

**VIRGINIA DEPARTMENT OF HEALTH
OFFICE OF EMERGENCY MEDICAL SERVICES**

**Cost Analysis of the Virginia Poison Control Network
August 2012**

Executive Summary

Item 297 of the 2012 Appropriation Act included language that directed the Virginia Department of Health (VDH) to assess the level of funding needed to provide statewide coverage for poison control services at two poison control centers and provide a report to the Chairmen of the House Appropriations and Senate Finance Committees by November 1, 2012.

The VDH Office of Emergency Medical Services (OEMS), which serves as the contract administrator for the poison control centers, contracted with PHBV Partners LLP to develop the report. In order to prepare the report, PHBV interviewed poison control center directors and obtained relevant financial data. PHBV also obtained copies of annual reports from the OEMS, and also researched and reviewed information available from external sources.

At a minimum, Virginia's Poison Control Centers services should include provision of poison information and consultation services to the public and health professionals free of charge. These services should be available 24 hours/day, 7 days/week via toll free telephone. In addition, centers shall have language interpretive services available for non-English speaking individuals and appropriate telecommunications equipment for the hearing impaired.

Furthermore, public education by the centers through public website, public media, printed educational materials or other methods should include, at a minimum, accessing poison control centers, first aid in poisoning and poison prevention measures, all free of charge. In addition, centers should provide education and training for health care practitioners and emergency responders in toxicology and medical management of poisoning.

Centers should meet the national standards and maintain certification by the American Association of Poison Control Centers (AAPCC). These standards establish the minimal staffing required to operate a center and the maximum number of exposure cases handled by a poison specialist. Centers should maintain records of all cases following the guidelines established by the AAPCC and shall submit human exposure data to the AAPCC and the Commonwealth.

The Blue Ridge Poison Center, the Virginia Poison Center and the National Capital Poison Center currently all receive funding from the Commonwealth of Virginia. In addition, the centers each receive additional funding from the U.S. Health Resources and Services Administration. Over the past three years State funding to the poison control centers has been decreased by 67 percent. At present, no State funding has been appropriated to any of the centers for FY14.

Based on the review of the attached study, VDH concludes:

- The minimal total costs to operate two poison control centers are approximated at \$2,780,000.

Executive Summary

- Funding from the Commonwealth and by the Health Resources and Services Administration does not cover the minimum cost to cover poison control services to Virginia.
- In the face of reduced state and federal funding, the poison control centers have identified alternate sources of funding to cover center costs in the short term; however such funding sources may not be adequate to cover costs over the long term.

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Virginia Department of Health
Office of Emergency Medical Services
Glen Allen, VA

At the request of the Virginia Department of Health's (VDH) Office of Emergency Medical Services (OEMS), we have completed an analysis of the level of funding needed to support the operations and services of the poison control centers. In order to conduct this analysis, we interviewed poison center directors and obtained relevant financial data. We also obtained copies of annual reports from the VDH, and also researched and reviewed information available from outside sources. Data was obtained and reviewed for the state fiscal years ending (FYE) June 30, 2009, June 30, 2010 and June 30, 2011. Unless otherwise noted in this report, the analysis will focus on FYE June 30, 2011. This report specifically analyzes the level of funding needed to support the operations and services of the poison control centers, and the level of funding necessary to provide statewide coverage of poison control services by two centers.

Background Information – Virginia Poison Control Network

The Virginia Poison Control Network (VPCN) historically consisted of three poison centers that provided complete coverage of the Commonwealth of Virginia. The three centers that made up the VPCN are the Blue Ridge Poison Center (BRPC), the Virginia Poison Center (VPC), and the National Capital Poison Center (NCPC). All three centers performed the operations required by their contracts with the Commonwealth of Virginia, which included maintaining a poison control call center and educating medical professionals about poison information. Each center has medical directors who provide supervision to the poison control center and are also involved in research and education for medical professionals.

