



# HSC Statistical Brief



## Asthma Surveillance in the West Virginia Medicaid Population – Year 2002 Brief No. 12

Presented in this statistical brief are asthma prevalence rates and asthma-related health care utilization rates among recipients of West Virginia Medicaid for the calendar year 2002. The study was performed by a team headed by Michael Smith, Ph.D., R.Ph., at the West Virginia University School of Pharmacy using Medicaid claims data. It was funded through a grant from the Asthma Education and Prevention Program of the West Virginia Bureau for Public Health, Department of Health and Human Resources. The endeavor is a part of the surveillance system for asthma in the state.

### Methods

- ❑ Rates of asthma (prevalence): These rates were determined using criteria similar to those of the National Committee for Quality Assurance (NCQA), which classifies a patient with *persistent* asthma based on the frequency of utilization of medical services for asthma or utilization of asthma-related prescription medications. For the purpose of this study, the NCQA criteria were modified in order to identify a recipient with asthma regardless of whether a recipient had persistent versus intermittent asthma. In this analysis, it was assumed that a recipient of West Virginia Medicaid had asthma if he/she had:
  - at least one medical claim (outpatient, ER, or hospital) with a primary or secondary diagnosis of asthma (ICD-9-CM codes of 493.00-493.99), OR
  - at least two prescription claims for asthma-related drugs, of which at least one was for a drug other than an oral steroid.
- ❑ Rates of utilization for asthma-related medical services: These rates were based on utilization of medical services (outpatient, ER, or hospital) with a primary or secondary diagnosis of asthma. If a recipient had ER and inpatient claims on the same date of service, then it was assumed that the recipient visited the ER and was subsequently admitted to the hospital. In such a circumstance, the event was classified only as a hospitalization.
- ❑ Patterns of utilization for asthma-related prescription medications: These patterns were described for recipients who had at least two prescription claims for asthma-related drugs, at least one of which was for a medication other than an oral steroid.
- ❑ Economic costs to West Virginia Medicaid for asthma-related health care: Amounts reimbursed were described by type of service (medical services and prescription drugs).

Only fee-for-service paid claims data were used in the analysis. Each person identified with asthma was only counted once when estimating prevalence rates, and an event (such as hospitalization) was only counted once in estimating utilization rates. Data were de-identified in compliance with HIPAA regulations.

## Summary Table of Utilization of Asthma-Related Health Care by Recipients of West Virginia Medicaid

The following table briefly summarizes the different types of asthma-related utilization by recipients of West Virginia Medicaid presented in this statistical brief. Utilization patterns according to different demographic characteristics are described later in individual sections of the brief.

**Table 1. Summary of utilization of asthma-related health care by recipients of West Virginia Medicaid, 2002<sup>1</sup>**

<b>TOTAL ASTHMA UTILIZATION</b>				
Based on recipients identified with asthma by the presence of at least one claim for medical services with a primary or secondary diagnosis of asthma OR at least two prescription claims for asthma-related medications				
Type of utilization	Number of recipients with asthma (N)	Prevalence rate per 1,000 Medicaid recipients	Total amount reimbursed by Medicaid (\$)	Average amount reimbursed per recipient (\$)
Total asthma utilization	42,312	118.7	28,304,831	669
<b>MEDICAL VISIT UTILIZATION</b>				
Based on services with a primary or secondary diagnosis of asthma				
Type of utilization	Number of visits (N)	Rate of visits per 10,000 Medicaid recipients	Total amount reimbursed by Medicaid (\$)	Average amount reimbursed per visit (\$)
Outpatient visits	35,723	1,002.0	3,431,757	96
Emergency room visits	5,642	158.3	1,007,981	179
Hospitalizations	1,702	47.8	7,941,660	4,666
<b>PRESCRIPTION UTILIZATION</b>				
Based on recipients with at least two prescription claims for asthma-related medications, at least one of which was for a drug other than an oral steroid.				
Type of utilization	Number of prescription claims for asthma-related drugs (N)	Average number of claims per recipient	Total amount reimbursed (\$)	Average amount reimbursed per recipient (\$)
Prescriptions	312,112	9.3	15,353,608	457

<sup>1</sup> Refer to footnotes on methodology in the respective sections of the brief.

