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The Actual, Long-Term Cost of Intentional Injury Care Among a Cohort of Maryland Medicaid Recipients

Zachary D.W. Dezman, MD, MS[a,b], **Paul Thurman, PhD, RN**[c], **Ian Stockwell, PhD, MA**[d,e,f]

[a]Department of Emergency Medicine, University of Maryland School of Medicine, Baltimore, Maryland, USA

[b]Department of Epidemiology and Public Health, University of Maryland School of Medicine, Baltimore, Maryland, USA

[c]R Adams Shock Trauma Center, University of Maryland School of Medicine, Baltimore, Maryland, USA

[d]Hilltop Institute, University of Maryland, Baltimore County, Catonsville, Maryland, USA

[e]Erickson School of Aging Studies, University of Maryland, Baltimore County, Catonsville, Maryland, USA

[f]Information Systems, University of Maryland, Baltimore County, Catonsville, Maryland, USA

Abstract

Background: Intentional injury (both self-harm and interpersonal) are major causes of morbidity and mortality, yet there is little data on the per-person cost of caring for these patients. Extant data focuses on hospital charges related to the initial admission but does not include actual dollars spent or follow-up outpatient care. The Affordable Care Act has made Medicaid the primary payor of intentional injury care (39%) in the United States and the ideal source of cost data for these patients. We sought to determine the total and per-person long-term cost (initial event and following 24 months) of intentional injury among Maryland Medicaid recipients.

Methods: Retrospective cohort study of Maryland Medicaid claims. Recipients who submitted claims after receiving an intentional injury, as defined by the International Classification of Diseases, version 10, between October 2015 to October 2017. Subjects were followed for 24 months (last participant enrolled October 2017 and followed to October 2019). Our primary outcome was the dollars paid by Medicaid. We examined subgroups of patients who harmed themselves and those who received repeated intentional injury.

Results: Maryland Medicaid paid $11,757,083 for the care of 12,172 recipients of intentional injuries between 2015 and 2019. The per-person, two-year healthcare cost of an intentional injury was a median $183 +/− $5,284 SD. These costs were highly skewed: Min=$2.56, Q_1=117.60,

Corresponding Author: Zachary Dezman, MD, MS, 110 S Paca Street, 6th Floor, Suite 200, Baltimore, MD 21201, (phone), 410-328-8028 (fax), zdezman@som.umaryland.edu.

CONFLICTS OF INTEREST

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median=$182.80, Q_3=$480.82, Max=$332,394.20. The top 5% (≥95% percentile) required $3,000 +/− $6,973 SD during the initial event and $8,403 +/− $22,024 SD per served month thereafter, or 55% of the overall costs in this study.

Conclusions: The long-term, per-person cost of intentional injury can be high. Private insurers were not included and may experience different costs in other states.

Level of Evidence: Prognostic and Epidemiological Study, Level III

Keywords

Intentional injury; Medicaid; Affordable Care Act; Healthcare costs

BACKGROUND

In 2018, an estimated 28 million patients were treated in emergency departments in the United States.[1] Of these, an estimated 1,442,723 were victims of interpersonal violence and 495,348 persons injured themselves.[1] The cost of treating these injuries is high: in 2010, the most recent year available, the US spent approximately $80 billion dollars treating patients hospitalized for injuries, of which $4.0 billion was spent on treating victims of violence and $3.5 billion was spent in hospital costs treating patients who injured themselves (respectively).[2]

Depending on the setting, methodology, and population, studies have found between 12.1% −49% of victims of interpersonal violence have been treated for a violence-related injury before.[3–5] 23% of those who self-harm have injured themselves in the past.[6] The risk of the next injury being fatal doubles among both groups.[6,7] These high-risk subgroups are ready targets for prevention efforts, and injury prevention programs have been shown to decrease repeated injuries and decrease costs.[8–11] President Biden has made violence prevention, specifically gun violence, a priority of his administration.[12] Unfortunately, progress has been limited until recently, because of a lack of invested payors and that firearms are a significant contributing factor to violence.[13,14] A better understanding of the costs of violence-related care will help policy makers recognize violence as a public health issue and motivate payors to invest in violence prevention programs.

