

# STI

**Sexually Transmitted Infections**

# **National Strategic Plan**

for the United States | **2021–2025**



# VISION

*The United States will be a place where sexually transmitted infections are prevented and where every person has high-quality STI prevention, care, and treatment while living free from stigma and discrimination.*

*This vision includes all people, regardless of age, sex, gender identity, sexual orientation, race, ethnicity, religion, disability, geographic location, or socioeconomic circumstance.*

**Acknowledgments:** The Sexually Transmitted Infections National Strategic Plan (STI Plan) was developed through a robust process that included gathering feedback from stakeholders across health care and related fields. Partners throughout the federal government, as well as hundreds of nonfederal stakeholders, including state, tribal, territorial, and local governments, researchers, health plans and providers, community groups, and national and local organizations that work in STI and related fields, have helped shape the goals, objectives, and strategies in this plan. The Office of the Assistant Secretary for Health (OASH) and its Office of Infectious Disease and HIV/AIDS Policy (OIDP) of the U.S. Department of Health and Human Services (HHS) sincerely thank all those who contributed to making this STI Plan a reality, especially staff from the Centers for Disease Control and Prevention (CDC) Division of STD Prevention who provided technical and personnel support..

**Language used in the STI Plan:** The STI Plan places value on the lived experiences and choices of all people, regardless of age, sex, gender identity, sexual orientation, race, ethnicity, religion, disability, geographic location, or socioeconomic circumstance. To reflect this vision, a concerted effort was made to use inclusive and person-first language throughout the STI Plan. Evidence-based, contemporary terminology is also used to convey respect and empowerment and to reduce stigma faced by communities and populations disproportionately impacted by these infections. Despite these efforts, specific terminology or language may be unintentionally offensive or stigmatizing to some individuals or populations. Language is subjective, and the meaning and use of language changes over time. This approach is intended to help the STI Plan’s users to identify these societal shifts in preferred terminology and to communicate in a manner that reflects its vision for a collective, inclusive, and respectful national response..

Additional information regarding the STI Plan and associated activities may be accessed at [www.hhs.gov/STI](http://www.hhs.gov/STI).

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# EXECUTIVE SUMMARY

Over the past decade, the United States has witnessed alarming increases in rates of sexually transmitted infections (STIs) including syphilis, chlamydia, and gonorrhea, amounting to a public health crisis. From 2014 to 2018, the rates of reported cases of primary and secondary syphilis, congenital syphilis, gonorrhea, and chlamydia rose 71%, 185%, 63%, and 19%, respectively. Human papillomavirus (HPV), the most common STI, accounts for 14 million new infections each year.

The consequences of the STI epidemic are enormous. When left untreated, STIs can lead to long-term, irreversible health outcomes such as chronic pelvic pain, infertility, adverse pregnancy outcomes, neonatal death, and congenital abnormalities, and can facilitate HIV acquisition. HPV can cause numerous forms of cancer, although most HPV types associated with cancer are preventable through vaccination. HPV vaccination rates are lower than for other routinely recommended childhood and adolescent vaccinations in the United States despite evidence that the vaccine has a substantial impact on reducing HPV infections, HPV-associated pre-cancers, cancers, and genital warts. Many Americans largely underestimate the risk of STIs and for myriad reasons may not proactively seek care. In addition, racial and ethnic disparities contribute to an unequal burden of STIs in the United States.

As recognized by several national reports and authorities, efforts to date to address STIs have been fragmented and insufficient. Despite actions to reverse the trend, resources are often strained in many state and local public health settings. In addition, STIs cost Americans billions of dollars each year in direct medical expenses. Combined, the health and economic toll can affect the quality of life and prosperity of millions of people. Coordinated, innovative approaches and sustained efforts are needed to reverse this increasing trajectory and to curtail the ever-growing burden of STIs.

This inaugural STI National Strategic Plan (STI Plan) sets forth a vision for the nation with goals, objectives, and strategies to meaningfully prevent and control STIs in the United States. It is intended to serve as a roadmap for federal and nonfederal stakeholders at all levels to reverse the upward trends in STI rates. The STI Plan focuses on four of the STIs with the highest morbidity rates, the most persistent and pervasive STI inequalities according to national data, and the greatest impact on the health of the nation: chlamydia, gonorrhea, syphilis, and HPV. HIV, another significant STI, is the focus of a separate HIV National Strategic Plan. Hepatitis B and hepatitis C, which can also be transmitted sexually, are the focus of a separate Viral Hepatitis National Strategic Plan.

The STI Plan also includes indicators to measure progress and quantitative targets for each indicator. The components of the STI Plan are contained and discussed in Section III.

The STI Plan establishes the following vision:

## VISION

*The United States will be a place where sexually transmitted infections are prevented and where every person has high-quality STI prevention, care, and treatment while living free from stigma and discrimination.*

*This vision includes all people, regardless of age, sex, gender identity, sexual orientation, race, ethnicity, religion, disability, geographic location, or socioeconomic circumstance.*

This vision is accompanied by five high-level goals, which frame the STI Plan's more specific objectives. The order of goals and objectives does not indicate any prioritization, and many are intertwined. The five goals and associated objectives are as follows:



### **Goal 1: Prevent New STIs**

- 1.1 Increase awareness of STIs and sexual health
- 1.2 Expand implementation of quality, comprehensive STI primary prevention activities
- 1.3 Increase completion rates of routinely recommended HPV vaccination
- 1.4 Increase the capacity of public health, health care delivery systems, and the health workforce to prevent STIs



### **Goal 2: Improve the Health of People by Reducing Adverse Outcomes of STIs**

- 2.1 Expand high-quality affordable STI secondary prevention, including screening, care, and treatment, in communities and populations most impacted by STIs
- 2.2 Work to effectively identify, diagnose, and provide holistic care and treatment for people with STIs by increasing the capacity of public health, health care delivery systems, and the health workforce



### **Goal 3: Accelerate Progress in STI Research, Technology, and Innovation**

- 3.1 Support research and investments to develop STI vaccines and bring them to market
- 3.2 Support the development and uptake of STI multipurpose prevention technologies, antimicrobial prophylaxis regimens, and other preventive products and strategies
- 3.3 Support the development and uptake of innovative STI diagnostic technologies, therapeutic agents, and other interventions for the identification and treatment of STIs, including new and emerging disease threats
- 3.4 Identify, evaluate, and scale up best practices in STI prevention and treatment, including through translational, implementation, and communication science research



### **Goal 4: Reduce STI-Related Health Disparities and Health Inequities**

- 4.1 Reduce stigma and discrimination associated with STIs
- 4.2 Expand culturally competent and linguistically appropriate STI prevention, care, and treatment services in communities disproportionately impacted by STIs
- 4.3 Address STI-related social determinants of health and co-occurring conditions



### **Goal 5: Achieve Integrated, Coordinated Efforts That Address the STI Epidemic**

- 5.1 Integrate programs to address the syndemic of STIs, HIV, viral hepatitis, and substance use disorders
- 5.2 Improve quality, accessibility, timeliness, and use of data related to STIs and social determinants of health
- 5.3 Improve mechanisms to measure, monitor, evaluate, report, and disseminate progress toward achieving national STI goals

The vision, goals, objectives, and other components of the STI Plan were developed and approved by a dedicated Steering Committee, composed of subject matter experts from across the federal government, with public comment from numerous and varied stakeholders. The STI Plan is designed to be accessible to a broad audience, including people working in public health, health care, government, community-based organizations, private industry, research, and academia. It serves as a roadmap for all stakeholders at all levels to guide development of policies, initiatives, and actions for STI prevention and control. Because certain demographic groups and areas are disproportionately impacted by STIs, the STI Plan also identifies populations and geographic regions with higher rates of STIs (i.e., priority populations) so that federal agencies and other stakeholders can focus their resources to realize the greatest impact. The priority populations were identified based on national-level data. Stakeholders are encouraged to review the data for the populations they serve to help focus their efforts.

Interwoven throughout the STI Plan are approaches to address the individual, community, and structural factors and inequities that contribute to the spread of STIs, such as stigma and social determinants of health. The STI Plan highlights opportunities to integrate STI prevention and control into HIV, viral hepatitis, substance use disorders, and other public health efforts by leveraging capacity and infrastructure across the domains and breaking down operational and funding silos.

A recurring theme is the need for innovative solutions and approaches to address the ongoing and emerging challenges to STI prevention and control, including expanding the types of community and clinical sites that address STIs and developing vaccines, point-of-care diagnostic tools, and therapeutics. The plan is designed to facilitate a whole-of-nation response to the STI epidemic in the United States and to successfully prevent and reduce STI-associated morbidity and mortality.

The STI Plan includes indicators for measuring progress and quantitative targets for each indicator. There are seven core indicators, some of which are stratified to measure progress in addressing disparities in STIs (i.e., disparities indicators). Although focused on the years 2021–2025, the STI Plan includes annual targets through 2030 because STIs will continue to pose a threat to the public's health. To ensure implementation and accountability, a Federal Implementation Plan that documents the specific actions that federal partners will take to achieve the STI Plan's goals and objectives will be released subsequent to the STI Plan. Progress toward meeting the STI Plan's goals will be monitored and reported annually.

# I. INTRODUCTION

## A. The Need for the STI National Strategic Plan

### 1. RISE IN STIs AND PURPOSE OF THE PLAN

Persistent rises in the rates of sexually transmitted infections (STIs) in the United States constitute an epidemic and public health crisis with profound implications for all Americans. In recent decades, rates of chlamydia, gonorrhea, syphilis, and congenital syphilis have increased significantly. The rate of chlamydia, the most commonly reported bacterial STI, increased by approximately 19% from 2011 to 2018.<sup>1</sup> Over the span of a decade, the rate of gonorrhea rose by greater than 80% from a historic low in 2009. The rates of primary and secondary syphilis and of congenital syphilis increased almost every year since 2001 and 2012, respectively. Human papillomavirus (HPV), the most common viral STI, accounts for 14 million new STI infections each year.<sup>2</sup>

Left untreated, STIs can lead to serious health consequences such as pelvic inflammatory disease (PID), chronic abdominal pain, infertility, ectopic pregnancy, miscarriage, neonatal death, and congenital abnormalities.<sup>1</sup> Chlamydia, gonorrhea, and syphilis are also associated with increased risk of HIV transmission.<sup>3</sup> HPV leads to approximately 35,000 cases of cancer in both men and women each year, despite being preventable through a safe and effective vaccine.<sup>2</sup>

In the United States, some groups are more affected by STIs than others.<sup>1</sup> People aged 15–24 represent one-half of new STI infections, but only one-quarter of the sexually active population.<sup>4</sup> In 2018, more than one-half of primary and secondary syphilis infections occurred among men who have sex with men (MSM).<sup>1</sup> In addition, rates of chlamydia, gonorrhea, and syphilis are higher among American Indians/Alaska Natives (AI/AN) and African Americans (Blacks)\* than among whites.<sup>5</sup> The South and West, as defined by the [U.S. Census Bureau](#),<sup>6</sup> are the U.S. regions most heavily impacted by the STI epidemic.

STIs significantly impact the U.S. economy and health care system. A 2008 analysis from the Centers for Disease Control and Prevention (CDC) estimated the total direct cost of chlamydia, gonorrhea, syphilis, and HPV was \$2.4 billion annually.<sup>7</sup> This estimate does not include the cost of adverse pregnancy outcomes, productivity losses due to illness, and the cost of STI screening and prevention programs.<sup>7</sup>

To spur action to reduce STI rates and their public health impacts, the U.S. Department of Health and Human Services (HHS) led the development of this inaugural STI National Strategic Plan (STI Plan or Plan). The STI Plan outlines national goals, objectives, strategies, and indicators to target four of the STIs with the highest morbidity rates, the most persistent and pervasive STI inequalities according to national data, and the greatest impact on the health of the nation: chlamydia, gonorrhea, syphilis, and HPV. † However, most of its components are also applicable to other STIs, such as herpes simplex virus infection, trichomoniasis, and

The term sexually transmitted infection (STI) refers to a virus, bacteria, fungus, or parasite that has infected a person's body via sexual contact, whereas the term sexually transmitted disease (STD) refers to a recognizable disease state that has developed from an STI. Some stakeholders commonly use the term STI, and some commonly use the term STD. This STI Plan generally uses the term STI because the goal is to prevent and treat infections before they develop into a disease state. However, the term STD is used when referring to data or information from sources that use the term STD.

\* In this STI Plan, Blacks will be used to refer to African Americans and Blacks.

† HIV, another significant STI, is addressed in a separate HIV National Strategic Plan (HIV Plan). Hepatitis B and hepatitis C, which can also be transmitted sexually, are addressed in a separate Viral Hepatitis National Strategic Plan (Hepatitis Plan).

*Mycoplasma genitalium*. A roadmap for federal and nonfederal stakeholders at all levels and sectors, the STI Plan envisions a whole-of-nation response to preventing and controlling STIs in the United States.

## 2. NATIONAL STI REPORTS: A CALL TO ACTION

Several foundational reports have been published on the STI epidemic, its impact on public health, and possible solutions to the crisis. These critical calls to action helped guide this STI Plan.

A groundbreaking 1997 report from the Institute of Medicine (IOM), *The Hidden Epidemic: Confronting Sexually Transmitted Diseases*, concluded that “the scope and impact of the STI epidemic are underappreciated... and largely hidden from public discourse.”<sup>8(p20)</sup> The reasons for this under-appreciation remain as relevant today. STIs may be asymptomatic and therefore undetected; a significant amount of time may lapse between initial infection and serious health consequences (e.g., infertility and HPV-associated cancers); and stigma associated with STIs inhibits traditional interventions such as education and public discourse. The report also highlighted other important drivers of the epidemic, including social determinants of health such as poverty, lack of education, and disparities in health care access.

