Pennsylvania Viral Hepatitis Elimination Plan

Bureau of Epidemiology

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Introduction

Viral hepatitis is a costly and preventable disease. Hepatitis B is a vaccine-preventable disease but only 1/3 of United States (U.S.) adults are vaccinated against hepatitis B¹. Hepatitis C is the most common bloodborne infectious disease in the U.S. and is a profound consequence of substance use disorders². As of 2017, an estimated 50,000 Pennsylvanians are chronically infected with hepatitis B and over 200,000 are chronically infected with hepatitis C³. New infections are increasing each year amongst Pennsylvanians who use drugs. Since 2018, reports of hepatitis A in Pennsylvania have significantly increased given person-to-person spread amongst people who use drugs and people experiencing homelessness. In 2019, Pennsylvania reported the second highest count by state of newly reported chronic hepatitis C infections in the U.S. at 10,848⁴. An estimated 4 in 10 Pennsylvanians living with hepatitis C are unaware of their infection⁵.

The National Academies of Sciences, Engineering and Medicine state that elimination of hepatitis B and C is possible by 2030 in the U.S. with significant expansion of vaccination, screening, and linkage to care⁶. Elimination planning is a critical step towards this goal and requires significant Commonwealth stakeholder engagement. In 2019, the Pennsylvania Department of Health (DOH) selected 30 external stakeholders to serve as Viral Hepatitis Elimination Planning Committee members tasked with drafting an elimination plan in partnership with DOH. In October 2019, the Planning Committee drafted Viral Hepatitis Elimination (VHE) plan goals and objectives. The Planning Committee identified four subsections in which to divide the plan: 1) Prevention and Education 2) Testing and Linkage to Care 3) Treatment Access 4) Data and Surveillance. In 2020, four workgroups were formed to refine the goals and objectives under each subsection. These workgroups were led by Planning Committee members and the call for participants was advertised through a broader stakeholder network. Borne out of this Commonwealth-wide stakeholder network, a Pennsylvania coalition, Hep Free PA, was formed in 2019 by a body of stakeholders, many of whom served on the Planning Committee. DOH supports Hep Free PA as an elimination planning partner dedicated to improving prevention, diagnosis, care, and treatment of viral hepatitis throughout Pennsylvania.

In addition to the Planning Committee, DOH created the Pennsylvania Interagency Hepatitis Workgroup to enhance collaboration across Commonwealth agencies, review the VHE plan and draft viral hepatitis elimination implementation plans by agency. Agencies represented in this workgroup include DOH, the Department of Corrections, the Department of Drug and Alcohol Programs, the Department of Education, the Department of Human Services, and the Department of Insurance. Implementation plans are currently under review by the agencies, and will document VHE plan components' commitments by agency as well as resource allocation and funding strategies.

In 2021, DOH piloted listening session opportunities for people affected by viral hepatitis to share their experience navigating the disease in Pennsylvania. People with lived experience play a critical role in VHE planning but may experience barriers to participating in this work. DOH piloted these listening session opportunities to reduce participation barriers and encourage people with lived experience to influence the VHE planning process. In 2021, DOH

advertised three low barrier methods of participating: 1) virtual small group listening sessions 2) voicemail submission of experience 3) completion of online survey. These opportunities were advertised via Hep Free PA and in partnership with several community-based organizations serving people with lived experience.

People with lived experience shared several themes: 1) barriers to diagnosis and treatment exist throughout the state, including insurance barriers, but barriers are reduced with the assistance of community-based organizations 2) viral hepatitis has significantly affected people's lives, especially related to fear and anxiety over premature death and transmission to family members 3) DOH needs to improve awareness around viral hepatitis prevention, diagnosis, and treatment and expand syringe service programs. Through this pilot, participants were introduced to Hep Free PA and invited to become active members of this elimination-focused coalition. Many lessons learned were borne out of this pilot project and this work will continue to be expanded upon with future grant funding.

