

Indicator 9: Pneumoconiosis Hospitalizations

Significanceⁱ

Pneumoconioses are lung diseases caused by dust exposure and nearly all are attributable to occupational exposures. Common types include silicosis, asbestosis, coal workers' pneumoconiosis and pneumoconiosis due to exposure to a variety of other mineral dusts, including talc, aluminum, bauxite and graphite. Complications of pneumoconiosis that may cause hospitalizations include respiratory infections (including tuberculosis), chronic bronchitis, emphysema, lung cancer, pleuritis, progressive systemic sclerosis, renal disease and respiratory failure. Controlling and monitoring exposure to dust and providing ongoing medical surveillance for exposed workers are important steps to preventing pneumoconiosis.

Note that the estimated incidence of hospitalizations does not necessarily represent current exposures or new diagnoses. Pneumoconiosis occurs many years after a worker's first exposure to hazardous dust. The latency from time of exposure to detection of disease averages 20 to 40 years. Therefore, rates presented for 2001 to 2011 may reflect past exposures from the 1960s to present.

Methods

The Colorado Hospital Discharge Dataset is compiled by the Colorado Hospital Association (CHA) and, through a data sharing agreement, made available to the Colorado Department of Public Health and Environment (CDPHE). The hospital discharge dataset contains records of all hospital discharges from member hospitals. In Colorado, nearly 100% of hospitals are CHA members (excluding Federal facilities). Each record in the dataset represents one hospital discharge resulting from an inpatient hospital admission.

Data were collected from all Colorado discharge data records if the ICD-9-CM codes 500-505 were present in any one of 15 diagnosis fields for Colorado residents, age 15 years or older. Rates were calculated using Colorado population estimates from the United States Census Bureau as the denominator.

ⁱ Council of State and Territorial Epidemiologists. *Occupational Health Indicators: A Guide for Tracking Occupational Health Conditions and Their Determinants*. Last updated April 2012.

Results

Table 9.1: Number and rates of hospitalizations from or with pneumoconiosis, Colorado and the United States, Residents age 15 and older, 2001-2011*

	Colorado			United States	
	Number of hospitalizations	Crude rate per 1,000,000	Age standardized rate per 1,000,000	Number of hospitalizations	Age standardized rate per 1,000,000
2001	363	103.9	134.7	25,710	116.2
2002	353	99.2	127.3	32,795	151.1
2003	387	107.5	136.5	19,667	90.4
2004	413	113.1	139.0	27,146	125
2005	418	112.6	139.8	26,188	108.9
2006	389	102.7	126.8	20,799	86.1
2007	356	92.0	112.3	19,037	78.5
2008	356	90.6	108.8	19,097	78.9
2009	326	81.6	97.0	data not available	data not available
2010	324	80.6	101.6	data not available	data not available
2011	335	82.0	101.4	data not available	data not available
Average	365	96.9	120.5	23,805	104.4

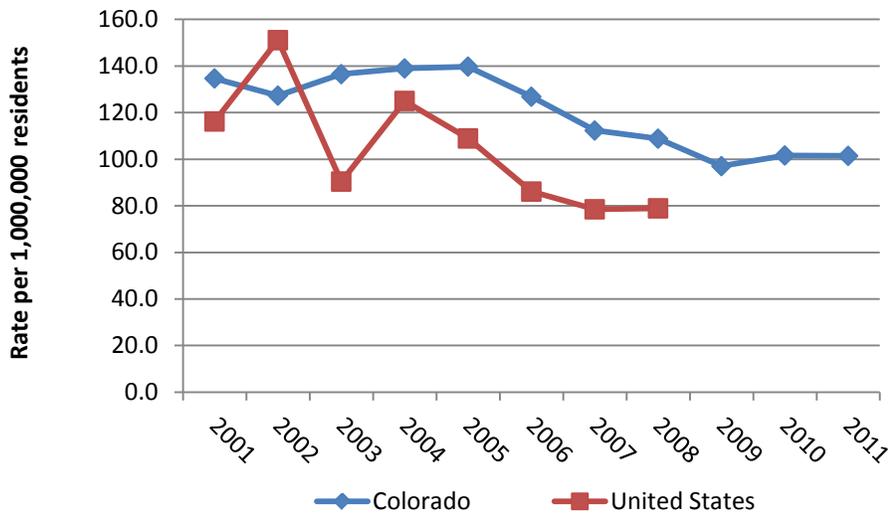
Numerator: Colorado Hospital Association hospital discharge data analyzed by the Health Statistics Section, Colorado Department of Public Health and Environment