BRPC serves the Central and Southwest regions of Virginia and is associated with the University of Virginia Health System and the School of Medicine. The poison center is a primary part of the Medical Toxicology Department, which is a segment of the Emergency Department. The Medical Toxicology Department includes clinical and research segments. BRPC has a recorded phone system, and all the call information is manually entered into the poison center's database by the BRPC staff.

VPC serves the Central and Tidewater regions in Virginia and is a part of the Toxicology Department within the Emergency Medicine Department of the Virginia Commonwealth University Health System (VCUHS). The physicians that provide supervision to the call center are considered part of the VCU School of Medicine, while the staff and equipment fall under the Hospital. The VPC has a recorded phone system, and all the call information is manually entered into the poison center's database by the VPC staff.

NCPC, now a subcontractor of the VCUHS, serves the NOVA/DC metro area (DC, Montgomery and Prince George, MD, and the Northern Virginia region). NCPC is a free standing 501c3 charitable organization and is not associated with a hospital. NCPC has an advanced phone system that automatically tracks the location of the calls and records that information in the Center's database/records. Because the NCPC serves portions of Virginia and Maryland, and all of the District of Columbia, the NCPC allocates costs and revenues to each service area based on yearly call volume. For the years in question, the percentage of the call volume related to Virginia remained fairly consistent, with an average of 49.89% over the three year period. For the analysis that follows, unless otherwise noted, the NCPC amounts are only the Virginia portion of expenses, revenues and calls.

Poison Control Center Calls

Poison control center performance and measurements are typically considered with regard to call volume. Therefore, we began our analysis looking at the call volume each center handles. The majority of all calls are handled by Certified Specialists in Poison Information (CSPIs). There are several types of calls the centers receive: human exposure calls, animal exposure calls, confirmed non-exposure calls, and information calls. Additionally, the call center workers make follow-up calls which are not included in these figures. Because human exposure calls is the standard used by the AAPCC (American Association of Poison Control Centers) in measuring performance, we have focused on human exposure calls as well. However, it is important to keep in mind the poison control centers do handle other calls as well.

The poison centers report call volumes in the annual reports they are required to provide to the VDH. Human exposure calls remained relatively stable over the three year period reviewed, with a slight decrease year to year noted. NCPC had the highest call volume at 40,137 human exposure calls in SFY June 30, 2011. However, only 19,820 of them related to Virginia. VPC and BRPC reported 25,779 and 22,289 respectively. The figures that VPC and BRPC report are only for calls in their service area. Their total call volume is slightly higher because of incorrect call routing (generally due to cell phone originations).

Poison Control Center Costs

Our analysis found that the most significant costs for the poison control centers are the salary expenses of the call center workers. An evaluation of the FYE June 30, 2009, June 30, 2010, and June 30, 2011 financial data was conducted to determine the cost history for each poison center. Over the three year period, the three centers incurred an average total cost per year of approximately \$4.2 million. Salaries and benefits of the CSPIs make up almost half of this total cost; salaries and benefits of the supervising directors, toxicologists, and other education and administrative staff account for another 30% of the costs, leaving only about \$0.7 million in non-

salary or benefit costs. The average yearly cost per human exposure call was \$61.59. The NCPC has higher costs than the other two centers because of higher non-salary costs. NCPC is a stand alone facility, while BRPC and VPC are associated with universities. As part of the universities, their overhead costs are passed down to the center through allocations performed by the accounting department. These overhead costs may or may not present a full picture of the value of the services received by the poison centers from the university, but are the best approximation available. As an example, NCPC reports higher rent, accounting/ audit, and computer support expenses than the other centers. For a summary of expenses by category and poison center, see **Appendix A**.

