# Advancing Immunization Equity: Recommendations from the National Vaccine Advisory Committee

## Approved on June 17, 2021

### INTRODUCTION

Immunization inequity contributes to negative health outcomes for both individuals and the population as a whole. Equitable immunization systems not only prevent potentially devastating vaccine-preventable illnesses, but also generate health more broadly by attracting people, including marginalized populations, into healthcare to improve other health inequalities. While longstanding inequities in vaccination persist, immunization equity is a requirement of an optimized vaccination system. The COVID-19 pandemic, for instance, has amplified the existence and impact of health disparities, inequities and inequalities in the United States.

People from marginalized and disadvantaged populations, as well as indigenous, institutionalized, homeless and incarcerated people have higher morbidity and mortality rates from COVID-19 than those in the general public,[i] and these inequities not only impact individuals of those populations but also the overall health of the nation. The COVID-19 pandemic illustrates the importance of protecting everyone to stop the spread of disease, but widespread immunization inequity is a longstanding and persistent plague to immunization uptake for almost all recommended vaccines.

For example, recent data indicate the following:

- Black, Hispanic, and Asian adults have lower vaccination rates than Whites for all recommended adult vaccines.[ii] Inequities for childhood vaccines exist but are far less dramatic.

- Rural adolescents are less likely to receive human papillomavirus (HPV) or meningococcal conjugate vaccines than those living in urban areas.[iii]
- Adults with health insurance have vaccination rates two to five times higher than people without health insurance for influenza, shingles, HPV, and other diseases.[iv]
- Black and Hispanic health care professionals (HCPs) have lower vaccination rates than White HCPs for influenza, hepatitis B, and tetanus, diphtheria, and pertussis (combined Tdap vaccine).[v]
- Beyond racial, ethnic, and geographic disparities, disparities also exist for other vulnerable populations, such as people with disabilities[vi] and those who are homeless[vii] or identify as lesbian, gay, bisexual, or transgender (LGBT)[viii].

The National Vaccine Advisory Committee (NVAC) believes these and other disparities are a result of underlying systemic barriers and biases that persist as a result of lack of access to immunization, unaffordability, and other system, policy and environmental barriers that result in differential receipt of vaccinations. Shortcomings in data reporting also influence immunization inequity. Current data allows for some understanding of disparities, but more robust data would drive a deeper awareness, a clearer understanding of the scope and complexity of the problem and an effective plan to address the issues. For example, current measurements of vaccine coverage do not disaggregate data for many meaningful sub-populations (e.g., distinct Asian-American sub-populations, institutionalized or incarcerated persons, or homeless people).

This report offers recommendations to address challenges to achieving equity in immunization and other system, policy and environmental barriers that result in differential receipt of vaccinations and refers specifically to vaccines recommended by the Advisory Committee on Immunization Practices (ACIP) for use in the United States for routine preventive care. While the NVAC fully supports immunization equity, it has not previously developed a report devoted to best practices to promote equity and eliminate disparities in vaccination in the United States. Over the years, the NVAC has written a number of recommendations to improve immunization

equity or reduce disparities in vaccination. Table 1 provides an overview of selected NVAC recommendations related to immunization equity, and this report builds on these recommendations as well as other efforts to decrease disparities in immunization rates.

The Vaccines for Children (VFC) program, for instance, has changed the landscape of childhood immunization, and the United States has made great strides toward immunization equity for children as a result. The program provides vaccines at no cost to eligible children through 18 years of age (approximately 50 percent of U.S. children). With the removal of cost barriers, childhood disparities in immunization have diminished markedly since 1994[ix] with some regional gaps in coverage and hesitancy[x]. Additionally, with the passage of the Affordable Care Act (ACA), historic gains in the coverage of both children and adults has improved access to routinely recommended vaccinations for those covered by a non-grandfathered, private insurance plan and those covered by Medicare and Medicaid. These historic gains in coverage helped to close the gap in immunization inequity, but work is still needed to close the gap in immunization inequities.