Denominator: Bureau of Labor Statistics (BLS), Geographic Profile of Employment and Unemployment (GP) and Current Population Survey (CPS)

United States Data: National Hospital Discharge Survey, Provided by the Council of State and Territorial Epidemiologist (CSTE) Occupational Health Indicators Reports

**United States data beyond 2008 not yet available through CSTE*

Figure 9.1: Age-adjusted hospitalization rates from or with pneumoconiosis per 1,000,000 residents, Age 15 and over, Colorado and the United States, 2001-2011*



Numerator: Colorado Hospital Association hospital discharge data analyzed by the Health Statistics Section, Colorado Department of Public Health and Environment

Denominator: Bureau of Labor Statistics (BLS), Geographic Profile of Employment and Unemployment (GP) and Current Population Survey (CPS)

United States Data: National Hospital Discharge Survey, Provided by the Council of State and Territorial Epidemiologist (CSTE) Occupational Health Indicators Reports

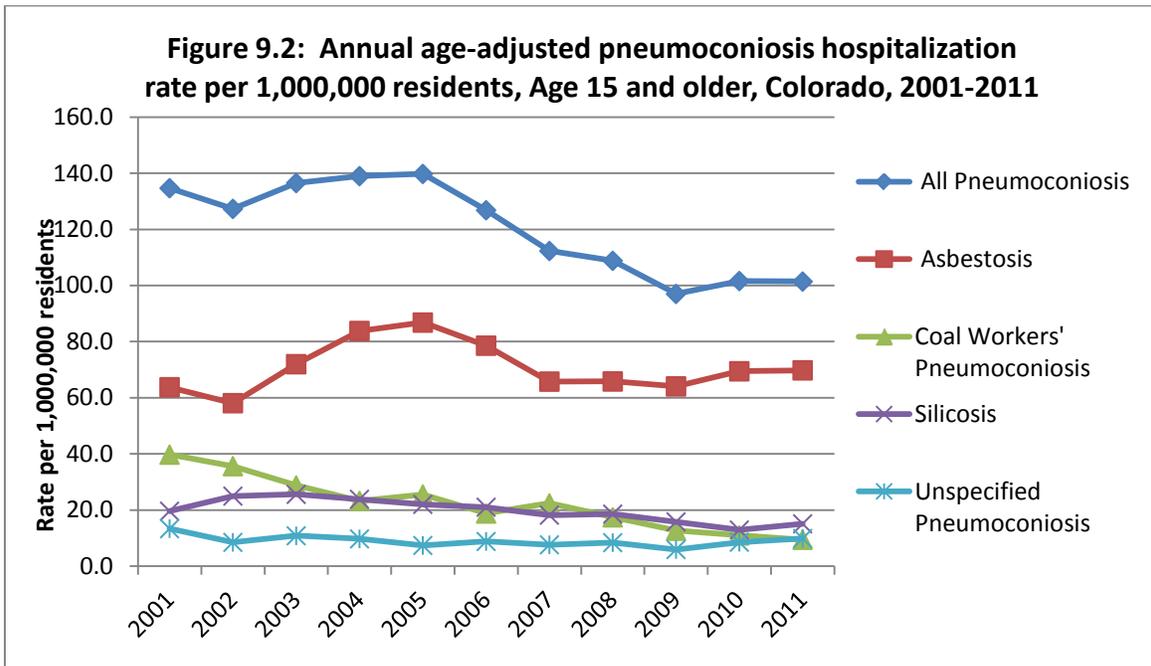
**United States data beyond 2008 not yet available through CSTE*

