INJURY BRIEF

Suicide & Self-Directed Violence

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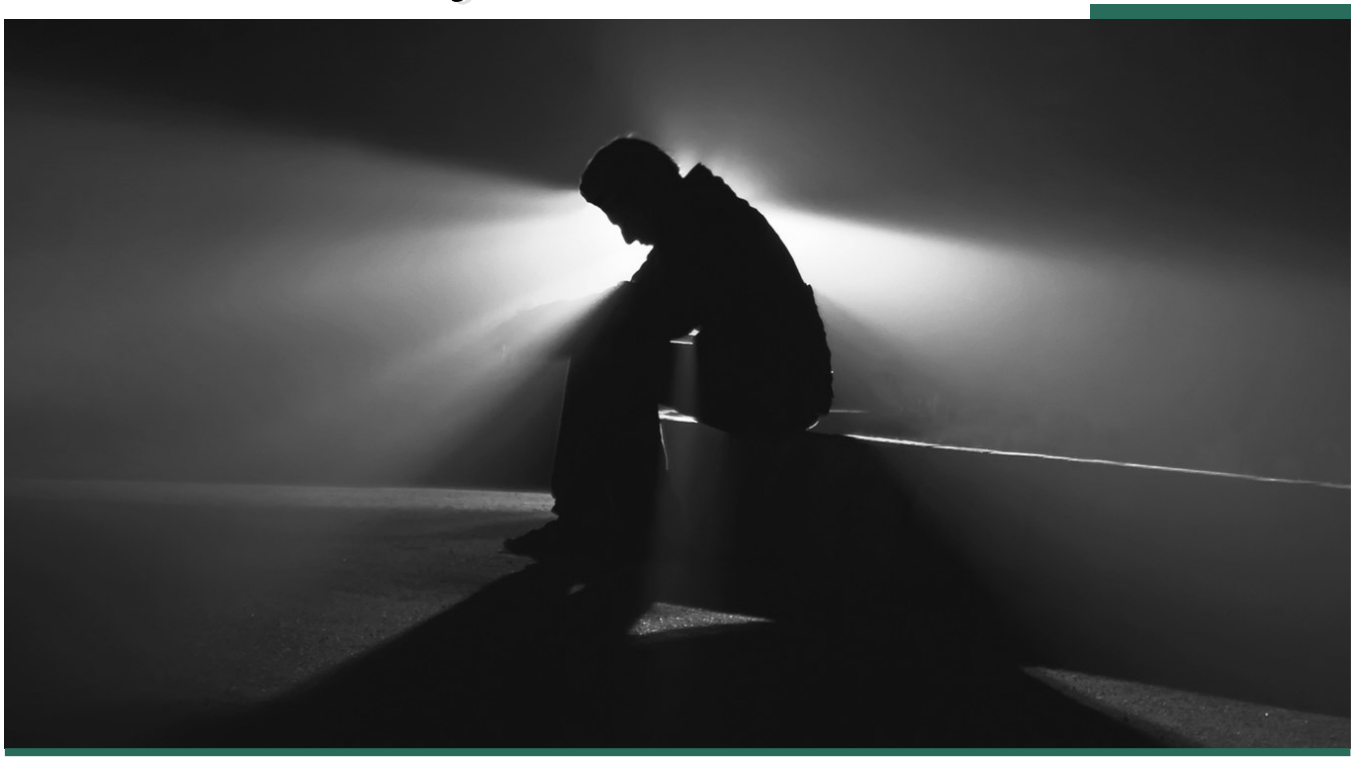

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HAMILTON COUNTY PUBLIC HEALTH
PREVENT. PROMOTE. PROTECT.

THE HEALTH COLLABORATIVE

WHAT'S IN THIS ISSUE?

At-Risk Groups

An in-depth look at the demographic breakdown of Hamilton County's self-directed violence.

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Behaviors and Methods

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How to Prevent Self-Directed Violence

Learn about resources and how to protect yourself or a loved one from self-directed harm.

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Healthy People 2020

www.healthypeople.gov

Healthy People 2020 Goals

What are the Healthy People 2020 Goals? How does Hamilton County stack up against national goals?