Table 1: Select NVAC Guidance from Previous Reports Related to Immunization Equity

| Guidance Summary | Report | Date |
|---|---|---|
| Recommendations 1 and 2 focused on the expansion of the VFC and improving vaccine administration reimbursement in VFC. | Assuring Vaccination of Children and Adolescents without Financial Barriers | Approved September 16, 2008 |
| Opportunity Area 3 focused on eliminating financial and systems barriers for providers and consumers to facilitate access to routinely recommended vaccines. | Evaluation of the 2010 National Vaccine Plan Mid-course Review | Approved February 2017 |
| Acknowledged women, especially pregnant women, were underrepresented in vaccine research trials. | Overcoming Barriers and Identifying Opportunities for Developing Maternal Immunizations | Approved September 20, 2016 |

| Guidance Summary | Report | Date |
|---|---|---|
| Recognized that disparities exist between public and private payers and found access issues with some groups more likely to be vaccinated than others. This report called for more diverse communications, including using new technologies. Recommendation 2.1 recommended "support vaccine administration as a routine standard of practice." Recommendation 3 recommended the ASH "focus efforts to improve financing for immunization services during pregnancy and postpartum. | Reducing Patient and Provider Barriers to Maternal Immunizations | Approved June 11, 2014 |
| Documented several racial/ethnic, geographic, and socioeconomic disparities. Focus area 4 centered on meeting the needs of rural providers. | Strengthening the Effectiveness of National, State, and Local Efforts to Improve HPV Vaccination Coverage in the United States | June 25, 2018 |

**IMMUNIZATION EQUITY AND RELATED TERMS**

Although the term *disparities* is often interpreted to mean racial or ethnic disparities, many dimensions of disparity exist in the United States, particularly in health. If a health outcome is seen to a greater or lesser extent between populations, there is disparity. Race or ethnicity,* sex, sexual identity, age, disability, socioeconomic status, and geographic location all influence the likelihood of achieving good health.[xi] *Equity* is the absence of avoidable, unfair, or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, geographically, or by other means of stratification. The goal of *health equity*, therefore, is that all people should have a fair opportunity to attain their full health potential,[xii,xiii] including access to and receipt of vaccinations.

In terms of immunization, an effective system must be optimized so it is equitable and avoids differences in immunization coverage between groups by addressing policies, structures, governance, communication efforts and vaccination program implementation and evaluation. This optimization will be achieved by addressing systemic issues, vaccine access, and the *social*

* Race and ethnicity are self-reported constructs.

*determinants of health*—the underlying conditions in which people are born, grow, live, play, worship, work, and age[xiv].

**CHARGE**

Health inequity is a complex problem that requires creative, responsive, collaborative, interprofessional approaches that must be sustained over time. The Assistant Secretary for Health (ASH) charged the National Vaccine Advisory Committee (NVAC) on March 25, 2019, with developing a report with recommendations to build a foundation for an effective national strategy to end immunization inequities in the United States. To assist with this effort, the NVAC established the Immunization Equity Subcommittee to 1) deliver a set of system-wide recommendations for overcoming drivers of immunization disparities and reducing gaps in coverage that will provide the foundation for development of a collaborative immunization equity strategy and 2) review and summarize the complex and interrelated factors that contribute to vaccination disparities such as access, affordability, awareness, acceptance, and activation.

**PROCESS**

In response to this charge, the NVAC established the Immunization Equity Subcommittee, which was composed of NVAC members and several individuals not currently serving on the committee with relevant expertise. A number of additional experts presented their work to the subcommittee and the full committee to support the findings and recommendations in this report. The subcommittee worked together to reach consensus on all of the recommendations in this report in both group meetings and over email discussions and in final reviews of various parts of this report as well as the full report. Table 2 lists the experts who presented in support of this report.