The following VHE plan aligns with the U.S. Department of Health and Human Services' <u>Viral Hepatitis National Strategic Plan: A Roadmap to Elimination in the U.S., 2021 – 2025</u>⁷. Former iterations of this national plan were referenced in the development of the VHE plan. The following VHE plan represents a first iteration to be updated annually and published on the DOH website. Currently, resources for viral hepatitis elimination activities are limited and funding is needed to accomplish the goals documented in this plan. Long-term and short-term goals were drafted to document what needs to be accomplished in Pennsylvania for viral hepatitis to be eliminated. SMART (Specific, Measurable, Achievable, Relevant and Time-Bound) objectives were drafted to document necessary short-term activities. Currently, the Pennsylvania Interagency Hepatitis Workgroup is reviewing programs and existing funding additional resource allocation, these SMART objectives are intended to be completed by 2025.

Pennsylvania Viral Hepatitis Elimination Plan

Prevention and Education

<u>Long-term goal 1</u>: Raise public awareness of viral hepatitis prevention and education as a statewide priority.

- Short-term goal PE1.1: Create a statewide viral hepatitis awareness campaign.
 - SMART Objectives:
 - Form a community advisory group of people living with, cured of, and at risk of viral hepatitis to inform the direction of the campaign and to participate in the campaign.
 - Conduct a literature review around viral hepatitis campaigns and existing marketing materials, with a focus on reducing stigma, and develop comprehensive communication and partnership strategy for different communities.
 - Create materials and launch statewide viral hepatitis print media and social media marketing campaign to ensure accessibility.
 - Create key messages and talking points that can be used by coalition members.
 - Develop a central clearing house of educational campaigns and materials across the state.
 - Create a storytelling campaign of people living with and/or at risk of hepatitis B and C and their loved ones.
- **Short-term goal PE1.2**: Expand capacity with partners to raise awareness about viral hepatitis, acknowledging diversity in Pennsylvania and built upon the trust that community organizations have with at-risk communities.
 - SMART Objectives:
 - Share education campaign materials with partner agencies for distribution.
 - Partner with the following settings serving high-risk patients to integrate viral hepatitis prevention and education into staff workflow:
 - Drug and alcohol treatment facilities
 - Integrate hepatitis messaging into existing campaigns including anti-stigma campaign.
 - Increase hepatitis messaging to Single County Authorities, facilities, and clients.
 - Centers of Excellence for Opioid Use Disorder (OUD)
 - Correctional settings
 - State Correctional Institutions
 - County jails
 - Syringe service providers
 - Ensure existing syringe service providers are involved in educational campaign development and implementation.
 - Human immunodeficiency virus (HIV) care provider settings, Sexual Transmitted Disease (STD) clinics, reproductive health clinics, Federally Qualified Health Centers, free and charitable clinics, community organizations serving people experiencing homelessness, community organizations serving the LGBTQIA+ community, community

organizations serving people who use drugs, correctional settings, dialysis facilities

- o Integrate hepatitis messaging into existing campaigns.
- Provide hepatitis educational trainings to providers to improve integration.
- Social services organizations serving foreign-born and limited English proficient communities, especially those reaching Asian American, Pacific Islander and African communities
 - Integrate culturally and linguistically appropriate hepatitis messaging into existing campaigns.
 - Provide hepatitis educational trainings to providers to improve integration.
- Community organizations serving refugee communities
 - Integrate culturally and linguistically appropriate hepatitis messaging into existing campaigns.
 - Provide hepatitis educational trainings to providers to improve integration.
- Short-term goal PE1.3: Increase knowledge of hepatitis A and B vaccination.
 - SMART Objectives:
 - Partner with DOH Division of Immunizations and the Hepatitis B Foundation to increase education around hepatitis A and B vaccine and the need for adult vaccination.
- **Short-term goal PE1.4**: Expand hepatitis vaccine coverage, particularly among highrisk adults.
 - SMART Objectives:
 - Develop a statewide plan to expand hepatitis A and B coverage, particularly among all high-risk adults.
 - Ensure the plan supports expansion of hepatitis A and B coverage in settings serving:
 - Foreign-born patients and refugees
 - People living with HIV
 - People who use drugs
 - People experiencing homelessness
 - LGBTQIA+ community
 - People with end-stage renal disease (including hemodialysis patients)
 - Ensure the plan promotes hepatitis vaccination as a primary prevention of liver cancer in partnership with the Pennsylvania Cancer Coalition
 - Expand Vaccines for Adults at Risk coverage to improve vaccination capacity at sites serving vulnerable populations.
 - Assess hepatitis A and B vaccine coverage for adults and identify out of pocket costs by insurance provider in Pennsylvania.
 - Develop recommendations for insurance providers based on assessment results.
 - Assess hepatitis A and B vaccination status of all State Correctional Institution inmates and staff and review polices.
 - Based on assessment findings, determine if and where improvements are needed within State Corrections to enhance vaccination coverage for hepatitis A and B.