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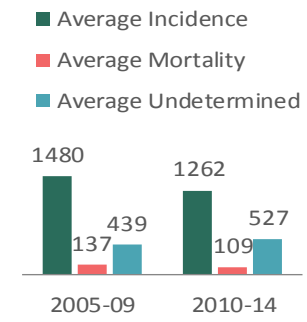
Quick Facts

Quick Facts, Figure 1

836,000

Emergency room visits in the U.S. for self-inflicted injuries in 2011[1].

Quick Facts, Figure 2



Quick Facts, Figure 3

= 10 deaths

107 Hamilton County residents committed suicide in 2014.

Quick Facts, Figure 4

9 %

Of self-directed injuries resulted in death.

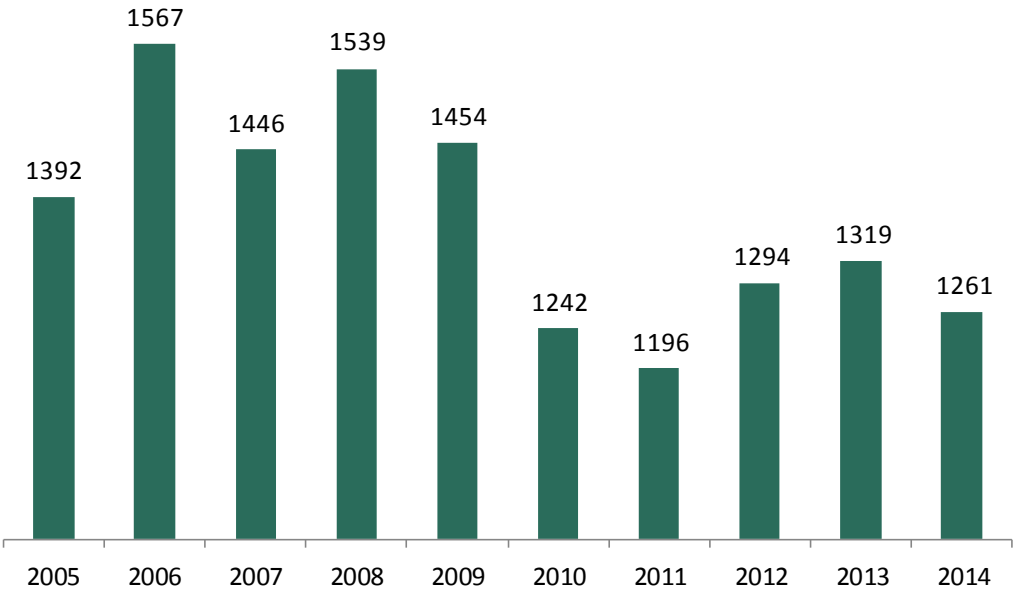


Figure 1: Total Hospital Visits and Deaths due to Self-Inflicted Injury; Hamilton County. 2005-2014

Self-Directed Violence

The Centers for Disease Control and Prevention (CDC) defines self-directed violence (SDV) as "behavior that is self-directed and deliberately results in injury or the potential for injury to oneself."[2] The issue is commonly discussed in the context of suicide—SDV which results in death. Considering SDV as suicide alone overlooks the vast majority of SDV incidence. Data from Hamilton County area hospitals and death records indicates that only about 9 percent of SDV incidents resulted in death.

Over the past ten years, an annual average of 1,371 SDV incidents were reported for Hamilton County residents, ranging from 1,196 to 1,567 incidents (Fig. 1). On average, 123 of these incidents resulted in death. There were less SDV incidents and suicides from 2010-14 than the previous five year period of 2005-09 (Quick Facts, Fig. 2).

These figures underrepresent the true burden of SDV. Data is limited to hospital and death record information. An unknown number of SDV incidents are not treated in hospitals. Even when someone is seen at the hospital or dies, the diagnosis of a self-inflicted injury may be missed or covered up to limit perceived embarrassment or shame.

The observed decrease in SDV events for 2010-14 may be due to changes in how hospitals and Coroners determine intent; as SDV incidents have gone down, the average annual number of injuries with undetermined intent has increased, from an average of 438 over 2005-09 to an average of 521 during 2010-14 (Quick Facts, Fig. 2).

While SDV incidents are relatively less common than other forms of injury, they are among the most likely to be fatal. Even when not fatal, SDV can have a lasting impact on the well-being of the individual, friends, family, and community.

