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Medicaid Expenditures for Persons with Traumatic Brain Injury while Residing in Maryland Nursing Facilities: A Follow-Up Analysis

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Table of Contents

List of Figures

Overview

The Mental Hygiene Administration (MHA), of the Maryland Department of Health and Mental Hygiene (DHMH), requested that The Hilltop Institute conduct an analysis to update the results of the December 2008 study entitled *An Analysis of Medicaid Costs for Individuals with Traumatic Brain Injury While Residing in Maryland Nursing Facilities*. The purpose of the original study was to provide MHA a better understanding of the service utilization patterns of Medicaid beneficiaries with a traumatic brain injury (TBI) while residing in a nursing facility. A TBI is an injury to the brain caused by a physical trauma or external force—such as a car accident or a blow to the head—that results in impaired cognitive, behavioral, physical, or emotional functioning. Anoxic brain injury is the partial or complete loss of oxygen to the brain resulting in cognitive issues and physical disabilities. In 2008, in consultation with the Money Follows the Person (MFP) behavioral health workgroup, Hilltop designed a study to address the following research questions:

- How many Medicaid-eligible individuals with TBI are cared for in nursing facilities in Maryland? Is the number increasing or decreasing?
- How many of these individuals have a diagnosis of TBI, anoxia, or both?
- What are the demographic characteristics of these individuals (e.g., age, gender, and region of residence)?
- What is the cost to Medicaid to provide care for these individuals while residing in a nursing facility?
- What types of health services do these individuals use while residing in a nursing facility, and what is the cost to Medicaid to provide those services?
- How many of these individuals are eligible for both Medicare and Medicaid ("dual eligibles")?

This follow-up study will revisit the above questions from the original study and will address the following supplemental information as requested by MHA:

- What are the Medicaid nursing facility reimbursement levels of individuals with a TBI diagnosis?
- What are the characteristics (e.g., number of beds, occupancy rates, and type of ownership) of Maryland nursing facilities that provide services to individuals with TBI?
- Do individuals with TBI tend to be admitted to a particular type of nursing facility (i.e., non-profit, for-profit, chain, or standalone)?
- How are the nursing facilities in which individuals with TBI reside rated in terms of quality of care and services provided?

Key Findings from the December 2008 Report

Users

- The number of Medicaid beneficiaries with a TBI diagnosis who experienced a nursing facility stay at any time from fiscal year (FY) 2004 to FY 2006 declined 8.3 percent, from 2,228 in FY 2004 to 2,042 in FY 2006.

Expenditures

- Total Medicaid expenditures for the study population incurred while residing in a nursing facility increased 2 percent from $107.7 million in FY 2004 to $109.4 million in FY 2006.
- There was a 10.8 percent increase in the average cost person, from $48,336 in FY 2004 to $53,562 in FY 2006.
- The "TBI-only" population declined in number by nearly 9 percent, while their total Medicaid costs increased by 2 percent.
- The "TBI and Anoxia" population increased nearly 7 percent, while their total Medicaid costs increased 13 percent.
- In two of the three study years, the "TBI-Anoxia" group had the highest average number of nursing facility days (273 in FY 2005), the highest per person average costs ($69,442 in FY 2006) and the highest average cost per nursing facility day ($268) in FY 2006 in each of the study years.

Demographics

- Individuals in the 18-49 and 50-64 age groups saw an increase in Medicaid expenditures in each of the study years while expenditures for individuals aged 65 and older declined.
- The "TBI-only" and "Anoxia-only" groups were approximately 55 percent female and 45 percent male; however, the reverse was true for the "TBI and Anoxia" group, where 41 percent were female and 59 percent were male (in FY 2006).
- In each of the study years, the largest percentage of the study population was located in the Baltimore-Washington region.

Service Utilization

- Nursing facility expenditures accounted for the largest percentage of total Medicaid expenditures in each of the study years at 82 percent in FY 2004 and FY 2005 and 84 percent in FY 2006.

- Ranging from 83 percent in FY 2004 to 86 percent in FY 2006, the percentage of nursing facility expenditures for the "TBI-only" group were consistently higher than those for the other two groups (the expenditures each year were around 80 percent for the "Anoxia-only" group and 75 percent for the "TBI-only" group).

Methodology

Defining and Identifying the Study Population

Hilltop defined the study population as Maryland Medicaid beneficiaries who 1) had a diagnosis of TBI, anoxia, or both TBI and anoxia at some time during FYs 1996 to 2012 and 2) resided in a Maryland nursing facility at some point during FYs 2010 to 2012.

In 2008, Hilltop and MHA identified the International Classification of Diseases, Ninth Revision (ICD-9) codes and Current Procedural Terminology (CPT) codes to be used in the original study to identify individuals with a TBI or anoxia diagnosis. The same ICD-9 codes, listed in Figure 1, were used in the follow-up study.

Figure 1. ICD-9 and CPT Codes Used to Identify Individuals with a Brain Injury Diagnosis

TBI-Only	Anoxia-Only	TBI and Anoxia
800-801.99	348.1	800-801.99
803-804.99		803-804.99
850-854.05		850-854.05
950.01-950.39		950.01-950.39
995.55		995.55
		Combined with…
		348.1

As in the previous study, two data sources—Maryland Medicaid Management Information Systems (MMIS2) files and the Federal Minimum Data Set (MDS) for Nursing Home Resident Assessment and Care Screening—were used to identify Medicaid recipients with a TBI diagnosis and one or more Medicaid nursing facility claims.

The MMIS2 files were searched to identify individuals with one or more ICD-9 codes shown in Figure 1 at any time from FY 1996 to FY 2012. Similarly, MDS2 and MDS3 records from 1998 to September 2010 were searched to identify individuals with one or more of the ICD-9 codes listed under "Other Current or More Detailed Diagnoses and ICD-9 Codes," Section I.3.a-e., and/or where the "Traumatic Brain Injury" box was marked in Section I.1.cc. MDS3 records from October 2010 to June 2012 were searched to identify individuals with one or more of the ICD-9 codes and/or the "Traumatic Brain Injury" box (question I5500) marked in Section I.

After searching each of the two data sources separately, the MDS and MMIS2 files were combined to produce a single unduplicated TBI identification file of individuals meeting the study criteria. The finder file contained information such as demographics, service utilization dates, and a unique identifier. During this process, individuals were assigned a mutually exclusive TBI diagnosis group of "TBI-only," "Anoxia-only," or "TBI and Anoxia" that was obtained from the diagnosis of their first TBI-related claim. Merging the finder file with MMIS2 nursing facility claims files produced a dataset that identifies individuals with one or more of the selected ICD-9 codes that also had at least one Medicaid nursing facility claim during FYs 2010 to 2012.

Identifying Medicaid Nursing Facility Users with a TBI Diagnosis

The resulting TBI identification file was merged separately with a file containing individuals with at least one Medicaid nursing facility claim from FY 2010 to FY 2012 to identify those with a Medicaid nursing facility stay each fiscal year. Of the 94,275 individuals in the TBI finder file, 98 percent were Medicaid beneficiaries at some point since FY 1996. The search found 3,244 individuals with at least one nursing facility claim in FY 2010, 3,022 individuals with at least one nursing facility claim in FY 2011, and 2,819 individuals with at least one nursing facility claim in FY 2012. Individuals may have had a nursing facility stay in more than one of the study years; therefore, a person may be included in more than one fiscal year count.

In comparison, study group participant numbers from the previous report ranged from 1,784 in FY 2004 to 1,675 in FY 2006. The increase in the study population is attributed to slight modifications in the study group selection methodology. The number of MDS diagnosis fields searched for this report was expanded from four to ten, resulting in a greater chance of identifying individuals with a TBI diagnosis code. Also, to make use of the most up-to-date data available, the diagnosis "look-back period" was expanded to include information available since the completion of the original report. Due to the changes in the methodology employed to select the study population, it is not appropriate to compare the results of the original report and the current report based on the raw numbers; however, comparisons of percentages on the same data items (e.g., diagnosis group and expenditures by diagnosis group) is appropriate.