Poison Control Center Revenues

All three poison centers receive funding from the Commonwealth of Virginia. This funding has been reduced by 67% over the three year period under review. The centers also receive annual funding from a federal agency, the Health Resources & Services Administration (HRSA). Each center has at times received grants for providing additional services beyond their normal activities. Aside from the state and federal funding, VCU has a small amount of contributions and in-kind contributions. NCPC, on the other hand, receives significant funding from donors, corporations, and other private sources. They are also funded by Maryland and DC, because of the services provided to those regions. See **Appendix A** for a summary of revenues for each poison control center.

Both VPC and BRPC benefit from their hospital and school of medicine relationships. The difference between the revenues received by these centers and their expenses are funded by the medical centers. The difference for NCPC is covered by the funding from other states and the donations and endowment.

Poison Control Center Requirements

An evaluation of the AAPCC and the VDH minimum requirements related to VPCN was performed. Based on the submitted documentation and conversations with the directors, it appears that each center is adhering to the minimal requirements set by the AAPCC and the VDH. Each center maintains an educational program for medical professionals and the public. The centers indicated that they coordinate with one another in order to provide efficient and effective educational programs. All centers' maintained operations 24 hours a day, 365 days a year. A fully operational telephone system and database was also maintained throughout the years analyzed.

Each center maintains a managing director that demonstrates a full-time commitment to poison center related activities. The managing director for BRPC and NCPC also serve as the medical directors for the center; however, they have multiple associate medical directors that provide support to the center. VPC has a separate medical director and an associate medical director that

split time at the center. The individual or individuals providing medical direction devoted at least 20 hours per week to professional toxicology activities. The AAPCC requirements indicate that, "Additional medical direction is desirable and may be necessary." The center's medical directors appear to provide the necessary oversight based on the reported call volume. 10 hours of medical direction must be provided for every 25,000 human exposure cases handled at the center. Each center employs a cumulative average of one FTE for the medical director, associate medical director, and toxicologist(s).

The VDH contractual requirements indicate that a maximum of 4,500 and no less than 2,000 exposure cases can be handled by a CPSI per one FTE. During 2011, NCPC, BRPC, and VPC SPI's handled human exposure calls in the amount 2,942.77, 2,932.76, and 3,347.92 per one FTE. The three centers met the overall maximum and minimum human exposures requirements.

Based on the FTE information provided by the centers, an average of 7.35 CSPI FTE's were employed. If CSPI's at all three centers handled the maximum 4,500 human exposure cases per year, and average of 5.03 FTE's would be required per center.

Minimum Funding Requirements to Operate Three Centers

To calculate the minimal funding requirements for CSPI salary and benefits we used the maximum amount of human exposure calls that could be handled by a CSPI (4,500) to determine the minimal CSPI FTE's required. Our calculation indicated that a minimum of 5.03 FTE's were required. We then used the FTE support submitted to determine the average salary and benefits cost per FTE. Our calculation determined an average salary and benefits costs per CSPI FTE of \$95,955. A total minimal CSPI salary and benefits cost for three poison centers was calculated to be \$1,566,758. It should be noted that this reduction in CSPI FTE's may not adequately provide staffing for the centers, because of the need for proper staffing and coverage at all hours.

All three centers had a cumulative average of one FTE for all medical directors, associate medical directors, and toxicologist, plus one FTE managing director. Per the AAPCC requirements, the managing director that is also a medical director must have a full-time commitment to the center and must have adequate backup. Each poison center must also provide full-time toxicological supervision and at least 20 hours of medical direction per 25,000 human poison exposures. BRPC and NCPC had less than 25,000 human poison exposures; therefore, they would only require 10 hours of supervision at each. VPC had more than 25,000 so they would require 20 human poison exposure hours. The AAPCC indicates that, "Additional medical direction is desirable and may be necessary." Therefore, we determined that BRPC and NCPC could reduce their medical director coverage to 0.25 FTE each, instead of the current one FTE, and VPC to 0.5 FTE. Please note that this analysis considers it necessary for the center to have both the managing director and the medical director positions. The AAPCC requirement does permit the medical director role to be fulfilled by the managing director. Based on conversations

with the call center directors and descriptions of their duties and those of the medical directors, they find it necessary to staff more than one full time position in order to fulfill the call center duties.