Previous studies examining the cost of violence-related care have focused on sub-populations[15] or element of care,[16] or may be outdated.[1] Older studies had focused on trauma centers because they provided the majority of violence-related care and much of it was uncompensated.[17] Medicaid became the largest single payor of violent in jury care nationally (39%) after the implementation of the Affordable Care Act,[16,18] effectively shifting financial responsibility of violence care from hospitals to state Medicaid agencies. Claims data has the further benefit of following patients across multiple medical systems and practice environments, allowing for a more comprehensive view of their long-term care.[16,19,20] Lastly, because the tenth edition of the International Classification of Diseases was adopted in the US in 2015, the cost of specific types of debilitating injuries, such as brain and spinal cord injuries, can now be examined.[21,22]

The objective of this descriptive study is to quantify the amount of dollars paid by Maryland Medicaid to support the acute and long-term (i.e., 24 months post-injury) care of patients suffering from violent injuries. Secondary objectives included describing the dollars paid by Maryland Medicaid for the care of high-risk subgroups like those who suffered repeated intentional injuries, those who injured themselves, and the costs associated with injuries to specific anatomical structures.

METHODS

Study Design

This retrospective study sought to quantify the dollars paid by Maryland Medicaid for both initial care of patients receiving intentional injuries and the following 24 months. Based on the literature and clinical experience, 24 months was the amount of time needed to capture late complications and many repeat injuries. The study population consists of Maryland Medicaid enrollees with clinical encounters for complaints related to new violent injuries from October 1, 2015 to October 1, 2017 (i.e, last patient in the cohort was seen initially on October 1, 2017 and followed through to October 1, 2019).

Study Definitions

Initial encounters due to violent injuries were identified using International Classification of Diseases version 10 (ICD-10) codes with the following prefixes: X71-X83, X92-Y09, Y22-Y29. Injuries of undetermined intent were included because some cases coded as undetermined for the initial event may later be found to be intentional.[23] We excluded codes for injuries due to legal intervention or war (Y35–Y36, Y89), terrorism (U01-U03), unintentional intent (V01–X59,Y85–Y86), or those solely coded as abuse (T74, T76, Z63) as these groups were beyond the scope of the study. All types of encounters were tabulated, including emergency department, inpatient, outpatient visits.

Qualifying initial encounters were identified if any diagnosis matched one of the violence categories and the suffix of the code was “A”, indicating that treatment was rendered for an “initial encounter”. All subsequent encounters during the two-year follow-up period were included if any diagnosis code on the claim matched one of these categories. Encounters indicating an additional intentional injury, or the individual receiving treatment for a violent incident different from the initial incident, where identifying by having any diagnosis matched one of the violence categories and the suffix of the code of “A”, and the primary diagnosis code from the qualifying initial encounter was not present in any diagnosis code.

This study included all claims submitted for qualifying encounters and all dollars paid by Medicaid to providers and hospitals. These costs included physician, facility, procedural, physical therapy, skilled nursing assistance, and prescription fees.

Analytical Plan

Counts and proportions of recipients, claims, and dollars spent by Medicaid were stratified by intent (interpersonal, self-harm), whether the recipient had received one injury or more injuries during the study period, and mechanism of injury (stab/penetrating, firearm, blunt or

fists, and other). Results were further shown by age, sex, race. Urbanity was determined by applying the Maryland Department of Agriculture classification to the recipient's home county. Anatomical location of injury was determined using the Center for Disease Prevention and Control's ICD-10 injury matrix.[23] The number of patients with tobacco, alcohol, and non-alcohol used disorders were tabulated because of the frequent interaction between substance use and intentional injury.[24–26] Cases where the location was not known or not specified were not included in calculating the proportions. Cells where there were very few counts (<10) and therefore potentially identifying were excluded from the table but included in the overall counts and cost calculations.

Descriptive statistics for the per-person cost of care for violent injuries were calculated for the entire cohort, those who had repeated intentional injuries, and those who self-harmed. The time to repeat injury was calculated using the time between the date of the first qualifying encounter and the next qualifying injury. We followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines when preparing this report.[27]

Ethical Approval

The study was considered exempt by the University of Maryland, Baltimore Institutional Review Board. IRB approval was obtained prior to any data collection. Maryland Medicaid claims data was obtained through The Hilltop Institute at the University of Maryland, Baltimore County.