Where appropriate, information on nursing facility users will be presented to provide context to the information provided for the study population. The non-TBI population will include those persons identified in the MMIS data as having a Medicaid nursing facility stay in FY 2010 to FY 2012 that do not have a TBI diagnosis at any time from FY 1996 to FY 2012.

Nursing Facility Quality

Data from the Centers for Medicare and Medicaid Services (CMS) and the Maryland Health Care Commission (MHCC) were used to assess the quality of care of Maryland nursing facilities serving individuals with a TBI diagnosis.

CMS "Nursing Home Compare" Five-Star Quality Rating System

The 2012 "Nursing Home Compare" Five-Star Quality Rating System data were used to assess the quality of nursing facilities providing services to individuals with a TBI diagnosis that had a nursing facility stay in FY 2012. The Five-Star Quality Rating System was implemented by CMS to provide nursing facility residents and their families with a standardized tool to assess the quality of nursing facilities across the country. The Five-Star Quality Rating System provides an overall rating, which is the compilation of three separate performance ratings:

1. Health Inspection Domain: Unannounced nursing home surveys conducted by the Maryland Office of Health Care Quality (OHCQ), the state's nursing home survey teams. Surveys are conducted at each facility, on average, every 12 to 15 months to determine compliance with federal requirements.
2. Staffing Domain: Self-reported staffing levels submitted to CMS by the nursing facility are used to calculate the staffing star rating.
3. MDS Quality Measures Domain: Based on the facilities' performance on a set of nine quality measures derived from MDS3. The measures assess a range of functioning and health status indicators in various care areas, such as pain, pressure ulcers, and falls resulting in a major injury.

MHCC Nursing Facility Family Survey

Additional nursing facility quality data were obtained from the 2012 MHCC Nursing Facility Family Survey. The annual surveys, administered to Maryland nursing facilities with one or more residents with a stay of 90 or more days, is conducted annually to assess the level of satisfaction of the family members and/or guardians of the residents. The 2012 survey contains 25 items—rated on a scale of one to four—in five key domains: 1) staff and administration of the nursing facilities, 2) care provided to residents, 3) food and meals, 4) autonomy and residents' rights, and 5) physical aspects of the nursing facilities. Individual nursing facilities' results are compared across all Maryland nursing facilities and among peer groups with similar characteristics (e.g., size, type of ownership, and location).

Analysis

This analysis focuses on a study population of individuals identified through the search of MDS and MMIS2 data as having a TBI diagnosis at some time during FYs 1996 to 2012, and as having one or more Medicaid nursing facility claims during FYs 2010 to 2012. Each person in

the study population was assigned one of the three diagnosis categories: "TBI-Only," "Anoxia-Only," and "TBI and Anoxia." User counts, service utilization, and Medicaid expenditures are provided by diagnosis group as well as by demographic variables such as age, gender, and region of residence. Medicaid expenditures for services received by the study population during nursing facility stay are provided by diagnosis group and by service category. Medicaid expenditures for individuals in the study population not incurred during a nursing facility stay are not included in this study.

To assess nursing facility quality of care, Hilltop analyzed nursing facility quality of care data for those facilities providing services to individuals with a TBI diagnosis. Nursing Home Compare and MHCC Family Survey data were downloaded for all Maryland nursing facilities and were merged, by provider identification number, with MMIS2 files. Frequency distributions were generated on the characteristics of these nursing facilities (e.g., payer, number of beds, and occupancy rates) and on selected quality indicators.

Findings

Medicaid Nursing Facility Users and Expenditures

Overall, there was a 13 percent decline in the number of individuals with a TBI diagnosis and nursing facility stay from FY 2010 to FY 2012. The search of MMIS2 claims files found 3,244 individuals with a TBI diagnosis and a nursing facility stay in FY 2010, 3,022 individuals in FY 2011, and 2,819 individuals in FY 2012. Along with a reduction in the number of individuals, there was a reduction in total costs from year to year. The total Medicaid expenditures for these individuals while in a nursing facility declined 13 percent from FY 2010 to FY 2012. As shown in Figure 2, although the average number of nursing facility days remained relatively stable from FY 2010 to FY 2012, the average annual cost of care per person increased 5 percent (from $64,016 to $67,360) during this period.

Figure 2. Number of Days in Nursing Facilities and Related Medicaid Costs for the Study Population, FYs 2010 – 2012

		Medicaid Costs		Nursing Facility Days	
	Total Users*	Average Costs per User	Total Costs	Average Number of Days	Total Number of Days
FY 2010	3,244	$64,016	$207,667,936	257	834,735
FY 2011	3,022	$66,491	$200,935,073	260	786,483
FY 2012	2,819	$67,360	$189,888,626	256	720,348

*Nursing facility users may have a stay in more than one of the study years.

As shown in Figure 2a, persons with a TBI diagnosis incurred higher average per person Medicaid costs while residing in a nursing facility and spent more days in a nursing facility than nursing facility users with no TBI diagnosis. For example, in FY 2012, the average annual Medicaid cost per user for persons in the study population were nearly $16,000 higher than the average cost for persons with no TBI diagnosis. Also, persons with a TBI diagnosis spent, on average, eight more days in a nursing facility than their counterparts with no TBI diagnosis. Similar to the TBI population, the average number of nursing facility days remained stable; however, the average annual cost of care per person increased 8 percent, which is slightly higher than the 5 percent increase noted in the study population.

Figure 2a. Number of Days in Nursing Facilities and Related Medicaid Costs for Individuals with No TBI Diagnosis, FYs 2010 – 2012

		Medicaid Costs			Nursing Facility Days	
	Total Users*	Average Cost per User	Total Costs	Average Cost per Day	Average Number of Days	Total Number of Days
FY 2010	19,762	$47,529	$939,276,325	$192	247	4,889,928
FY 2011	19,569	$49,577	$970,172,305	$200	248	4,846,428
FY 2012	19,548	$51,423	$1,005,223,896	$208	248	4,841,207

*Nursing facility users may have a stay in more than one of the study years.

Figure 3 shows the number of individuals with a TBI diagnosis and nursing facility stay by diagnosis group. From FY 2004 to FY 2006, the "TBI-only" diagnosis group consistently made up over three-quarters of the study population. The same holds true in this report, with the "TBI-only" group comprising 78 to 80 percent of the study population from FY 2010 to FY 2012. However, between FY 2010 and FY 2012, there was an 11 percent decrease in the number of individuals in this group that was accompanied by a near 6 percent decrease in total expenditures. The number of individuals in the "Anoxia-only" group decreased 18 percent from FY 2010 to FY 2012 and was accompanied by a 12 percent decrease in total expenditures. The largest decrease in numbers was noted in the "TBI and Anoxia" group, which declined 21 percent from FY 2010 to FY 2012. Medicaid expenditures for this group decreased 18 percent during the same period.