## Prevalence Rates of Asthma and Total Reimbursements

### Overall burden of asthma in the West Virginia Medicaid population

- In 2002, 42,312 Medicaid recipients were identified with asthma in West Virginia.
- The prevalence rate of asthma was 118.7 per 1,000 recipients of West Virginia Medicaid. The rates were higher among adults and whites compared with other age and race groups. Rates were slightly higher among females compared with males.
- Total Medicaid reimbursements for asthma-related health care were in excess of \$28 million.
- The average amount reimbursed for asthma care per recipient was about \$670. The average amount reimbursed for asthma care was higher per adult recipient than the average amount reimbursed for asthma care per child. The average amount reimbursed for asthma care was higher per female recipient than male recipient.

**Table 2. Prevalence rates of asthma in the West Virginia Medicaid population and total Medicaid reimbursements for asthma-related services – By demographic category, 2002**

Demographic variables	Number of recipients with asthma <sup>2</sup> (N)	Prevalence rate per 1,000 Medicaid recipients <sup>3,4</sup>	Total amount reimbursed <sup>5</sup> (\$)	Average amount reimbursed per recipient <sup>6</sup> (\$)
<b>Age (years)</b>				
0-14	14,642	94.6	8,155,973	557
15-20	2,962	74.7	1,206,971	407
21-64	18,439	147.4	14,387,829	780
≥ 65	6,247	169.1	4,544,551	727
Unknown	22	--	9,507	432
<b>Gender</b>				
Male	17,340	115.1	10,843,507	625
Female	24,535	119.3	17,165,038	700
Unknown	437	--	296,286	678
<b>Race</b>				
White	39,575	119.8	26,446,302	668
Black	1,752	97.9	1,221,682	697
Other	464	--	322,964	696
Unknown	521	--	313,883	602
<b>Total</b>	<b>42,312</b>	<b>118.7</b>	<b>28,304,831</b>	<b>669</b>

<sup>2</sup> Total number of recipients of West Virginia Medicaid who had at least one medical claim with a primary or secondary diagnosis of asthma or at least two prescription claims for an asthma-related medication (at least one of which was for a drug other than an oral steroid).

<sup>3</sup> Rates based on the number of recipients of West Virginia Medicaid in fiscal year 2002 in each demographic category (Total N = 356,374).

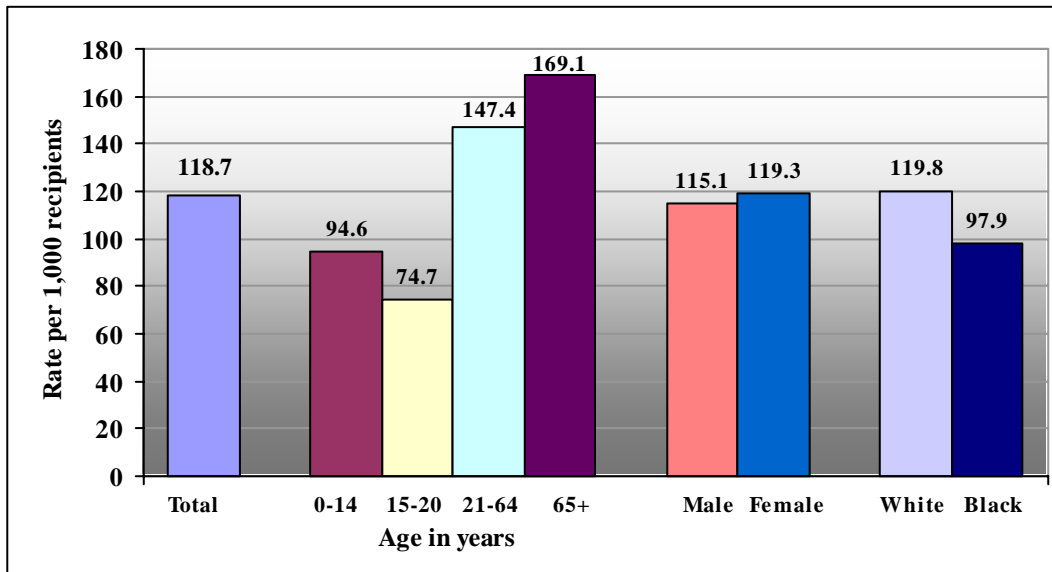
<sup>4</sup> Rates for recipients aged 65 and older are not reliable due to the impact of Medicare penetration in this age group.

