Viral Hepatitis Services and Providers in Pennsylvania: A Preliminary Survey

by

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Submitted to the Graduate Faculty of the

Department of Epidemiology

Graduate School of Public Health in partial fulfillment

of the requirements for the degree of

Master of Public Health

University of Pittsburgh

2021

UNIVERSITY OF PITTSBURGH

GRADUATE SCHOOL OF PUBLIC HEALTH

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April 23, 2021

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Abstract

Pennsylvania bears a considerable burden of viral hepatitis. Over 800 cases of hepatitis A have been reported in PA since January 2018 as part of large person-to-person outbreaks occurring in the United States. The opioid epidemic has also highlighted the increasing risk of hepatitis B transmission through intravenous drug use and PA remains among the top 10 states with the highest prevalence of chronic hepatitis C infections. The objective of this preliminary survey was to access the availability of hepatitis-related services and providers as well as current barriers to services with the goal of creating a centralized resource through which potential patients could find care.

Existing data and surveys conducted through the Pennsylvania Department of Health (PADOH) and a prior hepatitis provider map were analyzed for gaps in knowledge regarding hepatitis provider availability and services. An online survey was created in collaboration with pertinent groups including the PADOH survey and communications team to be distributed to providers listed on the 2016 provider map, free and charitable health clinics, and federally qualified health care centers in PA. Phone and email follow-ups were conducted to increase buy-in and promote survey participation. Data collected were then summarized and analyzed utilizing Microsoft Excel and uploaded into ArcGIS Online to create an updated hepatitis provider map to be linked on the PADOH's hepatitis C webpage.

Reliable access to up-to-date information regarding preventive services and treatment is essential to those seeking care and to combatting the spread of viral hepatitis in Pennsylvania. Through this preliminary survey hepatitis-related services, providers, and barriers to care were identified to inform potential solutions to increase access to these services. This preliminary survey highlighted the need for increased funding and training for hepatitis-related services as well as statewide geographic gaps in care. An understanding of current provider availability is imperative to address barriers to care, properly allocate resources, combat the rising spread of viral hepatitis across the state and prevent associated morbidity and mortality of this major public health problem.

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Preface

I would like to take a moment to thank the Pennsylvania Department of Health, most notably, Dr. Lauren Orkis, whose continued support and expertise made this survey and essay possible. Thank you to Dr. Mair for her insightful feedback and expert guidance on this essay. I would also like to thank my advisor Dr. Glynn, whose persistent and sage counsel has guided me throughout my graduate education. Finally, thank you to my family and friends for your constant patience and support in these turbulent times, without you this would not be possible.

1.0 Introduction

The opioid epidemic has brought with it a rapid rise in infectious diseases(Centers for Disease Control and Prevention, 2019). As the COVID-19 epidemic continues to exacerbate the existing opioid crisis it is imperative to address the consequential rise in infectious diseases("As COVID-19 surges, AMA sounds alarm on nation's overdose epidemic | American Medical Association," 2020). This has been observed most notably as a significant rise in human immunodeficiency virus (HIV) and viral hepatitis infections related to unsterile injection drug use(Centers for Disease Control and Prevention, 2019). In 2015, following an HIV and HCV outbreak linked to unsterile injection drug use in Scott County, Indiana, the Centers for Disease Control and Prevention (CDC) conducted a nationwide vulnerability assessment to identify other counties at risk of similar outbreaks ("Public Health Impacts of the Opioid Epidemic:," 2020). This assessment identified multiple counties at risk within PA, leading the Pennsylvania Department of Health to conduct a more in-depth in-state census tract vulnerability assessment as well as an assessment of hepatitis c-related services in Pennsylvania's drug and alcohol facilities. However, no centralized resource or database of hepatitis resources in PA currently exists. In the summer of 2020, the Pennsylvania Department of Health (PADOH) conducted a preliminary provider survey to assess the availability of hepatitis providers and services in PA, as well as barriers to care. Providing access to community-based preventative services and treatment is essential to combat the spread of viral hepatitis in PA as cases and mortality associated with hepatitis continues to rise (Centers for Disease Control and Prevention, 2019). Through this preliminary survey hepatitis-related services, providers, and barriers to care were identified to quantify current access to services, highlight gaps in care, and inform potential solutions to

increase service availability. The survey focused on assessing hepatitis A, B, and C; the three most common variations of viral hepatitis found in the United States and those posing the greatest risk for outbreaks associated with the opioid epidemic (Centers for Disease Control and Prevention, 2020).

1.1 Natural History Hepatitis A

Hepatitis A is an acute illness caused by hepatitis A virus (HAV). Multi-state outbreaks of hepatitis A continue to occur across the United States especially affecting people who use drugs and people experiencing homelessness ("HAN Archive - 00418 | Health Alert Network (HAN)," 2019) As of February 19th, 2021, there were over 37,860 cases since initial outbreaks were observed in 2016 ("Widespread outbreaks of hepatitis A across the U.S. | CDC," 2021). This is due to the highly contagious nature of the virus. Transmitted via fecal-oral route, most people become infected after unknowingly ingesting the virus ("Hepatitis A - FAQs, Statistics, Data, & Guidelines | CDC," 2020). HAV is found in the blood and stool of infected individuals and is transmitted through close personal contact with an infected person, sexual contact with an infected person, or ingestion of contaminated food or drink (Centers for Disease Control and Prevention, 2020). Prior to 2016, increases in hepatitis A cases were largely linked to contaminated imported foods ("Hepatitis A Outbreaks in the United States | CDC," 2020). However, significant rises in cases in 2017 and 2018 (3,366 and 12,474 cases respectively) were linked to ongoing person-to-person outbreaks among people who use drugs, people experiencing homelessness, and outbreaks among men who have sex with men. Unfortunately, the highest level of viral shedding and

therefore risk of transmission occurs prior to development of symptoms meaning individuals are likely to unknowingly spread the virus (Shin & Jeong, 2018).

Unlike hepatitis B or C, hepatitis A infection does not lead to chronic infection. Instead following an incubation period of approximately 30 days, infected individuals develop an acute infection (Shin & Jeong, 2018). However, not all infected individuals will develop symptomatic acute infection, with risk of symptomatic acute infection increasing with age. Less than 30% of children under the age of 6 years will develop symptoms of an acute infection. Conversely, over 70% of older children and adults will develop a symptomatic infection (Centers for Disease Control and Prevention, 2020). People with chronic liver disease, those with HIV, and persons over the age of 40 are at increased risk for severe disease from hepatitis A ("Hepatitis A - FAQs, Statistics, Data, & Guidelines | CDC," 2020). For those who develop a symptomatic infection, onset is often abrupt with symptoms including fever, fatigue, nausea and vomiting, abdominal pain, jaundice, dark urine, and other flu-like symptoms (Shin & Jeong, 2018). Most cases will recover spontaneously with supportive care after 2-8 weeks. Acute liver failure occurs in less than 1% of cases, however as an increasing number of older individuals become infected more severe clinical manifestations are becoming increasingly common (Shin & Jeong, 2018).

Hepatitis A is vaccine preventable and post exposure prophylaxis is also available within two weeks following exposure. Hepatitis A vaccine or immunoglobin are both effective methods of postexposure prophylaxis (PEP) when administered within 2 weeks following exposure (Nelson et al., 2018). Hepatitis A vaccine is the current recommended PEP treatment due to its higher availability, ease of administration, and induction of active immunity with longer protection. Immunoglobin is available for those over 40 years old based on provider risk assessment. One dose of single antigen hepatitis A vaccine provides up to 95% seroprotection in healthy individuals

for up to 11 years, and vaccination has shown to be effective in controlling hepatitis A outbreaks ("HAN Archive - 00418 | Health Alert Network (HAN)," 2019). Hepatitis A vaccination has been part of ACIP recommended routine vaccinations for children since 2006 ("Hepatitis A Outbreaks in the United States | CDC," 2020). The CDC now recommends all children aged 12-23 months, unvaccinated children younger than 18, men who have sex with men, people who use illegal drugs, people experiencing homelessness, and any other person identified as at increased risk for HAV infection get vaccinated ("Hepatitis A - FAQs, Statistics, Data, & Guidelines | CDC," 2020). However, vaccine rates among adults remain low resulting in high susceptibility. Among the most at-risk groups in the U.S. non-vaccination remains high with an estimated 73.1% of persons who report injection drug use, 65.2% of men who have sex with men, and 75.1% of individuals infected with hepatitis C or B unvaccinated (Yin et al., 2020). Consequently, most cases of hepatitis A occur in individuals 20 years or older, coinciding with the high hepatitis A susceptibility among U.S. adults.

1.2 Natural History of Hepatitis B

Hepatitis B is a liver infection caused by hepatitis B virus. Although vaccine-preventable, hepatitis B infections have been increasing in the United States with 32 states reporting a rise in acute infections in adults over 40 years old in 2017 ("Support to Address the Infectious Disease Consequences of the Opioid Crisis | CDC," 2019). Hepatitis B is transmitted when percutaneous, mucosal, or nonintact skin is exposed to blood, semen, or other bodily fluids from an infectious individual. The primary methods of hepatitis B transmission occur via vertical transmission from infected mother to newborn, through unprotected sexual contact with an infected person, and by

sharing contaminated needles, syringes, or other injection-drug equipment ("Hepatitis B - FAQs, Statistics, Data, & Guidelines | CDC," 2020). Less common methods of infection include accidental needle-sticks or sharp instrument injuries, organ transplantation and dialysis, and sharing of personal contaminated items such as razors or toothbrushes (Centers for Disease Control and Prevention, 2020). It is imperative to properly disinfect any surfaces or items exposed to contaminated blood as hepatitis B virus (HBV) can survive on surfaces and remain infectious for at least 7 days ("Hepatitis B Questions and Answers for Health Professionals | CDC," 2020).

