The Financial Burden of Asthma in Utah:

Charges Associated with Asthma Hospitalizations

UTAH DEPARTMENT OF HEALTH
Utah Asthma Program

Utah Department of Health
Asthma Program
288 North 1460 West
PO Box 142106
Salt Lake City, UT 84114-2106
health.utah.gov/asthma

Acknowledgments: This report was prepared by Holly Uphold, PhD with assistance from Rebecca Giles, MPH, Michael Friedrichs, MS and Brittany Guerra, MPH.

Utah Asthma Program has permission to publish all photographs.

Funding for this publication was provided by the Centers for Disease Control and Prevention, Cooperative Agreement #5U59EH000489, Addressing Asthma from a Public Health Perspective. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the CDC.

Table of Contents

Executive Summary

Asthma is an important public health issue especially when considering the direct (monetary) and indirect (missed school or work days) costs to individuals, families, and society. Keeping costs at a minimum requires proper asthma management. To improve asthma management and reduce costs, partners must work together to identify populations with a large asthma burden and address barriers such as lack of access to care, poor housing conditions, lack of knowledge about asthma, and the benefits of asthma management.

This report utilizes asthma hospitalization data from the Utah Inpatient Discharge Database to highlight the financial burden of asthma among Local Health Districts (LHDs) and insurance payers in Utah. This report is intended to assist LHDs, payers, and the Utah Asthma Program (UAP) in targeting areas and groups that exhibit a large financial asthma burden. This report will also highlight data patterns and provide conclusions to support strategic interventions that target reducing hospital visits for those with asthma.

Key Findings

- In Utah, asthma hospitalization charges have steadily increased from 2004 to 2013.
- In Utah, from 2004 to 2013, self-pay had the largest increase in asthma hospitalization median charges at 102% followed by CHIP at 82%. The smallest increase was in "Other Government" (58%) followed by Blue Cross/Blue Shield (BCBS) (69%).
- In Utah, from 2004 to 2013, Southeastern Utah LHD had the largest increase in asthma hospitalization median charges at 138%, with TriCounty LHD following at 112%. Central Utah LHD (35%) had the smallest increase.
- In Utah, during 2013, charges to Medicaid and Medicare made up over half ($9.5 million) of the total charges related to asthma hospitalizations ($18.7 million).
- An estimated $27.6 million was charged for asthma-related Emergency Department (ED) visits and hospitalizations in Utah during 2013.

Conclusions

- LHDs and payers should partner to identify populations with a large asthma financial burden. This will help to categorize groups with poor asthma management.
- The inverse relationship between median charge and average length of stay (days) suggests that advanced medical technology may play an important role in increasing costs.
- Each LHD and payer should consider the unique characteristics of their populations when determining how to address the asthma burden in their communities or among their clients.
- Partners who work together to provide education, treatment, and support to individuals with poorly controlled asthma can improve outcomes and reduce preventable costs like ED visits and hospitalizations.

Introduction

In Utah during 2013, 9.1% of adults and 6.1% of children had asthma. Asthma is associated with large health care expenditures. For example, in 2013, for non-infectious ambulatory diseases, asthma was the second most costly condition in Utah, following congestive heart failure. Asthma accounted for 1.0% of total ED charges and 0.3% of total hospitalization charges in Utah. In 2013, the total charge for asthma-related treat-and release ED visits in Utah was about $9.8 million; the total charge for hospitalizations that year was $18.7 million. An estimated $28.5 million was charged for asthma-related ED visits and hospitalizations in Utah during 2013.

Asthma health care expenditures include direct and indirect costs to society and individuals with asthma. Direct costs are associated with trips to the ED or hospital and indirect costs include lost work or school days. One study found that direct costs equal about 12.5% of total asthma costs (Bahadori, 2009). Therefore, if $28.5 million (ED plus hospitalization charges) is 12.5% of total charges, then total charges (including direct and indirect costs) could be as high as $216 million for asthma in Utah during 2013.

Access to quality asthma care is one way to reduce costs, especially those related to ED visits and hospitalizations. The goal of quality asthma care is to reduce the effects of asthma symptoms through guidelines-based asthma care, appropriate self-management, and community support. Lack of quality asthma care and/or poor asthma management can lead to utilization of the ED to treat asthma symptoms. If symptoms are severe enough that a patient is hospitalized, then even more costly treatments may be administered. Addressing asthma care in order to reduce ED visit and hospitalization rates and their associated costs is not only physically, monetarily, and emotionally beneficial for those with asthma, but it also has positive implications for society at large by reducing costs to Medicare and Medicaid. In Utah, during 2013, charges to Medicaid and Medicare made up more than half ($9.5 million) of the total charges related to asthma hospitalizations ($18.7 million).

Introduction

Purpose of this Report

This report details charges incurred by Utah's health care system for asthma-related hospitalizations. The presentation of charges in this report seeks to provide the Utah Asthma Program and community partners with data that illuminates the financial impact of asthma on specific populations. This report provides extensive amounts of data that can be used by payers or LHDs to identify populations with a large financial asthma burden. This report will also highlight patterns and provide conclusions about the data to support strategic interventions that target reducing hospital visits and associated charges for those with asthma.

