The Lion’s Pride Committee:

Pablo Bautista
Karen Holum
Wes Mantooth
Elisa Parrett
Rechelle Schimke
Sue Wozniak

The Lion’s Pride seeks to showcase the creative work of our diverse students and programs of study at Lake Washington Institute of Technology. Please consider submitting your creative work for consideration. For details, please visit the publication homepage: http://www.lwtech.edu/lp
You may also contact wesley.mantooth@lwtech.edu if you have questions.

Notes on This Publication:
Members of the Lion’s Pride committee may make minor edits to submissions in order to standardize spelling, grammar, punctuation, and formatting. However, committee members do not thoroughly edit submissions for students, and the committee’s general policy is to present work in close to its submitted form to preserve the integrity of each student’s voice. Students are encouraged to edit their own work carefully before submission and to get assistance from instructors and campus tutors.

The Lion’s Pride may contain links to third-party web sites. These links are provided as a convenience to readers and are not under the control of The Lion’s Pride. If you access a third-party site linked to The Lion’s Pride publication, you are responsible for guarding against computer viruses or other potential risks of online navigation. The Lion’s Pride cannot guarantee the accuracy and completeness of such links and does not endorse information contained at the third-party web sites.

Lion’s Pride of Lake Washington Institute of Technology (LWTech) is licensed under a Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) license. For the individual, original works contained herein, all rights reserved and revert to artists after publication. The views expressed herein do not necessarily represent those of LWTech or the magazine publication staff.
Cover Art: “Rocks,” by Ashley Nicole Hernandez
Artist's Statement: I'm taking a photography class here at LWTech. I'm in the Medical Assisting program. When I took this picture, I was being a little creative with nature. I enjoy spending time outdoors.
# Table of Contents

Below the Surface (Sara Judith Gonzalez) - visual  
Movement in Reflection (Stefani Sturtz) - visual  
Urvashi (Chayanika Chattopadhyay) - visual  
Nocturne (Marissa Willis) - visual  
Identity: I Artist (Austin Paul Strother) - essay  
Blossom (Jamie L. Miller) - visual  
Texture and Movement (Carlos Eduardo Fernandez) - visual  
Living with An Invisible Illness (Rachel Mary Snee) - essay  
Value Portrait (Hai-Au Thi Bui) - visual  
Portrait of Tim Burton (Alyona Li) - visual  
Lady Gaga Value Portrait (Triet Phu) - visual  
Peony (Shuxin 'Rosie' Zhou) - visual  
Cute Velociraptor (Alina E Volianskaya) - visual  
Needle Exchange Programs and Supervised Injection Sites as Possible Effective Solutions for Harm Reduction among People Who Inject Drugs (Xuling Fu) - essay  
Fun at the Beach (Nicole Stegriy) - visual  
Sunflowers (Samantha Tshudy) - visual
Substance Use Disorder and the Stigma That Surrounds It (Samantha Tshudy) - essay

Periodontal Vaccine (Wakasa Peabody and Patricia Wells) - multimedia
Below the Surface
Sara Judith Gonzalez

I took this photo at Log boom park, I wanted to capture something that wasn't obvious to the eye, so I turned my camera upside down and stuck my hand below the standing dock. I like this photo because it's more abstract than my usual work, and my settings were able to capture the small details, such as the water droplets on the left leaflets.
Movement in Reflection
Stefani Sturtz

I was feeling stagnant in my journey, so I threw a stone into new waters. I set out to conquer old fears, cause a ripple and change the reflection.
Urvashi
Chayanika Chattopadhyay

I am pursuing an Associate’s degree in Game Design and did this piece for my Intro to Drawing class. This sketch is inspired by the works of Raja Ravi Varma, Alphonse Mucha and Ando Hiroshige. It shows the difficulties and deceit that Urvasi had to go through even though she was a heavenly being.
Nocturne
Marissa Willis

Digital painting practice and art therapy result, a portrait of my poison-selling, occult loving, Nightborne Elf from WoW.
Artist’s site: www.girlonthinter.net
Identity: I Artist
Austin Paul Strother

*I explain my journey to becoming an artist at Lake Washington Institute of Technology. My journey goes from having little motivation to create art to being able to draw around the expertise of the teachers at LWTech. I explain the importance of self-care to giving positivity in life.*

Today, I see myself as an artist due to the field of study I’m going into. Art was never something I enjoyed doing. When my art material didn’t look anything but the opposite of what I was going for, my motivation was never there. However, art never was something I couldn’t do, but something I didn’t want to do. But what got me started drawing today? My thought process that goes on in my mind to develop a picture of certain events pushes me forward to collaborate with the art I see today. Today, I see myself as an artist because of the peace I receive from the writing, the silence of the music playing, and the imagination of thinking.

To me, I feel as if there needs to be peace, (not just from the environment, but the peace that comes from the head). Growing up, I never received the peace I wanted. I played a lot of sports growing up and felt like I was looked upon on a pedestal. I didn’t know how to control being looked upon and being myself, so I turned towards my friends to help me along the way. I felt as if this never gave me the opportunity to be original to what I wanted. I never found the pleasure of arts and literature. However, today, I’ve begun finding peace inside
myself. By meditating and praying before the day, I’ve begun listening to my surrounding. This has helped channel my inner thoughts to look upon art as a safe place to imagine. Therefore, my peace is found when I’m able to touch a pen to paper.

Silence became a virtue in my life at a young age. Being quiet around people was just something I did. In contrast, silence in art comes from the inner peace inside. When I can find the peace, I can find the silence inside my mind. Furthermore, this helps me create the images inside my head that lay out the foundation of my artwork.

Images come to my mind when I begin finding the peace and silence of my surroundings. When I find the images, I let it sit there for a minute, ponder upon the experiences and begin writing it down on paper. The paper begins feeling light. Letting my imagination wander around as I channel my energy. I find it enlightening when I’m able to find the end goal. Hence, nothing feels better than being able to tell the image to the next fellow that comes in my day.

Therefore, art today has been something I’ve recently been able to channel. Without the peace I have today, I’d be followed around by the negative energy of my surroundings. Simply by taking the words from others and defining them in my own words, I’m able to create the images that come to my mind. Therefore, the imagination becomes glistening to my mind.
Blossom
Jamie L Miller

I am a graphic design student. This is a surrealist collage I did for one of my art classes, entitled "Blossom." The theme behind it is mental health. This theme was inspired by Mental Health Awareness month and also by a study of depression in my psychology class. I carefully chose all of the elements in this piece to reflect the idea that we all have an inner and an outer emotional world and what appears on the outside is not always what is on the inside. I hope that you enjoy and connect with it.
Texture and Movement
Carlos Eduardo Fernandez

I am Peruvian and I came to the United States in 2018, I am currently studying English and the courses required to study at Lake Washington Institute AAs in Electronics. In winter 2020 I studied drawing 102 and attached texture project.
Living with An Invisible Illness
Rachel Mary Snee

Accepting and embracing my mental illnesses has been challenging, insensible and impeccable. I always had an idea of what “normalcy” was in society, and I knew depressive states weren’t a part of that image. I was often stuck in an anxious manifestation of reality reinforced by the exploitation and degradation by those closest to me. This cycle destroyed my self-image and depleted my self-respect, which led me to darker places. This is the truth in mental illness: judging others for their feelings and actions does not help. I needed loving support, and fortunately I learned how to fight for that.

