Asthma Among Elderly Adults in Utah

2011

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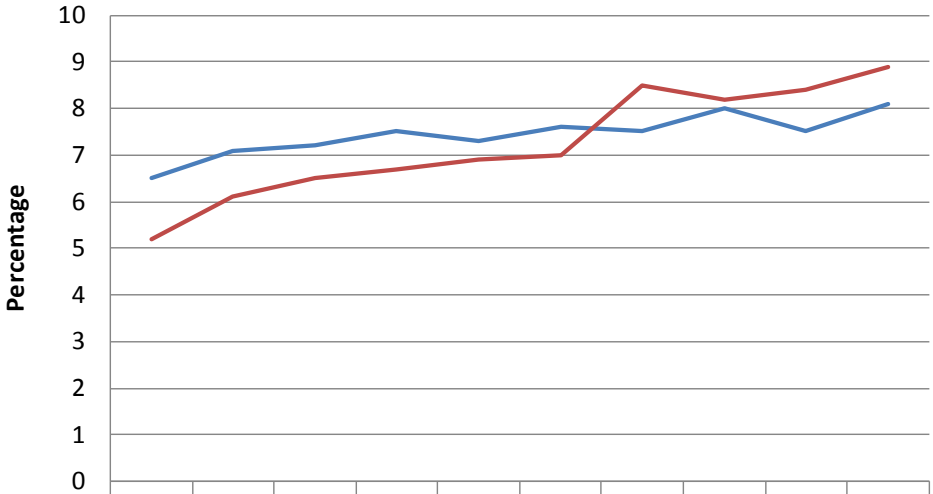
Introduction

There are approximately 258,000 adults ages 65 and older in Utah[1]. Of those, an estimated 8.9% (around 23,000 people) currently have asthma[2]. Asthma can affect individuals differently based on personal characteristics, and differences in asthma outcomes have often been noted by age. The elderly population differs from other age groups in ways that may affect asthma outcomes, some of which may include existing co-morbidities or the availability of Medicare. Because of these and other characteristics unique to the elderly, interventions should be tailored to the specific needs of this population.

The Utah Asthma Program seeks to improve quality of life for all people with asthma by providing resources and education across the state. This report was developed to describe the burden of asthma specific to the elderly population and to provide data upon which the Utah Asthma Program and other organizations can develop appropriate resources or programs designed to improve quality of life for Utah's elderly population.

Prevalence

Figure 1. Current Asthma Prevalence Among Adults Ages 65+, Utah versus United States, 2001-2010



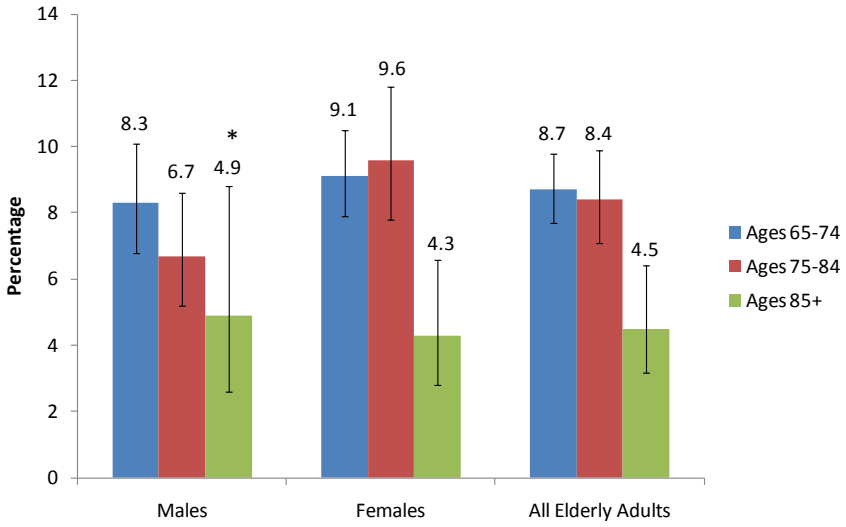
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
U.S.	6.5	7.1	7.2	7.5	7.3	7.6	7.5	8.0	7.5	8.1
Utah	5.2	6.1	6.5	6.7	6.9	7.0	8.5	8.2	8.4	8.9

Data source: BRFSS, 2001-2010. Crude prevalence.

There has been an increasing trend in asthma prevalence among the elderly population during the past 10 years, both in Utah and nationwide. Specific findings include:

- In Utah, prevalence increased by 71% between 2001 and 2010, from 5.2% to 8.9%.
- Since 2007, the asthma prevalence among the elderly in Utah has exceeded the nationwide asthma prevalence.

Figure 2. Current Asthma Prevalence by Age and Sex, Utah Adults Ages 65+, 2006-2010



Data source: BRFSS, 2006-2010. Crude prevalence.

*The coefficient of variation is >30% and does not meet Utah Department of Health standards for reliability.

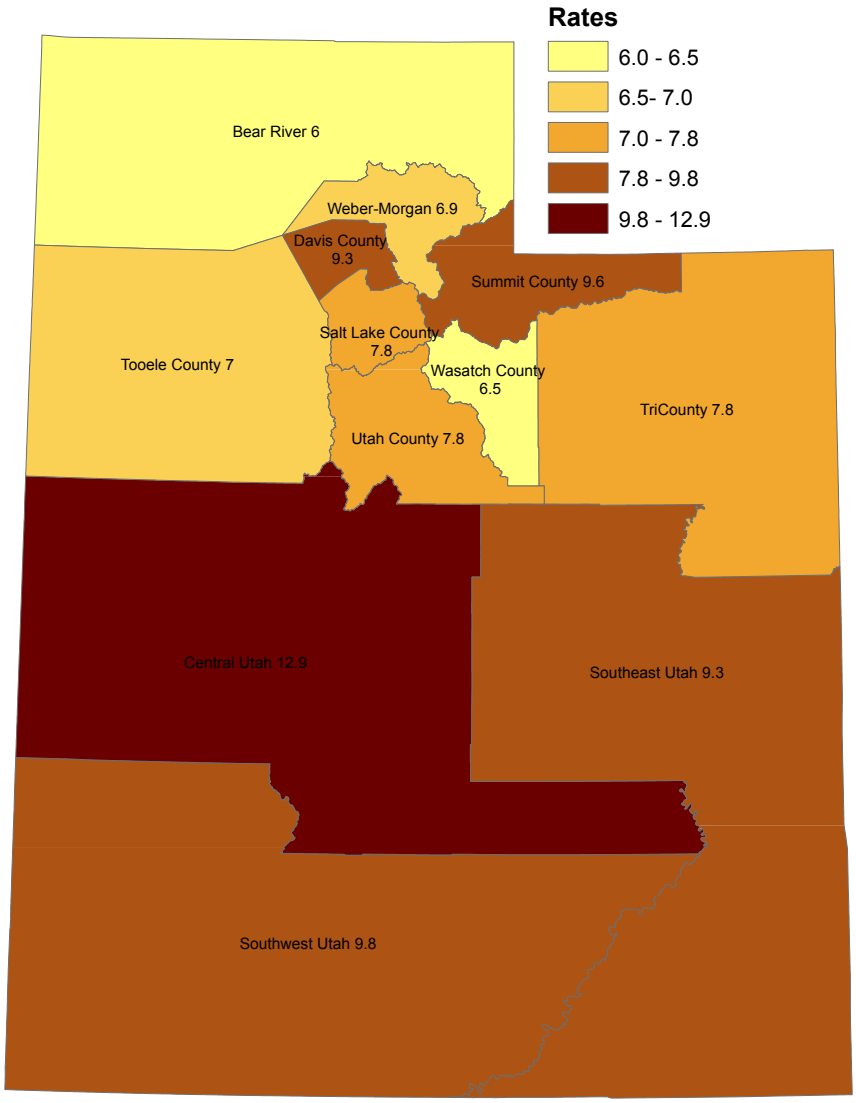
Analyses of asthma prevalence by age and sex showed the following:

• Among females and overall, elderly adults ages 85 and older reported nearly half the prevalence of asthma compared to younger age groups (differences were statistically significant).

• For age groups 65-74 and 75-84, females reported higher asthma prevalence compared to males, though differences were not statistically significant.

Prevalence

Figure 3. Current Asthma Prevalence by Local Health District, Utah Adults Ages 65+, 2006-2010



Data source: BRFSS, 2006-2010. Crude prevalence. This map was developed using the "natural breaks" method, in which categories are based on groupings inherent in the data.

Analyses of asthma prevalence by local health district showed the following:

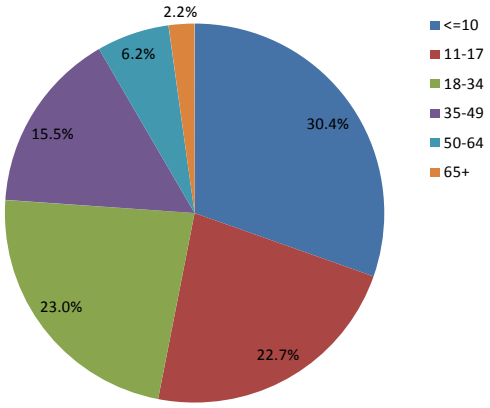
- Bear River and Wasatch County local health districts had the lowest asthma prevalence compared to other local health districts.
- Central Utah had the highest asthma prevalence (12.9% (9.6-17.0)), which was nearly twice the asthma prevalence in the two areas with the lowest asthma prevalence.

Characteristics of Elderly Adults with Asthma

Elderly adults with current asthma in Utah reported the following characteristics:

- 27.7% (16.9-38.6) said they have ever been diagnosed with COPD[a]
- 25.8% (20.1-31.5), or about one in four, said they have ever been diagnosed with depression[b]
- 2.2% (1.5-2.9) reported being diagnosed when they were 65 or older (see Figure 4)[b]

Figure 4. Age at First Diagnosis Among Elderly Adults With Lifetime Asthma, Utah, 2007-2010



Data sources: a BRFSS Core, 2007. b. BRFSS Adult Asthma Call-back Survey, 2007- 2010. Crude percentages.

Table 1. Indoor Modifications and Exposures Among Elderly Adults With Asthma, Utah, 2007-2010

	Percent	95% Confidence Interval
Indoor Modifications		
Air cleaner or purifier regularly used inside home	25.0	(19.5-30.6)
Dehumidifier regularly used to reduce moisture inside home	9.1	(5.4-12.8)
Exhaust fan regularly used when cooking	52.2	(45.3-59.2)
Exhaust fan regularly used in bathroom	53.9	(46.9-60.9)
Mattress cover used to control dust mites	27.8	(21.2-34.5)
Pillow cover used to control dust mites	20.7	(14.4-27.0)
Hot water used to wash sheets and pillowcases	42.3	(35.5-49.1)
Exposure to Indoor Triggers		
Unvented gas logs, fireplace, or stove used in home	11.9	(7.6-16.2)
Have pets that spend time indoors	40.3	(33.4-47.1)
Have pets that are allowed in the bedroom	29.0	(23.0-34.9)
Wood-burning fireplace or stove used in home	14.0	(9.5-18.6)
Carpeting or rugs in bedroom	88.7	(84.6-92.9)
Gas used for cooking	22.8	(17.4-28.3)

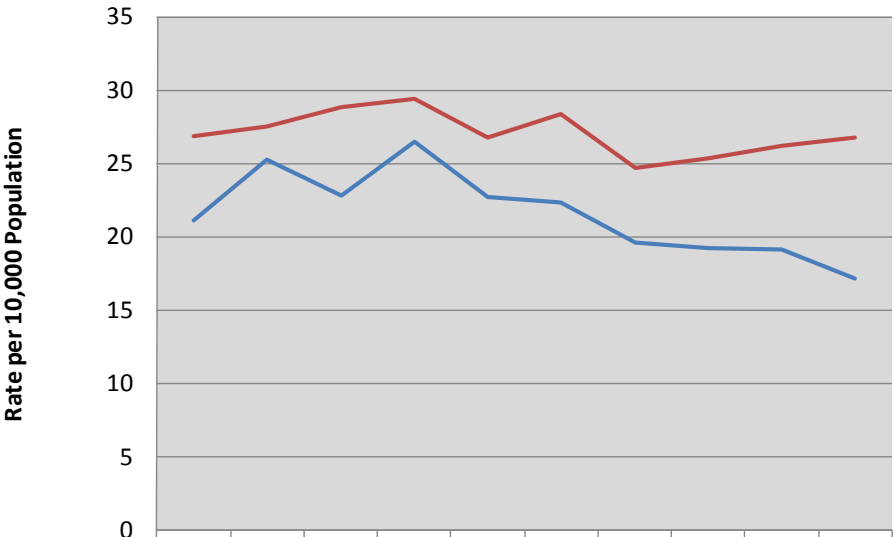
Data source: BRFSS Adult Asthma Call-back Survey, 2007-2010. Crude percentages.