Data

Data for hospitalization charges come from the Utah Inpatient Hospital Discharge Database, managed by the Bureau of Emergency Medical Services and the Office of Health Care Statistics at the Utah Department of Health. The database contains information on complete billing, which includes medical codes, patient characteristics, services received, and charges billed for each hospitalization. The data are comprehensive because they come from billing forms that include a diagnosis code for all visits. However, billing forms lack quality data on other factors related to asthma severity like race, income, and education. Access to this data can be found on the Utah Department of Health IBIS-PH website at http://ibis.health.utah.gov.

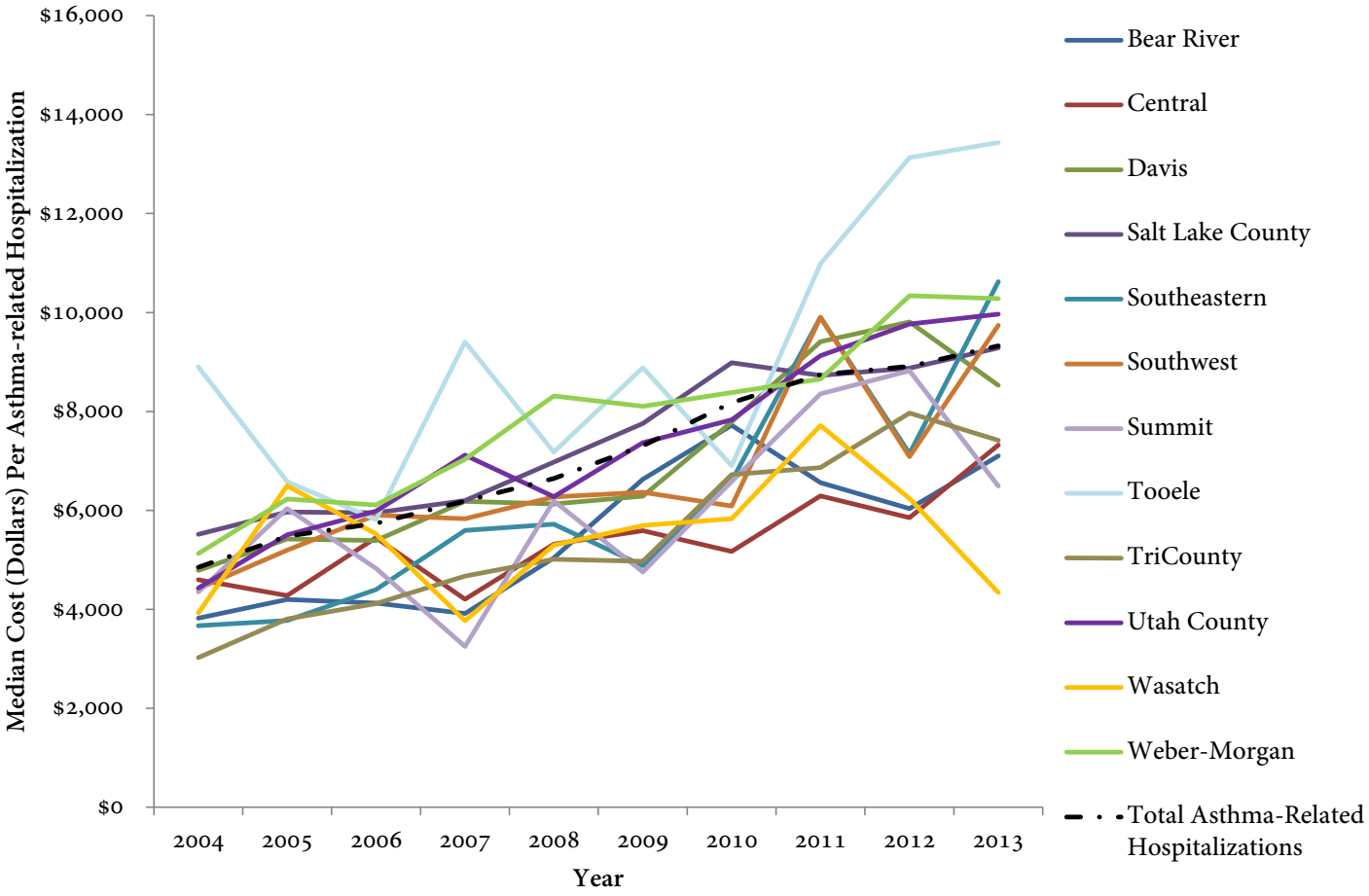
This report uses charge data which does not indicate cost. Payment or the cost is different from hospital charges. Furthermore, in reading this report, a few things must be noted to ensure accurate data interpretation. When examining total charges across populations, certain factors which influence differences should be considered. These include the number of visits per population and population demographics. To ignore these factors would result in a misunderstanding of the financial burden of asthma across different populations. For example, Medicare typically serves those aged 65+ while CHIP serves those 18 and younger. Also, those with commercial insurance will likely represent those with a higher income when compared to those on Medicaid. Differences in populations will likely affect the types of services rendered, thus affecting charges. In terms of notable population characteristics for LHDs, Southwest Utah LHD has a large population of residents aged 65+, while those living in Summit County LHD have the highest median income in the state. Again, these population characteristics will likely affect the services rendered and charges incurred.