Figure 3. Nursing Facility Users, TBI Diagnosis Group, FY 2010 – FY 2012

	FY 2010		FY 2011		FY 2012	
	Total Unique Users	Percentage	Total Unique Users	Percentage	Total Unique Users	Percentage
TBI-Only	2,536	78%	2,398	79%	2,248	80%
Anoxia-Only	280	9%	253	8%	231	8%
TBI and Anoxia	428	13%	371	12%	340	12%
Total	**3,244**	**100%**	**3,022**	**100%**	**2,819**	**100%**

Figure 4. Medicaid Expenditures by Diagnosis Group, and Fiscal Year

	FY 2010			FY 2011			FY 2012		
	Total Unique Users	Total Costs	Average Cost per User	Total Unique Users	Total Costs	Average Cost per User	Total Unique Users	Total Costs	Average Cost per User
TBI-Only	2,536	$151,926,462	$59,908	2,398	$148,493,006	$61,924	2,248	$143,037,261	$63,629
Anoxia-Only	280	$20,444,332	$73,015	253	$19,933,778	$78,790	231	$17,939,034	$77,658
TBI and Anoxia	428	$35,297,142	$82,470	371	$32,508,290	$87,623	340	$28,912,331	$85,036
Total	**3,244**	**$207,667,936**	**$64,016**	**3,022**	**$200,935,074**	**$66,491**	**2,819**	**$189,888,626**	**$67,360**

Figure 5 shows the total and average number of nursing facility days by diagnosis group. On average, from FY 2010 to FY 2012, individuals in the "TBI-only" diagnosis group and the "Anoxia-only" group had almost the same number of nursing facility days. However, the average cost of care per day for individuals in the "Anoxia-only" and "Anoxia and TBI" groups was higher than the average cost of care per day for individuals in the "TBI-only" group. In FY 2012, the average cost for a day of care for individuals in the "Anoxia-only" and "Anoxia and TBI" groups were $92 and $86 more, respectively, than those in the "TBI-only" group.

Figure 5. Nursing Facility Days and Average Medicaid Costs per Users by Diagnosis Group

	FY 2010			FY 2011			FY 2012		
	Total Nursing Facility Days	Average Number of NF Days	Average Cost per NF Day	Total Nursing Facility Days	Average Number of NF Days	Average Cost per NF Day	Total Nursing Facility Days	Average Number of NF Days	Average Cost per NF Day
TBI-Only	661,399	261	$230	626,676	261	$237	580,813	258	$246
Anoxia-Only	65,062	232	$314	59,836	237	$333	53,139	230	$338
TBI and Anoxia	108,274	253	$326	99,971	269	$325	86,396	254	$335
Total	**834,735**	**257**	**$249**	**786,483**	**260**	**$255**	**720,348**	**256**	**$264**

Medicaid Nursing Facility User Demographics

During the study period, the number of persons with TBI and anoxia diagnoses who had a nursing facility claim declined 13 percent. Across all diagnosis categories, the largest decrease was noted in the 65 and over age group, which decreased 15 percent from FY 2010 to FY 2012.

Figure 6. Number of Users Under and Over Age 65 by Diagnosis Group, FY 2010 – FY 2012

	FY 2010	FY 2011	FY 2012
< Age 65			
TBI-Only	937	901	875
Anoxia-Only	164	152	142
TBI & Anoxia	335	281	262
Total	**1,436**	**1,334**	**1,279**
Age 65+			
TBI-Only	1599	1,497	1,373
Anoxia-Only	116	101	89
TBI & Anoxia	93	90	78
Total	**1,808**	**1,688**	**1,540**

In FY 2012, over 400 Marylanders were transitioned from a nursing facility into a community-based setting under the Maryland Money Follows the Person (MFP) Demonstration. The Demonstration, implemented in 2008, assists states in rebalancing their Medicaid long-term care delivery system by increasing the use of home and community-based services while reducing the use of institutionally-based services. On average, 16 percent of individuals who transitioned each year had a TBI diagnosis.

Figure 7. Money Follows the Person Demonstration Nursing Facility Transitions for Individuals with a TBI Diagnosis as a Percentage of all Money Follows the Person Transitions, FY 2010 to FY 2012

	Total MPF Transitions	Transitions for Persons with a TBI Diagnosis	Percentage
FY 2010	340	64	19%
FY 2011	403	60	15%
FY 2012	416	60	14%

Figures 8 to 11 provide additional information on nursing facility use and Medicaid expenditures for persons with a TBI diagnosis that had a nursing facility stay in FY 2010 to FY 2012 by demographic variables such as age, gender, and region. This information is also provided by diagnosis category. Some key findings from these charts include:

- Consistent with the previous report, across all study years, females composed the larger percentage (55 percent in both FY 2006 and FY 2012) of individuals in the "TBI-only" group. While the male-female ratio is changing, males continued to make-up the larger percentage (59 percent in FY 2006 and 54 percent in FY 2012) of the "TBI and Anoxia" group.
- Also consistent with the previous report, the largest percentage of the study population was located in Baltimore City, suburban Baltimore, and suburban Washington, the location of most of the state's population and most of its nursing facility beds. The "TBI-only" population and "TBI and Anoxia" groups were more likely to be located in Baltimore City, while individuals in the "Anoxia-only" group tended to be located in suburban Washington.

Figure 8. TBI-Only: Medicaid Nursing Facility Costs by Age, Gender, and Region

		FY 2010					FY 2011					FY 2012				
		Total Users	% of Total Users	Average Cost Per User	Total Costs	% of Total Costs	Total Users	% of Total Users	Average Cost Per User	Total Costs	% of Total Costs	Total Users	% of Total Users	Average Cost Per User	Total Costs	% of Total Costs
Age Group	< 18	0	0%	$0	$0	0%	0	0%	$0	$0	0%	2	0%	$64,917	$129,835	0%
	18-49	335	13%	$70,791	$23,715,001	16%	294	12%	$75,226	$22,116,328	18%	282	13%	$72,992	$20,583,708	14%
	50-64	602	24%	$71,600	$43,103,020	28%	607	25%	$71,661	$43,498,509	26%	591	26%	$73,548	$43,467,074	30%
	65+	1,599	63%	$53,226	$85,108,441	56%	1,497	62%	$55,363	$82,878,169	56%	1,373	61%	$57,434	$78,856,643	55%
Gender	Female	1,436	57%	$58,824	$84,471,685	56%	1,361	56%	$60,131	$81,838,751	55%	1,237	55%	$63,098	$78,051,671	55%
	Male	1,100	43%	$61,323	$67,454,804	44%	1,037	44%	$64,276	$66,654,242	45%	1,011	45%	$64,279	$64,985,590	45%
Region	Baltimore City	729	29%	$67,032	$48,866,066	32%	666	28%	$70,555	$46,989,850	32%	633	28%	$70,048	$44,340,121	31%
	Baltimore Suburbs	570	22%	$58,002	$33,061,120	22%	545	23%	$61,371	$33,447,391	23%	515	23%	$62,242	$32,054,655	22%
	Eastern Shore	284	11%	$54,116	$15,368,852	10%	274	11%	$56,481	$15,475,736	10%	248	11%	$59,211	$14,684,306	10%
	Southern Maryland	135	5%	$58,367	$7,879,593	5%	137	6%	$2,151	$7,408,589	0%	118	5%	$58,021	$6,846,522	5%
	Washington Suburbs	585	23%	$58,514	$34,230,446	23%	547	23%	$13,544	$33,771,696	5%	531	24%	$64,122	$34,048,927	24%
	Western Maryland	228	9%	$53,718	$12,247,668	8%	226	9%	$149,432	$11,105,087	23%	198	9%	$54,117	$10,715,181	7%
	Out of State	5	0%	$54,543	$272,717	0%	3	0%	$3,701,696	$294,657	7%	5	0%	$69,510	$347,549	0%

Figure 9. Anoxia-Only: Medicaid Nursing Facility Costs by Age, Gender, and Region

