# THE SCOURGE OF OPIOIDS IN THE COMMONWEALTH

So consider the amount of standard daily doses of opioids consumed in Japan. And then double it. And then double it again. And then double it again. And then double it again. And then double it a fifth time. That would make Japan No. 2 in the world, behind the United States.

 Kevin Humphreys, Professor of Psychiatry and Behavioral Sciences, Stanford University, 2017

pioids are the leading cause of accidental death in the United States and the Commonwealth of Virginia. Over the past decade, opioid overdose deaths in Virginia surged past gun- and vehicular-related deaths. Regardless of whether the number of deaths and hospitalizations is called a "crisis," "epidemic" or "emergency," one point is clear: Virginians are dying in ever-greater numbers from opioids.

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Opioids are painkillers and have many legitimate uses. When prescribed and supervised by physicians, opioids enable individuals to reduce or avoid pain in medical situations that range from arthritis to surgery. When used inappropriately or abused, however, opioids can result in hospitalization and, in many cases, death.

One episode of opioid abuse gained widespread attention last year. It featured a heart-rending and unforgettable picture (see next page) that quickly went viral – a confused child in the back seat of an automobile staring at two unconscious adults in the front seat, each with mouth agape. Published in September 2016 and reprinted here, this photo opened the eyes of many Americans to what has become a raging epidemic – opioid abuse and addiction.

The picture, taken after the driver was pulled over for driving erratically, illustrates the destructive nature of opioid abuse. The child's grandmother, who was in the front passenger seat, had been granted custody only six weeks before, as the mother was no longer able to take care of him. Police quickly administered Narcan to counter the effects of the apparent opioid overdose and then arrested the grandmother and driver for child endangerment. The young child now lives with distant relatives in another state. We don't know what opioids were used nor do we know if the adults in the car have found the right treatment to combat their addiction. What is becoming clear, however, is that opioids are wreaking havoc on communities, and children are especially vulnerable.

Unfortunately, events like this are increasingly common and raise troubling questions. Were the opioids prescribed or obtained illegally? What happens to children whose parents or guardians fall into the grips of opioid abuse or addiction? What are the financial consequences of illegal opioid use?

Often, there are more questions than answers when opioid addiction is the subject of discussion. One thing that we do know for certain, however, is that the misuse and abuse of opioids have led to a crisis that has left a destructive imprint on the Commonwealth and the United States. Graph 1 illustrates the disheartening growth in drug overdose deaths in Virginia. The number of opioid-related deaths has almost doubled over the last decade. Opioid overdose was not only the leading cause of accidental death in Virginia in 2016, but also responsible for an increasing number of emergency calls and hospitalizations. In this chapter, we outline this crisis and suggest a plan of action.



Source: Alice Park, "The Story Behind the Viral Photo of an Opioid Overdose," Time (Jan. 24, 2017)



#### ESTIMATED NUMBER OF DEATHS DUE TO ALL DRUG OVERDOSES: VIRGINIA, 2007-2016



Source: Virginia Department of Health, Medical Examiner, Forensic Epidemiology, 2017

# **Opioids: A Primer**

Opioids can be natural substances that reduce pain, such as opium or morphine, both of which come from poppy plants. They also can be synthesized from opium and morphine into other forms, such as heroin. Opioids, as well, can be manufactured into a wide variety of legitimate products that either are prescribed by physicians, or can be purchased over the counter.

As is true for common and legitimate drugs, opioids come in five major forms: tablets, capsules, nasal sprays, patches and liquids. The key ingredients of most opioids used in the United States come either from South America or Mexico. Even though perhaps 90 percent of the world's heroin is cultivated in Afghanistan, only about 4 percent of heroin in the U.S. came from Afghanistan in 2013.<sup>1</sup>

Synthetic opioids such as oxycodone (OxyContin), hydromorphone (Dilaudid) and hydrocodone (Tussionex) are made by changing the chemical structure of naturally occurring opioids.<sup>2</sup> The starting point, however, is a naturally occurring opioid such as opium or morphine.

#### Table 1 reports the most common opioid varieties.

Fentanyl, an opioid that is 50 to 100 times more potent than morphine, offers dramatic pain relief but is also causing an increasing number of opioid deaths in the Commonwealth and the United States. Like most opioids, fentanyl has legitimate uses. It is used to combat pain during surgeries and fentanyl patches provide localized pain relief. It also can be taken by means of a nasal spray or injection. Used recreationally and abusively, however, it can be fatal.