Table 2: Invited speakers and panel presentations given during the NVAC meetings or Immunization Equity Subcommittee meetings

| Topic | Date | Speaker(s) |
|---|---|---|
| Adult Disparities in Vaccination Coverage | 8/20/2019 | Megan C. Lindley |
| Vaccination Hesitancy, Confidence, and Immunization Disparities | 9/9/2019 | Glen Nowak |
| Immunization Equity among Diverse Populations | 9/9/2019 | Paula M. Frew |
| Vaccine Equity Literature Review | 9/18/2019 | Melissa Martinez |
| Health Literacy and Immunization | 9/18/2019 | Melissa G. French |
| Collaboration for Vaccine Education and Research | 10/8/2019 | Barbara Pahud |
| Vaccine Financing | 10/8/2019 | Angela K. Shen |
| Disparities in Immunizations in Rural Health Areas | 10/21/2019 | Paul Moore |
| Pharmacists: Access to Vaccinations and Addressing Disparities | 10/21/2019 | Mitchel C. Rothholz |
| Vaccination Coverage among U.S. Children and Adolescents | 11/5/2019 | Tanja Y. Walker |
| Vaccines for Children Program and Disparities | 11/5/2019 | Cindy Weinbaum |
| Using an IIS for Identifying Populations At Risk | 11/18/2019 | Rebecca Coyle |
| IIS to Evaluate Health Equity | 11/18/2019 | Miriam Muscoplat |
| Seasonal Influenza on Latino Adults | 12/16/2019 | Elena Rios |
| Factors Leading to Ethnic Disparities in Access to Adult Vaccines | 12/16/2019 | Sonja S. Hutchins |
| Medicare vs Medicaid: Vaccines, State Flexibility, State Options, HEDIS Measures | 1/14/2020 | Jeffrey Kelman, Mary Beth Hance |
| Medicaid Vaccination Services for Pregnant Women | 1/14/2020 | Charleigh Granade |
| Immunization Disparities among American Indian/Alaska Native People | 1/14/2020 | Jillian Doss-Walker |
| Maternal Immunizations | 1/27/2020 | Laura E. Riley |
| Health Insurance Providers are Addressing the Social Determinants of Health | 2/11/2020 | Chris Regal |
| Vaccinate your Family: the Next Generation of Every Child by Two | 2/11/2020 | Amy Pisani |
| Immunization Equity Summary | 3/10/2020 | Alan Hinman |

Several times over the course of writing the report, the subcommittee presented progress to the full committee during public meetings. This report was also shared with the full committee once for comments during the development process and again, once finalized, before the vote to approve the report. The NVAC approved this report on June 17, 2021.

**ACCESS**

Gaining access to vaccines can be complex and driven by multiple factors, such as financial or system barriers that impede a patient's ability to get vaccinated and providers ability to give vaccinations. Geography also plays a notable role in access. In general, vaccination rates are higher in urban than rural areas[xv,xvi, xvii, xviii, xix]. In rural areas, even insured patients may face barriers to access, because they may live a considerable distance away from their closest in-network healthcare provider. Likewise, certain populations—such as some undocumented immigrants, those experiencing homelessness, incarceration, or those housed in long-term care facilities or who are homebound—face substantial barriers to access and are considered particularly hard to reach through routine care.[xx] People who are vaccine-hesitant are also less likely than others to obtain routine vaccinations.

Vaccines may be available at physicians' offices, some local health departments, and pharmacies,[xxi, xxii, xxiii, xxiv, xxv, xxvi, xxvii] as well as through community dissemination mechanisms (e.g., schools, prisons, drive-through immunization clinics, mobile health units, community health centers, churches, shelters, and senior centers)[xxviii, xxix]. Individual and community efforts have met with success and serve as examples. Nonetheless, an evidence-based comprehensive and coordinated plan is needed.

The most common point of access for vaccinations is a primary care provider, yet approximately 20 percent of Americans (23 percent of Whites, 31 percent of Blacks, 47 percent of Hispanics) have no primary care provider, and younger adults are less likely than older adults to visit one. Some people are more likely to visit a medical subspecialist than a primary care provider and perceive the subspecialist as their provider of routine care. Few subspecialty providers stock vaccines. Even some specialties that are considered primary care providers, such as obstetrician-gynecologists,[xxx] do not always offer the full range of ACIP-recommended vaccines for their patients.