<sup>5</sup> Total = (Amount reimbursed by West Virginia Medicaid for recipients who had medical services with a primary or secondary diagnosis of asthma, including all asthma-related prescription claims for these recipients) + (Amount reimbursed for recipients who did not have medical services for asthma, but who had at least two prescription claims for an asthma-related medication, at least one of which was for a drug other than an oral steroid).

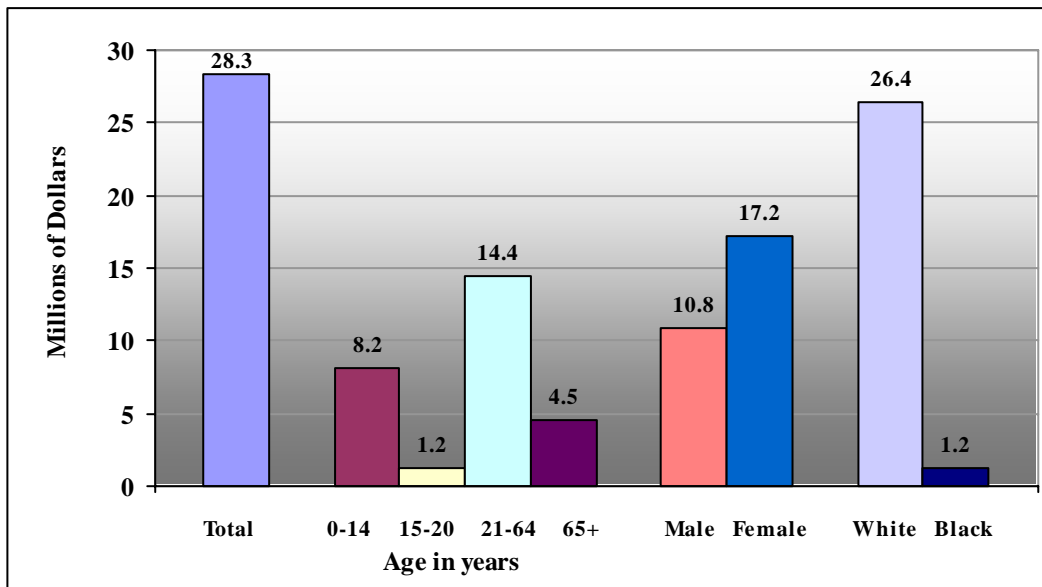
<sup>6</sup> Average amount reimbursed by West Virginia Medicaid for asthma-related medical services and prescription drugs per recipient identified with asthma by demographic category.

## Graphical Presentations of Selected Data from Table 2

**Figure 1. Prevalence rates of asthma in the West Virginia Medicaid population – By demographic category, 2002<sup>7</sup>**



**Figure 2. Total reimbursements for asthma-related health care by West Virginia Medicaid – By demographic category, 2002<sup>8</sup>**



<sup>7</sup> See Footnotes 2 and 3 on Page 3.

<sup>8</sup> See Footnotes 2 and 5 on Page 3.

## Utilization of Outpatient Services

### Outpatient visits for asthma in the West Virginia Medicaid population

- In 2002, there were 35,723 outpatient visits for asthma.
- The rate of outpatient visits for asthma was 100.2 per 1,000 West Virginia Medicaid recipients. The rate was higher among adults aged 21-64, females, and whites compared with other groups within the respective demographic categories.
- Total Medicaid reimbursements for asthma-related outpatient visits were over \$3.4 million.
- The average amount reimbursed per outpatient visit for asthma was \$96. The average amount reimbursed per visit made by a child was higher compared with the same for an adult.

