

Federal Cervical Cancer Collaborative Opportunities Report

April 2023



This report was produced for the Health Resources and Services Administration, Office of Women's Health under contract number 75R60219D00017.

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Suggested Citation: Health Resources and Services Administration, Office of Women's Health, *The Federal Cervical Cancer Collaborative Opportunities Report*. Maryland: 2023.

Foreword

MESSAGE FROM THE ADMINISTRATOR

Cervical cancer prevention efforts over the past several decades have helped to dramatically reduce cervical cancer-related deaths in the U.S. However, substantial disparities in access to vaccines, screening, and treatment have resulted in disparities in cervical cancer mortality rates, including for people living in poverty, people living in rural areas, and people of color.

The Federal Cervical Cancer Collaborative (FCCC), built on the goals of the [Cancer MoonshotSM](#), is a multi-year federal partnership to address these disparities in cervical cancer care by informing and accelerating the uptake and implementation of cervical cancer prevention, screening, and treatment approaches in HRSA-supported and other safety-net settings of care. The FCCC is comprised of the Health Resources and Services Administration (HRSA) Office of Women's Health (OWH), the National Institutes of Health (NIH) National Cancer Institute, NIH Office for Research on Women's Health, HHS Office of Population Affairs in the Office of the Assistant Secretary for Health, HRSA Office of Intergovernmental and External Affairs, and the Centers for Disease Control and Prevention (CDC) Division of Cancer Prevention and Control.

In 2022, the FCCC brought together expert clinicians, public health personnel, health center directors, researchers, and civil servants to explore current practices, challenges, opportunities, and innovations to strengthen cervical cancer prevention, screening, and management in safety-net settings and enhance coordination and partnership across interested groups. This report summarizes the findings from this roundtable series.











HRSA deeply appreciates the time, engagement, and thoughtfulness of these stakeholders and our FCCC partners.

Carole Johnson
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Icon Glossary

Icon	Label
	Safety-net Setting
	HPV Vaccination
	Screening
	Management
	Strengthening Collaboration
	U.S. Territories and Freely Associated States
	Research and Data
	Current Initiatives
	Resources
	The Path Forward

Executive Summary

Cervical cancer was once a leading cause of cancer death among women in the United States, but death rates have consistently declined over the past 40 years with the improvement in diagnostic and preventive care.^{1,2} Pap (Papanicolaou) and human papillomavirus (HPV) tests can identify abnormal, precancerous cells before they develop into cancer, and vaccines prevent against HPV types that cause up to 90 percent of cervical cancers.¹ Despite opportunities for prevention, there are substantial disparities in screening and cervical cancer death rates for multiple groups of people, including women who live in poverty, rural women, women of color, transgender men and nonbinary individuals, and women with disabilities.³⁻⁵ Some health disparities result from factors that traditional prevention and screening interventions often do not address, such as economic, social, and physical environments that shape communities and may impede individuals from accessing care and following up on treatment. These structural, institutional, and interpersonal factors can affect health outcomes and opportunities to access care. Disparities in screening, diagnosis, and treatment ultimately lead to higher cervical cancer mortality rates among those who experience disproportionate burden.

This report is a key product of the FCCC 2022 Roundtable Series. The FCCC is an offshoot of the Cancer MoonshotSM and is supported by a federal partnership between the Department of Health and Human Services (HHS) Health Resources and Services Administration (HRSA) Office of Women’s Health (OWH), HRSA Office of Intergovernmental and External Affairs (IEA), National Institutes of Health (NIH) National Cancer Institute (NCI), NIH Office for Research on Women’s Health (ORWH), HHS Office of Population Affairs (OPA) in the Office of the Assistant Secretary for Health (OASH), and Centers for Disease Control and Prevention (CDC) Division of Cancer Prevention and Control (DCPC). The FCCC aims to implement the outcomes and realize the vision of the Cancer MoonshotSM in safety-net settings of care. The 2022 Roundtable Series sought input from subject matter experts to identify opportunities to strengthen cervical cancer prevention, screening, and management to improve health care outcomes for diverse populations within safety-net settings of care.

The FCCC aims to inform and accelerate the uptake and implementation of cervical cancer prevention, screening, and treatment approaches in HRSA-supported and safety-net settings of care.

Federal Opportunities to Improve the Cervical Cancer Care Continuum

This report identifies primary, secondary, and tertiary prevention opportunities that impact health care outcomes for diverse populations within safety-net settings of care. As defined by the Institute of Medicine, safety-net settings are “those providers that organize and deliver a significant level of health care and other needed services to uninsured, Medicaid, and other vulnerable patients,” which are key populations served by HRSA-supported programs.⁶ Opportunities were derived from the FCCC 2022 Roundtable Series and from experts, including FCCC

members. These opportunities address challenges at the patient, provider, and system levels and aim to maintain, expand, or strengthen the cervical cancer care continuum in safety-net settings. The opportunities named in this report are proposed considerations for the FCCC and other federal partners to inform potential activities to advance cervical cancer prevention, management, and screening; they do not reflect current federal commitments.



HPV Vaccination

1. Address vaccine hesitancy and misinformation through education campaigns.
2. Explore health information technology solutions to improve access to vaccine records.
3. Expand access to vaccines through increased delivery settings and eligible providers.



Screening and Management

1. Increase knowledge and awareness of current screening and management guidelines.
2. Increase adoption of primary HPV screening.
3. Facilitate introduction of self-collection for HPV screening.
4. Develop quality standards to improve adherence to screening.
5. Strengthen health information systems to support providers across the care continuum.



Strengthening Federal Collaboration

1. Provide consistent messaging on guidelines across agencies.
2. Facilitate interagency collaboration.
3. Develop and strengthen infrastructure to support external collaboration.

Bridging Research into Practice in Safety-Net Settings of Care

Safety-net health care systems provide critical care to individuals who need preventive care and screening services for cervical cancer, including people of color, people who are uninsured or underinsured, or people who have low incomes. These proposed opportunities seek to further the aim of the FCCC to bridge research and innovation into practice, ensure that patients served in safety-net settings have access to evidence-based best practices in cervical cancer care, and ensure that efforts are focused on those with the greatest need. Details about the roundtable series, challenges in cervical cancer care, current initiatives, opportunities, and associated considerations are described in the pages that follow.



U.S. Territories and Freely Associated States

While these federal opportunities are intended to have a positive impact on cervical cancer prevention, screening, and management for patients throughout the United States, U.S. territories, and Freely Associated States (FAS), it is important to note that U.S. territories and FAS experience unique and exacerbated barriers to cervical cancer care.

Federal Cervical Cancer Collaborative Members

This report is a product of the FCCC, which includes the following members.

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Introduction

Once a leading cause of cancer death among women in the United States, cervical cancer is now largely preventable due to the use of screening tools and vaccinations.^{1,2} Pap and HPV tests can identify abnormal, precancerous cells before they develop into cancer, and vaccines prevent against HPV types that cause up to 90 percent of cervical cancers.^{1,2} As of 2021, cervical cancer is a relatively rare cancer in the United States, representing only 0.8 percent of new cancer cases.¹ The ACS estimated there will be 14,480 new cases of cervical cancer and 4,290 related deaths in 2021.¹ Despite opportunities for prevention, there are substantial disparities in screening and cervical cancer death rates for multiple groups of people, including women who live in poverty, rural women, women of color, transgender men and nonbinary individuals with a cervix, and women with disabilities. These disparities are rooted in structural, institutional, and interpersonal factors that affect health outcomes and opportunities to access care. Since the National Cancer Act was signed in 1971, reducing the burden of cancer has been a top priority of the federal government.⁷ The President's Cancer Panel monitors the activities of the National Cancer Program and reports directly to the President on barriers to progress. The Panel's 2022 report, *Closing Gaps in Cancer Screening: Connecting People, Communities, and Systems to Improve Equity and Access*, outlines four goals: improve and align communication; facilitate equitable access; create effective health information technology; and strengthen workforce collaborations.⁸ Safety-net systems of care are a crucial part of the healthcare landscape to ensure equity in these goals.

Safety-net health care systems provide critical care to low income, underserved, uninsured and/or underinsured individuals who need preventive care and screening services for cervical cancer, including women of color who are uninsured and/or have low incomes. The rate of new cervical cancers differs by race and ethnicity with Hispanic women experiencing the highest rate of new cancer in 2019 at 9.7 cases per 100,000, compared to 9.0 cases for American Indian and Alaska Native women, 8.4 cases for Black women, and 7.0 cases for White women.⁹ As an example of need for innovative approaches to increase cervical cancer screening rates, of 419 women diagnosed with cervical cancer in a safety-net health system in Dallas, Texas, from 2010 - 2015, almost 60 percent were at stage 2B or higher at diagnosis, almost 70 percent were new patients, and 40 percent were uninsured.¹⁰ Among those who were existing patients prior to diagnosis, missed opportunities to prevent cancer included failure to screen (63 percent), lack of follow-up (21 percent), and failure of test to detect cancer (16 percent).¹⁰



Examples of Safety-net Settings of Care

- HRSA Health Center Program recipients and Federally Qualified Health Centers (FQHCs)
- Critical Access Hospitals
- Rural health clinics (RHCs)
- Ryan White HIV/AIDS Program providers
- National Breast and Cervical Cancer Early Detection Program sites
- Title X clinics

Innovative approaches to increase cervical cancer screening rates and treatment adherence have been studied in safety-net settings, including the use of socially-informed cancer care navigation¹¹ and continuous quality improvement initiatives.^{12,13}

Federal Cervical Cancer Collaborative

The FCCC is a collaborative initiative of HHS partners HRSA's OWH and IEA, NIH's NCI and ORWH, OASH's OPA, and CDC's DCPC. The FCCC is an offshoot of the [Cancer MoonshotSM](#), which aims to accelerate cancer research, improve cancer prevention and early detection, and make more therapies available to more patients. The FCCC is working to implement the outcomes and realize the vision of the Cancer MoonshotSM in safety-net settings of care.