Even access to a primary care provider does not guarantee access to immunization. Among family physicians and internists, for example, only 27 percent stock all adult vaccines, in part because of the cost of stocking vaccines and the need for appropriate storage equipment.[xxxi, xxxii] Although vaccinations are increasingly available at community-based pharmacies, some rural areas and low-income urban areas[xxxiii] do not have access to pharmacies that provide vaccines.

In 2013, the NVAC's *Updated Standards for Adult Immunization Practice* stated, "Every clinician, in all settings, has a fundamental responsibility in ensuring that all patients are up-to-date with respect to recommended immunizations."[xxxiv] The NVAC further recommended that all healthcare professionals should assess patients' vaccine needs, strongly recommend needed vaccines, and either provide the vaccines or refer patients to a provider who immunizes.

**Recommendation 1.1: The Department of Health and Human Services (HHS) should work with state immunization programs, who are responsible for the VFC program, to increase collaboration with pharmacies by facilitating pharmacies' participation in VFC, especially in rural areas where pharmacists are among the few accessible immunization providers.** An amendment to the Public Readiness and Emergency Preparedness Act (PREP Act) provided authority to pharmacists and certain pharmacy interns to order and administer vaccines to children ages three through 18 years, under several requirements during the current public health emergency. NVAC recommends this practice continues to allow for greater flexibility to immunize children when the medical home is not being utilized. As we move towards providing vaccines for all, HHS should work to minimize the regulatory burden of this immunization program to vaccinators, public health authorities, and vaccinees.

**Recommendation 1.2: HHS should develop model legislative language about the provision of immunizations by pharmacists and provide it to states to make it easier for them to change or add in language to state pharmacist vaccination laws.**

**Recommendation 1.3: To address access to providers in rural areas, the ASH should work with public and private groups to highlight best practices and promising community approaches for improving vaccination rates. As part of this effort, the ASH should highlight evidence-based approaches to increase access by removing or decreasing financial concerns or transportation issues.** The ASH and the HHS Office of the National Coordinator for Health Information Technology should work with the Centers for Disease Control and Prevention (CDC), public and private groups to develop an actionable guide to use immunization information systems (IIS) and geomapping to determine the extent of vaccine deserts (in rural and urban areas), track immunization rates in hard-to-reach populations, and assess efforts to overcome access barriers. The guide should be presented to NVAC for review and approval within the next two years before it is published and disseminated to immunization stakeholders.

The NVAC recommends the ASH work with medical, dental, and other provider groups to promote vaccines for all patients by all specialties, even among healthcare professionals who do not administer vaccines. The NVAC standards for immunization practice can be used to provide a rationale and a 4-step process for all healthcare professionals to ensure their patients are fully immunized.

**Recommendation 1.4: To address access issues relative to disability, language, and immigration status, the ASH should work with public and private groups to develop guidance for providers on ways to reduce these barriers and evaluate the impact of these activities.**

**AFFORDABILITY**

Access to vaccines is closely tied to affordability. Despite the availability of the VFC program and the vaccine coverage legislated by the Patient Protection and Affordable Care Act (ACA), disparities based on insurance status persist. Concerns have been raised about the VFC program, such as its administrative and logistical burdens for providers (e.g., regulations dictating that providers separate VFC vaccine from other vaccine stocks), missed opportunities for immunization due to delays in vaccine delivery, and delayed vaccine administration due to issues maintaining stored vaccine temperature. These concerns may prevent some healthcare providers from taking part in the VFC program, thus decreasing patients' access to an affordable immunization option.

Medicare does not cover all vaccines as a medical benefit.[xxxv] Vaccines that are covered as a pharmacy benefit rather than a medical benefit, such as the shingles vaccine, are less likely to be stocked at provider clinics and more likely to require a copay, resulting in income-associated disparities in vaccination rates.[xxxvi] In addition, Medicaid coverage of ACIP-recommended vaccines for adults varies by state, with mandatory coverage of ACIP-recommended vaccines for the Medicaid expansion population and children. In addition, states have flexibility to set Medicaid reimbursement rates. As a result, many adult Medicaid beneficiaries do not have access to all of the ACIP-recommended vaccines for adults.[xxxvii]

For providers, the costs of administering vaccines includes the financial burdens of vaccine purchase, storage, and vaccine insurance, as well as the time required for counseling patients and administering vaccine.[xxxviii, xxxix] In addition, all vaccination providers must invest time and money in recordkeeping, maintaining reminder/recall systems, and IIS reporting. The costs of vaccines and related supplies are also increasing,[xl, xli] and providers must pay for them upfront and await reimbursement, which varies considerably by insurer. As such, the financial burden on providers can diminish patients' access.