**Table 3. Utilization of outpatient services for asthma among recipients of West Virginia Medicaid and reimbursements by Medicaid for the same – By demographic category, 2002**

Demographic Variables	Number of outpatient visits <sup>9</sup> (N)	Rate of outpatient visits per 1,000 recipients <sup>10,11</sup>	Total amount reimbursed <sup>12</sup> (\$)	Average amount reimbursed per visit <sup>13</sup> (\$)
<b>Age (years)</b>				
0-14	11,930	77.1	1,432,720	120
15-20	2,409	60.8	252,091	105
21-64	18,230	145.8	1,618,091	89
≥ 65	3,136	84.9	127,637	41
Unknown	18	--	1,219	68
<b>Gender</b>				
Male	12,875	85.5	1,332,023	103
Female	22,277	108.3	2,067,287	93
Unknown	571	--	32,447	57
<b>Race</b>				
White	33,541	101.5	3,222,950	96
Black	1,385	77.4	150,045	108
Other	356	--	21,931	62
Unknown	441	--	36,831	84
<b>Total</b>	<b>35,723</b>	<b>100.2</b>	<b>3,431,757</b>	<b>96</b>

<sup>9</sup> Number of outpatient visits with a primary or secondary diagnosis of asthma among recipients of West Virginia Medicaid.

<sup>10</sup> Rates based on the number of outpatient visits with a primary or secondary diagnosis of asthma divided by the number of recipients of West Virginia Medicaid during fiscal year 2002 in each demographic category (Total N = 356,374).

<sup>11</sup> Rates for recipients aged 65 and older are not reliable due to the impact of Medicare penetration in this age group.

<sup>12</sup> Total amount reimbursed by West Virginia Medicaid for outpatient visits with a primary or secondary diagnosis of asthma.

<sup>13</sup> Average amount reimbursed by West Virginia Medicaid per outpatient visit with a primary or secondary diagnosis of asthma.

## Utilization of Emergency Room Services

### Emergency room (ER) visits for asthma in the West Virginia Medicaid population

- In 2002, there were 5,642 ER visits for asthma.
- The rate of ER visits for asthma was 158.3 per 10,000 recipients of West Virginia Medicaid. The rate was higher among adults aged 21-64, females, and blacks compared with other groups within the respective demographic categories.
- Total Medicaid reimbursements for asthma-related ER visits were over \$1.0 million.
- The average amount reimbursed per ER visit related to asthma was \$179. The average amount reimbursed per visit made by an adult was higher compared with the same for a child.

**Table 4. Utilization of ER services for asthma among recipients of West Virginia Medicaid and reimbursements by Medicaid for the same – By demographic category, 2002**

Demographic Variables	Number of ER visits <sup>14</sup> (N)	Rate of ER visits per 10,000 recipients <sup>15,16</sup>	Total amount reimbursed <sup>17</sup> (\$)	Average amount reimbursed per visit <sup>18</sup> (\$)
<b>Age (years)</b>				
0-14	2,184	141.1	340,504	156
15-20	499	125.9	84,538	169
21-64	2,754	220.2	542,326	197
≥ 65	203	55.0	40,416	199
Unknown	2	--	196	98
<b>Gender</b>				
Male	2,113	140.3	353,276	167
Female	3,470	168.7	642,612	185
Unknown	59	--	12,093	205
<b>Race</b>				
White	5,079	153.8	906,229	178
Black	427	238.7	74,255	174
Other	56	--	10,471	187
Unknown	80	--	17,025	213
<b>Total</b>	<b>5,642</b>	<b>158.3</b>	<b>1,007,981</b>	<b>179</b>

<sup>14</sup> Number of ER visits with a primary or secondary diagnosis of asthma among recipients of West Virginia Medicaid.

<sup>15</sup> Rates based on the number of ER visits with a primary or secondary diagnosis of asthma divided by the number of recipients of West Virginia Medicaid during fiscal year 2002 in each demographic category (Total N = 356,374).

<sup>16</sup> Rates for recipients aged 65 and older are not *reliable* due to the impact of Medicare penetration in this age group.

<sup>17</sup> Total amount reimbursed by West Virginia Medicaid for ER visits with a primary or secondary diagnosis of asthma.

<sup>18</sup> Average amount reimbursed by West Virginia Medicaid per ER visit with a primary or secondary diagnosis of asthma.

## Utilization of Inpatient (Hospital) Services

### Hospitalizations for asthma in the West Virginia Medicaid population

- In 2002, there were 1,702 hospital visits for asthma.
- The hospitalization rate for asthma was 47.8 per 10,000 recipients of West Virginia Medicaid. The rate was higher among adults, females, and blacks compared with other groups within the respective demographic categories.
- Total Medicaid reimbursements for hospitalizations related to asthma were nearly \$8 million.
- The average amount reimbursed per hospital visit was \$4,666.
- The average length of stay (ALOS) per visit was longer for adults and females compared with children and males, respectively. The ALOS was also slightly longer for non-whites compared with whites.

