKGROUND AND JUSTIFICATION:

Clinical description

Asthma is a chronic inflammatory disorder of the airways in which many cells and cellular elements play a role, in particular, mast cells, eosinophils, T lymphocytes, macrophages, neutrophils, and epithelial cells. In susceptible individuals, this inflammation causes recurrent episodes of wheezing, breathlessness, chest tightness, and coughing, particularly at night or in the early morning. These episodes are usually associated with widespread but variable airflow obstruction that is often reversible either spontaneously or with treatment. The inflammation also causes an associated increase in the existing bronchial hyperresponsiveness to a variety of stimuli (NHLBI 1995).

Approximately 13.7 million Americans reported having been told they had asthma in 1993-94; a 75% increase from 1980. Mortality has more than doubled from 0.7/100,000 in 1979 to 1.5/100,000 in 1994. Use of a standard asthma surveillance case definition is critical to appropriately interpret and compare asthma surveillance data among reporting jurisdictions and over time and to evaluate the impact of state asthma interventions. The asthma surveillance case definition is intended to provide a uniform set of criteria for identifying individuals with confirmed or suspected asthma based on clinical, laboratory or other information. This definition is expected to promote uniform classification of cases and events at the local, state and national level.

For those interested in conducting asthma surveillance, one or more data sources may be used. The asthma case definition provides uniform classification criteria for asthma cases identified from three different types of sources: administrative databases, survey self-response and medical records. If more than one data source is used, or if the program changes from one data source to another, it is important to clearly describe the data source to make appropriate interpretations. For example, cases identified by searching death certificates or hospital databases will underestimate the number of persons in the population with asthma (asthma prevalence) and should be reported as the number of deaths or the number of hospitalizations, respectively.

The survey self-response section recommends a series of questions that can be included in surveys such as the Behavioral Risk Factor Surveillance System (BRFSS), the National Health Interview Survey (NHIS), and the National Health and Nutrition Examination Survey (NHANES). These questions could be included in surveys conducted by other organizations such as the National Heart, Lung and Blood Institute (NHLBI) and the American Thoracic Society (ATS).

States are encouraged to use the clinical and laboratory criteria to validate the mortality and hospital discharge data. The only confirmed case classification provided is for clinical and laboratory criteria. Since this category may be infrequently used, those conducting asthma surveillance are advised to combine the probable and confirmed cases to tabulate asthma case counts. The suspect category will include many non-asthma cases but could be used to get an

upper limit of the number of undiagnosed asthma cases. The suspect cases may also be used to look at trends that could indicate changes in clinical diagnoses. For example, if asthma is increasing is chronic bronchitis decreasing?

GOALS FOR SURVEILLANCE:

- Describe and monitor asthma deaths (all states) and hospitalizations (where data are available);
- Estimate and monitor asthma prevalence, where resources allow.

PROPOSED METHOD OF SURVEILLANCE:

- State mortality and hospital discharge data as currently collected and reported;
- Telephone surveys, such as BRFSS, or school surveys may be conducted to estimate asthma prevalence

PROPOSED ASTHMA SURVEILLANCE DEFINITION:

I. MORTALITY AND HOSPITAL DISCHARGE CLASSIFICATION

Case classification

Confirmed:

- There is no confirmed case classification for mortality and hospital discharge data. Health departments are encouraged to evaluate the accuracy of these sources.

Probable:

- death certificates/records listing the asthma diagnostic code (ICD-9 Code: 493; or ICD-10 Codes: J45, J46) as the underlying cause of death.
- hospital records listing the asthma diagnostic code (ICD-9-CM Codes: 493.0- 493.9; ICD-10-CM Codes: J45.0-J45.9) as the primary diagnosis.

Possible:

- death certificates/records listing the asthma diagnostic code (ICD-9 Code: 493; or ICD-10 Codes: J45, J46) as a contributing cause of death.
- hospital records listing the asthma diagnostic code (ICD-9-CM Codes: 493.0- 493.9; ICD-10-CM Codes: J45.0-J45.9) as a secondary diagnosis.
- 466(acute bronchitis and bronchiolitis), *** in children < 12 years***
- 491.20 and 491.21 (chronic bronchitis), *** in children < 12 years***

COMMENT:

Additional ICD-9 codes that may be used to evaluate administrative data for misdiagnoses and to evaluate possible changes in diagnoses that could explain changes in asthma trends may include: 492 (emphysema), 495 (extrinsic allergic alveolitis),

496 (chronic airway obstruction, not elsewhere classified),
508 (respiratory conditions due to other/unspecified external agents),
506.3 Other acute/subacute respiratory conditions due to fumes/vapors
506.9 unspecified respiratory conditions due to fumes and vapors
786 (symptoms involving respiratory system/other chest symptoms)

II. PREVALENCE CLASSIFICATION

Case classification

Confirmed:

- There is no confirmed case classification for self-report. Health departments are encouraged to validate the accuracy of survey self-response data.

Probable:

- A positive response to the survey question, “Did a doctor (or other health professional) ever tell you (or any household member) that you (they) had asthma?”

AND

- A positive response to any of the following survey questions:

a) “Do you (or the household member) still have asthma?”

OR

b) “Have you (or any household member) taken prescription medications for asthma (such as albuterol, inhaled steroids, cromolyn, theophylline, etc) during the past year?”