Craving knowledge for the sake of safety.
Hiding from truth.
Hoarding information that’s readily available.
Cuddling fear.
Fear sprouting into willful ignorance.
Consumed.


Categorize people and put limits on their character until they aren’t people anymore!

Failure of critical thinking.
Failure of interpersonal analyzation.
Failure of education on historical truths.
Failure of empathetic understanding.

Upon discovering something new and unacceptable, we deny, deny, deny!

This is wrong. This is bad. This is crazy.
You are wrong. You are bad. You are crazy.
From the in-group to the out-group in a single misstep.  
*My newfound behaviors must be a reflection of my wants and desires.*


I choose to stay home and ignore you *because I don’t cherish you.*
I have occasional bursts of anger *due to my irrational, mean character.*
I return home in silence *because you’re not worth speaking to.*
I lock the door to my bedroom *as a sign. Stay away. I hate you.*

Little do they care to know…

I can’t go out without the weight of the world baring down on me.
My emotions are wild, consuming waves that I can’t comprehend.
I can’t laugh and dance, knowing my pain goes unseen.
I lock myself in this barren box to gain a sense of security that I so desperately crave.
In the dark, cold, dry air of this bedroom, I lay still.
Hours go by. Then days. Then…How long has it been?
All I’ve done is squirm and cry.

A knock at the door; I flinch then freeze.

*It’s been weeks, what are you doing?*
I wouldn’t know how to tell you if I tried.

*You can’t skip school and sleep all the time.*
I haven’t slept in days.

*Answer me.*
What am I to say?

*What’s wrong with you?*
Inch by inch, my heart falls to the ground.
Say something.
Daggers are thrown at this pitiful lump of tissue as it pumps away on the hardwood.

This is ridiculous.
Believe me, I know.

Are you on drugs? How’d you get like this?
The fatal mistake has been made.
Assumptions before questions.
Judgment before an attempt at understanding.
Disgust and shame before comfort and love.
As friends fall away, family does faster.

American ideology promotes the sweeping of baggage under the rug.
Hidden baggage rots. Eats away at the soul.

But what matters?

What is true wellness? Good grades? Sports and school involvement?
Tons of friends? Being loud and boisterous? Infinite happiness?

Do I sacrifice that to meet all of my friend’s and family’s needs of appearance?
Is their denial a sign that my life isn’t what matters?

A cycle of never-ending madness.

This is the lack of education. The lack of necessary care. The abuse of those who struggle.
Years pass. A diagnosis arrives. Truths are uncovered.
I remain the subordinate in a society of the unyielding standardized dominant ideals. This “disability” is either something to be hidden away or stigmatized by others. Invisible illnesses.

*Quit being dramatic. You’re fucked up. Stop seeking attention. Just get up. You’re bound for failure. You mess up all the time and it’s all your fault. You’re too broken for me to handle. You’re not normal. Stop being a baby. You’re not dying. You can’t talk about those things: they’re scandalous; taboo.*

*Push! Push! Push! Ignore it and the ugly thing will go away!*

Hash it out. I’ll take it again and again, one person to the next.  

*We must lock them into this box!*  
*Lock them in tight, shove this discrimination down their throat!*

What am I to do?  
As my illness goes ignored.  
My anger builds until—for a period—it’s all I am. My social identity is but one thing: a broken and willing fuck-up in the eyes of all. See me god damn it! See me for what I’ve been and know I don’t have a choice! I’d choose any other path than my own! Internalized stigmas bring shame.  

*It’s my fault.*  
*Why can’t I snap out of this?*
What is wrong with me?
I must escape these feelings.
I must be like everyone else.
What if I was like other people?

I fall further.

Resources. Education.
A budding empowered targeted group member.

Knowledge is power.
Compiling strategies, I begin to thrive.
I’m looking in the mirror and I’m surprised what’s looking back at me.
A person just like everyone else.
Of the same worth; just a different story.

I’m forced to ask, what is true social justice? Social equity.
Give me what I need just as you’d give a mentally healthy, “abled”
person what they need.

What if people were aware of what depression looks like? And didn’t
ignore the signs?
What if society gained a sense of respect for not only successes, but for
reasons people fail too?
What if people were open to discussions about boundaries necessary for
my mental safety?
What if we were all more willing to help than we are to criticize?

What if people counteracted assumptions and asked about the
experiences?

“What? –why are you avoiding people? –why are you doing drugs?”
“What happened?”
“How are you feeling?”
“Can I help you in any way?”
“Here’s a number you can call, if you need something I can’t provide.”


My illnesses are not something to be joked about.
My illnesses are not to be belittled.
My illnesses are not yours to judge at all.
My illnesses are mine to accept and manage.
My illnesses do not define me.

I’m getting comfy. So, you better as well or leave me to get healthy on my own.
Value Portrait
Hai-Au Thi Bui

My major is computer science. I took Art 102 Design I in summer 2019. Even though I have never taken any art class before, I really enjoyed this class as I learned a lot of new concepts, make a lot of cool projects, and Professor Green is always there to help.
Portrait of Tim Burton
Alyona Li

I am pursuing my Bachelor degree in Digital Gaming and Interactive media. This is an art project that I created for Design I class. I used various papers (white black and 3 shades of gray), X-Acto knife, rubber cement and Bristol.
Lady Gaga Value Portrait

Triet Phu

I have always been fascinated by art and any form that it takes on (movies, music, paintings, drawings, video games, etc.). So, when I had the chance to follow my dream to become a game designer, I took it immediately and the first step on the stair leading to my dream was to enroll at Lake Washington Institute of Technology. This project was an assignment from my Design 102 class where we had to create a value portrait of a famous person and I chose Lady Gaga who is one of my favorite artists of all time.
Peony
Shuxin 'Rosie' Zhou

I was inspired by a peony I saw in a conservatory. After, I took a photo of the center of the flower and provided a black/white motif. This work demonstrates the intricate patterns within the flower.
Cute Velociraptor
Alina E Volianskaya

I am a young aspiring artist looking for new and creative ways to do art. This piece was made in the intro to printmaking class using a zinc plate and ink, the image itself was created by quite a fun way of dipping it into an acid bath. Not as dangerous as it sounds though. It earned its name from my professor who constantly referred to the small chick as a “Velociraptor” and it seemed to work.
Needle Exchange Programs and Supervised Injection Sites as Possible Effective Solutions for Harm Reduction among People Who Inject Drugs
Xuling Fu

The United States is under an opioid epidemic crisis, and drug misuse is a serious issue in society and impacts public health. Therefore, it’s important that people can acknowledge the situation and take action to reduce the impacts of illicit drugs. This paper is not only for the people who have little knowledge about the intravenous drug misuse issue, people who inject drugs and their families, the people who don’t know about the syringe service programs or supervised injection sites, but also everyone, anyone who can get involved in drug misuse intervention.