		FY 2010					FY 2011					FY 2012				
		Total Users	% of Total Users	Average Cost Per User	Total Costs	% of Total Costs	Total Users	% of Total Users	Average Cost Per User	Total Costs	% of Total Costs	Total Users	% of Total Users	Average Cost Per User	Total Costs	% of Total Costs
Age Group	< 18	0	0%	$0	$0	0%	0	0%	$0	$0	0%	0	0%	$0	$0	0%
	18-49	64	23%	$77,866	$4,983,394	24%	60	24%	$84,474	$5,068,463	25%	45	19%	$83,621	$3,762,926	21%
	50-64	100	36%	$73,839	$7,383,922	36%	92	36%	$91,423	$8,410,887	42%	97	42%	$82,054	$7,959,195	44%
	65+	116	41%	$69,629	$8,077,015	40%	101	40%	$63,905	$6,454,427	32%	89	39%	$69,853	$6,216,913	35%
Gender	Female	146	52%	$70,311	$10,265,413	51%	125	49%	$75,852	$9,481,482	48%	118	51%	$80,713	$9,524,139	48%
	Male	134	48%	$75,962	$10,178,919	51%	128	51%	$81,659	$10,452,295	52%	113	49%	$74,468	$8,414,895	42%
Region	Baltimore City	86	31%	$75,225	$6,469,351	32%	73	29%	$80,674	$5,889,221	30%	59	26%	$87,320	$5,151,852	29%
	Baltimore Suburbs	58	21%	$76,284	$4,424,478	22%	54	21%	$86,063	$4,647,379	23%	51	22%	$73,081	$3,727,107	21%
	Eastern Shore	24	9%	$64,115	$1,538,757	8%	28	11%	$61,294	$1,716,245	9%	28	12%	$61,174	$1,712,871	10%
	Southern Maryland	9	3%	$78,195	$703,752	3%	8	3%	$63,388	$507,104	3%	7	3%	$77,462	$542,233	3%
	Washington Suburbs	95	34%	$71,191	$6,763,102	33%	81	32%	$83,226	$6,741,329	34%	78	34%	$81,939	$6,391,257	36%
	Western Maryland	8	3%	$68,112	$544,893	3%	9	4%	$48,055	$432,499	2%	7	3%	$47,016	$329,111	2%
	Out of State	0	0%	$0	$0	0%	0	0%	0%	$0	0%	1	0%	$84,604	$84,604	0%

Figure 10. TBI and Anoxia: Medicaid Nursing Facility Costs by Age, Gender, and Region

		FY 2010					FY 2011					FY 2012				
		Total Users	% of Total Users	Average Cost Per User	Total Costs	% of Total Costs	Total Users	% of Total Users	Average Cost Per User	Total Costs	% of Total Costs	Total Users	% of Total Users	Average Cost Per User	Total Costs	% of Total Costs
Age Group	< 18	0	0%	$0	$0	0%	0	0%	$0	$0	0%	0	0%	$0	$0	0%
	18-49	158	37%	$92,058	$14,545,143	41%	127	34%	$101,493	$12,889,576	40%	112	33%	$96,646	$10,824,395	37%
	50-64	177	41%	$83,637	$14,803,676	42%	154	42%	$85,233	$13,125,823	40%	150	44%	$84,679	$12,701,905	44%
	65+	93	22%	$63,960	$5,948,322	17%	90	24%	$72,143	$6,492,890	20%	78	23%	$69,052	$5,386,031	19%
Gender	Female	195	46%	$87,022	$16,969,242	48%	170	46%	$93,440	$15,884,844	49%	155	46%	$86,750	$13,446,183	47%
	Male	233	54%	$78,661	$18,327,899	52%	201	54%	$82,704	$16,623,446	51%	185	54%	$83,601	$15,466,148	53%
Region	Baltimore City	160	37%	$98,092	$15,694,679	44%	133	36%	$101,270	$13,468,888	41%	116	34%	$100,978	$11,713,440	41%
	Baltimore Suburbs	102	24%	$73,809	$7,528,499	21%	100	27%	$82,619	$8,261,912	25%	93	27%	$76,877	$7,149,600	25%
	Eastern Shore	39	9%	$78,384	$3,056,978	9%	33	9%	$73,675	$2,431,272	7%	31	9%	$75,814	$2,350,227	8%
	Southern Maryland	18	4%	$84,789	$1,526,211	4%	19	5%	$69,152	$1,313,884	4%	17	5%	$72,481	$1,232,170	4%
	Washington Suburbs	87	20%	$72,032	$6,266,784	18%	68	18%	$87,903	$5,977,371	18%	62	18%	$84,446	$5,235,675	18%
	Western Maryland	22	5%	$55,636	$1,223,991	3%	18	5%	$58,609	$1,054,963	3%	20	6%	$61,456	$1,229,110	4%
	Out of State	0	0%	$0	$0	0%	0	0%	$0	$0	0%	1	0%	$2,108	$2,108	0%

Figure 11. All Diagnosis: Medicaid Nursing Facility Costs by Age, Gender, and Region

		FY 2010					FY 2011					FY 2012				
		Total Users	% of Total Users	Average Cost Per User	Total Costs	% of Total Costs	Total Users	% of Total Users	Average Cost Per User	Total Costs	% of Total Costs	Total Users	% of Total Users	Average Cost Per User	Total Costs	% of Total Costs
Age Group	< 18	0	0%	$0	$0	0%	0	0%	$0	$0	0%	2	0%	$0	$129,835	0%
	18-49	557	17%	$77,637	$43,243,539	21%	481	16%	$83,315	$40,074,367	20%	439	16%	$80,116	$35,171,030	19%
	50-64	879	27%	$74,278	$65,290,619	31%	853	28%	$76,243	$65,035,220	32%	838	30%	$76,525	$64,128,174	34%
	65+	1,808	56%	$54,831	$99,133,778	48%	1,688	56%	$56,769	$95,825,486	48%	1,540	55%	$58,740	$90,459,587	48%
Gender	Female	1,777	55%	$62,862	$111,706,313	54%	1,656	55%	$64,737	$107,205,078	53%	1,510	54%	$66,902	$101,021,993	53%
	Male	1,467	45%	$65,414	$95,961,622	46%	1,366	45%	$68,616	$93,729,995	47%	1,309	46%	$67,889	$88,866,633	47%
Region	Baltimore City	975	30%	$72,851	$71,030,096	34%	872	29%	$76,087	$66,347,959	33%	808	29%	$75,749	$61,205,413	32%
	Baltimore Suburbs	730	23%	$61,663	$45,014,097	22%	699	23%	$66,319	$46,356,682	23%	659	23%	$65,146	$42,931,362	23%
	Eastern Shore	347	11%	$57,535	$19,964,587	10%	335	11%	$58,577	$19,623,252	10%	307	11%	$61,066	$18,747,404	10%
	Southern Maryland	162	5%	$62,405	$10,109,555	5%	164	5%	$56,278	$9,229,577	5%	142	5%	$60,711	$8,620,925	5%
	Washington Suburbs	767	24%	$61,617	$47,260,332	23%	696	23%	$66,797	$46,490,397	23%	671	24%	$68,071	$45,675,858	24%
	Western Maryland	258	8%	$54,328	$14,016,552	7%	253	8%	$49,773	$12,592,549	6%	225	8%	$54,548	$12,273,402	6%
	Out of State	5	0%	$54,543	$272,717	0%	3	0%	$98,219	$294,657	0%	7	0%	$62,037	$434,261	0%

Long-Stay Nursing Facility Residents

In FY 2012, the average nursing facility cost per person of individuals with a TBI diagnosis was $67,360. Of this group, the 1,158 individuals with a nursing facility stay of 300 or more days (11 months) had average nursing facility cost of $91,443 per person. Figure 12 shows the average FY 2012 per person cost by service category and by category of total nursing facility expenditures per person. As the average per person costs increased, the percentage of expenditures for non-nursing facility expenditures (i.e., inpatient services, pharmacy services) increased. For those individuals with nursing facility expenditures of less than $50,000, nearly all (99 percent) of their expenditures were for nursing facility services compared to those individuals with nursing facility expenditures of $150,000 or more whose nursing facility services accounted for 67 percent of their total expenditures.

