

# THE IMPACT OF NAIL SALON INDUSTRY POLICIES AND REGULATIONS ON HEPATITIS B AWARENESS AND PREVENTION

---

HEPATITIS B FOUNDATION



## About the Author

Eugene Ng was a Healthy Equity Fellow from the U.S. Department of Health and Human Services Office of Minority Health and worked with the Hepatitis B Foundation (HBF) in the summer of 2018. He has since continued to work with the Hepatitis B Foundation and their Public Health team. During his time with HBF, he conducted research on the landscape of the nail salon industry to better understand how industry regulations and policies affect hepatitis B education, awareness, and prevention. His work in the field of hepatitis B began under the guidance of Dr. Su Wang at the Center for Asian Health at Saint Barnabas Medical Center in Florham Park, NJ, where he was involved in outreach efforts to promote hepatitis B education, awareness, and prevention. Eugene completed his Bachelor of Science degree in genetics at the University of Minnesota and is currently pursuing a Medical Degree at the University of Colorado School of Medicine.

## Acknowledgements

We sincerely thank our contributors from partner organizations and other institutions that offered their time and expertise to assemble this report.

### Contributing Partners and Stakeholders

**Asian Pacific Health Foundation**

**California Healthy Nail Salon Collaborative**

**Charles B. Wang Community Health Center**

**Drexel University**

**HOPE Clinic**

**San Francisco Hep B Free – Bay Area**

**Tacoma-Pierce County Health Department**

### Hepatitis B Foundation Staff

**Chari Cohen, DrPH, MPH**

**Kate Moraras, MPH**

**Rhea Racho, MPAff**

**Catherine Freeland, MPH**

**Michaela Jackson, MS**

**Maureen Kamischke**

**Jenny Kimbel**

**Sierra Pellechio, CHES**

## Introduction

The hepatitis B virus (HBV) is the world's most common serious liver infection and the leading cause of liver cancer. Approximately 30% of the world's population show serological evidence of past or current HBV infection, further emphasizing the significant public health concern<sup>1</sup>. With approximately 292 million people chronically infected worldwide, including up to 2.2 million in the United States, HBV continues to disproportionately affect Asian Americans and Pacific Islanders (AAPIs)<sup>2-4</sup>. According to the Centers for Disease Control and Prevention (CDC), one in twelve AAPIs are living with HBV with nearly two-thirds unaware that they are affected<sup>5</sup>. While AAPIs comprise approximately 6% of the United States' population, they account for over 50% of all HBV infected individuals, with foreign-born populations accounting for approximately 95% of all new HBV cases in the United States<sup>6,7</sup>. Screening for HBV in high-risk populations is not routinely performed, because high-risk groups encounter many social, economic, cultural, and linguistic barriers, and providers often possess a limited understanding of HBV prevention, testing, and treatment, further compounding the issue<sup>8</sup>. As a result, an estimated less than 10% of patients eligible for treatment actually receive medication<sup>9</sup>. Without adequate treatment to control HBV, 25% of affected patients will develop liver cancer<sup>5</sup>.

Perinatal (mother to child) transmission is the most common route of HBV transmission globally<sup>3,5,10</sup>. Contact with infected blood or bodily fluids via percutaneous or mucosal exposure also present

major routes of transmission, for example, through unprotected sex or the sharing of razors or similar objects. Currently, only 25% of the U.S. adult population over the age of 18 has received the HBV vaccination, with only 32.6% of adults aged 19-49 (the age group most at risk) vaccinated<sup>11</sup>.

In October of 2011, the American College of Gastroenterology urged the need for increased surveillance and information on disinfection and infectious disease prevention, particularly for hepatitis B and C in nail salons<sup>12</sup>. While the majority of the nail salon workforce is comprised of Vietnamese Americans, this cohort also presents one of the highest prevalence rates of HBV infection (12.48%) among all Asian ethnicities<sup>6</sup>. In addition, nail scissors may present a reservoir for detectable levels of HBV DNA, presenting a potential risk for transmission<sup>13</sup>. These coinciding factors, along with the potential exposure to bodily fluids in their work, put the nail salon workforce at an increased risk for HBV exposure. The high number of Vietnamese Americans in the nail salon workforce, compounded by the potential risk of HBV transmission between nail technicians and nail salon customers, presents a unique target population that requires further analysis.

As of June 2018, there have been very few studies that have examined hepatitis B risk and transmission in the nail salon workforce. This report reviews results of an analysis of the nail salon occupational environment and culture, and identifies opportunities for state-level policy or regulatory interventions and community-based strategies to

**In October of 2011, the American College of Gastroenterology urged the need for INCREASED SURVEILLANCE and information on DISINFECTION AND INFECTIOUS DISEASE PREVENTION, particularly for HEPATITIS B AND C IN NAIL SALONS.**



increase education, screening, prevention, and treatment for hepatitis B.

