

Implementation and outcomes of a remote hepatitis B screening program designed to overcome COVID-19 pandemic-related disruptions to community-based screenings for Asians in Greater Philadelphia: A descriptive study

1 | INTRODUCTION

While Asians only make up about 6% of the United States (US) population, they account for 60% of the country's hepatitis B infections, and among those that are infected, nearly 2 in 3 do not know their status.¹ Left untreated, chronic hepatitis B infections can lead to cirrhosis and liver cancer.

Previously, the Hepatitis B Foundation (HBF), which aims to find a cure for the disease and improve quality of life for those impacted, reported that the prevalence of hepatitis B infection in a community sample from Greater Philadelphia comprised predominantly of first-generation Americans from the Western Pacific Region was 7.9%.² Greater Philadelphia is a region composed of five counties and includes the City of Philadelphia. Within the City of Philadelphia, the sixth-largest city in the US, more than one-third of chronic hepatitis B infections are found in Asians,³ who make up about 8% of the population.⁴

Screening, which involves testing blood for hepatitis B antigens and antibodies, can identify asymptomatic infections and allow for treatment or monitoring to prevent disease progression. Additionally, screening can be used to trigger the identification of close contacts and educate individuals about preventing transmission.

In prior work, we identified lack of knowledge about hepatitis B and available resources, limited English proficiency, concerns about costs, time constraints, discrimination, and stigma as barriers to screening and health care for Asians.⁵ Screening can increase when recommended by trusted family members or health professionals and when awareness of hepatitis B increases,⁶ and community-based screening programs can leverage linguistic and cultural connections to provide relevant health education, screening, and referral to care.

Before the coronavirus disease 2019 (COVID-19) pandemic, the HBF and the Asian Pacific American Medical Student Association (APAMSA) chapters at the University of Pennsylvania and Thomas Jefferson University partnered with community

organizations to provide free screenings at community health fairs throughout Greater Philadelphia. At these events, we educated and screened 300–500 people per year in settings where they naturally congregated (e.g., community centers, religious centers). While the COVID-19 pandemic threatened to exacerbate existing health disparities by leading to the cancelation of in-person events and limiting access to education, screening, and care,⁷ the increased use of digital communication tools (e.g., Zoom) and virtual programming during this period presented an opportunity to work with community organizations remotely.

To that end, we sought to describe the implementation and outcomes of a remote hepatitis B screening program that HBF and APAMSA designed and implemented to overcome COVID-19 pandemic-related disruptions to community-based screenings for Asians in Greater Philadelphia.

2 | METHODS

2.1 | Program design

In line with the Health Belief Model, we designed a screening program to address constructs that affect health behaviors: susceptibility, seriousness, benefits, barriers, cues to action, and self-efficacy.⁸

We created an online registration form where individuals could enter their name, birth date, sex, contact information, and preferred language (Figure 1). We scheduled these individuals for free screenings through the Patient Assistance for Lab Services (PALS) online platform (<http://pals-labs.org>), which allows patients to sign up and pay for lab tests online and sends results to providers. Registrants were also mailed a letter with the nearest LabCorp location, hours of operation, and contact details. Additionally, they were sent a requisition to take to the lab for a blood draw at their convenience. Blood samples were checked for hepatitis B surface antigen (HBsAg), core antibody (HBcAb), and surface antibody

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2022 The Authors. *Health Science Reports* published by Wiley Periodicals LLC.