As with hepatitis C, many individuals newly infected with hepatitis B virus will not experience symptoms with who develops symptoms determined largely by age at at infection ("Hepatitis B - FAQs, Statistics, Data, & Guidelines | CDC," 2020). Children under the age of 5 years and immunosuppressed adults generally do not develop symptoms. Of infected individuals 5 years and older 30-50% will develop a symptomatic infection (Centers for Disease Control and Prevention, 2020). For those who develop symptoms, symptoms may include fatigue, fever, loss of appetite, nausea, stomach pain, and other general flu-like symptoms and generally develop 90 days after exposure. Approximately, 95% of adults will recover completely from the acute infection without any long-term side effects or development into chronic infection. Adults over the age of 60 years, experience acute infections most severely ("Hepatitis B Questions and Answers for Health Professionals | CDC," 2020). However, risk of chronic infection is inversely related to age. Chronic infection develops in 90% of infants after acute infection at birth, and 25-50% of children infected at ages 1 to 5 years old will develop chronic infection (Centers for Disease Control and Prevention, 2020). Those individuals who do not clear the acute infection and whose infection remains untreated will develop chronic hepatitis B.

The majority of individuals with chronic hepatitis B infection will go years without experiencing any symptoms or consequences, reducing the chance of diagnosis and increasing the chance of transmission ("Hepatitis B Questions and Answers for Health Professionals | CDC," 2020). Approximately 15-25% of people with chronic infection will develop chronic liver disease, including cirrhosis, liver cancer, or liver failure. Hepatitis B is one of the major risk factors for hepatocellular carcinoma (LeFevre & U.S. Preventive Services Task Force, 2014). Tragically, premature death is also a leading consequence of chronic hepatitis B infection with infected persons living on average 14 years fewer than counterparts in the general population (Bixler et al., 2019). Furthermore, hepatitis B was listed as the cause of death for 1,649 U.S. residents in 2018 including 34 deaths in Pennsylvania ("Hepatitis B Surveillance in the United States, 2018 | CDC," 2020).

Hepatitis B is vaccine preventable and chronic infections are treatable. The National Academies of Science, Engineering, and Medicine have gone as far as to indicate that through vaccination, treatment and screening hepatitis B elimination is possible (Bixler et al., 2019). Hepatitis B vaccination was first introduced in 1982 and became a part of the standard CDC recommended vaccination schedule for infants in 1991 (Centers for Disease Control and Prevention (CDC), 2008). There are currently five licensed vaccines available in the United States, ENGERIX-B, RECOMBIVAX HB, HEPLISAV-B, and the combination vaccines PEDIARIX and TWINRIAX. Each has an overall vaccine effectiveness of approximately 94% (Van Damme, 2016). Immunization can also be utilized as a postexposure monoprophylaxis when administered within 24 hours following exposure ("Hepatitis B Questions and Answers for Health Professionals | CDC," 2020). Vaccination within 24 hours is 70-95% effective in preventing perinatal HBV transmission (Centers for Disease Control and Prevention (CDC), 2008). Currently, the Advisory

Committee on Immunization Practices (ACIP) recommend hepatitis B vaccine for all infants, unvaccinated children under 19 years old, those identified at higher risk of exposure, travelers to areas with high or intermediate endemic levels of hepatitis B, incarcerated persons, persons infected with HIV and/or HCV and all others interested.

For those chronically infected with hepatitis B, there are currently seven FDA approved antiviral agents available (Cohen et al., 2011). As of 2018, the American Association for the Study of Liver Diseases recommends Tenofovir dipovoxil fumarate, Tenofovir alafenamide, Peg-IFN-α-2a/b and Entecavir for treatment, however only Peg-IFN-α-2a/b and Entecavir are indicated for use in children (Terrault et al., 2018). Current regimens include daily oral medication for over a year with clinical monitoring necessary to determine therapy success. Although these treatments are not a cure, viral suppression is possible with consistent application. Consistent antiviral therapy is also associated with significant risk reduction for liver cirrhosis. However, in the United States only approximately 30% of adults living with hepatitis B are aware they are infected and vaccine rates among adults remain low, with only approximately 25.8% vaccinated for Hepatitis B in 2017 (Cohen et al., 2011; "Vaccination Coverage Among US Adults, NHIS, 2017 | CDC," 2018). To fully experience the benefits of these treatments and vaccines patients must be counseled, with those infected identified and linked with subsequent care.

1.3 Natural History of Hepatitis C

Hepatitis C is a liver infection caused by the hepatitis C virus and is the leading cause of liver cancer and liver transplants in the United States ("Hepatitis C," 2021). Prior to COVID-19, hepatitis C was the fourth most reported infectious disease in PA and the most common bloodborne

disease in the country (Ly, Hughes, Jiles, & Holmberg, 2016). It was associated with more deaths in 2013 than all other notifiable diseases in the United States ("2015 Surveillance Data for Viral Hepatitis in U.S. | CDC," 2019).

It is transmitted through direct percutaneous exposure to infectious blood. Limited transmission is also possible from exposure of a mucous membrane to infectious blood (Centers for Disease Control and Prevention, 2019). The most common route of HCV transmission is through the sharing of contaminated needles, syringes, and other equipment used to inject drugs. Other routes of transmission include unprotected sexual contact with an HCV-infected person, medical procedures performed with improperly sterilized equipment, receipt of piercings or tattoos from an unregulated setting, needlestick injuries, and sharing of personal items contaminated with infectious blood. Those who received blood transfusions, blood products, or solid organ transplants prior to 1992 may also have been exposed to hepatitis C. Although less common vertical transmission of hepatitis C, passage of the pathogen from mother to neonate during or directly following birth, is a growing concern. There was a 68% increase nationally from 2011 to 2014 of vertical transmission of hepatitis C (Centers for Disease Control and Prevention, 2019).

Once infected, HCV can cause acute infection. Acute infection occurs within the first six months following exposure and may or not include symptoms (Hajarizadeh, Grebely, & Dore, 2013). Acute symptomatic infection occurs in approximately 15-30% of infected individuals and is characterized by non-specific flu-like symptoms (Centers for Disease Control and Prevention, 2020). These include but are not limited to abdominal pain, fever, jaundice, lethargy, and myalgia. Symptoms are often mild, however the majority of infections are asymptomatic leading to a high incidence of missed diagnosis and lack of follow-up care (Hajarizadeh et al., 2013). Of those with acute HCV infection, approximately 25% will experience spontaneous viral clearance with the

remainder of infected persons progressing to chronic infection. Spontaneous clearance of infection is influenced by a number of factors including sex, immune response, and genetics, specifically polymorphism in the IL28B gene (Hajarizadeh et al., 2013). The remaining 75% of infected individuals who did not spontaneously clear the infection and whose acute infection remains untreated will go on to develop a chronic infection (Hajarizadeh et al., 2013).

Chronic hepatitis C is a slow progressing infection which remains largely asymptomatic in the first decade following infection increasing the risk of delayed diagnosis, treatment, and unintentional continued transmission of HCV ("Hepatitis C Questions and Answers for Health Professionals | CDC," 2020). Following the initial 10-15 years of infection, chronic hepatitis C infection begins to manifest in severe consequences such as advanced liver disease, liver cirrhosis, and hepatocellular carcinoma (Hajarizadeh et al., 2013). Those with chronic HCV infection are also at increased risk of fibrosis progression, with certain behavioral factors such as heavy alcohol intake exacerbating this process.

Huge strides have occurred in hepatitis C treatment over the past decade. Highly effective oral direct-acting antiviral therapies (DAAs) have resulted in higher cure rates, fewer side-effects, and simplified treatment regimens ("Hepatitis C," 2021). Oral antiretroviral therapies have a more than 90% cure rate with the most common treatment regimens lasting approximately 8-12 weeks. Despite the efficacy of DAAs and the slow progression of hepatitis C infections estimates in the United States indicate that as of 2017, only 19% of infected individuals were aware of their infection status and of those individuals only 15% received treatment that year (Stasi, Silvestri, & Voller, 2020). Significant increases in HCV education, screening, evaluation, and treatment are required to achieve the full potential of disease burden reduction made possible by DAAs.

1.4 Prevalence and Incidence of Viral Hepatitis

Over the past decade there have been significant increases in viral hepatitis observed across the United States largely associated with injection drug use. As of the 2003-2010 NHANES survey approximately 2.7 million people within the United States were currently infected with hepatitis C (Edlin, Eckhardt, Shu, Holmberg, & Swan, 2015). When accounting for high risk populations such as the homeless, incarcerated, or hospitalized this estimate increases to 3.5 million currently infected. New hepatitis C infections rose more than 300% between 2010 and 2017, with an estimated 17,253 deaths associated with hepatitis C in 2017 ("Support to Address the Infectious Disease Consequences of the Opioid Crisis | CDC," 2019). In Pennsylvania alone, there were 13,545 newly reported cases of confirmed chronic hepatitis C in 2017 ("Hepatitis Surveillance in the United States, 2017 | CDC," 2019). There was 50,300 new HCV infection in 2018, with an estimated 2.4 million people living with HCV in the United States in 2016 (Centers for Disease Control and Prevention, 2020). Hepatitis C remains the most common bloodborne disease in the United States effecting mostly individuals 50 years of age and younger (Alter, 1999).

Similarly, the number of acute hepatitis B infections rose 20% from 2014-2015 (Centers for Disease Control and Prevention, 2019). As of 2018, the CDC estimated that an overall incidence rate of 1.0 case per 100,000 population with an adjusted incidence of 21,600 acute hepatitis B cases in 2018 ("Hepatitis B - FAQs, Statistics, Data, & Guidelines | CDC," 2019). There were 61 newly reported cases of acute hepatitis B infection in PA in 2018 ("Hepatitis B Surveillance in the United States, 2018 | CDC," 2020). In the United States as a whole an estimated 850,000 to 2.2 million people are currently living with chronic hepatitis B infection (Cohen et al., 2011). As of 2015, the highest incidence of cases was among people aged 30-39 years with an incidence of approximately 2.6 per 100,000 population (Schillie et al., 2018).