A panel of the National Academy of Public Administration (NAPA), on behalf of the National Coalition of STD Directors (NCSD), released two reports in 2018 and 2019 that expanded on the IOM report.<sup>9,10</sup> The NAPA reports, which explored the effectiveness of STI prevention and control efforts as well as the challenges of frontline programs, highlighted many of the same themes and recommendations. Their findings documented reductions in federal, state, and local funding that have left programs without the resources or capacity to provide the STI prevention and treatment services needed to respond to increasing STI rates. Further, technology challenges—such as incompatibility across surveillance systems, the inability to link electronic health record data, and the lack of public health informatics staff—are hindering the collection, reporting, and use of surveillance data essential to prevention and control activities.

Funding restrictions often prevent integrated, coordinated programming necessary to address contributing factors to STIs. In addition, the closing of many STI clinics has left vulnerable populations without access to timely sexual health care. Social stigma remains an overriding issue on the frontlines and a continuing barrier to STI education and screening. The reports underscored that many entities are involved in STI mitigation and recommended development of a comprehensive, unified national strategy to combat STIs, which would include the following specific actions.

- Designate a national STI champion to coordinate federal, state, and local efforts and to lead the development and implementation of a national STI strategy.
- Frame the STI narrative as a health and wellness issue to destigmatize the discourse.
- Expand science-based, health-centric STI education and awareness among the public and health care providers to reduce stigma, encourage healthy behaviors, and increase screening, testing, and treatments.
- Expand access to care, with a focus on delivering community-sensitive and patient-centered care.
- Improve data collection, reporting, and evaluation and enable more research to inform interventions and bring best practices to scale.
- Expand funding and resources and enhance agility across STI programs.

In another 2019 report commissioned by NCSD, the Treatment Action Group (TAG) highlighted serious gaps in the development of new tools for STI prevention (e.g., vaccines), diagnostics/testing (e.g., rapid tests), and treatment and called for major new investment in STI research.<sup>11</sup> TAG recommendations for community advocates and key stakeholders included the following:

- Invest substantially in new prevention modalities, particularly vaccine research and development for chlamydia, gonorrhea, and syphilis.

- Consider scaling up pre-exposure prophylaxis (PrEP) and/or post-exposure prophylaxis (PEP) for syphilis and chlamydia.
- Pave the way for development and access to novel antibiotics for treatment of gonorrhea.
- Develop reliable, easy-to-use, widely accessible (including point-of-care [POC] and self-testing) rapid tests for STIs.
- Focus STI advocacy efforts to aggressively address structural, social, financial, and research barriers, in addition to condoms and behavioral interventions.
- Synergize STI and HIV advocacy—STI prevention and treatment success is integral to the success of HIV prevention and treatment.
- Address underfunding and declining funding of STI infrastructure and clinics in the United States.

These frameworks and calls to action recognize and highlight the need for a cohesive national approach to address the STI epidemic. Other national frameworks have also informed this STI plan and include *The Surgeon General's Call to Action to Promote Sexual Health and Responsible Sexual Behavior (2001)*,<sup>12</sup> the *National Prevention Strategy (2011)*,<sup>13</sup> the *National Strategy for Combating Antibiotic Resistant Bacteria (CARB) (2014)*,<sup>14</sup> and the *Healthy People framework*.<sup>15</sup>

## B. The STI Epidemic: Challenges and Opportunities

Several challenges must be addressed to curtail the rising STI rates. Although the United States is in the midst of an STI epidemic and more than one-half of Americans will acquire an STI in their lifetime, a large majority remain unaware of the high prevalence of STIs.<sup>16</sup> Disparities in rates among certain population groups and geographic regions highlight the need for focused prevention strategies that address contributing factors such as health behaviors, substance use, stigma, and social determinants of health.<sup>1</sup> Other ongoing and emerging challenges must also be addressed including workforce skill and program capacity, the increasing threat of antimicrobial resistance (AMR), and the need for innovations in STI prevention, diagnosis, and treatment. To reverse the high rates of STIs, the field must shift from a fragmented and insufficient approach to one that is coordinated, sustained, and population-based and leverages innovation.<sup>9,17</sup>

Many aspects of the STI epidemic are intertwined with other public health challenges such as HIV, viral hepatitis, and substance use disorders (SUDs). For example, stigma crosscuts each of these issues and leads to significant disparities as well as prevention and treatment challenges. The STI Plan provides a framework for addressing many of these challenges and opportunities in an integrated fashion.

### 1. HEALTH DISPARITIES, STIGMA, AND THE ROLE OF SOCIAL DETERMINANTS OF HEALTH

Social determinants of health—the social and economic conditions that influence the health of individuals and communities—loom large in the STI epidemic and the unequal burden of STIs in the United States. Individual behaviors that contribute to STIs occur in a broad context that involves a complex interplay of factors such as poverty, stigma, housing and food insecurity, discrimination, racism, medical mistrust, violence/trauma, access to care, and education.

Stigma, driven by medical, social, and cultural conditions, has long been a challenge in the prevention and control of STIs. Even when other barriers (e.g., health care access) are eliminated, stigma can discourage individuals from seeking STI testing and treatment.<sup>18</sup> Stigmatizing attitudes that associate STIs with immoral or irresponsible behavior hinder public discourse, disclosure, information sharing, care-seeking, and treatment.<sup>19</sup> Bias in provider behavior and interactions with patients may inhibit patients from seeking testing and accepting STI prevention education.<sup>1</sup> Such bias often goes unrecognized by the provider, and the lack of patient engagement in prevention and care may be perceived by the provider as a client issue, not a care delivery issue. In addition, approximately 11 states have laws that criminalize behaviors that can potentially expose another person to communicable or infectious diseases including STIs.<sup>20</sup> These laws add to the stigma associated with STIs and barriers to prevention and treatment.

A number of opportunities exist to address the social determinants of health that affect STI prevention and control efforts. Public education and awareness that involves schools, families, and communities is needed, especially among populations most affected by STIs. Partnering with the communities and groups being served strengthens the impact of STI prevention and control messaging. Education and awareness efforts should include positive messaging that reduces the negative connotations of STIs, engaging national and local champions and ensuring that campaigns reduce—and do not perpetuate—STI-related discrimination and stigma. In addition, efforts to increase provider education and awareness and to take a holistic approach to sexual health may promote the provision of prevention strategies such as immunization and counseling on risk-minimizing behaviors. Embracing a more holistic approach also provides avenues to support other health and wellness issues and to connect individuals to critical social services that can help address poverty, housing, and/or food insecurities.

### **A Focus on Health Inequities**

Certain racial and ethnic minority groups, such as Blacks, AI/AN, and Hispanics, have higher rates of STI incidence and prevalence, compared with rates for non-Hispanic whites.<sup>1</sup> The COVID-19 pandemic has further exposed the health disparities and health inequities faced by people of color. Health disparities can stem from inequities in the social determinants of health and highlight the need to focus not only on STI prevention and care efforts, but also on how programs, practices, and policies affect communities of color. Racial and ethnic minority groups are more likely to be uninsured compared to non-Hispanic whites,<sup>21</sup> limiting their access to health care. Barriers to health care access include lack of transportation and childcare, inability to take time off from work, communication and language barriers, racism, discrimination, and lack of trust in health care providers.<sup>22</sup>

Sexual and gender minority (SGM) populations also face health disparities.<sup>23, 24, 25, 26, 27</sup> Barriers to health care include stigma, discrimination, medical mistrust, and lack of access to affirming mental health care.<sup>28</sup> SGM face greater health challenges than heterosexual and cisgender individuals due in part to inequities such as stigma and discrimination.<sup>29</sup> CDC data demonstrate that MSM are disproportionately impacted by STIs, as presented below in Section III.D. Other SGM populations, particularly those who are transgender, may engage in higher-risk behaviors and experience adverse social determinants of health as well as face stigma daily.<sup>28</sup> Disaggregated data for SGM populations are lacking for STIs other than HIV.<sup>25</sup> Among the 3 million HIV testing events reported to CDC in 2017, the percentage of transgender people who received a new HIV diagnosis was three times the national average.<sup>30</sup> The National Institutes of Health's *Strategic Plan to Advance Research on the Health and Well-Being of Sexual and Gender Minorities: Fiscal Years 2021-2025* addresses the need to encourage sexual orientation and gender identity data collection in health care and related settings including through national datasets.<sup>31</sup>

The STI Plan recognizes the importance of addressing social determinants of health to improve health outcomes for racial, ethnic, and sexual minority groups. By working to establish policies and programs that positively influence social and economic conditions that facilitate opportunities for changes in individual behavior, health can be improved and sustained, and disparities reduced. Improving the conditions in which we live, learn, work, and play and the quality of our relationships will create a healthier population, society, and workforce.<sup>32</sup> Application of a “health in all policies” strategy, a cross-sector collaborative approach to integrating health into policies and programs,<sup>13, 33</sup> to close the health gaps can be implemented across all areas and levels of government to foster achievement of these aims.

## **2. PROVIDER EDUCATION, AWARENESS, AND TRAINING**

STI screening and treatment—including stopping the progression of STIs to serious health consequences or diseases—is critical for protecting the health of people affected by STIs. Lack of training and provider reticence are commonly documented reasons for providers not adequately addressing sexual health issues with patients.<sup>34</sup> Providers with sexual health education and training may be more likely to address individual

sexual health needs such as recommending testing and screening during routine health visits<sup>34,35</sup> and offering expedited partner therapy for exposed partners (where recommended).<sup>35,36</sup> Awareness, education, and training are particularly relevant for providers seeing preteen and teen patients. Research suggests that not enough teens get private and confidential time with their providers. One study found that only 38% of teens aged 15–17 had one-on-one time with a provider during a clinic visit in the prior year.<sup>37</sup> In another study, only 68% of medical visits attended by a parent involved time alone between the provider and the teen.<sup>38</sup>

There is a clear need and opportunity to expand overall sexual health education and training among all health care provider types throughout the stages of their career including during training (e.g., medical school, residency) and once in practice (e.g., through continuing education, certification, and maintenance of certification). This training can strengthen provider confidence and skills across a variety of practice settings, promote sexual health conversations that can help reverse STI-related stigma, and reduce adverse sexual health outcomes through all life stages of individuals.<sup>34</sup> Among providers caring for preteens and adolescents, strengthening privacy and confidentiality while implementing practices that encourage sexual health assessments and increase risk-avoidance behaviors can further reduce STIs and STI-related stigma and shame.<sup>39,40</sup> Telemedicine and telehealth may also be useful tools for addressing stigma and discomfort with discussing sexual health concerns because patients may feel more comfortable addressing these concerns from the privacy of where they live.

Provider training in cultural competency and humility can help reduce health inequities and disparities. Such training can also help address a provider's interactional and interpersonal skills that may inadvertently manifest unknown bias or judgment. Moreover, there is a need to strengthen the capacity and competency of the STI workforce to engage effectively with people who use drugs, given the frequent co-occurrence of STIs and substance use.<sup>41,42</sup> This engagement includes providing a welcoming environment and taking a harm reduction approach, such as providing naloxone and referring to comprehensive syringe services programs.

### 3. PROGRAM CAPACITY AND ACCESS TO PREVENTION AND CARE SERVICES

Most types of STIs are treatable and curable. However, as noted by the NAPA reports, funding cuts to STI programs have reduced access to essential prevention and care services. STI specialty clinics played a key role in reducing STI rates to their lowest levels in the early 2000s, but since then more than one-half of state and local STI programs have cut budgets, laid off staff, reduced clinic hours, and increased patient co-pays. STI specialty clinics typically offer onsite testing and treatment services (e.g., rapid tests for gonorrhea and syphilis, 3-site testing, dark-field microscopy for primary and secondary [P&S] syphilis, HIV ribonucleic acid [RNA] testing, injectable medications to treat gonorrhea and syphilis, expedited partner therapy) that often are not routinely available in alternative sites of care, such as primary care clinics. They also often have disease intervention specialists (DIS) on staff to conduct partner services, which help avert further transmission and repeat infections. Further, STI specialty clinics have been fundamental to the provision of affordable, quality STI care, especially to men (including MSM), adolescents and young adults, racial and ethnic minorities, and individuals without the resources to seek treatment in the private sector.<sup>43</sup> As STI clinics close or reduce hours across the United States, these key populations may forego care or turn to general practice settings and emergency departments, where sexual health expertise and adherence to STI clinical management guidelines may be inconsistent and providers may lack training in sexual history taking and client-centered risk avoidance and risk-reduction counseling. Because most people are unaware of their infections due to lack of symptoms, if sexual health is not addressed, then recommended screening is not performed. Budget cuts have also negatively impacted critical prevention tools such as STI surveillance and partner services.<sup>9</sup>

As emerging infectious diseases continue to pose threats to populations around the world, continued focus on STI screening and treatment is essential. For example, in 2016 the arrival of Zika virus in the United States required significant disease control efforts including STI screening and counseling.<sup>44</sup> In 2020, disruptions due

to the COVID-19 pandemic further exposed vulnerabilities in the STI infrastructure. Two months into the pandemic, greater than 60% of state and local health programs reported a negative impact on surveillance, reduced capacity to treat STIs, and difficulty addressing syphilis and HIV caseloads.<sup>45</sup> In addition, there have been reports of antimicrobial shortages as well as STI lab supplies and personnel being diverted for COVID-19.<sup>46</sup> Greater than 57% of DIS reported that they or other DIS in their jurisdictions had been deployed to COVID-19 efforts, and only 32% of DIS had the capabilities to perform field visits remotely or virtually.<sup>45</sup>

Targeted public health funding to strengthen STI surveillance and STD clinic infrastructure and to expand DIS and partner services may reduce the burden of STIs; increases in federal STI prevention funds have been linked to decreases in STI case rates.<sup>47</sup> Although STI specialty clinics remain a critical part of our health care infrastructure, more and more Americans are getting tested and treated in other settings, including primary care, HIV care, and family planning clinics. Strategies throughout the STI Plan aim to enhance and strengthen STI care in all of these settings in order to provide the highest-quality STI care.<sup>48</sup> Providing multiple options for high-quality STI prevention and care is an important approach to meeting all people's needs. Harnessing opportunities to increase resources and implement innovative approaches, especially during public health emergencies such as COVID-19, is necessary to ensure access to and continuity of STI services. The COVID-19 pandemic has sparked the use of innovative approaches and a recognition of the need to offer multiple modalities of care to best meet all people's needs. Going forward this means, for example, increased telehealth capacity, self-testing outside of clinical facilities, and referrals to alternate treatment and care settings (e.g., pharmacies, retail health clinics), as well as in-person health care provider visits.