## Objectives

1. Analyze the nail salon workforce to understand challenges and barriers to HBV education and access to health care.
2. Analyze current state policies and regulations to identify gaps in HBV prevention and education in the nail salon workplace.
3. Provide recommendations to improve HBV awareness and prevention among nail salon workers.

## Methods

To analyze the understudied nail salon workforce mostly comprised of Vietnamese Americans at high risk for HBV infection, qualitative interviews were conducted with seven *Hep B United* \* coalition partners, local health departments, and other relevant stakeholders. During these interviews, outreach strategies and challenges were shared from organizations that have extensive health education programs for the Vietnamese American population across the U.S. These organizations included: California Healthy Nail Salon Collaborative, Charles B. Wang Community Health Center, Drexel University, Tacoma-Pierce County Department of Health, San Francisco Hep B Free – Bay Area, HOPE Clinic, and Asian Pacific Health Foundation. Qualitative information from these groups' experiences in providing outreach and connecting with the Vietnamese American community and/or the nail salon workforce were synthesized to determine overarching barriers. The outreach or program coordinators were contacted from each organization to understand their outreach strategies, program

---

\* Hep B United is a national coalition co-chaired by the Hepatitis B Foundation and the Association of Asian Pacific Community Health Organizations dedicated to reducing the health disparities associated with hepatitis B.

initiatives, experience with nail salons, and challenges they encountered.

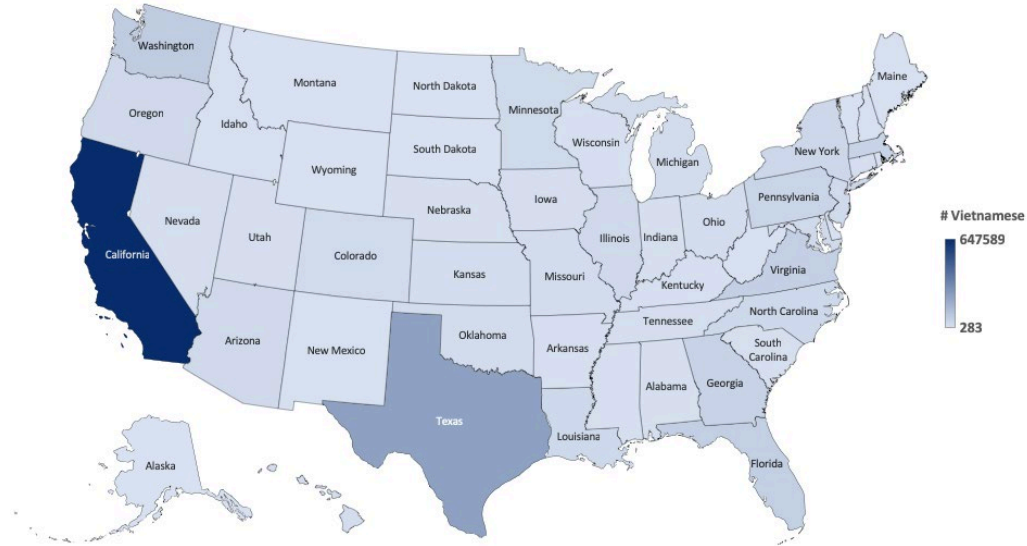
Additionally, a policy analysis of all 50 states was conducted to assess the adequacy of state policies to protect workers and clients from horizontal HBV transmission. State laws and regulations (accessible through state cosmetology board websites) were systematically reviewed to determine each state's infection control requirements, which included: type of disinfectant required, presence of a specific protocol for cleaning tools, presence of a blood spill protocol, and employment restrictions for HBV-infected individuals. State cosmetology boards were contacted via phone to determine the eligibility for HBV-infected individuals to work or obtain a nail technician license.

## Nail Salon Workforce

### Demographics

With limited data on the nail salon industry and HBV surveillance in AAPI communities, *Nails Magazine* was primarily used to provide demographic information regarding this workforce. *Nails Magazine* provides the only nationwide data obtained by independent research. The nail salon industry has seen extensive expansion in recent years with \$8.53 billion spent on nail services in 2017. Vietnamese Americans comprise 56% of the workforce with approximately 97% of workers female. In 2017, the United States Bureau of Labor Statistics estimated 104,020 individuals were employed as nail technicians<sup>14</sup>. Another 2017 estimate by *Nails Magazine* reported employment to be as high as 440,000<sup>15</sup>. California, Texas, and Florida possessed the largest population of registered nail technicians<sup>15</sup>. These three states are also home to the largest Vietnamese populations in the United States<sup>16</sup>.