This edition of the Hamilton County Public Health (HCPH) injury brief will highlight characteristics of residents committing SDV and the nature of the incidents themselves. Unlike other injuries, SDV takes on a broad variety of methods and intent. This report considers the wide scope of methods employed to commit SDV. Resources for at-risk individuals and loved ones, and opportunities for prevention are highlighted.

Demographics of SDV

Past SDV events can help predict and prevent future events. Hamilton County SDV events since 2004 demonstrate different risk patterns among certain populations.

SDV rates in Hamilton County are about 12 percent higher in the white population than the black population (Table 1). Rates are extremely high in minority groups that are not black or white, such as Asians, Pacific Islanders, or American Indians.

Females have a higher rate of SDV compared to males. However, males are much more likely to commit suicide. This trend is not only apparent in Hamilton County, but has been well documented across populations.[3]

Age is a meaningful and nuanced factor in SDV and suicide risk. Figure 2 demonstrates that teens and young adults commit SDV at the highest rate, with a pooled rate of 348.5 SDV events per 100,000 among those aged 15 to 29. This young adult group accounted for 43 percent of all SDV events over the past 10 years.

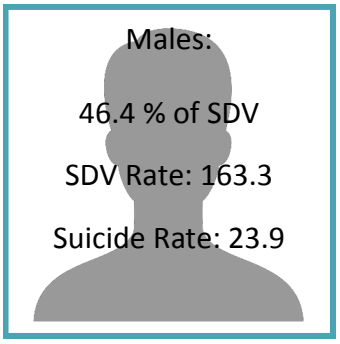
SDV among these young people does not usually result in death. Among the 15-29 age group, approximately 4.3 percent of SDV events were suicides (Table 2).

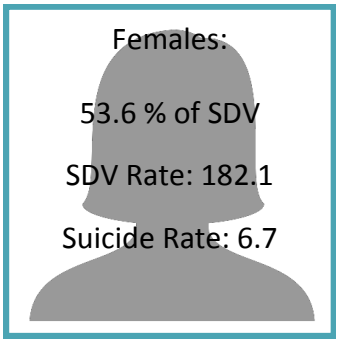
Older age groups commit SDV at a much lower rate; 101.9 per 100,000 for those aged 45 and older pooled together. The older age groups, however, have a much higher proportion of SDV events resulting in death. Table 2 shows that the percent of SDV events that result in death rises nearly uniformly with age. In every age group above 50-54, over 20 percent of SDV were suicides.

Demographic analysis alone does not fully delineate the complicated issue of SDV. Nested within the intent to cause oneself harm is the intention and goals of that harm, e.g. to commit suicide or with some other goal in mind. Finally, the issue is confused by the fact that suicidal intention does not always result in death, and non-suicidal intention does not imply one will survive. Behavior and methods surrounding SDV events may provide clarity.

Table 1: Race, Sex, and SDV; Hamilton County, 2005-2014*

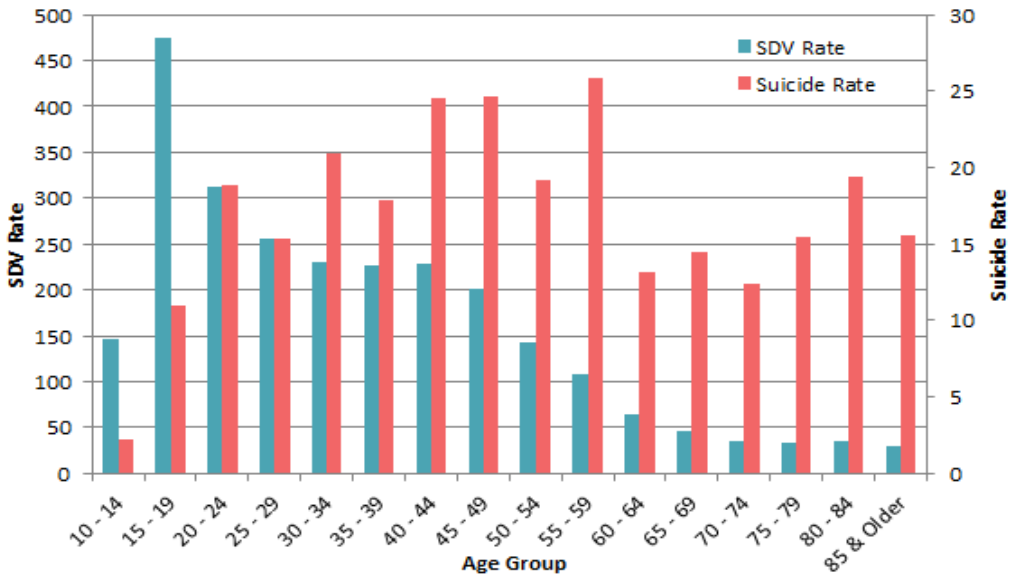
Race	Percent	Age-Adjusted Rate per 100,000 residents
White	71.4%	177.8
Black	24.6%	156.9
Other	4.0%	243.8