Furthermore, the use of trusted community-based organizations working in the field of STIs may provide opportunities to reach populations that would not otherwise present at an STI clinic or in a traditional health care setting. Community-based organizations have the knowledge and the trust of the populations they serve and may be able to help deliver effective messaging about the importance of screening and treatment of STIs.

#### **4. ACCELERATE PROGRESS IN STI RESEARCH, TECHNOLOGY, AND INNOVATION**

Inadequate investment in STI research, technology, and innovation has resulted in a lack of new vaccines, rapid diagnostics, and therapeutic and preventive antimicrobials.

##### ***STI Vaccines***

Vaccines are widely recognized as an effective primary prevention strategy against infectious diseases.<sup>49</sup> However, no vaccine exists to prevent syphilis, gonorrhea, or chlamydia. Significant barriers to STI vaccine development remain.<sup>50</sup> Concerns about the ability to achieve reasonable returns on the investment required to bring a vaccine to market have slowed STI vaccine development. The potential for lower than anticipated consumer demand and uptake, an ongoing challenge for the HPV vaccine, further undermines STI vaccine development efforts. Innovation in vaccine development, care delivery models for providing vaccinations, and communication are critical to advancing STI vaccines and ultimately STI prevention.

##### ***Diagnostics and Self-Testing***

Some high-quality STI diagnostic tests exist, but affordable STI tests that allow for rapid POC diagnosis are not available in the wide array of STI care settings.<sup>11</sup> Reliable, affordable, and user-friendly POC tests are needed to rapidly identify and treat STIs. Deficits in STI testing and contact tracing due to the COVID-19 pandemic have revealed an urgent need for availability and access to affordable home-based tests or self-collection specimen kits for use outside of clinics. However, technological advancement has been limited by lack of investment and other barriers.<sup>11,51</sup> Public knowledge, access, and the cost of self-test options, which are not typically covered by insurance carriers, are additional barriers to widespread use.<sup>51</sup> Furthermore, cultural practices, language, and educational level also serve as barriers to widespread use. The development of tests across STI pathogens and of a national distribution plan would also accelerate progress.

## Therapeutic and Preventive Antimicrobials

In 2019, the World Health Organization (WHO) named AMR among the top 10 threats to global health, and CDC included gonorrhea (*Neisseria gonorrhoeae*) as one of five pathogens that are urgent public health threats and requiring urgent and aggressive action.<sup>52, 53</sup> Gonococcal infections are increasingly resistant to at least one antibiotic, and only one recommended treatment option remains.<sup>1, 35</sup> Yet the drug development pipeline lacks effective antimicrobials to reduce the spread of STIs in general, especially for the rising number of resistant gonococcal infections and their related complications. For example, Benzathine penicillin G is currently the only recommended treatment option for pregnant women with syphilis who have no evidence of neurosyphilis. Shortages of Benzathine penicillin G, its high cost, storage issues, and penicillin drug allergies present challenges and underscore the need for alternative therapeutic options for syphilis.

Antibiotic susceptibility testing can help with decisions about which therapeutic options are the most likely to be effective for a specific patient's infection. Using the most effective treatment regimen also can mitigate the emergence of resistant organisms. Novel diagnostics with antibiotic susceptibility markers to help select the best antibiotic for the patient can reduce the need for broad spectrum, costly antibiotics and can contribute to antibiotic stewardship, one of the CARB priority goals in the U.S. CARB plan.<sup>54</sup> Preventive antimicrobials warrant more investigation as promising tools in STI prevention. These include microbicides—topical products containing drugs designed to reduce the risk of STI transmission—and PrEP and PEP. Unlike other prophylactic interventions such as condoms, microbicides can be used discreetly and may be applied without the consent or knowledge of a sexual partner.<sup>55</sup> Although pilot data suggest that some PrEP and PEP approaches might be effective, further research is needed on efficacy, target population, community acceptability, behavioral risk compensation, dosing regimens and formulations, long-term safety, AMR, cost-effectiveness, and risk-benefit.<sup>56</sup>

## 5. STIs, HIV, VIRAL HEPATITIS, AND SUBSTANCE USE DISORDERS—A HOLISTIC APPROACH TO THE SYNDemic

The nation's opioid epidemic has been linked to outbreaks of bloodborne infections and STIs such as HIV, hepatitis A (HAV), hepatitis B (HBV), hepatitis C (HCV), gonorrhea, chlamydia, and syphilis.<sup>57</sup> The syndemic, which refers to the co-occurring and interrelated epidemics of HIV, viral hepatitis, SUDs, and STIs, is also associated with social determinants of health such as poverty, housing, education, underemployment, and disparities.<sup>58, 59</sup>

In 2020, TAG and the National Academies of Sciences, Engineering, and Medicine (NASEM) each released a report that highlights the importance of addressing components of the syndemic through integrated health services in traditional and nontraditional settings.<sup>11, 57</sup> For example, HIV, viral hepatitis, and SUD programs can and should integrate STI prevention, testing, and linkage to care, and vice versa. STI screening and linkage to care should also be integrated into nontraditional settings such as emergency departments, correctional facilities, retail health clinics, and pharmacy-based services. This approach is recognized throughout the STI Plan. The interplay between social determinants of health and components of the syndemic also must be recognized and addressed through integrated efforts.<sup>60</sup> Opportunities exist to address comorbidities of STIs and social determinants of health by aligning strategies in the STI Plan with those in other national strategic plans to promote innovative programs and policies to provide patients with resources including housing, education, transportation, food, and employment.

A **syndemic** is a set of linked health problems that interact synergistically and contribute to excess burden of disease in a population.

A syndemic occurs when health-related problems cluster by person, place, or time.

A prominent syndemic for this STI Plan involves STIs, viral hepatitis, HIV, and substance use disorders.

Social determinants of health and stigma also play a significant role in this syndemic.

## COVID-19 and the Syndemic

This plan is being released during an unprecedented pandemic. In early 2020, SARS-CoV-2, the coronavirus that causes COVID-19 disease, spread rapidly across our nation and the globe, infecting millions, claiming the lives of hundreds of thousands of people, and causing great uncertainty, including for people at risk for STIs, HIV, and viral hepatitis.

The pandemic has exacerbated existing challenges in the nation's public health care system, further exposing decades, if not centuries, of health inequities including among social determinants of health. Clinical services have been limited due to the pandemic, with many staff understandably redeployed to address the public health emergency. Many of the populations and communities disproportionately affected by STIs, HIV, and viral hepatitis are particularly vulnerable to the service disruptions and the economic consequences of the pandemic, including unemployment, housing and food insecurity, and obstacles to practicing safe social distancing. The economic impact of the pandemic may have long-lasting impacts on service availability, because of budget constraints and permanent closures or reduction in hours of clinics and practices, and on the socioeconomic conditions that people face. Implementation of the plan should take into account these long-lasting effects.

As the nation responds to the pandemic, while working to maintain STI, HIV, and viral hepatitis prevention, screening, and care, innovative approaches have expanded and evolved, including meeting with clients via telemedicine, distributing self-testing collection kits, increasing use of expedited partner therapy to ensure timely treatment, offering multi-month medication refills, and partnering with pharmacies and retail health clinics to ensure continuity of care. Some of these adaptations may prove to be sustainable and effective in achieving our national goals.

Our understanding of COVID-19 will continue to evolve as effective therapeutics and vaccines are developed and implemented. The ways in which the COVID-19 pandemic will continue to influence our responses to STI, HIV, and viral hepatitis remain unknown. However, stakeholders' commitment to addressing the syndemic remains firm. The nation's evolving response will require continued innovation and identification of opportunities to integrate and leverage resources and lessons that advance efforts to address infectious diseases that threaten public health.

## C. Scope, Approach, and Development of the STI National Strategic Plan

Although there are more than 30 types of STIs,<sup>61, 62, 63</sup> the STI Plan focuses on four of the STIs with the highest morbidity rates, the most persistent and pervasive inequalities of STI burden according to national data, and the greatest impact on the health of the nation: chlamydia, gonorrhea, syphilis, and HPV.<sup>1</sup> Chlamydia, gonorrhea, and syphilis are the three nationally notifiable STDs<sup>‡</sup> for which there are federally funded control programs.<sup>1</sup> Chlamydia and gonorrhea are the first and second most commonly reported conditions in the United States, excluding COVID-19.<sup>1</sup> Primary and secondary syphilis (see Section II.C for descriptions) rates have increased steadily since reaching a historic low in 2000 and 2001, and the rate of congenital syphilis has increased every year since 2012.<sup>1</sup> HPV is included as part of the STI Plan because it is the most common viral STI, is easily transmitted, and can lead to cancers in both men and women, and 92% of cancers caused by HPV can be prevented by an underutilized HPV vaccine.<sup>64</sup> Additional information about each of these STIs is provided in Section II. All of the goals and most of the objectives and strategies delineated in this STI Plan are not infection specific. Thus, they can be used to guide prevention, care, and treatment for other prevalent STIs as well.

<sup>‡</sup> With the exception of HPV, the scope of this plan focuses on nationally notifiable STDs in the United States for which there are federally funded control programs. Chlamydia, gonorrhea, and syphilis are "notifiable" diseases, but other STIs such as genital herpes are not. A disease is "notifiable" if health care providers and/or laboratories in all 50 states are required by state law or statute to report the diagnosis or the positive lab test, respectively, to their state or local health departments. The Council of State and Territorial Epidemiologists works with CDC to determine whether a particular disease should be nationally notifiable, based on several [criteria](#). Other common but not nationally notifiable STIs such as genital herpes and trichomoniasis are neither specifically addressed in the plan, nor are emerging sexually transmitted pathogens such as *Mycoplasma genitalium*; however, this should not deter stakeholders from using available data to identify where their resources will have the most impact. The scope of future iterations of the STI Plan may be broadened to include other common STIs.

The STI Plan is intended to serve as a roadmap for federal and other stakeholders to reverse the upward trends in STI rates in the United States. It was developed by subject matter experts across the federal government with input from a variety of stakeholders as well as the public. The STI Plan presents a strategic framework for integrating and leveraging synergistic policies, programs, and resources. It sets forth a vision and goals for the nation, with objectives and strategies for each goal. The order in which the goals, objectives, strategies, and indicators are presented is not associated with any prioritization. The objectives and strategies offered in this plan are intertwined and overlapping and may be used to make progress toward more than one goal. Because STIs disproportionately affect certain demographic groups, the STI Plan also identifies priority populations (i.e., those populations most impacted by STIs based on national data) to guide national efforts and funding to realize the highest impact on reducing STIs.

The STI Plan also identifies indicators to track progress toward each goal and quantitative targets for each indicator. Although this is a 5-year plan, it sets 10-year quantitative targets for each indicator—reflecting the reality that it will take more than 5 years to reverse, not just slow, the upward trajectory of rising STI rates, and to eliminate the epidemic. The STI Plan will be re-evaluated in 2025.

These components—vision, goals, objectives, strategies, priority populations, indicators, and 5- and 10-year targets—are all set forth in Section III of the STI Plan. The methodology for developing the STI Plan, including stakeholder input, is explained in Appendix A; the baseline measures and annual targets for each indicator are set forth in full in Appendix B.

Utilizing a whole-of-nation approach, the STI Plan assumes the active participation of state, tribal, local, and territorial health departments and organizations, health plans and health care providers, schools and other academic institutions, community-based and faith-based organizations, scientists, researchers, and the public in this effort. The priority populations, indicators, and quantitative targets, especially the methods used to determine them, are intended to help focus efforts and limited resources to realize the most impact. Stakeholders are encouraged to focus on activities that resonate the most with the needs of the populations they serve and the services they provide, and to develop their own plans to reverse the rise of STIs and improve the health of their communities, states, tribal nations, territories, and the nation.

Recognizing the importance of addressing the syndemic of STIs, HIV, viral hepatitis, and SUDs, the STI Plan was developed concurrently and is aligned with the next iterations of the HIV Plan and the Hepatitis Plan, both planned to be released in fiscal year 2021. The next iteration of the National Vaccine Plan, also scheduled for release in fiscal year 2021, will support and enhance the elements of these three plans that focus on developing vaccines as an effective approach to preventing infection. These national plans are also aligned with the *Ending the HIV Epidemic: A Plan for America* (EHE) initiative, which aims to reduce new HIV infections by 90% by 2030. EHE provides further opportunities for STI prevention and control measures such as leveraging the infrastructure for HIV services as an entry point for people seeking STI prevention and treatment services (see Box 1). Three of the infections of focus—HPV, syphilis, and gonorrhea—also align with WHO’s priority infections in its 2016–2021 global strategy on STIs.<sup>65</sup>



## BOX 1

# ENDING THE HIV EPIDEMIC: A PLAN FOR AMERICA

The *Ending the HIV Epidemic: A Plan for America* (EHE) initiative is a bold initiative by the current Administration to end HIV in this nation by 2030. Efforts to control HIV have cross-cutting effects on the control of other STIs. For example, EHE's funding and support of STI clinics in three jumpstart jurisdictions—Baltimore City, Maryland; DeKalb County, Georgia; and East Baton Rouge Parish, Louisiana—support both missions.