In the summer of 2016, an increasing number of overdoses and deaths appeared related to a derivative of fentanyl, Carfentanil. Carfentanil is typically used to sedate large animals, such as elephants and rhinoceroses. While fentanyl is up to 100 times more potent than morphine, Carfentanil is up to 10,000 times more potent than morphine. What makes this drug so dangerous is that it typically appears as a dry, white powder, is hard to detect when mixed with other illicit drugs, and even a very small dose (0.6 milligrams) is fatal. **To put this into perspective, the U.S. government only authorized production of 10 grams a year of Carfentanil versus 1,750 kilograms of fentanyl in 2017.**<sup>3</sup> From October 2016 to June 2017, Customs and Border Protection seized almost 2 kilograms of the drug, illustrating the stark difference between legal production and illegal importation.<sup>4</sup>

Consistent opioid use, even when prescribed legitimately by a physician, can lead to physical dependence. As dependence increases, individuals may find themselves less willing or able to work and participate in society. Habitual use or abuse of opioids such as heroin and fentanyl may result in unintended death. While the withdrawal from opioids is generally not fatal, there are substantial physical and financial costs involved in the treatment of opioid addiction.

#### TABLE 1

#### THE MOST COMMON OPIOIDS

Methadone	Vicodin, Lorcet, Lortab (hydrocodone)	Dilaudid (hydromorphone)	
Percocet, Percodan, OxyContin (oxycodone)	Demerol (pethidine)	Duragesic (fentanyl)	
Source: Opioids, National Institute on Drug Abuse, www.drugabuse.gov			

<sup>1 &</sup>quot;The Drug Addiction Pipeline: Who Supplies Drugs to America?" *The Recovery Village*, https://www. therecoveryvillage.com/drug-addiction/who-supplies-drugs-america.

<sup>2</sup> CAMH: Centre for Addiction and Mental Health. www.camh.ca/en/hospital/health\_information/a\_z\_mental\_ health\_and\_addiction\_information/oxycontin/Pages/opioids\_dyk.aspx.

<sup>3</sup> https://s3.amazonaws.com/public-inspection.federalregister.gov/2016-23988.pdf.

<sup>4</sup> Angela M. Hill, "This elephant tranquilizer is killing people, but no one knows how many." Sept. 25, 2017, http://www.wkbw.com/longform/getting-a-fix-carfentanil-is-an-elusive-killer.

# **Opioid-Related Fatalities**

Deaths attributable to opioid misuse or abuse have been rising rapidly. In Virginia, 1,138 people died from an opioid overdose in 2016, a 40 percent rise from the 811 opioid overdose deaths in 2015.<sup>5</sup>

Monica Beaudry, the 23-year old daughter of a retired Hampton Roads naval officer, died from a heroin overdose in December 2016. She became addicted, tried rehabilitation programs, but ultimately was unable to overcome her addiction. Her story is discouragingly typical. See Scott Daugherty, "Forever Changed: Family Wants Justice for Daughter Who Overdosed 9 Months After Trying Heroin," The Virginian-Pilot (May 18, 2016).

By no means is this solely a Virginia problem. Nationwide, opioids were directly responsible for the deaths of 53,000 people in 2016, almost 15,000 more than in 2015.<sup>6</sup> Graph 2 illustrates the rapid growth in overdose deaths involving opioids between 2000 and 2016 in the United States. Fentanyl-related deaths in the U.S. grew by 540 percent over the past three years and are expected to increase again in 2017.

Physicians wrote more than 320 million opioid prescriptions to over 61 million Americans in 2016.<sup>7</sup> Opioid deaths frequently begin with a legitimate prescription from a physician that was intended to reduce a patient's pain. Four out of five heroin abusers started their opioid use with a legitimate prescription received from a physician.<sup>8</sup> Even so, only 27 percent of those taking opioids today are using their own prescription; the majority obtain their supply of opioids from other sources. A recent report issued by the surgeon general of the United States estimated that more than 27 million Americans used illegal drugs or violated the terms of their prescription in 2015.<sup>9</sup> These are grim statistics.

### **An International Perspective**

There is no way to sugarcoat the numbers. Fueled primarily by overly permissive opioid prescription practices, Americans use far more opioids than the citizens of any other nation. Graph 3 compares the average daily consumption of opioids per 1 million inhabitants from 2013 to 2015 for a selection of developed countries. **Americans consumed 138 percent more opioids than Canadians, 394 percent more than residents of the United Kingdom, 631 percent more than Italians and 3,890 percent more than residents of Japan.** 

Why does the United States (and Canada) stand out for legitimate opioid usage? Compared to other industrialized nations, there appears to be a lower regulatory burden with regards to the prescription and dispensation of prescription opioids for medical issues. Nonmedical uses of opioids are also significantly higher. Finally, opioid prescriptions are typically covered by health insurance, unlike many other industrialized countries.<sup>10</sup>

While opioid use is merely problematic in countries such as Sweden and Spain, it is reaching catastrophic proportions in the United States. Clearly, the dynamics of opioid possession and use are different in the United States than in other developing countries. We stand out like in the proverbial sore thumb.