All three centers employed an education coordinator and administrative employees. VPC and BRPC did not directly include salary expense related to human resources, accounting, IT, etc. because these are overhead costs to the larger university system. NCPC was able to provide accurate costs related to the above departments, since they are a separate entity. We determined that the three centers maintain an adequate level of administrative and other staff; therefore, we determined that the current staffing level, and therefore expenses, should be maintained to meet contractual and AAPCC requirements.

The above salary and benefits cost for all three centers total to \$2,570,275. When these costs are compared to the current three year average salary and benefits costs, a potential reduction of \$894,218 was noted.

We reviewed the other costs incurred by the three facilities. Other costs consist of call center equipment, training materials, travel costs, licensure costs, and other miscellaneous costs. All costs appear to be necessary to maintain current operational level and to meet their contractual and AAPCC certification requirements. Indirect costs currently are lower for VPC and BRPC than for NCPC because NCPC is a standalone facility.

The minimal total costs to operate three poison centers would be around \$3,287,000 or about \$48.50 per human exposure call. See **Appendix B** for a summary of costs under the minimal requirements for funding three centers. In 2011, the three facilities received \$500,000 (combined) from Virginia OEMS. They also received \$655,698 from a HRSA grant, and \$359,518 in other funding (primarily related to NCPC). This funding amounts to about \$22.30 per call.

A national mean cost per human exposure was calculated in 2002 by the AAPCC. This was inflated to 2011 cost using the CPI percentage of change for medical professional services. During 2011, a poison control center's average cost per human exposure was estimated to be \$58.16. See **Appendix D** for a summary of the national mean cost per human exposure for 2002, and for the inflated 2005 through 2012 amounts.

Minimum Funding Requirements of Two Centers

To calculate the minimal costs for CSPI salary and benefits we used the maximum amount of human exposure calls that could be handled by a CSPI (4,500) to determine the minimal CSPI FTE's required. If call volume stayed consistent with the historical data, the average amount of

human exposure calls for each of the two centers would be around 33,944 (total of 67,888). The current average human exposure call volume for each existing center is 22,629 (total of 67,888).

Our calculation indicated that the minimum of eight FTE's were required, per center (16 FTE's in total). We then used the FTE support submitted to determine the average salary and benefits cost per FTE. Our calculation determined an average salary and benefits costs per CSPI FTE of \$95,955. A total minimal CSPI salary and benefits cost for two poison centers was calculated to be \$1,519,281. In the above analysis, CSPI FTE's were decreased from an average of 22 to 16.

The methodology used to determine the amount of FTE's related to the medical directors, associate medical directors, toxicologists, and managing directors for two facilities was as follows. Based on the requirement to have 10 hours per 25,000 calls, the two centers could each employ 0.5 FTEs for medical directors / associate medical directors / toxicologist. They would also employ one FTE for managing director. Overall, there would be a reduction in the number of medical directors, toxicologists, and managing directors to 1.5 FTEs at each center. A total minimal medical director, toxicologist, and managing director salary and benefits cost for two poison centers was calculated to be \$462,877.

The two centers will need to employ an education coordinator and administrative employees. VPC and BRPC did not directly include salary expense related to human resources, accounting, IT, etc. because these are overhead costs to the larger university system. NCPC was able to provide accurate costs related to the above departments, since they are a separate entity. We determined that the level of administrative and educational staff currently in place could be reduced to the level currently provided by two centers, thus cutting out the expenses of one center.

The above salary and benefits cost for two centers total to \$2,242,466. When these costs are compared to the current three year average salary and benefits costs, a potential reduction of \$1,222,026 was noted.