The types of charges used in this report include total and median charges. Median charges were used to deal with extraneous data, and can be used to identify areas with a large asthma burden because they may indicate severe or uncontrolled asthma. Total charges can be useful for identifying populations that have a large financial burden regardless of population characteristics.

Results: Hospitalization Charges over Time

Although there are several dips and spikes in the data, Figure 1. highlights the steadily increasing median charge over 10 years for asthma-related hospitalizations in Utah (black dotted line) and within specific LHDs (all colors).

Figure 1. Asthma-related Hospitalization Median Charges (Dollars) by Utah LHD, 2004-2013



Results: Hospitalization Charges over Time

To compare the social and financial burden of asthma among LHDs, the following table (Table 1.) presents asthma-related number of hospitalizations, rates, and charges for all LHDs in 2013. Rates are provided to offer comparable numbers for LHDs.

Table 1. Summary of Utah Asthma-related Hospitalization Visits, Rates, and Charges, 2011-2013

LHD	Number of Hospitalizations	Percent of Total Visits	Age-adjusted Hospitalizations (per 10,000) and 95% Confidence Intervals	Relation of LHD Rate to State Rate
Bear River*	151	3%	3.0 (2.5-3.5)	Lower
Central*	141	3%	5.9 (4.9-7.0)	No Difference
Davis**	415	8%	4.2 (3.8-4.7)	Lower
Salt Lake County**	2,515	51%	7.8 (7.5-8.2)	Higher
Southeastern*	110	2%	6.1 (5.0-7.3)	No Difference
Southwest*	188	4%	2.7 (2.3-3.1)	Lower
Summit*	38	1%	3.5 (2.4-4.8)	Lower
Tooele*	167	3%	9.9 (8.4-11.6)	Higher
TriCounty*	158	3%	8.9 (7.5-10.5)	Higher
Utah**	615	12%	3.8 (3.5-4.1)	Lower
Wasatch*	18	0.40%	2.4 (1.4-3.9)	Lower
Weber-Morgan**	412	8%	5.4 (4.9-6.0)	No Difference
Utah Total	4,928	100%	5.6 (5.5-5.8)	-

*Rural **Urban

¥ Insufficient data to meet Utah Department of Health (UDOH) standard for data reliability, interpret with caution. The estimate has a coefficient of variation >30% and does not meet UDOH standards of reliability

Results: Hospitalization Charges over Time

Table 1 continued. Summary of Utah Asthma-related Hospitalization Visits, Rates, and Charges, 2011-2013

LHD	Average Length of Stay	Median Charge per Visit	Maximum Charge	Total Charges 2013
Bear River*	2.3	$6,713	$42,037	$286,666
Central*	2.6	$6,296	$48,653	$366,028
Davis**	2.5	$9,212	$109,127	$1,363,984
Salt Lake County**	2.4	$8,964	$186,056	$10,094,198
Southeastern*	2.6	$9,115	$129,189	$449,038
Southwest*	2.4	$8,797	$50,289	$634,774
Summit*	1.9	$8,244	$32,464	$136,990
Tooele*	2.6	$12,189	$56,262	$790,598
TriCounty*	2.2	$7,451	$40,965	$516,609
Utah**	2.5	$9,492	$142,753	$2,530,706
Wasatch*	3.1 ¥	$7,333	$118,850	$18,773
Weber-Morgan**	2.3	$9,664	$77,558	$1,513,887
Utah Total	2.4	$9,009	$186,056	$18,702,252

*Rural **Urban

¥ Insufficient data to meet UDOH standard for data reliability, interpret with caution. The estimate has a coefficient of variation >30% and does not meet UDOH standards of reliability

- Urban LHDs appeared to have a higher maximum charge when compared to rural LHDs.
- Tooele, when compared to LHDs with a similar rate (Salt Lake County and TriCounty), had nearly double the median charge.
- Tooele (9.9), TriCounty (8.9), and Salt Lake County (7.8) had higher hospitalization rates when compared to the state rate (5.6).
- Central had the lowest median charge ($6,296) and Tooele had the largest median charge ($12,189).

Results: Hospitalization Charges over Time

Table 2. presents asthma-related hospitalization median and total charges by payer and LHD. Population size must be considered when interpreting total charges and comparing LHDs.