OR

c) “Have you had a wheeze episode in the past year?”

Possible: A suspect case meets any of the following:

- A positive response to survey question “Have you (or any household member) used over-the-counter medications for asthma during the past year?”,
- Positive response to survey question, “Have you (or any household member) experienced episodes of wheezing during the past year?”

III. CLINICAL AND LABORATORY CLASSIFICATION

Clinical Criteria

- presence of wheezing lasting 2 or more consecutive days,
- chronic cough that responds to bronchodilation that persists 3-6 weeks in the absence of allergic rhinitis or sinusitis,
- nocturnal awakening with dyspnea, cough and/or wheezing in the absence of other medical conditions known to cause these symptoms (see Comments below).

Definitive Laboratory Criteria

- Pulmonary function testing (spirometry: FEV₁, FVC) demonstrating a 12% increment after the patient inhales a short-acting bronchodilator;
- a 20% decrement in FEV₁ after a challenge by histamine, methacholine, exercise or cold air
- 20% diurnal variation in peak expiratory flow over 1 to 2 weeks

Case classification***Confirmed:***

A confirmed case met any of the clinical symptoms at least 3 times during the past year AND at least one of the laboratory criteria.

Probable: A probable case meets any of the following:

- In the absence of supporting laboratory criteria, presence of any of the clinical symptoms which have been reversed by physician treatment with asthma medications and have occurred at least 3 times during the past year.
- In the absence of supporting clinical criteria, met at least one of the laboratory criteria during the past year.
- In the absence of supporting laboratory or clinical criteria, taken medications in the past year that were prescribed by a physician for asthma.

Possible: A suspect case meets any of the following:

the presence of any of the following during the past year:

- shortness of breath on exertion,
- presence of wheezing or chronic cough in the absence of obvious respiratory infection
- presence of increased nasal secretion, mucosal swelling, nasal polyps, or chronic sinusitis
- hyper expansion of the thorax,
- sounds of wheezing during normal breathing
- prolonged phase of forced exhalation,
- chest x ray showing hyper expansion,
- FEV₁ less than 80% of predicted value

COMMENT:

- This surveillance case definition may not be as useful in young children as in adults because it is more difficult to diagnose asthma in young children and there may be a reluctance to stigmatize young children with the diagnosis of asthma.
- Recurrent episodes of cough and wheezing are frequently due to asthma. However, other causes of airway obstruction leading to wheeze exist (NIHNAEP 1997), such as:

In infants and children:

Upper airway diseases (allergic rhinitis and sinusitis); Obstructions involving small airways (foreign body in the trachea or bronchus, vocal cord dysfunction, vascular rings or laryngeal webs, laryngotracheomalacia, tracheal stenosis, or bronchostenosis, or enlarged lymph nodes or tumor); Obstructions involving small airways (viral bronchiolitis or obliterative bronchiolitis, cystic fibrosis, bronchopulmonary dysplasia, heart disease); Other causes (recurrent cough not due to asthma, aspiration from swallowing mechanism dysfunction or gastroesophageal reflux)

In adults:

Chronic obstructive pulmonary disease (chronic bronchitis or emphysema); Congestive heart failure; Pulmonary embolism; Laryngeal dysfunction; Mechanism obstruction of the airways (benign and malignant tumors); Pulmonary infiltration with eosinophilia; Cough secondary to drugs; Vocal cord dysfunction.

References

- National Heart, Lung, and Blood Institute. *Global Initiative for Asthma*. National Institutes of Health publication number 95-3659, Bethesda, MD, 1995.
- National Asthma Education and Prevention Program. *Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma*. National Institutes of Health publication number 97 -4051A Bethesda, MD, 1997.

Comment

It is recommend to combine the confirmed and probable cases for asthma case counts.

COORDINATION WITH OTHER ORGANIZATIONS:

Agency for Response:	Centers for Disease Control and Prevention(CDC), National Center for Environmental Health (NCEH)
Agencies for Information:	Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) Association of State and Territorial Chronic Disease Program Directors (ASTCDPD) Agency for Toxic Substances and Disease Registry (ATSDR) Association of State and Territorial Health Officials (ASTHO) National Association of County and City Health Officials (NACCHO) Environmental Protection Agency (EPA) National Heart, Lung and Blood Institute (NHLBI)

National Institute for Occupational Safety and Health (NIOSH)
National Environmental Health Agency (NEHA)

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Classification	Data Source		
	<i>Hospital Discharge & Mortality</i>	<i>Survey Self-Report</i>	<i>Clinical and Laboratory Criteria</i>
<i>Confirmed</i>			1) meets definitive laboratory <u>AND</u> 2) meets clinical criteria
<i>Probable</i>	ICD code: Asthma	1) clinician diagnosed asthma <u>AND</u> 2) “current” asthma	meets clinical criteria <u>OR</u> meets definitive laboratory criteria <u>OR</u> taken asthma meds in past year
<i>Suspect</i>	ICD codes: bronchitis (acute and chronic) in kids < 12 years of age; <u>OR</u> bronchiolitis in kids < 12 years of age	used “over the counter” meds for asthma in past year <u>OR</u> had wheezing in past year	meets suggestive laboratory criteria <u>OR</u> meets suggestive clinical criteria

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