In 2009, there were 435 emergency department visits for asthma among adults ages 65 and older. Of those, 280 were visits where the patient was treated and then released from the emergency room, and 155 were visits that resulted in hospitalization. Each non-admitted emergency

Emergency Department Visits

department visit had an average charge of cost an average of $2,000, and total charges for non-admitted emergency department visits among the elderly were just over $600,000. Total emergency department visits for asthma among the elderly represented approximately 6.0% of all emergency department visits for asthma that year.

Figure 5. Emergency Department Visit Rates for Asthma by Age Group, Utah, 2000-2009



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Ages 0-64	26.9	27.6	28.8	29.4	26.8	28.3	24.7	25.3	26.2	26.8
Ages 65+	21.1	25.2	22.9	26.5	22.7	22.4	19.6	19.2	19.2	17.2

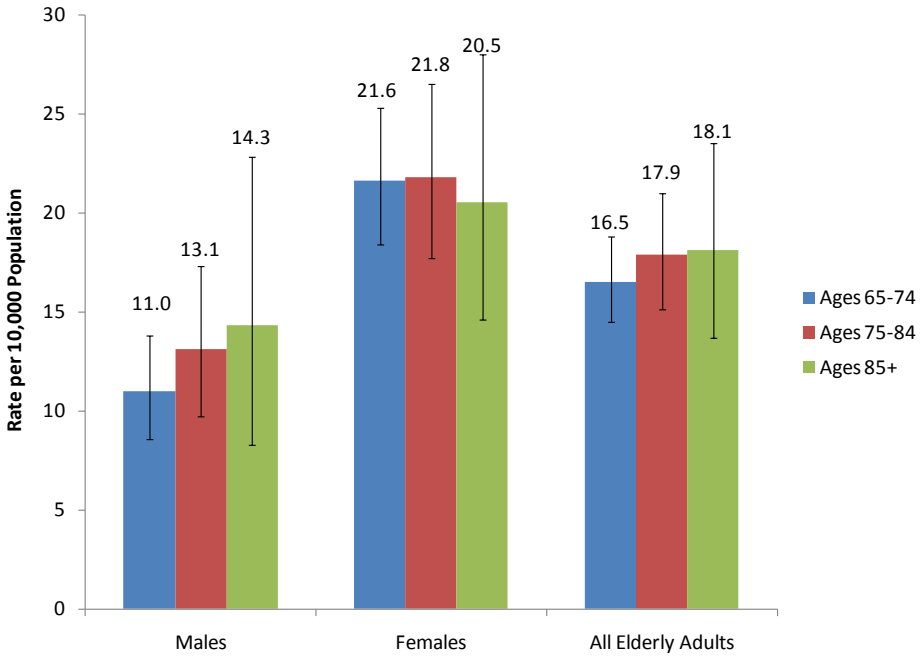
Data source: Utah Emergency Department Encounter Database, 2000-2009. Note: Rates shown include both treat-and-release visits and visits that resulted in hospitalization. Crude rates.

In recent years, there has been a decreasing trend in emergency department visits for asthma among the elderly. Specific findings included:

- The emergency department visit rate among Utah's elderly population has remained consistently lower than the rate among all other ages combined.
- From 2000 to 2009, the overall emergency department visit rate among the elderly decreased by 18.9%, from 21.1 to 17.2 visits per 10,000 population.

Emergency Department Visits

Figure 6. Asthma Emergency Department Visit Rate by Age and Sex, Utah Adults Ages 65+, 2009



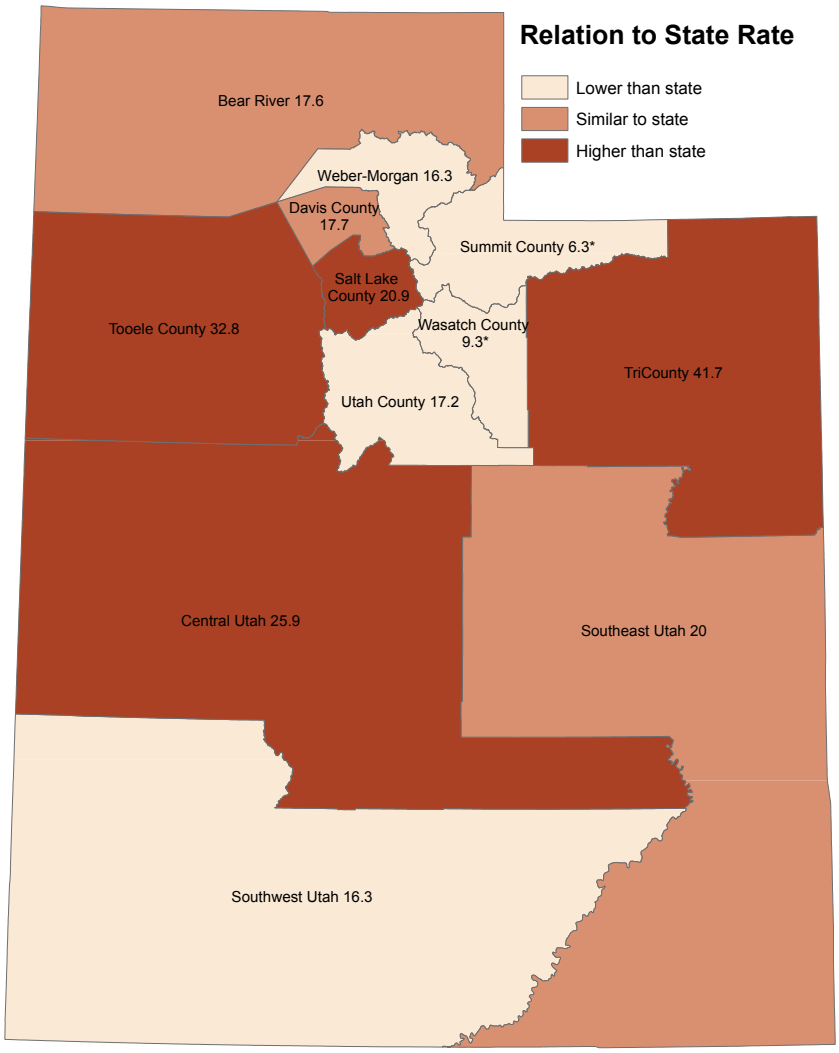
Data source: 2009 Emergency Department Encounter Database. Note: Rates shown include both treat-and-release visits and visits that resulted in hospitalization. Crude rates.

Analyses of asthma emergency department visits, stratified by sex and age groups, showed the following:

- For age groups 65-74 and 75-84, females had significantly higher emergency department visit rates for asthma compared to males.
- Among males, asthma emergency department visit rates appeared to increase with age (differences were not statistically significant), while they did not for females.