Table 2. Asthma-related hospitalization median (2011-2013) and total charge (2013)by LHD and payer, Utah

LHD	Medicare	Medicaid	Other Government	BCBS	Other Commercial
Bear River Median Charge	$12,095	$5,891	$3,351	$5,683	$4,493
Total Charge	$104,474	$45,500	-	$28,111	$25,252
Central Median Charge	$8,265	$8,440	-	$5,680	$4,747
Total Charge	$59,527	$174,537	-	$3,559	$8,542
Davis Median Charge	$15,676	$7,299	$7,320	$7,799	$7,567
Total Charge	$374,272	$52,455	$52,455	$154,811	$31,253
Salt Lake County Median Charge	$14,498	$8,123	$9,641	$7,042	$8,510
Total Charge	$3,140,527	$2,436,385	-	$663,947	$335,109
Southeastern Median Charge	$14,087	$10,613	-	$6,707	$8,514
Total Charge	$80,804	$238,371	-	$21,189	$59,968
Southwest Median Charge	$10,785	$6,978	$13,849	$6,804	$4,589
Total Charge	$278,285	$138,543	$23,254	$7,039	-
Summit Median Charge	$12,218	$9,043	-	$8,172	$8,251
Total Charge	$12,218	$14,617	-	$20,625	-
Tooele Median Charge	$16,939	$13,120	$6,243	$8,860	$6,984
Total Charge	$281,084	$130,338	$6,242	$77,076	$6,984
TriCounty Median Charge	$11,123	$7,111	$10,250	$6,573	$6,001
Total Charge	$171,030	$74,529	$36,827	$61,151	$23,142
Utah Median Charge	$12,733	$9,217	$6,828	$9,068	$8,012
Total Charge	$615,071	$410,285	$35,138	$52,497	$150,173
Wasatch Median Charge	$12,063	¥$62,461	-	$7,416	-
Total Charge	-	-	-	-	-
Weber-Morgan Median Charge	$13,588	$9,271	$7,570	$9,047	$10,690
Total Charge	$369,950	$226,288	$25,758	$52,957	
Utah Total Median Charge	$13,509	$8,431	$8,042	$7,280	$7,689
Total Charge	$5,487,247	$4,048,535	$386,932	$1,142,966	$640,426

- Indicates no data was available. Some payers will have a median charge amount but no total charge, this happens when several years of data were used to create the median charge amount but only one year of data was used to create the total charge amount.

*Highlighted areas indicate only one year of data was available.

¥ Indicates that in 2011, Wasatch County had one unusually high charge for $118,849 which greatly impacted the median charge for that area over the course of three years.

Results: Hospitalization Charges over Time

Table 2 continued. Asthma-related hospitalization median (2011-2013) and total charge (2013) by LHD and payer, Utah

LHD	Managed Care	Self Pay	Charity/ Unclassified	CHIP	Total
Bear River Median Charge	$5,686	$11,141	-	-	$6,713
Total Charge	$67,773	$15,503	-	-	$286,666
Central Median Charge	$5,482	$6,447	$5,232	$4,407	$6,296
Total Charge	$89,843	$30,016	-	-	$366,027
Davis Median Charge	$7,928	$7,956	$23,839	$14,225	$9,212
Total Charge	$462,594	$75,120	$51,610	$2,777	$1,363,983
Salt Lake County Median Charge	$7,099	$9,570	$11,297	$5,789	$8,964
Total Charge	$2,354,464	$588,409	$283,624	$84,473	$10,094,197
Southeastern Median Charge	$6,405	$9,753	-	$7,429	$9,115
Total Charge	$16,465	$22,629	-	$9,609	$449,038
Southwest Median Charge	$6,822	$9,862	$6,904	$5,418	$8,797
Total Charge	$88,049	$69,896	$22,352	$7,352	$634,774
Summit Median Charge	$4,580	$6,145	$20,707	-	$8,244
Total Charge	$48,115	-	$41,414	-	$136,989
Tooele Median Charge	$10,828	$12,024	$7,975	-	$12,189
Total Charge	$190,081	$98,791	-	-	$790,598
TriCounty Median Charge	$6,869	$7,241	-	$5,272	$7,451
Total Charge	$65,174	$84,754	-	-	$516,608
Utah Median Charge	$8,678	$10,603	$9,889	$8,266	$9,492
Total Charge	$1,015,923	$173,528	$48,189	$29,898	$2,530,706
Wasatch Median Charge	$6,158	$10,129	-	$4,343	$7,333
Total Charge	$4,301	$10,128	-	$4,343	$18,773
Weber-Morgan Median Charge	$8,311	$10,777	$8,257	$10,278	$9,664
Total Charge	$604,933	$175,175	$58,822	-	$1,513,886
Utah Total Median Charge	$7,424	$9,753	$10,934	$6,852	$9,009
Total Charge	$5,007,720	$1,343,955	$506,013	$138,454	$18,702,252

- Indicates no data was available. Some payers will have a median charge amount but no total charge, this happens when several years of data were used to create the median charge amount but only one year of data was used to create the total charge amount.

*Highlighted areas indicate only one year of data was available.

¥ Indicates that in 2011, Wasatch County had one unusually high charge for $118,849 which greatly impacts the median charge for that area over the course of three years.

Results: Hospitalization Charges over Time

Median Charges

- Among payers, Medicare had the largest median charge ($13,509) and CHIP had the smallest median charge ($6,852).
- Among LHDs, Tooele had the largest median charge ($12,189) and Central had the smallest median charge ($6,296).