Other non-salary costs consist of call center equipment, training materials, travel costs, licensure costs, and other miscellaneous costs. Because these are mostly fixed costs (with the exception of some of the educational material and call center equipment), we would estimate that a reduction of approximately \$150,000 in other non-personnel costs (workspace, equipment, insurance, etc.) would be possible because of the elimination of a call center.

The minimal total costs to operate two poison centers would be around \$2,780,000 or about \$41.00 per human exposure call. See **Appendix B** for a summary of costs under the minimal requirements for funding two centers.

Conclusions

Based on the above analysis, a consolidation of the poison control centers from three to two would reduce the expenses required to operate the centers. However, the funding provided by the Commonwealth and by HRSA does not cover the minimum operations of the centers, under either scenario. The shortfall at BRPC and VPC is covered by the larger medical center entity. For these two centers, some costs are fluid and not easily identifiable to the poison center. At NCPC, the shortfall is funded by donations and contributions. NCPC receives funding from Maryland and DC as well, which covers a large portion of the costs of the calls for those regions. Additionally, at all three centers, the medical directors provide services to the university community through their commitment to the university, where they have privileges and see patients. The poison control centers are required to maintain a 24 call center and to provide education to the medical community. The AAPCC standards do not identify more specific criteria for what educational opportunities should be provided. It does require that the call center be staffed to a certain level, and based on our analysis the centers could operate with fewer staff to meet the minimum requirements. Additionally, medical director costs could be reduced. However, we realize that in order to provide 24 hour coverage, staffing needs must be considered with regard to shifts, overtime, and emergencies and greater staffing may be necessary. Based on our review, funding does need to be increased to fully cover the needs of the poison control centers in Virginia. See **Appendix C** for a summary of projected profits or losses by funding level.