Abstract

The United States is under an opioid epidemic crisis: the population of people who inject drugs (PWID) in the United States is huge. People who inject drugs are exposed to a high risk of blood-borne diseases, such as HIV and viral hepatitis, and other infectious diseases by sharing injection equipment and engaging in other risky behavior. The high rate of fatal overdoses among PWID is also a serious problem. Family members of PWID and other people in their communities may also undergo high risk of blood-borne diseases. Also, inappropriate injection litter disposal and injection in public spaces impacts the entire community. In addition, a lot of community resources are involved to respond to drug-related harm. Both syringe service programs and supervised injection sites serve as effective approaches to combat the opioid crisis in the United States. Both programs reduce the infection
rate of blood-borne diseases and other infectious diseases by providing clean injection equipment and connecting PWID to various medical assistance and social support, thus enhancing the whole community and saving numerous public resources. By providing safe, supervised injection spaces, SIS’s have significant positive impacts on preventing overdoses and on reducing public injection and inappropriate injection litter disposal. However, the public support for both of these programs is still low. In order to reduce the health risks among people who inject drugs and communities, people need to promote syringe service programs and supervised injection sites.

*Keywords*: People who inject drugs, health risks, blood-borne diseases, overdose, community resources, syringe services programs, supervised injection sites, public support

**People Who Inject Drugs at a Glance**

The term “people who inject drugs” (PWID) refers to individuals who use illegal drugs such as heroin, cocaine, morphine, or other drugs into a vein by using a hypodermic needle. In most cases, PWID already have addiction or will become addicted very soon (Adamec & Gwinnell, 2008). The number of PWID is numerous. After reviewing the data from 976 credible sources from worldwide, Larney (2017) estimated that the population of PWID is up to 15.6 million. The United States is under the opioid epidemic crisis as well. A document posted on Centers for
Disease Control and Prevention (CDC) and a study published on Lancet Global Health indicated that the rapid increase of PWID in the U.S. is largely associated with the abuse of prescription opioids (CDC, 2019a; Degenhardt et al., 2017). The data from the National Survey on Drug Use and Health (2007) showed that between 2002 and 2005, there were an average of 424,000 PWID in the U.S. However, in 2018, the CDC (2019a) indicated that the number of PWID had already increased to 775,000. The actual number of PWID may be much greater than these numbers, since some PWID may not report their injection behavior due to their drug use being illicit or due to the stigma of such drug use. The use of injection drugs is also a risk factor correlated with unstable housing and homelessness. In some cities in the United States, such as Seattle, Los Angeles, San Francisco, and Philadelphia, there is a big proportion of injection drug users who are homeless or in unstable housing (HIV/AIDS Epidemiology Unit, Public Health –Seattle & King County and the Infectious Disease Assessment Unit, & Washington State Department of Health, 2019; Quinn, Chu, Wenger, Bluthenthal, & Kral, 2014; Mirzazadeh et al., 2018; Larson, Padron, Mason, & Bogaczyk, 2017). Clearly, the issue of intravenous drug misuse among PWID is serious. Not only are the people from this group at high health risks, but also their families and communities.
Health Risks Among PWID and Their Communities

At the individual level, high frequency of sharing syringes and other drug-use equipment elevates the infection rate of blood-borne diseases and other infectious diseases among PWID. A report written by Wejnert et al. (2016) posted on the CDC website revealed that 54 percent of PWID shared syringes. After injection, residues such as blood, pieces of tissue, even viruses and bacteria may contaminate the syringe or other injection equipment. Therefore, if the second person or even more people use the same syringe, this syringe can provide a portable way for viruses and bacteria to infect the other persons. A document from the CDC (2020c) warned that the HIV virus can stay alive in a used syringe more than 40 days, and an HIV negative individual can have a 1 in 160 chance to be infected by using a syringe which was used by an HIV positive person. PWID may inject multiple times per week or even per day, so if PWID have unhygienic injection practices constantly, the infection rate will increase dramatically. According to the CDC (2020b), in 2018, PWID counted for 7% of total new diagnoses of HIV. Drug injection is also a common and major risk factor for viral hepatitis, especially the hepatitis B virus (HBV) and hepatitis C virus (HCV), since they can be transmitted through blood and body fluid. In 2016, 34.4 % and 68.6% of new diagnoses of HBV and HCV were PWID (CDC, 2019b). Moreover, PWID are more likely to encounter other infectious diseases, such as MRSA (methicillin-resistant staphylococcus
aureus, an antibiotic resistant bacteria) and endocarditis (a dangerous heart disease caused by bacteria infection) due to sharing injection equipment (CDC, 2019a).

Being in a lower socioeconomic group and engaging in other risky behavior increases infection rates among PWID and their communities. Since some PWID experience homelessness or unstable housing, the limitation of their social economic status prevents them from seeking medical assistance and disease prevention, which largely increases the health risks among PWID. Also, research has shown that PWID are more likely to engage in risky behavior, such as unprotected sexual contact, sex for money, and multiple sexual partners (CDC, 2020a). Therefore, other people in their communities may undergo high risk of blood-borne diseases. The sexual partners of PWID can be infected by body fluid transmission, and even a newborn baby can be infected by mother-to-child transmission if the mother is infected. The family members are also at high risk of these diseases, and they can be infected by contacting the contaminated supplies used by their PWID family members, for instance, people being accidentally poked by a used needle.

Worse than being infected, a lot of PWID die from overdose. Data from the CDC (2020d) claimed overdose as “a leading cause of injury-related death in the United States,” and, on average, 130 people die from
opioid overdose every day. It is worth noting that there are many more nonfatal overdose cases among PWID.