<sup>5</sup> Virginia Department of Health, Medical Examiner, Forensic Epidemiology, http://www.vdh.virginia.gov/ medical-examiner/forensic-epidemiology.

<sup>6</sup> Centers for Disease Control, National Center for Health Statistics, https://www.cdc.gov/nchs/data/health\_ policy/monthly-drug-overdose-death-estimates.pdf.

<sup>7</sup> CDC National Center for Injury Prevention and Control. 2017. Annual Surveillance Report of Drug-Related Risks and Outcomes, United States.https://www.cdc.gov/drugoverdose/pdf/pubs/2017-cdc-drug-surveillancereport.pdf.

<sup>8</sup> Marc Siegel, "Opioids Shouldn't Be a Doctor's First Resort," The Wall Street Journal (March 28, 2017).

<sup>9</sup> Addiction in America. Surgeon General's Report. Department of Health and Human Services (2016).

<sup>10</sup> Benedikt Fischer, Annette Keates, Gerhad Buhringer, Jens Reimer and Jurgen Rehm. 2014. Non-medical use of prescription opioids and prescription opioid-related harms: why so markedly higher in North American compared to the rest of the world? Society for the Study of Addiction (109) 2, 177-181.

#### **OPIOID OVERDOSE DEATHS IN THE UNITED STATES, 1999-2016**



Source: Centers for Disease Control, National Center for Health Statistics, 2017



#### ESTIMATED AVERAGE CONSUMPTION OF OPIOIDS, 2013-2015: DAILY DOSES PER 1 MILLION INHABITANTS



Source: International Narcotics Control Board, Narcotic Drugs 2016

# When Is Opioid Use Illegal?

Opioids typically are prescribed by licensed medical practitioners to individuals who complain of acute or chronic pain resulting from disease, surgery or injury. Opioids also are prescribed to people with moderate to severe coughs and diarrhea.

Methadone and buprenorphine are "substitute" opioids prescribed to treat addiction to other opioids, such as heroin or oxycodone. Addicts are provided with a consistent, legal supply of these drug substitutes, with the aim of gradually weaning them off an uncontrolled opioid such as heroin. Success in this regard has been mixed.

The use of prescription opioids for anything other than their medical purpose is illegal. Much attention is given to the abuse of illegal opioid drugs such as heroin, but the reality is that some of the most commonly abused opioids are prescription drugs, including fentanyl, Tylenol containing codeine, hydromorphone (Dilaudid), oxycodone (OxyContin, Percocet and Percodan) and morphine.<sup>11</sup>

Opioids are sold legally under many different brand names, including those just listed. At the same time, they exist under different street names. Some of the well-known brand and street names for opioids are listed in Table 2.

In many American cities, identifiable illicit street markets exist where opioids are bought and sold.<sup>12</sup> The flourishing nature of these illegal opioid street markets means not only that they constitute a major source of income for some participants, but also that they are responsible for individuals abandoning searches for legitimate employment. Frequently, one of the sources of the illegal opioid supply is multiple prescriptions that individuals have obtained from multiple physicians.

On occasion, unethical doctors operate "pill mills"<sup>13</sup> and write substantial numbers of prescriptions either to addicts or to middlemen who sell them to drug dealers. Illegal opioids also are purchased on the "dark web"

with cryptocurrencies such as bitcoin, which renders the transactions financially untraceable. Recent charges against two men in China illustrate the linkages between illicit international production of opioids and the shipment of opioids through Canada for distribution throughout the United States.<sup>14</sup> Ironically, opioids often are shipped inside this country via the U.S. Postal Service.<sup>15</sup>

#### TABLE 2

COMMON STREET AND BRAND NAMES OF OPIOIDS				
Street Names (Nonprescribed and Illegal)		Brand Names (Prescribed)		
Captain Cody	Goodfella	Fiorinal with Codeine		
Cody	Murder 8	Robitussin A-C		
Schoolboy	Tango and Cash	Tylenol with Codeine		
Doors & Fours	China White	Empirin with Codeine		
Pancakes & Syrup	Friend	Roxanol		
Loads	Jackpot	Duramorph		
М	TNT	Demerol		
Miss Emma	0xy 80	Actiq		
Monkey	Oxycat	Duragesic		
White Stuff	Hillbilly Heroin	Sublimaze		
Demmies	Percs	OxyContin		
Pain killer	Perks	Percodan		
Apache	Juice	Percocet		
China girl	Dillies	Tylox		
Dance fever		Dilaudid		
Courses Objects and Merphine Derivatives. Foundation for a Drug Free World, www.drugfreeworld.org				

Source: Opioids and Morphine Derivatives, Foundation for a Drug Free World, www.drugfreeworld.org

<sup>11</sup> Centre for Addiction and Mental Health (CAMH), www.camh.ca/en/hospital/health\_information/a\_z\_mental\_ health\_and\_addiction\_information/oxycontin/Pages/opioids\_dyk.aspx.