Following this trend of rise in newly confirmed viral hepatitis cases, the rate of newly confirmed hepatitis A increased almost 800% from 1,380 reported cases in 2015 to 12,474 reported cases in 2018 ("Widespread outbreaks of hepatitis A across the U.S. | CDC," 2021). As of February 19th, 2021 37,860 cases of hepatitis A and 355 deaths have been reported to the CDC since large person-to-person outbreaks were first identified in 2016. Of those 37,860 identified cases 61% resulted in hospitalization. In Pennsylvania 882 cases of hepatitis A, 15 associated deaths, and 677 associated hospitalizations were reported between January 1st, 2018 and February 13th, 2021 ("Widespread outbreaks of hepatitis A across the U.S. | CDC," 2021).

1.5 Risk Factors for Viral Hepatitis

People with HIV infection, current and former people who use injection drugs, those receiving maintenance hemodialysis, heath care and emergency workers at risk of needle sticks, and children born to mothers with HCV are at increased risk for hepatitis C infections ("Hepatitis A Q&As for Health Professionals | CDC," 2020). PA-NEDSS data also indicated a steady rise in reported HCV cases in 15 to 35 year olds between 2004 and 2014 meanwhile case frequency among those 35 years and older has remained relatively stagnant highlighting a shift in age demographics among infected individuals ("Hepatitis C Virus Letter to Providers from DDAP - RCPA," 2015).

Many of these populations are also at increased risk of hepatitis B infection. Infants born to infected mothers, sex partners of infected persons, men who have sex with men, people who inject drugs, household or sexual contacts of people with known chronic HBV infection and hemodialysis patients are all at increased risk of hepatitis B infections ("Hepatitis B Questions and

Answers for Health Professionals | CDC," 2020) Healthcare and public safety workers at risk for occupational exposure to blood or contaminated body fluids are also at increased risk of HBV. As previously stated, the highest incidence of HBV infections as of 2015 was among 30–39-year-olds reflecting the significant shift in age of incidence as a result of childhood vaccination (Schillie et al., 2018). The incidence of hepatitis B declined by 98% from 1990 to 2006 in children below the age of 15 year due to childhood vaccination (Weinbaum, Mast, & Ward, 2009). In the United States, 47-70% of chronic HBV infections are now among individuals born in other countries (Weinbaum et al., 2009).

A significant shift in demographics has also occurred among hepatitis A cases since person-to-person outbreaks began in 2016. International travelers, men who have sex with men, all those who use illegal drugs: injection or otherwise, people experiencing homelessness and people with occupational risk for exposure are now at the highest risk of hepatitis A infection ("Hepatitis A - FAQs, Statistics, Data, & Guidelines | CDC," 2020).

1.6 Viral Hepatitis & Injection Drug Use

An underlying current in the rise of viral hepatitis has been the increase in injection drug use fueled by the opioid epidemic ("Support to Address the Infectious Disease Consequences of the Opioid Crisis | CDC," 2019). The large person to person outbreaks of hepatitis A observed since 2016 have especially affected people who use illegal drugs and people experiencing homelessness ("HAN Archive - 00418 | Health Alert Network (HAN)," n.d.). Correspondingly, for the 1,518 reported cases of hepatitis B for which injection drug use information was available 549 (36%) reported injection drug use ("Hepatitis B Surveillance in the United States, 2018 |

CDC," 2020). However, the majority of HBV-infected injection drug users are unaware of their infection status (Cohen et al., 2011). Acute hepatitis C infections linked to opioid use also increased, with a 133% rise from 2004 to 2014 (Recommendations, n.d.). In the U.S. there has also been a significant increase in hepatitis C virus infections in individuals 18 to 35 years of age with a history of injection drug use (Howsare & MPH, 2016).

1.7 Viral Hepatitis Mortality

As of February 19, 2021 approximately, 355 people had died of acute hepatitis A infection since U.S. outbreaks were identified in 2016 ("Widespread outbreaks of hepatitis A across the U.S. | CDC," 2021). As these outbreaks continue to affect an aging population mortality and the occurrence of more severe disease is expected to increase. Likewise, without treatment approximately 15-25% of people with chronic hepatitis B infection die prematurely of liver cirrhosis, liver failure or hepatocellular carcinoma (LeFevre & U.S. Preventive Services Task Force, 2014) (Harris et al., 2018). In 2018, a total of 1,649 death certificates in the U.S. had hepatitis B recorded as an underlying or contributing cause of death ("Hepatitis B Questions and Answers for Health Professionals | CDC," 2020). Chronic hepatitis B patients in a Chronic Hepatitis Cohort study died on average 14 years younger than decedents in the general population and had higher rates of all forms of liver-related causes of death (Bixler et al., 2019). However, the highest mortality due to viral hepatitis occurs as a result of hepatitis C infections. In 2017, there were 17,253 deaths attributed to hepatitis C reported to in the United States ("Hepatitis Surveillance in the United States, 2017 | CDC," 2020). In 2018, deaths attributed to hepatitis C decreased to 15,713 cases, however it remains the leading cause of liver-related morbidity and

mortality in the United States. ("Hepatitis C Questions and Answers for Health Professionals | CDC," 2020)

Pennsylvania's age adjusted mortality rate for hepatitis C in 2017 was 3.15 per 100,000 (Ly et al., 2020). Pennsylvania falls into CDC region 3, Eastern Branch, which encompasses Delaware, D.C., Maryland, Pennsylvania, Virginia, and West Virginia. In this region, the age-adjusted mortality rate was 5.43 (5.10-5.76) per 100,000 for men and 1.82 (1.62-2.01) per 100,000 for women. The highest hepatitis C mortality rate, 11.74 (10.68-12.81) per 100,000, was among the baby boomer cohort: those born between 1945 and 1965. Additionally, the age-adjusted mortality rate for Non-Hispanic Blacks was 8.11 (7.40-8.82) per 100,000 as opposed to the overall mortality rate within CDC's region 3 of 3.53 (3.35 – 3.72) per 100,000.

1.8 Viral Hepatitis Prevention Strategies

The key to combatting any infectious disease is prevention and, in this way, viral hepatitis is no different. Due to the high prevalence and the wide spectrum of populations affected by viral hepatitis and the difficulty of accessing some of its most vulnerable populations effective prevention strategies must be multi-faceted and adaptable. Current prevention strategies are built by combining primary, secondary, and tertiary methods in the form of vaccination, testing, and treatment, respectively. Harm reduction strategies, such as syringe exchange programs, fill the gaps in these prevention strategies and often work to link at-risk individuals with care.

1.8.1 Vaccination

Vaccination of susceptible and high-risk populations is the most effective strategy for preventing hepatitis A and B transmission. However, despite testing not being indicated prior to vaccination for either infection - vaccination rates remain low especially among adults. Approximately 75% of U.S. born adults were susceptible to hepatitis A infection or had not received a HAV vaccine as of the 2007-2016 NHANES Survey (Yin et al., 2020). Similarly, the high incidence of hepatitis B cases in adults over the age of 20 years, indicates low hepatitis B vaccination coverage (Weinbaum et al., 2009).

1.8.2 Testing

Recent updates in testing recommendations have shifted and differ for hepatitis A, B, and C. For hepatitis A serologic testing is not required prior to administering hepatitis A vaccine, and the CDC does not recommend postponing vaccination due to unknown vaccination history ("Widespread outbreaks of hepatitis A across the U.S. | CDC," 2021). As such there is no reason to delay vaccination due to infection status.

Similarly, the CDC does not recommend waiting for initial screening results to administer the first dose of the hepatitis B vaccine. However, testing is recommended to determine infection status and immunization. There are three different serologic tests for hepatitis B, the hepatitis B surface antigen, hepatitis B surface antibody, and total hepatitis B core antibody. All three are needed in order to determine whether an individual has an acute or chronic infection, is immune to HBV due prior infection or vaccination and whether they are susceptible and in need of vaccination ("Hepatitis B Questions and Answers for Health Professionals | CDC," 2020). The

CDC currently recommends people born in countries with HBV prevalence greater than 2% including many countries found in the WHO African and Western Pacific regions, unvaccinated children of parents born in regions with high rates of HBV infections, men who have sex with men, people who inject drugs, people with HIV, household and sexual contacts of HBV infect persons, people receiving immunosuppressive therapy, blood and tissue donors, pregnant women, and infants born to HBV-infected women be screened for HBV ("Hepatitis B Questions and Answers for Health Professionals | CDC," 2020). Household contacts, sexual contacts, and those who share needles with HBV infected individuals, men who have sex with men, hemodialysis patients, and injection drug users should all receive the initial dose of vaccine at the time of testing ("Routine Testing and Follow-up for Chronic HBV Infection | CDC," 2019). Of those infected with HBV in the U.S., less than 40% are currently diagnosed with the probable diagnosis rate closer to 20-30% (Cohen et al., 2011). If an estimated 1.4-2 million individuals are currently infected with HBV in the U.S. then up to 1.4 million are unaware of their infection status leaving a huge gap in the care continuum. Screening and identification of chronically infected individuals may pose the largest barrier to linking individuals with care.

A similar gap in infection status awareness exists among individuals infected with hepatitis C. Despite the slow progression of hepatitis C, as of 2015 estimates in the United States indicated that only approximately 50% of infected individuals are diagnosed and aware of their infection status (Howsare & MPH, 2016). In 2017, the National Academies of Sciences proposed that an aggressive strategy of case-finding and treating all of those infected could reduce incidence of HCV infections by 90% and deaths by 65% by 2030 (Ly et al., 2020). The CDC now recommends universal hepatitis C testing at least once for all adults over the age of eighteen, and for all pregnant women during each pregnancy ("Core Concepts - Recommendations for Hepatitis C Screening -

Screening and Diagnosis of Hepatitis C Infection - Hepatitis C Online," n.d.). One-time hepatitis C testing is recommended for all people with HIV, people who have injected drugs, shared needles or other drug equipment, those with occupational risk of needlestick injuries, prior recipients of blood products or organ transfusions, or infants born to HCV infected mothers. Routine periodic testing is recommended for those with ongoing risk including people who are currently injecting drugs, or sharing needles, syringes, or drug equipment or people on maintenance hemodialysis. However, significant challenges remain in hepatitis C testing availability. The CDC recommends an enzyme immunoassay and follow-up recombinant immunoblot assay or HCV nucleic acid testing for RNA to diagnose a current hepatitis C infection (Centers for Disease Control and Prevention (CDC), 2013). These tests are expensive, difficult to conduct in resource limited settings, and have long waiting periods for results. As an alternative, point of care testing (POCTs) and antibody-based rapid diagnostic tests (RDTs) offer a convenient, cost effective, and rapid preliminary screening method (Shivkumar, Peeling, Jafari, Joseph, & Pant Pai, 2012). POCTs of blood have the highest accuracy and concordance with standard enzyme immunoassays. However, despite the accuracy of these tests there is limited data regarding their availability and utilization in Pennsylvania.