Role of the Funding Source

The data collection and analysis were funded by the National Institutes of Health (NIH) National Center for Advancing Translational Sciences (NCATS) Clinical & Translational Science Awards (CTSA) Program (1UL1TR003098). Dr. Dezman was supported by the National Foundation for Emergency Medicine. Neither had any role in the study's design, conduct, or reporting.

RESULTS

Results of the Overall Cohort

We identified 12,172 Medicaid recipients who had qualifying encounters between October 2015 and October 2017 (Figure 1, Table 1). These recipients filed 54,716 claims across the study period, resulting in Maryland Medicaid paying $11,757,083 to physicians and institutions. Of these qualifying encounters, 11,113 (89.1%) were due to interpersonal violence, 892 were self-harm (7.2%), and 467 (3.7%) were of an undetermined intent. The per-person, two-year healthcare cost of an intentional injury was a median $183 +/− $5,284 SD, or $129 for services rendered on the initial treatment date and $162 per served month thereafter (Table 2). We included Medicaid recipients with injuries of undetermined intent in our study sample because many of these injuries are later found to be intentional. We calculated the Maryland Medicaid dollars spent on these 467 (3.7%) patients as a sensitivity analysis of our inclusion and exclusion criteria. The care of recipients with injuries of an

undetermined intent was $239,252. The median per-person Maryland Medicaid dollars spent on these patients over the 24-month period was $167.23, SD=$17,850.63.

The distribution of Medicaid dollars was highly skewed due to a small proportion of extremely high-cost individuals (Table 2). Those in the top 5% (≥95% percentile) required $3,000 +/− $6,973 SD during the initial event and $9,403 +/− $22,024 SD per served month thereafter, or 55% of the overall costs in this study.

The study population was mostly male (N=7,318, 60.1%) and 80.3% of healthcare costs ($9,443,956) were spent on their care. This shift in costs sharpened further when examining those with repeated intentional injuries (73.2% were male, making up 89.5% of costs). The most common age at time of injury for intentional injuries overall and those with multiple injuries was 30–39 years of age (21.7% and 24.8%, respectively). Rural participants made up a third of the cases of self-harm (35.3%) but were over-represented in costs ($489,292, 51.3%). Injuries to the upper extremities were the most common overall (21.4% of subjects and 19.6% of claims). The most expensive injuries involved the brain ($1,389,353, 20.2% of costs) and thorax ($1,368,062, 14.6%) Injuries to the abdomen occurred in 4.9% of subjects studied but made up 14.4% of all costs (Table 1).

Intentional Self-Harm

Among those who harmed themselves, there was an early peak among 15 to 19-year-olds (N=181, 20.3%) and a second peak in the fourth decade (N=176, 19.7%). However, the largest proportion of Medicaid dollars (40.2%, $382,652) was spent on the fraction of subjects who injured themselves in the sixth decade (N=78, 8.7%). The most expensive self-injuries were to the abdomen ($303,824, 46.2%). The most common mechanism and site of injury among those who harmed themselves was cutting/pierce (53.1%) and the upper extremities (49.9%), respectively. The overall per-person, two-year healthcare cost of those who self-injured was a median $183 +/− $ 11,628 SD. Spinal cord and vertebral injuries were over-represented among violent injuries generally and those with multiple intentional injuries. Those who injured themselves repeatedly across the study period (N=172, 18.8% of all self-injuries) made up more than half of payouts for self-injuries ($568,766, 59.7%).

Repeat Victims of Violence

There were 2,483 (20.4%) subjects who had at least two intentional injuries during the follow up period, resulting in 50.1% (N=27,423) of all claims and costing $4,846,768 (41.2%). Men had a disproportionally higher rate of repeat injuries (24.8%, 1,817/7,318). The per-person, two-year healthcare cost of repeat victims of violence was a median $700 +/− $ 9,949 SD. The healthcare cost of repeat intentional injuries was $185 +/− $6,345 per served month. The mean time to repeat injury was 135 days after the initial injury (SD=201, skew=1.4).

Firearm Injuries

Relatively few Medicaid recipients were injured by firearms (N=1,554, 11.8%), yet these injuries make up the largest proportion of claims (N=23,527, 43.0%) and costs ($5,601,626, 47.6%). Firearm injuries were even more common (N=737, 26.8%) and costly (67.7%,

$3,280,017) among repeat victims of violence. About half of those with firearm injuries received another gunshot wound within the follow up period (47.4%, N=737/1,554), making up 27.9% of all costs ($3,280,017/$11,757,083). Firearms were involved in few cases of self-injury (N=31, 3.4%) but those patients required almost half of dollars spent towards treating those with self-injuries ($445,800, 46.8%).