Health risks which are related to PWID also impact public health. First, a lot of public resources are used for disease treatment and overdose response. A large amount of money is used for providing healthcare service for PWID to treat infectious diseases. The CDC (2019a) indicated the lifetime cost of HIV treatment for one person is $450,000, and the annual cost for chronic HCV treatment in the United States is $15 billion. According to one study that estimated the cost of overdoses, the healthcare system of New York City pays $41 million per year for these incidents (Behrends et. al, 2019). In addition to money, other public health resources, such as ambulances, healthcare providers, and healthcare facilities, are all involved. Since a certain amount of PWID have unstable housing or are homeless, when an emergency occurs, they probably need to rely on mostly public resources. Second, used injection litter is left in public, which impacts the entire community. Most PWID may already suffer from addiction, so they will use drugs “wherever they can,” said Kathleen Woodruff DNP, ANP-BC, clinical assistant professor at USC School of Social Work Department of Nursing (as cited in Nursing@USC Staff, 2019). Especially for injection drug users who are homeless, injection in public may be their only choice. A report from KIRO 7, a Seattle local news station, reported that in King County, WA, “syringes can be found nearly anywhere in parks”
(Mcnerthney & Clancy, 2019). People may find used syringes or other injection litter on the street, children may pick up used syringes, or pets may get hurt by stepping on a used needle. Those biohazard materials increase the potential infection risk among community members. Third, people may acquire mental trauma by witnessing injection, overdose, even overdose death. Data from HIV/AIDS Epidemiology Unit, Public Health – Seattle & King County and the Infectious Disease Assessment Unit, and Washington State Department of Health (2018) indicated that 60% of PWID inject in public, 30% reported having injection into the neck, and 20% reported experiencing overdose. With such high frequency of injection in the public, if people, especially children, are witnessing the injection or even overdose, it is traumatic and difficult to recover from.

Solution Availability to Reduce Drug-Related Harm

Both PWID and entire communities are suffering drug-related harm, so effective intervention is urgently needed. The best way to reduce the health risks among PWID is for them to stop injecting. However, for those people who already have addiction, generally, it is impossible to get rid of illicit drug use by themselves. Worldwide, there are two main harm reduction approaches available: syringe services programs (SSPs) and supervised injection sites (SISs).
According to the CDC (2019a), SSPs provide sterile injection equipment, including needles, syringes, and other injection material, to PWID and collect and dispose used injection litter to limit the unclean injection litter in public, thus reducing the overall health risk of infectious diseases. At the same time, SSPs distribute Naloxone (an opioid overdose reverse medication), provide screening and treatment for blood-borne diseases and other health issues, and refer PWID to other social support, such as detox treatment and mental health consulting. The CDC (2019a) recommends SSPs as an efficient way to reduce the transmission of blood-borne infectious diseases and help PWID to seek medical care earlier, thus enhancing public health and saving community resources.

The term “SIS’s” also refers to safe injection facilities or overdose prevention centers. Besides providing the same harm reduction services as SSPs, SISs also provide a space where PWID can use their own drugs under professional health staff supervision. SIS’s bring positive impacts on overdose prevention and infectious diseases control, reduce inappropriate injection litter disposal and public injection, save community resources, and promote more PWID engaging with harm reduction care.

For SISs, the most significant action for PWID is life-saving by preventing overdose. Potier, Laprévote, Dubois-Arber, Cottencin, and Rolland (2014) asserted that the SIS’s play an important role in reducing
overdose death among PWID. The significance of overdose prevention by the SIS’s is clearly demonstrated by Insite, North America’s first legal supervised consumption site, which opened in 2003 located in Vancouver (Vancouver Coastal Health, 2020). Since 2003, in Insite, there were 487,798 visits and 6,440 overdose cases happened, but no overdose deaths (Vancouver Coastal Health, 2019). In SIS’s with necessary medical supplies, such as Naloxone and EAD, PWID consume drugs under supervision, so once any emergency occurs, the professional staff will respond immediately, which greatly reduces the rate of fatal overdose.

SIS’s limit the chance of transmission of infectious diseases and inappropriate injection litter discard. The worldwide evidence, especially from Canada, already shows that the SIS’s have reduced the transmission rate of infectious diseases (Kerr, Mitra, Kennedy, & McNeil, 2017; Ng & Kolber, 2017). In SIS’s, PWID can obtain clean injection equipment. After injection, all the injection litter is 100% returned to the SIS and disposed of appropriately, so it will not circulate in the community. This process prevents the material from being reused and protects all community members from being punctured by the used needles. Therefore, SIS’s cut the route of transmission of infectious diseases caused by sharing needles or other injection equipment.

SIS’s also provide a secure place for PWID and reduce the level of public injection. After having a systematic review of seventy-five
relevant articles related to SIS’s, researchers concluded that SIS’s reduced inappropriate injection litter disposal and levels of public drug injections (Potier et al., 2014). For those people who are homeless or have unstable housing, the implementation of SIS’s is meaningful. For them, once addiction occurs, the public area will be their only option for injection. They may use drugs in the public restroom, in the park, on the sidewalk, or in their temporary tents. When they complete injection, they need to find a place to discard the injection litter or maybe just toss it where they consume drugs. If there is a safe, secure place where these PWID can enter, it will decrease the public injection and inappropriate injection litter discard. In this scenario, SIS’s are significant for these vulnerable groups.

Since SIS’s lower the health risk among PWID and their communities, a significant amount of money and healthcare resources is saved. A study completed by Irwin et al. (2017) visualized the beneficial outcome of a hypothetical SIS in Baltimore: one SIS implementation will have $5.98 million annual net saving for Baltimore; 3.7 and 21 new HIV and HVC diagnoses, respectively, can be prevented; more than 300 days of hospitalization due to other infection can be reduced; 5.9 overdose mortality and 108 overdose ambulance calls can be prevented. The study also showed that in most cases, the overdose which occurs in SIS’s doesn’t need further ambulance assistance and hospitalization (Madah-Amiri et al., 2019). Other multiple studies also claimed that
SIS’s are cost effective approaches. Four SIS’s will save New York City $2.9-$5.7 million annually by applying overdose prevention only (Behrends et. al, 2019). One 13-booth SIS will contribute $3.5 million net savings for public resources in San Francisco yearly (Irwin, Jozaghi, Bluthenthal, & Kral, 2017). In Seattle, one SIS implementation can save approximately $4 million per year in overdose intervention and other drug-related harm management (Hood et al., 2019). By preventing transmission of infectious disease, SIS’s save a lot of money and healthcare resources, which may be used for disease treatment. By preventing overdose among PWID, SIS’s significantly reduce the frequency of ambulance calls and hospitalization among PWID, thus relieving the public health resources.

Last but not least, SIS’s are a door that connects PWID with harm reduction care. Due to the particularity of PWID group—illicit drug using, some of them are in a low socioeconomic class or experiencing homelessness or unstable housing—people in this group are marginalized and experience discrimination. Therefore, they may hesitate or even be unable to seek medical care or other social support. In SIS’s, PWID have a secure and clean place to go, and the professional health staff are always there and willing to help. “You’ve built up a rapport of making them safer; they feel able to talk to you,” said Kathleen Woodruff, DNP, assistant professor at USC School of Social Work Department of Nursing (Nursing@USC Staff, 2019). As a
Professor of Medicine Department in the University of British Columbia, Canada Research Chair in Inner City Medicine, Evan Wood and his colleagues confirmed that the implementation of an SIS in Vancouver was independently associated with 30% detoxification treatment increase, which also benefited the long-term addiction treatment (Wood, Tyndall, Zhang, Montaner, & Kerr, 2007). SIS’s are building up trust with PWID gradually, which promotes the opportunity for PWID to engage with healthcare service such as detox treatment, disease screening, medical care, and other social supports, which largely enhance the well-being of PWID.