Increased screening for hepatitis aims to prevent its spread and reduce the current burden of disease. More wide-spread testing allows individuals to be linked with care, receive treatment, and reduces transmission.

1.8.3 Harm Reduction

Settings providing services to adults at increased risk of hepatitis infection provide a unique opportunity to link susceptible individuals with vaccination and preventative services, screening, and care. Sterile syringe exchange programs are still technically illegal in Pennsylvania, however as of March 2020 there were about 20 operating across the state with both Philadelphia and Pittsburgh passing local ordinance to make these programs legal ("Syringe exchanges deemed 'life-sustaining' during Pa. coronavirus shutdown, raising hopes for eventual legalization · Spotlight PA," 2020). These syringe services provide a unique opportunity to connect individuals with testing, care, and treatment. Individuals accessing syringe service programs are 5 times more likely to enter drug treatment than those who never used the program (Centers for Disease Control and Prevention, 2019). In addition, injection drug users utilizing syringe service programs in combination with medication-assisted therapies are linked with significant decreases in hepatitis C transmission (Centers for Disease Control and Prevention, 2019). However, this still leaves many individuals outside the range of these operating sites with limited access to care and preventative services.

1.9 Availability of Viral Hepatitis Treatment

Current American Association for the Study of Liver Diseases and Infectious Disease Society of America (AASLD/IDSA) guidelines recommend nearly universal treatment of those with hepatitis C infection regardless of disease progression (Centers for Disease Control and Prevention, 2020). The significant improvements in treatment mean that over 90% of infected

individuals can now be cured of hepatitis C infections within 8 to 12 weeks of oral therapy. However, extremely effective direct-acting antiviral therapy is not yet universally available (Naggie & Ramers, 2019). Many insurers and providers continue to deny treatment to individuals based on substance use status despite growing evidence that people with injection drug use can achieve high rates of sustained virologic response (Graf et al., 2020). This limits the efficacy of treatment as prevention and leads to unnecessary delays in care. Insurers may also restrict treatment coverage based on provider specialty, disease progression, and patient age despite growing evidence supporting universal treatment (Recommendations, n.d.). Similarly, gaps in knowledge regarding current treatment standards prevent family care providers and others from providing care. Even substance abuse facilities, who provide care to one of the most at-risk populations, have low testing and care rates. In 2017 only approximately 27.5 percent of substance abuse facilities in the U.S. offered hepatitis C screening ("Despite Infectious Disease Outbreaks Linked To Opioid Crisis, Most Substance Abuse Facilities Don't Test For HIV Or HCV | Health Affairs," 2018). Many of these facilities cite lack of personnel, funding, training, and low reimbursement rates as barriers to offering screening ("Hep C And Drug Abuse Often Go Hand In Hand, But Screening For Infection Lags | Kaiser Health News," 2018). Despite the efficacy of DAAs and nearly universal treatment recommendations recent estimates indicate that only 10-24% are prescribed treatment indicating significant room for improvement within the care continuum (Reader, Kim, El-Serag, & Thrift, 2020).

Similarly, of those tested and diagnosed with hepatitis B a majority do not receive appropriate follow-up care. When identified through hospital or targeted screening up to 66% of infected individuals are evaluated and referred to appropriate care (Cohen et al., 2011). However, those screened in community clinics and medical offices are only referred to appropriate care 40%

of the time. In the United States only approximately 10-15% of potentially eligible individuals receive care. However, this may be in large part due to the limited number of individuals who are tested and subsequently linked to care. There are significant barriers to connecting individuals to care especially as most individuals are asymptomatic, meaning few are ever screened for disease (Klevens, Liu, Roberts, Jiles, & Holmberg, 2014). A variety or personal and environmental factors may influence the low rate of screening and care linkage among individuals chronically infected with hepatitis B. The majority of individuals with chronic HBV infection are foreign born increasing the probability of cultural and language barriers and lack of information or fear discrimination (Cohen et al., 2011). In addition, environmental barriers such as lack of access to medical care, lack of insurance, or difficulty navigating the health care system decrease care accessibility (Cohen et al., 2011). However, an estimated 56% of adults with acute hepatitis B infection had previously received care in correctional facilities or STD clinics ("Achievements in Public Health: Hepatitis B Vaccination --- United States, 1982--2002," 2002). Each interaction with a healthcare system poses an opportunity to increase screening and intervention. The lack of screening on these occasions indicates potential areas for increased intervention and vaccination efforts. Hepatitis B treatment is further complicated by stringent treatment criteria, based on disease severity, risk of disease progression, co-infection with HCV or HIV, and estimated likelihood of treatment efficacy (Cohen et al., 2011). To meet current treatment criteria patients must have elevated viral loads of HBV DNA, elevated serum alanine aminotransferase levels, and evidence of moderate to severe liver inflammation. Under these treatment recommendations approximately 25-50% of those chronically infected with HBV should be eligible for treatment, but as of 2010 only approximately 2.5-5% of those chronically infected with HBV were receiving care.

Unlike hepatitis C and B there is no treatment for hepatitis A, however supportive therapy, including the use of antiemetics and intravenous fluids is available for those who develop severe infections. Supportive therapy only mitigates the symptoms of hepatitis A and does not alter the course of the disease.

1.10 Public Health Significance & Gaps in Knowledge

Early diagnosis and treatment of hepatitis B and C and increased accessibility of hepatitis A and B vaccines are significantly more cost-effective when compared to the high costs of treating end-stage liver disease and loss of quality of life (Cohen et al., 2011). The rise in viral hepatitis exacerbated by the opioid epidemic mandates a concerted and comprehensive public health response to combat ongoing disease spread, the impending loss of quality of life, and high consequent disease burden. It is imperative to identify facilities currently serving populations at risk as well as facilities providing care for viral hepatitis infections such as syringe service programs, homeless shelters, medication-assisted treatment facilities, STD clinics, free and charitable clinics, and other facilities serving these populations to increase education, vaccination, and treatment efforts. However, no centralized database of facilities currently providing viral hepatitis services exists to determine the level of accessibility of care and potential gaps. This gap in knowledge regarding current prevention, screening, and treatment providers poses a considerable barrier to accessing care availability, increasing care access, targeting resources, and linking individuals with care.

2.0 Viral Hepatitis in PA

Pennsylvania (PA) is not immune to this rise in viral hepatitis and infectious disease associated with the opioid epidemic. Prior to COVID-19, hepatitis C was the fourth most reported disease in PA and PA remains among the top ten states with the highest prevalence of chronic hepatitis C infection (Orkis, Carr, Waller, & Watkins, 2020). The opioid epidemic has caused a significant demographics shifts among hepatitis infected individuals and a rise in cases within the state. In particular, the total number of cases among 15- to 35-year-olds rose steadily between 2003 and 2014 (Howsare & MPH, 2016). In 2007, the majority of cases among this age group were isolated to the largely urban southeast and southwest regions of the state with only twelve counties recording 50 or more HCV cases among 15-35 years olds ("Newly Identified Confirmed Chronic Hepatitis C Age 15-34 Year 2007-2016 | PA Open Data Portal," 2019). However, by 2016 cases had spread across the state with 33 of 57 counties in PA reporting 50 or more cases of newly identified confirmed HCV in this age cohort. A similar rise in hepatitis B cases has been observed with 9 PA counties recording a chronic hepatitis B incidence rate of 8 per 100,000 population or higher from 2016 to 2018 ("Pennsylvania County Health Profiles," n.d.). Over the years, the Pennsylvania Department of Health in conjunction with community partners, stakeholders, and county health departments has conducted a number of surveys to assess the state of viral hepatitis in PA. The most notable of these assessments include the PA Vulnerability Assessment, the PADOH Department of Drug and Alcohol Programs Hepatitis C Survey, and the 2016 Provider Map. The PADOH also relies on several preeminent stakeholders to aid in the evaluation of viral hepatitis across PA, however significant gaps in knowledge remain.

2.1 PA Vulnerability Assessment

In 2015, following an HIV outbreak associated with unsterile injection drug use in Scott County, Indiana, the CDC led a nationwide vulnerability assessment to identify other U.S. counties at risk for a similar outbreak (Short et al., 2020). The Indiana outbreak identified HIV/HCV coinfection in over 90% of cases highlighting concerns about potential future outbreaks of bloodborne infections linked with injection drug use. The CDC vulnerability report identified three PA counties, Luzerne, Cambria, and Crawford, at risk of similar outbreaks. In response, the PADOH conducted a statewide vulnerability assessment in 2019 using recent census tract-level data to determine which Pennsylvania communities are at the highest risk of bloodborne infection associated with unsterile drug use and drug overdose deaths (Short et al., 2020). The PADOH vulnerability assessment identifies areas along the Appalachian Mountain Range specifically Blair, Union and Tioga counties as well as York county, and Philadelphia county as the highest risk for HCV outbreaks with overdose death hot spots concentrated around Philadelphia and Pittsburgh. This report indicates high HCV infection rates are more evenly distributed between urban and rural areas than previously suspected. Blair, Union, and Tioga county are all relatively rural PA counties however, they had the highest crude rates of HCV cases per 100,000 population under 40 years of age. HCV cases in individuals under 40 years of age were used as a proxy for recent HCV infection in this report. These findings highlight the necessity for broader location-specific distribution of health-related resources and targeted interventions such as expansion of mobile clinics, syringe exchange programs, and increased community outreach and education (Short et al., 2020).