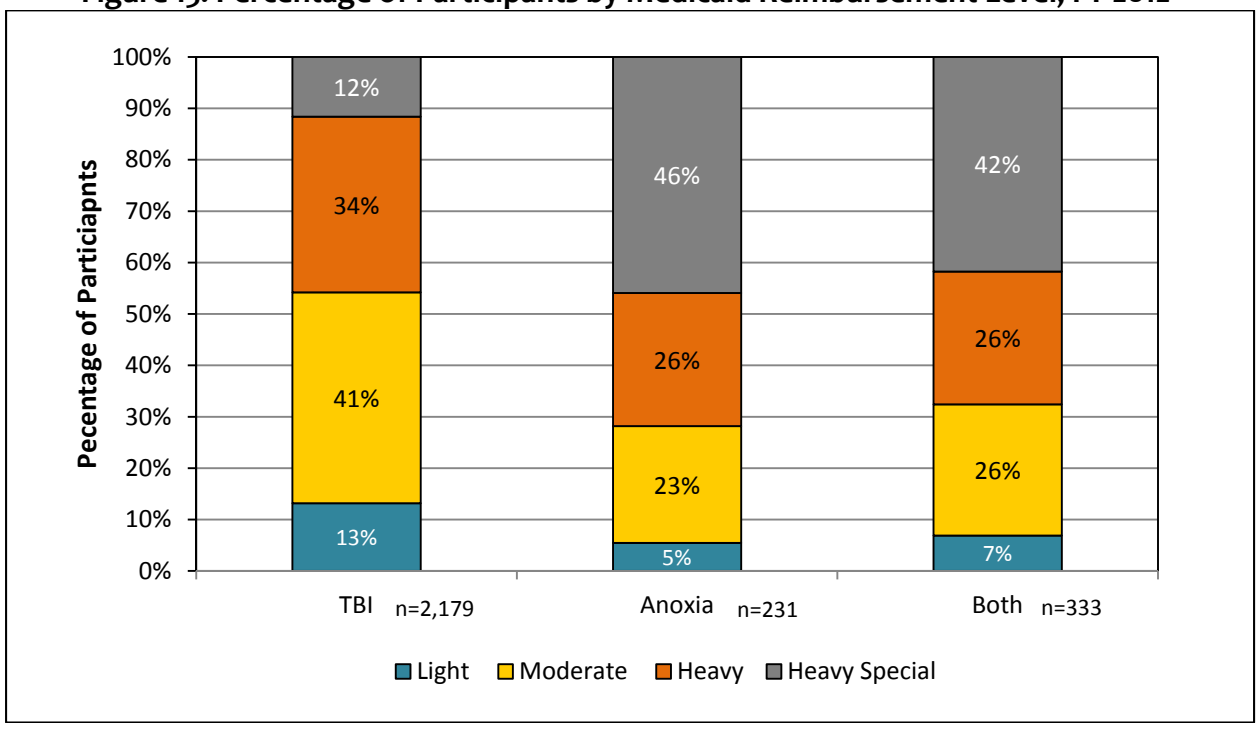
Figure 12. Average Medicaid Costs per Person by Service Category for Individuals Residing in a Nursing Facility for 300 Days or More, FY 2012

	$0 to $50,000 n=17		$50,001 to $100,000 n=1,168		$100,001 to $150,000 n=239		$150,000 and Higher n=114	
	Average per Person	% of Total	Average per Person	% of Total	Average per Person	% of Total	Average per Person	% of Total
Emergency Room Services	$0	0%	$6	0%	$90	0%	$286	0%
Durable Medical Equipment	$0	0%	$23	0%	$228	0%	$307	0%
Medicine	$122	0%	$22	0%	$151	0%	$1,238	1%
Inpatient	$0	0%	$141	0%	$4,997	4%	$34,376	17%
Mental Health	$0	0%	$0	0%	$0	0%	$0	0%
Nursing Facility	$39,745	99%	$73,690	97%	$102,920	88%	$137,914	67%
Outpatient	$0	0%	$126	0%	$1,476	1%	$4,921	2%
Pharmacy	$0	0%	$758	1%	$4,479	4%	$14,753	7%
Other	$444	1%	$1,501	2%	$2,934	3%	$10,613	5%
Total	**$40,310**	**100%**	**$76,266**	**100%**	**$117,274**	**100%**	**$204,407**	**100%**

Medicaid Reimbursement Levels for Individuals with a TBI Diagnosis

Maryland's Medicaid payment rates for nursing facility residents are based on the residents' dependency in activities of daily living (ADLs) and need for and receipt of ancillary nursing services, such as tube feeding, decubitus ulcer care, and ventilator care. Each nursing facility resident is assigned a reimbursement level depending on his or her degree of dependency with ADLs as determined by the MDS assessment. The ADLs considered in establishing the reimbursement level are mobility, bathing, dressing, continence, and eating. Figure 13 shows the reimbursement levels for FY 2012 nursing facility residents with a TBI diagnosis. Nursing facility residents with an "Anoxia" (46 percent) or "TBI and Anoxia" (42 percent) diagnosis were more likely to have a "heavy special" reimbursement level, while residents with a "TBI-only" diagnosis were more likely to have a "moderate" reimbursement level.

Figure 13. Percentage of Participants by Medicaid Reimbursement Level, FY 2012



Note: Reimbursement levels are defined as follows: Light – Dependent in 0, 1, or 2 ADLs; Moderate – Dependent in 3 or 4 ADLs; Heavy – Dependent in all 5 ADLs; Heavy Special – Dependent in all 5 ADLs and requires and receives one or more of the following: Communicable Disease Care, Central Intravenous Line, Peripheral Intravenous Care, Decubitus Ulcer Care, Tube Feeding, Ventilator Care, or Support Surface A or B during the majority of the month.

Figure 14 shows the Medicaid expenditures for individuals with a TBI diagnosis by reimbursement level and by diagnosis group. Consistent with the design of the reimbursement system, individuals with a "heavy special" reimbursement level had the highest average annual cost per person, ranging from $95,176 for individuals with a TBI diagnosis to $115,736 for individuals in the "TBI and Anoxia" diagnosis group. The reimbursement system is designed to pay less for persons with a "light" reimbursement level. Those individuals had the lowest average annual per person costs.

Figure 14. Medicaid Expenditures by Diagnosis Group and Reimbursement Level

	Light	Average Cost per Person	Moderate	Average Cost per Person	Heavy	Average Cost per Person	Heavy Special	Average Cost per Person
TBI	$16,058,486	$55,953	$57,692,431	$64,533	$45,039,529	$60,456	$24,079,409	$95,176
Anoxia	$613,482	$51,124	$3,281,579	$65,632	$3,189,962	$55,964	$10,826,766	$107,196
TBI and Anoxia	$1,582,471	$68,803	$5,626,781	$66,197	$5,560,485	$64,657	$16,087,368	$115,736
Total	**$18,254,439**	**$56,691**	**$66,600,791**	**$64,724**	**$53,789,976**	**$60,574**	**$50,993,543**	**$103,435**

Medicaid Service Utilization and Expenditures

Figure 15 shows the Medicaid cost for the study population by diagnosis group. For those individuals who are dually eligible for both Medicare and Medicaid, only their Medicaid expenditures are included in this analysis. Of the three diagnosis groups, total Medicaid expenditures incurred during nursing facility stays were consistently higher for the "TBI-only" population, averaging 74 percent of the total expenditures each fiscal year. Yet, this group has the lowest average per person cost annually of the three groups.