Long Term Goal 2: Expand the availability of co-located viral hepatitis and harm reduction services and programs throughout the state

- **Short-term goal PE2.1**: Improve access to sterile syringes and other injection equipment for viral hepatitis prevention by supporting statewide harm reduction service expansion.
 - SMART Objectives:
 - Create mode/method for people and organizations to share experiences with viral hepatitis prevention efforts in syringe service program (SSP) settings and facilities offering Medication-Assisted Treatment (MAT).
 - Partner with syringe service programs to create materials to share.
 - Partner with Pennsylvania Coordinated MAT providers who have integrated services.
 - Develop educational materials for community members and clinical stakeholders about the benefits of SSPs and MAT including viral hepatitis prevention.
 - Ensure harm reduction organizations have resources to support hepatitis A and B vaccination.
 - Conduct informational interviewing with SSPs to determine vaccination practices and future needs.
 - Include SSPs in statewide vaccination plan.
- **Short-term goal PE2.2**: Ensure that people receiving viral hepatitis education and prevention interventions also have access to overdose prevention and treatment for substance use disorder.
 - SMART Objectives:
 - Incorporate questions and education about overdose prevention in HIV and viral hepatitis testing/prevention programs and link to naloxone for interested individuals.

Testing and Linkage to Care

Long-term goal 1: Ensure all Pennsylvanians know their hepatitis B and C status.

- Short-term goal TL1.1: Improve diagnostic tools and systems for hepatitis B and C.
 - SMART Objectives:
 - Assess point of care and reflex testing at various facility types, compare point of care and traditional blood testing practices.
 - Develop a patient-centered education campaign about hepatitis B and C testing and test result interpretation as documented in Prevention and Education section.
 - Assess hepatitis B and C testing coverage for adults by insurance provider in Pennsylvania.
 - Develop recommendations for insurance providers based on assessment results.
 - Increase access to hepatitis B and C testing, including hepatitis C reflex testing in clinical and non-clinical settings that serve high-risk populations including those seeking services at:

- Drug and alcohol treatment facilities
- Syringe service programs
- HIV care provider settings
- Sexually transmitted disease clinics
- Reproductive health clinics
- Federally Qualified Health Centers
- Free and charitable clinics
- Correctional facilities
- Emergency departments and inpatient hospital settings
- Pharmacies
- Employee health divisions of healthcare settings including MAT
- Additional community settings that reach high-risk adults, including at community-based events
- Refugee resettlement programs and community organizations serving foreign-born and limited English proficient communities
- Centers of Excellence OUD
- Assess the impact of lower cost testing technology and point-of-care testing for hepatitis B in Pennsylvania.
- Consider mandating hepatitis C reflex testing statewide in laboratory settings
 - Develop a working group to assess current challenges and strategize/implement a plan in laboratory settings
 - Assess the impact of lower cost reflex hepatitis C testing
- Consider mandating hepatitis C reflex testing statewide in non-laboratory settings.
 - Develop a working group to assess current challenges and strategize/implement a plan in non-laboratory settings
- **Short-term goal TL1.2:** Expand pharmacy scope of practice to include hepatitis B and C education, vaccination and screening.
 - SMART Objectives:
 - Expand partnerships with Pennsylvania Board of Pharmacy, pharmacy associations and pharmacy schools to assess the availability and feasibility of viral hepatitis prevention and treatment service expansion in pharmacy settings.
- **Short-term goal TL1.3**: Improve provider knowledge and uptake of United States Preventive Services Task Force and Centers for Disease Control and Prevention's hepatitis B and C screening guidelines.
 - SMART Objectives:
 - Conduct provider education in collaboration with professional societies.
 - Integrate hepatitis B and C testing into healthcare system infrastructure at primary and relatable points of care, including Federally Qualified Health Centers.
 - Develop institutional leadership champions to promote implementation of screening policies.
 - Develop, implement and assess strategies to assist providers and institutions in integrating hepatitis B and C screening.
 - Collaborate with insurance companies to implement quality measures.
 - Modify healthcare system electronic medical record prompts related to universal non-risk-based hepatitis B and C screening.
 - Partner with county jails to assess hepatitis B and C testing, including hepatitis C reflex testing.