The Vietnamese American nail salon market presents a unique niche for employees, as it tends to

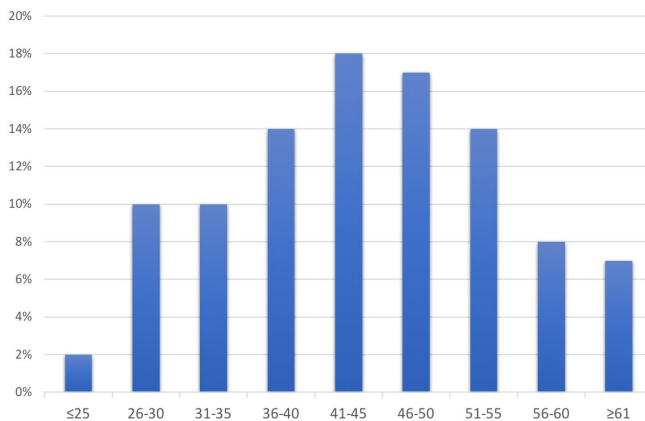


**Figure 1. Geographic distribution of nail technicians in the U.S. \*Data retrieved from Nails Magazine**

be employee or commission-based, unlike typical non-Vietnamese-owned nail salons that offer booth rentals. Vietnamese-owned salons predominantly offer walk-in services, relying more on customer spontaneity and the convenience of a walk-in service to offer reduced prices<sup>15</sup>.

The Asian nail salon workforce is a vulnerable population susceptible to worker exploitation, given language barriers and other factors that limit them to taking low wage jobs. In 2015, the *New York Times* exposed the exploitative culture of nail salons, where employees are often required to work over 40-hour weeks, with an average hourly pay below minimum

wage. Services in Vietnamese-owned nail salons are also priced 30-40% lower than current published averages to undercut competitors, further driving nail salon owners to underpay workers to compensate, while attracting more customers<sup>15,17</sup>. Because many workers are undocumented immigrants who do not possess a nail technician license, they are a target population highly susceptible to exploitation from nail salon owners. The lack of adequate infection control training, the nature of their work, and the disproportionate rate of HBV prevalence among Asian Americans increases their risk for HBV transmission to and from clients<sup>17</sup>.



**Figure 2. Age distribution of nail technicians in the U.S. \*Data retrieved from Nails Magazine**

## Policies and Regulation of the Nail Salon Industry

### Licensing requirements and curriculum –

Connecticut is currently the only state that does not require licensing to become a nail technician, thus is not regulated by any government entity. Currently, most nail technician licensing curriculums do not emphasize the importance of HBV education or other specific infectious diseases. All states that require licensing have requirements to teach sanitation and disinfection; however, there is often no specific requirement to include HBV education. California is one of few states that specify HBV in its curriculum and require education to prevent transmission and

enhance awareness, which is crucial for this workforce as exposure to blood or bodily fluids can be a major occupational hazard for those who are unvaccinated.

#### **Disinfection regulations –**

From our analysis, 48 states required disinfection of multi-use tools prior to service to a new client. Disinfection regulations were located for all states except Connecticut and Utah. Utah does not define any regulations for proper sanitation or disinfection in their state board of cosmetology rules and regulation. Despite the presence of disinfection guidelines in other states, only 42 mandate the use of an EPA-registered disinfectant that would effectively eliminate HBV (Fig 3). In addition, while most states provide some guidance for disinfection, detailed disinfection protocols to adequately clean and destroy infectious diseases were not provided in all states and greatly varied between states. Many states also listed alternative disinfectants that were not EPA-registered options to effectively destroy HBV where dilution ratios also varied between states. Because HBV can survive outside of the body for up to seven days, improper disinfection and reuse of tools can increase the risk of transmission to clients as well as workers<sup>18</sup>.