### **Scaling Up HIV Prevention Services in Specialty STI Clinics**

In 2019, the three jurisdictions were awarded \$1.3 million to strengthen the infrastructure of STI clinics serving a high proportion of racial/ethnic and sexual minorities as part of the implementation phase of EHE. In just a few months, the jurisdictions implemented innovative, evidence-based approaches to scale up clinic capacity and HIV prevention services with self-registration kiosks, express visits with self-testing, virtual visits for PrEP follow-up, and a city-wide health resource directory to connect STI clinic patients with key resources.

This is one example of the STI Plan's integrated approach to addressing all parts of the syndemic.

Federal partners will contribute to the development of a Federal Implementation Plan, which will document the actions they will take to help the nation reach the goals of the STI Plan and to strengthen the collective national response to the STI epidemic. The Federal Implementation Plan will be public; progress toward meeting the STI Plan's goals will be monitored and reported annually to ensure transparency and accountability.

## II. OVERVIEW OF EACH STI

This section provides a very high-level overview of each of the four STIs in the scope of the STI Plan: chlamydia, gonorrhea, syphilis, and HPV. State and local STI prevention and control programs provide CDC with case reports for these conditions when confirmed by laboratory testing. Because STIs are often asymptomatic and may remain undiagnosed, case report data underestimate the number of infections that occur in the U.S. population.<sup>1</sup> The exception of the four is HPV, which is not a nationally notifiable disease, rendering case report data unavailable.

The following section lists each infection separately. However, in a clinical setting, screening for STIs should be integrated and use a holistic approach, taking into account the patient's individual needs, geographic location, past medical history and risk, among other factors. The snapshots include screening criteria are based on current CDC guidelines and reported surveillance data. More robust information on the STIs of focus, STI surveillance data, and screening and treatment guidelines may be found on the CDC website through the links in Box 2.



### BOX 2

### STI SURVEILLANCE AND FACT SHEETS

CDC's [Sexually Transmitted Disease Surveillance 2018](#) report presents trends for nationally notifiable STDs in the United States through 2018. Additional data about the four STIs covered by the STI Plan are available in the following STI-specific documents prepared by CDC:

[Chlamydia Detailed Fact Sheet](#)

[Gonorrhea Detailed Fact Sheet](#)

[Syphilis Detailed Fact Sheet](#)

[HPV Vaccination: What Everyone Should Know](#)

Information on current guidelines for screening and treating people who have or are at risk for STDs can be found on [CDC's Treatment and Screening website](#), which is updated as new guidelines are released.

# A. Chlamydia

## BOX 3

### CHLAMYDIA SNAPSHOT

- Treatable and curable
- Untreated chlamydia can lead to pelvic inflammatory disease (PID), which may cause infertility
- Screening recommended annually for sexually active females < age 25, females ≥ age 25 at increased risk, and MSM; screening in MSM should be based on anatomic site(s) of exposure



#### Epidemiological Facts



**1,758,668 REPORTED CASES**  
(2018)



**19% RATE INCREASE**  
(2014–2018)

Rates increased among males, females, all geographic regions, and all racial/ethnic groups



**80% OF CASES** were reported from providers other than STD clinics

#### Populations Disproportionally Impacted

- Females of reproductive age
- Adolescents and young adults
- Adolescent racial/ethnic minorities

#### Consequences When Left Untreated

- PID
- Infertility
- Ectopic pregnancy
- Chronic pelvic pain
- Increased risk of HIV
- Epididymitis

#### Current Challenges

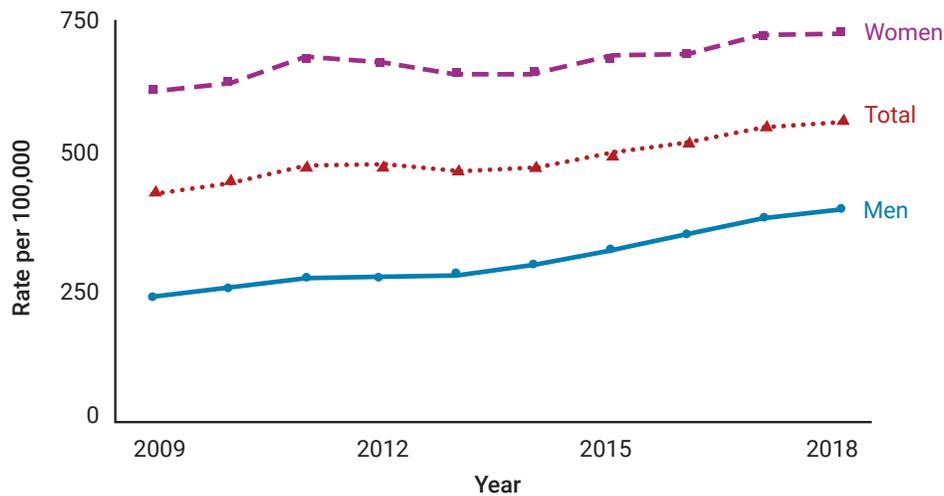
- Asymptomatic infections
- Lack of provider and public awareness about screening recommendations
- Limited resources to support screening
- Lack of an available vaccine

Sources: CDC<sup>1</sup>, Workowski and Bolan<sup>35</sup>, Jones et al.<sup>66</sup>

Chlamydia, the most common bacterial STI in the United States, is caused by *Chlamydia trachomatis*. It is transmitted through sexual contact with an infected partner.<sup>67</sup> Left untreated, chlamydia can cause debilitating or lifelong consequences. In women, it can result in an increased risk for PID, which can result in chronic pelvic pain, infertility, and ectopic pregnancy, which can be life-threatening.<sup>67</sup> Gonorrhea and other infections that are not sexually transmitted can also cause PID. Chlamydia in pregnancy can lead to premature birth or may affect the health outcomes of the newborn.<sup>67</sup> Untreated chlamydia may increase a person's chances of acquiring or transmitting HIV.<sup>68</sup>

Rates of reported chlamydial infections in the United States have risen steadily for the past 10 years (see Figure 1). In 2018, 1,758,668 cases of *Chlamydia trachomatis* infection were reported to CDC.<sup>1</sup> This number of cases corresponds to a national rate of 539.9 chlamydia cases per 100,000 persons and a 19% increase in the rate of chlamydia cases since 2014.<sup>1</sup> Females aged 15–24 account for nearly one-half (44%) of reported cases

and face the most severe sequelae from undiagnosed infection.<sup>1</sup> Chlamydia is currently the most common public health condition reported to CDC excluding COVID-19.<sup>1</sup>



**Figure 1.** Chlamydia—Rates per 100,000 reported cases by sex, United States, 2009–2018<sup>1</sup>

## CHALLENGES

A significant challenge to reducing the incidence of chlamydia is the large proportion of cases that are asymptomatic. A recent study demonstrated that greater than 84% of females and 94% of males did not report symptoms within 12 months after infection.<sup>69</sup> If symptoms do appear, they often do not manifest until weeks after exposure. Asymptomatic individuals often do not seek testing yet can still transmit the infection to a sexual partner. As a result, many cases go undiagnosed and unreported.<sup>67</sup>

Given that most chlamydial infections are asymptomatic, screening for chlamydia is critical to identify and then treat the infection. Although chlamydia screening has expanded over the past two decades, many women who are at risk are still not being tested. For example, in 2017, rates of chlamydia screening for sexually active women aged 16–24 were 48.9% in commercial health maintenance organizations (HMOs) and 57.6% for those covered by Medicaid.<sup>1, 70</sup>

## B. Gonorrhea

### BOX 4

### GONORRHEA SNAPSHOT

- Treatable and curable
- Gonorrhea can lead to pelvic inflammatory disease (PID), which may cause infertility
- Screening recommended annually for sexually active females < age 25, females ≥ age 25 at increased risk, and MSM; screening in MSM should be based on anatomic site(s) of exposure



#### Epidemiological Facts



**583,405 CASES**  
(2018)



**63% RATE INCREASE**  
(2014–2018)

137% rate increase among  
MSM



**51% OF ALL ISOLATES**  
tested in 2018 were resistant  
to at least one antibiotic

#### Populations Disproportionally Impacted

- Females of reproductive age
- MSM
- Adolescent racial/ethnic minorities

#### Consequences When Left Untreated

- PID
- Infertility
- Ectopic pregnancy
- Chronic pelvic pain
- Increased risk of HIV
- Disseminated gonococcal infection
- Epididymitis

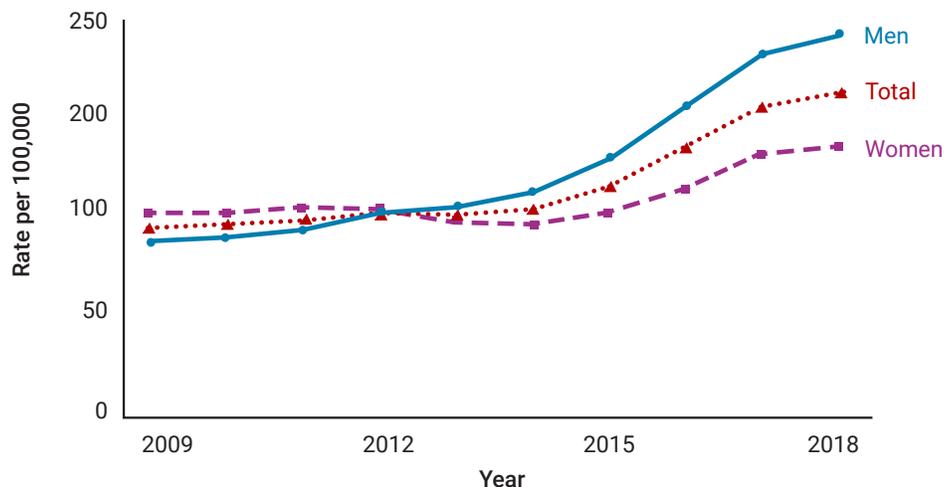
#### Current Challenges

- Antimicrobial resistance—gonorrhea has developed resistance to all but one class of antibiotics, and half of all infections are resistant to at least one antibiotic
- Lack of point-of-care diagnostics to test antibiotic susceptibility
- Asymptomatic infections
- Limited resources to support screening
- Lack of an available vaccine

Sources: CDC<sup>1</sup>, Workowski and Bolan<sup>35</sup>, Jones et al.<sup>66</sup>

Gonorrhea is caused by the bacteria *Neisseria gonorrhoeae*, which infects the mucous membranes in the reproductive tract, as well as in the mouth, throat, eyes, and rectum. It is the second most common notifiable disease in the United States that is reported to CDC.<sup>1,71</sup> Asymptomatic infections may lead to gonorrhea going untreated, which in women can result in PID, ectopic pregnancy, and infertility. In men, it can cause epididymitis (inflammation of the testicles). In adults, gonorrhea can disseminate through the bloodstream and cause sepsis, arthritis, meningitis, and endocarditis. Gonococcal infection of the newborn occurs from exposure to infected cervical secretions during delivery<sup>72</sup> and may result in blindness and less commonly sepsis.<sup>35,72</sup> Untreated gonorrhea may increase a person's chances of acquiring or transmitting HIV.<sup>68</sup>

During 2018, CDC received reports of 583,405 gonorrhea cases, representing a national rate of 171.9 cases per 100,000 population. Rates of reported gonococcal infection in the United States have risen annually for the past 5 years (see Figure 2).<sup>1</sup> From 2014 to 2018, the overall rate in the United States increased 63%,<sup>1</sup> with rate increases among both females and males in all regions of the United States and among all racial/ethnic groups, as well as a significant rate increase among MSM.<sup>1</sup>



**Figure 2.** Gonorrhea—Rates per 100,000 reported cases by sex, United States, 2009–2018<sup>1</sup>

## CHALLENGES

The greatest challenge to gonorrhea prevention and control is its growing AMR. Gonorrhea typically can be treated with antibiotics; however, *N. gonorrhoeae* is demonstrating resistance against previously recommended treatments, and resistance to currently recommended therapy is increasing. For example, in the United States alone, it is estimated that nearly one-half (550,000) of the estimated annual 1.14 million new infections each year are resistant to at least one antibiotic.<sup>53</sup> Because of this increased resistance, CDC treatment recommendations (see Box 2) are modified as needed to ensure that the most effective regimen is recommended.

Resistance to oral extended-spectrum cephalosporins has been reported in more than 50 countries.<sup>73,74</sup> Gonorrhea completely resistant to recommended treatment has been detected in other countries. Without intervention, it may only be a matter of time before untreatable gonorrhea emerges in the United States. In addition, developing the capacity for rapid detection of antibiotic susceptibility testing would help public health entities identify and respond to outbreaks more quickly, and would be a major advancement in gonorrhea control.

The critical need for more advanced diagnostic tools and additional therapeutics, as well as vaccines, to prevent infection is further discussed in the innovation goal and strategies in this document.