**Table 5. Utilization of inpatient services for asthma among recipients of West Virginia Medicaid and reimbursements by Medicaid for the same – By demographic category, 2002**

Demographic variables	Number of hospital visits <sup>19</sup> (N)	Rate of hospital visits per 10,000 recipients <sup>20,21</sup>	Total amount reimbursed <sup>22</sup> (\$)	Average amount reimbursed per visit <sup>23</sup> (\$)	Average length of stay (ALOS) per visit <sup>24</sup>
<b>Age (years)</b>					
0-14	569	36.8	2,483,812	4,365	2.7
15-20	50	12.6	197,974	3,959	2.4
21-64	881	70.4	4,215,180	4,785	4.7
≥ 65	201	54.4	1,042,422	5,186	5.3
Unknown	1	--	2,272	2,272	4.0
<b>Gender</b>					
Male	583	38.7	2,719,709	4,665	3.4
Female	1,098	53.4	5,120,029	4,663	4.5
Unknown	21	--	101,921	4,853	4.6
<b>Race</b>					
White	1,572	47.6	7,255,182	4,615	4.1
Black	93	52.0	513,408	5,521	4.5
Other	19	--	99,369	5,230	4.9
Unknown	18	--	73,701	4,095	3.7
<b>Total</b>	<b>1,702</b>	<b>47.8</b>	<b>7,941,660</b>	<b>4,666</b>	<b>4.1</b>

<sup>19</sup> Number of hospital admissions with a primary or secondary diagnosis of asthma among recipients of West Virginia Medicaid.

<sup>20</sup> Rates based on the number of hospital admissions with a primary or secondary diagnosis of asthma divided by the number of recipients of West Virginia Medicaid during fiscal year 2002 in each demographic category (Total N = 356,374).

<sup>21</sup> Rates for recipients aged 65 and older are not reliable due to the impact of Medicare penetration in this age group.

<sup>22</sup> Total amount reimbursed by West Virginia Medicaid for hospital visits with a primary or secondary diagnosis of asthma.

<sup>23</sup> Average amount reimbursed by West Virginia Medicaid per hospital visit with a primary or secondary diagnosis of asthma.

<sup>24</sup> Average length of stay per hospital visit with a primary or secondary diagnosis of asthma.

## Prescription Utilization

### Prescription utilization patterns among West Virginia Medicaid recipients who had at least two prescription claims for asthma-related medications

- In 2002, there were 33,570 recipients who had at least two prescription claims for an asthma-related drug, at least one of which was for a drug other than an oral steroid.
- The average number of prescription claims for asthma-related drugs per recipient in this sample was 9.3. The average number of claims per adult recipient was higher than that per child. The average number of claims per black recipient was lower compared with the average number of claims per recipient of other race groups.
- Total Medicaid reimbursements for asthma-related prescriptions in this sample was over \$15 million.
- The average amount reimbursed for asthma-related prescriptions per recipient was \$457. The average amount reimbursed per adult recipient was higher than per child, and lower per black recipient than the same per recipient of other race groups.

**Table 6. Asthma-related prescription utilization patterns among West Virginia Medicaid recipients who had at least two prescription claims for asthma-related drugs and reimbursements by Medicaid for the same – By demographic category, 2002**

Demographic Variables	Number of recipients with asthma <sup>25</sup> (N <sub>1</sub> )	Number of prescription claims <sup>26</sup> (N <sub>2</sub> )	Average number of claims per recipient <sup>27</sup>	Total amount reimbursed <sup>28</sup> (\$)	Average amount reimbursed per recipient <sup>29</sup> (\$)
<b>Age (years)</b>					
0-14	10,535	64,604	6.1	3,629,416	345
15-20	2,135	13,371	6.3	631,725	296
21-64	15,218	160,224	10.5	7,779,973	511
≥ 65	5,666	73,777	13.0	3,306,932	584
Unknown	16	136	8.5	5,562	348
<b>Gender</b>					
Male	13,672	122,688	9.0	6,216,245	455
Female	19,592	186,380	9.5	8,990,661	459
Unknown	306	3,044	9.9	146,702	479
<b>Race</b>					
White	31,461	295,158	9.4	14,544,609	462
Black	1,303	9,026	6.9	441,777	339
Other	385	4,101	10.7	188,354	489
Unknown	421	3,827	9.1	178,868	425
<b>Total</b>	<b>33,570</b>	<b>312,112</b>	<b>9.3</b>	<b>15,353,608</b>	<b>457</b>

<sup>25</sup> Number of recipients of West Virginia Medicaid who had at least two prescription claims for asthma-related medication, at least one of which was for a drug other than an oral steroid.