#### **Blood spill protocols –**

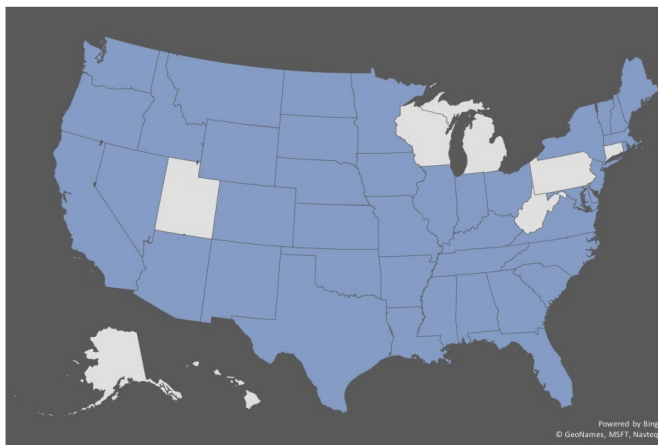
While many states indicated proper procedures to dispose of contaminated materials, they failed to detail specific guidelines, such as glove use, to protect workers from potential exposure. Blood spill protocols were found in only 28 states (states were determined to have a blood spill protocol if their policy included any language describing how to handle contaminated materials). These 28 states did not all necessarily provide a specific step-by-step protocol. For example, only 23 states specifically required glove use when dealing with a blood spill. These inadequate policies failed to describe a specific procedure that protects workers and clients in instances where a client or worker is injured, and potential blood exposure is present. Without these specified protocols for disinfection and managing blood spills, compliance can be low and cannot

adequately protect clients and workers from infectious diseases.

#### **Employment restrictions –**

This analysis identified Arkansas, New Jersey, Oklahoma, and Texas as states with employment restrictions where HBV-infected individuals were deemed unfit to work in the nail salon industry. These concerns stem from misconceptions about HBV transmission and lack of knowledge about highly effective HBV vaccines and treatments. New Jersey possessed the strictest regulations requiring a physician examination and medical clearance to obtain a nail technician license. While these states claim the high risk of HBV transmission in this work environment poses an unwarranted threat to clients, there is no evidence that under normal circumstances a worker would transmit HBV to a client if proper precautions are taken. Placing employment restrictions on people with hepatitis B is a violation of the Americans with Disabilities Act (ADA), which protects workers with communicable diseases from discrimination in the workplace. Under the ADA, it is unlawful for an employer to deny employment on the basis of an HBV infection status.

In Alabama, HBV-infected employees are required to disclose their HBV status to all co-workers and clients, which is a violation of the Health Insurance Portability and Accountability Act (HIPAA). The District of Columbia, Montana, and West Virginia



**Figure 3. States mandating the use of an EPA-registered disinfectant.** States shown in blue require the use of EPA-registered disinfectants. \*Connecticut has no governing board for nail salons.



## Case Study: Addressing HBV-related Institutional Discrimination

In November 2013, the Oregon Health Licensing Agency, Board of Cosmetology convened to repeal two major Administrative rules: 817-015-0010 and 817-010-0300. Rule 817-015-0010 contained language regarding the practice of nail technicians diagnosed with a blood-borne pathogen. The Board of Cosmetology ruled that under the Americans with Disabilities Act (ADA), a state cannot lawfully prohibit an individual from practicing cosmetology on the basis of a communicable disease status<sup>19</sup>. Title II of the ADA explicitly delineates contagious diseases to be covered under the ADA and prohibits public entities from restricting licensure on that basis.

Additionally, Rule 817-010-0300 had previously allowed nail salons to apply for a variance to follow infection control standards if the salon demonstrated that such requirements would be highly burdensome or impractical. The Board of Cosmetology had ruled that infection control is mandatory to protect both workers and clients, and thus no accommodations to this original rule would be provided<sup>19</sup>.

The actions of the Oregon Board of Cosmetology should set precedent for other states that continue to restrict the practice of cosmetology based upon a communicable disease or blood-borne disease status. Previous precedent has also been set by the U.S. Department of Justice (DOJ) in a 2013 ruling that prohibited the University of Medicine and Dentistry of New Jersey from restricting enrollment on the basis of an HBV diagnosis. The DOJ cited both the ADA and the Civil Rights Act as protecting individuals from discrimination on the basis of HBV status<sup>20</sup>.

Given the precedents established by Oregon and the DOJ settlement, communicable diseases are protected under the ADA, thereby discrediting any claims that individuals affected by HBV are unfit to work. If all proper disinfection and blood-spill protocols are followed, there is no reason to believe that workers would be at an increased risk to transmit HBV to clients or their co-workers<sup>21</sup>.

and may in turn compound the issue of worker exploitation<sup>17,22</sup>.

As Vietnamese American nail salons offer significantly reduced pricing for their services, this leads to lower profit margins and further contributes to the low paygrade for workers. In turn, any unexpected medical costs incurred by workers can become a burden on their household expenses. In addition, the Vietnamese culture values family at the center of one's life; thus, all considerations including medical costs are considered in the context of the whole family. Low insurance coverage among this population also compounds their inability to access affordable care and treatment and preventive services for hepatitis B<sup>23</sup>.