Total Charges

- Among payers, Medicare had the highest total charges at $5.5 million followed by Managed Care at about $5 million and Medicaid at about $4 million.
- The economic burden of asthma can be seen in the "Self-Pay" category with about $1.3 million dollars being charged to those who pay for their own medical care.
- Among LHDs, Salt Lake County had the highest total charges at about $10 million and Summit had the lowest total charges at about $140,000. Salt Lake County has the largest population in Utah and Summit has one of the smallest.

Results: Hospitalization Charges over Time

The following table (Table 3.) presents the percent change in hospitalization median charges from 2003-2005 to 2011-2013 by LHD and payer. Table 3 continues on page 12.

Table 3. Percent change in asthma-related hospitalization median charge by LHD and payer from 2003-2005 to 2011-2013, Utah

LHD	Medicare	Medicaid	Other Government	BCBS	Other Commercial
Bear River	110%	61%	6%	120%	16%
Central	21%	109%	-	56%	14%
Davis	89%	51%	57%	96%	50%
Salt Lake County	71%	56%	49%	54%	69%
Southeastern	179%	173%	-	104%	161%
Southwest	63%	56%	173%	85%	28%
Summit	52%	77%	-	91%	228%
Tooele	55%	81%	4%	45%	12%
TriCounty	172%	108%	193%	141%	104%
Utah	50%	107%	47%	107%	100%
Wasatch	46%	-	-	4%	-
Weber-Morgan	79%	54%	21%	72%	131%
Utah Total	72%	76%	58%	69%	75%

-Indicates no data was available.
Blue boxes indicate only one year of data was available.
Orange boxes highlight the largest increases across payers for LHDs.
Boxes with a dotted outline highlight the largest increases across LHDs by payer.

(Table 3 continued on next page.)

Results: Hospitalization Charges over Time

Table 3 continued. Percent change in asthma-related hospitalization median charge by LHD and payer from 2003-2005 to 2011-2013, Utah

LHD	Managed Care	Self Pay	Charity/ Unclassified	CHIP	Total
Bear River	61%	237%	-	-	77%
Central	15%	95%	-	95%	35%
Davis	100%	56%	166%	233%	89%
Salt Lake County	55%	83%	59%	62%	61%
Southeastern	80%	291%	-	36%	138%
Southwest	92%	191%	-	141%	88%
Summit	5%	62%	-	-	86%
Tooele	103%	27%	-	-	76%
TriCounty	128%	62%	-	50%	112%
Utah	100%	123%	14%	61%	93%
Wasatch	35%	-	-	14%	40%
Weber-Morgan	98%	101%	52%	96%	80%
Utah Total	73%	102%	71%	82%	78%

-Indicates no data was available.

Blue boxes indicate only one year of data was available.

Orange boxes highlight the largest increases across payers for LHDs.

Boxes with a dotted outline highlight the largest increases across LHDs by payer.

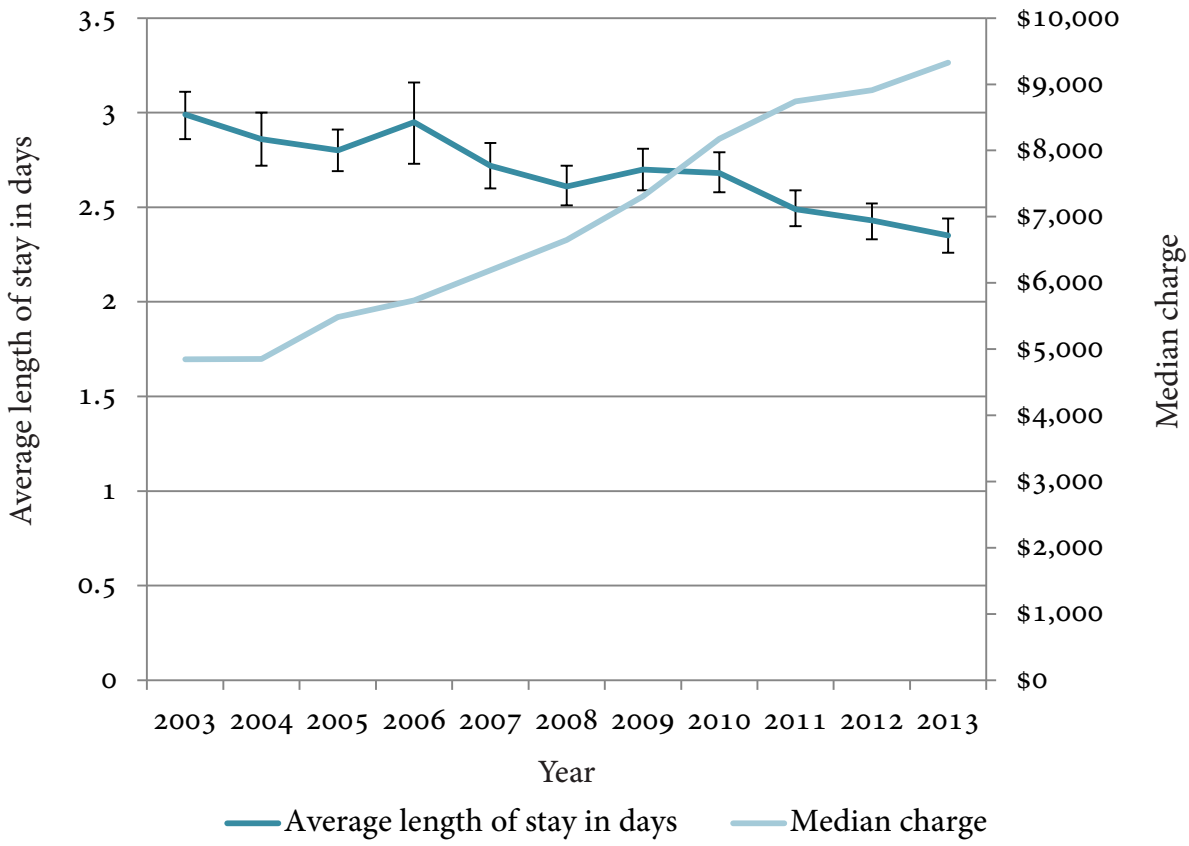
Results: Hospitalization Charges over Time