2.2 PADOH Department of Drug and Alcohol Programs Hepatitis C Survey Report

The rise in cases associated with the opioid epidemic requires targeted care to address the growing prevention, screening, and treatment needs of this population. Drug and alcohol treatment facilities provide a unique opportunity to bring care and testing directly to individuals at risk. In conjugation with the Vulnerability Assessment in 2019 the PADOH with the assistance of the Pennsylvania Department of Drug and Alcohol Programs assessed hepatitis c-related services in Pennsylvania drug and alcohol facilities through an online survey ("Hepatitis C," 2021). A total of 330 facilities were sampled, and 242 completed the survey (Orkis et al., 2020). Only 76 (32%) of responding facilities tested their clients for HCV, and only 26 (34%) of facilities that test for HCV conducted testing on all clients. Furthermore, only 24 (10%) of total respondents offered onsite confirmatory HCV testing. The most commonly indicated barrier to providing HCV testing was lack of funding, followed by staff time (Orkis et al., 2020). Lack of laboratory capacity, trained medical staff, and client buy-in were also listed among facility barriers. This is a significant missed opportunity for linking vulnerable populations to care and testing. Drug and alcohol treatment facilities could serve as an important contact point for linking individuals with testing and care and preventing outbreaks of infectious disease among people who use drugs. This survey provided an insightful view into the availability of infectious disease care, screening and prevention. However, it focused only on drug and alcohol treatment facilities limiting the utility of this survey for addressing care availability across the state.

2.3 Major Stakeholders Addressing Viral Hepatitis in PA

Philadelphia and Allegheny counties are the two largest urban centers in PA and have the highest crude rates of overdose deaths ("Public Health Impacts of the Opioid Epidemic:," 2020). They have both taken aggressive approaches to prevent infectious disease outbreaks like that which occurred in Scott County, Indiana. This includes but is not limited to implementing targeted programs to combat infectious disease spread related to injection drug use and providing harm reduction resources to those struggling with addiction. Philadelphia and Allegheny counties have also put in place local regulations which allow for their respective syringe service programs despite syringe service programs currently remaining illegal in PA. Allegheny county's syringe exchange program, Prevention Point Pittsburgh, offers needle exchange services, risk-reduction counseling, health education, HIV, HCV, and STI screening, naloxone distribution as well as comprehensive case management ("Prevention Point Pittsburgh," 2021, Home HFCA) Philadelphia county has two main syringe exchange programs, Prevention Point Philadelphia and a smaller program Angels in Motion ("Needle Exchange & Program Services | Angels in Motion," n.d., "Prevention Services | Prevention Point," n.d.). Both offer similar services to Prevention Point in Pittsburgh. The implementation of syringe service programs is one of the most effective strategies for preventing the risk of bloodborne infections among people who inject drugs and serves to link individuals with additional infectious disease screening and care. The Philadelphia Department of Health attributes the 34% decrease from 1992 to 2021 in new HIV infections among its drug injecting population to the implementation of syringe service programs ("Prevention Services | Prevention Point," 2021).

In addition to syringe service programs both counties have coalitions specifically dedicated to hepatitis C prevention, diagnosis, treatment and other care services. HepCFree Allegheny

County (HCFA) and the Hepatitis C Allies of Philadelphia (HepCAP) offer linkage to care, provider information, advocacy and education to increase hepatitis C testing and treatment improving the care continuum ("HepCAP – Philadelphia's Hepatitis C Coalition," n.d., "Home | HCFA," n.d.) Although both counties offer extensive harm reduction services it is important to note that the Philadelphia Department of Health has operating rules, funding revenues, and jurisdictional powers specific to the county which can limit information sharing with the PADOH. These counties' multi-faceted cooperative approach for resource allocation and emphasis on harm reduction, testing, and care linkage create a framework for addressing injection drug use associated infectious disease the rest of PA should strive toward. The Pennsylvania Expanded HIV Testing Initiative (PEHTI) was created in part to address this goal.

PEHTI is a statewide collaboration between the PADOH and Penn State University to implement opt-out HIV screening in a range of healthcare settings, increase screening among populations disproportionately affected by HIV, and integrate HCV, and STD related screening with HIV screening ("Pennsylvania Expanded HIV Testing Initiative | PSU College of Education," 2021). Through its collaboration with the PADOH it offers reduced testing costs, free training, support, medication, test kits, and integrated fee for service contracts to eligible health care providers.

Distribution of supportive efforts such as test kits, staff training, and treatment can be difficult given the diverse blend of providers in PA. Currently, common viral hepatitis care providers in PA include free and charitable clinics, federally qualified healthcare centers, homeless shelters, private providers and medical centers, jails and others. Each of these facilities may provide any array of viral hepatitis services with service availability differing drastically between facilities and providers. Some facilities or providers only serve target populations, others restrict

care based on facility specific requirements, and others are simply unable to provide the full spectrum of services. This can create a significant barrier to individuals seeking care and to those accessing service availability across the state. A central database documenting stakeholders and thus providers as well as subsequent uniform assessment of services would allow for more targeted distribution of state support and increase accessibility to those seeking care.

2.4 2016 Survey Provider Map

In 2016, the PADOH Viral Hepatitis Prevention Coordinator, Charlie Howsare, MD, MPH created a hepatitis provider map to begin accessing the availability of hepatitis providers in PA ("ArcGIS Web Application," 2020). This original map consisted of 50 facilities he had connected with over his tenure at PADOH. These facilities were made up of drug and alcohol centers, gastroenterology offices, federally qualified healthcare centers (FQHCs) and free and charitable clinics from across the state. The survey consisted of 30 questions regarding contact information, education, screening, and vaccine availability for hepatitis A and B, as well as treatment availability for HCV and HIV, including referrals. The contact information included the facility's address, website, hours of operation, location, and information for the point of contact. In total 50 facilities, 5 in the Northeast, 3 in the Northwest, 13 in the Southeast, 18 in the Southwest, and 11 in the Southcentral district of PA were surveyed. No facilities in the Northcentral district of PA were surveyed. All data were gathered from 2014 to 2015 and complied into an ArcGIS Online map which was posted on the PADOH website in 2016. Although this map provided an initial idea of provider variability and availability in PA much of the data collected were incomplete, with contact information missing for 8 (16%) facilities, point of contact emails missing for 23 (46%)

facilities, and 14 (28%) facilities listing screening information as not available. Little information is available regarding the sampling method utilized for facility inclusion or for standardization of survey questions. In addition, with only 50 facilities listed the map provided information on less than 15% of potential providers in PA ("Organizations by Location | National Prevention Information Network," n.d.). It was officially brought offline in 2019 due to outdated data and lack of utilization, however it's removal sparked the idea for a more expansive hepatitis provider database to access availability of hepatitis services in PA.

2.5 Gaps in Knowledge

A shift in demographics, common routes of transmission and improved treatment options for hepatitis necessitates a revitalized initiative to link individuals with testing and care in PA. This includes but is not limited to an increase in the need for hepatitis services and education to prevent future spread especially among people who use drugs. Initial assessments conducted by the PADOH identified areas most vulnerable to infectious disease outbreaks linked with injection drug use, highlighted gaps in testing and care at drug and alcohol facilities as well as barriers to providing care and provided inspiration for future projects. Review of major stakeholders in PA as well as the extent of service availability in Philadelphia and Pittsburgh provide a framework for service allocation, availability, and program implementation. However, limited data exists regarding the total availability of hepatitis prevention, testing, and treatment services in PA.

To properly allocate resources including education and testing services, the PADOH must first access the current availability of providers across the state as well as barriers which limit the distribution of care. There is currently no centralized database of hepatitis providers in

Pennsylvania. The PADOH conducted a preliminary online survey in 2020 to address this gap in knowledge. The purpose of the survey was to assess availability of hepatitis providers in PA as well as the hepatitis prevention, testing, treatment services they provide, and possible barriers to providing services.

3.0 Objectives

The objectives of this survey of hepatitis providers in Pennsylvania were to assess the current availability of hepatitis providers and the scope of hepatitis prevention, testing and treatment offered in facilities as well as evaluate barriers to providing hepatitis and other related infectious disease services. Our secondary objective was to utilize the data gathered to update the 2016 hepatitis provider map and create a centralized database of hepatitis providers in Pennsylvania to be utilized by the public in order to locate services near them.

4.0 Methods

The Pennsylvania Department of Health (PADOH) conducted the Hepatitis Provider Survey to assess the availability of hepatitis providers in PA. This survey also assessed the availability of hepatitis prevention, testing, and treatment services these facilities provide, and possible barriers to providing services. The survey was conducted from June 2020 through October 2020.

4.1 Facility Selection

Prior to this preliminary survey there was no centralized database of hepatitis providers in Pennsylvania. To create a list of providers the PADOH referred to prior surveys, the original hepatitis provider map, and partner organizations. The PADOH identified 50 facilities listed on the original hepatitis provider map from 2016. The Pennsylvania Expanded HIV Testing Initiative (PEHTI) provided an additional list of 66 partner sites for possible contact. Federally qualified health centers (FQHCs) and free and charitable health clinics (FCHCs) were also selected for inclusion. Drug and alcohol treatment centers were not surveyed as information regarding hepatitis services was available for many of these facilities through the previous DDAP survey (Orkis et al., 2020). After review of the 50 facilities listed on the original hepatitis provider map, 19 total were excluded: 1 correctional facility and 6 drug and alcohol treatment centers for ineligibility. The remaining 12 excluded facilities consisted of 9 FQHCs and 3 FCHCs and were removed to prevent duplicate contact. Of the 66 partner sites provided for contact by PEHTI, 3 were excluded

as duplicates from the original facility list. This left a total of 31 facilities from the original hepatitis provider map, 63 facilities provided by PEHTI, 317 FQHCs, and 79 FCHCs to survey (n=490 total facilities).