The FCCC has three primary objectives:

1

Describe the current practices, challenges, opportunities, and innovations to strengthen cervical cancer prevention, screening, and management in safety-net settings that deliver care to people who are geographically isolated, economically or medically vulnerable.

2

Identify best practices to include in technical assistance materials for safety-net providers.

3

Enhance coordination and partnership across stakeholder groups by identifying opportunities to strengthen cervical health services through partnerships, policy, programs, outreach, and education.

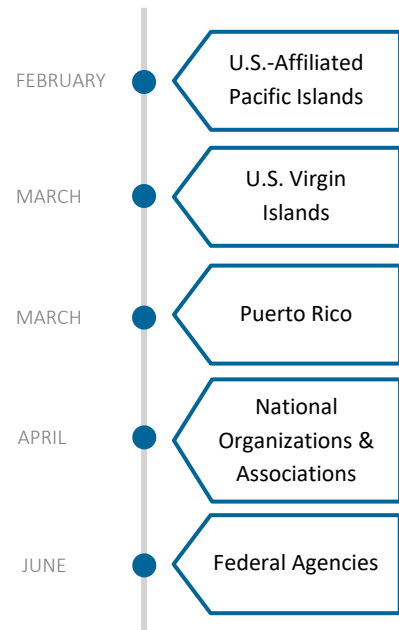
2022 Roundtable Series

To achieve these goals and objectives, the FCCC hosted the 2022 Cervical Cancer MoonshotSM Roundtable Series, which brought together experts, partners, and stakeholders from the territorial, national, and federal levels, to inform this Federal Opportunities Report, as well as the Toolkit to Build Provider Capacity. During the roundtable series, meeting participants shared information about the current state of cervical cancer care, including challenges, opportunities, and innovations; identified best practices providers can implement; and discussed opportunities for federal coordination and collaboration.

The meetings included themed sessions on HPV vaccination, screening, management, and strategies to enhance federal collaboration and support safety-net settings of care. The meeting structure encouraged participant engagement through small-group breakout rooms with facilitated discussion on barriers at the patient, provider, and systems levels and associated existing or proposed solutions.

The roundtable series included specific meetings for U.S. territories and FAS because, while some patient-, provider-, and systems-level barriers on the islands are similar to those in other parts of the United States, U.S. territories and FAS also experience additional unique challenges. In addition, safety-net programs are subject to different regulations than the U.S. mainland. Holding separate meetings for U.S. territories and FAS ensured sufficient opportunity to explore and understand their unique circumstances.

After meeting with U.S. territories and FAS, the series entailed meetings with experts from national organizations, associations, academia, and federal agencies to provide further insight into issues on the U.S. mainland, and brainstorm solutions and opportunities for federal collaboration.



Barriers and Challenges Across the Care Continuum

While the following chapters detail challenges specific to HPV vaccination and cervical cancer screening and management, certain barriers and challenges cut across the care continuum.

- Clinics that are open only during regular business hours limit accessibility, create scheduling challenges, and may generate out-of-pocket costs (e.g., childcare) and opportunity costs (e.g., lost wages) for patients.
- Patients may face transportation barriers, such as inaccessible public transportation, or increasingly expensive cost of transportation. Living in areas that are not close to a clinic (e.g., islands, rural areas) may exacerbate transportation issues.
- Patients may delay medical visits when they have competing priorities, for example, if their work schedules conflict with clinic hours or childcare is unavailable.
- Out-of-pocket costs, such as copays, are high, especially for uninsured and underinsured patients.
- Limited health care workforce in safety-net settings may impact appointment availability and providers' ability to offer services, including limited culturally and linguistically appropriate services.



Burden of Cervical Cancer in U.S. Territories and FAS

- The lack of infrastructure (e.g., health care facilities and workforce, reliable transportation, supply procurement) contributes to limited options for cancer education, screening, and treatment.¹⁴
- Cervical cancer incidence rates were 13.0 per 100,000 among women in Puerto Rico (2017) and 11.9 per 100,000 among Chamorro women in Guam (2009-2013)—higher than rates across all racial and ethnic groups in the United States during the same periods.¹⁵

The COVID-19 Pandemic

The COVID-19 pandemic impacted the utilization of health care services across the country.¹⁶ Populations with low-income and Black and Hispanic populations in particular experienced disruptions to health care access, including delays to non-emergency medical care, preventive health care, and reproductive health services.^{17,18} Health centers experienced a 7 percent decrease in the number of total visits provided from 2019 to 2020 as a result of the COVID-19 pandemic, driven by a 30 percent reduction in in-person clinic visits.¹⁹

The Federal Opportunities Report

The purpose of this report is to identify key opportunities for the FCCC, the federal agencies and offices it represents, and other interested federal parties based on expert input from federal agencies, national organizations, academia, and health care providers at the national, state, and territorial levels. This report presents select key challenges, opportunities, and considerations that were synthesized and derived from the FCCC 2022 Roundtable Series, as well as inputs from experts, including FCCC members, to identify additional opportunities, considerations, and initiatives. The chapters that follow provide background information on HPV vaccination and cervical cancer screening and management, current challenges, and federal opportunities to improve cervical cancer care in safety-net settings. These chapters also include special sections identifying unique barriers and opportunities in U.S. territories and FAS. The report concludes with chapters on collaboration and the path forward to continue the efforts of the FCCC. The opportunities named in this report are proposed considerations for the FCCC and other federal partners to inform potential activities to advance cervical cancer prevention, management, and screening; they do not reflect current federal commitments.



HPV Vaccination

Background

HPV Infection

In 2018, the estimated prevalence of disease-associated* human papillomavirus infection in the United States was 42 million cases with new infections acquired by 13 million people that year, making HPV the most common sexually transmitted infection (STI).²⁰ Although approximately 90 percent of genital HPV infections become undetectable within two years, a persistent infection over years with carcinogenic HPV types may lead to cervical precancer, which can progress to cervical cancer if not treated.²¹ Approximately 36,500 HPV-attributable cancers were diagnosed annually from 2014 - 2018, primarily cervical cancer in women and oropharyngeal cancer in men. Based on the distribution of HPV types found in these cancers, it is estimated that 92 percent of those cases could have been prevented with 9-valent HPV vaccination.²²



Vaccine Recommendations

HPV vaccines prevent HPV, including types 16 and 18, the two types that cause the most HPV cancers; Gardasil-9[†] protects against nine types of HPV (6, 11, 16, 18, 31, 33, 45, 52, and 58).²³ The Advisory Committee on Immunization Practices (ACIP) recommends vaccinating individuals at ages 11 – 12 (may be given starting at age 9) given that the greatest benefit is with vaccination in early adolescence when antibody responses are stronger and before initial HPV exposure, with a catch-up period of ages 13 - 26.²⁴ Shared clinical decision-making about HPV vaccination for 27–45-year-olds is advised as the vaccination series is less effective from a population health standpoint in this age group since most people have had prior HPV exposure.²⁴ If the HPV vaccine series is initiated at <15 years of age, a two-dose series is recommended, whereas three doses are recommended for those who start the series at age 15 or older.²⁵ Federal opportunities to increase HPV vaccination among individuals aged 9 – 26 years, the age range recommended by ACIP, are the focus of this chapter.[‡]

Vaccine Uptake

Data from the National Immunization Survey-Teen (NIS-Teen), a telephone survey conducted in the United States, indicate an upward trend in HPV vaccination uptake. In 2021, 76.9 percent of 13–17-year-olds surveyed had initiated the HPV vaccine series, compared with <40 percent in 2011, and 61.7 percent had completed the HPV vaccine series, compared with <20 percent in 2011.²⁶ Despite increasing rates of HPV vaccination, initiation rates for HPV vaccination remain 14 percent lower than the Tdap vaccine and the first meningococcal vaccine, which are also routinely recommended for the same age group.²⁶

* Disease-associated HPV in this instance refers to 2 types that cause anogenital warts plus 14 types detected by tests used for cervical cancer screening (HPV 6/11/16/18/31/33/35/39/45/51/52/56/58/59/66/68).

[†] At the time of this report, Gardasil-9 is the only vaccine currently available in the U.S. mainland. For more information on HPV vaccines, please refer to the [FDA](#).

[‡] Please refer to the CDC for further information on shared clinical decision-making for adults aged 27-45 years.



Vaccine Effectiveness

An overwhelming body of evidence indicates the HPV vaccine is safe and effective in decreasing cancer risk²⁷⁻²⁹:

- **Reduction in HPV infections:** Data from the National Health and Nutrition Examination survey comparing pre-vaccine (2003-2006) and post-vaccine era (2015-2018) data among 14-24-year-old females who have engaged in sexual activity showed an 85 percent decrease in HPV infection, with evidence of decreased infection among both vaccinated (90 percent reduction) and unvaccinated females (74 percent reduction), suggesting herd protection.³⁰
- **Reduction in cervical precancer:** Data from the Human Papillomavirus Vaccine Impact Monitoring Project compared cervical precancer incidence across age groups from 2008-2016 and observed a 78 percent decline in HPV 16-CIN2+ and a 72 percent decline in HPV 18-CIN2+ from 2008-2009 to 2015-2016 among 20-24-year-olds.³¹
- **Reduction in cervical cancer:** Studies in Sweden and England show that vaccination is associated with reduced incidence of cervical cancer, with near elimination of HPV-related cancers among those vaccinated at younger ages.^{32,33} Data from the United States also support a relationship between HPV vaccination and declines in cervical cancer incidence rates in 15–29-year-olds from 1999–2017.³⁴

The COVID-19 Pandemic

The COVID-19 pandemic led to reductions in the administration of routine adolescent vaccinations.³⁵ Annual administered doses of Tdap, meningococcal, and HPV vaccine decreased by 21.1 percent, 20.8 percent, and 24.0 percent, respectively, in 2020 compared to 2019.³⁶ Furthermore, hesitancy related to COVID-19 vaccination may have also increased hesitancy around other vaccines. While the long-term impact of pandemic disruptions on adolescent vaccination is still unknown, substantial catch-up efforts may be needed to restore and improve upon pre-pandemic levels, especially considering that HPV vaccination coverage has been lower than Tdap coverage, and below target levels, since the beginning of the HPV vaccination program.^{26,37} In 2021, after most broad pandemic-related closures ended in the United States, vaccination coverage for meningococcal and Tdap among adolescents of routine age were lower compared to pre-pandemic rates, while vaccination coverage for HPV did not differ compared to pre-pandemic rates.²⁶

Patient, Provider, and Systems Challenges

There are many challenges related to vaccine delivery and access, vaccine records, and messaging that impact HPV vaccination rates in the United States, U.S. territories, and FAS. Select challenges at the patient, provider, payer, and structural levels are identified here. Notably, these challenges are present and may be exacerbated in U.S. territories; additional challenges specific to U.S. territories are noted at the end of this chapter.