<sup>26</sup> Number of prescription claims for asthma-related medications for each demographic category.

<sup>27</sup> Average number of prescription claims for asthma-related medication per recipient in each demographic category.

<sup>28</sup> Total amount reimbursed by West Virginia Medicaid for prescriptions for asthma-related medications.

<sup>29</sup> Average amount reimbursed by West Virginia Medicaid for asthma-related medications per recipient.



## Pharmacotherapy Classes of Asthma-Related Medications

### Pharmacotherapy classes of asthma-related medications

- A substantial majority (78.6%) of the recipients who had at least two prescription claims for asthma-related drugs had received short-acting beta-agonist therapy. Approximately 30% of the sample had received oral corticosteroids, 33% had received inhaled corticosteroids, and 33% had received leukotriene modifiers.
- The average amount reimbursed per asthma-related prescription claim was \$49.
- Among all drug classes, leukotriene modifiers had the highest total reimbursement (over \$4 million). However, the average amount reimbursed per claim was highest for inhaled corticosteroids (\$88).

**Table 7. Pharmacotherapy classes of asthma-related medications among recipients of West Virginia Medicaid who had at least two prescription claims for asthma-related drugs and amounts reimbursed by Medicaid for the same – By demographic category, 2002**

Pharmacotherapy class	Number (and %) of recipients with asthma <sup>30</sup> (N <sub>1</sub> )	Number (and %) of prescription claims <sup>31</sup> (N <sub>2</sub> )	Total amount reimbursed <sup>32</sup> (\$)	Average amount per claim <sup>33</sup> (\$)
<b>Spacer devices</b>	1,273 (3.8%)	3,291 (1.1%)	37,872	12
<b>Short-acting beta-agonists</b> (all dosage forms)	26,370 (78.6%)	110,758 (35.5%)	3,324,310	30
<b>Oral corticosteroids</b>	10,058 (30.0%)	24,795 (7.9%)	218,593	9
<b>Inhaled corticosteroids</b>	10,951 (32.6%)	33,225 (10.6%)	2,924,536	88
<b>Ipratropium</b>	8,469 (25.2%)	39,386 (12.6%)	2,706,208	69
<b>Methylxanthines</b>	3,764 (11.2%)	25,987 (8.3%)	544,438	21
<b>Salmeterol</b>	3,645 (10.9%)	13,400 (4.3%)	992,797	74
<b>Leukotriene modifiers</b>	11,069 (33.0%)	55,919 (17.9%)	4,189,853	75
<b>Cromolyn/Nedocromil</b>	1,489 (4.4%)	5,351 (1.7%)	415,001	78
<b>Total</b>	<b>33,570 (100%)</b>	<b>312,112 (100%)</b>	<b>15,353,608</b>	<b>49</b>

<sup>30</sup> Based on recipients with at least two prescription claims for asthma-related medication, at least one of which was for a drug other than an oral steroid.