4.2 Survey Design

The survey was developed in coordination with the PADOH survey, communication, and mapping teams. The completed survey consisted of a total of 52 questions covering hepatitis A, B, and C prevention, testing and treatment services including availability of onsite testing, frequency of screening, and referral services (Appendix A). Information pertaining to availability of other infectious disease and harm reduction-related services on-site was also collected. Questions were made responsive, meaning certain questions and sections would appear or disappear to the respondent based on previous answers. For example, if a respondent noted they did not provide any hepatitis A services questions pertaining to hepatitis A vaccination would not appear for that respondent. This was done to expedite the completion process. For each question, respondents were provided a list of potential options to standardize responses as well as a comment section for writing in responses not listed. The survey was available from July 2, 2020, to September 30, 2020 and conducted online via SurveyMonkey™. Facilities listed on the original provider map and identified through PEHTI were emailed instructions and a link to complete the survey. Distribution of surveys to FQHCs and FCHCs was conducted through professional organizations. A copy of the survey is provided in Appendix A.

4.3 Survey Follow-Up

Survey check-ins to encourage completion were dependent on the facility type. Due to the outdated nature of information available for the 31 facilities included from the original hepatitis provider map additional contact efforts were put in place to increase response rate and update information. These facilities were first called to attempt to verify contact information and operational status. If new contact information was available, the survey link was sent to the new contact. If phone follow-up was unsuccessful survey links were sent to existing contacts. Phone follow-ups were conducted again a week after initial survey distribution to increase facility buy-in and completion as well as update information where pertinent. For the facilities identified by PEHTI a follow-up email was sent one week after initial contact to attempt to increase completion rates. For FQHCs and FCHCs professional organizations were sent instructions and the survey link to distribute, follow-ups were conducted by these organizations in the form of newsletter updates. All facilities who did not complete the survey following email follow-up were considered non-respondents.

4.4 Analysis

Raw data from completed surveys were exported from SurveyMonkey™ to a Microsoft Excel file for cleaning and analysis. For questions in which open-ended responses were available responses of "no" and "not applicable" were removed to accurately calculate response rates. Any responses fitting into a predetermined response option were recoded. Summary statistics were calculated for each question and organized under five categories: an "overview" category,

“hepatitis A services”, “hepatitis B services”, “hepatitis C services”, and an “other” category covering infectious disease education and payment information.

5.0 Results

Response rates varied widely based on facility type. Of the 31 facilities identified from the original hepatitis provider map, 3 were unreachable. Of the remaining 28 eligible facilities, 9 submitted surveys (response rate = 32%). All 19 non-respondents from the original hepatitis provider map were physician offices. Of the 63 PEHTI provided facilities, 7 submitted surveys (response rate = 11%). Three FQHCs of the 317 included submitted the survey (response rate = 1%). Of the 79 FCHCs included, 12 submitted surveys (response rate = 15%). Although, 31 facilities submitted a survey, sufficient operational and service information was gathered from collaboration with PEHTI and web research, to include an additional 58 facilities on the ArcGIS Online rendition of this preliminary survey, for a total of 89 facilities. The information gathered included address, confirmation of current operating status, and confirmation of availability of viral hepatitis or other infectious disease and harm prevention services. These additional facilities were only included in the ArcGIS Online map in order to provide a more complete picture of providers available to potential PA residents seeking care and were not included in further analysis. Of the 31 respondents who completed surveys not all surveys had every question completed; analysis was conducted based on facilities who submitted responses to each question.

At least one submission was received for each PADOH community health district. Ten surveys were submitted from facilities in the Southwest district, 7 from the Southeast district, 7 from the Southcentral, 4 from the Northcentral, 2 from the Northeast, and 1 from the Northwest (Table 1). Of the facilities that submitted a survey hepatitis C services were most common followed by hepatitis B services, HIV screening services, STI screening services, and hepatitis A services

respectively (Table 2). Three facilities noted offering syringe service exchange programs (Table 2).

Table 1. Availability of Hepatitis Providers by Pennsylvania Community Health Districts, 2020

PADOH Community Health Districts	Submitted Surveys	Additional Facilities	Total
Northeast	2	5	7
Northwest	1	5	6
Northcentral	4	2	6
Southeast	7	11	18
Southcentral	7	9	16
Southwest	10	26	36
Total	31	58	89

Table 2. Availability of Services within the Commonwealth of PA

Among Hepatitis Survey Provider Respondents, 2020 (N = 31)

Service Type	n (%)
Hepatitis A	11 (35.5)
Hepatitis B	22 (71.0)
Hepatitis C	29 (93.5)
HIV Screening	18 (58.1)
STI Screening	16 (51.6)
Syringe Exchange Program	3 (14.3)

5.1 Hepatitis A Services

Hepatitis A vaccine availability and barriers to providing vaccination were evaluated. Eleven (35.5%) of the thirty-one facilities who submitted responses provided hepatitis A vaccine to their clients (Table 3). Of those who provided hepatitis A vaccine 8 (25.8%) facilities offered vaccination to all of their clients. Additionally, 7 (22.6%) offered hepatitis A vaccination free of charge. Facilities noted a variety of barriers to providing hepatitis A vaccine. The most common

barriers noted were funding (32.3%), vaccine storage issues (19.4%), and staff time (16.1%). Other notable barriers included private insurance and Medicaid reimbursement issues.

Table 3. Availability of Hepatitis A Services within the Commonwealth of PA

Among Hepatitis Survey Provider Respondents, 2020 (N = 31)

Hepatitis A	n (%)
Vaccine Available	11 (35.5)
All Clients	8 (25.8)
Provided Free of Charge	7 (22.6)
Barriers to Providing Hepatitis A Vaccine	
Funding	10 (32.3)
Vaccine Storage Issues	6 (19.4)
Staff Time	5 (16.1)

5.2 Hepatitis B Services

Hepatitis B vaccine and testing availability was obtained from thirty facilities, one did not respond. Eleven (35.5%) facilities had hepatitis B vaccine available to clients, seven (22.6%) provided it to all clients, and seven (22.6%) provided it free of charge (Table 4). The three most commonly noted barriers to providing hepatitis B vaccination were funding (22.6%), vaccine storage issues (16.1%), and staff time (19.4%). Other notable barriers included staff and client buy-in. Seventeen (54.8%) facilities offered hepatitis B testing, with 11 (35.5%) making it available to all clients, and 12 (38.7%) providing it free of charge. Seven 22.6%) facilities tested at the first encounter, nine (29.0%) provided it at client request, and ten (32.3%) offered it for those with suspected exposure. Ten (32.3%) facilities offered hepatitis B treatment onsite and 15 (48.4%) referred clients elsewhere. The three most common barriers to providing treatment were funding (22.6%), lack of trained staff (25.8%), and staff time (12.9%).

Table 4. Availability of Hepatitis B Services within the Commonwealth of PA

Among Hepatitis Survey Provider Respondents, 2020 (N = 31)

Hepatitis B	n (%)
Vaccine Available	11 (35.4)
All Clients	7 (22.6)
Provided Free of Charge	7 (22.6)
Barriers to Providing Hepatitis B Vaccine	
Funding	9 (29.0)
Vaccine Storage Issues	5 (16.1)
Staff Time	6 (19.4)
Hepatitis B Testing Available	17 (54.8)
Available to All Clients	11 (35.5)
Available Free of Charge	12 (38.7)
Frequency of Testing	
First Encounter	7 (22.6)
Client Request	9 (29.0)
Suspected Exposure	10 (32.3)
Hepatitis B Treatment Available	
Onsite	10 (32.3)
Referred Elsewhere	15 (48.4)
Barriers to Providing Treatment	
Funding	7 (22.6)
Lack of Trained Staff	8 (25.8)
Staff Time	4 (12.9)

5.3 Hepatitis C Services

Twenty-four (77.4%) facilities offered hepatitis C testing to their clients, with twenty (64.5%) offering it to all clients, 19 (61.3%) providing it free of charge, and 17 (54.8%) offering testing onsite (Table 5). Seven (22.6%) facilities offered hepatitis C confirmatory testing and three (19%) referred clients out for confirmatory testing. Of those facilities offering hepatitis C testing 52% provided it at client request, 48% provided it at first patient encounter, and 43% offered it at first exposure. The three most commonly noted barriers to providing testing were funding (22.6%),

phlebotomy and/ or laboratory capacity issues (6.5%), and staff time (6.5%). Nine (29.0%) facilities offered hepatitis C treatment onsite and seventeen (54.8%) referred clients out. The three most common barriers noted to providing treatment were funding (19.4%), lack of trained staff (29.0%), and staff time (12.9%).

Table 5. Availability of Hepatitis C Services within the Commonwealth of PA

Among Hepatitis Survey Provider Respondents, 2020 (N = 31)

Hepatitis C	n (%)
Hepatitis C Testing Available	24 (77.4)
Provided to All Clients	20 (64.5)
Provided Free of Charge	19 (61.3)
Testing Offered Onsite	17 (54.8)
Hepatitis C Confirmatory Testing	7 (22.6)
If No, Do You Provide Referrals	3 (9.7)
Frequency of Testing	
First Encounter	11 (35.5)
Client Request	12 (38.7)
Suspected Exposure	10 (32.2)
Barriers to Providing Testing	
Funding	7 (22.6)
Phlebotomy/laboratory capacity issues	2 (6.5)
Staff Time	2 (6.5)
Hepatitis C Treatment	
Onsite	9 (29.0)
Referrals	17 (54.8)
Barriers to Providing Treatment	
Funding	6 (19.4)
Lack of Trained Staff	9 (29.0)
Staff Time	4 (12.9)

5.4 Other Infectious Disease Screening and Harm Reduction Services

Information regarding other pertinent infectious disease screening and harm reduction services was also collected (Table 6). Eleven (35.5%) facilities offered PrEP referral and fifteen

(48.4%) offered PrEP information, conversely only 38.7% offer TB screening. Condom distribution was slightly more common (48.4%) than naloxone distribution (29.0%) with only 22.6% facilities offered substance use disorder counseling. More than half of these facilities offered these services free of charge.