DISCUSSION

This statewide analysis of Maryland Medicaid recipients provides the per-patient, per-incident two-year healthcare cost of intentional injury. Violent injury is common but varies widely in the amount of dollars spent on an individual's care, the patients it affects, and the anatomical and geographic location of injury. These injuries are a substantial burden on the medical system that continue for years after the initial event. Many patients have presumably minor injuries requiring few resources. But there is a subset of individuals with devastating injuries requiring an extremely high number of resources, accounting for more than half of total Medicaid dollars spent during the study period. These are the individuals who receive multiple gunshot wounds and/or brain injuries, requiring initial treatment in an intensive care unit and are eventually discharged to long-term skilled nursing facilities due to persistent functional limitations. Thus, the average per-person costs found in this study must be interpreted cautiously as they may under-represent these infrequent but catastrophic high-cost cases. Firearm injuries and patients with repeated injuries were a minority of the study population, yet each is associated with a disproportionately large proportion of total dollars spent. Nearly half of those injured by firearms received a second firearm injury within two years, and more than a quarter of all Medicaid dollars in this study were spent on their care, making them a population of interest for injury prevention efforts.

The study population was demographically different from the overall Maryland Medicaid population. From 2018 to 2020, the Maryland Medicaid population has been mostly female 54.8%), whereas the study population was nearly two-thirds male.[28] The most common stratum of the study population was 30–39, while the most common ages of Maryland Medicaid recipients during the study period was from 21–44 (26.7%) and 75–84 (26.6%) The distribution of age, sex, and race among subjects in this study is also consistent with the literature for victims of violence generally and for repeat victims.[24,29]

Similar to other statewide studies, our work found a greater proportion of high-mortality penetrating injuries like stab and gunshot wounds than found in single-center studies of trauma centers, highlighting the need for population-level studies.[20,30] The proportion of patients with penetrating injuries increased when examining repeat victims of violence, like prior studies.[3,24,31] Much of the prior work examining the cost of injury has focused on the hospital charges or costs of patients treated at trauma centers.[16] Trauma center charges are relatively easy to obtain through hospital billing, many victims were uninsured, and many high-cost patients are treated at trauma centers.[17] After the Affordable Care Act was implemented, the share of uninsured hospital stays for patients from 18-to-44 years, the typical age-range for victims of violence, dropped to a 16-year low in 2015 (11.9%).[32] Similarly, the proportion of nonmaternal inpatient stays covered by Medicaid recipients aged 18-to-44 increased 74%.[32] The cost of outpatient care, which are not included in

hospital analyses, can be up to 46% of the total cost of care for injured patients.[19] A recent analysis of multi-payor data in Florida showed that 58.9% of repeat victims presented to a different hospital for their second injury, the cost of which was 27.6% higher than their initial injury.[16] An earlier study based in Los Angeles found that 42% of repeat victims of violence had presented to different hospitals between injuries.[4] Nationwide, and in Maryland specifically, Medicaid is the largest payor of violence-related care (39%).[16,18] This suggests that state- or system-wide analyses of Medicaid or all-payor claims data are currently the best way to understand the cost of violent injury care. A study of a multi-payor database in Florida found that the median hospital cost per patient with an intentional injury between 2010–2012 was $674. Repeat victims were 16.2% of cases yet had a 27.8% higher median hospital cost ($860/visit) compared to those injured for the first time.[33]

The peak of self-injury cases seen in adolescents and teenagers, followed by another in the 3rd and 4th decades of life, is well documented in the literature.[25] The current study found a high frequency of self-injuries due to cut/pierce mechanism and injuries to the upper extremities, both of which required relatively few resources. These findings are consistent with a common method of self-harm called ‘cutting’, where one incises themselves, most commonly to the arms.[34] There were a few resource-intensive abdominal injuries, which are most consistent with stab wounds to the abdomen, a high-lethality method of self-injury usually attempted by older men.[35] Firearms were involved in a minority of cases of self-harm yet require the largest proportion of resources, consistent with the high case-fatality rate associated with firearm injuries.[36] The Centers for Disease Control and Prevention estimates the per-incidence cost of self-injury is $8,836 USD.[1] A single-center study of self-poisonings found an average cost of treatment to be £872 or about $1,200 per patient in US dollars (USD).[37] Investigators in London found self-injuries cost their hospital an average £809 or approximately $1,100 USD.[38] Like the current study, those investigators found a wide variation in costs (SD=£1,709 or $2,400 USD).[38]