<sup>12</sup> Harriet Ryan et al., "How black-market OxyContin spurred a town's descent into crime, addiction and heartbreak," Los Angeles Times (July 10, 2016).

<sup>13</sup> David Armstrong, "Illegal Street Drugs, Not Prescriptions, Now Powering Opioid Abuse, Study Finds," published on Aug. 25, 2016, www.statnews.com/2016/08/25/fentanyl-street-drugs-cdc.

<sup>14</sup> Pete Williams, "Two Chinese nationals charged with selling Fentanyl to U.S. Suppliers," NBC News (Oct. 17, 2017).

<sup>15</sup> http://www.lexingtoninstitute.org/the-threat-to-public-safety-in-the-u-s-mail/.

## The Medical Consequences Of Opioid Use

Opioid abuse often has devastating consequences. To the surprise of some, during the past decade, even while the death rates associated with heart disease and cancer declined substantially, the death rate associated with opioid pain medication sharply increased.

Opioid abuse and addiction nearly always have negative mental and physical effects, including nausea, vomiting, a weakened immune system, slower breathing rates, comas, increased risk of HIV, infectious diseases, hepatitis, hallucinations, collapsed veins and clogged blood vessels, and choking.<sup>16</sup> Unfortunately, symptoms associated with the withdrawal from opioids can be almost as terrifying. When someone who is addicted to opioids stops using the drugs, they likely will exhibit severe withdrawal symptoms, including anxiety, sweating, insomnia, agitation, tremors, muscle aches, nausea, vomiting, diarrhea and extreme mental and physical discomfort. These symptoms typically last four to 10 days, although methadone withdrawal may last longer. Generally, opioid withdrawal is not medically dangerous or life threatening, though some symptoms can persist for months.<sup>17</sup>

The cure is not worse than the disease in the case of opioids; however, Baldini et al. (2012) found that even positive, well-intentioned opioid therapy can adversely affect respiratory, gastrointestinal, musculoskeletal, cardiovascular, immune, endocrine and central nervous systems.<sup>18</sup> Further, the higher the daily dose of a prescribed opioid, the higher the risk of overdose and accompanying problems, such as fractures, addiction, intestinal blockages and sedation. Hence, physicians and patients must weigh the full spectrum of medical risks against a realistic assessment of observed benefits related to pain reduction. It is not clear that some physicians understand this responsibility fully. It is possible to reverse the immediate deadly impact of an opioid overdose. Naloxone (also known as Narcan) is a drug that can be used to treat narcotic overdoses in emergency situations. Since Nov. 21, 2016, when Gov. Terry McAuliffe announced that State Health Commissioner Marissa J. Levine declared the Virginia opioid addiction crisis a Public Health Emergency,<sup>19</sup> naloxone has been much easier to obtain in the Commonwealth. Amazingly, it can restore breathing to a comatose, headed-for-death individual within two to eight minutes after being administered. Now, a wide variety of individuals, including families and friends of abusers, can obtain naloxone without a prescription and have it ready when needed.<sup>20</sup> While naloxone addresses the results of opioid abuse and not the causes, its greater availability is a positive step forward that undoubtedly will save lives.

### A Closer Look At Virginia

Virginia looks reasonably good when compared to other states on drug overdose death rates. Graph 4 presents data describing overall drug overdose death rates for a selection of states in 2016. Virginia's rate is below the national average and below that of neighboring states (not all states reported comparable data).

Graph 5 shows that since 2010, the number of total opioid overdose deaths has more than doubled in Virginia. We need, however, to look deeper into the numbers. Figure 1 presents information on the fatal overdose death rate by locality for 2016. Total opioid overdose deaths are higher in southwestern, northern and coastal Virginia.

<sup>16</sup> Opioid (Opiates) Abuse and Addiction, http://www.healthline.com/health/opioids-and-relateddisorders#overview1.

<sup>17</sup> Substance Abuse and Mental Health Service Administration. (2010). Protracted Withdrawal. https://store. samhsa.gov/shin/content/SMA10-4554/SMA10-4554.pdf.