**Recommendation 2.1: A Vaccines for All program should be created and operated in parallel with the VFC program to provide vaccines at no cost to the recipient, so that all financial barriers to ACIP-recommended, routine vaccines are removed.** Payment to healthcare professionals should include adequate reimbursement for administration and counseling. To address the cost to practices of stocking vaccines, the ASH, in collaboration with CMS, should work with vaccine suppliers, payers, and professional organizations to ensure that HCPs receive adequate compensation for vaccinating in their clinical settings. This program should also ensure that all Medicare and Medicaid beneficiaries have access to all ACIP-recommended vaccines at no additional cost to beneficiaries.

**Recommendation 2.2: The ASH should convene a meeting and report findings from this meeting to explore the development of a system that removes all financial barriers to ACIP-recommended, routine vaccines for people of all ages.**

**Recommendation 2.3: The CDC and CMS should convene a series of meetings with VFC providers and state program managers to listen to concerns regarding the delivery of vaccines and other program policy issues, and then develop a plan to address the findings.**

**Recommendation 2.4: The ASH should work with the CDC and other appropriate agencies to study how financial coverage of vaccines impacts vaccination rates and health outcomes and report these findings to the NVAC.**

**KNOWLEDGE AND AWARENESS**

Provider recommendations are key to vaccine uptake.[xlii, xliii] Given the rapid rate of new vaccine development and changes in vaccine recommendations, not all providers are knowledgeable about vaccines and vaccine recommendations across the lifespan.[xliv, xlv] Medical providers—including physicians, nurses, advanced practice providers, and pharmacists—vary in their training and may have knowledge gaps regarding vaccines and their importance. Moreover, as the pace of vaccine development has increased and the evidence about their use has expanded,

the complexity of ACIP recommendations has increased as well, which further complicates the already nuanced process of shared decision-making between healthcare professionals and patients.

Young physicians are less likely to champion vaccines, partly because they lack personal experience with vaccine-preventable diseases and partly because they lack confidence in providing information about vaccine safety and risks.[xlvi] There is no standardized vaccine curriculum in medical, nursing, or dental schools, and most involve only a few hours of learning on the topic. Immunizations might be covered in didactic sessions during primary care (family medicine, internal medicine and pediatric) residencies or in fellowships. Even infectious disease specialty education has no standardized curriculum about vaccines. The online curriculum created by the multidisciplinary Collaboration for Vaccine Education and Research was deemed to increase residents' confidence in discussing vaccines with parents and patients.[xlvii]

**Recommendation 3.1: The ASH should work with appropriate governmental and private agencies to ensure an emphasis on vaccine education, communication, and health literacy during training, particularly during postgraduate and in-service training with the goal of improving immunization equity.** For example, the ASH should consider working with CDC to develop a model of interdisciplinary vaccine education, building on the foundation created by CDC's Epidemiology and Prevention of Vaccine-Preventable Diseases (a.k.a., the Pink Book),[xlviii] which is linked to free online continuing education opportunities. Currently, more training is needed on vaccines in general, as well as communication strategies for professionals working in immunization settings to discuss vaccination and make a strong recommendation for it. Additionally, professionals need more training to recognize inequities and disparities and create solutions to resolve this issue.