Limited English proficiency presents one of the largest barriers to accessing medical care and effective management of chronic HBV. Nearly one half of Vietnamese households are linguistically isolated by a limited capacity to communicate with health care providers<sup>24</sup>. There is also an overall lack of information about health, the healthcare system, and health resources. Culturally, suffering may be viewed as an inevitable part of life, which may lead one to

delay necessary treatment or even reject western medicine altogether.

Within Asian communities, misconceptions surrounding the transmission of HBV also continue to exist. HBV transmission is commonly misattributed to sharing food, and there remains a lack of knowledge about the availability and effectiveness of the HBV vaccine. These misconceptions perpetuate the social stigma that many HBV patients from these communities face. Because Asian cultures are grounded in the communal aspect of sharing food in large families, the misinformed belief that HBV can be transmitted by sharing food or using the same utensils further perpetuates the stigma and isolation faced by HBV patients.

Many Hep B United coalition members expressed similar barriers within the Vietnamese population and nail salon workforce as described above. These challenges emphasize the need to utilize a community-based and culturally and linguistically appropriate approach. HBV outreach and educational awareness programs that are integrated into existing public health infrastructure would be the most sustainable approach to increase hepatitis B



## Case Study: Community-Based Response to Addressing HBV Among Immigrants and Refugees

Tacoma-Pierce County Department of Health presents a model approach to providing sustainable HBV education and outreach to Vietnamese immigrant and refugee communities. This program is centered around a working group of individuals from the local Vietnamese community, including nail salon owners. This working group convenes throughout the year to plan and coordinate educational programs to provide HBV education to the community. The working group offers insight into the Vietnamese community and fosters a valuable partnership to provide greater access to HBV education. Through this community-based approach, the Tacoma-Pierce County Department of Health created a successful partnership with the local Vietnamese community through this working group, which seeks to provide culturally sensitive education. Developing a working group with members from the community of focus provides an effective means to understand their needs and a culturally sensitive approach to addressing a health disparity.

education, prevention, and treatment in the nail salon workforce. It is important to note, while educational information can be empowering to individuals to make informed decisions, knowledge does not always equate to action. Thus, institutional initiatives can present the most effective forms of reform that can reach individuals at greatest risk for HBV. The following recommendations were compiled based on analysis of the challenges and opportunities that Hep B United coalition members identified during the interviews and on analysis of state cosmetology board policies and licensing requirements.

### Recommendations

#### ***1. Integrate HBV education into the nail technician licensing curriculum***

Further integration of infectious disease knowledge is needed in the licensing curriculum to adequately educate workers and raise awareness about HBV and other infectious diseases in the workplace. While current curriculum materials are not publicly accessible, many courses likely do not emphasize the importance of infection control and the potential workplace hazards. All states specify a mandatory number of hours of sanitation and bacteriology training, however, the specific curricula vary greatly by state. Because all nail technician curricula require both a theoretical and practical component to training, this presents an effective

means to educate future workers about workplace exposure to HBV. Inclusion of HBV and other infectious disease education into the final licensing exam can also contribute to increased awareness of HBV and the importance of testing and vaccination among schools and individuals.

#### ***2. Provide multilingual course materials and written exams***

The language barrier present in this population also indicates the need for greater access to bilingual materials. This includes bilingual course materials and bilingual protocols that are displayed in the nail salons. In addition, avoiding highly technical language in these materials can help better bridge the language barrier. Further widespread implementation and access to multilingual written cosmetology license exams are needed to address language barriers. While few states implement these initiatives, further adoption from other states to meet the needs of the primarily Vietnamese nail salon workforce is needed.

#### ***3. Build partnerships between community organizations and nail salons to increase hepatitis B education, testing, and vaccination among nail salon workers.***

CDC recommends that individuals at high risk for HBV infection (including those born in highly endemic regions) be screened<sup>6</sup>. Testing is necessary to effectively reach all workers at risk for HBV. Nearly

two thirds of individuals chronically infected with HBV are unaware they are infected because HBV can persist without symptoms for decades<sup>26</sup>.

While cost is a barrier for this target population, Occupational Safety and Health Administration (OSHA) guidelines require that an employer offer free HBV vaccinations to their employees if they are at a potential risk for blood exposure<sup>27</sup>. Given the nature of nail technicians' work, they are at reasonable risk for potential blood exposure, and thus employers should be required to offer free HBV vaccination, if an employee requests it. This provides an effective means of integrating vaccination with employment. Cosmetology boards can emphasize an urgency to begin the vaccination series before beginning work.