**Rates age-adjusted using 2000 U.S. Standard Population*

Figure 2: Age Distribution of SDV Incidents and Suicides; Hamilton County, 2005-2014*



**Rates calculated per 100,000 individuals within age group*

Table 2: Percent of SDV that were Suicides, by Age Group; Hamilton County, 2005-2014

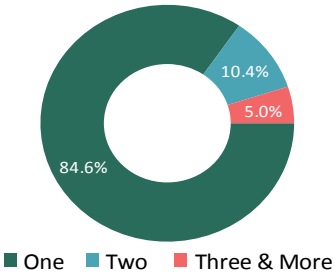
Age Group	Percent of SDV that are Suicides
10-14	1.5%
15-19	2.3%
20-24	6.0%
25-29	6.0%
30-34	9.1%
35-39	7.9%
40-44	10.7%
45-49	12.2%
50-54	13.3%
55-59	24.1%
60-64	20.7%
65-69	31.4%
70-74	35.6%
75-79	45.7%
80-84	55.0%
85 +	51.9%

SDV Behaviors and Methods

Quick Facts

Quick Facts, Figure 5

Number of SDV incidents related to individuals (includes undetermined intent)

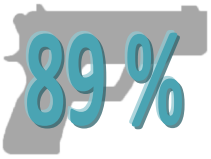


Quick Facts, Figure 6

2 out of 3

SDV incidents were poisonings

Quick Facts, Figure 7



of firearm SDV resulted in death

Quick Facts, Figure 8

of suicides in people younger than 30 occur by hanging

One of the most concerning patterns to emerge is individuals committing repeated acts of SDV. Since 2004 in Hamilton County, among those who survived their first SDV act or incident with uncertain intent, 15.4 percent went on to commit additional SDV. Like the true rate of SDV, the true rate of repeat SDV is likely higher than observed, since the available data is from hospital and death records and would not capture SDV where the individual did not die or seek emergency healthcare.

These repeat incident figures indicate a gap in healthcare for SDV injuries. Hospital visits for SDV are valuable opportunities for intervention in the lives of those at risk for SDV. Since 2004, 109 Hamilton County residents who were seen in a hospital for an act of SDV or injury of uncertain intent that was survived would eventually commit suicide.

Many methods are used to commit SDV. All methods have unique injury risks in different populations. SDV method can be understood broadly in four categories; poisoning, firearms, cutting, and all other methods.

Poisoning

By far, poisoning is the most often employed method of SDV; since 2004 in Hamilton County, about 2/3 of all SDV was some sort of poisoning.

Poisoning resulted in death about 3.1 percent of the time, and most deaths were in older individuals (5.1 percent of poisonings resulted in death among those aged 30 and older, compared to 0.7 percent in those under 30).

Any agent can be toxic at high enough levels. Therefore, a vast array of agents are employed in SDV poisonings. Table 3 lists the most common substances used in intentional self-poisonings.

The vast majority of poisoning SDV involves agents that are drugs or medicinal substances. The 3 percent of SDV poisonings where a substance other than a drug or medicinal substance was implicated most often were consumption of caustic substances or inhalation of poisonous gases, such as motor vehicle exhaust gas. Poisonings of this nature had higher mortality rates than poisoning by medicinal drugs or drugs of abuse (narcotics).

The most common substances involved in SDV poisonings are prescription drugs like benzodiazepines, antidepressants, and antipsychotics. These drugs treat conditions linked to increased risk for SDV, and the availability of these drugs to prescribed individuals provides a method to harm oneself.