Emergency Department Visits

Figure 7. Asthma Emergency Department Visit Rates per 10,000 Population by Local Health District, Utah Adults Ages 65+, 2005-2009



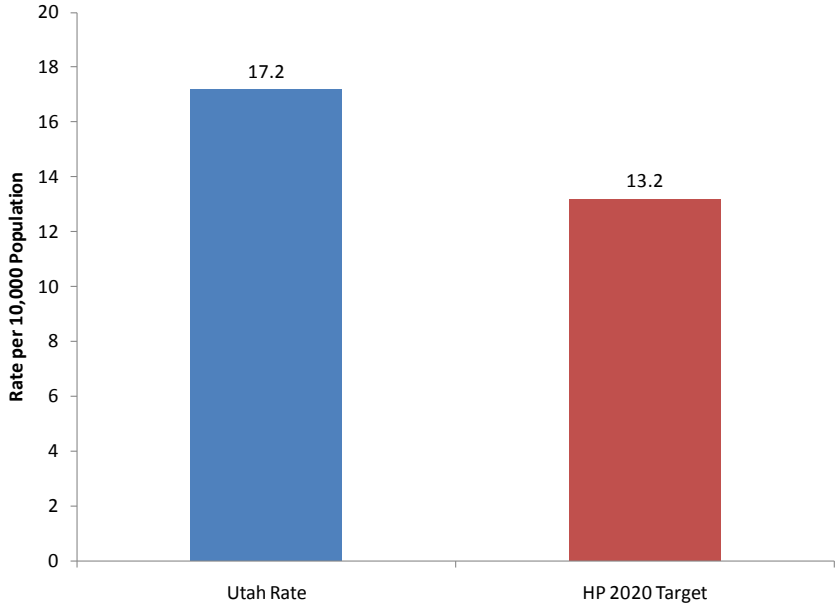
Data source: Emergency Department Encounter Database, 2005-2009. Note: Rates shown include both treat-and-release visits and visits that resulted in hospitalization. *Estimates for Summit County and Wasatch County local health districts had a coefficient of variation >30% and do not meet Utah Department of Health standards for reliability. Interpret with caution. Crude rates.

Analyses of emergency department visits by local health district showed differences by geographic area. Specific findings included the following:

- TriCounty local health district had more than double the state rate of emergency department visits for asthma (41.7 (34.0-50.7) versus 19.4 (18.6-20.2) visits per 10,000 population).
- Summit and Wasatch County local health districts had the lowest emergency department visit rates for asthma (6.3 [2.9-12.0] and 9.3 [4.2-17.6] visits per 10,000 population respectively).

Emergency Department Visits

Figure 8. Asthma Emergency Department Visit Rate in Utah Compared to Healthy People 2020 Target, Adults Ages 65+, 2009



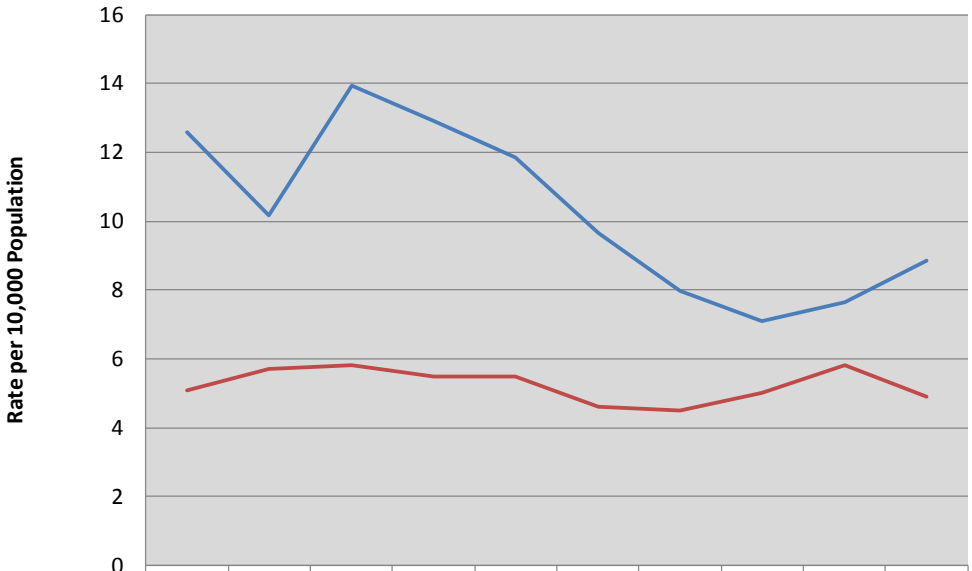
Data source: 2009 Utah Emergency Department Encounter Database. Healthy People 2020 Objectives. Note: Rates shown include both treat and release visits and visits that resulted in hospitalization. Crude rates.

In 2009, the Utah emergency department visit rate among the elderly population exceeded the nationwide target of 13.2 visits per 10,000 population.

Hospitalizations

In 2010, there were 228 hospitalizations due to asthma among the elderly. This represented 15.3% of all asthma hospitalizations that year among the elderly the average length of stay was 3.6 days compared to 2.9 days among adults ages 18-64. Each elderly hospitalization had an average charge of $16,000, with a total charges exceeding of more than $3.5 million for all elderly hospitalizations for asthma in 2010.

Figure 9. Hospitalization Rates for Asthma, Utah, 2001-2010



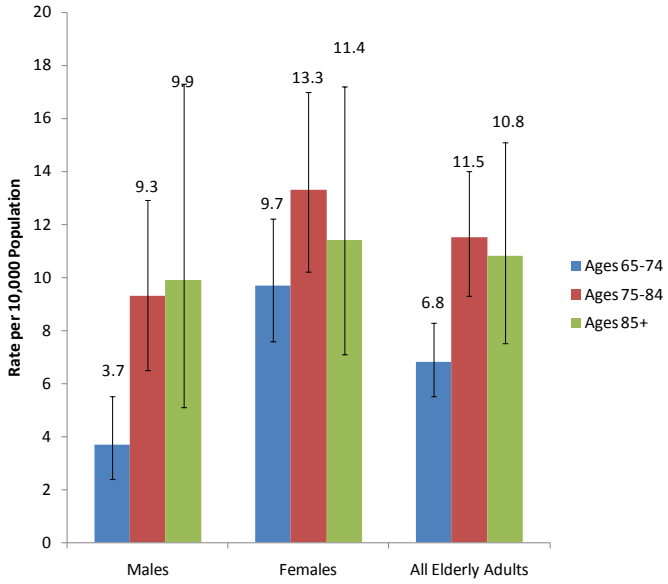
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Ages 65+	12.6	10.2	13.9	12.9	11.8	9.6	8.0	7.1	7.7	8.8
Ages 0-64	5.1	5.7	5.8	5.5	5.5	4.6	4.5	5	5.8	4.9

Data source: Utah Inpatient Hospital Discharge Database, 2001-2010. Crude rates.