- Develop institutional leadership champions to promote implementation of screening policies
- Develop, implement, and assess strategies to assist providers and institutions in integrating hepatitis B and C screening.
- Modify electronic medical record prompts related to universal non-riskbased hepatitis B and C screening.
- **Short-term goal TL1.4:** Ensure all pregnant people are tested for hepatitis B and C during pregnancy, and gestational parents living with hepatitis B and/or C are appropriately reported and referred for follow-up care.
 - SMART Objectives:
 - Assess current hepatitis C testing and linkage to care practices in prenatal clinics.
 - Provide education to physicians, and prenatal, labor and delivery nurses about hepatitis B and C testing (how to test, how to refer) and linkage to care.
 - Improve awareness of American College of Obstetricians and Gynecologists and American Association for The Study of Liver Diseases hepatitis B guidelines for testing and managing women for hepatitis B.
 - Assess hepatitis B and C testing coverage for pregnant people by insurance provider in PA.
 - Develop recommendations for insurance providers based on assessment results.
 - Assess hepatitis B and C testing coverage for incarcerated pregnant people and develop recommendations based on assessment results.
- **Short-term goal TL1.5**: Ensure all children born to hepatitis B and/or C-positive gestational parents are vaccinated for hepatitis B, and all infected children are appropriately referred for follow-up care.
 - SMART Objectives:
 - Assess current hepatitis C testing and linkage to care practices in pediatric clinics.
 - Provide education to pediatric providers about hepatitis B and C testing and linkage to care.
 - Improve awareness of hepatitis B and C screening guidelines for infants and children born to hepatitis B and/or C-positive gestational parents.
 - Assess the current infrastructure within County Children and Youth Agencies and adoption agencies to screen for hepatitis B and C.
 - Improve delivery hospitals' discharge summary inclusion of hepatitis B and C status of gestational parent.

Long-term goal 2: Ensure all Pennsylvanians living with hepatitis B and/or C access sustainable, appropriate medical care and treatment.

- Short-term goal TL2.1: Increase the number of people diagnosed with chronic hepatitis B and/or C who are able to access sustainable care through implementation of innovative and multi-sectoral programs.
 - SMART Objectives:
 - Assess existing viral hepatitis peer outreach and patient navigation programs throughout Pennsylvania.
 - Create a sustainable statewide system for peer outreach workers and patient navigators to link infected individuals with appropriate medical care.

- Develop an online platform for linkage to care to increase access to services among marginalized populations.
- Short-term goal TL2.2: Improve provider awareness of hepatocellular carcinoma screening guidelines to ensure that all people living with chronic hepatitis B and C are appropriately screened for liver cancer, to prevent cancer-related mortality.
 - SMART Objectives:
 - Create a pilot program of dedicated staff (navigators) in a hospitals/health system to navigate patients who need hepatocellular carcinoma screening, and ensure appropriate screening takes place.
 - Replicate the pilot program in hospitals/health systems across the state.
 - Expand upon current hepatocellular carcinoma screening guidelines to include all those at risk through:
 - Building hepatocellular carcinoma testing into provider education platforms.
 - Integrating hepatocellular carcinoma screening prompts into electronic medical records.
 - Work with health systems to create liver cancer-related quality measures for hepatitis B and C to incentivize hepatocellular carcinoma screening.
 - Assess hepatocellular carcinoma screening coverage amongst people living with chronic hepatitis B and C by insurance provider in Pennsylvania.
 - Develop recommendations for insurance providers based on assessment results.
 - Assess hepatocellular carcinoma screening coverage amongst inmates living with chronic hepatitis B and C and develop recommendations based on assessment results.

Treatment Access

<u>Long-term goal 1</u>: Ensure that every individual living with hepatitis B and C in Pennsylvania receives treatment.