- Among LHDs, Southeastern Utah LHD had the highest overall increase at 138% with TriCounty LHD having the second highest increase at 112%. Central Utah LHD (35%) had the lowest increase followed by Wasatch County LHD (40%).
- Among payers, self-pay had the largest increase at 102% followed by CHIP at 82%. The smallest increase was "Other Government" (58%) followed by BCBS (69%).
    - In 2003-2005, the median charge for self-pay was $4,818 and by 2011-2013, it was $9,753.
    - In 2003-2005, the median charge for CHIP was $3,756 and by 2011-2013, it was $6,851.
    - In 2003-2005, the median charge for "Other Government" was $5,091 and by 2011-2013, it was $8,042.
- The largest overall increase, excluding areas with only one year of data, was in Bear River LHD in the self-pay category which increased 237%, followed by Southeastern Utah LHD with Medicare at a 179% increase.
- The smallest overall increase was in Wasatch County LHD with BCBS at an increase of just 4%. The second smallest increase was in Summit County LHD managed care with a 5% increase.
- Southeastern Utah LHD had the most payers with the largest increases across payers. These included Medicare, Medicaid, and other commercial.
- Self-pay had the most LHD increases. The largest increases were in Bear River LHD, Salt Lake County, Southwest Utah LHD, and Utah County LHD. Managed care and Medicare were second with two LHDs that experienced the highest increase within their categories. For managed care, it was Tooele County LHD and Wasatch County LHD and for Medicare, it was Southeastern Utah LHD and TriCounty LHD.

Results: Hospitalization Charges over Time

The following graph (Figure 2.) highlights changes over time in median charges and average length of stay (days) for the state of Utah.

Figure 2. Asthma hospitalization length of stay (days) and median charge, Utah, 2003 to 2013.