Asthma hospitalizations among the elderly have had an overall decreasing trend from 2001-2010. Specific findings applicable to the elderly include:

- Between 2001 and 2010, the asthma hospitalization rate among the elderly declined by 30.2%, from 12.6 to 8.8 hospitalizations per 10,000 population.
- During the past 10 years, the asthma hospitalization rate among the elderly has remained consistently higher compared to all other age groups combined.

Figure 10. Asthma Hospitalizations by Age and Sex, Utah Adults Ages 65+, 2010



Data source: Utah Inpatient Hospital Discharge Database, 2010. Crude rates.

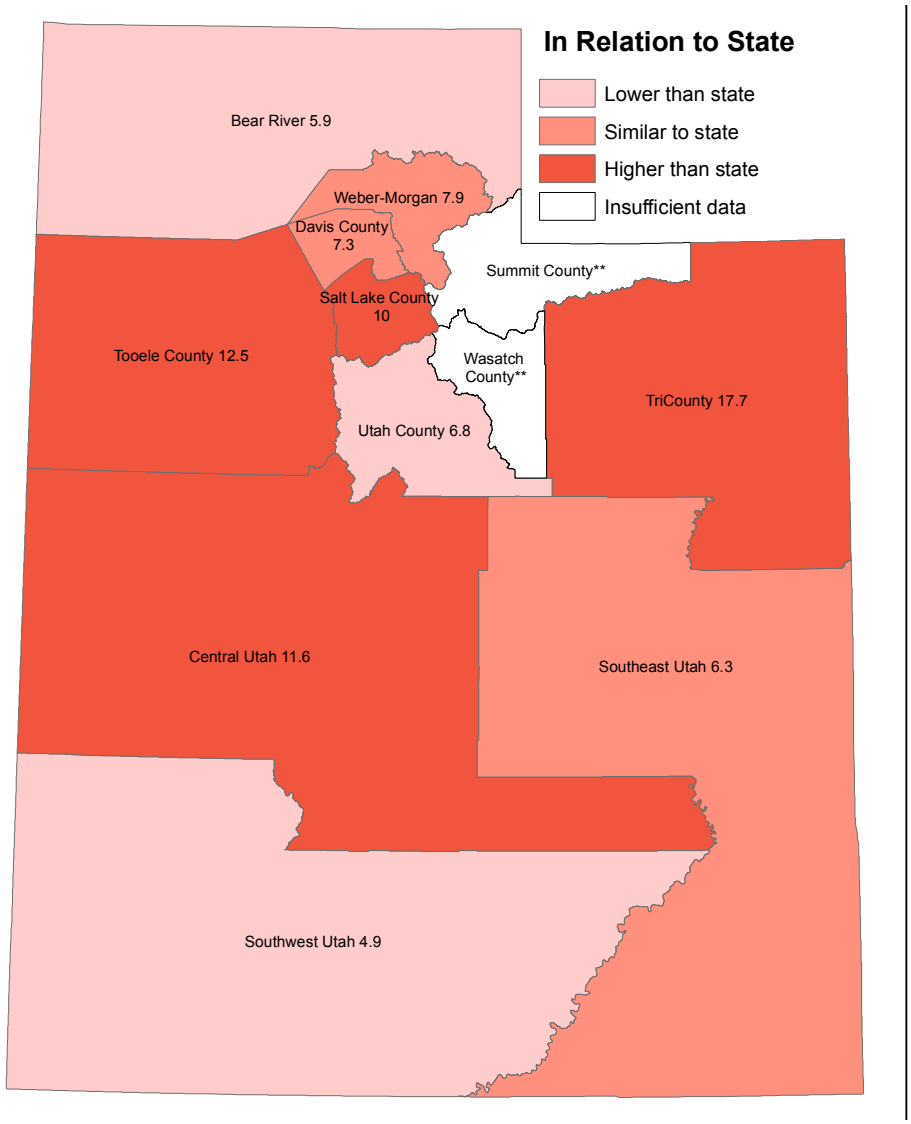
Analyses of asthma hospitalizations, stratified by sex and age groups, showed the following:

• Asthma hospitalization rates for males ages 75-84 (9.3 visits per 10,000 population) were more than double the rate for males ages 65-74 (3.7 visits per 10,000 population)

• Asthma hospitalization rates were higher among females, compared to males, for every age group (differences were statistically significant for ages 65-74)

Hospitalizations

Figure 11. Asthma Hospitalization Rates per 10,000 Population by Local Health District, Utah Adults Ages 65+, 2006-2010



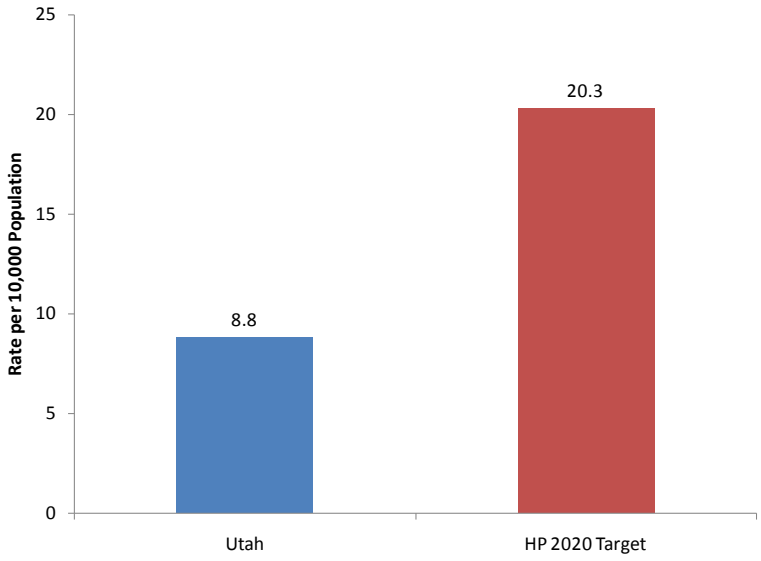
Data source: Utah Inpatient Hospital Discharge Database, 2006-2010. Crude rates. **Due to the small number of asthma hospitalizations and resulting coefficients of variation >50% in Summit and Wasatch County local health districts, rates for those areas were not reported.