Vaccine Delivery and Access

HPV vaccine accessibility is limited for some patients due to structural barriers. Even when these barriers are addressed, safety-net settings may face system-level constraints, such as workforce capacity. Patients face individual, structural, and economic barriers to initiating and completing the HPV vaccine regimen, and because HPV vaccination is a two- or three-dose series (depending on age), they may face these barriers repeatedly.

- Addressing scheduling and transportation barriers for multiple vaccination appointments can generate out-of-pocket costs (e.g., childcare) and opportunity costs (e.g., lost wages) that caregivers cannot afford.
- Some patients experience financial challenges due to lack of insurance, which impacts vaccine delivery and access. In addition, recommendations for routine HPV vaccination extend to age 26, but individuals 19 and older do not qualify for the federal Vaccines for Children (VFC) program and other child health insurance programs. Out-of-pocket costs are a barrier for uninsured or underinsured patients who do not qualify for these services.
- Limitations on types of health care practitioners that are authorized to administer vaccines contribute to capacity issues. Standard protocol for administering vaccines requires approval by a medical doctor in a health care setting, a physician, or another authorized practitioner, such as physician assistants and nurse practitioners.³⁹



Vaccines for Children Program

- The VFC program provides vaccines to children who might not otherwise be vaccinated because of inability to pay.³⁸
- The VFC program funds vaccines to be distributed at private physicians' offices and public health clinics registered as VFC providers.³⁸
- Children aged 18 and younger are eligible for the VFC program if they meet any of the following criteria: Medicaid-eligible, American Indian/Alaska Native, uninsured, and underinsured. Underinsured children are eligible to receive vaccines through the VFC program at FQHCs or RHCs.
- While there is no charge for VFC vaccines, children and families may incur other costs such as fees for the office visit or non-vaccine services provided during the visit.

Vaccine Records Access

One of the challenges to increasing HPV vaccine uptake is lack of patient and provider awareness of the patient's vaccine history across health systems. Since the HPV vaccine is a two- or three-dose series, an unknown vaccine history may contribute to incomplete series. Populations in safety-net settings of care may also have longer gaps between appointments and are less likely to have a primary care provider, contributing to challenges in tracking vaccine history.

Vaccine histories may not be known because:

- Patient health care records do not travel with the patient to new health care settings unless requested by the patient.
- Electronic Health Record (EHR) software systems may be incompatible with one another, creating barriers to health information exchange.
- There is no national vaccine registry. Some states have the ability share data between state immunization information systems through a secure channel (Immunization Gateway), but not all.

Knowledge and Beliefs

Vaccine uptake is affected by knowledge and beliefs among patients, parents of eligible patients, and some providers.

- Some individuals with limited health literacy and/or lack of knowledge about HPV and the HPV vaccine may be unaware of critical information including:
 - Benefits of the vaccine
 - The importance of receiving all recommended doses in the series
- Some individuals may be hesitant to vaccinate their children due to:
 - Religious and/or cultural beliefs
 - Previous negative experiences
 - Mistrust in the government and medical system
 - Misinformation about vaccine side effects, which was exacerbated during the COVID-19 pandemic
- There is stigma associated with HPV as an STI.
- Some providers may lack knowledge about vaccine importance, effectiveness, safety, and current guidelines, leading to ineffective or insufficient communication to the patient.
- Health communication messaging for the promotion of the HPV vaccine may address lack of knowledge about HPV and cervical cancer. However, cancer prevention messaging is challenging for pediatric populations, in which the averted outcome may seem far in the future.

Federal Opportunities

Participants at the FCCC Roundtable Series and FCCC federal partners provided insight on potential opportunities to address the patient-, provider-, and systems-level challenges to HPV vaccination rates in the United States, U.S. territories, and FAS. Select opportunities at the systems level are identified here. At the end of this chapter, federal opportunities specific to U.S. territories and FAS are noted along with the unique challenges they address.

Federal Opportunity 1: Address vaccine hesitancy and misinformation through education campaigns.

Associated Challenges: Knowledge and beliefs

Maintain and strengthen public health messaging to promote the HPV vaccine.

- Promotion of the HPV vaccine should take a multi-pronged approach to disseminating information through multiple modes, tailoring messaging to address specific barriers for different populations in culturally relevant ways (e.g., colloquial terminology, non-English languages, relatable imagery), and collaborating across agencies to ensure consistent messaging.
- HPV vaccination messaging strategy could be incorporated into broader cancer control efforts to leverage visibility and educational resources and promote HPV vaccination as cancer prevention.
- Messaging campaigns, whether they are national or tailored, should be disseminated through local and social media, billboards, public transportation, and bus shelters, especially for safety-net populations that may not attend health care settings as frequently. When focusing on health care settings, consider pediatric and family medicine primary care clinics. Non-health care settings, such as youth-focused community-based organizations, libraries, and schools, can also contribute to promoting engagement.

Include trusted messengers in vaccine promotion campaigns.

- Trusted leaders in the community may be more effective at addressing patient concerns around vaccine hesitancy, which may include fear of vaccine side effects, lack of awareness of vaccine benefits, medical mistrust, and misinformation.



Research Opportunity

- Additional research is needed about how misinformation and social media affect HPV vaccine hesitancy and uptake, which could inform communications strategies to address this.⁴⁰
- Evidence-based strategies for improving HPV vaccination rates have been defined.⁴¹ Additional research is needed to determine best practices for implementing interventions to increase rates and sustaining improvements long-term.

- Community leaders may include women’s and men’s councils, local coalitions, parent groups, community-based organizations, faith-based community organizations, and community health workers.
- Health care providers within health care settings are the most critical drivers of HPV vaccination. A large body of literature indicates that a strong provider recommendation is the key driver of vaccination. Strong recommendations include unambiguous statements that the vaccine is due for that child in the current visit, e.g., “Your child is due for HPV vaccine today.” This simple statement is consistent with the language used to present other vaccines and is associated with same-day acceptance rates of approximately 80 percent across parents of all races, ethnicities, geography, language, income, and setting of care. As parents may also discuss vaccination with other medical staff, it is crucial that messaging and recommendations are consistent across all members of the medical staff to reinforce the benefits and allay concerns. One approach to improving provider messaging is provider – patient communication training that focuses on effective methods of communicating with a patient-centered approach, including scripts.



Examples of Existing Education and Messaging Campaigns

- CDC has a robust catalogue of [resources, education, and references](#) for providers and patients on HPV vaccination, which have gone through rigorous message testing and can be shared on-demand.
- The Reproductive Health National Training Center, funded by OPA, led an initiative in 2020 to increase access to and uptake of the HPV vaccine. One outcome of the initiative was the online [HPV Vaccine Toolkit](#), which is aimed at providers and includes materials in English and Spanish.
- In January 2021, HHS OASH launched the HPV VAX NOW campaign to increase vaccination rates by increasing awareness of the protective benefits of the vaccine and the risk of HPV-related cancers. The campaign is focused on young adults and health care providers in three low HPV vaccination states – Mississippi, South Carolina, and Texas. The campaign website provides [information for young adults](#), [information for health care providers](#), and communications toolkits for [reaching young adults](#) and [reaching health care providers](#).

Federal Opportunity 2: Strengthen health information technology solutions to improve access to vaccine records.

Associated Challenges: Vaccine records access

Integrate HPV vaccine reminders into EHRs.

- Enhance access to advanced EHR software for safety-net providers. EHR systems exist that enable automated reminders for providers to alert them when patients are eligible or due for HPV vaccination based on national guidelines. Related activities would enable safety-net settings to upgrade their systems and access these resources.

Facilitate access to vaccination records across state lines and jurisdictions.

- In the absence of a national registry, federal support for interoperability and communication between state registries could support facilitating provider access to vaccination records. CDC's Immunization (IZ) Gateway facilitates data exchange between multi-state providers and state registries, one state registry to another, and state registries and consumers.
- The integration of vaccination records as part of health information exchange could be explored in the context of the HPV vaccine; for example, vaccine delivery data tracked in the EHR can be shared with population-based health record platforms (e.g., state vaccination registries) with guidance for improving HPV vaccine initiation and completion.

Facilitate patient access to vaccine history with personal health apps.

- Expand health data information sharing access to personal health records through patient apps may enable patients to personally keep track of their vaccination records and address challenges with vaccine completion.
- CDC's IZ Gateway supports consumer access to immunization records by connecting consumer applications to state registries.
- Any health information technology lessons learned from COVID-19 that can be applied to support access to vaccine-related personal health information to foster vaccination periodicity could be considered.



Continued Advancements in Health Information Exchange

The HHS Office of the National Coordinator for Health Information Technology supports the adoption of health information technology nationwide and can provide insight into bidirectional methods of sharing data, specifically for immunization information systems. One of its initiatives is the Public Health Immunization Data and Consumer Access Pilot Projects.⁴² These projects, if successful, could serve as models that can be scaled more broadly.