Figure 15. Total and Average Medicaid Expenditures by Diagnosis Group

	FY 2010		FY 2011		FY 2012	
	Total Costs	Average Cost per User	Total Costs	Average Cost per User	Total Costs	Average Cost per User
TBI-Only	$151,926,462	$59,908	$148,493,006	$61,924	$143,037,261	$63,629
Anoxia-Only	$20,444,332	$73,015	$19,933,778	$78,790	$17,939,034	$77,658
TBI and Anoxia	$35,297,142	$82,470	$32,508,290	$87,623	$28,912,331	$85,036
Total	**$207,667,936**	**$64,016**	**$200,935,074**	**$66,491**	**$189,888,626**	**$67,360**

Key findings from Figures 16 to 19 include:

- As in the previous report, expenditures for nursing facility services were the largest Medicaid expenditures in each of the diagnosis groups in each of the fiscal years, ranging from $23.3 million (or 81 percent) of the "TBI and Anoxia-only" total FY 2012 expenditures to $15.9 million (or 89 percent) of the "Anoxia-only" total FY 2012 expenditures.
- Twenty percent of the individuals in the "TBI-Anoxia-only" group used emergency room services in FY 2012, compared to 13 percent and 10 percent of individuals in the "Anoxia-only" and TBI-only" groups. These services accounted for less than 1 percent of the total expenditures for each group.
- Eleven percent of the study population used inpatient services in FY 2012, at a cost of $10.3 million; individuals in the "TBI and Anoxia" group had the highest inpatient expenditures, at $2.9 million.
- In each of the groups, over two-thirds of the individuals used pharmacy services, which totaled $5.2 million across the three groups. Pharmacy expenditures totaled 3 percent of the FY 2012 "TBI-only" expenditures, 2 percent of "Anoxia-only" expenditures, and 4 percent of "TBI and Anoxia" expenditures.

As shown in Figure 20, nursing facility users with a TBI diagnosis tended to be younger than their non-TBI diagnosed counterparts. In FY 2012, 45 percent of nursing facility users with a TBI diagnosis were 18 to 64 years of age but were responsible for 53 percent of this group's Medicaid expenditures. Comparatively, 18 percent of the non-TBI group were aged 18 to 64 and accounted for one-fifth of this group's Medicaid expenditures. In both the TBI and non-TBI groups, three-fourths of the population was located in the Baltimore-Washington area. However, the largest percentage of the study population (29 percent) and largest percentage of expenditures (32 percent) was located in Baltimore City, while the largest percentage of the non-TBI population (29 percent) and expenditures (28 percent) was located in Baltimore County.

Figure 16. TBI-Only: Medicaid Expenditures for the Study Population, by Category of Service

	FY 2010				FY 2011				FY 2012			
	Total Users*	% of Total Users	Total Costs	% of Total Costs	Total Users	% of Total Users	Total Costs	% of Total Costs	Total Users	% of Total Users	Total Costs	% of Total Costs
Emergency Room	293	12%	$94,498	0%	257	11%	$88,766	0%	231	10%	$68,952	0%
Durable Equipment	79	3%	$73,438	0%	70	3%	$110,581	0%	107	5%	$253,934	0%
Medicine	400	16%	$219,699	0%	398	17%	$228,984	0%	417	19%	$239,250	0%
Inpatient	266	10%	$7,272,069	5%	267	11%	$7,526,971	5%	212	9%	$6,518,770	5%
Mental Health	4	0%	$2,852	0%	3	0%	$1,965	0%	4	0%	$1,630	0%
Nursing Facility	2,536	100%	$132,714,762	87%	2,398	100%	$129,906,868	87%	2,249	100%	$126,146,540	88%
Outpatient	419	17%	$1,443,706	1%	422	18%	$1,352,755	1%	347	15%	$1,299,438	1%
Pharmacy	1,629	64%	$4,232,719	3%	1,466	61%	$4,030,611	3%	1,362	61%	$3,757,346	3%
Other**	2,258	89%	$5,872,455	4%	2,126	89%	$5,247,471	4%	2,005	89%	$4,751,358	
Total			**$151,926,199**	**100%**			**$148,494,971**	**100%**			**$143,037,218**	**100%**

*"Total Users" is an unduplicated count within each service category but a duplicated count across service categories.

**Includes Medicaid cost sharing, dental, home health, physician, and special program services.

Figure 17. Anoxia-Only: Medicaid Expenditures for the Study Population, by Category of Service

	FY 2010				FY 2011				FY 2012			
	Total Users*	% of Total Users	Total Costs	% of Total Costs	Total Users	% of Total Users	Total Costs	% of Total Costs	Total Users	% of Total Users	Total Costs	% of Total Costs
Emergency Room	41	15%	$12,803	0%	39	15%	$12,048	0%	31	13%	$7,047	0%
Durable Equipment	7	3%	$3,264	0%	0	0%	$0	0%	11	5%	$13,514	0%
Medicine	68	24%	$31,209	0%	57	23%	$38,489	0%	54	23%	$26,835	0%
Inpatient	56	20%	$1,699,929	8%	46	18%	$1,915,037	10%	35	15%	$919,930	5%
Mental Health	0%	0	0%	$0	0%	0%	$0	0%	0	0%	$0	0%
Nursing Facility	280	100%	$17,136,719	84%	253	100%	$16,558,646	83%	231	100%	$15,911,380	89%
Outpatient	49	18%	$112,504	1%	40	16%	$225,068	1%	36	16%	$85,316	0%
Pharmacy	203	73%	$571,553	3%	166	66%	$454,411	2%	155	67%	$381,050	2%
Other**	258	92%	$876,347	4%	228	90%	$730,079	4%	212	92%	$593,962	3%
Total			**$20,444,328**	**100%**			**$19,933,778**	**100%**			**$17,939,034**	**100%**

*"Total Users" is an unduplicated count within each service category but a duplicated count across service categories.

**Includes Medicaid cost sharing, dental, home health, physician, and special program services.

Figure 18. TBI and Anoxia: Medicaid Expenditures for the Study Population, by Category of Service

	FY 2010				FY 2011				FY 2012			
	Total Users*	% of Total Users	Total Costs	% of Total Costs	Total Users	% of Total Users	Total Costs	% of Total Costs	Total Users	% of Total Users	Total Costs	% of Total Costs
Medicaid Cost Sharing	199	46%	$693,959	2%	187	50%	$524,355	2%	168	49%	$402,003	1%
Emergency Room	97	23%	$37,909	0%	79	21%	$29,277	0%	67	20%	$21,576	0%
Durable Equipment	8	2%	$2,606	0%	11	3%	$48,285	0%	6	2%	$12,381	0%
Medicine	126	29%	$62,353	0%	113	30%	$59,414	0%	98	29%	$58,954	0%
Inpatient	108	25%	$4,671,009	13%	84	23%	$3,743,958	12%	76	22%	$2,911,034	10%
Mental Health	0	0	0%	$0	0%	0%	$0	0%	0	0%	$0	0%
Nursing Facility	403	94%	$27,339,838	77%	371	100%	$25,751,730	79%	340	100%	$23,519,609	81%
Outpatient	121	28%	$336,426	1%	99	27%	$291,279	1%	79	23%	$209,787	1%
Pharmacy	305	71%	$1,315,633	4%	258	70%	$1,269,185	4%	230	68%	$1,078,288	4%
Other**	389	91%	$1,531,286	4%	339	91%	$1,315,160	4%	311	91%	$1,100,660	4%
Total	**428**	**100%**	**$35,297,061**	**100%**	**371**	**100%**	**$32,508,290**	**100%**	**340**	**100%**	**$28,912,289**	**100%**

*"Total Users" is an unduplicated count within each service category but a duplicated count across service categories.