- Central Utah, Salt Lake Valley, Tooele County, and TriCounty local health districts had higher rates of asthma hospitalizations compared to the state rate of 8.2 (7.7-8.8) admissions per 10,000 population.

- TriCounty local health district had the highest rate of asthma hospitalizations, which was more than twice the state rate (17.7 [12.9-23.6] versus 8.2 [7.7-8.8] admissions per 10,000 population).

- Summit and Wasatch local health districts had the lowest rates of asthma hospitalizations (actual values not reportable due to small numbers).

Figure 12. Asthma Hospitalization Rate in Utah Compared to Healthy People 2020 Target, Adults Ages 65+, 2010



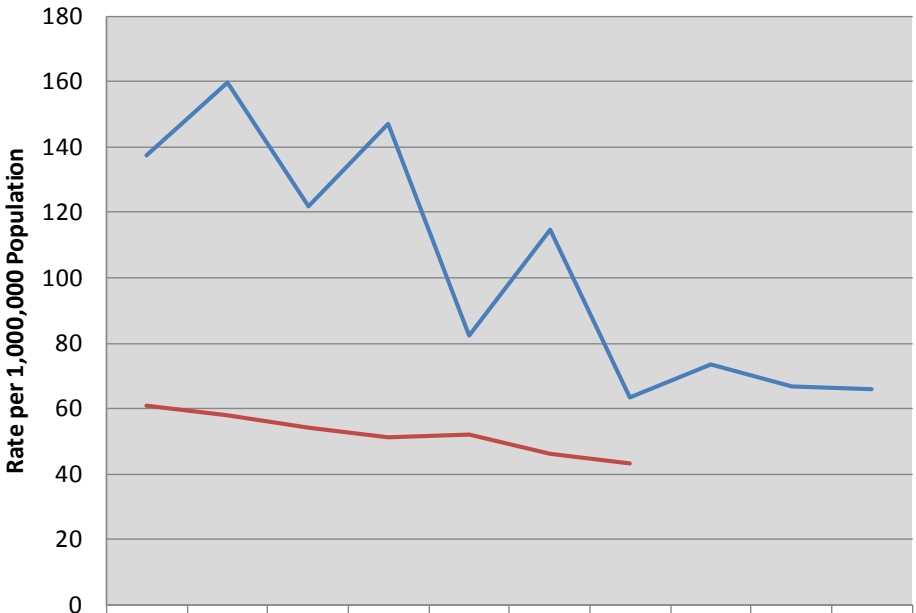
Data source: Utah Inpatient Hospital Discharge Database, 2010. Healthy People 2020 Objectives. Crude rates.

In 2010, the elderly asthma hospitalization rate in Utah was 8.8 hospitalizations per 10,000 population, which was below the Healthy People 2020 target of 20.3 visits per 10,000 population.

Mortality

Although asthma mortality is rare, it is an outcome in the elderly more commonly than in younger age group. In 2010, there were 17 deaths due to asthma among adults ages 65 and older in Utah. This represented 68.0% of all Utah asthma deaths that year (25 total asthma deaths).

Figure 13. Asthma Mortality Rate, Adults Ages 65+, Utah and U.S., 2001-2010



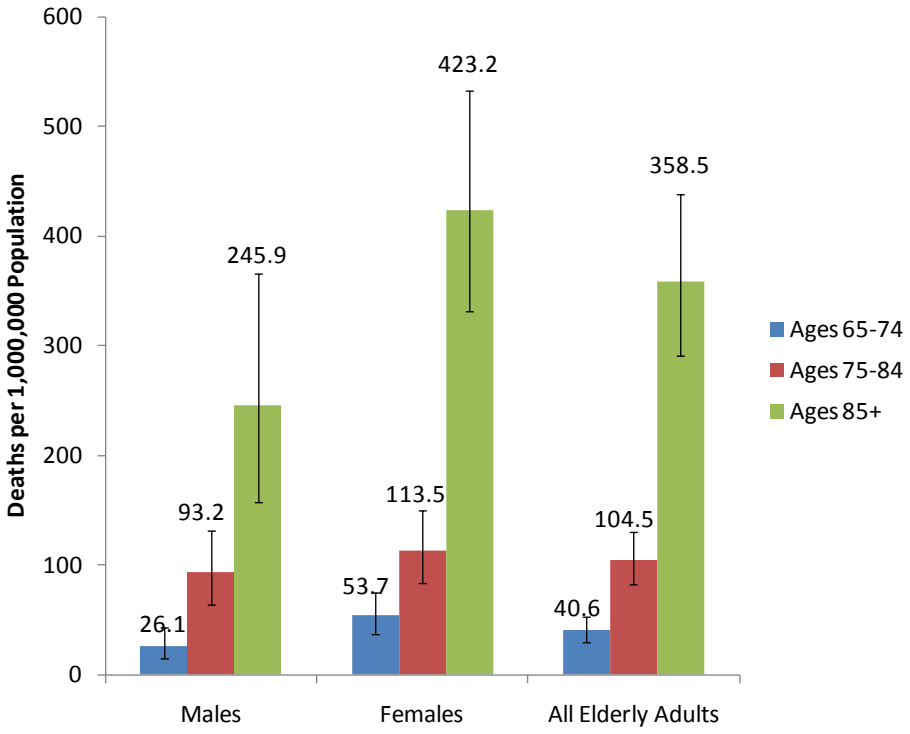
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Utah	137.5	159.6	121.7	147.1	82.3	114.9	63.6	73.4	67.0	65.9
U.S.	60.8	58.1	54.4	51.3	52.3	46.2	43.3			

Data sources: Utah Death Certificate Database, 2001-2010. Centers for Disease Control and Prevention, National Center for Health Statistics. Compressed Mortality File 2001-2007[3]. Note: National asthma mortality data were unavailable after 2007. Crude rates.

The asthma mortality rate among Utah's elderly population declined over the past ten years. Specific findings include:

- The asthma mortality rate among the elderly in Utah has remained consistently higher than the national asthma mortality rate for the elderly population.
- From 2001 to 2010, the Utah asthma mortality rate among the elderly decreased by 52.1%, from 13.8 to 6.6 deaths per 100,000 population.

Figure 14. Asthma Mortality by Age and Sex, Utah Adults Ages 65+, 2001-2010



Data source: Utah Death Certificate Database, 2001-2010. Crude rates.