## C. Syphilis

### BOX 5

### SYPHILIS SNAPSHOT

- Treatable and curable
- Primary and secondary (P&S) syphilis (early-stage disease) may progress to late-stage disease in about 15% of infections, when left untreated
- Screening recommended at least annually for sexually active MSM
- Screening recommended for all pregnant women at the first prenatal visit and, if at high risk for syphilis acquisition during pregnancy, again at 28 weeks and delivery



#### Epidemiological Facts



**115,045 REPORTED CASES OF ALL STAGES**  
(2018)

MSM accounted for 54% of all P&S cases



**71% RATE INCREASE OF P&S SYPHILIS**  
(2014–2018)



**42% OF MSM WITH P&S SYPHILIS** are known to be living with HIV



**185% RATE INCREASE IN CONGENITAL SYPHILIS**  
(2014–2018)

#### Populations Disproportionally Impacted

- MSM
- Pregnant people
- Racial/ethnic minorities

#### Consequences When Left Untreated

- Ocular and neurologic morbidity
- Cardiovascular, bone, skin, and other organ system morbidity
- Increased risk of HIV
- Congenital syphilis, which can lead to preterm birth, stillbirth, and infant death

#### Current Challenges

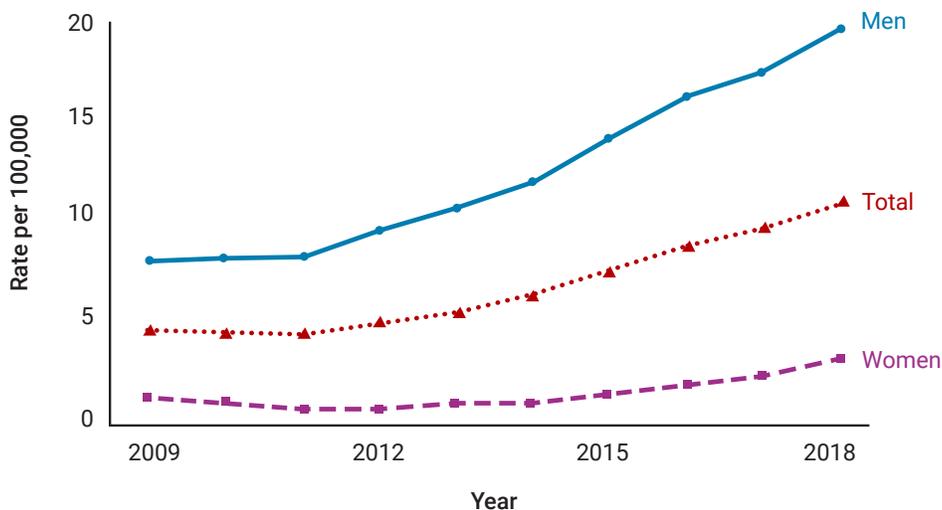
- Lack of provider awareness and training on diagnosis, management, and stages of syphilis
- Need for better diagnostics to detect active infection
- Lack of prenatal screening and timely treatment
- Only one antibiotic available to treat syphilis in pregnancy and newborns
- Shortages of recommended antibiotics for treatment
- Lack of an available vaccine

Sources: CDC<sup>1</sup>, Workowski and Bolan<sup>95</sup>

Syphilis is caused by the bacterium *Treponema pallidum*. Disease begins with P&S syphilis, which generally occurs within a few weeks to months of infection. Primary syphilis manifests as a genital sore(s) or lesion(s), generally at the anatomical site where the bacteria first entered the body. Secondary syphilis is characterized by skin rashes and mucous membrane lesions (sores) or both at a site(s) distant from the primary lesion.<sup>75</sup>

After a period of latency (during which time there are no visible signs or symptoms), often decades later, it may progress because of a lack of diagnosis, treatment, and/or timely care to tertiary syphilis, the most advanced stage of the disease. Tertiary syphilis is rare but can affect multiple organ systems including the brain, nerves, eyes, heart, blood vessels, liver, bones, and joints.<sup>75</sup> However, ocular and neurologic syphilis can occur at any stage of disease. Congenital syphilis occurs when a pregnant woman passes the infection to her fetus during pregnancy (see the next section for details).

During 2018, CDC received 115,045 reports of syphilis cases, including 35,063 cases of P&S syphilis.<sup>1</sup> Rates of P&S syphilis increased by 71% during 2014–2018 (see Figure 3).<sup>1</sup>



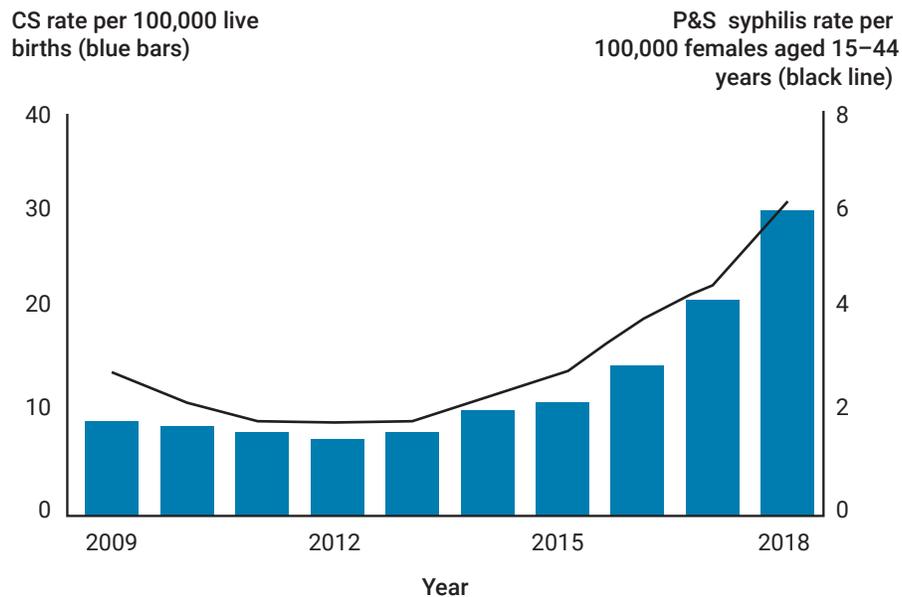
**Figure 3.** P&S Syphilis—Rates per 100,000 reported cases by sex, United States, 2009–2018<sup>1</sup>

P&S syphilis cases have risen disproportionately among MSM. From 2014 to 2018, the estimated rate of P&S syphilis among MSM increased 49%. In 2018, MSM accounted for 54% of all reported P&S syphilis cases.<sup>1</sup> Among MSM with P&S syphilis, 42% were known to be living with diagnosed HIV.<sup>1</sup>

## CONGENITAL SYPHILIS

Congenital syphilis occurs when a pregnant woman who is infected with syphilis transmits the infection to her fetus. Congenital syphilis is considered a sentinel health event and may reflect multiple missed opportunities for prevention and the timely diagnosis and treatment of syphilis among pregnant women.<sup>§</sup> Pre-conception care and the support for planned pregnancies is the first step to preventing congenital syphilis. In primary care, people of childbearing potential should be counseled about STI prevention and the benefits of planned pregnancies, and tested for syphilis if at risk. Once in prenatal care, pregnant women should be tested for syphilis at the first prenatal visit and, if at high risk for syphilis acquisition during pregnancy, again at 28 weeks and delivery.<sup>35</sup> Pregnant women who test positive for syphilis should be treated immediately to protect the fetus. Their sexual partners should receive treatment as well. The consequences of untreated syphilis in pregnancy can include miscarriage, stillbirth, and preterm birth. Infants who survive can experience meningitis, anemia, bone abnormalities, and other physical and neurological disabilities.<sup>76</sup>

<sup>§</sup> A [sentinel health event](#) is a preventable disease, disability, or untimely death whose occurrence serves as a warning signal that the quality of preventive and/or therapeutic medical care may need to be improved.



**Figure 4.** Congenital syphilis—Reported rates by year of birth and reported rates of P&S syphilis among females aged 15–44, United States, 2009–2018<sup>1</sup>

During 2018, CDC received 1,306 reports of congenital syphilis cases, representing a national rate of 33.1 cases per 100,000 live births. From 2014 to 2018, there was an alarming 185% increase in the rate of congenital syphilis in the United States (see Figure 4).<sup>1</sup> Increases in the rate of congenital syphilis have paralleled increases in the rate of P&S syphilis among females of reproductive age (i.e., 15–44 years). During 2018, the highest rates of congenital syphilis cases were in the West and in the South (as defined by the [U.S. Census Bureau](#)).

## CHALLENGES

The control of both P&S syphilis and congenital syphilis in the United States is challenging for numerous reasons. Often labeled an “imitator,” syphilis is notoriously difficult to diagnose, especially for providers who lack awareness and training to diagnose syphilis in the differentiated stages. The most commonly used tests are cumbersome, difficult to interpret, unable to diagnose early infections, and may lead to treatment delays. Tests to directly detect the presence of syphilis-causing bacteria in lesions are not widely available. There is a critical need for commercially available, direct-detection tests to detect active infection. Quick and accurate tests to diagnose the disease, such as POC tests, may reduce the adverse consequences and transmission.

A number of challenges have the most impact on congenital syphilis. Early prenatal care and screening and treatment (including of partners) are critical ways to prevent congenital syphilis and to lower the prevalence of adverse outcomes generally. Providers are missing cases among some people who do receive prenatal care. Further, an examination of U.S. congenital syphilis cases reported in 2018 found that one in two newborn syphilis cases in the United States occur due to gaps in testing and treatment during prenatal care.<sup>77</sup> Data revealed that most cases occur when pregnant women are not tested early during prenatal care (10%), are diagnosed but not adequately treated for syphilis (31%), or acquired syphilis later in pregnancy after an initial negative test (11%). Although most failures occur while pregnant women are receiving some level of prenatal care, one in four cases occur in the absence of timely prenatal care. Commonly missed opportunities also differed by region, underscoring the importance of tailoring prevention solutions to the needs of affected communities. Policy changes to address these screening and treatment lapses and other barriers to obtaining early and adequate prenatal care for pregnant women at high risk may curb the rise of congenital syphilis.

Lack of provider training, drug shortages, and lack of new treatment options further thwart the effort to control syphilis. In addition to training on diagnosis, clinicians require training on recommended treatment across the different stages and on best practices for managing syphilis, including monitoring for treatment efficacy and tracing and managing contacts. The shortage of Benzathine penicillin G, which the WHO reports has been routinely observed, is especially problematic when treating pregnant women because penicillin is the only known effective antimicrobial for preventing maternal transmission to the fetus and for treating fetal infection.<sup>78</sup> Research on new treatment options is critical to prevention of congenital syphilis.<sup>77</sup>

## D. HPV and HPV Vaccination

### BOX 6

#### HPV AND HPV VACCINATION SUPPORT

- Up to 92% of cancers that are attributed to HPV can be prevented with the HPV
- HPV vaccination recommended for youth aged 11–12 and young adults through age 26 who are not up-to-date with vaccine recommendations



#### Epidemiological Facts



**APPROXIMATELY 79 MILLION AMERICANS ARE CURRENTLY INFECTED WITH HPV**

Young people aged 15–24 account for 49% of HPV infections



**ONLY 54% OF FEMALES AND 49% OF MALES AGED 13–17** were up-to-date with a completed HPV vaccine series, as of 2018



**PREVALENCE OF CANCER-ASSOCIATED HPV DECREASED 86% AND 71%**, among females aged 14–19 and 20–24, respectively, in the decade following introduction of the vaccine

#### Populations Most In Need of Vaccination

- Adolescents and young adults
- HPV vaccination rates are lowest in the South.

#### Consequences

- Cervical cancer
- Anal cancer
- Vulvar cancer
- Penile cancer
- Vaginal cancer
- Genital warts
- Oropharyngeal cancer

#### Current Challenges

- Lack of public awareness of HPV vaccine as cancer prevention
- Lack of provider awareness and training on HPV vaccination and vaccine communication strategies
- Missed opportunities to administer vaccine
- Lack of vaccine confidence among parents/caregivers/patients
- Financial barriers for patients and providers; confidentiality barriers

Sources: CDC<sup>1,79</sup>, Workowski and Bolan<sup>35</sup>, McClung et al.<sup>80</sup>, Senkomago et al.<sup>64</sup>

HPV remains the most common STI in the United States. Yet HPV strains that can lead to cancers and genital warts in both men and women are preventable by a widely available, safe vaccine.<sup>81</sup> HPV is transmitted through vaginal, anal, or oral sex, whether or not an infected individual is symptomatic.<sup>79</sup> Approximately 43% of adults aged 18–59 in the United States had HPV genital infection during 2013–2014.<sup>82</sup> It is estimated that 90% of HPV infections resolve without any intervention within 2 years because the body is able to clear the virus.<sup>83</sup> However, in cases where the immune system does not clear the HPV infection, it becomes persistent and can cause more serious health consequences. These can include genital warts (and warts in other areas of contact) and cervical, vulvar, vaginal, anal, penile, and oropharyngeal cancers. It is estimated that as many as 92% of cervical cancers and 70% of oropharyngeal cancers are caused by HPV.<sup>64, 84</sup>

### **HPV Vaccine**

Safe and highly effective vaccines prevent infection with types of HPV that cause most genital warts and cancers caused by HPV.<sup>81</sup> Within a decade following introduction of the vaccination program, prevalence of vaccine targeted HPV types decreased 86% among females aged 14–19 and 71% among females aged 20–24.<sup>80</sup> Since the end of 2016, the vaccine available in the United States prevents infection with nine HPV types, two that cause genital warts and seven that cause cancers. Vaccination is most effective when administered prior to the onset of sexual activity.<sup>85</sup> However, series completion rates of HPV vaccination in the United States remain low. As of 2018, only 54% of females and 49% of males aged 13–17 had completed the HPV vaccine series,<sup>1</sup> and only 40% of adults aged 18–26 had received one or more doses of the HPV vaccine.<sup>86, 87</sup>

For up-to-date vaccine recommendations, please refer to the most recent recommendation provided by [CDC's Advisory Committee on Immunization Practices \(ACIP\)](#).