**Status and Public Support**

Both SSPs and SIS’s are effective approaches to address drug-related harm among PWID and communities. What status do these two approaches have in the U.S, and how about public support? The implementation of harm reduction facilities is controversial and complex, especially for the SIS. In the United States, SSPs are legitimate in 39 states (Policy Surveillance Program, 2019). For SSPs, the CDC provides guidelines, and federal funds also support the implementation of SSPs (CDC, 2020e). There is currently no SIS in any state in the U.S. (Nursing@USC Staff, 2019). Nevertheless, some professional organizations such as the American Medical Association (AMA, 2017) have already called for SIS’s to combat the urgent opioid crisis in the
United States. According to the National Drug Early Warning System (2019), University of Maryland, funded by National Institute on Drug Abuse, to reduce drug-related harm, several states such as California, Massachusetts, New York, Pennsylvania, and Washington are considering establishing SIS’s. Fortunately, the regulation of SIS’s in the U.S. has started to change since Gerald McHugh, U.S. District Judge, ruled that supervised injection sites do not violate the law (Allyn, 2019).

At the community level, the public support of these programs needs to be promoted. In Philadelphia, one of the pioneer cities, which advocates to establish the first SIS in the U.S., a poll showed that only half of the respondents support SIS’s (Eichel, 2019). A nationwide survey conducted by the researchers at Johns Hopkins Bloomberg School of Public Health suggested that more Americans support SSPs (39%) than SIS’s (29%), but most people still viewed both programs negatively, and people who have a negative perspective of these two programs generally also have a negative attitude on PWID (McGinty et al., 2018). The reasons why those people have a negative attitude toward SSPs and SIS’s may vary. Some people may blame SSPs and SIS’s for encouraging illicit drug use. Some people may not know enough information about how these programs work to help PWID and the whole communities, so when they hear the words “needle,” “syringe,” or “injection” they have a negative response directly. Some people may have heard about the programs, and they acknowledge the effectiveness
of the programs, but they worry about community safety due to the implementation of a program in their neighborhoods. However, the studies showed that neither SSPs nor SIS’s increase the crime rate and illicit drug injection behavior (CDC, 2019a; Potier et al., 2014).

Despite public support being low, the willingness to use the SIS’s among PWID are high. According to a survey, in Boston, 91.4% of the participants were willing to use SIS’s, especially those who had a higher overdose risk (León, Cardoso, Mackin, Bock, & Gaeta, 2018). In San Francisco, over 85% of PWID had the willingness to use SIS’s, and more than 60% of the responders reported they would visit SIS’s multiple times per week (Kral et al., 2010).

Although the implementation of SIS’s is urgent, in the vast majority of areas of the U.S., SIS’s still face a lot of obstacles. Dr. Jessie Gaeta, chief medical officer at Boston Health Care for the Homeless Program, asserted that prohibiting SIS’s “feels like a treatment gap” (as cited in Shaw, 2020). Jim Kenney, current Mayor of Philadelphia, claimed that SIS’s are an effort “to alleviate suffering and to save lives” (Hatmaker, 2020).

**Conclusion**

The United States is under an opioid epidemic crisis, in which numerous PWID and their communities are exposed to high rates of blood-borne infection and other health risks. In order to reduce the
health risks among people who inject drugs and communities, people need to promote SSPs and SIS’s. Both SSPs and SIS’s serve as effective approaches to reduce drug-related harm. Furthermore, these programs may contribute to data collection about various infectious diseases in the PWID population – data which can serve as an important reference for disease prevention policies.

According to the CDC (2020e), 44 states in the U.S. have suggested establishing SSPs to reduce drug-related harm, but in several of those states, SSPs are still not allowed by law. The implementation of an SIS in Philadelphia has moved its first step, but there is still a long way to go to gain more support. Therefore, in order to promote SSPs and SIS’s, more effort is needed. When agencies or organizations are planning to establish SSPs or SIS’s, they should consider the location, the density of PWID, the facility size, and the community support. Meanwhile, strategies to increase the public awareness about SSPs and SIS’s and decrease the stigma on PWID need to be further explored. Implementation of SSPs and SISs are not the final goal, but for the moment, they probably are the advisable solutions to reduce drug-related harm as much as they can. To achieve the long-term goal, solving the opioid crisis from the root, drug misuse prevention needs to be considered, since it can prevent the population of PWID from increasing and thus directly cut all potential health risks and protect public health.
References


Ng, J., Sutherland, C., & Kolber, M. R. (2017). Does evidence support supervised injection sites? Canadian family physician Medecin de famille canadien, 63(11), 866.
Nursing@USC Staff. (2019, May 2). Supervised Injection Sites Are Coming to the United States. Here’s What You Should Know [Blog post]. Retrieved from https://nursing.usc.edu/blog/supervised-injection-sites/


Fun at the Beach
Nicole Stegriy

This is a project inspired by Andrew Goldsworthy for my Art 140 class. It was made at Meydenbauer Beach in Bellevue with all natural supplies found on the beach.
Sunflowers
Samantha Tshudy

I created this painting in Jason Sobottka's Beginning Painting Class and based it from a couple of photographs I took in a field of sunflowers in La Conner, WA. I have been a student in pre-nursing at LW Tech for 3 years and this class was my favorite! Thank you for your consideration.
Substance Use Disorder and the Stigma That Surrounds It
Samantha Tshudy

I wrote this paper in Wes Mantooth’s English 102 class. It is about addiction and the stigma that surrounds it. This is a very personal subject for me. One of my sons is a recovering drug addict, and his journey through addiction, along with mine, has opened my eyes to the complexity of a disease that has taken the lives of a half a million people in the last decade.

— TAKE TIME OUT
When you see her walking
Barefoot in the rain
And you know she’s tripping
On a one-way train
You need to ask
what’s all the
lying and the
dying and
the running and
the gunning all about.
TAKE TIME OUT.
Use a minute
Feel some sorrow
For the folks
who think tomorrow
is a place that they
can call up
on the phone.
Take a month
and show some kindness
for the folks
who thought that blindness

— from Maya Angelou’s poem
“Take Time Out”
Abstract

We are currently in the midst of the biggest drug epidemic our country has ever witnessed, maybe even in the world. It is now a public health crisis, and deaths due to drug overdoses have resulted in a colossal loss of lives, yet our country is still not treating it as the public health crisis it is. Most people either know of someone who struggles with addiction (substance use disorder) or have dealt with it personally. This literature provides information that defines substance use disorder as a disease. It also takes a look at the current drug epidemic and overdose death rates in the U.S. The research will provide a comparison of the drug epidemic to the AIDS epidemic of the 1980s and the stigma that surrounded that disease at the time. The stigma that surrounds substance abuse disorder and the AIDS epidemic are similar. We cannot stop a crisis we don’t fully understand, and I hope this sheds some light of understanding. Ultimately, the goal is to see addiction through a lens of compassion and break down the stigma.