**Recommendation 3.2: The CDC should continue to develop online training about best practices for providers already in the field, including addressing health literacy, addressing unconscious or perceived bias and instituting diversity training, and incorporating successful**

**practice-level interventions (e.g., making strong vaccine recommendations and using motivational interviewing in practice).**

**Recommendation 3.3: The CDC should continue to work with state and local public health agencies, professional associations, communities, and voluntary organizations to provide ongoing engagement and education with stakeholders about immunization.** CDC's current activities with COVID-19 vaccines may be a model for success and should continue to be funded to provide additional engagement for all ACIP-recommended vaccinations in the future.

**ATTITUDES, BELIEFS, AND VACCINE ACCEPTANCE**

Attitudes about vaccines influence vaccine uptake. Mistrust of vaccines, government institutions, or health care systems may stem from personal or community experience or perceived or actual discrimination, particularly among underserved communities.[xlix, l, li, lii, liii, liv, lv, lvi, lvii, lviii, lix, lx] Acknowledging discrimination, recognizing bias, and working to deliver culturally sensitive care could help mitigate longstanding barriers to trust in health care and government institutions.

A person's likelihood of obtaining some specific vaccines, such as the HPV vaccine, is influenced by race, ethnicity, geography, socioeconomic status, and other factors.[lxi, lxii, lxiii, lxiv, lxv] Knowledge about vaccines (including of the benefits of certain vaccines for people with chronic conditions) plays a substantial role in vaccine uptake.[lxvi, lxvii] Vaccine confidence, also can vary by person and vaccine. The NVAC has written about this issue previously, so this report will not focus on vaccine confidence except to say that this issue plays a significant role in vaccine disparities. For example, Black communities report high distrust of COVID-19 and flu vaccines, citing various reasons including enduring structural racism. [lxviii, lxix, lxx, lxxi, lxxii]

**Recommendation 4.1: The ASH should fund the Office of Infectious Disease and HIV-AIDS Policy (OIDP) and the CDC to conduct focus groups, listening sessions and/or structured interviews with representatives of undervaccinated populations and the providers who serve**

**these groups to better understand what type of messaging would be effective in reaching these populations and the messengers that serve as trusted voices in the specific communities we are trying to reach. In addition, the OIDP should gather information about how to best package information for providers to support their efforts in increasing immunization rates and provide this information to immunization stakeholders involved in vaccine communication.**

**Recommendation 4.2: The ASH should continue to support efforts to identify effective communication strategies that improve communication, education, and health literacy[lxxiii, lxxiv, lxxv] and should work with the CDC to incorporate these strategies into vaccine training, educational offerings and Vaccine Information Statements.** HHS should continue to disseminate health information that is accurate, accessible, and actionable. Trusted messengers in the community and social media influencers should be further engaged to help disseminate information. The CDC and other groups developing immunization information should continue to develop culturally and linguistically appropriate health information, including visual communication, and the ASH should actively encourage the expansion of these efforts in the community, especially during outbreaks, using the Office of Minority Health's National Standards for Culturally and Linguistically Appropriate Services in Health and Health Care (CLAS standards).

**Recommendation 4.3: The ASH should invest in new, targeted communication strategies to promote tested messages about the benefits of vaccination and measure message effectiveness and improved reach in underserved groups for all routine vaccines. Communication strategies should recognize that correcting myths can have the unintended effect of reinforcing them.[lxxvi] The communication efforts should be independently evaluated and findings distributed widely to relevant groups promoting vaccination.**

**Recommendation 4.4: The ASH should promote the use of interventions for which there is an evidence-base for improving equity including practice-level interventions,[lxxvii, lxxviii, lxxix, lxxx, lxxxi,**

**[lxxxii], [lxxxiii] such as the use of standing orders, reminder/recall systems, enhanced training, and information technology systems.**

**Recommendation 4.5: The ASH should identify funding to increase research and evaluation of evidence-based interventions that reduce disparities in immunization as well as ways to better counter vaccine hesitancy in marginalized populations.** NVAC recognizes the work of the U.S. Preventive Health Services Task Force and the Community Preventive Services Task Force in providing reviews of evidence to form recommendations for practice and encourages future work to highlight effective interventions to improve equity in immunization across the lifespan.