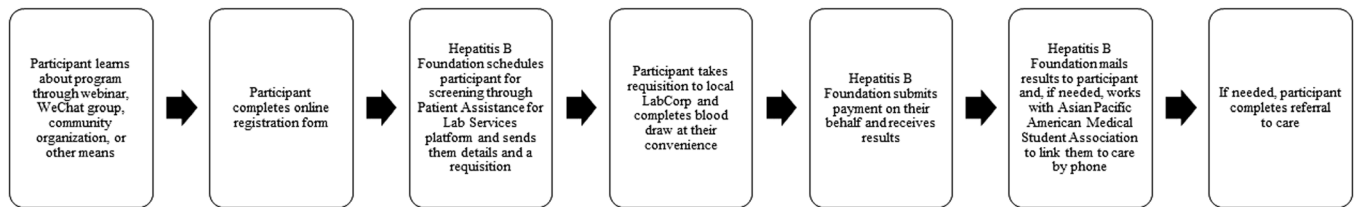


FIGURE 1 Steps to complete remote hepatitis B screening program

(HBsAb). Once screening was completed, we submitted payment to PALS (\$42.00 per participant), which sent results to the HBF. Within 7 days of screening, we mailed participants their results, an explanation in their preferred language, and \$5.00 for public transportation costs.

Depending on their results, all participants requiring referral to care were connected to a linguistically and culturally competent hepatologist or primary care physician (PCP) with hepatitis B competency or a vaccination site by phone. Furthermore, participants without health insurance and/or a PCP were offered appointments at a Federally Qualified Health Center or other clinics.

2.2 | Participant outreach and recruitment

We raised program awareness by hosting informational webinars for the Chinese and Vietnamese communities served by the Northeast Philadelphia Chinese Association (NEPCA) and VietLead, respectively. Webinars were conducted in Mandarin and Vietnamese and covered hepatitis B epidemiology, transmission, screening, and prevention (Supporting Information 1). We also disseminated hepatitis B facts in Chinese and the registration form link in two NEPCA WeChat groups with a combined membership of nearly 500 members on a peri-weekly basis (Supporting Information 2). WeChat is a free Chinese instant messaging and calling app. Additionally, VietLead promoted the program through its in-person and social media networks.

2.3 | Ethical approval and informed consent

The Heartland Institutional Review Board approved this study. Participants were informed about the screening process and consented before screening.

3 | RESULTS

3.1 | Registrations

Between August 2020 and September 2021, 60 adults registered. Of these, four (6.7%) were ineligible because they lived abroad. Among the 56 eligible adults, 26 (46.4%) completed screening.

TABLE 1 Demographic characteristics, screening results, and referrals to care for remote hepatitis B screening program participants

	Eligible and completed screening ^a (N = 26)
Demographic characteristics	
Age, years, mean (SD)	46.6 (12.9)
Sex, n (%)	
Male	11 (42.3)
Female	15 (57.7)
Ethnicity, n (%)	
Chinese	12 (46.2)
Vietnamese	13 (50.0)
Hispanic	1 (3.8)
Screening results	
Hepatitis B surface antigen (HBsAg), n (%)	
Positive	7 (26.9)
Negative	19 (73.1)
Hepatitis B core antibody (HBcAb), n (%)	
Positive	8 (30.8)
Negative	18 (69.2)
Hepatitis B surface antibody (HBsAb), n (%)	
<10 IU/ml	2 (7.7)
≥10 IU/ml	24 (92.3)
Referral to care type, n (%)	
Results by mail	26 (100.0)
Hepatologist or primary care physician with hepatitis B competency	7 (26.9)
Vaccination	2 (7.7)

^a30 adults registered but did not complete screening.

3.2 | Demographics

As shown in Table 1, the mean (SD) age of participants who completed screening was 46.6 (12.9) years during the program period. Eleven (42.3%) participants were male, and 15 (57.7%) were

female. Twelve (46.2%) participants were Chinese, 13 (50.0%) were Vietnamese, and 1 (3.8%) was Hispanic.

3.3 | Screening results

Of those screened, seven (26.9%) participants were positive for HBsAg, indicating a likely chronic infection. Eight (30.8%) participants were positive for HBcAb, indicating a past acute infection and recovery. Two (7.7%) participants had low or undetectable HBsAb (<10 IU/ml) and needed vaccination. Nine (34.6%) participants had protective HBsAb due to prior vaccination.