### **Challenges**

There are a number of challenges to the provision of the HPV vaccine as recommended. Some are provider-related, some are related to parental knowledge of and confidence in the vaccine, and some are caused by system-level barriers.

Studies have consistently shown that a strong recommendation from providers is the single best predictor of vaccination, for any vaccine.<sup>88</sup> Delays to vaccine initiation may result in HPV exposure or infection. Yet adherence to HPV vaccination recommendations by providers is lower than that of other childhood immunizations.<sup>89</sup> Failure to recommend and initiate HPV vaccination during adolescent primary care visits or during a visit to administer other routine vaccinations are considered “missed opportunities.”<sup>90</sup> Efforts to increase HPV vaccination during annual checkups could provide greater coverage among children and adolescents at a time during the lifespan when the vaccine is most effective. This could be accomplished by increasing provider training in several areas such as the benefits of HPV vaccination and its administration schedule; vaccine counseling to address questions and concerns of parents, caregivers, and patients; and building skills in sexual health conversations and assessments for adolescents and adults. In addition, understanding the disparities in HPV vaccine coverage, such as lower rates in rural areas and in the South, may help providers make a more conscious effort to increase administration of this cancer-preventive vaccine to recommended populations.

A lack of vaccine confidence—caused by limited information or misinformation—prevents some parents from vaccinating their children and some young adult patients from accepting vaccination. Common barriers to HPV vaccination are concerns about safety and side effects, and misunderstanding about the benefits from vaccination and doing so prior to sexual debut.<sup>91</sup> Expanding public awareness of the cancer prevention benefits of the vaccine and implementing strategies to improve parent-provider communication will support the effort to increase HPV vaccination rates.

System-level barriers relating to HPV vaccination also pose issues for patients and providers.<sup>91</sup> People enrolled in Medicaid through Medicaid expansion can obtain routinely recommended vaccines with no cost-sharing, as can people covered by most private health insurance when services are received in-network. However, others may have cost-sharing or no coverage at all, which can be a deterrent to vaccination.<sup>91</sup>

Studies have consistently noted poor insurance coverage as well as reimbursement and cost to purchase the vaccine as barriers to vaccination.<sup>91</sup> Other barriers for adolescents and young people exist regardless of the type of insurance or health care coverage. These include confidentiality and consent issues, less frequent opportunities to interact with a health care provider, confusion about health care decision-making and autonomy, and concerns about STI-associated stigma.<sup>91</sup> A future without HPV-associated cancers is within reach if vaccination rates improve. To accomplish this vision for the future, policies and strategies must effectively address these system-level barriers.

# III. STI NATIONAL STRATEGIC PLAN

The vision, goals, objectives, and strategies (Sections III.A, B, and C) set forth in the STI Plan are designed to address the alarming increases in STI rates nationwide, prevent STIs, and prevent and reduce the adverse consequences of STIs. Disproportionately impacted populations and geographical regions (Section III.D) were identified using nationwide data to provide stakeholders with a method to focus limited resources for the greatest impact. Indicators and quantitative targets (Section III.E and Appendix B) will help measure progress toward reducing this public health epidemic. The goals, objectives, and strategies are cross-cutting; their delineation and placement is not intended to limit their applicability to other aspects of addressing STIs. The order within the goals, objectives, strategies, priority populations, and indicators do not indicate any prioritization among them. The methodology for developing the components of the STI Plan is described in Appendix A.

## A. Vision

The United States will be a place where sexually transmitted infections are prevented and where every person has high-quality STI prevention, care, and treatment while living free from stigma and discrimination.

This vision includes all people, regardless of age, sex, gender identity, sexual orientation, race, ethnicity, religion, disability, geographic location, or socioeconomic circumstance.

## B. Goals

In pursuit of this vision, the STI Plan establishes five goals:



### 1. Prevent new STIs



### 2. Improve the health of people by reducing adverse outcomes of STIs



### 3. Accelerate progress in STI research, technology, and innovation



### 4. Reduce STI-related health disparities and health inequities



### 5. Achieve integrated, coordinated efforts that address the STI epidemic

## C. Objectives and Strategies

The STI Plan sets forth objectives for each goal, and strategies for each objective (see Table 1 for definitions). These objectives and strategies are designed to guide federal partners and other stakeholders in achieving the STI Plan’s vision and goals. The objectives provide direction for the attainment of each goal. The strategies recommend approaches to achieve the objectives. Numerous objectives and strategies could fit under more than one goal. However, each one has been placed under the goal in which it most closely aligns. A separate STI Federal Implementation Plan (to be released subsequent to this STI Plan) will detail federal partners’ plans and activities to implement the goals, objectives, and strategies set forth in this document.

**Table 1.** Definitions Included in the STI Plan<sup>a</sup>

STI Plan	Federal Implementation Plan
<p><b>Goals:</b> Broad aspirations that enable a plan’s vision to be realized</p> <p><b>Objectives:</b> Changes, outcomes, and impact a plan is trying to achieve</p> <p><b>Strategies:</b> Choices about how to best accomplish objectives</p>	<p><b>Action Steps:</b> Specific activities that will be performed to implement the strategies and achieve the goals of the plan</p> <p><b>Progress Reports:</b> Reports on progress, successes, and challenges</p>

<sup>a</sup> Adapted from the HHS Office of the Assistant Secretary for Planning and Evaluation.



### GOAL 1: PREVENT NEW STIs

Goal 1 objectives and strategies exemplify the use of primary prevention to halt the spread of STIs, specifically by preventing them before they occur, including through raising awareness and education. In its clinical prevention guidance for STIs, CDC defines primary prevention methods for health care providers as including an assessment of behavioral risk, which entails an assessment of the patient’s sexual behaviors that may increase risk for infection with an STI.<sup>35</sup> The guidance stresses the need to use the clinical encounter to effectively obtain sexual histories and to impart primary prevention messaging such as risk-avoidance and risk-reduction methods. Prevention methods cited in the guidelines include pre-exposure vaccination for STIs where applicable (e.g., HPV, HAV, and HBV), abstinence, client-centered prevention counseling for those who are or have been sexually active, reduction of number of sex partners, and condom use.

Several community-based programs and interventions are recognized as effective approaches to primary prevention of STIs and are described in CDC’s *Compendium of Proven Community-Based Prevention Programs*.<sup>92</sup> Examples include interventions to reduce high-risk sexual practices, to delay first intercourse among adolescents in low-income housing developments, to distribute free condoms state-wide, and to collaborate with community champions to increase condom usage among MSM.

The STI Plan recognizes that increasing awareness of STIs, expanding comprehensive STI prevention programs, and engaging health care providers, schools, families, and communities to prevent STIs and promote sexual health are critical activities for enhancing primary prevention of STIs. Suitable primary prevention approaches should be age-appropriate, linguistically and culturally informed, community-centered,

inclusive, stigma-reducing, and grounded in science and medicine. According to the American Academy of Pediatrics, developmentally appropriate and evidence-based education about human sexuality and sexual reproduction provided over time by pediatricians, schools, other professionals, and parents is important to help children and adolescents make informed, positive, and safe choices about healthy relationships, responsible sexual activity, and their reproductive health.<sup>93, 94</sup> As an example, primary prevention for adolescents who are not yet sexually active should encourage open and honest dialogue about the benefits of delaying the onset of sexual activity, completing the HPV vaccination series, and other aspects of sexual health as appropriate. Primary prevention should be a part of comprehensive sexual education, particularly for youth, including abstinence or delayed initiation of sexual activity for those who are not yet sexually active, and non-judgmental information about safer sexual activity for those who are sexually active. CDC advises that the most reliable way to avoid STIs is to not have sex (i.e., anal, vaginal, or oral). Also, for those engaging in sexual activity, being in a long-term mutually monogamous relationship with an uninfected partner is one of the most reliable ways to avoid STIs. CDC also recommends reducing the number of sex partners to decrease risk for STIs and notes that correct and consistent use of the male latex condom is highly effective in reducing STI transmission.<sup>95</sup>

Youth can also benefit from increased private and confidential time with their providers during preventive care visits to improve the value of screening and counseling on STIs, reproductive health, pregnancy prevention, mental health, and SUDs.<sup>96</sup> Primary prevention also involves activities, strategies, and policies that improve youth connectedness—that is, foster a sense of being cared for, supported, and connected to school, family (e.g., parents and caregivers), providers, or other important people and organizations in their lives.<sup>97</sup> Youth who feel connected at school and home are less likely to experience negative health outcomes related to sexual risk, SUDs, violence, and mental health.<sup>97</sup>

Unlike for chlamydia, gonorrhea, and syphilis, a safe and efficacious vaccine is available for HPV. Increasing HPV vaccination rates and reducing the incidence of new STI infections will require strategic efforts to improve vaccine confidence and increase opportunities to access HPV vaccination. Here the STI Plan intersects with the Vaccines National Strategic Plan 2021–2025, which addresses the issue of vaccine confidence in great detail. Among other strategies, the Vaccines Plan emphasizes the importance of engaging trusted community members and organizations to develop effective messages and strategies to enhance vaccine confidence and acceptance in these communities.

Additional capacity, resources, incentives, training, partnerships, and integration of efforts are all critical elements that must be addressed before we will be able to reverse the alarming trend of rising STI rates in the United States.

Primary prevention and interventional approaches informed the development of objectives that will support the goal of preventing new STIs. The following objectives and strategies are critical to achieve the goal of preventing new STIs.



## GOAL 1: PREVENT NEW STIs

### Objectives

- 1.1 Increase awareness of STIs and sexual health
- 1.2 Expand implementation of quality, comprehensive STI primary prevention activities
- 1.3 Increase completion rates of routinely recommended HPV vaccination
- 1.4 Increase the capacity of public health, health care delivery systems, and the health workforce to prevent STIs

## **Objective 1.1: Increase awareness of STIs and sexual health**

### **Strategies:**

- 1.1.1 Develop and implement culturally sensitive and linguistically appropriate campaigns to provide education on sexual health, STI primary prevention, testing, and treatment that reduce STI-associated stigma and promote sexual health.
- 1.1.2 Support a non-stigmatizing, comprehensive approach to sexual health education and sexual well-being, especially in adolescents and young adults, that promotes healthy sexual development and relationships and includes both risk-avoidance and risk-reduction messaging at the community level in schools, faith-based organizations, and other community-based organizations.
- 1.1.3 Integrate STI messaging into existing public health campaigns and strategies.
- 1.1.4 Increase awareness of STI testing among adolescents, young adults, MSM, and pregnant women.
- 1.1.5 Increase awareness and education especially among MSM and their providers on the importance of extragenital testing.

## **Objective 1.2: Expand implementation of quality, comprehensive STI primary prevention activities**

### **Strategies:**

- 1.2.1 Ensure that prevention programs are accessible, comprehensive, and culturally, linguistically, and age appropriate.
- 1.2.2 Implement STI prevention activities in a broad range of health care delivery, education, and community-based settings through innovative, evidence-based approaches.
- 1.2.3 Promote safe and supportive environments such as school, family, and community that encourage adolescents and young adults to avoid and decrease STI risk.
- 1.2.4 Increase private and confidential time for providers with their adolescent patients during preventive care visits to improve the effectiveness of risk assessment, screening and counseling on STIs, reproductive health, mental health, and substance use disorders.
- 1.2.5 Establish partnerships with both public and private entities to expand and strengthen STI prevention efforts.

## **Objective 1.3: Increase completion rates of routinely recommended HPV vaccination**

### **Strategies:**

- 1.3.1 Increase confidence in the HPV vaccine by implementing messaging and evidence-based interventions to address scientifically documented barriers to uptake and emphasizing that it prevents cancer.
- 1.3.2 Dispel myths that lead to HPV vaccine hesitancy in communities by working with trusted community leaders, community-based organizations, and providers to guide strategies and provide culturally affirming messages about HPV vaccination.
- 1.3.3 Reduce missed opportunities to promote and provide routinely recommended HPV vaccination including catch-up HPV vaccination in accordance with current Advisory Committee on Immunization Practices recommendations.
- 1.3.4 Integrate HPV vaccination into routine clinical care for adolescents and young adults.
- 1.3.5 Provide HPV vaccination at a broad range of clinical and nontraditional community-based settings, including pharmacies, retail clinics, and dental offices.

- 1.3.6 Reduce the financial and system barriers encountered by providers and consumers to providing HPV vaccination.

## **Objective 1.4: Increase the capacity of public health, health care delivery systems, and the health workforce to prevent STIs**

### **Strategies:**

- 1.4.1 Provide resources, incentives, training, and technical assistance to expand health workforce and systems capacity.
- 1.4.2 Increase diversity of the workforce that delivers STI prevention services.
- 1.4.3 Partner with professional societies and academic institutions to increase awareness and knowledge of sexual health including STI prevention, screening, and treatment, and to strengthen and expand clinical practices that lead to high-quality STI care provided by public health personnel, health care professionals, and paraprofessionals.
- 1.4.4 Integrate STI prevention with HIV, viral hepatitis, and substance use prevention services across workforces and delivery systems.



## **GOAL 2: IMPROVE THE HEALTH OF PEOPLE BY REDUCING ADVERSE OUTCOMES OF STIs**

Goal 2 objectives and strategies exemplify secondary and tertiary prevention approaches to impede the progression from infection to disease and to treat disease when it occurs. The United States should strengthen efforts to rapidly identify individuals infected with an STI and then provide them with appropriate and timely treatment. Improved screening, care, and treatment for people with STIs is critical to preventing adverse health outcomes associated with untreated infections. Efforts to strengthen our response to STIs will require integrating STI care and treatment into settings beyond medical clinics, expanding the role of DISs, reducing barriers to testing and care, and increasing linkage to care across programs.