- The Consumer Access to immunization information system pilot project provided consumers with access to their online immunization records that are stored in a state IIS.
- The Cross-Jurisdictional Exchange pilot project enabled providers to access patients' immunization records from outside their jurisdictional areas through cross-jurisdiction exchange of immunization data.

Federal Opportunity 3: Expand access to vaccines through increased capacity.

Associated Challenges: Vaccine delivery and access

Administer HPV vaccines in more locations to meet patients where they are.

- Pharmacies, mobile clinics, and home visits, which have been used to distribute flu and COVID-19 vaccines, could expand their offerings to include the HPV vaccine within the context of other vaccine delivery and/or other services.
- School-based clinics and community health outreach events are additional opportunities to bring vaccines to patients.

Enable ancillary health care staff to administer vaccines.

- Standing orders could allow more health care providers such as nurses, medical assistants, dentists, and pharmacists to approve, consent, and/or administer HPV vaccines inside the safety-net setting. Standing order programs have increased vaccination rates for influenza^{43,44} and have contributed to positive results among childhood vaccines in combination with other evidence-based practices to increase uptake.^{45,46}
- Expanding the locations and settings in which the HPV vaccine is delivered would necessitate an expansion in providers who are eligible to administer the vaccine.

Associated Considerations:

- Using alternative locations for HPV vaccination, which could involve decoupling the HPV vaccination from other adolescent vaccines such as Tdap and meningococcal, could impact provision of other primary care services.
- U.S. states separately regulate issues such as vaccine standing orders, which enable assessment and vaccination without the need of a direct order from a physician.
- Alternative sites and types of vaccine administrators may be constrained by insurance reimbursement policies.
- Expanding vaccine delivery to other settings will necessitate adequate vaccine storage and handling infrastructure, and integration into the state or local immunization information system to document vaccine administration.
- The feasibility of alternative delivery methods may differ by locations and types of populations, such as rural and island communities.
- Expansion strategies should be accompanied by provider trainings for engaging in effective conversations with patients, HPV vaccine safety and efficacy, and the needs of different populations.



Research Opportunity

- Continued research is needed on what may appropriately expand vaccine administration (e.g., ongoing analysis of age range and bundling or co-administration of the vaccine with other vaccines).
- Research can be used to design targeted approaches for implementing vaccine delivery expansion for populations with higher incidence/mortality rates and to inform efforts and channel workforce resources, such as rural, island, and other isolated areas.



U.S. Territories and Freely Associated States: Challenges and Opportunities in HPV Vaccination

While all the aforementioned challenges and opportunities related to HPV vaccination are relevant in the U.S. territories and FAS, the territories and FAS also experience barriers to HPV vaccination that may be unique or exacerbated by their historical, geographic, social/demographic, and cultural dynamics, as well as their vulnerability to certain types of natural disasters and other emergencies as islands. Likewise, opportunities to address their challenges may draw upon unique strengths, such as regional partnerships and local political structures. This section highlights those unique challenges, and specific opportunities to improve HPV vaccination in the territories and FAS.

Challenges

Vaccine Delivery and Access

- Puerto Rico has an HPV vaccine school-entry requirement,⁵ however school-based vaccination programs were halted in Puerto Rico due to COVID-19-related school closures, and some patients prioritized COVID-19 vaccines over routine vaccinations.⁴⁷
- Hurricane damage in the U.S. Virgin Islands (USVI) resulted in limited vaccine storage space.
- In the U.S. Affiliated Pacific Islands (USAPI), limited resources and restrictions on the use of federal funding make it difficult to prioritize vaccine distribution, and the COVID-19 pandemic exacerbated procurement challenges and limited storage space leading to insufficient vaccine supplies.
- Public funding for the HPV vaccine is limited in the Republic of Palau, the Republic of the Marshall Islands, and the Federated States of Micronesia (Freely Associated States), which do not participate in the VFC program because they do not have Medicaid programs.⁴⁸ There is some federal funding to provide vaccines at low or no cost in FAS from the Section 317 Immunization Program, which is authorized by the Public Health Service Act to purchase vaccines to vaccinate children, adolescents, and adults. However, current resources are not sufficient to meet the need and increase HPV vaccination of eligible individuals in FAS.

Vaccine Records Access

- Providers in USVI require health department assistance to determine child vaccination history, which is time consuming and may result in delays or missed opportunities to vaccinate.

⁵ Puerto Rico Law No. 25 (passed September 25, 1983) enables the Puerto Rico Secretary of Health to decide which vaccines will be required for school entrance. There is no equivalent U.S. federal law.

Federal Opportunities

- Additional research and federal consultation to learn more about challenges and barriers to HPV vaccination in U.S. territories and FAS may identify federal opportunities to support safety-net settings in their efforts to promote HPV vaccination. For example, U.S. territories and FAS have expressed interest in an exception to allow them to offer single-dose vaccination to alleviate access issues. The World Health Organization (WHO) supports a single-dose series, but ACIP does not currently recommend single-dose vaccination in the United States, nor is this currently approved by the FDA. However, there may be flexibilities for some to receive an exception for single-dose vaccination due to the specific nature of their agreement with the United States. Agency-field offices may be able to provide context and understanding around such territory-specific issues and impact to safety-net settings of care.



Select International Vaccination Trials with Potential Implications for U.S. Territories and FAS

- [California-Mexico-Puerto Rico \(CAMPO\) Consortium Clinical Trials](#), funded by NCI in 2021, include clinical research studies focused on the prevention of cervical cancer among HIV-positive women in Mexico and Puerto Rico. One of the research studies will evaluate the safety and efficacy of a multivalent replication-defective adenovirus-based therapeutic HPV vaccine to treat cervical and anal high-grade squamous intraepithelial lesions in HIV-positive women and men.
- Researchers in the NIH Division of Cancer Epidemiology & Genetics are conducting [clinical trials in Costa Rica](#) to confirm the effectiveness of single-dose HPV vaccination in reducing the risk of HPV infection in women. The Costa Rica clinical trials will allow researchers to quantify any differences between the single-dose HPV vaccination and the vaccination series. If one dose effectively reduces the risk of HPV infection, this will help to accelerate the timeline for cervical cancer control. However, modeling studies may be needed to see if the single-dose vaccination may be useful in U.S. territories and FAS, which have limited access to HPV vaccines.



Screening and Management

Background

Cervical Cancer Disparities

- Black women have the highest cervical cancer mortality rate and second highest incidence rate.²
- Hispanic women have the highest incidence rate and second highest mortality rate.²
- Lower screening rates are associated with rural residence; public insurance or uninsured status; poverty; lower levels of formal education; identification as lesbian, gay, bisexual, or queer; less than 10 years in the United States; no usual source of care; and Asian race/ancestry.^{49,50}

Cervical Cancer Screening

An estimated 14,100 new diagnoses of cervical cancer and 4,280 deaths from cervical cancer are expected in the United States in 2022.¹ More than half of cervical cancer diagnoses are in people who have not been screened, are under-screened, or have not had appropriate surveillance or treatment of abnormal results.⁵¹⁻⁵³ From the mid-1970s to the mid-2000s, cervical cancer incidence and mortality declined by more than 50 percent in the United States, which is attributed to the widespread implementation of screening.⁵⁴ Even with the availability of HPV vaccination for primary prevention, cervical cancer screening as a secondary prevention strategy remains a priority. However, National Health Interview Survey (NHIS) data reflect a concerning downward trend since the year 2000 in self-reported cervical cancer screening adherence with only 73.5 percent up to date in 2019.⁵⁵ In addition, analysis of Surveillance, Epidemiology, and End Results (SEER) data from 2001 to 2018 showed a 1.3 percent annual increase in Stage IV disease.⁵⁶

Screening Guidelines

Screening is highly effective when performed over time at recommended intervals. Average-risk cervical cancer screening recommendations are published by the U.S. Preventive Services Task Force (USPSTF)⁵⁷ and the American Cancer Society (ACS).⁵⁸ In addition, leading organizations like the American College of Obstetricians and Gynecologists (ACOG) endorse guidelines, the most recent being the 2021 endorsement of the 2018 USPSTF guidelines.⁵⁹ Cervical cancer screening test options include HPV testing alone, cytology alone (Pap test), and cytology with HPV (co-test). Initiation of screening is advised from 21-25 years of age and continued through age 65 or until exit criteria are met (Exhibit 1). Exit criteria include adequate and negative screening over the prior 10 years and no history of cervical cancer, precancer, or immunosuppression. Patients with recent abnormal test results, history of cervical precancer or cancer, or medical conditions like HIV or immunosuppression require more frequent screening.⁶⁰



Exhibit 1. Average Risk Cervical Cancer Screening Recommendations

Age	USPSTF (2018)/ACOG (2021)	ACS (2020)
<21 years	No screening	No screening
21-24 years	Pap every 3 years	No screening
25-29 years	Pap every 3 years	Primary HPV every 5 years (preferred) Co-test every 5 years (if primary HPV not available) Pap every 3 years (if primary HPV not available)
30-65 years	Pap every 3 years Co-test every 5 years Primary HPV every 5 years	Primary HPV every 5 years (preferred) Co-test every 5 years (if primary HPV not available) Pap every 3 years (if primary HPV not available)
>65 years	Discontinue if exit criteria met	Discontinue if exit criteria met