Many of the most common substances utilized in poisonings were over-the-counter

Table 3; Top Drugs and Percent of SDV Poisonings where Drug was Involved; Hamilton County, 2004-2014

Drug / Drug Type	Percent*	Median Age	Percent Male	Percent Mortality
Benzodiazepines	19.2 %	40	37.1 %	0.8 %
Antidepressants	16.3 %	34	33.9 %	0.8 %
Acetaminophen and similar drugs	14.1 %	27	33.5 %	0.4 %
Other antipsychotics, neuroleptics, and tranquilizers	11.3 %	34	39.0 %	0.4 %
Opiates and related narcotics	10.0 %	35	49.0%	2.6 %
Alcohol	8.2 %	33	44.7 %	0.7 %
Ibuprofen and similar drugs	7.5 %	21	27.1 %	0.1 %
Anticonvulsants	6.1 %	33	33.3 %	0
Sedatives and Hypnotics	5.8 %	40	32.8 %	1.2 %
Antihistamines and similar drugs	5.3 %	25	36.4 %	0.4 %

**Individuals may be included in multiple drug groups due to drug combinations*

Poisoning (cont.)

drugs. These included acetaminophen (Tylenol), ibuprofen (Advil), and antihistamines. Younger people are more likely to harm themselves with these drugs, probably due to easy availability.

Drugs of abuse were not the most common poisoning substances, but had relatively high mortality rates. Opioids (heroin and pain medications like Vicodin) and alcohol accounted for 13.5 percent of all self-inflicted poisonings.

Firearms

Firearms pose an enormous risk for individuals who are depressed or suicidal. SDV with firearms is fatal 89 percent of the time. Firearms make up less than 5 percent of SDV incidents, but account for over 45 percent of Hamilton County's suicides. The vast majority of firearm SDV is done with handguns; in the 83 percent of firearm SDV incidents where a type of firearm was specified, it was a handgun.

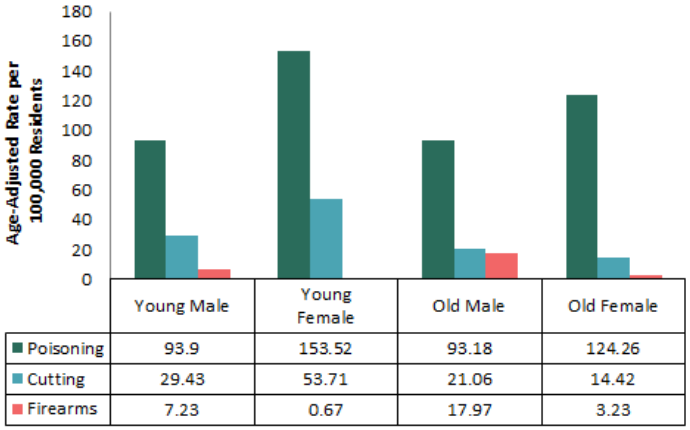
As demonstrated in Figure 3, older men have a very high rate of firearm SDV; nearly 18 firearm SDV incidents per 100,000 men 30 and older, compared to 4.3 for the other groups, combined.

Firearms are the leading cause of suicide death in Hamilton County since 2004 (Table 4).

Cutting

Self-inflicted injury by a cutting or piercing instrument was almost always at the wrist region. Cutting is a behavior that is more common in younger individuals; the highest rate of cutting SDV was among females 29 and younger (Figure 3).

Demographically, cutting follows the general overall pattern of SDV. Among Hamilton County residents that committed cutting SDV, three-quarters were white, 56 percent were female, and 64 percent were younger than 30.



	Young Male	Young Female	Old Male	Old Female
Poisoning	93.9	153.52	93.18	124.26
Cutting	29.43	53.71	21.06	14.42
Firearms	7.23	0.67	17.97	3.23

Figure 3; Rate of SDV Method by Age*/Sex; Hamilton County, 2004-2014**

**Young defined as younger than 30, old defined as 30 and older*

***Rates age-adjusted using 2000 U.S. Standard Population*

Less than 1 percent of cutting incidents resulted in death, the lowest for any method. Cutting SDV is one of the most common forms of SDV, occurs mainly in young people, and rarely results in death. Therefore, it is often a valuable opportunity to seek help for those who commit SDV. More than one in five individuals who survived a cutting incident would go on to commit additional SDV.