<sup>18</sup> Angee Baldini, et al., A Review of Potential Adverse Effects of Long-Term Opioid Therapy. The Primary Care Companion for CNS Disorders, 2012, doi:10.4088/pcc.11m01326.

Office of the Governor, "Opioid Addiction Crisis Declared a Public Health Emergency in Virginia," Nov. 21, 2016.

<sup>20</sup> There is now a standing order in Virginia that serves as a prescription for all Virginians to obtain naloxone. Virginia residents can directly request naloxone from a pharmacy without first having to visit their medical provider. For further information, see the Virginia Department of Behavioral Health and Developmental Services.

#### STATE DRUG OVERDOSE DEATH RATES PER 100,000 POPULATION, 2016



Sources: Centers for Disease Control, www.cdc.gov/nchs/data/health\_policy/monthly-drug-overdose-death-estimates.pdf for the number of overdose deaths, and the U.S. Census Bureau for population estimates

**TOTAL OPIOID OVERDOSE DEATHS IN VIRGINIA, 2007-2016** 



Source: Virginia Department of Health, Medical Examiner, Forensic Epidemiology, 2017

#### FIGURE 1

#### RATE OF ALL OPIOID OVERDOSES BY LOCALITY OF OVERDOSE, 2016



Source: Virginia Department of Health, Quarterly Drug Report, 2<sup>nd</sup> quarter, 2017

The Virginia Department of Health reported that prescription opioid overdoses fell by 6.2 percent from 2011 to 2016.<sup>21</sup> Figure 2 depicts the fatal prescription overdose death rate by localities in Virginia for 2016. There may be a correlation between the number of individuals on Medicare and Medicaid in Virginia counties and the abuse of prescription opioids. Southwest Virginia appears to bear a disproportionate burden. A recent estimate suggested that, for 2013, over 40 percent of Medicaid spending in southwest Virginia health districts on emergency room and inpatient hospital services was related to opioid abuse.<sup>22</sup>

If prescription overdose deaths fell slightly from 2011 to 2016, what is driving the increase in overall opioid overdose deaths? Much like in the United States, the recent emergence of fentanyl and fentanyl-heroin combinations has led to the startling increase in deaths.

We first turn to heroin. From 2007 to 2011, heroin overdose deaths in the Commonwealth were relatively stable, even declining sharply in 2010. Since 2010, however, heroin deaths have steadily increased and were often attributed as the primary cause of opioid overdose fatality until the emergence of fentanyl. Since 2007, heroin overdose deaths increased 348 percent, and 31 percent from 2015 to 2016. Figure 3 illustrates that heroin overdoses appear to be concentrated in Northern Virginia, Richmond and Hampton Roads. From an economic perspective, illicit drug markets flourish in more population-dense areas, leading to higher rates of illicit drug overdose in these urban areas.

Graph 7 indicates the sharp rise in fentanyl-related overdose deaths in Virginia and Figure 4 shows the distribution of deaths throughout the Commonwealth. From 2007 to 2012, the number of fentanyl deaths was relatively stable. Since 2012, however, fentanyl deaths in the Commonwealth have increased by 1,140 percent, including a 176 percent increase from 2015 to 2016. The number of fentanyl deaths is expected to increase in Virginia in 2017.<sup>23</sup>



22 VCÜ Health, VCU School of Medicine. "The Opioid Crisis Among Virginia Medicaid Beneficiaries" (January 2016).

<sup>21</sup> Virginia Department of Health. Opioid Addiction Indicators.

<sup>23</sup> Virginia Department of Health, Medical Examiner. Fatal Drug Overdose Quarterly Report. October 2017.

#### FIGURE 2

#### RATE OF FATAL PRESCRIPTION OPIOID (EXCLUDING FENTANYL) OVERDOSES BY LOCALITY OF OVERDOSE, 2016



Source: Virginia Department of Health, Quarterly Drug Report, 2nd quarter, 2017

#### HEROIN OVERDOSE DEATHS IN VIRGINIA, 2007-2016



Source: Virginia Department of Health, Medical Examiner, Forensic Epidemiology, 2017

#### FIGURE 3

#### RATE OF FATAL HEROIN OVERDOSES BY LOCALITY OF OVERDOSE, 2016



Source: Virginia Department of Health, Quarterly Drug Report, 2<sup>nd</sup> quarter, 2017

#### FENTANYL-RELATED DEATHS IN VIRGINIA, 2007-2016



Source: Virginia Department of Health, Medical Examiner, Forensic Epidemiology

#### FIGURE 4

#### RATE OF FATAL FENTANYL (RX, ILLICIT AND ANALOG) OVERDOSES BY LOCALITY OF OVERDOSE, 2016



Source: Virginia Department of Health, Quarterly Drug Report, 2<sup>nd</sup> quarter, 2017

There is more to the story. The cost of opioid addiction and abuse to Virginia is not just measured in the number of overdose deaths. A locality may not have any opioid overdose deaths in a given year but may incur significant expenses responding to nonfatal opioid overdoses. Emergency Medical Services (EMS) units respond to opioid overdose calls and, in many cases, administer naloxone (Narcan) to counter the effects of an overdose. Graph 8 illustrates the 481 percent rise in naloxone administrations by EMS personnel from 2011 to 2016 for Virginia.