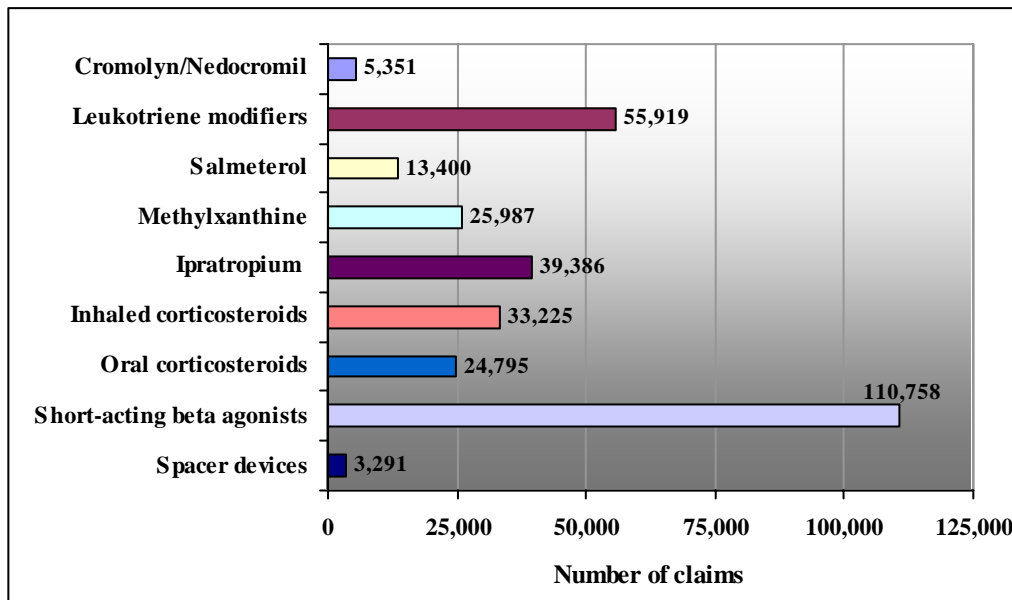
<sup>31</sup> Number of prescription claims in each pharmacotherapeutic category.

<sup>32</sup> Total amount reimbursed by West Virginia Medicaid for prescriptions in each pharmacotherapeutic category.

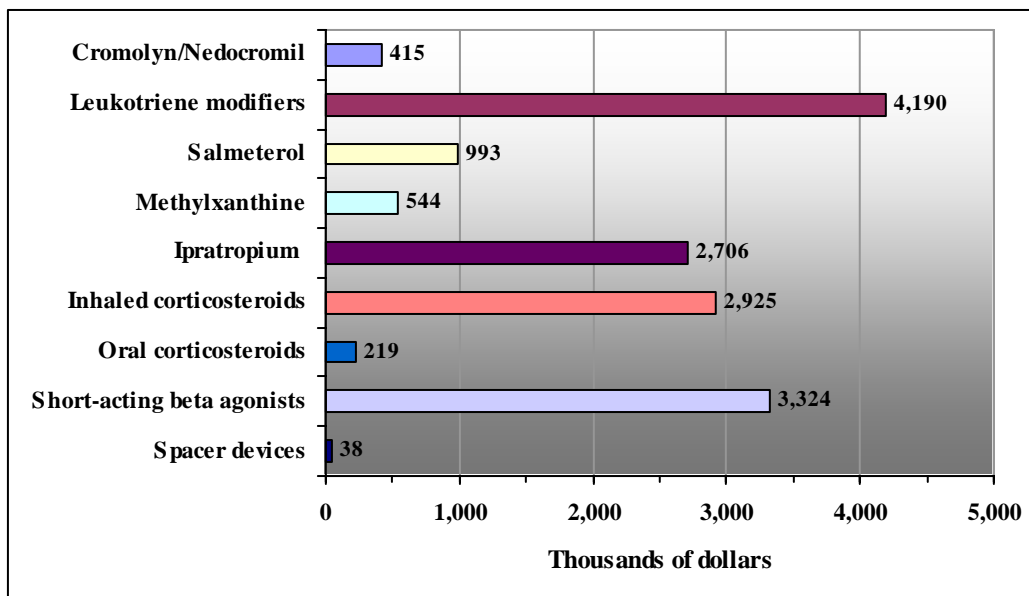
<sup>33</sup> Average amount reimbursed by West Virginia Medicaid per claim in each pharmacotherapeutic category.

## Graphical Presentations of Selected Data from Table 7

**Figure 3. Number of prescription claims for asthma-related medications among recipients of West Virginia Medicaid who had at least two prescription claims for asthma-related drugs – By pharmacotherapy class, 2002<sup>34</sup>**



**Figure 4. Total reimbursements by West Virginia Medicaid for asthma-related prescriptions among recipients who had at least two prescription claims for asthma-related drugs – By pharmacotherapy class, 2002<sup>35</sup>**



<sup>34</sup> See Footnotes 30 and 31 on Page 9.

<sup>35</sup> See Footnotes 30 and 32 on Page 9.