3.4 | Referral to care

We mailed results to all 26 (100.0%) participants. Seven (26.9%) participants were referred to a hepatologist or PCP with hepatitis B competency based on whether they had health insurance and an existing provider, and two (7.7%) participants (7.7%) were referred for vaccination.

4 | DISCUSSION

Consistent with our prior work, the study findings suggest there is a high prevalence of hepatitis B among Asians in Greater Philadelphia, high exposure to hepatitis B (as demonstrated by HBsAg and HBcAb), and the need to continue prioritizing this population for hepatitis B and liver cancer prevention efforts.²

Our program had notable strengths. In addition to utilizing digital communication tools and virtual programming to overcome disruptions to community-based screenings caused by the COVID-19 pandemic, it addressed educational, linguistic, cultural, financial, and time constraints, and normalized screening. Our program also had limitations. Namely, participants needed literacy and internet or mobile connectivity. Additionally, this approach was less efficient than outreach via community health fairs, where we could reach, register, and screen large numbers of people at once. With the remote screening program, we recruited significantly fewer people, and approximately half of registrants did not complete screening. However, as noted previously, this new approach allowed education, screening, and referral to care to continue in spite of pandemic-related restrictions.

In summary, we demonstrated the feasibility of implementing a remote hepatitis B screening program that overcame COVID-19 pandemic-related disruptions to community-based screenings for Asians in Greater Philadelphia. Future work should expand partnerships with other community organizations and populations with elevated risk, improve screening follow through, test the effectiveness and cultural appropriateness of messaging, and incorporate contact tracing.

AUTHOR CONTRIBUTIONS

Conceptualization: Yoonhee P. Ha and Catherine Freeland. *Formal Analysis:* Yoonhee P. Ha and Catherine Freeland. *Funding Acquisition:* Yoonhee P. Ha and Catherine Freeland. *Investigation:* Yoonhee P. Ha, Yusha Sun, Jack Wilkinson, Sonia Wang, Lillian Chien, Marisa Wu, Evangeline Wang, and Catherine Freeland. *Writing—Original Draft:* Yoonhee P. Ha, Jack Wilkinson, and Catherine Freeland. *Writing—Review & Editing:* Yoonhee P. Ha, Yusha Sun, Jack Wilkinson, Sonia Wang, Lillian Chien, Marisa Wu, Evangeline Wang, and Catherine Freeland. All authors have read and approved the final version of the manuscript. Catherine Freeland had full access to all of the data in this study and takes complete responsibility for the integrity of the data and the accuracy of the data analysis.

ACKNOWLEDGMENTS


The authors thank the Northeast Philadelphia Chinese Association (NEPCA) and VietLead for making the remote hepatitis B screening program possible, Philadelphia Department of Public Health for its partnership, and Hep B United Community Advisory Board members for strategic guidance. This project was funded by the Philadelphia Department of Public Health as part of the Hepatitis B Demonstration Grant Program through the U.S. Department of Health and Human Services Office of Minority Health and an Asian Pacific American Medical Student Association Hepatitis Screening Grant. Yoonhee P. Ha and Yusha Sun were funded by the Medical Scientist Training Program at the Perelman School of Medicine, University of Pennsylvania. YPH received additional support from the Community Scholars-in-Residence Program of the Community Engagement and Research (CEAR) Core of the University of Pennsylvania Clinical and Translational Science Award (8UL1TR001878). The funders had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication. This study was presented as a poster presentation at the 2021 Asian Pacific American Medical Student Association Region 5 Conference (virtual) in October 2021, a poster presentation at the 2021 Asian Pacific American Medical Student Association Region 4 Conference (virtual) in November 2021, and an oral presentation at the 15th Annual National Asian Pacific American Medical Student Association Hepatitis Conference (virtual) in November 2021.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

TRANSPARENCY STATEMENT

The lead author (Catherine Freeland) affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