The administration of naloxone does not come without cost. While it is a generic drug produced by multiple companies, the price has steadily increased over the last five years.<sup>24</sup> The cost of a naloxone kit ranges from \$40 to \$200, depending on the number and strength of doses. Newer auto-injectors of naloxone have also become available, with significantly higher prices, ranging from about \$300 to over \$3,750 per auto-injector. The range of possible methods of injecting naloxone makes it difficult to estimate the cost, but clearly the cost is likely in the hundreds of thousands (if not millions) of dollars, especially if one factors in the cost of the drugs, training, and first responder and emergency personnel time. If one includes the cost to families, the economic consequences associated with the administration of naloxone are stark.

Even more troubling is that newer opioid combinations require more than one dose of naloxone. First responders and families are now recommended to have multiple doses of naloxone on hand and, in the case of fentanylrelated overdoes, to be prepared to administer these doses. The increasing potency of opioids not only increases the likelihood of an unintended overdose, but also the cost to localities and families to save lives.<sup>25</sup> Another impact of the opioid crisis is on Emergency Departments (ED) throughout Virginia. An ED is also known as an Accident & Emergency department (A&E), Emergency Room (ER) or Emergency Ward (EW). As the number of overdoses has increased, the number of ED visits for treatment has increased, straining scarce resources. As shown in Table 3, visits for heroin overdoses increased by 75 percent from 2015 to 2016. Non-heroin related overdoses increased by 18 percent for the same period.<sup>26</sup>

#### TABLE 3

#### EMERGENCY DEPARTMENT VISITS FOR HEROIN AND OPIOID OVERDOSE, 2015 AND 2016

	2015	2016		
Heroin Overdose	800	1,401		
Opioid Overdose	7,534	8,710		
Source: Virginia Department of Health, Opioid Addiction Indicators, 2017				

"I could feel his pulse coming back slowly, and then it jumped. I've seen firsthand what a miracle this stuff is. I've seen people wake up that I didn't think would wake up. I took a class to learn how to use it, and the class was only half an hour. Half an hour to save someone's life. I think it's very important." - Bob DeTriquet, director of Male Programs at The McShin Foundation in Richmond, on the ease of the administration of naloxone. ("Free classes on administering lifesaving drug: 'I could feel his pulse come back slowly,' " WTVR, July 20, 2017)

<sup>24</sup> Meg Tirrell, "As opioid epidemic worsens, the cost of waking up from an overdose soars." Jan. 4, 2017. CNBC. https://www.cnbc.com/2017/01/04/as-opioid-epidemic-worsens-the-cost-of-waking-up-from-anoverdose-soars.html.

<sup>25</sup> https://emergency.cdc.gov/han/han00384.asp

<sup>26</sup> The data represent visits by Virginia residents to emergency departments for unintentional overdose. Visits for opioid overdose include visits where the drug causing the overdose was not determined at the time of the patient's arrival at the hospital.

#### NALOXONE (NARCAN) ADMINISTRATIONS BY EMS PERSONNEL IN VIRGINIA, 2011-2016



Source: Virginia Department of Health, Opioid Addiction Indicators, 2017

## **Opiate Addiction And Employment**

Prima facie, opiate misuse or abuse is antithetical to regular, productive employment. Even so, because the U.S. economy has now expanded for more than eight years consecutively, rising opioid use has coincided with rising total employment and falling rates of unemployment. This does not imply that drug use reduces unemployment; as we have seen, the opposite is true. What it does mean is that overall economic prosperity sometimes disguises the relationship between opioid use and unemployment rates.

A statistic that is more relevant to measuring the possible effects of opioid usage on work activity is the labor force participation rate (LFPR). LFPRs measure whether individuals of prime working age are either employed or looking for a job. The relevance of LFPRs to opioid usage is straightforward: the consensus is that opioid addiction causes individuals to drop out of the labor force by making them less ambitious, more lackadaisical and even unresponsive to ordinary labor market incentives.

It is also true that unemployment rates can be deceptive because an individual who drops out of the labor force and stops looking for a job is not counted as unemployed. LFPRs, however, catch this.