- **Short-term goal TA1.1**: Streamline, reduce, or remove health insurance hepatitis C prior authorization, broaden liver score assessments to those recommended by American Association for The Study of Liver Diseases, and remove genotype testing requirement for hepatitis C treatment.
 - SMART Objectives:
 - Identify the barriers created by prior authorization and genotype testing and provide supportive evidence with updated guidelines and documenting the removal of these requirements in other countries and states.
 - Present the evidence to insurance providers.
- **Short-term goal TA1.2**: Eliminate barriers to Medicaid reimbursement of hepatitis C-related services in Pennsylvania drug and alcohol treatment facilities.
 - SMART Objectives:
 - Educate providers on billing practices for hepatitis medications to improve access to care.
- **Short-term goal TA1.3**: Reduce hepatitis B treatment costs and improve access to treatment by addressing adverse drug tiering issues.

- SMART Objectives:
 - Assess barriers for hepatitis B medication access across the state including adverse drug tiering of medication.
 - Improve education of providers about the availability of hepatitis B medications through various insurance providers.

Long-term goal 2: Expand the number of hepatitis B and hepatitis C treatment providers in Pennsylvania.

- **Short-term goal TA2.1**: Document the number of hepatitis B treatment providers in Pennsylvania.
 - SMART Objectives:
 - Evaluate barriers to treatment management and reimbursement by pharmacists.
 - Conduct statewide assessment of hepatitis B treatment providers.
 - Create online search tool for Pennsylvania hepatitis B providers (include information on providers who see uninsured patients including uninsured immigrant populations).
- **Short-term goal TA2.2**: Expand hepatitis B treatment training opportunities for providers.
 - SMART Objectives:
 - Create Pennsylvania hepatitis B treatment continuing education module by building upon existing modules.
 - Collaborate with national partners (e.g., Hepatitis B Foundation) to create a hepatitis B online training course.
 - Expand primary-care focused hepatitis B treatment and management training and support (leverage existing primary care providers treating hepatitis C to expand hepatitis B providers).
 - Provide hepatitis B treatment and management training to healthcare facility management to increase buy in (focus on cost effectiveness).
 - Evaluate the feasibility of creating a hepatitis B warmline which would include healthcare provider mentorship at a local level.
- **Short-term goal TA2.3**: Document the number of hepatitis C treatment providers in Pennsylvania.
 - SMART Objectives:
 - Evaluate barriers to treatment management and reimbursement by pharmacists.
 - Conduct statewide assessment of hepatitis C treatment providers.
 - Create online search tool for hepatitis C treatment providers.
- Short-term goal TA2.4: Expand hepatitis C treatment training opportunities.
 - SMART Objectives:
 - Expand primary care-focused hepatitis C treatment training and technical assistance support for treatment integration into clinic workflow.
 - Assess necessity for expansion of telemedicine services for hepatitis C treatment and consultation.
 - Engage health systems in hepatitis C treatment training.
 - Evaluate the feasibility of creating a hepatitis C regional or statewide warmline (similar to HIV Warmline through University of California San Francisco) that can allow for a provider mentorship model at a local level.

<u>Long-term goal 3</u>: Significantly reduce stigma surrounding hepatitis B and C among patients and healthcare providers.

- **Short-term goal TA3.1**: Educate providers regarding current American Association for The Study of Liver Diseases /Infectious Disease Society of America guidelines that support treatment of people who use drugs to benefit the individual's health as well as the public's health reducing rates of transmission.
 - SMART Objectives:
 - Incorporate harm reduction into all healthcare provider hepatitis B and C treatment trainings.
 - Educate providers about hepatitis B and C treatment as prevention and share best practices.
 - Educate providers about harm reduction services.
 - Create materials specifically for uninsured immigrant populations to educate patients and providers about treatment access issues.

Data and Surveillance

Long-term goal 1: Continuously monitor the hepatitis B and C care cascade of every diagnosed Pennsylvanian.