Table 9.2: Number of hospitalizations from or with pneumoconiosis by type of pneumoconiosis, Colorado residents age 15 and older, 2001-2011

	All Pneumoconiosis	Asbestosis	Coal Workers' Pneumoconiosis	Silicosis	Unspecified Pneumoconiosis
2001	363	171	107	52	38
2002	353	161	99	68	25
2003	387	205	81	71	32
2004	413	245	69	71	33
2005	418	256	77	67	24
2006	389	238	59	65	29
2007	356	205	72	61	24
2008	356	211	58	63	29
2009	326	214	42	55	20
2010	324	217	36	42	30
2011	335	222	34	55	33

Colorado Hospital Association hospital discharge data from the Colorado Department of Public Health and Environment Health Statistic Section

Note: As specific types of pneumoconiosis are not mutually exclusive, and more than one diagnosis may be identified in a single hospitalization, the sum of hospitalizations across the various pneumoconiosis categories may be greater than the total count of hospitalizations with a pneumoconiosis diagnosis.



Colorado Numerator: Colorado Hospital Association hospital discharge data from the Colorado Department of Public Health and Environment Health Statistic Section

Denominator: Population estimates from the United States Census Bureau; Year 2000 US Standard population (for age-standardization)

Limitations

- Because of the long latency for development of disease, current pneumoconiosis hospitalization incidence is not necessarily indicative of current exposure.
- Practice patterns and payment mechanisms may affect decisions by health care providers to hospitalize patients, to correctly diagnose work-related conditions and/or to list the condition as a discharge diagnosis.
- The true burden of work-related hospitalizations may be under-represented if workers utilize other payer sources (e.g., self-pay, private insurance).
- Colorado residents hospitalized in another state are not captured in these data.
- Hospitalization discharge records are based on admissions, not persons; thus, they may include multiple admissions for a single individual.
- Typically, only a small number of the most severe cases of pneumoconiosis are hospitalized; thus, these hospitalization rates most likely underestimate the true burden of pneumoconiosis among workers.
- Work-related hospitalization data analyzed using the methods in this report are not directly comparable between states due to differences in states' workers' compensation insurance programs.
- Though United States level data are provided in this report, comparing state data to United States data should be done with caution as United States data are based on national probability estimates from state-level data, and workers' compensation (WC) insurance programs vary from state to state.

Recommendations and Next Steps

- Evaluate existing hospitalization data available to the CDPHE to describe hospitalizations from or with pneumoconiosis in Colorado by age, gender, race/ethnicity and type of pneumoconiosis.ⁱⁱ
- Continue to explore opportunities to link hospitalization data with other health and employment data to obtain information on industries and occupations associated with pneumoconiosis hospitalizations. (See Indicator #2 Recommendations for more information about analyzing hospitalization data.)
- By conducting more detailed analyses, identify the worker characteristics or risk factors that most contribute to pneumoconiosis hospitalizations to guide intervention, education and prevention efforts.
- Because all types of pneumoconioses are chronic diseases, they are largely treated on an outpatient basis and the true burden of the disease is not well described by hospitalization data. The CDPHE, in partnership with its Occupational Health and Safety Surveillance Advisory Committee and other stakeholders, should work to identify data sources that estimate the rate of outpatient (non-hospitalized) cases of pneumoconiosis (incidence and prevalence). The utility of states workers' compensation FRI reports (available to CDPHE) should be evaluated for surveillance of pneumoconiosis incidence. (See Employment Demographic Profile Recommendations for more information about evaluating WC FRI data.)

ⁱⁱ The Occupational Health and Safety Surveillance Program is currently working to publish an expanded evaluation of these data.