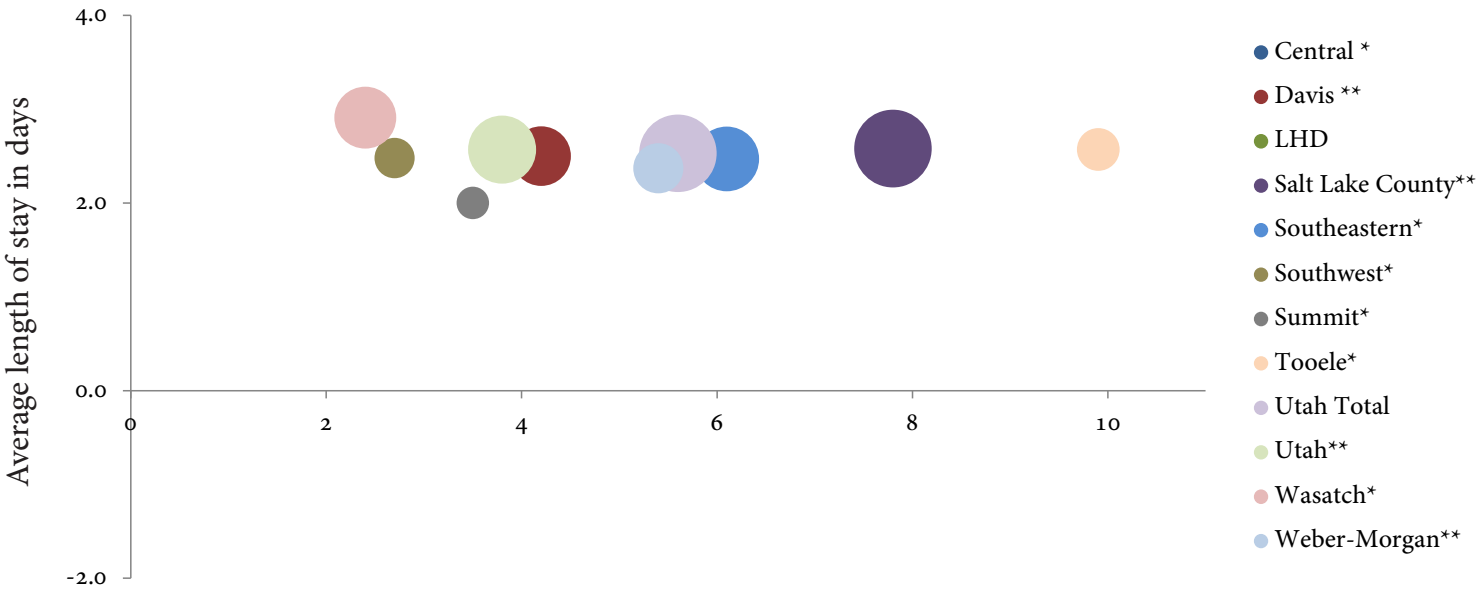


- The average length of stay in days declined from 2003 to 2013.
- The median charge appears to have increased from 2003 to 2013.

Results: Hospitalization Charges over Time

Figure 3. illustrates the relationship between hospitalization rates, average length of stay (days), and median charge. Each bubble represents a LHD and is graphed according to hospitalization rate and average length of stay. The size of the bubble is determined by the maximum charge. Data can be requested from the UAP epidemiologist, however, comparable data can be found in Table 2. Additional years of data were used in Figure 3. to increase data reliability.

Figure 3. Asthma hospitalization age-adjusted rate per 10,000, average length of stay in days, and maximum charge by LHD, 2009-2013.



Asthma hospitalization age-adjusted rate per 10,000

Bubble area is proportional to maximum charge.

*Rural **Urban

- Initially, LHDs with a higher average length of stay (days) had lower hospitalization rates. However, as hospitalization rates increased, the average length of stay remained about 2.5 days even for areas with the highest hospitalization rates.
- LHDs with high and low hospitalization rates appeared to have smaller maximum charges when compared to LHDs with hospitalization rates in the middle of the range.
- Urban LHDs appeared to have larger maximum charges when compared to rural LHDs.

Results: Hospitalization and ED Charge Comparison

Data in this report were compared to findings from a recent report on asthma-related ED charges in Utah (http://health.utah.gov/asthma/pdfs/data/EDCostReport.pdf). Payers with the highest ED total charges included: commercial, Medicaid, and Medicare. In comparison, for hospitalizations, payers with the highest total charges included: Medicare, managed care, and Medicaid. It is not surprising that Medicare is in the top three for total charges for both ED visits and hospitalizations because Medicare typically serves an elderly population whose care is usually more expensive. Also, because Medicaid typically serves lower SES individuals who are more likely to suffer from poor asthma outcomes, it is not surprising that it is also in the top three total charges for both ED visits and hospitalizations. For the largest median costs, ED visits included: CHIP, self-pay, and Medicare. For hospitalizations it was Medicare, Charity/unclassified, and self-pay. Table 4. compares the increase in median charges between ED and hospital visits by payer and LHD.

Table 4. Comparison of median charge increases between ED and hospital visits by payer and LHD.

	ED Visits		Hospitalizations	
Rank	Payer	Percent Increase in Median Charge from 2002-2011	Payer	Percent Increase in Median Charge from 2003-2005 to 2011-2013
1st	CHIP	277%	Self-pay	102%
2nd	Self-pay	266%	CHIP	82%
3rd	Medicare	242%	Medicaid	76%
	LHD		LHD	
Highest LHD	Summit County	472%	Southeastern Utah	138%
	Bear River	269%	TriCounty	112%
Lowest LHD	Central Utah	147%	Central Utah	35%
	TriCounty	185%	Wasatch County	40%

- ED visit charges had much larger increases when compared to hospitalization charges.
- Self-pay and CHIP were in the top three for increases in ED visits and hospitalizations.
- Central Utah LHD was in the lowest two spots for increases in ED visit charges and hospitalization charges among LHDs.
- TriCounty LHD had one of the smallest increases for ED visits charges but one of the largest increases for hospitalization charges among LHDs.

Conclusion

Median charges for asthma-related hospitalizations have been on the rise in Utah over the last 10 years. All LHDs and payers have experienced an increase in charges. Factors driving costs include: health care inefficiency, medical technology, and health status such as obesity (RWJF, 2008). It is difficult to determine the single impact of these factors on charges in Utah. However, the inverse relationship between median charge and average length of stay (days) suggests that advanced medical technology may play an important role in increasing costs. One study found that more expensive technology was related to a shorter hospital stay (Weiss, 2000).

On the other hand, medical technology may not be the main driver of charge increases within specific LHDs. For example, a large population with poorer health outcomes might be the main driver in urban LHDs, like Utah County, Salt Lake County, and Davis County LHDs. These areas also had the largest maximum charges. Southeastern Utah LHD, which has a large older population, also had a large maximum charge. These nuances are why it is important to know the population before determining which interventions would be most effective in improving asthma outcomes and lowering associated costs.