Other Methods

The remaining 12.5 percent of SDV incidents involved a variety of other methods, including hanging/strangulation, jumping from a high place, jumping/lying before a moving object, and drowning.

These methods vary widely, and are committed at a very low rate. When committed, they are generally among the deadliest methods of SDV. While making up about 2 percent of SDV incidents, hanging/suffocation was the second leading suicide method (Table 4).

Table 4; Top 5 Causes of Suicide Death, Percent of Suicides and Rate per 100,000 residents; Hamilton County, 2004-2014*

1. Firearms	2. Hanging/Suffocation	3. Poisoning	4. Cutting	5. Jumping
Percent; 45.4 %	Percent; 25.8 %	Percent; 23.3 %**	Percent; 1.6 %	Percent; 1.6 %
Suicide Rate; 6.6	Suicide Rate; 4.0	Suicide Rate; 3.3	Suicide Rate; 0.2	Suicide Rate; 0.2

**17.4 % solid/liquid, 5.8 % gaseous

**Rates age-adjusted using 2000 U.S. Standard Population*

SDV and Suicide Prevention

While prevention of SDV and suicide can seem daunting, there are many resources that exist both nationally and locally in Hamilton County to provide help for those who are concerned that they or a loved one may commit SDV.

Recognize Warning Signs.

One of the strongest indicators for future SDV is a previous SDV event.[3] An SDV incident should be seen as a warning sign regardless of severity of injury. The American Foundation for Suicide Prevention (AFSP) lists many risk factors and warning signs for suicidal ideation and/or depression on their website (https://afsp.org/about-suicide/risk-factors-and-warning-signs/).

The first obstacle to overcome with SDV is the stigma that is often attached to it. Because of its stigma, those who are considering SDV may resist seeking help. Stigma may also cause loved ones to be reluctant to admit that someone they care for would consider committing an act of SDV. If you are concerned that you or a loved one may be considering self-harm or suicide, know that it is normal to have strong emotions that can include fear, depression, anxiety, and/or anger. Recovery is a process and recognition and acceptance of the problem is the first step in that process.

Seek Guidance from Medical Professionals or Organizations Devoted to Suicide Prevention.

There are many resources, national and local, available to people and loved ones of people struggling with depression and SDV risk, including;

Cincinnati Children's

Cincinnati Children's Surviving the Teens Suicide Prevention Program (www.cincinnatichildrens.org/service/s/surviving-teens/default/) is a local resource through Cincinnati Children's Hospital Medical Center that brings educators and advisors into area schools to talk about teenage suicide.

Surviving the Teens takes a unique approach to suicide prevention education by meeting students in small groups and working collaboratively with teachers and parents. As a major hospital in the Hamilton County area, the Emergency Department of Cincinnati Children's sees 5,000 children a year for mental health evaluation, including over 2,000 with thoughts of suicide. For more information, visit their website (linked above) or call Cincinnati Children's Psychiatric Response Center team, staffed 24 hours a day, at

513-636-4124.

NATIONAL SUICIDE PREVENTION LIFELINE™ 1-800-273-TALK (8255) suicidepreventionlifeline.org

If you feel you are in a crisis, whether or not you are thinking about killing yourself, the Suicide Prevention Lifeline is a number you can call to immediately talk with a skilled, trained crisis worker who will listen to your problems and will tell you about mental health services in your area. The call is confidential and free. The 24-hour lifeline can be reached at

1-800-273-TALK (8255).

The lifeline takes calls for help with substance abuse, economic worries, relationship and family problems, sexual orientation, illness, getting over abuse, depression, mental and physical illness, and even loneliness.

AMERICAN FOUNDATION FOR Suicide Prevention

The American Foundation for Suicide Prevention (AFSP) is a national organization that raises awareness, funds scientific research, and provides resources and aid to those affected by suicide.

AFSP offers online resources including:

Support resources for all those affected by suicide;

Information about suicide warning signs, risk factors, statistics, and treatment;

And ways to take action to promote suicide prevention.

AFSP has a Cincinnati chapter (http://afsp.org/chapter/afsp-cincinnati/) that can provide localized support for SDV. The Cincinnati chapter of AFSP can also be found on Facebook.