Cervical Cancer Management Guidelines

The *American Society for Colposcopy and Cervical Pathology's (ASCCP) Risk-Based Management Consensus Guidelines for Abnormal Cervical Cancer Screening Tests and Cancer Precursors* are the most recent national guidelines for follow-up care and management. The guidelines were developed through a large consensus effort involving several clinical organizations, patient representatives, and federal agencies (i.e., NCI and CDC representatives). Several NCI scientists performed extensive risk assessment and systematic literature reviews to support the development of the guidelines. These guidelines define appropriate management of abnormal cervical cancer screening tests, colposcopy biopsy results, and post-treatment follow-up. The current guidelines are based on the principle of “equal management of equal risk” and differ from previous guidelines in that they incorporate prior screening history and test results to more precisely estimate precancer risk. Due to the complexity of these guidelines, decision tool applications like the paid [ASCCP Management Guidelines web application](#) for smart devices or the free website application is available to provide management recommendations.⁶¹ The guidelines can also be accessed in English and Spanish in a patient-friendly format at [cervicalrisk.com](#). The design of the *ASCCP Risk-Based Management Consensus Guidelines* allows for future updates to risk estimates, which can be incorporated based on new risk markers and test methods (i.e., programmed into updated application software), thereby creating “enduring guidelines.”⁶²

The COVID-19 Pandemic

The impact of the COVID-19 pandemic on patients and health care system resources contributed to additional declines in cervical cancer screening. National Breast and Cervical Cancer Early Detection Program (NBCCEDP) screening test volumes from June 2020 were 40 percent below the five-year average,⁶³ and health claims data from 18 states showed a 78 percent decrease in cervical cancer screening tests in April 2020 compared to April 2019.¹⁸ In this study, cervical cancer screening test claims data had subsequently rebounded to pre-pandemic levels by November 2020. These results point to the impact that pandemic disruptions have on prevention and screening services, which could potentially lead to increased risk for cervical cancer and precancers. Disruptions in screening could have a larger impact on certain populations because evidence suggests that racial minorities and other communities that experience disproportionate burden are more likely to benefit from cancer screenings.⁶⁴

Patient, Provider, and Systems Challenges

There are many challenges related to access to screening and follow-up services, knowledge and beliefs, medical record sharing, medical training, and insurance coverage in the United States, U.S. territories, and FAS. Select challenges at the patient, provider, payer, and structural levels are identified here. Notably, these challenges are present and may be exacerbated in U.S. territories and FAS; additional challenges specific to U.S. territories and FAS are noted at the end of this chapter.

Access to Screening and Follow-up Care

Some patients face barriers and structural issues that limit their ability to access screening services and the necessary follow-up care after an abnormal result. Even when these barriers are addressed, safety-net settings may face system-level constraints related to workforce capacity within the health care setting and laboratories, as well as access to lab facilities.

Structural Barriers. Patients face barriers that impact their ability to receive screening services at recommended intervals and obtain appropriate risk-based follow-up care:

- While uninsured patients qualify for coverage through the NBCCEDP, the process of applying can be arduous and confusing. Furthermore, the NBCCEDP program does not cover treatment services, leaving a gap in coverage for patients who do not qualify for their states' Medicaid program.

Workforce and Facility Capacity. Lack of resources for adequate workforce and lab facilities creates a bottleneck when attempting to reach patients in low-resource settings.

- There is limited access to specialist services due to location (e.g., rural counties) or shortage of available providers trained in colposcopy and treatment procedures.
- Ancillary roles, such as patient navigators, are under-resourced and underutilized.
- Understaffed and under-resourced health care clinics may result in insufficient time per visit for pelvic exams. Also, many male providers do not perform pelvic exams, and when they do, require chaperones, which may not be available if staffing is limited.



Primary HPV Screening

- There are currently two FDA-approved lab platforms to perform primary HPV screening, and labs that perform Pap tests and co-tests may not have the primary HPV testing platform. There are currently two FDA-approved devices to perform liquid-based Pap test.
- Different lab workflows are required for primary HPV testing compared to co-testing or cytology with HPV “reflex.” While a negative HPV test is a complete result, a positive HPV test must have a cytology performed from the same sample to provide a complete result that will allow patient management. Therefore, labs must process clinical samples to allow storage of liquid-based samples so that “reflex” cytology testing can be performed on HPV-positive samples. The College of American Pathologists is currently developing protocols to assist labs with these issues.



Select Resources and Initiatives to Support Cervical Cancer Screening

- [National Breast and Cervical Cancer Early Detection Program](#). This CDC-directed program provides access to breast and cervical cancer screening, diagnosis, and treatment services, as well as patient navigation services and population-based approaches to improve public health systems. The program was established in 1990 and amended in 2000 and 2001, and provides support to all 50 states, the District of Columbia, two U.S. territories, five U.S.-Affiliated Pacific Islands, and 13 American Indian and Alaska Native tribes or tribal organizations.
- [Women's Preventive Services Initiative](#). The Women's Preventive Services Guidelines, supported by HRSA, include [Breast Cancer Screening for Average-Risk Women](#) and [Screening for Cervical Cancer](#). Section 2713 of the Public Health Service Act and pertinent regulations require that non-grandfathered group health plans and health insurance issuers provide coverage, without cost-sharing, for certain preventive health services.
- HHS OPA Reproductive Health Programming
 - [Title X Family Planning Program](#). Title X is the only federal grant program dedicated solely to providing individuals with comprehensive family planning and related preventive health services. Title X projects may also include reproductive health and related preventive health services that are considered beneficial to reproductive health, such as HPV vaccination and cervical cancer screening. The [Title X clinic locator](#) helps to locate specific clinics where in addition to family planning services, HPV vaccination and breast and cervical cancer screening are provided.
 - [Teen Pregnancy Prevention \(TPP\) Program](#). OPA invests in both the implementation of effective programs and the development and evaluation of new and innovative approaches to prevent teen pregnancy, prevent STIs among adolescents, and promote optimal health. Through the TPP program, information and education on HPV spread and the availability and importance of vaccines are disseminated to adolescents and parents and guardians. Additionally, the TPP program facilitates linkages to health care clinics where young people can access relevant services.
 - [Reproductive Health National Training Center](#). This center provides resources, materials, and educational opportunities to ensure that Title X and TPP grantees have the knowledge, skills, and attitudes necessary to deliver high-quality services and programs. Relevant resources include the [HPV Vaccine Toolkit](#); included in the toolkit are several resources like the [Reducing Missed Opportunities for HPV Vaccinations at Title X Sites Webinar](#) and [Using Normalizing Language to Encourage HPV Vaccination Among Adolescent Clients Palm Card](#) (also available in Spanish).
 - [The National Clinical Training Center for Family Planning](#). This center delivers continuous, high-quality clinical skills training and resources to health care providers within the Title X and related public health communities. Relevant resources include [How to Improve HPV Vaccination Rates in your Practice](#) and [Counseling Patients and Parents on the HPV Vaccine](#).

Knowledge and Beliefs

Patients' knowledge, health literacy, and beliefs may affect their ability to understand screening and management guidelines and their willingness to adhere to them. Such patient-level barriers may also compound access barriers. For example, if a patient does not understand the importance of screening or is afraid of the procedure, this may affect their willingness to take time from work to schedule an appointment or find solutions to transportation barriers.

Knowledge. Patients' lack of health knowledge can create challenges in cervical cancer screening uptake and adherence to screening and management guidelines, contribute to patient hesitancy, and contribute to confusion and belief in misinformation. Potential knowledge gaps include:

- Understanding of the importance of screening
- Understanding of different screening modalities (i.e., Pap test, HPV testing)
- How to access screening
- How often to be screened
- How to understand and interpret screening results
- What to expect after an abnormal screening result
- Understanding that many abnormal screening results require follow-up and/or increased surveillance

Beliefs. Patient fears and beliefs that may impact screening and management include:

- Fear of pain or discomfort during screening, colposcopy, or biopsy
- Fear of HPV or cancer diagnoses
- Navigating mistrust, sometimes with intergenerational roots, in the medical system
- Privacy concerns, shame, or embarrassment associated with exposing one's body during an exam
- Prior trauma related to examination of genital anatomy
- Discomfort discussing matters related to the pelvic region, including embarrassment of testing during menstruation
- Shame or fear of provider bias based on negative experiences, including treatment of patients classified as obese

Health Information Systems and Exchange

Ensuring that patients stay up to date on cervical cancer screening and receive the appropriate management and follow-up requires health information tracking over time in and, in many cases, across health care organizations. Limitations in health information technology services within the safety-net setting and across settings can affect patient and provider adherence to screening and management guidelines.

Medical Record Systems Limitations. EHR capacity is highly variable across health care settings, and safety-net systems may not have access to EHR systems with the latest capabilities in automated provider reminders that notify them when patients are due for screening and follow-up care after an abnormal result. Or, in some cases, EHR prompts may not be updated to follow current screening guidelines. Or large numbers of prompts may lead to provider fatigue and inability to attend to all care gaps. These limitations lead to missed opportunities for adequate screening and surveillance.

Health Information Exchange Limitations. Cervical cancer screening and management care plans may span several years, over which time patients may move between health care organizations. In many cases, providers that offer screening services are unable to provide necessary follow-up and management services. For example, Title X family planning clinics perform cervical cancer screening but not treatment, which requires the patient to access this care from other providers. Movement between organizations can create several challenges:

- Patient health care records, such as screening results and treatment plans, do not travel with the patient to new health care settings unless requested by the patient. Therefore, providers often lack critical patient medical history for making risk-based decisions for patients who received health care outside of their organization. This may cause delays in care or limit a new provider's ability to determine patient needs when patients change health systems without their records.
- Providers who screen patients and refer them for follow-up care with other providers may not receive updates on subsequent management steps, limiting their ability to follow up with patients to ensure their adherence to management plans.

Provider Awareness and Adherence to Screening and Management

Guidelines

Screening and management guidelines for cervical cancer are updated regularly in keeping with new evidence; however, changes to guidelines present challenges in provider awareness and adherence, which may result in both underscreening and overscreening depending on age and risk factors.⁶⁵ Dissemination of new guidelines requires time and education to the whole interprofessional collaborative practice (e.g., patient navigators, nurses, administrators), and rural and tribal communities often lag in receiving the most up-to-date training.