PHBV Partners LLP

August 31, 2012

Appendix A
Poison Center Revenues & Expenses

| | Blue Ridge Poison Center | | | Virginia Poison Center | | | National Capital Poison Center | | | |
|---|--------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|--------------------------------|------------------------|------------------------|----|
| | FYE 6/30/09 | FYE 6/30/10 | FYE 6/30/11 | FYE 6/30/09 | FYE 6/30/10 | FYE 6/30/11 | FYE 6/30/09 | FYE 6/30/10 | FYE 6/30/11 | |
| EXPENSES | | | | | | | | | | |
| Salaries - CSPIS | \$ 479,089.55 | \$ 465,627.23 | \$ 456,612.00 | \$ 677,554.00 | \$ 729,873.00 | \$ 686,071.00 | \$ 526,944.57 | \$ 537,528.69 | \$ 580,228.71 | ** |
| Salaries - Managing / Medical Directors | 243,290.83 | 260,654.51 | 277,216.00 | 257,780.00 | 272,000.00 | 268,800.00 | 194,651.12 | 216,027.32 | 193,249.56 | ** |
| Salaries - Admin / Other | 107,576.15 | 94,654.61 | 99,454.00 | 29,220.00 | 30,193.00 | 30,864.00 | 126,388.72 | 133,157.90 | 178,704.69 | ** |
| Fringe Benefits | 221,483.00 | 203,270.00 | 216,551.00 | 248,579.00 | 281,699.00 | 249,645.00 | 203,524.97 | 216,971.35 | 227,096.47 | ** |
| Total Salary & Benefit Costs | \$ 1,051,439.53 | \$ 1,024,206.35 | \$ 1,049,833.00 | \$ 1,213,133.00 | \$ 1,313,765.00 | \$ 1,235,380.00 | \$ 1,051,509.38 | \$ 1,103,685.26 | \$ 1,179,279.43 | |
| Call Center Equipment | \$ 29,489.00 | \$ 32,608.00 | \$ 25,550.00 | \$ 45,795.00 | \$ 49,696.00 | \$ 52,179.00 | \$ 27,056.17 | \$ 29,830.35 | \$ 29,175.83 | ** |
| Call Center Training & Other | 101,450.00 | 87,501.00 | 38,552.00 | 84,258.00 | 89,324.00 | 52,091.00 | 240,355.51 | 215,596.35 | 212,626.94 | ** |
| Admin & Overhead | 106,417.74 | 99,471.79 | 80,188.42 | 111,062.00 | 55,000.00 | 49,904.00 | 143,549.34 | 150,278.31 | 176,413.98 | ** |
| Total non-salary costs | \$ 237,356.74 | \$ 219,580.79 | \$ 144,290.42 | \$ 241,115.00 | \$ 194,020.00 | \$ 154,174.00 | \$ 410,961.02 | \$ 395,705.01 | \$ 418,216.74 | |
| Total Expenses | \$ 1,288,796.27 | \$ 1,243,787.14 | \$ 1,194,123.42 | \$ 1,454,248.00 | \$ 1,507,785.00 | \$ 1,389,554.00 | \$ 1,462,470.40 | \$ 1,499,390.27 | \$ 1,597,496.17 | |
| REVENUES | | | | | | | | | | |
| Virginia DOH | \$ 548,361.46 | \$ 478,037.09 | \$ 170,000.00 | \$ 611,015.00 | \$ 519,382.00 | \$ 200,000.00 | \$ 390,314.53 | \$ 331,759.36 | \$ 130,000.00 | |
| Other Virginia | - | - | - | 56,062.00 | 30,116.00 | - | - | - | - | |
| HRSA | 169,565.00 | 191,353.00 | 173,957.00 | 218,793.00 | 246,907.00 | 259,581.00 | 167,702.78 | 186,198.56 | 222,160.31 | ** |
| Other Government | - | - | - | - | - | 2,272.00 | - | - | - | * |
| Donations / Contributions | - | - | - | - | 142.00 | 41.00 | 41,823.53 | 41,779.81 | 48,101.75 | ** |
| Corporations | - | - | - | - | - | - | 57,553.85 | 52,623.32 | 59,511.10 | ** |
| Campaigns & Foundations | - | - | - | - | - | - | 86,920.05 | 48,006.36 | 28,592.91 | ** |
| In Kind Contributions | - | - | - | - | - | 55,000.00 | 10,126.39 | 76,258.09 | 65,022.45 | ** |
| Other Revenues | - | - | - | 35,000.00 | 44,235.00 | 41,240.00 | 47,901.90 | 49,362.55 | 59,736.85 | ** |
| Total Revenues | \$ 717,926.46 | \$ 669,390.09 | \$ 343,957.00 | \$ 920,870.00 | \$ 840,782.00 | \$ 558,134.00 | \$ 802,343.02 | \$ 785,988.05 | \$ 613,125.37 | |
| Human Exposure Calls - VA only | 25,039 | 23,527 | 22,289 | 26,719 | 25,693 | 25,779 | 19,887 | 20,274 | 19,820 | |
| Cost per Call | \$ 51.47 | \$ 52.87 | \$ 53.57 | \$ 54.43 | \$ 58.68 | \$ 53.90 | \$ 73.54 | \$ 73.96 | \$ 80.60 | |
| Revenue per Call | \$ 28.67 | \$ 28.45 | \$ 15.43 | \$ 34.46 | \$ 32.72 | \$ 21.65 | \$ 40.35 | \$ 38.77 | \$ 30.93 | |

* NCPCC receives revenues from DC, Maryland, and additional federal incentives. These are not included above as they are not designated for Virginia Poison Center funding.

** The noted NCPCC expenses and revenues were multiplied by the call percentage for VA (47.10%, 49.16%, and 53.40% respectively) to determine the applicable portion related to Virginia.