STI patients will benefit from expanded and integrated patient-centered care models that address comorbidities. The presence of STIs are recognized as a risk for HIV acquisition, and STI screening is viewed as being “an essential and underutilized component of an STD/HIV risk assessment in most clinical settings.”<sup>35</sup> For patients who seek treatment or evaluation for a particular STI (or pregnancy prevention or testing), health care providers are encouraged to screen also for other STIs based on prevalence within their specific community and national recommendations and to perform a comprehensive risk assessment. Increasing STI clinical decision support systems in electronic health records and increasing patient sexual health portals would facilitate this effort. Prevention partners can help improve health outcomes by supporting efforts to increase the capacity of health care systems and providers to screen, diagnose, and treat STIs. Disruptions during the COVID-19 pandemic forced many programs to rapidly innovate and shift to telehealth models and to offer self-collection STI specimen kits. They also underscore the critical need for use of expedited partner therapy, the expertise and need to expand the DIS workforce, as well as the importance of remote models for contact tracing to interrupt transmission and further prevent the



## **GOAL 2: IMPROVE THE HEALTH OF PEOPLE BY REDUCING ADVERSE OUTCOMES OF STIs**

### **Objectives**

- 2.1 Expand high-quality affordable STI secondary prevention, including screening, care, and treatment, in communities and populations most impacted by STIs
- 2.2 Work to effectively identify, diagnose, and provide holistic care and treatment for people with STIs by increasing the capacity of public health, health care delivery systems, and the health workforce

spread of disease. Workforce knowledge of and experience in STIs can be advanced through evidence-based, innovative programs such as Project ECHO® (Extension for Community Healthcare Outcomes), which connects community providers with specialists at centers of excellence in regular, real-time collaborative sessions designed around STI case-based learning and mentorship.

Secondary prevention and interventional approaches informed the development of objectives that emphasize the need to expand screening, while maintaining a focus on the communities most impacted by STIs, and to foster improvements at the system level to increase capacity to diagnose, treat, and provide holistic care for people affected by STI.

The following objectives and strategies are necessary to achieve the goal of improving health by reducing adverse outcomes of STIs.

### **Objective 2.1: Expand high-quality affordable STI secondary prevention, including screening, care, and treatment, in communities and populations most impacted by STIs**

#### **Strategies:**

- 2.1.1 Integrate STI screening, diagnosis, care, and treatment as a routine part of a wide variety of programs and settings including those that screen, diagnose, and treat people for other whole health and public health issues such as primary care, urgent care, emergency departments, pediatrics, family planning, HIV, viral hepatitis, substance use disorders, correctional facilities, and school-based health centers.
- 2.1.2 Support expanded staffing and role of disease intervention specialists in programs and settings that serve communities and populations disproportionately impacted by STIs.
- 2.1.3 Reduce systems and financial barriers to receiving STI testing, care, and treatment, including those related to laboratory services and coverage for point-of-care testing, self-collected testing, extragenital testing, expedited partner therapy, and partner services.
- 2.1.4 Increase STI screening and testing for adolescent and young women, pregnant women, and MSM, including extragenital STI testing among MSM, in accordance with CDC guidelines.
- 2.1.5 Increase linkage to care between public health, correctional facilities, syringe services programs, substance use disorder treatment facilities, emergency departments, pharmacies, retail clinics, school-based health centers, and other health care providers and community-based organizations to provide coordinated, comprehensive care and treatment for people with STIs.
- 2.1.6 Increase STI quality measurement and incentives to promote high-quality STI screening, care, and treatment and to reduce missed opportunities in clinical settings.
- 2.1.7 Increase patient sexual health portals and STI clinical decision support systems in electronic health records to support high-quality sexual health assessments, STI screening, and integrated care models.

### **Objective 2.2: Work to effectively identify, diagnose, and provide holistic care and treatment for people with STIs by increasing the capacity of public health, health care delivery systems, and the health workforce**

#### **Strategies:**

- 2.2.1 Expand workforce knowledge and experience in STI prevention, screening, diagnosis, and treatment through education and training, maintenance of certification, and continuing education programs for health professionals and paraprofessionals.

- 2.2.2 Expand the capacity of the health workforce to provide STI screening, testing, and care through innovative, evidence-based models such as Project ECHO, mentoring programs, telehealth, express visits, and other models described in Strategy 2.1.5.
- 2.2.3 Optimize, expand use of, and improve the effectiveness of expedited partner therapy, STI partner services, and linkage to care in programs and settings that provide STI testing and treatment.
- 2.2.4 Expand integrated, coordinated, patient-centered, trauma-informed care models that address the syndemic of STIs, HIV, viral hepatitis, and substance use disorders, including related comorbidities and social determinants of health.



### GOAL 3: ACCELERATE PROGRESS IN STI RESEARCH, TECHNOLOGY, AND INNOVATION

A robust innovation agenda is needed that prioritizes American discovery while streamlining mechanisms to bring scientific advances from the laboratory into clinical practice.<sup>98</sup>

Recognizing the value of innovation is directly relevant to the goals of the STI Plan. Given the significant challenges facing the U.S. public health system, the National Institutes of Health (NIH) recently provided recommendations regarding biomedical research goals to drive development of innovative diagnostics, vaccines, and therapeutics for STIs.<sup>99</sup> Advances in these areas are not only critical to addressing STIs at the societal level, but also needed to achieve the objectives of Healthy People 2030, which include decreases in rates of gonorrhea and syphilis and increases in screening for chlamydial infections.<sup>100</sup>

Support for innovation will strengthen STI prevention, diagnosis, care, and treatment. To accelerate STI innovation, federal partners should prioritize and promote the development and assessment of appropriate data to support approval of STI prevention tools such as vaccines, diagnostics, therapeutics, and microbicides. Timely diagnosis and effective treatment of STIs to avert disease progression will be facilitated by advancing STI POC diagnostics; addressing AMR to STI treatments; and scaling up evidence-based, innovative STI service delivery models (e.g., express visits, telehealth, and self-testing outside of clinical facilities). In some settings, STI express visits have been shown to increase clinic capacity,<sup>101, 102</sup> decrease cost, reduce time to treatment,<sup>103</sup> and reduce patient visit time.<sup>104</sup> Modeling studies have shown that express-testing models could lead to reduced transmission through increased testing and early detection.<sup>105</sup> The urgent threat of AMR gonorrhea dictates the need to scale up effective antimicrobial stewardship programs to ensure optimal use of antimicrobial drugs and preserve their effectiveness and to develop tests that can quickly assess the level of susceptibility to relevant antibiotics without resorting to culture. CDC is working to strengthen infrastructure to combat resistant gonorrhea.<sup>106</sup> Enhancement of the capacity



### GOAL 3: ACCELERATE PROGRESS IN STI RESEARCH, TECHNOLOGY, AND INNOVATION

#### Objectives

- 3.1 Support research and investments to develop STI vaccines and bring them to market
- 3.2 Support the development and uptake of STI multipurpose prevention technologies, antimicrobial prophylaxis regimens, and other preventive products and strategies
- 3.3 Support the development and uptake of innovative STI diagnostic technologies, therapeutic agents, and other interventions for the identification and treatment of STIs, including new and emerging disease threats
- 3.4 Identify, evaluate, and scale up best practices in STI prevention and treatment, including through translational, implementation, and communication science research

to rapidly detect susceptibility and resistance and development of novel rapid molecular tests, which signal use of the most appropriate drug, would be major advancements toward control of gonorrhea.

Rapid POC STI tests are the most efficient way to improve early diagnosis and support same-day treatment. For example, a new U.S. Food and Drug Administration (FDA)-cleared, 30-minute molecular POC assay for the detection of chlamydia and gonorrhea has shown high specificity and sensitivity in both women (vaginal swab) and men (first-catch urine).<sup>107</sup> Mathematical modeling suggests that rapid POC tests with high sensitivity (>90%) may substantially reduce infections and PID cases. In addition to the use of rapid tests conducted by providers, a market has grown for the use of self-collected tests for home use and other opportunities outside of clinical settings. The COVID-19 pandemic has magnified the need for and benefit of such tests. However, no self-collection–based tests for chlamydia, gonorrhea, or syphilis are currently approved by FDA. More work is needed to ensure universal self-collection for appropriate specimens, and a program or method to ensure affordable access to them for insured and uninsured patients is critical. In addition, states that prohibit distribution and possession of self-tests should revisit their laws and policies, but remain in conformance with relevant FDA regulations. Increased use of collaborative practice agreements will expand care and treatment in different settings. Scale-up of express testing, self-testing, and delivery of non-vaccine injectables administered by pharmacists (e.g., ceftriaxone) will enable integration of STI testing in alternative settings (e.g., SUD programs, pharmacies, retail clinics) and will increase reach to people at increased risk for STIs who may not seek care in traditional clinical settings.

The development of other innovative preventive products such as multipurpose prevention technologies (MPTs), which are all-in-one tools that combine contraception with protection against STIs including HIV, require support and exploration.<sup>108, 109</sup> To date condoms are the most basic example of MPTs; development of MPTs has focused mostly on tools that prevent HIV, rather than other STIs, and unintended pregnancy. MPTs may have broad prevention appeal as they have the potential to meet both the sexual and reproductive health needs of an individual. Several unique regulatory issues will need to be addressed by FDA and other relevant regulatory agencies, such as design and implementation of clinical efficacy studies and evaluation of drug-drug interactions.

Investment in research, commercialization, and translation into practice will lead to more innovative, evidence-based prevention models, technologies, and products to reduce the incidence of STIs and the STI epidemic. In addition, the affordability and supply of new and existing preventive and therapeutic agents need to be considered to better ensure translation into practice and access. Innovations in payment models, such as subscription approaches, can support innovators' and manufacturers' return on investment while ensuring access for the public and appropriate use. Development of major biomedical interventions—such as vaccines for chlamydia, gonorrhea, and syphilis, which may reduce the spread of infection and mortality—should be prioritized. To complement innovative service delivery models, comprehensive communication strategies should be crafted with the aims of emphasizing the importance of sexual health, reducing stigma, and linking patients to STI services. These strategies should be informed by behavioral, social, clinical, and epidemiologic science as well as health economics. Regulatory support, commercial investment, and academic, public, and private partnerships are all needed to successfully accelerate progress in these areas.

The following objectives and strategies are recommended to achieve the goal of fostering innovations in STI prevention, care, and treatment.

### **Objective 3.1: Support research and investments to develop STI vaccines and bring them to market** **Strategies:**

- 3.1.1 Increase research to improve understanding of STI pathogenesis, immunity, and correlates of protection.
- 3.1.2 Develop and leverage academic, public, and private partnerships for vaccine development, approval, and manufacture.

- 3.1.3 Ensure that critical pathways exist to facilitate STI vaccine approval and to bring newly licensed STI vaccines to market.
- 3.1.4 Ensure vaccine development and distribution is rooted in racial, ethnic, and sexual and gender identity equity and is community-informed to best serve those disproportionately affected by STIs.

**Objective 3.2: Support the development and uptake of STI multipurpose prevention technologies, antimicrobial prophylaxis regimens, and other preventive products and strategies**

**Strategies:**

- 3.2.1 Develop and leverage academic, public, and private partnerships for the development, approval, and manufacture of multipurpose prevention technologies and other preventive technologies and products.
- 3.2.2 Advance research on pre-exposure and post-exposure prophylaxis.

**Objective 3.3: Support the development and uptake of innovative STI diagnostic technologies, therapeutic agents, and other interventions for the identification and treatment of STIs, including new and emerging disease threats**

**Strategies:**

- 3.3.1 Develop new STI treatment options to address antimicrobial resistance, supply chain limitations, and other barriers.
- 3.3.2 Support the development of molecular diagnostic tests to rapidly identify and characterize antimicrobial resistance.
- 3.3.3 Advance the development and uptake of point-of-care and self-collected STI diagnostics.
- 3.3.4 Develop and leverage academic, public, and private partnerships for the development, approval, and manufacture of new, as well as short supplied and/or high cost existing, STI diagnostic technologies, therapeutic agents, and other interventions.

**Objective 3.4: Identify, evaluate, and scale up best practices in STI prevention and treatment, including through translational, implementation, and communication science research**

**Strategies:**

- 3.4.1 Expand implementation of innovative, evidence-based models that increase the quality and convenience of STI testing, care, and treatment, such as telehealth, STI express clinics, pharmacy-based services, self-collected testing, mobile field-based units, and expedited partner therapy.
- 3.4.2 Develop, assess, and support the scale-up of innovative STI service delivery models in settings such as clinics, pharmacies, schools, mental health programs, substance use disorder programs, retail clinics, and field and community settings.
- 3.4.3 Develop policies that facilitate the implementation of innovative and effective STI prevention and treatment models and technologies, including the appropriate use of antibiotics.
- 3.4.4 Advance communications and implementation science to raise the visibility of STIs and sexual health, promote uptake of STI vaccines, and scale up novel STI prevention technologies and products.