Universal suicide risk screening, brief intervention, and follow-up have been found to be cost-effective and have a mortality benefit.[11] Violence prevention programs, which are structured to provide similar wrap-around services, have been shown to be effective at reducing subsequent violent injuries, shootings, hospital costs, and criminality (both arrests and convictions for violent crimes).[8,39] Like most population health efforts, suicide and violence prevention programs have been supported through a patchwork of grants, community and local partnerships, as well as private and hospital funding.[40] Now that most of injured patients are covered by a public program like Medicaid, there is a single payor who has a vested interest in these patients and decreasing the cost of their care.[14] While the current analysis does not include the considerable emotional and societal costs of violence, the per-person costs of these injuries is critical in creating the mechanisms needed to sustainably fund injury prevention programs through Medicaid and other payors.

LIMITATIONS

This retrospective study focuses on Medicaid claims submitted during care of patients with non-fatal intentional injuries. Patients who were intentionally injured but did not seek care or file a Medicaid claim would not be included in our analysis. We did not study uninsured

patients, those with private insurance, or those covered by Medicare. Patients may also have several types of coverage over the study period, and this report would not contain services covered by other insurers or paid out-of-pocket.

Our method of identifying subjects is based on ICD-10 codes, and some coders may assign an undetermined intent unless there is a "definitive" level of evidence to support the assignment of an intentional intent.[41] This leads to some intentional injuries being misclassified as having an undetermined intent, resulting in underreporting of intentional injuries.[23] We included injuries with an undetermined intent to reduce the impact of this misclassification bias on our analysis. Though, the potential magnitude of this misclassification bias is small because the proportion of injuries with an undetermined intent in this study was 3.7% (Table 1). Our automated method of identifying subsequent encounters may not have referenced the initial violent injury and may not have been included in our results. However, the distributions of age, sex, and injury mechanism within the overall study population and within each subgroup matches the literature.[3,20,24,25,30,31,34–36] Our automated method of identifying repeat victims of violence may also mis-categorize Medicaid recipients. We used the 'A' code suffixes introduced in ICD-10 to identify when patients were first injured. This code and has not been well-validated. However, the rate of, and time to, repeat injury found in this study falls within the range of previous reports.[3–5,7,24,33]

We did not examine subgroups of patients based upon the victim's relationship to their perpetrator, as in the case of child, elder, or intimate partner violence. However, the distributions of age and sex suggest these groups were captured. This report does not examine mortality, disability, or years of life lost due to violent injury.

CONCLUSIONS

Violent injury care is costly, and those costs continue over time. There is an extremely wide variation, with a small population of patients having catastrophic, high-cost injuries. Repeat victims of violence, including those who self-harm, are common and are an ideal target for prevention efforts. Firearms cause relatively few injuries yet make up the largest proportion of Maryland Medicaid dollars spent, especially among repeat victims of violence and those who injure themselves.