- Short-term goal DS1.1: Monitor the hepatitis B and C care cascade for the following populations: HIV/hepatitis C co-infected, hepatitis B/C coinfected, clients treated at Pennsylvania drug and alcohol facilities, clients served at Pennsylvania syringe service program sites, clients served at Federally Qualified Health Centers, incarcerated individuals
 - SMART Objectives:
 - Build statewide viral hepatitis surveillance infrastructure to involve the inclusion of linkage to care services in surveillance workflow.
 - Create a care cascade starting with the following populations mentioned in the short-term goal above.
 - Determine appropriate metrics based on literature review and consultation with federal and state partners.
 - Identify areas of Pennsylvania in need of screening through geographic analysis of specific care cascades above.
 - Mandate reporting of hepatitis C negative antibody tests and negative hepatitis B surface antigen tests through Pennsylvania electronic disease surveillance system.
 - Utilize reported negative screening data to inform care cascade and screening rates.
 - Mandate reporting of hepatitis C negative RNA tests through Pennsylvania electronic disease surveillance system.
 - Utilize reported negative RNA results to estimate treatment and reinfection rates.
 - Provide technical assistance through DOH to clinics attempting to create a care cascade.
 - Summarize hepatitis care cascade data in partnership with Department of Human Services to measure change over time.

Long-term goal 2: Continuously monitor hepatitis B and C-related morbidity and mortality.

- Short-term goal DS2.1: Create a Pennsylvania viral hepatitis morbidity profile.
 - SMART Objectives:
 - Create a Pennsylvania viral hepatitis-related cancer surveillance system by regularly matching surveillance data to cancer registry data to identify individuals with viral hepatitis and liver cancer and identify groups at particular risk for developing cancer.
 - Work with insurers to gain access to liver disease diagnoses and outcomes in order to summarize patient-related morbidity data.
 - Annually analyze United Network for Organ Sharing data to identify viral hepatitis-related liver transplants.
 - Incorporate Pennsylvania-specific Veterans Administration data into morbidity profile.
- Short-term goal DS2.2: Annually review viral hepatitis-related death data.
 - SMART Objectives:
 - Annually match viral hepatitis surveillance data with death data.
 - Specifically analyze the viral hepatitis-related data to identify deaths attributable to liver-related complications and substance use disorders.
 - Incorporate Pennsylvania-specific Veterans Administration data into mortality profile.

Long-term goal 3: Ensure viral hepatitis data findings are comprehensively summarized for public consumption.

- **Short-term goal DS3.1**: Share progress of Elimination Plan as shown by data outcomes.
 - SMART Objectives:
 - Establish measurable outcomes to illustrate elimination progress.
 - Annually publish plan implementation progress Establish measurable outcomes to illustrate elimination progress.
- Short-term goal DS3.2: Annually update viral hepatitis data summaries.
 - SMART Objectives:
 - Create website to display interactive data dashboard.
 - Publish care cascade and add it to the data dashboard allowing for the public to filter the data by county.
 - Publish hepatitis B epidemiologic profile including morbidity and mortality data.
 - Publish hepatitis C epidemiologic profile including morbidity and mortality data.
 - Create Pennsylvania viral hepatitis data fact sheets for public consumption.

Citations

¹Lu PJ, Hung MC, Srivastav A, Grohskopf LA, Kobayashi M, Harris AM, Dooling KL, Markowitz LE, Rodriguez-Lainz A, Williams WW. "Surveillance of Vaccination Coverage Among Adult Populations -United States, 2018." *MMWR Surveill Summ.* 70 (2021): 1 – 26.

²Centers for Disease Control and Prevention. "Hepatitis C." Last modified July 28, 2020. https://www.cdc.gov/hepatitis/hcv/index.htm.

³Data courtesy of the Pennsylvania Department of Health and Philadelphia Department of Public Health Viral Hepatitis Program.

⁴Centers for Disease Control and Prevention. "2019 Viral Hepatitis Surveillance Report." https://www.cdc.gov/hepatitis/statistics/SurveillanceRpts.htm. Published July 2021. Accessed February 17, 2022.

⁵Centers for Disease Control and Prevention. "CDC Vital Signs: Dramatic increases in hepatitis C." https://www.cdc.gov/hepatitis/hcv/vitalsigns/pdf/hepatitisc-vitalsigns-april2020-H.pdf. Published April 2020. Accessed February 17, 2022.

⁶The National Academies of Sciences, Engineering, and Medicine. 2017. A National Strategy for the Elimination of Hepatitis B and C: Phase Two Report. Washington, DC: The National Academies Press. https://doi.org/10.17226/24731.

⁷U.S. Department of Health and Human Services. 2020. Viral Hepatitis National Strategic Plan for the United States: A Roadmap to Elimination (2021–2025). Washington, DC.