Presence of Multiple Screening Guidelines. Average-risk cervical cancer screening recommendations published by the USPSTF and ACS, in 2018 and 2020 respectively, share key similarities regarding screening intervals and discontinuation, but they do not fully align. This presents several challenges for providers:

- Providers may struggle to stay up to date on changes to the guidelines or be confused about differences across guidelines.
- Some providers may not agree with updated guidelines that change screening intervals.
- Providers may not have access to all recommended screening tests.
- Ensuring provider uptake of updated screening guidelines can also necessitate changes to existing workflows and processes that may be difficult in the absence of financial and structural support.

Awareness, Access, and Adherence to Management Guidelines. The *ASCCP Risk-Based Management Consensus Guidelines* are the current standard of care determined by national consensus. Clinical decision support tools are available to help clinicians correctly manage patients; however, providers continue to face challenges with adherence to the guidelines. These challenges include:

- Some providers may be unaware of the updated guidelines or be hesitant to adopt new guidelines due to confusion about how to apply them.
- The cost of the web-based application downloaded to a provider's smartphone may present a barrier to adoption in some cases. Tracking adherence to management guidelines is difficult, and manual chart reviews are time- and resource-consuming.
- There are currently no quality assurance metrics to guide guideline-adherent care for management of abnormal results.



Self-Collection for HPV Screening

Self-collection of samples ('self-sampling') for HPV testing is a screening approach that involves an individual collecting one's own vaginal sample using a designated collection kit. A primary benefit of this approach includes ease of collection at a time/place of a patient's choice without a need for a speculum examination or a clinic visit.⁶⁶ Over half of cervical cancer cases in the US each year are among women who have been never screened or infrequently screened.⁶⁷ Self-collection for HPV screening has significant potential to expand cervical cancer screening access to women who cannot or do not access clinic-based/speculum-exam-based cervical cancer screening and thereby address a persistent cancer health disparity.⁶⁸ However, self-sampling for HPV testing is currently not FDA-approved.

Federal Opportunities

Participants at the FCCC Roundtable Series and FCCC federal partners provided insight on potential opportunities to address the patient-, provider-, and systems-level challenges to cervical cancer screening and management in the United States, U.S. territories, and FAS. Select opportunities at the systems level are identified here, in no

particular order. At the end of this chapter, federal opportunities specific to U.S. territories and FAS are noted along with the unique challenges they address.

Federal Opportunity 1: Increase knowledge and awareness of current screening and management guidelines.

Associated Challenges: Patient and provider knowledge and beliefs, provider adherence to screening and management guidelines

Improve patient and community awareness and understanding of screening and management guidelines.

- Develop patient-facing, culturally sensitive outreach and education materials that providers can use to connect with patients with varying levels of awareness and understanding. These materials should explain the importance of screening, current screening guidelines, and what to expect after screening.
- Develop dissemination guidance and resources for providers with information on effective patient engagement strategies and talking points.
- Promote cervical cancer screening through mass media and social media campaigns that are multi-lingual and inclusive, and leverage communication from trusted spokespeople.

Increase opportunities for health care workforce training.

- Create culturally sensitive provider education that includes colposcopy training, updates to guidelines, importance of follow-up, how to discuss screening with patients, and how to access and use available guidelines applications.
- Collaborate with professional societies to promote education on and implementation of screening and management guidelines in safety-net settings.

Associated Considerations:

- Cultural competency and sensitivity are critical components to successful communications campaigns. A variety of resources and tools may be needed to address the needs of varied populations.
- Strategies for addressing sexual and gender minority populations in messages could be considered to reduce stigma for people undergoing cervical cancer screening and management of abnormal results.
- Resources in multiple languages are necessary to meet the needs of patients and providers across the United States, U.S. territories, and FAS. Some populations may be more receptive to materials in specific dialects.



Federal Initiative with a Community Focus: Accelerating Cancer Screening (AxCS)

- In fiscal year 2023, HHS awarded \$11 million for health centers, an increase from \$5 million in fiscal year 2022, to expand equitable access to life-saving cancer screenings. This funding supports President Biden’s Unity Agenda and his call to action on cancer screening and early detection as part of the Administration’s Cancer MoonshotSM initiative to end cancer as we know it. [Read the press release here.](#)
- HRSA-funded health centers (H80 award recipients) that partner with an [NCI-Designated Cancer Center](#) were eligible to apply for the [Accelerating Cancer Screening funding](#). A key component of the partnership is a commitment to deploy outreach specialists and patient navigators within the health center’s service area.

Federal Opportunity 2: Increase adoption of primary HPV screening.

Associated Challenges: Access to screening and follow-up care

Increase lab facility capacities.

- Coordinate with local, regional, and national lab facilities to improve their capacity to run primary HPV tests.
- Understand laboratory capacity, including the use of platforms capable of identifying needed primary HPV screens and the barriers and facilitators to workflows that allow clinicians to conduct primary HPV screening in practice.

Utilize community health workers and patient navigators.

- Community health workers (CHWs) who know specific communities and cultural differences could help with patient education and increased uptake for primary HPV screening by addressing misconceptions and concerns in a culturally sensitive way.



Select Federal Collaboration Efforts Focused on Health Equity

Cancer Diagnostic Devices Interagency Task Force (CD2). A 5-year, collaborative effort established in 2021 focused on cancer diagnostics for near-patient use among geographically isolated, medically underserved, and otherwise vulnerable communities. The task force includes NCI, FDA, HRSA, and Centers for Medicare and Medicaid Services (CMS) representatives.

Population-based Research to Optimize the Screening Process (PROSPR). An NCI-funded research network project to better understand how to improve the cancer screening process across diverse community health care settings in the U.S. The study began in 2011 and is evaluating screening processes for cervical, colorectal, and lung cancer.

Federal Opportunity 3: Facilitate introduction of self-collection for HPV screening.

Associated Challenges: Access to screening and follow-up care

Continue research efforts that build the evidence base for self-collection that will support future FDA approval.

- Patient self-collection of a vaginal swab for primary HPV testing can improve screening rates, especially among under-screened women, by addressing barriers to screening such as time and place of the collection, and by removing the need for a speculum exam, which expands the range of providers who can offer this testing. Multiple studies have shown high levels of acceptance among the diverse groups of women surveyed.⁶⁹⁻⁷¹
- Research on the safety and efficacy of self-collection to support the evidence base for FDA approval should continue.

Support research on effective implementation strategies that can be deployed after FDA approval.

- Support evidence-based implementation guidelines for self-collection.
- Support research on barriers to uptake of self-collection to understand inequities by race, ethnicity, geographic location, insurance status, and other social determinants of health.
- Conduct research to support the creation of culturally sensitive patient-facing education materials on how to collect and return the sample, how and when to follow up with a provider, and how to understand results and next steps.

Associated Considerations:

- Consider a broad application of self-collection with the goal of extending reach to remote and low-resource settings, rather than eliminating clinician testing. For example, offering multiple testing options may provide more flexibility going forward (e.g., when in-person services are reduced during a pandemic).
- Ensure that self-collection increases access to patients who are currently unscreened or under-screened and make it clear that self-collection is not a second-tier screening strategy.
- Ensure that there are resources in place for follow-up and management of abnormal results, which is an important part of this screening option.



Select Initiatives and Resources to Support Self-Collection

Last Mile Initiative

- To extend the reach of cervical cancer screening, the NCI [“Last Mile Initiative: Self-sampling for HPV testing to Improve Cervical Cancer Prevention”](#) began in 2020 as a public-private partnership to validate patient self-sampling for HPV screening as it is not currently FDA-approved.⁶⁸

Leverage Lessons Learned from Other Initiatives

- Self-collection has been approved in other countries, such as Australia and the Netherlands, and is recommended by the WHO. Lessons learned in other countries may support effective rollout and implementation practices in the United States, once FDA-approved.
- Colorectal cancer screening is approved for at-home fecal immunochemical test (FIT) sampling.

Combination Self-Sampled HPV Screening and Automated Visual Evaluation

- Several new technologies for screening and management are currently in development that may provide new opportunities for cervical cancer prevention in safety-net settings. For example, a combination of HPV self-sampling followed by automated visual evaluation of screen-positive individuals may allow treatment decisions to be made in a single-visit setting. Large scale evaluation and regulatory approval is needed before these new technologies can be offered in these settings.

Federal Opportunity 4: Develop quality standards to improve adherence to screening and management guidelines.

Associated Challenges: Provider adherence to screening and management guidelines

Encourage adoption of screening guidelines.

- Conduct research to support guideline adoption.
- Develop standardized follow-up protocols within health systems to ensure all members of the care team are aware of guidelines and next steps of care.

Develop quality of care standards for follow-up after abnormal screening results.

- Improve the availability of clinical decision support tools, including through the EHR and lab information systems.
- Identify entities best suited to oversee development of quality measures (e.g., hospital, health system, insurance companies, CMS), such as Healthcare Effectiveness Data and Information Set (HEDIS) measures.

Associated Considerations:

- There is a need for more transparency to understand payor perspectives on the patient process from screening to diagnosis and treatment that could inform the development of quality standards.
- Although the implementation of value-based care will encourage the development of quality measures for adherence to management guidelines adherence, there is a concern that reporting burden may adversely impact low-resource settings.

Federal Opportunity 5: Strengthen health information systems to support providers across the care continuum.

Associated Challenges: Health information systems and exchange

Integrate support mechanisms into EHR.

- Enhance access to and support for advanced EHR software for safety-net providers and patients so that they can leverage technology to support screening and management guideline adherence. For example, EHR systems exist that enable automated reminders for when patients are due for screening.
- Explore integration of *ASCCP Risk-Based Management Consensus Guidelines* into the EHR through use of a clinical decision support system, removing the need for manual entry of patient data by the clinician and likely improving adherence to guidelines and ultimately patient outcomes.