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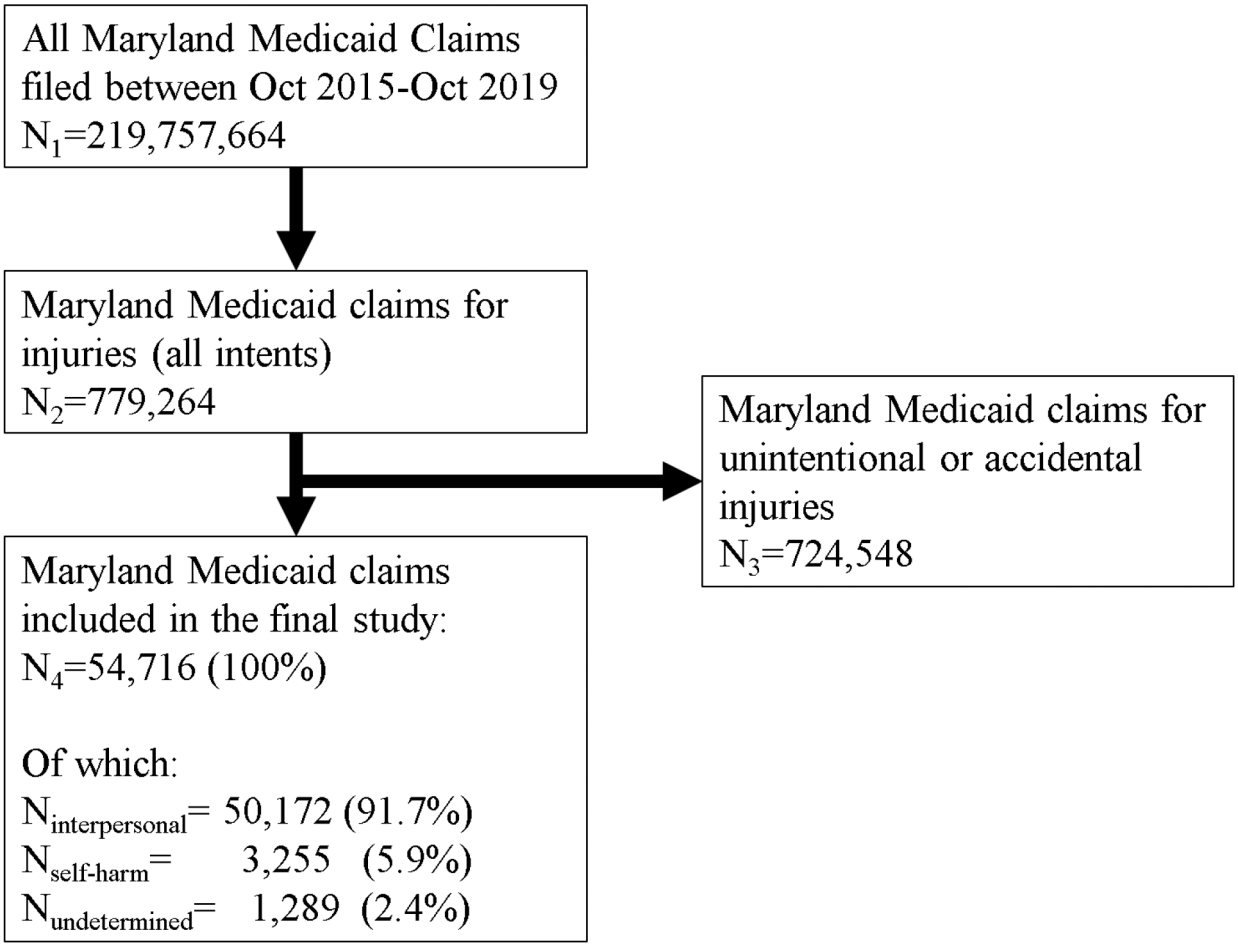

Figure 1.
CONSORT diagram showing the derivation of the study population

Table 1.

Medicaid Dollars Spent by Maryland Medicaid on the Acute and Long-Term Care (24-months) of Violent Injuries, Stratified by Patient and Injury Characteristics, N=12,472, October 2015-October 2019