The labor force participation rate in the United States for adults 25-54 years old has been on the decline for many years and reached a near 40-year low in May 2015 (see Graph 9). As of September 2016, 11.4 million men between the ages of 25 and 54 were not in the labor force.

Does the decline in labor force participation reflect increasing opioid usage? Recent work conducted by Alan Krueger of Princeton University, under the aegis of the Federal Reserve Bank of Boston, strongly suggests that this may be so.<sup>27</sup> Krueger found that **44 percent of men not in the**  labor force said they took painkillers daily and two-thirds of that subset were on prescription medicines. By contrast, just 20 percent of employed men and 19 percent of unemployed men (but looking for work) in the same age group reported taking any painkillers (see Graph 10). Krueger's empirical work led him to estimate that about 20 percent of the decline in labor force participation rates in the United States can be attributed to opioid use and abuse.

If, for whatever reason, many people of prime working age are not working, then how do they survive? Some successfully claim disability. Social Security provided disability insurance payments to 8.8 million beneficiaries in 2016, up from 5.5 million beneficiaries in 2002.<sup>28</sup>

An increasing proportion of people who have left the labor force cobble together a combination of sources of support that may include disability payments, extended family support, as well as charitable gifts, unemployment insurance, food stamps and perhaps some criminal activity. They may end up standing on a proverbial street corner, or lounging in a park – but not in the labor force except on a part-time, temporary or "gig" basis.

What is the cost of such behavior to the Virginia economy? This is not easy to measure. If, however, labor force participation rate data in Virginia have declined 3 percent due to opioid addiction, then the Commonwealth has experienced between \$4.5 billion and \$7.6 billion in lost productivity.<sup>29</sup> To put it another way, the lost productivity is at least equal to 1 percent of the Commonwealth's gross domestic product for 2017 and may be as high as 1.7 percent.

<sup>27</sup> Alan B. Krueger, "Where Have All the Workers Gone?" Federal Reserve Bank of Boston Working Paper (Oct. 16, 2016). Also, Katherine M. Keyes et al., "Understanding the Rural-Urban Differences in Nonmedical Prescription Opioid Use and Abuse in the United States," *American Journal of Public Health* (February 2014), www.ajph.aphapublications.org. For nontechnical presentations, see Yoki Noguchi, "Opioid Abuse Takes a Toll on Workers and Their Employers," National Public Radio (Jan. 20, 2016), www.npr.org, and Patrick Gillespie, "The Opioid Crisis Is Draining America of Workers," CNNMoney (July 27, 2017), www. money.cnn.com.

<sup>28</sup> Social Security Administration, Office of the Chief Actuary (2017). https://www.ssa.gov/oact/STATS/dibStat. html.

<sup>29</sup> In August 2017, Virginia's labor force numbered 4.33 million individuals. If 3 percent (129,900) of those workers left the labor force, then our estimate of lost productivity is equal to \$35,000\*129,900 or \$4.55 billion annually. If we use average weekly wages from the 1st quarter of 2016 (\$1,129), then our estimate jumps to \$7.63 billion. We obtain data on gross domestic product from the Bureau of Economic Analysis and data on the labor force from the Bureau of Labor Statistics.





Source: Bureau of Labor Statistics, www.bls.gov

#### PERCENTAGE OF PEOPLE WHO TOOK PAINKILLERS THE DAY BEFORE, 2010-2013 (BY EMPLOYMENT STATUS)



Source: Alan B. Krueger, based upon data from the American Time Use Survey of the U.S. Census Bureau

# **Opiate Addiction And Crime**

Does opioid abuse or addiction lead to additional crime? The National Council on Alcoholism and Drug Dependence argues that "drugs and crime are directly and highly correlated and serious drug use can amplify and perpetuate preexisting criminal activity."<sup>30</sup> Evidence concerning this is limited. Most crime rates in many areas of the United States have been declining in recent years, and hence it is difficult to make the case that the upward spike in opioid abuse and addiction has had much of an impact on crime rates. This is not the same as saying there has been no effect, but rather that many different factors affect crime rates and it is difficult to extract the precise contribution of opioid abuse to crime rates.

There are two additional observations of importance to make with respect to opioid addiction and crime rates. First, opioid addicts typically do not survive for long periods of time and therefore do not remain alive to commit crimes. Second, the nature of opioid addiction is such that it saps energy and vitality. One is unlikely to commit crimes when one is semiinert.