Despite the great benefit of enhancing vaccine coverage in this high-risk population, a vaccination requirement may draw concerns given the immigrant status of many nail salon workers. As many may already have a general mistrust in the government, workers and owners may fear deportation or that their undocumented status would be revealed during this process. This measure to require vaccination before obtaining working status may further isolate this hard-to-reach population from this workforce. Thus, community stakeholders should be involved in further discussions to alleviate fears and mistrust in the government or the healthcare system. Greater partnerships between community-based organizations and local government entities working to address HBV and nail salons can be an effective strategy to increase HBV awareness, education, testing, vaccination, and treatment among nail salon workers.

#### ***4. Adoption of a sanitation rating system***

Cosmetology Boards should adopt a rating system for salon cleanliness, similar to those of restaurant establishments. Public certifications of excellence can present an effective means to incentivize nail salon owners to meet standards of excellence. Currently, North Carolina is the only state that implements a sanitation rating system for nail salons where adherence to sanitation standards are rated as "A", "B", or "C", and assessed three times per year. Similar rating systems can be adopted in other

states to encourage nail salon owners to uphold sanitation standards.

#### ***5. Implementing continuing education (CE) requirements around HBV prevention and upholding sanitation requirements***

Continuing education (CE) provides an opportunity to provide course refreshers and update workers on changes to practices. While some states require CE credits for license renewal, widespread requirements for CE credits could capture a greater number of workers, especially given the high employee turnover. These trainings can provide continued education about proper infection control, disinfection, and common infectious diseases such as HBV to foster greater compliance with sanitation requirements. Because the majority of the nail salon workforce is female and of reproductive age (Fig. 2), HBV education is essential to prevent perinatal transmission. The National Task Force on Hepatitis B provides team-based continuing education training across the country to healthcare professionals about HBV prevention and treatment; similar programs can be developed to educate nail salon workers about workplace hazards and methods to reduce transmission of infectious diseases<sup>25</sup>. These educational courses could be effectively paired with community-based screening programs and outreach opportunities to provide free or reduced cost HBV testing for nail salon workers.

### **Model Program: The Healthy Nail Salon Recognition Program**

The Healthy Nail Salon Recognition Program (HNSRP) is a model strategy in California that presents a sustainable approach to incentivize nail salons to comply with healthy environmental standards to protect workers from occupational hazards. This program is integrated within local governments to prioritize worker safety and healthy workplace practices. HNSRP helps local county health departments establish the infrastructure needed to develop a local recognition program for healthy nail salons that implement exceptional measures to

protect their workers and the environment. When nail salons install ventilation units and implement other measures to protect workers from chemical odors, they are offered a special certificate to display in their store and receive recognition on the state board of cosmetology website. By partnering with the state board of cosmetology and the Consumer and Environmental Protection Agency of California, this program has successfully provided special certificates to nail salons to highlight their commitment to worker and environmental safety. Displaying these certificates offers potential employees and clients the confidence that the nail salon owner has taken measures to protect the health of the workers and the clients.

With an already established framework to address worker safety and health, this program can be further expanded to include HBV education, prevention, and testing as part of a measure of excellence. While these salons are routinely inspected for continued compliance, integrating an aspect that includes HBV screening and vaccination as a quality measure can further incentivize nail salon owners to educate their workers about infectious diseases like HBV. With nearly 200 Certified Healthy Nail Salons in California, this program presents a sustainable strategy to educate and integrate worker health and safety into the nail salon industry. HBV education and screening services could be provided in

these settings where routine trainings are offered to nail salon workers and owners. Programs like HNSRP offer the best sustainable model of practice to integrate effective HBV screening and vaccination programs with local governmental infrastructure.

## Conclusion

HBV education, awareness, and prevention continues to remain a major challenge in the nail salon workforce. The cultural and linguistic barriers in conjunction with inadequate surveillance create challenges to understand HBV transmission and HBV rates in this understudied workforce. While this analysis identified many policy changes that could be implemented at the state level to regulate nail salons, further analysis of state legislative policies and processes is needed to develop advocacy strategies for achieving these changes. Future efforts will be needed to impose changes to state regulations to include measures that protect nail technicians from HBV exposure and transmission in the workplace. Partnerships with other state-level advocacy groups, including legal services, may offer greater insight into the state legislative and regulatory environment to implement strategic initiatives to effect policy changes.