Facilitate access to information across health systems.

- Explore health information exchange software and security agreements to ensure providers stay up to date on patient care as they move through the cervical cancer care continuum (e.g., automatically send test results to primary care providers who refer patients for specialty care).
- Support national-level initiatives to facilitate electronic health information exchange and compatibility across health information technologies.



Computable Guidelines and Clinical Decision Support for Cervical Cancer Screening and Management

The CDC DCPC is leading a multiyear initiative to develop computer-interpretable ("computable") versions of cervical cancer screening and management guidelines to support clinician awareness and adoption. This collaboration between CDC, NCI, and the MITRE Corporation aims to improve patient outcomes and decrease cervical cancer disparities by developing clinical decision support tools that can be integrated into health IT systems, such as EHRs.⁷²



U.S. Territories and Freely Associated States: Challenges and Opportunities in Cervical Cancer Screening and Management

While all of the aforementioned challenges and opportunities related to cervical cancer screening and management are relevant in the U.S. territories and FAS, the territories and FAS also experience barriers to screening and management that may be unique or exacerbated by their structural, historical, geographic, social/demographic, and cultural dynamics, as well as their susceptibility to certain types of natural disasters and other emergencies as islands. Likewise, opportunities to address their challenges may draw upon unique strengths, such as regional partnerships and local political structures. This section highlights those unique challenges, and specific opportunities to improve cervical cancer screening and management in the territories and FAS.

Challenges

Access to Screening and Follow-up Care

- U.S. territories and FAS face additional barriers to achieving a sufficient health care workforce. For example, in the USVI, the costs of living on-island and obtaining licensure and training are prohibitively high. In addition, Medicaid reimbursement requires that services must be administered by U.S.-trained practitioners.
- When islands lack sufficient workforce capacity, providers must travel between islands to provide services, or patients must travel off-island to receive care, both of which can result in significant care delays.
- Natural disasters have destroyed health care facilities in U.S. territories and FAS that have not been rebuilt.
- Challenges related to lab access are particularly exacerbated in U.S. territories and FAS. Some jurisdictions, including the USAPI, rely on specimen transport to Hawaii, Puerto Rico, the U.S. mainland, and Australia in some cases for lab processing.⁷³

Federal Opportunities

- Explore barriers and facilitators to the use of supplies and laboratory equipment available from partner nations and donors, which could increase capacity and reduce financial burdens in U.S. territories and FAS.
- U.S. territories and FAS have expressed interest in an exception to allow them to offer self-collection of HPV screening samples to alleviate access issues. The WHO supports self-collection, but it is not currently approved by the FDA. However, there may be flexibilities for some to receive an exception for self-collection due to the nature of their specific agreement with the United States. Agency-field offices may be able to provide context and understanding around territory-specific issues and impact to safety-net settings of care.



Research Opportunity

Some populations in U.S. territories and FAS are not represented in some national surveys, such as the National Health and Nutrition Examination Survey, the Behavioral Risk Factor Surveillance System, and the NHIS. Including them in data collection efforts can help researchers identify critical needs and inform policy efforts.



Funding Opportunity

[Accelerating the Prevention and Control of HIV, Viral Hepatitis, STDs, and TB in the U.S. Affiliated Pacific Islands](#): CDC funding opportunity released in FY2022 that addresses public health laboratory capacity in USAPI.



Strengthening Collaboration

This report is one of several efforts from the FCCC to ensure safety-net settings of care have support to increase their uptake of evidence-based best practices in cervical cancer prevention, screening, management of abnormal results, and treatment of cancer precursors. In addition to identifying opportunities for federal collaboration to support safety-net settings, the FCCC is also undertaking activities to understand the barriers to guideline adoption in safety-net settings, assess collaboration between HRSA-funded safety-net settings and NCI-designated cancer centers, and provide direct support to providers through a toolkit.



Federal Cervical Cancer Collaborative Initiatives

- [Landscape Analysis: Guideline Adoption in Safety-Net Care](#): This report describes the range of facilitators and barriers to effective cervical cancer screening in low-resource settings and for groups experiencing disproportionate burden of cervical cancer.
- **Collaboration Survey**: This novel survey of 64 NCI-designated cancer centers identifies ways to promote collaboration with safety-net settings of care supported by HRSA to increase adoption of updated cervical cancer screening and management guidelines. The survey findings offer insights into common barriers and opportunities that impact how cancer centers partner and engage with safety-net settings of care, including those supported by HRSA.
- **Toolkit to Build Provider Capacity**: This toolkit, which is currently under development, aims to support safety-net providers in improving cervical cancer care by providing practical tools and resources for adhering to vaccination, screening, and management guidelines, as well as guidance on change management, quality improvement, partnerships, and patient engagement.
- The FCCC has strategic and collaborative communications efforts underway to amplify and promote content in this report, the Toolkit to Build Provider Capacity, and other related materials.

In addition to these current initiatives, the FCCC aims to strengthen collaborative efforts across and between federal agencies and community partners. The opportunities presented in this chapter focus on overarching ways to strengthen collaboration. These opportunities span the cervical cancer continuum and will facilitate opportunities outlined previously in this report.

Collaboration Challenges

The opportunities presented throughout this report range from targeted initiatives to system-wide improvements in HPV vaccination and management of cervical cancer screening that require discussions and engagement across sectors, including federal, nonprofit, and private entities. There are often challenges to establishing and maintaining collaboration among two or more entities related to communication, infrastructure, dedicated staff, and priorities. The following challenges were identified during the roundtable series as overarching issues that affect cervical cancer care in safety-net settings.

Multiple Guidelines and Messages

Throughout the roundtable series, attendees shared frustrations related to navigating multiple screening guidelines and updates to management guidelines. They expressed a desire for federal agencies to speak with one voice and provide unified, simple messaging about cervical cancer screening to reduce confusion among providers. Consistent messaging is particularly important for safety-net providers, who may experience more barriers to staying up to date on changing guidelines, evidence-based best practices, and new innovations. However, there are several challenges to creating consistent messaging across federal agencies:

- While the USPSTF creates one set of screening guidelines, other screening and management guidelines are actively utilized across safety-net settings of care (i.e., ACS, ACOG, ASCCP). Federal agencies should be aware of the range of approaches at play in the field in outreach, education, and policy approaches.

Infrastructure Limitations

Although roundtable participants expressed enthusiasm and a desire for continued collaboration and dialogue, there are infrastructure challenges due to the siloed nature of federal agencies:

- Collaborative decision-making is difficult when federal colleagues may not have access to the same information.
- Federal priorities and funding are based on support of the Executive Branch and Congress and are subject to change.

Cross-Sector Collaborations

Public-private partnerships work best when there is a clear agreed-upon mission with well-defined priorities and activities. However, the private and public sectors may not always share the same priorities or information sharing regulations, making it difficult to realize shared goals. For example:

- Payers' and private health care systems' information is proprietary, and there may be barriers to obtaining it for research and operational purposes. Data sharing agreements may be able to leverage the Health Insurance Portability and Accountability Act of 1996 (HIPAA), which allows sharing of certain health information for the purposes of research, public health, or health care operations, while abiding by the HIPAA Privacy Rule.

Federal Opportunities

Participants at the Federal FCCC Roundtable and FCCC federal partners discussed the importance of interagency and cross-sector collaboration in strengthening cervical cancer prevention efforts. Participants and partners provided insight for potential opportunities related to consistent messaging and interagency and external collaboration in the United States, U.S. territories, and FAS.

Federal Opportunity 1: Provide consistent messaging on guidelines across agencies.

Associated Challenges: Multiple guidelines and messages

Collaborate across agencies to develop and disseminate a unified message.

- Identify channels for dedicated communication between personnel to work across organizations and agencies to promote consistent messaging.
- Create opportunities, like annual roundtable meetings, for federal and private partners to convene to review current guidelines and discuss messaging prior to disseminating to the public.
- Develop consistent messaging to be used across all systems of care supported by the federal government, including Indian Health Services, Veterans Health Administration, as well as non-health entities, such as the U.S. Department of Housing and Urban Development.

Disseminate messaging strategically.

- Consider opportunities to repeat messages through multiple modes and in multiple locations to reach a wide variety of providers.
- Demonstrate federal approval of a message by including agency names and/or logos to add credibility.



Research Opportunity

- Build upon research conducted by NCI's Health Communication and Informatics Research Branch about cancer misinformation on social media, and the impact of online misinformation on decisions about medical care and on people's health.
- Build upon research about how cultural tailoring and advances in technology, like platform algorithms and data access, can be used to achieve equity and ensure that cancer/health-related disparities are not exacerbated but rather reduced by the growth of social media and digital footprints.⁷⁴

Federal Opportunity 2: Facilitate interagency collaboration.

Associated Challenges: Infrastructure limitations

Explore opportunities to streamline collaboration through tangible mechanisms.

Examples may include:

- A website to promote the objectives and outcomes of the FCCC, which brings together experts from multiple federal agencies focused on bringing research into practice in safety-net settings of care.
- Liaisons between agencies to serve as a bridge between federal agencies to identify opportunities for collaboration around a specific topic or initiative with shared interest groups.
- An internal online workspace for federal agencies to communicate, collaborate, and share documents. This space could enable entities that serve similar populations to share best practices and identify points of contact.



Compendium of Federal Datasets Addressing Health Disparities

[This compendium](#) is a useful resource for exploring data related to socioeconomic factors and social determinants of health. It includes datasets and data-related resources developed, maintained, or funded by federal agencies. The compendium is a work in progress that will continue to incorporate datasets and resources from agencies within HHS and other federal partners.

Federal Opportunity 3: Develop and strengthen infrastructure to support external collaboration.

Associated Challenges: Cross-sector collaborations

Build partnerships and leverage the strengths of non-federal partners and non-governmental organizations.