# **Other Costs Of Addiction**

Drug addicts or abusers frequently end up in hospital emergency rooms (ERs) and there are costs associated with this. Virginia's Joint Legislative Audit and Review Commission (JLARC) estimated that in 2008, untreated substance abuse resulted in \$613 million in public safety expenditures (police, jail, prison) and health care services by local and regional governmental units.<sup>31</sup> The average hospital stay for those who were admitted because of drug abuse was 3.8 days in 2010 and their average treatment cost was \$29,497.<sup>32</sup> No doubt these numbers are higher today.

It is interesting to note that one well-regarded national study of the economic cost of opioid abuse attributed only about one-quarter of the aggregate national cost of opioid addiction and abuse to governments. The lion's share of the costs is borne by families, employers and charitable organizations. Nearly two-thirds of the total economic burden was due to health care expenses, substance abuse treatment and lost productivity.

We want opioid abusers to seek treatment, but the treatment costs also can prevent them from doing so. In 2015, the average cost to a patient of an uncomplicated emergency room visit was \$1,124 in Northern Virginia, \$1,105 in central Virginia, \$819 in southwest Virginia and \$746 in eastern Virginia.<sup>33</sup> Further, the drug substitutes used to move opioid addicts to a controlled status also can be pricey. The two most widely used drug substitutes are methadone and Suboxone (buprenorphine); each costs about \$500 per month per individual. These drug substitutes can be administered in the form of an implant that slowly releases the curative drug over a period of several months, but this costs around \$6,000.<sup>34</sup> One of several goals in instituting a drug substitute program is to reduce the size of the clandestine drug market, which often is dominated by organized crime and gangs.

<sup>30</sup> Virginia Performs, http://vaperforms.virginia.gov/indicators/publicsafety/crime.php.

<sup>31</sup> Joint Legislative Audit and Review Commission, Report to the Governor and the General Assembly of Virginia, Mitigating the Costs of Substance Abuse in Virginia. http://jlarc.virginia.gov/dfs/reports/Rpt372.pdf (2008).

<sup>32</sup> www.latimes.com/nation/la-sci-sn-opioid-overdose-prescription-hospital-er-20141026-story.html.

<sup>33</sup> Virginia Health Information, www.vhi.org/healthcarepricing/procedure.asp?id=ERM22.

<sup>34</sup> Matt Gregory, "Drug Addiction: The Cost of a Second Chance" (Feb. 16, 2017), http://drugfreeva.org/drugaddiction-the-cost-of-a-second-chance.

## **Policy Considerations**

- The foremost need of citizens, physicians and elected officials is to acquire more and better information concerning opioid addiction. This chapter is a step in that direction. Despite the adverse impact of opioid addiction upon labor force participation and even though this imposes substantial costs on society, many individuals seem unaware of the magnitude of the challenges.
- 2. It is not disputed that some physicians remain uninformed about the risks of opioids and are insufficiently trained to prescribe them while managing chronic patient pain. A Boston Medical Center study examined nearly 3,000 patients who survived an opioidrelated overdose between 2000 and 2012.<sup>35</sup> The study found that more than 90 percent of these patients continued to receive opioid medications from doctors, even after their overdose. Both physician and pharmacy education are in order.
- Additional financial support should be provided for research into nonaddictive, "selective" painkillers such as PZM21 and BU00028 (both experimental drugs). They offer hope that long-term use of opioids need not result in addiction.
- 4. We should create a national prescription registry. A recurring problem in opiate addiction is the ability of an individual to obtain multiple opiate prescriptions from multiple physicians. While there are privacy downsides to a national prescription registry, the nature of the current crisis suggests that the benefits accruing from such a registry probably would outweigh the costs by eliminating the ability of people to obtain repeated and duplicative prescriptions.

- 5. The medical community should continue to utilize opiate substitute drugs such as methadone to move opiate addicts away from their addiction, and drugs such as naloxone to reverse the effects of opiate drug overdoses. Almost needless to say, such interventions will require funding if they are to make a difference.
- 6. Opiate addiction should be regarded as a medical problem. Another "war on drugs" is not going to improve the opiate situation we face today.

Finally, it should be apparent that opiate misuse and abuse ultimately reflect our society – the values, attitudes, laws, geography and range of economic opportunities that together make us who we are. Hence, one cannot press a single button and eliminate the scourge of opiate addiction because this wave of abuse represents the conjunction of a set of complex phenomena deep within us. It would take a decade or more of attention, education and funding to reverse our current dismal situation, and even this may be too ambitious a goal.

<sup>35</sup> Marc R. Larochelle, Jane M. Liebschutz, Fang Zhang, Dennis Ross-Degnan and J. Frank Wharam. "Opioid Prescribing After Nonfatal Overdose and Association With Repeated Overdose: A Cohort Study of Opioid Prescribing After Nonfatal Overdose." Annals of Internal Medicine. American College of Physicians (Jan. 5, 2016).