**HBV education, awareness, and prevention continues to remain a major challenge in the nail salon workforce.**

## References

1. Trépo, C., Chan, H. L. Y. & Lok, A. Hepatitis B virus infection. *Lancet* **384**, 2053–2063 (2014).
2. The Polaris Observatory. Global prevalence, treatment, and prevention of hepatitis B virus infection in 2016: a modelling study. *Lancet Gastroenterol. Hepatol.* **000**, 1–22 (2016).
3. Services, U. S. D. of H. & H. Hepatitis B Basic Information. (2016). at <<https://www.hhs.gov/hepatitis/learn-about-viral-hepatitis/hepatitis-b-basics/index.html>>
4. Kowdley, K. V., Wang, C. C., Welch, S., Roberts, H. & Brosgart, C. L. Prevalence of chronic hepatitis B among foreign-born persons living in the United States by country of origin. *Hepatology* **56**, 422–433 (2012).
5. Center for Disease Control and Prevention. Asian Americans and Pacific Islanders and Chronic Hepatitis B. (2016). at <<https://www.cdc.gov/hepatitis/populations/api.htm>>
6. Chen, M. S. & Dang, J. Hepatitis B among Asian Americans: Prevalence, progress, and prospects for control. *World J. Gastroenterol.* **21**, 11924–11930 (2015).
7. Mitchell, T., Armstrong, G. L., Hu, D. J., Wasley, A. & Painter, J. A. *The Increasing Burden of Imported Chronic Hepatitis B-United States, 1974-2008*. at <[www.plosone.org](http://www.plosone.org)>
8. Cohen, C. *et al.* Eradication of hepatitis b: A nationwide community coalition approach to improving vaccination, screening, and linkage to care. *J. Community Health* **38**, 799–804 (2013).
9. Cohen, C. *et al.* Is chronic hepatitis B being undertreated in the United States? *J. Viral Hepat.* **18**, 377–383 (2011).
10. World Health Organization. Hepatitis B. (2018). at <<http://www.who.int/news-room/fact-sheets/detail/hepatitis-b>>
11. Williams, W. W. *et al.* Vaccination coverage among adults, excluding influenza vaccination - United States, 2013. *MMWR Morb Mortal Wkly Rep* **64**, 95–102 (2015).
12. Hepatitis Transmission Risk Needs to Be Studied in Nail Salon, Barbershops. (2011).
13. Koroglu, M. *et al.* Nail scissors and fingernails as reservoirs of hepatitis B virus DNA: Role of nail scissors in household transmission of hepatitis B virus. *Am. J. Infect. Control* (2017). doi:10.1016/j.ajic.2017.12.009
14. Bureau of Labor Statistics. Manicurists and Pedicurists. *Bureau of Labor Statistics* (2009). at <<https://www.bls.gov/oes/current/oes395092.htm#st>>
15. Nails Magazine. Nails Technician Demographics. 4 (2018). at <<http://files.nailsmag.com/Handouts/NABB2017-18stats-LR.pdf>>
16. Census, 2010 United States. American FactFinder - Results. 2013–2015 (2014). at <[https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\\_16\\_1YR\\_B02018&prodType=table](https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_1YR_B02018&prodType=table)>
17. Nir, S. M. The Price of Nice Nails. *New York Times* 1–19 (2015).
18. Lok, A. S. F. & McMahon, B. J. Chronic hepatitis B. *Hepatology* **45**, 507–539 (2007).
19. Brown, K. *Oregon Bulletin*. (2013). at <[http://library.state.or.us/repository/2010/201001041608311/doc\\_rules\\_bulletin\\_November2013\\_Bulletin.pdf](http://library.state.or.us/repository/2010/201001041608311/doc_rules_bulletin_November2013_Bulletin.pdf)>
20. Department of Justice. USDOJ: Justice Department Settles with the University of Medicine and Dentistry of New Jersey Over Discrimination Against People with Hepatitis B. at <<https://www.justice.gov/opa/pr/justice-department-settles-university-medicine-and-dentistry-new-jersey-over-discrimination>>
21. Yang, J., Hall, K., Nuriddin, A. & Woolard, D. Risk for hepatitis B and C virus transmission in nail salons and barbershops and state regulatory requirements to prevent such transmission in the United States. *J. Public Heal. Manag. Pract.* **20**, E20–E30 (2014).
22. Ng, E. Phone Interview with Hep B United Partners. (2018).
23. Tran, T. T. Understanding cultural barriers in hepatitis B virus infection. *Cleve. Clin. J. Med.* **76**, (2009).
24. Gonzalez-Rey, E. *et al.* Human adult stem cells derived from adipose tissue protect against experimental colitis and sepsis. *Gut* **58**, 929–939 (2009).
25. The National Task Force on Hepatitis B. at <<https://hepbtaskforce.org/>>
26. Colvin, H. M. & Mitchell, A. E. *Hepatitis and Liver Cancer: A National Strategy for Prevention and Control of Hepatitis B and C*. (2010). at <<http://www.nap.edu>>
27. Occupational Safety and Health Administration. Bloodborne Pathogens. (1992). at <[https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_id=10051&p\\_table=STANDARDS](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=10051&p_table=STANDARDS)>