Keywords: substance use disorder, addiction, overdose, stigma
In 2017, more than 70,200 people died from drug overdoses in the U.S., which includes illegal drugs and prescription medications combined (National Institute of Health [NIH], 2019). I could not find statistics for death rates due to overdose for 2018, but I would wager that the number is even higher. One in three Americans is affected by substance use, either personally, or they know someone who suffers from it (Hampton, 2018, p.2), and drug overdose deaths in the U.S. are now the leading cause of death for people under the age of fifty (Kristof, 2017). Imagine the population of the entire city of Auburn, Washington all dying off within one year. That is approximately one hundred and ninety-seven people dying every day in your city until every single person is gone. That to me is unfathomable! It is something I have a hard time wrapping my mind around, yet those are the facts. If 70,000 people a year were dying as a result of any other disease, such as the measles for example, you could bet that there would be an enormous mobilization effort to find out why. There would be a monumental movement for prevention, treatment, research, and resources. Although substance use disorder may not be an infectious disease, it is a systemic, insidious disease that affects everyone it touches, not just those that suffer from it directly, but also a person’s family members, friends, and communities. It has been proven that addiction is a brain disease, so why are we not treating it like any other disease/mental disorder? I believe the difference between a disease like cancer and a disease like substance
use disorder is that they are treated differently because of the stigma that surrounds it. Our society and culture treat addiction as a crime and a moral problem, rather than the public health issue that it is. Our jails and prisons are overrun with those that have committed crimes related to drugs, and jails have become treatment providers. If the implication is that substance use disorder is a moral failing, then it implies 70,200 people that died of overdoses in 2017 were all morally flawed. Stigma is the massive barrier that blocks the way for real policy reform for effective treatment standards for substance use disorder.

**Is Addiction a Disease?**

We have decades of research from multiple medical organizations that has proven time and time again that addiction is a medical condition and a neurobiological brain disease. It is a chronic medical condition that is both partly inherited and progressively developed, but the argument is still alive and well for those that believe substance use disorder is not a disease. I think a lot of people have a hard time accepting it as a disease due to the symptoms it exhibits, which are: continued use of substances regardless of the consequences, stealing, arrest, loss of jobs, loss of family, loss of money, homelessness, and loss of health. Initially, the choice to use drugs and/or alcohol is voluntary, but for those with a propensity of developing an addiction to the substances they are using, it will progress and no longer be a “choice”
anymore. It is complex and hard to understand at times, even for those who have experience dealing with it. People don’t start out wanting to become addicted to drugs. They use substances as solutions to alleviate negative emotions. Many people do. Hampton (2018) noted in his book *American Fix*, “To the outside observer, a relapse looks ungrateful, careless, reckless and insane. But it’s no more insane than the erratic behavior people exhibit when they’re in diabetic shock or suffering from a concussion” (p. 88). Dr. Michael Miller, past president of the American Society of Addiction Medicine (ASAM) stated:

At its core, addiction isn’t just a social problem or a moral problem or a criminal problem. It’s a brain problem whose behaviors manifest in all these areas…Many behaviors driven by addiction are real problems and sometimes criminal acts. But the disease is about brains, not drugs. It’s about underlying neurology, not outward actions. (Live Science, 2011)

Another reliable source provided by the Center on Addiction (2017) also gives a good definition by stating:

Addiction is defined as a disease by most medical associations, including the American Medical Association and the American Society of Addiction Medicine. Like diabetes, cancer and heart disease, addiction is caused by a combination of behavioral, environmental and biological factors….if left untreated over time, addiction becomes more severe, disabling, and life threatening.
Regardless, there are still people out there that argue addiction is not a disease.

As an advocate against defining addiction as a disease and a recovering heroin addict, Slate (2016) argues in his TEDx talk, from his website, *The Clean Slate Addiction Site*, that addiction is not a brain disease, but rather a choice. He uses the descriptions of cancer and diabetes as examples of true diseases and defines them as some part of the body that is in a state of “abnormal physiological functioning,” which causes undesirable symptoms. In the case of diabetes, he points out the cells that produce insulin fail to produce it at all or only partially, resulting in the harmful symptoms of diabetes. He uses examples from the NIH of brain scans of normal brains versus those on meth. He claims they are not reliable. In response, it has been proven that substance use disorder does change the neurobiology of the brain and causes abnormal physiological symptoms regardless of his opinion of the brain scans. As for his description of cancer, he points out cell mutation and argues the cells cannot choose to stop their symptoms directly and cure the disease, as compared to the choice in being able to stop using substances, which can stop addiction. Slate (2016) also states, “Following treatment, addicts typically struggle longer, relapse more often, binge more, and have increased overdose rates.” His argument is that treatment for addiction actually causes relapse and invokes helplessness in addicts. He feels that telling someone who has substance use disorder that they need
to avoid triggers and treat their disorder for the rest of their lives is harming them and invoking a message that their issues are too large to overcome and that most people move on from substance use and “get over it.” He bases his findings from his own experience of being able to overcome addiction, but not everyone overcomes addiction by just “getting over it,” either. Substance use disorder is not black and white or a one-size-fits-all. There are many varying degrees of the disease along with how to treat it, just like any other disorder or disease.

I can tell you from personal experience that there was a time I thought my son’s substance use was a “choice.” My son is twenty-seven years old and has suffered from drug addiction for almost half his life. There was a time I would get so angry with him, especially in the early years of his disease, for his “choice” in using drugs and all the things that happened to him because of it, but my thinking changed right along with the progression of his disease. Over and over, I could see him trying to overcome his addictions and failing again and again. He has been in and out of treatment, had periods of recovery (abstinence), and relapsed multiple times over the last fourteen years. I’ll never forget that “light bulb” moment for me when what I felt was a “choice” changed to realizing his substance use had progressed into a full-blown disease. It was several years ago, when he relapsed after a long period of sobriety he had at the time. He left his Oxford House (sober living housing community), going on a four-day binge of meth and heroin. About day
four of his binge, he called me late at night and begged me to find him and pick him up or he was going to die if I didn’t. I got a lot of calls like that from him during his times of active addiction, but there was something in his voice that made me take him seriously that night, so I went to find him. He warned me about the condition I would find him in, but I wasn’t prepared to see my son in the state I found him. When I did find him, he was alone in a parking lot behind a dumpster and it was pouring rain. He got in the car and was so distraught over having relapsed. He had been up for four days straight on meth and had just scored some heroin and shot up to come down from the meth. He was crying inconsolably and so remorseful and filled with shame. He kept apologizing over and over. It’s painful for me to remember that and words simply cannot fully describe what the reality of it was like. He begged me to take his needles and drugs from him because he knew he couldn’t stop using, even though he wanted to stop. He knew he would keep using until he overdosed, and he has had many overdoses. I took all his drugs and needles and just held him as he cried. Using drugs was no longer a “choice” for my son. I could finally see that. Drugs had hijacked his brain, his control, and his life. What he did choose to do was ask for my help, and he went back to treatment again. From that moment on, I put my anger towards him aside and began turning to solutions to help him. If anyone could have witnessed him that night, in that moment as I had seen him, they too would know addiction is a
disease. We have got to get over the argument of whether substance use disorder is a disease or not. The argument itself implies blame and questions whether someone with substance use disorder deserves treatment or not. It’s ridiculous, and it is actually harming people. The prejudice feeds the stigma, and stigma is the roadblock to effective, ongoing research and treatment.