Table 6. Availability of Other Infectious Disease and Harm Reduction Services within the Commonwealth of PA Among Hepatitis Survey Provider Respondents, 2020 (N = 31)

Hepatitis C	n (%)
PrEP Referral	11 (35.5)
PrEP Information	15 (48.4)
TB Screening	12 (38.7)
Condom Distribution	15 (48.4)
Naloxone Distribution	9 (29.0)
Substance Use Disorder Counseling	7 (22.6)
Free Services Provided	20 (64.5)

6.0 Discussion

Prior to this survey limited data were available regarding the prevalence and accessibility of hepatitis prevention, testing, and care services in Pennsylvania. This preliminary survey provides a launching point for future harm reduction and prevention efforts. Although preliminary, this survey highlights significant discrepancies in the distribution of care across the state. Of the 31 facilities who completed surveys, only four were from the Northcentral community health district. Even after additional facilities were assessed, less than ten facilities were identified with sufficient information for map inclusion in any one of the northern community health districts. For comparison, more than fifteen facilities were identified in each of the southern districts. This is likely due to the location of Pennsylvania's two major urban centers, Pittsburgh and Philadelphia, in the southern half of the state. However, it highlights potential geographical gaps in care as the two of the counties identified as most at risk for infectious disease outbreaks linked with injection drug use, Tioga and Union, fall within the Northcentral community health district (Short et al., 2020). As infectious disease outbreaks associated with injection drug use continue to remain a significant risk in these communities sufficient resources must be put in place to address these populations.

This survey also identified several gaps in care within facilities offering hepatitis services. Injection drug use is currently the driving force behind the spread of hepatitis among those under the age of 40 in the United States (Centers for Disease Control and Prevention, 2019). However, only 36% of surveyed facilities took part in naloxone distribution, 28% offered substance use disorder counseling, and 10% offered syringe service exchange programs, although syringe service exchange programs reman illegal statewide. In addition, despite standing ACIP recommendations

for hepatitis A and B vaccination of at-risk individuals only 37% of surveyed facilities offer vaccination, and of that 37%, fewer than 75% offer vaccination to all clients. These findings in conjunction with the limited availability of hepatitis and harm reduction services through drug and alcohol treatment centers indicates there is currently limited harm reduction service availability to this key population (Orkis et al., 2020). Furthermore, of those locations that offer hepatitis services few offer all the services required to complete the hepatitis care continuum through treatment. Although 57% of respondents offer hepatitis B testing only 35% offer hepatitis B treatment onsite. For hepatitis C, 30% of surveyed facilities offer confirmatory hepatitis testing onsite and 32% offer hepatitis treatment onsite. However, fewer than 50% of facilities provided testing at first encounter indicating there may be patients who undergo care at these facilities but remain untested and untreated. This is a significant missed opportunity for linking potential infected individuals with care. It also increases the risk of loss to follow-up as these individuals are shuffled from facility to facility for continuation of care.

To increase hepatitis care availability, it is imperative to first understand the barriers currently preventing facilities from offering services in Pennsylvania. Across all services funding was among the top three most noted barriers to providing services. When prompted further, both Medicaid and private insurance reimbursement issues and lack of insurance among cliental were notable responses. Many of these surveyed facilities provide services free of charge and work with traditionally underserved communities such as LGBTQIA+ youth, people experiencing unstable housing or homelessness, people who use drugs, women, and low-income or uninsured individuals. This places the burden of expensive tests and treatments onto the facility. Increased funding revenues and policy change regarding insurance reimbursement is necessary to provide these facilities the funding necessary to expand services. Other common barriers included lack of

trained staff, staff time, and storage or laboratory issues or lack thereof. This provides a unique opportunity to build upon the work of existing PADOH partners, such as PEHTI, to increase accessibility of care by expanding their current training, testing, and medication distribution efforts. It also provides evidence for the sustained need of organizations such as PEHTI to continue to fill gaps in care which currently exist.

As a preliminary study, this survey sets the foundation for future endeavors but does not completely represent the scope of providers and services in PA. The information gathered will be utilized to better understand geographic gaps in care statewide, barriers to providing care, and to inform future policy and program interventions. It also establishes a framework for similar surveys and endeavors in the future.

6.1 Limitations and Strengths

This is a preliminary survey subject to several limitations. Foremost is the low survey response rate. As a preliminary survey, this was the first of its kind conducted in Pennsylvania and data collection occurred in a short span of time during the height of the COVID-19 epidemic. There was limited time for facility follow-up and no pilot testing was performed. In addition, PADOH resource reallocation due to the ongoing COVID-19 pandemic limited resources available to increase facility buy-in and improve response rates. Additionally, many facilities altered care availability and hours due to the pandemic and redirected services to COVID-19. The use of professional organizations to distribute this survey to FQHCs and FCHCs may have also influenced response rates as it is unclear what fraction of these facilities received direct links to the survey. This is reflected in the higher completion rate among facilities from the original

provider map group who received increased follow-up. The limited response rate also reduces the generalizability of the responses and subsequent information derived. The data collected is subject largely to nonresponse bias, as illustrated by the low response from FQHCs and the identification of all non-respondents from original hepatitis provider map as physician offices. The alternate is also true as facilities actively receiving support from PEHTI or with existing PADOH relationships may have been biased toward responding. Another possible limitation is the length and organization of this survey. Response rates per question were lower the deeper into the survey the question was located, indicating the survey may have been subject to order bias.

Despite these limitations, this survey remains that first of its kind assessing the scope of hepatitis providers and services in PA. Created in conjunction with the PADOH mapping, communications, and survey teams this survey acts as a collaborative document illustrating significant areas of interest identified by the PADOH and will be utilized to guide future research and surveys. The variable response rate between facility types serves to inform future iterations of potential respondent barriers and highlights the importance of standardized and direct follow-up to increase provide buy-in and subsequent participation. Furthermore, the observations and data collected in this preliminary survey, although not generalizable, provided important insight into hepatitis care across the state and potential gaps in resources. For those who completed the survey, it also afforded the PADOH and PEHTI with crucial current service and barrier information to allow for more targeted support to address these facility's needs. The ArcGIS Online provider map serves to centralize PA hepatitis provider information increasing its utility as a search engine for potential residents seeking care.

6.2 Future Directions

As a pilot survey this study established the framework for similar surveys and endeavors in the future. It provides a preliminary overview of facilities providing hepatitis prevention, testing, and treatment services. Future endeavors can utilize these data as a launching point for hepatitis awareness campaigns, allocation of resources, and linking potential patients with care. The data collected will also be utilized to inform distribution of care to areas with limited care availability and where risk of outbreaks remains high. The PADOH is currently using this information to increase its hepatitis C website utility and generate a more interactive ArcGIS Online map to link consumers with care. Additionally, future surveys and studies should utilize this pilot project when conducting further evaluations of hepatitis provider availability in Pennsylvania. A follow-up study expanding participation to all facilities identified in the National Prevention Information Network beta launch of the National Service Provider Information search tool could provide a more accurate illustration of testing, prevention, and care availability ("Organizations by Location | National Prevention Information Network," n.d.). To prevent the spread of hepatitis, reduce disease mortality, and avoid infectious disease outbreaks associated with injection drug use, a concerted designation of state and local resources will be necessary.

6.3 Public Health Significance

Pennsylvania continues to bear a significant burden of viral hepatitis and consequently the substantial morbidity and mortality it causes. With viral hepatitis transmission increasing in PA because of the opioid epidemic and population demographics shifting toward younger generations,

it is imperative to address this as a rising public health crisis. Advances in treatment mean that over 90% of infected individuals can be cured, and prevention strategies such as syringe service programs have shown significant efficacy in preventing the spread of infectious diseases related to illicit drug use. However, for many individuals especially those within typically marginalized communities these services remain inaccessible. Implementation of readily available prevention, testing, and treatment services would significantly reduce the transmission and subsequent burden of viral hepatitis in Pennsylvania.

To properly allocate resources and address the rise of hepatitis transmission in Pennsylvania, the PADOH must first understand the scope of services currently available. This survey highlighted geographic gaps in care statewide, the need for increased resources and funding to care facilities and established a framework for similar surveys and endeavors in the future. All the individual components: prevention, testing, and treatment currently exist to eliminate the spread of viral hepatitis in PA, however without sufficient allocation of resources another outbreak like that observed in Scott County, Indiana is not likely but inevitable.

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Appendix A Hepatitis Provider Prevention Treatment Survey

Hepatitis Provider, Prevention and Treatment Survey

Introduction

The Pennsylvania Department of Health is conducting a survey to assess the availability of viral hepatitis-related services in Pennsylvania. This survey will assess the number of providers currently offering viral hepatitis testing, treatment, and prevention services. This survey will also identify barriers to care. We ask that you answer the following questions based on your experience pre-COVID-19 as we understand COVID-19 may be impacting services previously offered at your facility. Thank you for your participation in this survey.

Service information gathered through this survey will be displayed on an interactive viral hepatitis provider map available to the public on the Pennsylvania Department of Health's website. Information gathered around barriers will help to identify statewide solutions to increase viral hepatitis-related services. We greatly appreciate your assistance. Please contact Lauren Orkis (laorkis@pa.gov) with any questions.

An asterisk (*) denotes a required response.

Hepatitis Provider, Prevention and Treatment Survey

Facility Contact Information

* 1. Facility name:

* 2. Contact person:

* 3. Facility location:

Address:

City:

Zip code:

If there are any other facility locations you would like to specify, please list them below. Otherwise, please leave blank.

4. Alternate facility location #1:

Address:

City:

Zip code:

5. Alternate facility location #2:

Address:

City:

Zip code:

* 6. Phone number:

7. Additional phone number:

* 8. Email address:

9. Website:

10. Alternative contact:

11. Alternative contact email address:

* 12. Operating hours:

Days of operation:

Hours of operation:

Walk-in hours (if applicable):

COVID-19 adjusted hours (if applicable):

13. Do you direct your outreach and care towards any of the following populations? Please select all that apply.

- [ ] LGBTQIA+ youth
- [ ] People experiencing unstable housing or homelessness
- [ ] People who use drugs
- [ ] Women
- [ ] Low-income or uninsured individuals
- [ ] Other (Please specify.)

* 14. Is your facility a bilingual service provider?

- ( ) Yes
- ( ) No

If yes, please specify language services provided:

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis Education

* 15. Do you currently provide any hepatitis prevention and treatment education?