## Appendix A.

State	EPA-Registered Disinfectant Use Required?	Sanitation Education?	Blood Spill Protocol?	Glove-wear specified?	Employment restrictions*?
Alabama	Yes	Yes	Yes	No	No
Alaska	No	Yes	Yes	Yes	No
Arizona	Yes	Yes	Yes	Yes	No
Arkansas	Yes	Yes	No	No	Yes
California	Yes	Yes	No	No	No
Colorado	Yes	Yes	Yes	Yes	No
Connecticut	No	No	No	No	No
District of Columbia	No	Yes	No	No	No
Delaware	Yes	No	Yes	Yes	No
Florida	Yes	Yes	No	No	No
Georgia	Yes	Yes	No	No	No
Hawaii	No	Yes	No	No	No
Idaho	Yes	Yes	No	No	No
Illinois	Yes	Yes	No	No	No
Indiana	Yes	Yes	No	No	No
Iowa	Yes	Yes	Yes	Yes	No
Kansas	Yes	No	Yes	Yes	No
Kentucky	Yes	Yes	No	No	No
Louisiana	Yes	Yes	Yes	No	No
Maine	Yes	Yes	Yes	Yes	No
Maryland	Yes	Yes	Yes	Yes	No
Massachusetts	Yes	No	No	Yes	No
Michigan	No	Yes	Yes	No	No
Minnesota	Yes	Yes	Yes	Yes	No
Mississippi	Yes	Yes	Yes	Yes	No
Missouri	Yes	Yes	Yes	Yes	No
Montana	Yes	Yes	Yes	Yes	No
Nebraska	Yes	Yes	Yes	Yes	No
Nevada	Yes	Yes	No	No	No
New Hampshire	Yes	Yes	Yes	Yes	No
New Jersey	Yes	Yes	No	No	Yes
New Mexico	Yes	Yes	Yes	Yes	No
New York	Yes	Yes	Yes	Yes	No
North Carolina	Yes	Yes	Yes	Yes	No

<b>North Dakota</b>	Yes	Yes	No	No	No
<b>Ohio</b>	Yes	Yes	Yes	Yes	No
<b>Oklahoma</b>	Yes	Yes	Yes	Yes	Yes
<b>Oregon</b>	Yes	Yes	Yes	Yes	No
<b>Pennsylvania</b>	No	Yes	No	No	No
<b>Rhode Island</b>	Yes	Yes	No	No	No
<b>South Carolina</b>	Yes	Yes	No	No	No
<b>South Dakota</b>	Yes	Yes	Yes	Yes	No
<b>Tennessee</b>	Yes	Yes	No	No	No
<b>Texas</b>	Yes	Yes	Yes	No	Yes
<b>Utah</b>	No	No	No	No	No
<b>Vermont</b>	Yes	Yes	No	No	No
<b>Virginia</b>	Yes	Yes	Yes	No	No
<b>Washington</b>	Yes	Yes	Yes	Yes	No
<b>West Virginia</b>	No	Yes	No	No	No
<b>Wisconsin</b>	No	No	Yes	No	No
<b>Wyoming</b>	Yes	Yes	Yes	Yes	No

\*Employment restrictions indicate the inability of an HBV infected individual to work in a nail salon.

## Appendix B.

### Guided Interview Questions:

1. How are regulations currently enforced in nail salon industry? Who regulates?
2. What kind of surveillance programs are there to look at HBV transmission in nail salon workforce?
3. Are incidences where people are injured in nail salons reported? If so, how are those reports regulated?
4. Any data on the continuum of care for these people who are tested?
5. Have they ever offered free HBV or other health screenings? What was their response?
6. What strategies did you use to target the immigrant population?
  - a. How did you know those efforts were effective?
7. What types of material did you use to bridge language/cultural barriers?
8. What efforts did you use to bridge health literacy disparity?
9. How effective are media campaigns? What types of media did you use/find most effective?
10. How did you encourage nail salons to be part of your program? Incentives? What was their response?
11. How do you think we could integrate HBV into nail salon curriculum? What is the current status of HBV infectious disease education in cosmetology curriculum?
12. Do you do any legislative advocacy?
13. Which community leaders/members are best to disseminate information to the rest of the community?



3805 Old Easton Road  
Doylestown, Pennsylvania 18902  
215.489.4900 | [www.hepb.org](http://www.hepb.org)