Appendix B
Minimum Funding Requirements

| | FYE 6/30/11 Total Poison System Costs and Revenues | | |
|--|--|------------------------|------------------------|
| | Current Operations | Minimum - 3 Centers | Minimum - 2 Centers |
| EXPENSES | | | |
| Salaries & Benefits - CSPIS | \$ 2,153,945.81 | \$ 1,566,758.42 | \$ 1,519,280.90 |
| Salaries & Benefits - Managing / Medical Directors | 924,213.36 | 617,182.86 | 462,877.15 |
| Salaries & Benefits - Admin / Other | 386,333.28 | 386,333.28 | 260,307.99 |
| Total Salary & Benefit Costs | \$ 3,464,492.45 | \$ 2,570,274.56 | \$ 2,242,466.04 |
| | | | |
| Total non-salary costs | \$ 716,681.16 | \$ 716,681.16 | \$ 537,348.19 |
| | | | |
| Total | \$ 4,181,173.61 | \$ 3,286,955.72 | \$ 2,779,814.23 |
| | | | |
| Human Exposure Calls | 67,888 | 67,888 | 67,888 |
| | | | |
| Cost Salary per Human Exposure Call | \$ 51.03 | \$ 37.86 | \$ 33.03 |
| Cost Other per Human Exposure Call | \$ 10.56 | \$ 10.56 | \$ 7.92 |
| Total Cost per Human Exposure Call | \$ 61.59 | \$ 48.42 | \$ 40.95 |
| | | | |
| REVENUES | | | |
| Funding - Virginia OEMS | \$ 500,000.00 | \$ 2,271,739.35 | \$ 1,764,597.86 |
| Funding - Other State & Federal | 655,698.31 | 655,698.31 | 655,698.31 |
| Funding - Other | 359,518.06 | 359,518.06 | 359,518.06 |
| Total | \$ 1,515,216.37 | \$ 3,286,955.72 | \$ 2,779,814.23 |

Appendix C

Projected Profit / Loss by Level of Funding

| | FYE 6/30/11 Total Poison System Profit (Loss) | | |
|---|---|---------------------|---------------------|
| | Current Operations | Minimum - 3 Centers | Minimum - 2 Centers |
| Total Expenses: | \$ 4,181,173.61 | \$ 3,286,955.72 | \$ 2,779,814.23 |
| Total Revenue (excluding Virginia funding): | \$ 1,015,216.37 | \$ 1,015,216.37 | \$ 1,015,216.37 |
| Total Loss (excluding Virginia funding): | \$ (3,165,957.24) | \$ (2,271,739.35) | \$ (1,764,597.86) |
| Funding Level - Virginia: | | | |
| \$0 | \$ (3,165,957.24) | \$ (2,271,739.35) | \$ (1,764,597.86) |
| \$500,000 | \$ (2,665,957.24) | \$ (1,771,739.35) | \$ (1,264,597.86) |
| \$1,500,000 | \$ (1,665,957.24) | \$ (771,739.35) | \$ (264,597.86) |
| \$2,000,000 | \$ (1,165,957.24) | \$ (271,739.35) | \$ 235,402.14 |
| \$2,200,000 | \$ (965,957.24) | \$ (71,739.35) | \$ 435,402.14 |
| \$2,800,000 | \$ (365,957.24) | \$ 528,260.65 | \$ 1,035,402.14 |

Appendix D
National Mean Cost per Human Exposure

| Source | Year | Cost Per Human Exposure | ** CPI Percent |
|---------------|-------------|--------------------------------|---------------------------|
| AAPCC | 2002 | \$44.91 | n/a |
| AAP | 2005 | \$48.76 | n/a |
| CPI | 2006 | \$50.08 | 2.70% |
| CPI | 2007 | \$52.08 | 4.00% |
| CPI | 2008 | \$53.85 | 3.40% |
| CPI | 2009 | \$55.30 | 2.70% |
| CPI | 2010 | \$56.85 | 2.80% |
| CPI | 2011 | \$58.16 | 2.30% |
| CPI | 2012 | \$59.44 | 2.20% |

** The above calculation used the year to year CPI percentage change related to the average costs for medical professional services to determine an average cost per human exposure. The initial cost per human exposure was based on amounts reported by the AAPCC in 2002.