**Stigma of Substance Use Disorder is Our AIDS Crisis**

As I have mentioned before, the stigma around substance use disorder has prohibited research and reform. Although right now things are starting to change, we still have a long way to go. It is the people that have substance use disorder and have come out the other side of it that are breaking the stigma by providing education, pushing for policy reform, and reaching back to help those who are still in the battle. Addiction does not discriminate. It can happen to anyone. Michael Boticelli (2016) was the director of the Office of National Drug Control Policy during the Obama administration. He has more than twenty years of recovery from substance use, which has made him passionate about the issue. In his TED talk, Boticelli (2016) speaks about the similarities of the stigma between substance use disorder and the HIV/AIDS epidemic of the 1980s. When people started dying of HIV/AIDS, specifically gay men, there was an enormous amount of ignorance and
prejudice surrounding it. People were quarantined, and it was called the “gay plague.”

Society blamed gay men for being sick because they contracted AIDS by having sex with other gay men. Society felt they deserved to die from their disease. It was treated like a moral failing, just like addiction is today. Getting HIV/AIDS was seen as a “choice,” just like addiction is today. Due to the ignorance and stigma around HIV/AIDS, thousands of people died. Boticelli (2016) also stated, “Public policy was being held hostage by stigma and fear… also held hostage were compassion, care, research, recovery, and treatment.” So, what changed? Hampton (2018) noted that people started speaking up. Princess Diana visited AIDS hospices and made sure the media got photos of her hugging and holding hands with AIDS patients. “She tried to show that the illness didn’t dehumanize someone. The way we treat them does” (pp. 188-189).

There was a galvanization for change of people speaking out and bringing awareness of the facts of the disease itself that changed the landscape of HIV/AIDS. We may even see a cure for it in our lifetime. My hope is that the stigma will change surrounding substance use disorder as well and change public policy surrounding treatment.

**Treatment for Substance Use Disorder**

Our treatment model for substance use disorder is lacking and, quite frankly, archaic. Inpatient treatment for drugs and alcohol (everything
from alcohol, prescription pills, heroin, fentanyl, benzodiazepines, and methamphetamines) follows the classic twenty-eight-day treatment model. Hampton (2018) noted the twenty-eight-day model was created in the 1950s by Dr. Daniel Anderson, who went on to become the president of the famous treatment center, Hazeldon. He states, “Twenty-eight days at a treatment center was thought to be the minimum amount of time needed to stabilize someone from acute detox and physical withdrawal symptoms” (p.90). It was called the “Minnesota model” and became the standard model of treatment in the U.S and still is to this day. Most insurance companies pay for a month stay due to the twenty-eight days standard of care. This model has not been challenged or changed in fifty years. The disease of addiction has progressed, yet the model for treatment is what it was fifty years ago. Treatment centers market ten days and thirty days as the cure-all, and it has become a revolving door. There are some centers that offer ninety-day treatment and suggest it, but most insurance companies will not pay for an extended stay, so treatment centers become a revolving door, and they are making billions of dollars. Most high-end treatment centers only take private insurance and not state-funded insurance at all, which leaves those treatment centers that do take it overrun, with long waiting lists to get in. The trouble with that is, when someone agrees to go to treatment, they need it ASAP and could die waiting to get in. I know this from experience in trying to help my son get into treatment numerous times.
He has been to inpatient treatment nine times. When I was able to have him on my private insurance through work, I could get him right in to most treatment centers within a few days. When I could no longer have him on my insurance, and he was covered through the state, the inpatient treatment centers that took state insurance had long waiting lists. Some places require you to detox first, which means going to a different facility with its own waiting list. Once detoxed, often times there is still a waiting list for inpatient treatment. This is a dangerous thing to allow for anyone detoxing from a dangerous substance and is a time when death from overdose is so prevalent. While in inpatient treatment, psychologists see the patient maybe once to a couple of times a week. Most inpatient treatment centers follow the twelve-step model of Alcoholics Anonymous (AA) and/or Narcotics Anonymous (NA). Outpatient treatment is suggested as well as sober living homes (living in a house with others also in recovery). Outpatient treatment is not always set up for the patient upon discharge, but when it is, it is covered by most insurance plans. On the other hand, sober living is not. A lot of the time it is up to the family to arrange. Mostly, there is no follow-up or aftercare of any kind. Most people are let go with little resources and then are blamed for relapsing. Treatment for substance use disorder has become a “one-size-fits-all” that focuses on the first phase of recovery only, but true recovery happens in learning how to live a normal life after inpatient, and a long-term treatment plan tailored to each patient
would be the best for success. When someone is diagnosed with cancer, it is determined what kind of cancer the patient has and treatment (chemotherapy) is tailored to treat it. Even in other mental illnesses, there are different medications used to treat the variety of mental illnesses there are. There is not a “one-size-fits-all” (Hampton, 2018, p.93), but this is how addiction is being treated. The whole treatment industry needs an overhaul, but that is for another time and maybe another paper.

As for my son, it has been a journey for him. It has been a journey for me and the rest of my family as well. His disease requires on-going vigilance and attention. It has progressed, and he has had numerous trips to inpatient treatment and has overdosed several times, being brought back with naloxone (an opioid reversal drug). He has been in and out of sober living homes and has relapsed often. His last relapse lasted ten months, resulted in numerous overdoses, hospitalizations, incarcerations, and he was homeless for a while, but he is alive, and as long as he is alive, there is hope, another chance to get better and recover.

He is currently not using any substances but is not involved in any kind of prevention to abstain from substance use, such as counseling or a twelve-step program, but one more day sober means one more day his brain heals. He is so much more than his disease or the stigma that surrounds it. He is a talented, loving, and wonderful human being and my greatest teacher.
References


Boticelli, M. (2017, April 21). Addiction is a disease. We should treat it like one TED [Video file]. Retrieved from https://www.youtube.com/watch?v=7_RGn75JcZ8


**Periodontal Vaccine**

Wakasa Peabody and Patricia Wells

*This was created for a Research class in the Dental Hygiene Program. The information was relatively new and it was difficult to get started. Once we got into the information we found, the topic was fascinating and the Poster was fun to create.*
PERIODONTAL VACCINE

Patricia Wells & Wakasa Peabody

DrW3 331: Dental Hygiene Research II

What Are Vaccines & How Do They Work?
- A vaccine solution is introduced into the body containing a killed or weakened microbe so that they don’t cause disease.
- The immune system confronts and destroys these foreign invaders rather than our body’s cells.
- This acquired immunity is the process of tricking your body into reacting faster to exposures with usual periodontal microbe (2).