Yoonhee P. Ha^{1,2,3,4,5} 

Yusha Sun¹

Jack Wilkinson⁶

Sonia Wang¹

Lillian Chien¹

Marisa Wu⁷

Evangeline Wang⁸

Catherine Freeland^{8,9} 

¹Perelman School of Medicine,

University of Pennsylvania, Philadelphia, Pennsylvania, USA

²Community Scholars-in-Residence Program, Community Engagement and Research Core,

University of Pennsylvania, Philadelphia, Pennsylvania, USA

³Center for Public Health Initiatives,

University of Pennsylvania, Philadelphia, Pennsylvania, USA

⁴Penn Medicine Center for Health Equity Advancement, Philadelphia, Pennsylvania, USA

⁵Leonard Davis Institute of Health Economics,

University of Pennsylvania, Philadelphia, Pennsylvania, USA

⁶Department of Psychiatry, Weill Cornell Medicine Child and Adolescent Psychiatry Fellowship Program,

New York-Presbyterian Hospital and Columbia College of Physicians and Surgeons, New York, New York, USA

⁷Sidney Kimmel Medical College,

Thomas Jefferson University, Philadelphia, Pennsylvania, USA

⁸Hepatitis B Foundation, Doylestown, Pennsylvania, USA

⁹College of Population Health,

Thomas Jefferson University, Philadelphia, Pennsylvania, USA

Correspondence

Catherine Freeland, Hepatitis B Foundation,
Doylestown, PA, USA.

Email: catherine.freeland@hepb.org

ORCID

Yoonhee P. Ha  <http://orcid.org/0000-0003-3525-1697>

Catherine Freeland  <http://orcid.org/0000-0002-1876-2105>

REFERENCES

1. Know Hepatitis B. Centers for Disease Control and Prevention. 2022. Updated April 7, 2021. Accessed February 23. <https://www.cdc.gov/knowhepatitisb/index.htm>
2. Freeland C, Vader D, Cohen C, George B. A predictive model for hepatitis B infection among high-risk adults using a community-based sample in greater Philadelphia. *J Viral Hepatitis*. 2020;27(12):1319-1325. doi:10.1111/jvh.13365
3. Hepatitis B and C. City of Philadelphia Department of Public Health. Updated 2018. Accessed February 23, 2022. <https://hip.phila.gov/data-reports-statistics/hepatitis-b-and-c>
4. Philadelphia County. United States Census Bureau. Updated 2021. Accessed February 23, 2022. <https://www.census.gov/quickfacts/philadelphiacountypennsylvania>
5. Freeland C, Huynh T, Vu N, Nguyen T, Cohen C. Understanding knowledge and barriers related to hepatitis B for Vietnamese nail salon workers in the city of Philadelphia and some of its environs. *J Community Health*. 2021;46(3):502-508. doi:10.1007/s10900-020-00878-w
6. Hu KQ, Pan CQ, Goodwin D. Barriers to screening for hepatitis B virus infection in Asian Americans. *Dig Dis Sci*. 2011;56(11):3163-3171. doi:10.1007/s10620-011-1840-6
7. Rehman ST, Rehman H, Abid S. Impact of coronavirus disease 2019 on prevention and elimination strategies for hepatitis B and hepatitis C. *World J Hepatol*. 2021;13(7):781-789. doi:10.4254/wjv.v13.i7.781
8. Skinner CS, Tiro J, Champion V. The health belief model. In: Glanz K, Rimer BK, Viswanath K, eds. *Health Behavior: Theory, Research, and Practice*. Jossey-Bass; 2015:75-94.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Ha YP, Sun Y, Wilkinson J, et al. Implementation and outcomes of a remote hepatitis B screening program designed to overcome COVID-19 pandemic-related disruptions to community-based screenings for Asians in Greater Philadelphia: a descriptive study. *Health Sci Rep*. 2022;5:e761. doi:10.1002/hsr2.761