**Includes Medicaid cost sharing, dental, home health, physician, and special program services.

Figure 19. All Diagnoses: Medicaid Expenditures for the Study Population, by Category of Service

	FY 2010				FY 2011				FY 2012			
	Total Users*	% of Total Users	Total Costs	% of Total Costs	Total Users	% of Total Users	Total Costs	% of Total Costs	Total Users	% of Total Users	Total Costs	% of Total Costs
Medicaid Cost Sharing	1,979	61%	$4,318,967	2%	1,833	61%	$3,285,606	2%	1,684	60%	$3,127,615	2%
Emergency Room	431	13%	$145,210	0%	375	12%	$130,091	0%	329	12%	$97,575	0%
Durable Equipment	94	3%	$79,309	0%	81	3%	$158,866	0%	124	4%	$279,828	0%
Medicine	594	18%	$313,261	0%	568	19%	$326,888	0%	569	20%	$325,039	0%
Inpatient	430	13%	$13,643,008	7%	397	13%	$13,185,966	7%	323	11%	$10,349,734	5%
Mental Health	4	0%	$2,852	0%	3	0%	$1,965	0%	4	0%	$1,630	0%
Nursing Facility	3,244	100%	$177,191,319	85%	3,022	100%	$172,217,244	86%	2,819	100%	$165,577,528	87%
Outpatient	589	18%	$1,892,637	1%	561	19%	$1,869,102	1%	462	16%	$1,594,541	1%
Pharmacy	2,137	66%	$6,119,905	3%	1,890	63%	$5,754,207	3%	1,747	62%	$5,216,685	3%
Other**	2,905	90%	$8,282,940	4%	2,693	89%	$7,246,727	4%	2,528	90%	$6,445,981	3%
Total			**$207,667,588**	**100%**			**$200,937,039**	**100%**			**$189,888,541**	**100%**

*"Total Users" is an unduplicated count within each service category but a duplicated count across service categories.

**Includes Medicaid cost sharing, dental, home health, physician, and special program services.

Figure 20. Medicaid Expenditures by TBI Status and Category of Service

	Nursing Facility Users with TBI Diagnosis				Nursing Facility Users without TBI Diagnosis			
	Total Users	% of Total Users	Total Costs	% of Total Costs	Total Users	% of Total Users	Total Costs	% of Total Costs
Medicaid Cost Sharing	1,684	60%	$3,127,615	2%	10,377	53%	$13,993,279	1%
Emergency Room Services	329	12%	$97,575	0%	674	3%	$179,798	0%
Durable Medical Equipment	124	4%	$279,828	0%	522	3%	$755,267	0%
Medicine	569	20%	$325,039	0%	1394	7%	$659,092	0%
Inpatient	323	11%	$10,349,734	5%	687	4%	$17,283,678	2%
Mental Health	4	0%	$1,630	0%	0	0%	$0	0%
Nursing Facility	2,819	100%	$165,577,528	87%	19,548	100%	$948,044,542	94%
Outpatient	462	16%	$1,594,541	1%	1184	6%	$4,628,299	0%
Pharmacy	1,747	62%	$5,216,685	3%	9,934	51%	$12,512,744	1%
Other	1,057	37%	$3,318,366	2%	3,151	16%	$7,167,197	1%
Total			**$189,888,541**	**100%**			**$1,005,223,896**	**100%**

Nursing Facility Quality of Care

Nursing Facility Providers for Individuals with a TBI Diagnosis

Persons with a TBI diagnosis and nursing facility stay used virtually all nursing facilities in the state for their care. In FY 2012, 206 Maryland Medicaid-funded nursing facilities provided services to persons with a TBI diagnosis. Three-quarters of these facilities were operated as for-profit facilities and 3 percent were state-owned. Nearly all (98 percent) were certified for both Medicare and Medicaid, and 95 percent were located outside of a hospital setting. Slightly more than half (59 percent) were operated as part of a chain of facilities. The largest percentage (43 percent) of nursing facilities used by persons with a TBI diagnosis has between 100 and 149 beds, with 87 percent of the facilities having an occupancy rate of 75 percent or more.

Figure 21. Characteristics for Facilities Used by Persons with a TBI Diagnosis

		Nursing Facilities	
		Number	Percentage
Number of Beds	Less than 50	8	4%
	0 to 99	42	21%
	100 to 149	84	43%
	150 to 199	44	22%
	200 to 249	11	6%
	250 to 299	4	2%
	300 to 349	2	1%
	400 to 449	1	1%
	500 or more	1	1%
Occupancy Rate	Less than 25	0	0%
	35 to 44	0	0%
	45 to 64	10	5%
	65 to 74	15	8%
	75 to 84	21	16%
	85 to 94	84	42%
	95 to 100	57	29%
Provider Region	Western Maryland	19	10%
	Baltimore Suburban	66	33%
	Southern Maryland	8	4%
	Eastern Shore	21	11%
	Washington	56	28%
	Baltimore City	28	14%

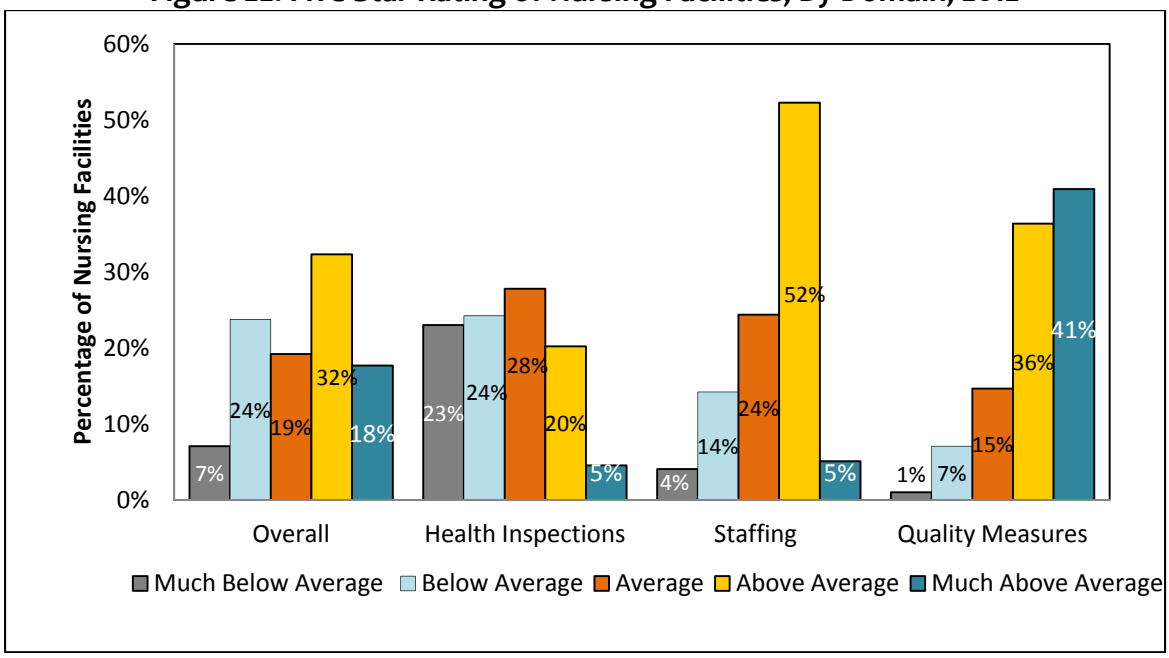
CMS Five-Star Quality Ratings

The quality of patient care provided by Maryland's Medicaid and/or Medicare certified nursing facilities is measured using a number of disparate processes. Implemented in 1998, the CMS "Nursing Home Compare" website provides quality data on every Medicare and/or Medicaid certified nursing facilities nationwide. In 2008, CMS enhanced the website by incorporating the Five-Star Quality Rating System to provide users with a standardized rating system to compare the quality of nursing facilities within the state or across the nation. Each nursing facility is assigned a rating of one to five stars based on performance in each of three quality domains—health inspections, staffing levels, and quality measures—as well as an overall quality rating. Health inspection data are gathered from the nursing facilities' three most recent state health inspections, while staffing level and quality measure data are self-reported by the nursing facilities.