Why Is It a Big Deal?
- About 15% of the global population has periodontal disease.
- Periodontitis is a leading cause of tooth loss.
- P. gingivalis also adversely affects other parts of the body, including heart disease, diabetes, and other chronic conditions (1).
- About 700 million Americans suffer from periodontal disease.
- The annual cost of periodontal treatment in the United States is $14.4 billion (4).

Periodontal Vaccine: What You Need to Know
- A successful periodontal vaccine will:
  1. Treat the cause
  2. Reduce cost of treatment
  3. Require a single injection

Gains in the Current Knowledge
- The efficacy found in animal trials has not been replicated in human subjects.
- The manner in which P. gingivalis causes periodontitis is not well understood.
- P. gingivalis is one of many pathogens in periodontal disease. It remains unclear which pathogen would be effectively neutralized by targeting this singular pathogen (5, 6, 7).

Limitations of Theories & Points of View
- Some people have P. gingivalis, but never display periodontitis (8).
- Research is being developed in the hope of targeting pathogens in changing sets of synergy (9).
- Animal testing is very different from human outcomes can be difficult to predict

Areas for Further Research
- The efficacy of any vaccine is likely to be determined by human subject (10).
- The pathogenesis of periodontitis instead of P. gingivalis needs to be investigated.
- The process of targeting P. gingivalis as a singular pathogen remains to be established.

Areas of Controversy
- No human trials have been completed.

References
- Website: www.periodontalvaccine.org
- Journal: Journal of Periodontal Research
- Book: The Periodontal Disease Solution
- Article: P. gingivalis and Its Role in Periodontal Disease

What is Periodontal Disease & What Bacteria Are Involved?

Periodontal disease is a chronic, progressive condition that affects the tissue surrounding and supporting the teeth. It is caused by bacterial infection, and if left untreated, can lead to tooth loss (11).

Periodontal bacteria include:
- Porphyromonas gingivalis (P. gingivalis)
- Aggregatibacter actinomycetemcomitans (A. actinomycetemcomitans)
- Tannerella forsythia (T. forsythia)

Recent evidence has linked P. gingivalis to periodontal disease, and this has led to the development of a periodontal vaccine (12).

Multiple bacteria have been identified as contributing pathogens in periodontal disease (13). Research has identified P. gingivalis, A. actinomycetemcomitans, and T. forsythia as the major pathogens for the vaccine to target (14).

Periodontal bacteria are shown to be present in the plaque and can cause inflammation, leading to bone loss and tooth loss (15).

Therapeutic periodontal vaccine (TPV) is shown to reduce the presence of periodontal bacteria in the mouth (16).

A successful periodontal vaccine will:
1. Treat the cause
2. Reduce cost of treatment
3. Require a single injection

The cure for periodontal disease is currently focused on traditional treatments such as dental cleaning and antibiotics. However, the development of a periodontal vaccine offers a promising alternative to traditional treatments (17).

On average, it takes 10 years and $250 million to develop a new vaccine (18). The hope is that a periodontal vaccine will reduce the cost of treatment and improve the quality of life for those affected by periodontal disease (19).

Therapeutic periodontal vaccine (TPV) is shown to reduce the presence of periodontal bacteria in the mouth (16). The cure for periodontal disease is currently focused on traditional treatments such as dental cleaning and antibiotics. However, the development of a periodontal vaccine offers a promising alternative to traditional treatments (17).

On average, it takes 10 years and $250 million to develop a new vaccine (18). The hope is that a periodontal vaccine will reduce the cost of treatment and improve the quality of life for those affected by periodontal disease (19).

On average, it takes 10 years and $250 million to develop a new vaccine (18). The hope is that a periodontal vaccine will reduce the cost of treatment and improve the quality of life for those affected by periodontal disease (19).

How to Get Periodontal Disease?
- Smoking
- Poor oral hygiene
- Hormonal changes
- Genetic predisposition
- Immune system problems
- Diabetes

What happens in the mouth?
- Bacteria attach to teeth
- Bacteria release toxins
- Bacteria multiply
- Bacteria cause inflammation
- Bacteria destroy bone
- Bacteria cause tooth loss

What are the effects of periodontal disease?
- Tooth loss
- Bleeding gums
- Bad breath
- Difficulty eating
- Sleep apnea
- Heart disease
- Stroke
- Diabetes

How can periodontal disease be treated?
- Traditional treatments: scaling, root planing, antibiotics
- Alternative treatments: plaque control, oral hygiene education, dietary changes

What are the limitations of periodontal disease treatment?
- Traditional treatments are expensive and time-consuming.
- Alternative treatments are not always effective.
- There is a lack of long-term data on the effectiveness of alternative treatments.

What is the future of periodontal disease treatment?
- The development of a periodontal vaccine offers hope for the future.
- Future research will focus on the identification of new pathogens and the development of new treatments.

Periodontal disease is a chronic, progressive condition that affects the tissue surrounding and supporting the teeth. It is caused by bacterial infection, and if left untreated, can lead to tooth loss (11).

Periodontal disease is a chronic, progressive condition that affects the tissue surrounding and supporting the teeth. It is caused by bacterial infection, and if left untreated, can lead to tooth loss (11).

Periodontal disease is a chronic, progressive condition that affects the tissue surrounding and supporting the teeth. It is caused by bacterial infection, and if left untreated, can lead to tooth loss (11).

Periodontal disease is a chronic, progressive condition that affects the tissue surrounding and supporting the teeth. It is caused by bacterial infection, and if left untreated, can lead to tooth loss (11).

Periodontal disease is a chronic, progressive condition that affects the tissue surrounding and supporting the teeth. It is caused by bacterial infection, and if left untreated, can lead to tooth loss (11).

Periodontal disease is a chronic, progressive condition that affects the tissue surrounding and supporting the teeth. It is caused by bacterial infection, and if left untreated, can lead to tooth loss (11).

Periodontal disease is a chronic, progressive condition that affects the tissue surrounding and supporting the teeth. It is caused by bacterial infection, and if left untreated, can lead to tooth loss (11).

Periodontal disease is a chronic, progressive condition that affects the tissue surrounding and supporting the teeth. It is caused by bacterial infection, and if left untreated, can lead to tooth loss (11).

Periodontal disease is a chronic, progressive condition that affects the tissue surrounding and supporting the teeth. It is caused by bacterial infection, and if left untreated, can lead to tooth loss (11).