	All Violent Injuries[1]						Repeat Victims of Violence						Self-Injury					
	Recipients, N (%)		Claims, N (%)		Dollars Paid, $ (%)		Recipients, N (%)		Claims, N (%)		Dollars Paid, $ (%)		Recipients, N (%)		Claims, N (%)		Dollars Paid, $ (%)	
Total	12,172	100	54,716	100	11,757,083	100	2,483	100	27,423	100	4,846,768	100	892	100	3,255	100	952,937	100
Injury Intent																		
Assault	11,113	89.1	50,172	91.7	10,564,895	89.9	2,309	89.5	25,351	92.4	4,192,403	86.5	-	-	-	-	-	-
Self-Injury	892	7.2	3,255	5.9	952,937	8.1	172	6.7	1,613	5.9	568,766	11.7	892	97.5	3,255	100.0	952,937	100.0
Undetermined	467	3.7	1,289	2.4	239,252	2.0	99	3.8	459	1.7	85,599	1.8	-	-	-	-	-	-
Mechanism of Injury																		
Blunt, Fists	1,180	9.0	2,751	5.0	486,179	4.1	247	9.0	772	2.8	129,969	2.7	12	1.3	17	0.5	2,440	0.3
Cut/pierce	2,200	16.8	8,840	16.2	2,064,198	17.6	553	20.1	3,751	13.7	609,182	12.6	486	53.1	1,121	34.4	212,168	22.3
Firearm	1,554	11.8	23,527	43.0	5,601,626	47.6	737	26.8	17,566	64.1	3,280,017	67.7	31	3.4	464	14.3	445,800	46.8
Other	8,200	62.4	19,598	35.8	3,605,080	30.7	1,213	44.1	5,334	19.5	827,600	17.1	386	42.2	1,653	50.8	292,528	30.7
Age																		
0–9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10–14	755	6.2	1,250	2.3	160,423	1.4	65	2.6	148	0.5	22,941	0.5	139	15.6	221	6.8	27,514	2.9
15–19	1,849	15.2	7,167	13.2	1,278,199	10.9	317	12.8	3,866	14.2	605,805	12.5	181	20.3	440	13.5	78,903	8.3
20–24	1,726	14.2	7,510	13.8	2,033,852	17.3	387	15.6	3,489	12.8	626,198	13.0	94	10.5	183	5.6	42,921	4.5
25–29	1,911	15.7	10,268	18.8	2,347,768	20.0	454	18.3	5,499	20.2	920,224	19.0	85	9.5	331	10.2	72,061	7.6
30–39	2,641	21.7	12,596	23.1	2,669,734	22.8	615	24.8	5,930	21.7	1,104,038	22.8	176	19.7	648	19.9	142,851	15.1
40–49	1,436	11.8	8,250	15.1	1,541,179	13.1	335	13.5	4,724	17.3	675,284	14.0	104	11.7	784	24.1	168,266	17.7
50–59	1,221	10.0	5,811	10.7	1,439,018	12.3	252	10.1	3,021	11.1	789,203	16.3	78	8.7	448	13.8	382,652	40.4
60–69	287	2.4	1,160	2.1	175,449	1.5	45	1.8	550	2.0	77,508	1.6	16	1.8	132	4.1	30,825	3.3
≥70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sex																		
Female	4,854	39.9	12,238	22.4	2,313,127	19.7	666	26.8	3,578	13.0	509,076	10.5	470	52.7	1,250	38.4	225,363	23.6
Male	7,318	60.1	42,478	77.6	9,443,956	80.3	1,817	73.2	23,845	87.0	4,337,692	89.5	422	47.3	2,005	61.6	727,573	76.4