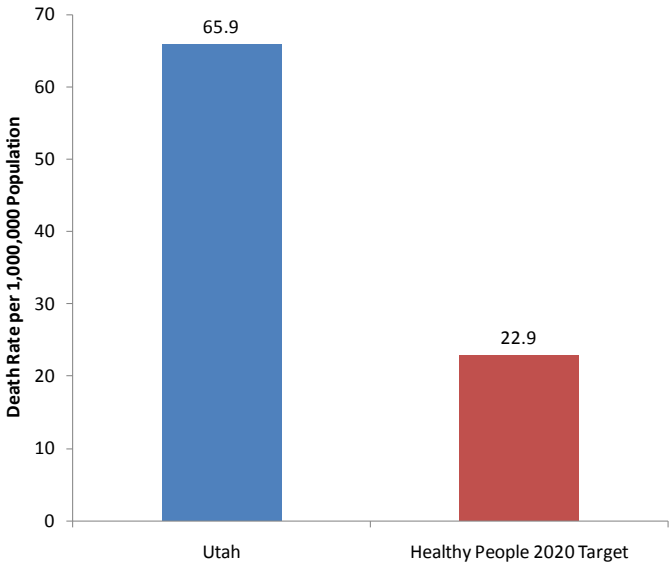
Analyses of asthma mortality by age and sex showed the following:

• Among males and females, asthma mortality rates were significantly higher for older age groups compared to younger age groups.

• For every age group, the asthma mortality rate among females was higher compared to the asthma mortality rate among males (differences were not statistically significant).

Mortality

Figure 15. Utah Asthma Mortality Rate Compared to Healthy People 2020 Target, Adults Ages 65+, 2010



Data source: Utah Death Certificate Database, 2010. Healthy People 2020 Objectives. Crude rates.

In 2010, the asthma mortality rate in Utah was 65.9 deaths per one million population among adults ages 65 and older, compared to the Healthy People 2020 target rate of 22.9 deaths per one million population. Though the Utah asthma mortality rate was nearly triple that of the Healthy People 2020 target, it is important to note that there were a total of 17 asthma deaths among elderly adults that year, and the rate would be dramatically decreased through the prevention of even a small number of deaths.

Asthma Management

Symptoms and Control

Elderly adults in Utah reported the following*:

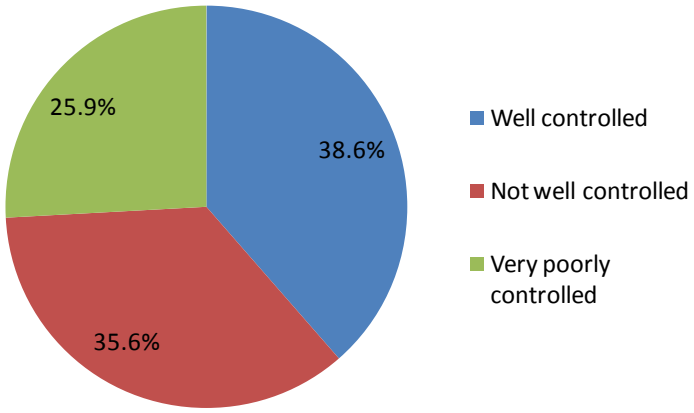
- 13.7% (9.2-18.1), or more than one in 10 elderly adults, reported experiencing asthma symptoms every day in the past 30 days and throughout the day.
- 41.9% (35.0-48.8) reported experiencing asthma symptoms within the past day.
- 8.2% (4.8-11.7) of elderly adults said they experienced a lot of activity limitations due to asthma during the past 12 months.
- More than one in 10 elderly adults (12.1% [7.9-16.4]), said their asthma symptoms made it difficult to stay asleep 13 or more days during the past month.
- According to criteria developed from the NAEPP guidelines, just over one-third (38.6% [32.0-45.1]) of elderly adults reported having well-controlled asthma (see Table 2 and Figure 16 for control definitions and percentages).

Table 2. Asthma Control Definitions for Adults, Based on NAEPP Guidelines

Control Component	Well Controlled	Not Well Controlled	Very Poorly Controlled
Symptoms	≤8 days in past 30 days	>8 days in the past 30 days but not throughout the day	Every day in the past 30 days and throughout the day
Nighttime awakenings	≤2 times in past 30 days	≥3 and ≤12 times in the past 30 days	≥13 times in the past 30 days
Rescue medication use	≤0.29 uses per day	>0.29 and <2.00 uses per day	≥2.00 uses per day

Note: All criteria must have been met for adults to be included in the "well controlled" category. For adults to be included in the "not well controlled" or "very poorly controlled" categories, only one of the criteria had to be met. Control level was assigned in accordance with the poorest outcome measure that was reported.

Figure 16. Level of Asthma Control Among Utah Adults Ages 65+, 2007-2010

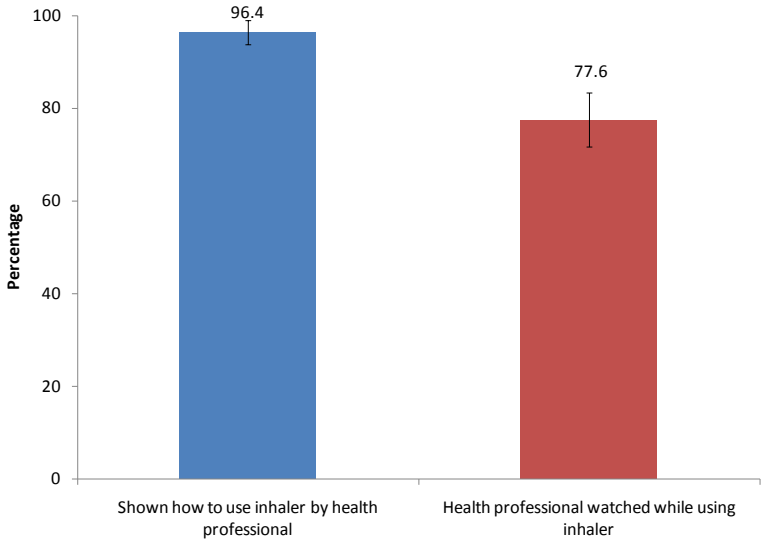


Data source: 2007-2010 BRFSS Adult Asthma Call-back Survey. Note: Asthma control level was determined based on NAEPP guidelines regarding self-reported symptoms, night-time awakenings, and rescue medication use (criteria listed in Table 2).