**DATA TRACKING AND REPORTING INFRASTRUCTURE**

Robust, consistent, and timely data are needed to identify disparities; to dispel myths, misconceptions, and disinformation that may be barriers to immunization; and to monitor disparities over time to improve equity. Current measurements of vaccine coverage do not disaggregate data for many meaningful sub-populations (e.g., distinct Asian-American sub-populations, institutionalized/incarcerated, homeless). In addition, national surveys have lower response rates from racial and ethnic minority groups, so the data tend to lack precision. For example, vaccination rates for American Indian/Alaska Native adults are not often reported, Pacific Islanders sub-populations are often grouped into a broader category with all Asians, and many respondents report mixed race or ethnicity. Even within racial and ethnic groups, diversity in vaccination rates and monitoring exists.

In addition, geographic data are reported based on metropolitan service areas (MSAs) but are not cross-referenced with health professional shortage areas. Data are reported at the state level[lxxxiv] (and not always by county, ZIP code, or neighborhood) and are inconsistent across jurisdictions.[lxxxv] Claims data and serologies have logistic limitations and are expensive sources for research.[lxxxvi, lxxxvii]

Although the Community Preventive Service Task Force recommends the use of IIS (because of strong evidence that they improve vaccine coverage[lxxxviii]), IIS are not used universally across the life span.[lxxxix] Currently, effective use of IIS requires substantial resources. As IIS evolve, it may be possible to gain more specific data on locations and populations with low vaccine rates. For example, cross-mapping IIS data with health professional shortage areas may yield useful data. Geomapping may be applied to IIS data. In addition to race and ethnicity, improved data on factors such as neighborhood location, languages spoken, income and occupation, payers, and sites of immunizations could help tailor interventions. Better collection of data through IIS will enable resources to be concentrated in areas of need and facilitate measurement of interventions. NVAC anticipates that COVID-19 vaccination efforts provide new tools for data reporting to track immunization for the purpose of ensuring equitable access and vaccination coverage.

**Recommendation 5.1: The ASH should work with the Office of Management and Budget to develop standardized racial and ethnic categories as well as other data collection categories for sex, disability status, and institutionalized, incarcerated, LGBT, or homeless people to facilitate the use of IIS data and immunization equity.**

**Recommendation 5.2: The ASH should facilitate funding to allow use of IIS to be a source of deidentified data for research purposes. To assist with this recommendation, the ASH should work with the Department of Veterans Affairs, Department of Defense, CDC, IHS, state, territorial and tribal health officers, and state governments to remove barriers to interjurisdictional sharing of information between IIS and increase use of IIS for all patients.**

**Recommendation 5.3: The ASH should study the feasibility of creating a national IIS to facilitate interjurisdictional sharing of information both to improve immunization coverage and to support research.**

**Recommendation 5.4: The CDC should collect data yearly on immunization rates for all ACIP-recommended, routine vaccines based on social determinants of health and by county to provide data to support planning of targeted interventions.**

**Recommendation 5.5: The ASH should work with CMS, CDC, HRSA, and the National Coordinator for Health Information Technology (ONC) to facilitate use of a universal clinical decision support system for immunization applicable to IIS and EHRs to support routinization and standard immunization practices across all ACIP-recommended vaccines.** An improved decision support system in Electronic Health Records (EHRs) to automate vaccination updates and information and establish training and incentive programs would encourage providers and hospital systems to use EHR systems to seamlessly capture bidirectional flow of vaccination data between and among EHR systems and IIS.

**Recommendation 5.6: The ASH should explore the feasibility of requiring provider reporting of all vaccines to IIS.**

**Recommendation 5.7: While we are still learning lessons from the COVID-19 pandemic, learnings from the systems that have been built to track COVID-19 vaccines should eventually be compiled and disseminated by the CDC, state and local health departments, and other relevant groups.**

**CONCLUSION**

The NVAC fully supports efforts at HHS to improve equity in immunization to improve the health of all Americans and save lives and believes underlying systemic barriers and biases in the immunization system should be removed to create a truly optimal, health-for-all system. The report provides a number of recommendations to address known challenges to achieving equity in immunization and contributing to health equity overall.

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