Medical technology may also explain why ED visit charges increased at a faster rate than hospitalization charges. This finding is likely attributable to the care and resources specific to the ED or hospital. A study by Stanford (1999) found that the majority of asthma-related ED costs (55%) were accounted for by supplies, equipment, and physician fees while the majority of hospitalization costs were related to nursing care. Furthermore, a study by Goyen (2008) found that by all measures, new medical technology was the dominant driver of increases in health care costs. Since the majority of costs in the ED are related to equipment and supplies and the main driver of cost is new medical equipment, then it seems likely that charges for ED visits

Conclusion

would have increased at a faster rate than charges for hospitalizations.

Advanced medical technology is important for managing asthma outcomes; however, it does not keep asthma patients from utilizing the ED or hospital as a source of care. Data from this report found that the average length of stay (days) was not related to age-adjusted hospitalization rates. This suggests that even those treated with the best medical technology will not necessarily have well-controlled asthma and may use the hospital as their primary source of care. Those with well-controlled asthma should rarely or never have to visit the ED or hospital to treat worsening symptoms.

The best way to reduce costs is to improve asthma outcomes and keep those with asthma out of the ED and hospital. To improve asthma outcomes, partners must work together to address barriers to asthma management. These include lack of access to quality care, poor housing conditions, lack of knowledge about asthma, and inadequate skills for asthma self-management. For example, insurance companies can ensure that those with asthma receive self-management education by reimbursing health care providers. They can also make sure that needed medications are covered. Pharmacists can educate patients when they pick up their medications about proper inhaler techniques and correct medication usage. Health care providers should provide and encourage the use of written asthma action plans and adhere to the national guidelines set by the National Asthma Education and Prevention Program known as the Diagnosis and Treatment of Asthma Guidelines (EPR-3 Guidelines). Schools and childcare centers can support children with asthma through caregiver and self-management education and environmental management. These partners, when working together, can help those with asthma manage their asthma and thereby mitigate rising costs, reducing the financial burden of asthma.

References

1. Bahadori, K. and Doyle-Waters, M. Economic burden of asthma: a systematic review. BMC Pulmonary Medicine.2009; 9:24.
2. Goyen, M. Healthcare costs for new technologies. European Journal of Nuclear Medicine and Molecular Imaging. 2008; 36: 139-143.
3. Stanford R, McLaughlin T, Okamoto LJ: The cost of asthma in the emergency department and hospital. Am J Respir Crit Care Med 1999, 160(1):211-5.
4. RWJF Robert Wood Johnson Foundation. 2008. High and rising health care costs. Accessed September 1, 2015 from http://www.rwjf.org/en/library/research/2008/10/high-and-rising-health-care-costs.html.
5. Weiss KB, Sullivan SD, Lyttle CS: Trends in the cost of illness for asthma in the United States, 1985–1994. J Allergy Clin Immunol 2000, 106(3):493-9.

Appendices

The Utah Asthma Program (UAP) currently funds two LHDs. The following data is for small areas within those two funded LHDs. Funded LHDs can use the following data to more specifically identify areas with a high asthma charge burden. Small area data for other Utah LHDs is available upon request from the UAP.

Salt Lake County LHD Asthma-related Hospitalization Median Charge Data by Utah Small Area, 2009-2013

Utah Small Area	Median Charge
SLC (Foothill/U of U)	$5,839.69
West Jordan (West)/Copperton [2009 and afer]	$7,081.57
SLC (Avenues)	$7,243.35
Sandy (SE)	$7,326.66
Riverton/Draper	$7,532.61
Sandy (NE)	$7,534.37
Sandy (Center)	$7,859.90
Cottonwood	$7,955.64
Taylorsville (East)/Murray (West) [renamed from Taylorsville]	$8,198.59
West Jordan (NE) [2009 through 2011]	$8,406.25
West Valley (West)	$8,409.50
South Jordan	$8,607.22
Midvale	$8,666.87
West Jordan (SE) [2009 and after]	$8,685.94
SLC (Glendale)	$8,715.48
Kearns V2 [2012 and after]	$8,901.95
West Jordan (NE) V2 [2012 and after]	$9,022.46
Millcreek	$9,150.07
Magna	$9,236.47
West Valley (East) [2011 and before]	$9,250.15
Earns [2-11 and before]	$9,270.26
SLC (Rose Park)	$9,427.76
West Valley (East)V2 [2012 and after]	$9,763.60
Murray	$9,806.12
Taylorsville (West) [2012 and after]	$10,037.42
SLC (Downtown)	$10,410.08
South Salt Lake	$10,439.50
Holladay	$10,679.94

Utah County LHD Asthma-related Hospitalization Median Charge Data by Utah Small Area, 2009-2013

Utah Small Area	Median Charge
Pleasant Grove/Lindon	$7,471.18
Lehi/Cedar Valley	$7,597.11
American Fork/Alpine	$7,989.87
Utah Co (South)	$8,315.00
Springville/Spanish Fork	$9,475.65
Provo (North)/BYU	$9,557.06
Provo (South)	$9,756.61
Orem (North)	$10,350.41
Orem (East)	$10,480.38
Orem (West)	$11,993.00

UTAH DEPARTMENT OF
HEALTH
Utah Asthma Program