Healthy People 2020 Goals

Every 10 years, the U.S. Department of Health and Human Services (HHS) releases the Healthy People objectives. The Healthy People 2020 objectives were released in December 2010. Healthy People are a set of nationwide health promotion and disease prevention goals that support prevention efforts to create a healthier nation.[5]

Many of these objectives are created by taking rates from a previously measured national rate gathered during Healthy People 2010, or from a 10 percent decrease there-in. Specific objectives for SDV injuries are given by the Injury and Violence Prevention (IVP) goal 41 and Mental Health and Mental Disorders (MHMD) goal 1. Table 5 describes what these goals are and shows where Hamilton County stands in terms of reaching those goals as of 2014.

Goal	Hamilton County 2014
IVP-41: Reduce nonfatal intentional self-harm injuries. Goal of **112.4 ED visits per 100,000** population.	152.2 per 100,000
MHMD-1: Reduce the suicide rate. Goal of **10.2 suicides per 100,000** population.	13.2 per 100,000

Table 5; Healthy People 2020 Goals*

**Rates age-adjusted using 2000 U.S. Standard Population*

Hamilton County is far behind in attaining national goal IVP-41 to reduce nonfatal intentional self-harm. Hamilton County's 2014 rate of 152.2 nonfatal SDV incidents per 100,000 is 35 percent higher than the national goal of 112.4.

Hamilton County is similarly far behind in attaining national goal MHMD-1 to reduce the suicide rate. Hamilton County's 2014 rate of 13.2 suicides per 100,000 is 30 percent higher than the national goal, 10.2.

Both of these measures have been relatively stable over the past 5 years (annual averages of 149.3 per 100,000, 13.4 percent). Therefore, there is little evidence that this goal will be reached by 2020 without intervention or an unexpected decrease in SDV morbidity.

Additional Reports

For additional Reports on injuries in Hamilton County, please visit:

www.hamiltoncountyhealth.org/en/resource_library/reports.html

References

[1] National Hospital Ambulatory Medical Care Survey: 2011 Emergency Department Summary Tables. Atlanta, GA: Centers for Disease Control and Prevention. Accessed December 28, 2015. Retrieved from http://www.cdc.gov/nchs/data/ahcd/nhamcs_emergency/2011_ed_web_tables.pdf.

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[5] United States Department of Health and Human Services. *About healthy people*. Updated March 29, 2012. Washington, DC: U.S. Department of Health and Human Services. Accessed September 11, 2012. Retrieved from http://www.healthypeople.gov/2020/about/default.aspx.

Where Does Public Health Get the Data?

The data used in this report were gathered from two sources; the Hamilton County Injury Surveillance System (HCISS) and mortality data compiled from death records by the Ohio Department of Health (ODH). The HCISS is a collaborative surveillance effort led by Hamilton County Public Health and supported by our local hospitals, the Hamilton County Coroner's Office, and the Greater Cincinnati Health Council. ODH compiles a database of deaths for all Ohio residents based on death records. Many individuals who committed suicide appeared in both datasets and were appropriately counted once. Figure 4 shows the breakdown of SDV injuries as reported through the HCISS and death records. The bottom layer represents the least severe injuries, yet the largest number of patients; the next two layers, hospitalizations and deaths, represent the most severe and costly injuries to residents of Hamilton County. An unknown number of unreported SDV incidents were not identified in the HCISS or death records because these individuals did not seek medical care or die as a results of their SDV.

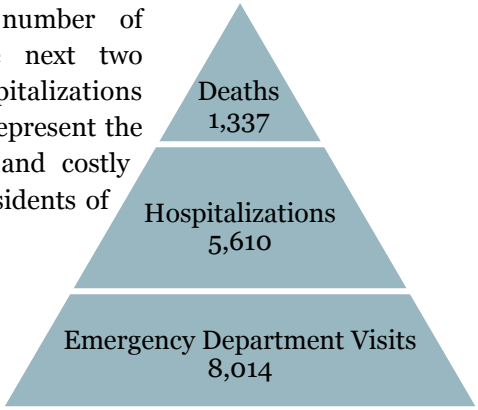

Figure 4: SDV Injury Pyramid, Hamilton County, 2004-2014