The CMS Five-Star Quality Rating System quality measure data is derived from resident MDS assessment data as submitted by the nursing facilities to CMS. To ensure nursing facilities provide enough staff to adequately care for its residents, nursing facilities are required to report staffing hours per resident per day to the state nursing facility survey agency two weeks prior to the nursing facility's annual health inspection. Health inspections, conducted by the states' survey agency, are conducted at all certified Medicare and/or Medicaid nursing facilities every 12 to 18 months. Combined ratings from the three domains comprise the overall rating.

Figure 22 shows the combined 2012 Five-Star Ratings available for 198 of the 206 nursing facilities serving individuals with a TBI diagnosis by the three key domains. Discrete nursing facility quality of care information for persons with a TBI diagnosis is not available, but the quality of care provided to all populations in Maryland nursing facilities is generally rated above-average. Over three-quarters of the nursing facilities were rated "above average" or "much above average" on self-reported quality measures; however, only 57 percent and 25 percent of the nursing facilities were rated in this range for staffing and health inspections, respectively.

Figure 22. Five-Star Rating of Nursing Facilities, By Domain, 2012



Source: Medicare.Gov, Nursing Home Compare – Downloadable Databases

Nursing facility-submitted MDS data are used to compile the facilities' CMS Five-Star Quality Rating. Selected self-reported MDS quality measures, collected in 2012, are provided below for the 198 Medicaid nursing facilities serving individuals with a TBI diagnosis in FY 2012.

Figure 23. Selected Minimum Data Set Nursing Facility Quality Measures, 2012

Nursing Facilities Self-Reporting that Long-Stay Residents:	<10% of Residents Affected		10% to 50% Percent of Residents Affected		50% or More of Residents Affected	
	Number of NFs	Percentage	Number of NFs	Percentage	Number of NFs	Percentage
Had Falls with Major Injury	195	99%	2	1%	0	0%
Had Pressure Ulcers	150	77	46	23%	0	0%
Received Flu Vaccine	0	0%	2	1%	195	99%
Received Pneumonia Vaccine	0	0%	1	1%	196	99%
Were in Severe or Moderate Pain	150	77%	45	23%	0	0%
Were Depressed	172	87%	25	13%	0	0%

Staffing hours for nursing facilities serving Marylanders with a TBI diagnosis and nursing facility stay in FY 2012 are provided in Figure 24. Federal laws mandate that all nursing facilities maintain a staffing level that is adequate to meet their residents' needs; however, there is currently no federal standard for ideal staffing levels.

Figure 24. Nursing Facility Average Staff Hours per Resident, by Position

Position	Less than 1 Hour	Percentage	1 to 2 Hours	Percentage	3 to 4 Hours	Percentage
Certified Nursing Assistant	1	1%	176	89%	20	10%
Licensed Staff	4	2%	189	96%	4	2%
Licensed Practical/Vocational Nurse	125	64%	71	36%	0	0%
Physical Therapists	187	100%	0	0%	0	0%
Registered Nurse	165	84%	30	15%	2	1%

Maryland Health Care Commission Nursing Home Family Surveys

Nursing facility quality data are also presented from the perspective of family members of nursing facility residents. The Nursing Facility Family Survey, administered annually by the MHCC, is designed to measure the experiences and satisfaction of family members with the nursing facilities' services provided to their loved one. The surveys are administered at nursing facilities that have one or more residents with a nursing facility stay of 90 or more days.

The 2012 survey, which contains two "overall" measures and 17 items, was used to assess the caregivers' experience and satisfaction in the following five domains: 1) autonomy and residents' rights, 2) care provided to residents, 3) food and meals, 4) physical aspects of the facility, and 5) staff and administration. Each of the 17 domain items are rated on a scale of 1 to 4, where 1 means never and 4 means always.

In April 2012, over 16,000 surveys were mailed to family members or individuals responsible for the nursing facility resident. In total, 8,901 (or 57 percent) were returned from the 224 participating nursing facilities. Figure 23 shows the 2012 survey results by domain. With the exception of the "physical aspects" domain, survey respondents rated the nursing facilities providing services to the study population in 2012 at 3.5 or above. With a rating of 3.7, the "staff and administration" domain was the highest rated among the survey respondents.

Figure 25. MHCC Family Nursing Home Survey, by Domain, 2012

Domain	TBI Providers	Statewide
Autonomy of Residents	3.5	3.5
Care to Patients	3.5	3.5
Food and Meals	3.5	3.5
Physical Aspects	3.4	3.4
Staff and Administration	3.7	3.7

Source: 2012 Maryland Nursing Facility Family Survey Statewide Survey

Respondents were also asked to rate, on a scale of 1 to 10, their "overall" level of satisfaction with the care their loved one received at the nursing home. The average "overall" level of satisfaction ratings of families or designees for the nursing facilities serving individuals with a TBI diagnosis was 8.3, which is the same as the statewide average for Maryland nursing facilities.

Conclusion

The number of persons with a TBI diagnosis with a nursing facility stay during the study period (FY 2010 to FY 2012) decreased 13 percent. This is consistent with a reduction in the overall number of persons with a nursing facility stay from FY 2010 to FY 2012.

At $67,360 in FY 2012, the average per person Medicaid expenditures incurred while residing in a nursing facility were nearly $16,000 higher for persons with a TBI diagnosis. Persons with a TBI diagnosis also spent, on average, eight more days in a nursing facility in FY 2012 than their non-TBI diagnosed counterparts. In FY 2012, the average per person Medicaid expenditures incurred for individuals while residing in a nursing facility for 300 or more days (11 months) was $91,443. As expenditures per person increased, expenditures for non-nursing facility services such as inpatient care and pharmacy increased.

As in the previous study, persons with a "TBI-only" diagnosis made up the largest percentage of the study population; three-fourths of the population had a "TBI-only" diagnosis in FY 2012. Although this population composed 75 percent of the total Medicaid expenditures for the study population, its average annual per person expenditures were exceeded by those of the "TBI and Anoxia" group and the "Anoxia-only" group. The "TBI-only" group also accrued the largest number of nursing days, receiving, on average, 258 days of nursing facility care in FY 2012. But, at $246 per person per day, the FY 2012 daily cost of caring for individuals was less than the cost of caring for the "TBI and Anoxia" ($335) and "Anoxia-only" ($338) diagnosis group. This difference is due to the larger percentage of persons in the "TBI and Anoxia" and "Anoxia-only" groups who require a more costly "heavy" or "heavy special" Medicaid reimbursement level.

Although nursing facility users generally tend to be aged 65 or older, the ratio of persons under age 65 to those 65 and over was noteworthy. In FY 2012, the ratio of persons under age 65 to those 65 and older for persons with a TBI diagnosis was nearly even at 5:5; the same ratio for nursing facility users with no TBI diagnosis was 2:8. While the distribution of males and females in the "Anoxia-only" group vacillates by year, individuals with a TBI diagnosis and nursing facility stay in the "TBI-only" diagnosis group were more likely to be female, and persons with both TBI and anoxia were more likely to be male.

Service utilization trends were generally the same across diagnosis group, with nursing facility expenditures composing 89 percent of "Anoxia-only" Medicaid expenditures, 88 percent of "TBI-only" expenditures, and 81 percent of "TBI and Anoxia" expenditures. There was no discernible pattern in the type of nursing facility used by the study population from FY 2010 to FY 2012. Persons with a TBI diagnosis who had a nursing facility stay at any time between FY 2010 and FY 2012 used virtually all of the nursing facilities in Maryland. In 2012, over three-quarters of these facilities were rated "above average" or "much above average" on self-reported MDS quality measures. However, 57 percent and 25 percent of these nursing facilities were rated for staffing levels and state-conducted health inspections.

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