- ( ) Yes
- ( ) No

Hepatitis Provider, Prevention and Treatment Survey

Services Currently Provided (Hepatitis Education)

16. For which do you provide hepatitis prevention and treatment education? Please select all that apply.

- [ ] Hepatitis A
- [ ] Hepatitis B
- [ ] Hepatitis C

17. What format do you provide hepatitis prevention and treatment education? Please select all that apply.

- [ ] Counseling
- [ ] Seminars
- [ ] Brochures/handouts
- [ ] Other (Please specify.)

18. To whom do you provide hepatitis prevention and treatment education?

- ( ) All clients
- ( ) Other (Please specify.)

Hepatitis Provider, Prevention and Treatment Survey

Services Currently Provided (Hepatitis Education)

19. What barriers exist to providing hepatitis prevention and treatment education? Please select all that apply.

- [ ] Buy-in from staff
- [ ] Buy-in from clients
- [ ] Funding
- [ ] Staff time
- [ ] Stigma
- [ ] No barriers
- [ ] Other (Please specify.)

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis A

* 20. Do you provide hepatitis A vaccine?

- ( ) Yes
- ( ) No

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis A

21. To whom is it available? (What are the criteria necessary to receive the vaccine?) Please select all that apply.

- [ ] All clients
- [ ] People who use drugs
- [ ] People experiencing unstable housing or homelessness
- [ ] Men who have sex with men (MSM)
- [ ] People who are currently or were recently incarcerated
- [ ] People with chronic liver disease, including cirrhosis, hepatitis B or hepatitis C
- [ ] Other (Please specify.)

22. Do you provide vaccine free of charge to under-insured or uninsured individuals?

- ( ) Yes
- ( ) No

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis A

23. What barriers exist to providing hepatitis A vaccine? Please select all that apply.

- [ ] Behavioral health payer issues
- [ ] Buy-in from staff
- [ ] Buy-in from clients
- [ ] Funding
- [ ] Medicaid reimbursement issues
- [ ] Private insurance reimbursement issues
- [ ] Staff time
- [ ] Stigma
- [ ] Vaccine storage issues
- [ ] No barriers
- [ ] Other (Please specify.)

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis B

* 24. Do you provide hepatitis B vaccine?

- ◯ Yes
- ◯ No

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis B

25. To whom is it available? (What are the criteria necessary to receive the vaccine?) Please select all that apply.

- [ ] All clients
- [ ] People who use drugs
- [ ] People experiencing unstable housing or homelessness
- [ ] Men who have sex with men (MSM)
- [ ] People who are currently or were recently incarcerated
- [ ] People with chronic liver disease, including cirrhosis, hepatitis B or hepatitis C
- [ ] Other (Please specify.)

26. Do you provide vaccine free of charge to under-insured or uninsured individuals?

- ( ) Yes
- ( ) No

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis B

27. What barriers exist to providing hepatitis B vaccine? Please select all that apply.

- [ ] Behavioral health payer issues
- [ ] Buy-in from staff
- [ ] Buy-in from clients
- [ ] Funding
- [ ] Medicaid reimbursement issues
- [ ] Private insurance reimbursement issues
- [ ] Staff time
- [ ] Stigma
- [ ] Vaccine storage issues
- [ ] No barriers
- [ ] Other (Please specify.)

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis B

* 28. Do you provide hepatitis B testing?

- ○ Yes
- ○ No

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis B

29. To whom is it available? (What are the criteria necessary to receive testing?) Please select all that apply.

- ☐ All clients
- ☐ People who use drugs
- ☐ People experiencing unstable housing or homelessness
- ☐ Men who have sex with men (MSM)
- ☐ People who are currently or were recently incarcerated
- ☐ People with chronic liver disease, including cirrhosis, hepatitis B or hepatitis C
- ☐ Other (Please specify.)

30. How often is the test offered? Please select all that apply.

- [ ] First encounter (opt-in)
- [ ] First encounter (opt-out)
- [ ] Annually (opt-in)
- [ ] Annually (opt-out)
- [ ] Semi-annually (opt-in)
- [ ] Semi-annually (opt-out)
- [ ] Quarterly (opt-in)
- [ ] Quarterly (opt-out)
- [ ] Client request
- [ ] Suspected exposure
- [ ] Other (Please specify.)

31. Do you provide hepatitis B testing free of charge to under-insured or uninsured individuals?

- ( ) Yes
- ( ) No

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis B

32. What barriers exist to providing hepatitis B testing? Please select all that apply.

- [ ] Behavioral health payer issues
- [ ] Buy-in from staff
- [ ] Buy-in from clients
- [ ] Funding
- [ ] Medicaid reimbursement issues
- [ ] Phlebotomy/laboratory capacity issues
- [ ] Private insurance reimbursement issues
- [ ] Staff time
- [ ] Stigma
- [ ] No barriers
- [ ] Other (Please specify.)

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis B

* 33. Do you offer hepatitis B treatment to clients on site?

- ◯ Yes
- ◯ No

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis B

34. Do you refer clients elsewhere for hepatitis B treatment?

- ◯ Yes
- ◯ No

35. What are the barriers to providing hepatitis B treatment on site? Please select all that apply.

- [ ] Behavioral health payer issues
- [ ] Buy-in from staff
- [ ] Buy-in from clients
- [ ] Lack of trained medical staff to provide treatment
- [ ] Medicaid reimbursement issues
- [ ] Private insurance reimbursement issues
- [ ] Staff time
- [ ] No barriers
- [ ] Other (Please specify.)

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis C

* 36. Do you currently provide hepatitis C testing?

- ◯ Yes
- ◯ No

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis C

37. To whom is it available? (What are the criteria necessary to receive testing?) Please select all that apply.

- [ ] All clients
- [ ] People who use drugs
- [ ] People experiencing unstable housing or homelessness
- [ ] Men who have sex with men (MSM)
- [ ] People who are currently or were recently incarcerated
- [ ] People with chronic liver disease, including cirrhosis, hepatitis B or hepatitis C
- [ ] Other (Please specify.)

38. How often is the test offered? Please select all that apply.

- [ ] First encounter (opt-in)
- [ ] First encounter (opt-out)
- [ ] One time on admission (opt-out)
- [ ] Annually (opt-in)
- [ ] Annually (opt-out)
- [ ] Semi-annually (opt-in)
- [ ] Semi-annually (opt-out)
- [ ] Quarterly (opt-in)
- [ ] Quarterly (opt-out)
- [ ] Client request
- [ ] Suspected exposure
- [ ] Other (Please specify.)

39. Do you provide hepatitis C testing free of charge to under-insured or uninsured individuals?

- ( ) Yes
- ( ) No

* 40. Does your facility currently provide hepatitis C testing onsite?

- ( ) Yes
- ( ) No

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis C

41. Which test do you currently provide? Please select all that apply.

- [ ] Hepatitis C Rapid/Point of Care Test (finger prick like OraQuick® hepatitis C Rapid Antibody Test)
- [ ] Phlebotomy-based antibody test
- [ ] Hepatitis C Confirmatory Testing (hepatitis C RNA) for hepatitis C antibody positive clients

If you did not select Hepatitis C Confirmatory Testing (hepatitis C RNA) for hepatitis C antibody positive clients, do you refer clients for hepatitis C confirmatory testing? Please respond with Yes or No.

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis C

* 42. Do you refer clients elsewhere for hepatitis C testing?

- ◯ Yes
- ◯ No

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis C

43. Where do you refer your clients? Please select all that apply.

- ☐ Primary care provider
- ☐ Specialist
- ☐ Community-based organization
- ☐ Other (Please specify.)

44. Do you receive hepatitis C test results?

- ◯ Yes
- ◯ No

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis C

45. What barriers exist to providing hepatitis C testing onsite? Please select all that apply.

- [ ] Behavioral health payer issues
- [ ] Buy-in from staff
- [ ] Buy-in from clients
- [ ] Funding
- [ ] Medicaid reimbursement issues
- [ ] Private insurance reimbursement issues
- [ ] Phlebotomy/laboratory capacity issues
- [ ] Staff time
- [ ] Stigma
- [ ] No barriers

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis C

* 46. Do you offer hepatitis C treatment to clients on site?

- ( ) Yes
- ( ) No

Hepatitis Provider, Prevention and Treatment Survey

Hepatitis C

47. Do you refer clients elsewhere for hepatitis C treatment?

- ( ) Yes
- ( ) No

48. What are the barriers to providing hepatitis C treatment on site? Please select all that apply.

- [ ] Behavioral health payer issues
- [ ] Buy-in from staff
- [ ] Buy-in from clients
- [ ] Lack of trained medical staff to provide treatment
- [ ] Medicaid reimbursement issues
- [ ] Private insurance reimbursement issues
- [ ] Staff time
- [ ] No barriers
- [ ] Other (Please specify.)

Hepatitis Provider, Prevention and Treatment Survey

Other Services Provided

49. Do you provide any of the following infectious disease and harm reduction-related services on-site? Please select all that apply.

- [ ] HIV screening
- [ ] PrEP information
- [ ] PrEP referral
- [ ] TB screening
- [ ] STI screening (e.g., chlamydia, gonorrhea, syphilis)
- [ ] Condom distribution
- [ ] Naloxone distribution
- [ ] Substance use disorder counseling
- [ ] Syringe exchange program
- [ ] Other (Please specify.)

Hepatitis Provider, Prevention and Treatment Survey

Payment Questions

* 50. How do your clients pay for services? (What payment options are available?) Please select all that apply.

- [ ] Private insurance
- [ ] Medicare/Medicaid
- [ ] Sliding scale/out-of-pocket
- [ ] Government contracts subsidize services
- [ ] Services are provided to clients for free
- [ ] Other forms of payment accepted (Please specify.)

Hepatitis Provider, Prevention and Treatment Survey

Payment Questions

51. Which insurances do you commonly accept?

Hepatitis Provider, Prevention and Treatment Survey

Comments

52. Is there any other pertinent information you would like to provide regarding additional services provided, populations treated, barriers to services or otherwise?