- Establish collaborations with non-governmental organizations that share similar goals in promoting cervical cancer care and prevention to provide support for populations in safety-net settings (e.g., uninsured, underinsured). For example, Comprehensive Cancer Centers conduct collaborative research studies that involve universities, industry partners, and community partners. Special interest organizations can also provide expert guidance for working with certain vulnerable populations, such as transgender men.
- Utilize roundtables to convene partners, using virtual formats to help connect people across the country from a variety of care settings. For example, NIH ORWH and the NIH Advisory Committee on Research on Women's Health convened subject matter experts from across HHS and external partners for [Advancing NIH Research on the Health of Women: A 2021 Conference](#), where they evaluated research on women's health issues, including stagnant cervical cancer survival rates.

- Monitor landscape for opportunities for external collaboration. For example, the American Cancer Society leads the *National Roundtable on Cervical Cancer*, a coalition of strategic partnerships to eliminate disparities and reduce mortality.
- Continue to pursue partnerships with organizations in U.S. territories and FAS and include the Association of State and Territorial Health Officials in those conversations.

Provide opportunities to strengthen service delivery.

- Consider opportunities to align cervical cancer with other health issues to streamline priorities for overburdened health centers.
- Enhance training for benefits coordinators and support staff so that they can provide the most up-to-date information to patients, including connections to cancer centers, hospital departments, or organizations that can connect patients to financial support.
- Explore options for adequate reimbursement for services provided by CHWs and patient navigators.

Highlight existing funding opportunities and continue to research coverage gaps.

- Raise awareness among safety-net providers and clinics about federally covered services and funding mechanisms (e.g., NBCCEDP, Title X).
- Support additional research to better understand gaps in service coverage across the entire cervical cancer care continuum, from diagnostic tests through treatment, and the impact of these coverage gaps on patient outcomes.



Select Federal Collaboration Efforts that Support Innovation

Advanced Research Projects Agency for Health (ARPA-H). ARPA-H was authorized in March 2020 to improve the U.S. government’s ability to speed biomedical and health research. ARPA-H will support research that may provide transformative solutions for all patients.

HHS Innovation X. The OASH Office of Science and Medicine oversees HHS Innovation X, which forms coalitions and collaborations to tackle difficult health problems with diverse stakeholders, while leveraging resources from multiple sectors to accelerate innovation and scale solutions.



The Path Forward

The FCCC bridges cutting edge research and innovation to practice in safety-net settings of care and covers the breadth of the cervical cancer continuum, including prevention, screening, and management. Its role as an interagency collaboration is unique in its scope and ability to influence.

The opportunities presented here include maintaining and strengthening current efforts, and initiating new and innovative research, programs, services, or policies. In addition, some opportunities presented here may be broadly applicable to multiple federal agencies while some may be specific to only a few depending on expertise and areas of influence. This wide range of opportunities invites federal agencies to consider how they may contribute to the multifaceted approach of improving cervical cancer care. Ultimately, federal interagency and cross-sector collaboration can drive the ability to achieve improved outcomes among patients in safety-net settings of care.

This report outlines 11 opportunities to improve cervical cancer care in safety-net settings, including opportunities associated with specific parts of the care continuum (i.e., vaccination, screening, and management), and broader opportunities for collaboration related to cervical cancer. Exhibit 2 demonstrates how these opportunities are related to one another by highlighting how strengthening collaboration can bolster the pursuit of many opportunities related to improving specific components of the cervical cancer care continuum. For example, providing consistent messaging on guidelines across agencies (Collaboration Opportunity 1) will help address vaccine hesitancy and misinformation through education campaigns (HPV Vaccination Opportunity 1), as well as increasing knowledge and awareness of current screening and management guidelines (Screening and Management Opportunity 3). In sum, this exhibit illustrates how collaboration is the path to achieve multiple goals.

These opportunities build upon a foundation of impactful and innovative initiatives that have been implemented by federal agencies to date, which are highlighted throughout this report. Continued collaboration is necessary to ensure that current and future innovations are accessible to all patients regardless of race, ethnicity, gender identity, sexual orientation, income, or geography. Gaps are often the widest for communities disproportionately affected by systemic inequities. Initiatives that prioritize maximizing reach to impact the most people may fail to address challenges that impact fewer people but in a more profound way (e.g., the compound effects of infrastructure damage after a natural disaster in U.S. territories and FAS). Federal collaborative efforts must incorporate whole-person, place-based approaches to enable safety-net providers to meaningfully address cervical cancer disparities and chart an equitable path forward.

Exhibit 2. Cross-cutting Collaboration Opportunities to Improve the Cervical Cancer Care Continuum

	Strengthening Collaboration		
	Opportunity 1. Provide consistent messaging on guidelines across agencies.	Opportunity 2. Facilitate interagency collaboration.	Opportunity 3. Develop and strengthen infrastructure to support external collaboration.
HPV Vaccination			
Opportunity 1. Address vaccine hesitancy and misinformation through education campaigns.	X	X	
Opportunity 2. Strengthen health information technology solutions to improve access to vaccine records.		X	X
Opportunity 3. Expand access to vaccines through increased delivery settings and eligible providers.		X	X
Screening and Management			
Opportunity 1. Increase knowledge and awareness of current screening and management guidelines.	X		
Opportunity 2. Increase adoption of primary HPV screening.			X
Opportunity 3. Facilitate introduction of self-collection for HPV screening.		X	
Opportunity 4. Develop quality standards to improve adherence to screening and management guidelines.		X	X
Opportunity 5. Strengthen health information systems to support providers across the care continuum.		X	X

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Appendix A: Acronyms

Acronym	Full Name
ACIP	Advisory Committee on Immunization Practices
ACOG	American College of Obstetricians and Gynecologists
ACS	American Cancer Society
ASCCP	American Society for Colposcopy and Cervical Pathology
CDC	Centers for Disease Control and Prevention
CHW	community health workers
CMS	Centers for Medicare and Medicaid Services
DCPC	Division of Cancer Prevention and Control
EHR	electronic health record
FAS	Freely Associated States
FCCC	Federal Cervical Cancer Collaborative
FDA	Food and Drug Administration
FIT	fecal immunochemical test
FQHC	Federally Qualified Health Center
HEDIS	Healthcare Effectiveness Data and Information Set
HHS	Department of Health and Human Services
HIPAA	Health Insurance Portability and Accountability Act of 1996
HPV	human papillomavirus
HRSA	Health Resources and Services Administration
IEA	Office of Intergovernmental and External Affairs
IZ	CDC Immunization Gateway
NBCCEDP	National Breast and Cervical Cancer Early Detection Program
NCI	National Cancer Institute
NHIS	National Health Interview Survey

Acronym	Full Name
NIH	National Institutes of Health
NIS-Teen	National Immunization Survey-Teen
OASH	Office of the Assistant Secretary for Health
ORWH	Office for Research on Women's Health
OPA	Office of Population Affairs
OWH	Office of Women's Health
Pap	Papanicolaou
PROSPR	Population-based Research to Optimize the Screening Process
RHC	Rural health clinic
SAMHSA	Substance Abuse and Mental Health Services Administration
SEER	Surveillance, Epidemiology, and End Results
STI	sexually transmitted infection
USAPI	U.S.-Affiliated Pacific Islands
USPSTF	U.S. Preventive Services Task Force
USVI	U.S. Virgin Islands
VFC	Vaccines for Children
WHO	World Health Organization

Appendix B: Acknowledgments

Roundtable Attendees

U.S.-Affiliated Pacific Islands Roundtable

Name	Title	Organization
Vince Aguon	Communicable Disease Control Coordinator II	Guam Department of Public Health and Social Services
Janos Baksa	Program Specialist	University of Hawaii
Chris Bates	Technical Lead, Cancer	World Health Organization Division of Pacific Technical Support
Arielle Buyum	Executive Director	Pacific Islands Primary Care Association
Nicole Campos	Senior Research Scientist	Harvard T.H. Chan School of Public Health
Karen Canfell	The Daffodil Centre Director	University of Sydney
Emi Chutaro	Executive Director	Pacific Island Health Officers' Association
Ivy Claire Lapidez	Physician – OBGYN	Republic of the Marshall Islands Ministry of Health
Terry Cuabo	Executive Director	Guam Cancer Care
Laurent Duenas	Deputy Director	Guam Department of Public Health and Social Services
Elizabeth Guerrero	Program Coordinator IV	Guam Department of Public Health and Social Services
Edolem Ikerdeu	Executive Director	Palau Community Health Center
Jane Kim	Professor	Harvard T.H. Chan School of Public Health
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Edward Trimble	Senior Advisor for Global HPV and Cervical Cancer Control	National Cancer Institute

U.S. Virgin Islands Roundtable

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Lyna Fredericks	Director of Chronic Disease	Virgin Islands Department of Health
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Shavell Karel	Chief Medical Officer	Frederiksted Health Care Inc.
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Charmaine Mayers	MCH Director	U.S. Virgin Islands Department of Health Maternal and Child Health Program
Mauricio Maza	Advisor, Cancer Prevention and Control	Pan American Health Organization

Name	Title	Organization
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Puerto Rico Roundtable

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Frances Baerga	Physician	Centro 330
Sara Benitez Maja	Cancer Projects Coordinator	Pan American Health Organization
Eunice Bonilla	Nurse	COSSMA
Nabal Bracero	President	PROGyn, Inc.
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Vivián Colón-López	Professor	University of Puerto Rico Comprehensive Cancer Center
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Name	Title	Organization
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Victor Ramos	Pediatrician	Colegio de Médicos Cirujanos de Puerto Rico
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National Organizations, Associations, and Academia Roundtable

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Name	Title	Organization
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Fred Wyand	Communications Director	American Sexual Health Association/National Cervical Cancer Coalition
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Lila Rutten	Professor of Health Services Research	Mayo Clinic
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Name	Title	Organization
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Federal Roundtable

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