Asthma Management

Medication Use

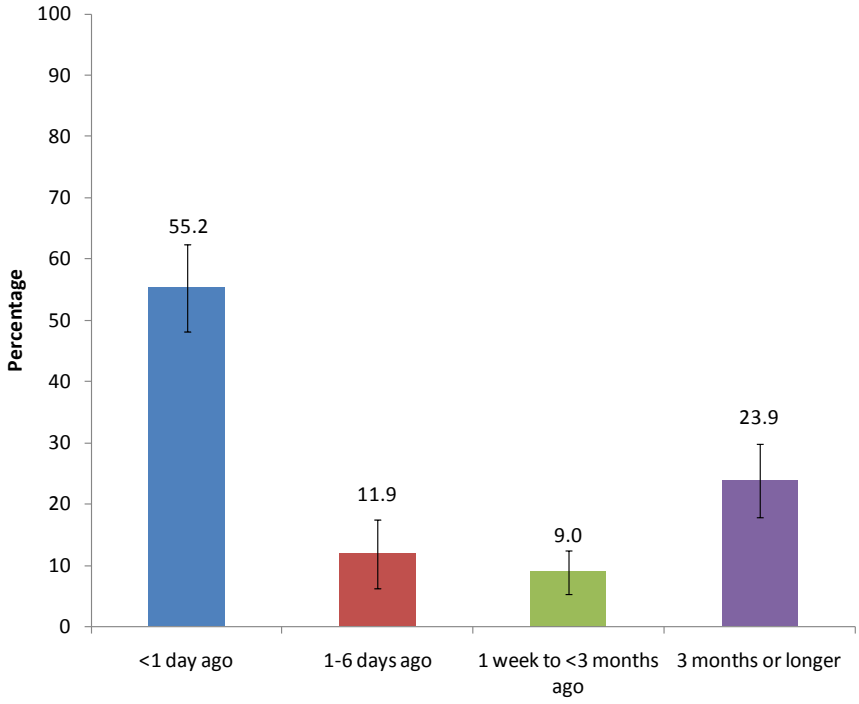
Figure 17. Inhaler Instruction Given to Utah Adults Ages 65+, 2007-2010



Data source: 2007-2010 BRFSS Adult Asthma Call-back Survey.

Nearly all elderly adults (96.4% (93.8-99.0) said they had been shown how to use an inhaler by a health professional, though lower percentages reported that a health professional had watched while they used the inhaler (77.6% [71.8-83.3]).

Figure 18. Most Recent Asthma Medication Use by Utah Elderly Adults, 2007-2010



Data source: 2007-2010 BRFSS Adult Asthma Call-back Survey.

When asked about their most recent use of asthma medications, elderly adults reported the following:

• About half (55.2% [48.1-62.4]) of elderly adults said they had taken asthma medications within the past day.

• Nearly one-quarter (23.9% (17.8-29.9)) said it had been at least three months since they had last taken any asthma medications. This percentage could represent those with well-controlled asthma who did not need daily asthma medications (see Figure 16).

Guideline Adherence

Table 3. Adherence to NAEPP Guidelines by Utah Adults Ages 65+

NAEPP Guideline	Status Among Utah's Elderly Population
Persons with asthma should have 2 or more visits per year with a health care professional for routine asthma care.	33.6% (27.2-40.0) reported having had at least two routine checkups for asthma during the past year[a]
Treatment should result in minimal to no emergency department visits for persons because of their asthma.	11.0% (6.0-15.9) experienced an ED visit for asthma during the past year[a]
Older adults with asthma should receive an influenza vaccination annually by virtue of their age and asthma status.	76.9% (69.8-82.8) received a flu shot during the past 12 months[b]
All adults ages 65 years and older should receive a pneumococcal vaccination per recommended schedule.	82.3% (75.6-87.4) reported having ever received a pneumococcal vaccination[b]
Persons with asthma should have an Asthma Action Plan.	24.4% (17.7-31.1) reported having ever received an asthma action plan[a]
Persons with asthma should receive instruction on how to recognize the signs and symptoms of an attack.	59.0% (52.1-65.8) reported having ever been taught to recognize the signs and symptoms of an asthma attack[a]
Persons with asthma should have a discussion with their healthcare provider about environmental exposures at their home or work.	18.2% (13.2-23.2) were ever told by a health professional to make changes to their environment[a]
Smoking or exposure to tobacco smoke should be avoided.	3.0% (0.5-5.5)* reported there was smoking in their home during the past week[a] 4.4% (2.7-7.2) said they were a current smoker[c]

Data sources: a. 2007-2010 BRFSS Adult Asthma Call-back Survey
b. 2010 BRFSS Core
c. 2009-2010 BRFSS Core
Note: * The coefficient of variation is > 30% and does not meet UDOH standards for reliability. Interpret with caution.

Conclusions

Asthma represents a significant burden among Utah's elderly population, affecting 8.9% of adults ages 65 and older. The effects of asthma have been manifest through emergency department visits and hospitalizations, which have resulted in an estimated $4.1 million in combined annual charges. Some areas of the state experienced higher emergency department visit and hospitalization rates compared to others, particularly TriCounty Local Health District. Asthma mortality has been declining over the past 10 years; however, deaths among the elderly represent the majority of asthma deaths that occur. Elderly females appear to be more affected by asthma than elderly males, as is shown in higher emergency department visit, hospitalization, and mortality rates for asthma.

An analysis of asthma management practices among the elderly indicate need for improvement. Based on reported sleep patterns, medication use, and night-time awakenings, just over one-third of elderly adults have well-controlled asthma. Using NAEPP guidelines as a reference, only about one-third of elderly adults received the recommended number of asthma checkups within the past year, and just over half have ever received instruction on how to recognize the signs and symptoms of an asthma attack. Other areas showing room for improvement include the issuing of an asthma action plan by health care providers and encouragement to receive an annual flu shot.

It is recommended that the Utah Asthma Program and other organizations consider these data as a basis for developing appropriate interventions targeted to the needs of the elderly population.

References

1. The Population Estimates Committee and the Governor's Office of Planning and Budget. Accessed via Utah's Indicator-Based Information System for Public Health at http://ibis.health.utah.gov/query/result/pop/PopMain/Count.html on Nov 22, 2011.

2. Behavioral Risk Factor Surveillance System Survey, 2010. Accessed via Utah's Indicator-Based Information System for Public Health at http://ibis.health.utah.gov/query/result/brfss/BRFSSCrude/AsthNow.html on Nov 22, 2011.

3. Centers for Disease Control and Prevention, National Center for Health Statistics. Compressed Mortality File 1999-2007. CDC WONDER On-line Database, compiled from Compressed Mortality File 1999-2007 Series 20 No. 2M, 2010. Accessed at http://wonder.cdc.gov/cmf-icd10.html on Oct 31, 2011 10:45:48 PM.

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