	All Violent Injuries[1]						Repeat Victims of Violence						Self-Injury					
	Recipients, N (%)		Claims, N (%)		Dollars Paid, $ (%)		Recipients, N (%)		Claims, N (%)		Dollars Paid, $ (%)		Recipients, N (%)		Claims, N (%)		Dollars Paid, $ (%)	
Urbanity of Home Address [2]																		
Rural	2,227	18.3	7,621	13.9	1,408,364	12.0	328	13.2	3,086	11.3	694,252	14.3	315	35.3	945	29.0	489,292	51.3
Urban	9,945	81.7	47,095	86.1	10,348,720	88.0	2,155	86.8	24,337	88.7	4,152,516	85.7	577	64.7	2,310	71.0	463,645	48.7
Location of Injury [3]																		
Abdomen	661	4.9	2,417	7.4	1,288,914	14.4	237	7.3	1,026	8.7	713,329	23.8	34	4.9	113	6.4	303,824	46.2
Abdomen, Lower Back, and Pelvis	204	1.5	424	1.3	102,836	1.1	48	1.5	102	0.9	24,157	0.8	-	-	21	1.2	2,191	0.3
Head and Neck, Other	-	-	12	-	2,143	-	-	-	-	-	1,087	0.0	-	-	-	-	1,365	-
Hip	104	0.8	330	1.0	57,899	0.6	48	1.5	200	1.7	28,108	0.9	-	-	43	2.4	3,596	0.5
Multiple Body Regions	91	0.7	168	0.5	30,383	0.3	31	1.0	60	0.5	9,075	0.3	-	-	-	-	420	0.1
Neck	507	3.7	1,260	3.8	335,595	3.7	110	3.4	381	3.2	138,424	4.6	47	6.8	102	5.8	18,965	2.9
Other Head	2,447	18.0	4,312	13.2	1,048,056	11.7	456	14.1	1,036	8.8	207,651	6.9	30	4.3	87	4.9	9,549	1.5
Other Lower Extremity	1,260	9.3	3,426	10.5	1,104,010	12.3	357	11.0	1,357	11.6	374,844	12.5	61	8.8	127	7.2	50,846	7.7
Other Trunk	19	0.1	49	0.1	10,137	0.1	-	-	25	0.2	5,542	0.2	11	1.6	30	1.7	8,091	1.2
Pelvis and Lower Back	259	1.9	684	2.1	217,664	2.4	91	2.8	294	2.5	74,529	2.5	12	1.7	97	5.5	14,499	2.2
Spinal Cord	24	0.2	114	0.3	61,037	0.7	16	0.5	97	0.8	30,658	1.0	-	-	-	-	27	0.0
System Wide	383	2.8	867	2.6	300,600	3.4	108	3.3	346	3.0	94,356	3.1	57	8.2	95	5.4	11,904	1.8
Thorax	1,418	10.4	4,791	14.6	1,368,062	15.3	458	14.1	2,293	19.6	447,917	14.9	27	3.9	129	7.3	12,543	1.9
Traumatic Brain Injury	2,916	21.4	6,625	20.2	1,389,353	15.5	572	17.7	2,079	17.7	412,550	13.7	58	8.4	227	12.9	52,952	8.1
Unknown	3,297	-	20,635	-	2,479,895	-	1,123	-	15,305	-	1,774,767	-	295	-	1,342	-	227,371	-
Unspecified	673	-	1,312	-	306,421	-	181	-	387	-	70,749	-	79	-	140	-	67,794	-
Upper Extremity	3,160	23.2	6,415	19.6	1,245,680	13.9	621	19.2	1,769	15.1	313,766	10.5	346	49.9	604	34.2	145,485	22.1
Vertebral Column	163	1.2	875	2.7	408,397	4.6	86	2.7	662	5.6	125,259	4.2	11	1.6	90	5.1	21,517	3.3
Substance Use																		

	All Violent Injuries[1]						Repeat Victims of Violence						Self-Injury					
	Recipients, N (%)		Claims, N (%)		Dollars Paid, $ (%)		Recipients, N (%)		Claims, N (%)		Dollars Paid, $ (%)		Recipients, N (%)		Claims, N (%)		Dollars Paid, $ (%)	
Alcohol Use	401	3.1	728	1.3	301,975	2.6	96	3.6	189	0.7	43,861	0.9	41	4.5	71	2.2	9,879	1.0
None	11,607	90.7	52,667	96.3	10,280,714	87.4	2,399	90.4	26,918	98.2	4,431,469	91.4	814	89.0	3,088	94.9	787,472	82.6
Substance Use	205	1.6	342	0.6	578,891	4.9	47	1.8	103	0.4	239,430	4.9	31	3.4	48	1.5	116,014	12.2
Tobacco Use	588	4.6	979	1.8	595,503	5.1	113	4.3	213	0.8	132,008	2.7	29	3.2	48	1.5	39,571	4.2

Table 2.

Median Maryland Medicaid Dollars ($) Spent on Intentional Injury Care and Subgroups, Stratified by Total, Initial Event, and Long-term (24-months) Care, N=12,472, October 2015-October 2019.

		Time period	Maryland Medicaid Dollars Spent	
			Median	SD
Overall Costs	Intentional Injury	Overall	$183	$5,284
		Initial Hospitalization	$129	$1,962
		Subsequent Months	$172	$5,673
	≥75th Percentile	Initial Hospitalization	$726	$3,682
		Subsequent Months	$1,645	$10,175
	≥95th percentile	Initial Hospitalization	$3,000	$6,973
		Subsequent Months	$8,403	$22,024
Specific Subgroups	Repeat Victims of Violence [1]	Overall	$700	$9,949
		Per-month	$185	$6,345
	Self-Harm	Overall	$183	$11,628
		Initial Hospitalization	$158	$1,612
		Subsequent Months	$172	$18,631
	Penetrating Injury [2]	Initial Hospitalization	$219	$2,932
		Subsequent Months	$235	$7,770
	Non-Penetrating Injury	Initial Hospitalization	$125	$1,359
		Subsequent Months	$131	$1,920

[1] Patients who received at least one additional intentional injury within the 24-month follow up period

[2] Any patient who received a stab wound or firearm injury