## GOAL 4: REDUCE STI-RELATED HEALTH DISPARITIES AND HEALTH INEQUITIES

STIs disproportionately affect specific communities and populations. These disproportionate impacts may be attributable to social determinants of health such as lack of access to STI preventive programs and services, discriminatory practices, and social stigma that can negatively affect access to care and outcomes. As part of its report on STIs, the NAPA Panel addressed health equity concerns, recognizing that certain communities are “uniquely vulnerable” to STIs as a result of a range of social and economic factors.<sup>9</sup> Among the factors contributing to disproportionate rates of STI among certain groups, the report cites limited access to services, increased likelihood of high-risk behaviors, and distrust of the health care system. A CDC study examining social determinants of health and STDs found that rates of syphilis, HIV/AIDS, chlamydia, and gonorrhea were 5.4 to 17.8 times higher in Black communities than among white communities.<sup>110</sup> The report also acknowledged that disparities can be due to geographic segregation, health care provision and use, and socioeconomic status. In addition to the disparities cited among racial and ethnic groups, sexual and gender minority populations experience higher rates of some STIs.<sup>111</sup> Individuals who identify with multiple minority populations and experience intersecting stigmas may have increased burden of STIs.<sup>112, 113</sup> In addition, poverty, lack of insurance, unstable housing, and underemployment are all associated with higher rates of STIs in communities.

To address the STI epidemic, recognizing the negative impacts of stigma and the importance of cultural competence is required. CDC’s *Recommendations for Providing Quality Sexually Transmitted Diseases Clinical Services, 2020*, provides recommendations to U.S. health care providers for quality clinical services for STIs in both primary and STI specialty care settings. The report acknowledges IOM’s framework for health care quality that is “essential for provision of quality [STI] clinical care services.”<sup>48, 114</sup> The framework includes the element of patient-centeredness, which is intended to “ensure attention to issues that disproportionately affect vulnerable populations” and to facilitate a “friendly and welcoming environment through cultural sensitivity.”<sup>48</sup> Lastly, the framework includes the element of equity, with the intent of ensuring universal access to quality health care. For example, 11 states have laws that criminalize behavior that potentially exposes others to STIs.<sup>20</sup> Criminalization laws are another and tangible negative impact of stigma that often do not reflect the evidence. The U.S. Department of Justice, in guidance still in effect in the context of HIV, has encouraged states to use scientific evidence to re-examine such laws.<sup>115</sup>

Federal partners have a role in reducing STI-related health disparities by supporting communities to engage in local solutions and training providers to deliver culturally competent, trauma-informed, and compassionate comprehensive sexual health care, free of judgment and discrimination. Social determinants of health and comorbidities must be addressed to reduce STI-related health disparities and inequities. Efforts to do so include promoting STI prevention and care in programs such as those involving housing, education, and the justice system, as well as those linking STI patients to medical home, behavioral health, housing, food, and employment resources. For example, CDC has funded the *Community-based Approaches to Reducing STDs* initiative to support efforts to improve the health of populations disproportionately affected by STIs.<sup>116</sup> The initiative’s key strategies include responding to social determinants of sexual health, improving the design and



### GOAL 4: REDUCE STI-RELATED HEALTH DISPARITIES AND HEALTH INEQUITIES

#### Objectives

- 4.1 Reduce stigma and discrimination associated with STIs
- 4.2 Expand culturally competent and linguistically appropriate STI prevention, care, and treatment services in communities disproportionately impacted by STIs
- 4.3 Address STI-related social determinants of health and co-occurring conditions

implementation of STI prevention services, and promoting individual health care-seeking behavior in more than 12 unique communities. Structural changes that grew out of the projects have led to new referral systems in the areas of education, substance use treatment, and even employment.

The STI Plan's tailored objectives support the goal of reducing STI-related health disparities and health inequities. These include objectives that emphasize patient-centered improvements such as reducing stigma associated with STIs and fostering treatment service environments that are more conscious of the needs of affected populations. In addition, an important objective is intended to foster improvement in social determinants of health and comorbidities, which can both amplify and perpetuate the negative impact of STIs.

The following objectives and strategies are critical to achieve the goal of reducing STI-related health disparities and health inequities.

#### **Objective 4.1: Reduce stigma and discrimination associated with STIs**

##### **Strategies:**

- 4.1.1 Support and encourage training of health care and health systems personnel in cultural sensitivity, bias, discrimination, and disparities associated with STIs.
- 4.1.2 Work with communities to address misconceptions and reduce stigmas that negatively affect STI prevention, screening, testing, care, and treatment.
- 4.1.3 Expand and encourage self-collected testing, opt-out testing for STIs, and other approaches that promote sexual health and STI testing in health care delivery.
- 4.1.4 Promote privacy and confidentiality of individual personal health and public health records especially for adolescents and young adults.
- 4.1.5 Re-examine laws that criminalize behavior that potentially exposes another person to an STI.

#### **Objective 4.2: Expand culturally competent and linguistically appropriate STI prevention, care, and treatment services in communities disproportionately impacted by STIs**

##### **Strategies:**

- 4.2.1 Train providers, including primary care, specialty, and nontraditional providers, to deliver high-quality, culturally and linguistically appropriate, nondiscriminatory, nonjudgmental, compassionate, and comprehensive sexual health services to populations disproportionately impacted by STIs.

#### **Objective 4.3: Address STI-related social determinants of health and co-occurring conditions**

##### **Strategies:**

- 4.3.1 Expand policies and approaches that promote STI prevention and care in programs involving housing, education, transportation, the justice system, and other systems that impact social determinants of health.
- 4.3.2 Promote innovative programs and policies that provide patients with resources that address social determinants of health, including housing, education, transportation, food, and employment.
- 4.3.3 Improve data collection and surveillance of STIs in populations that are underrepresented in current data.



## GOAL 5: ACHIEVE INTEGRATED, COORDINATED EFFORTS THAT ADDRESS THE STI EPIDEMIC

Coordination among programs, including the input of community-based organizations, is essential to address adequately the ongoing STI epidemic. Such efforts help identify synergies, reduce duplication of efforts, and integrate policies and programs across the syndemic. Coordination across services and programs—including the input of community-based organizations—at the individual level also facilitates more patient-centered, comprehensive approaches to care.

Integration among efforts is needed to address the syndemic of STI, viral hepatitis, HIV, and SUD. A 2020 NASEM report acknowledges that “overlapping risk factors, injection opioid use and risky sexual behaviors undermine national strategies to end HIV ... viral hepatitis, and other infectious diseases [including other STIs]”<sup>57</sup> and recommends that integrated medical services be used to address the syndemic.

The need for integrated care is also set forth in CDC’s *Recommendations for Providing Quality Sexually Transmitted Diseases Clinical Services*.<sup>48</sup> The federal government is already making efforts to integrate programs. For example, as part of EHE,<sup>117</sup> integrated services are being strengthened in response to the syndemic through funding opportunities and use of core funds. These activities allow for programs to scale up HIV prevention services in STI specialty clinics, enhance and expand integrated screening activities (e.g., STIs, viral hepatitis, and/or tuberculosis) conducted in conjunction with HIV testing with accompanying referral for prevention care and services, and diagnose and treat STIs for uninsured or underinsured people receiving care in not-for profit or government clinics when conducted in conjunction with HIV testing.

A more coordinated approach to the epidemic will require that STI prevention, care, and treatment are integrated across services and programs. This cross-cutting theme is also central to other national strategic plans that HHS, in collaboration across its agencies and other federal departments, expects to release this year—the HIV Plan and the Hepatitis Plan—all of which have been developed in alignment with each other. These strategic plans and other federal initiatives provide further opportunities to incorporate STI prevention and control measures similar to the efforts discussed above. Further mechanisms should be explored to leverage the established infrastructure for HIV services as an entry point for people seeking prevention and treatment services for other STIs. For all services and programs, at all levels, cross-agency collaboration can create efficiencies that are cost-effective, facilitate exchange of ideas and strategies, support efforts to improve data quality and accessibility, align translational and implementation research efforts, and improve people’s health.

The objectives for Goal 5 focus on areas where national programs (or programs on a state or local level) align or should align, improving quality of prevention and care in a variety of ways including through collection and use of data, coordination across programs, and monitoring and evaluation of progress. These steps will allow for reinforcement and sharing of successful approaches as well as rapid corrections when the desired outcomes are not being achieved. A system of regular reporting also enables entities to make informed decisions about the allocation of resources and to better advocate for unmet needs.



### GOAL 5: ACHIEVE INTEGRATED, COORDINATED EFFORTS THAT ADDRESS THE STI EPIDEMIC

#### Objectives

- 5.1 Integrate programs to address the syndemic of STIs, HIV, viral hepatitis, and substance use disorders
- 5.2 Improve quality, accessibility, timeliness, and use of data related to STIs and social determinants of health
- 5.3 Improve mechanisms to measure, monitor, evaluate, report, and disseminate progress toward achieving national STI goals

The following objectives and strategies are recommended to establish integrated, coordinated efforts that address the STI epidemic across programs and agencies.

### **Objective 5.1: Integrate programs to address the syndemic of STIs, HIV, viral hepatitis, and substance use disorders**

#### **Strategies:**

- 5.1.1 Establish and scale up integration of STI-related efforts, policies, and programs involving all components of the syndemic.
- 5.1.2 Integrate STI prevention, screening, testing, care, and treatment in funding opportunities that address other components of the syndemic.

### **Objective 5.2: Improve quality, accessibility, timeliness, and use of data related to STIs and social determinants of health**

#### **Strategies:**

- 5.2.1 Strengthen and expand existing surveillance infrastructure and methods including the capacity for more real-time data sharing between public health authorities and health care providers.
- 5.2.2 Incorporate novel scientific approaches for monitoring, identifying, and responding to trends in STIs and STI sequelae and social determinants of health related to STIs.
- 5.2.3 Strengthen and expand surveillance to identify rapidly cases of antimicrobial resistant STIs.
- 5.2.4 Strengthen and expand existing health care data and quality measures to assess provider adherence to recommended guidelines for STI screening, care, and treatment.
- 5.2.5 Leverage technology and invest in data solutions to modernize and improve the efficacy of partner services.
- 5.2.6 Ensure timely dissemination of data and analyses related to STI surveillance, public health, and health care data to inform decision-making.
- 5.2.7 Work to align indicators across programs that address STI, HIV, viral hepatitis, preventive care, maternal care, pediatrics, family planning, and substance use disorder treatment and services.

### **Objective 5.3: Improve mechanisms to measure, monitor, evaluate, report, and disseminate progress toward achieving national STI goals**

#### **Strategies:**

- 5.3.1 Encourage entities to integrate STIs and sexual health into existing and future implementation plans that address or relate to other communicable infections or substance use disorders.
- 5.3.2 Monitor, review, evaluate, and regularly communicate progress on STI program implementation according to an established schedule and address areas of deficiency.
- 5.3.3 Develop and implement recommendations promoting policies, programs, and activities that accomplish goals and address areas for improvement.

## D. Priority Populations and Geographic Areas

Although STIs affect millions of Americans nationwide and from all social, economic, and racial and ethnic groups, they disproportionately impact certain populations and communities. STI prevention and control efforts can be more efficient and effective by identifying and focusing efforts on those populations that bear a disproportionately higher burden of infection. Focusing on such priority populations will also reduce health disparities and have the most impact on the health of the nation. This approach should not diminish efforts to increase awareness of, prevent, and treat STIs among all Americans and integrate STI efforts across other components of the syndemic.

### PRIORITY POPULATIONS BASED ON NATIONAL-LEVEL DATA

National incidence, prevalence, and morbidity rates indicate that adolescents and young adults, MSM, and pregnant women are most impacted by the four STIs addressed in the STI Plan (see Table 2). Within each of these populations, certain racial and ethnic minorities (Blacks, AI/AN, and Hispanics) and certain regions of the United States (South and West) are further disproportionately impacted by these STIs. People may belong to none, one, or several of these populations and communities. The priority populations identified are not specific to each particular STI. Not surprisingly, these priority populations overlap with those most impacted by some other components of the syndemic such as HIV. This underscores the need for an integrated approach to addressing the components of the syndemic. As described below, jurisdiction- or community-level data may indicate different and/or additional populations and communities disproportionately impacted by STIs.

There are limited national data and analyses on the incidence of STIs in certain populations due to the lack of accurate disaggregated data, incomplete reporting of data both at the patient and provider level, and data reporting biases. For example, data among persons with disabilities, certain racial and ethnic groups, incarcerated persons, sexual and gender minorities,\*\* among others, may be inaccurately or insufficiently reported. The data-driven approach of this STI Plan in identifying priority populations did not result in these groups being identified as the most disproportionately impacted in the nation. However, the stigma, discrimination, and inequities faced by some minority populations are discussed in this plan and should be recognized and further studied. Thus, the plan includes strategies that call for the expansion of data collection and the improvement of surveillance systems to better account for and understand any disparities that may exist.

National-level data for calendar year 2018, provided below for each priority population and subgroup, illustrate the disparate impact of the four STIs. Additional data are available in CDC's [2018 Sexually Transmitted Disease Surveillance report](#) and are posted on CDC's website as they become available. This report is the source for all data cited below unless otherwise specified.

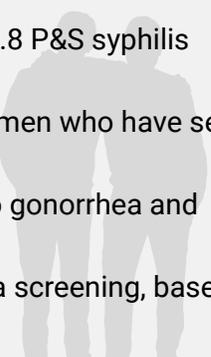
\*\* Beginning January 2018, CDC added separate data elements for gender identity and sexual orientation to the National Notifiable Disease Surveillance System regarding STDs, provided guidance to implement data elements, and requested jurisdictions begin reporting the new data elements. The National Electronic Telecommunications System for Surveillance (NETSS) CDC Implementation Plan for STD Surveillance Data (effective as of January 2018), available at: [https://www.cdc.gov/std/program/STD-NETSSIMPLN-V5\\_2018Jan.pdf](https://www.cdc.gov/std/program/STD-NETSSIMPLN-V5_2018Jan.pdf); National Notifiable Diseases Surveillance System Message Mapping Guide for Sexually Transmitted Diseases, available at: <https://wwwn.cdc.gov/nndss/case-notification/message-mapping-guides.html>.

**Table 2.** Priority Populations and Summary National-Level Data, Calendar Year 2018

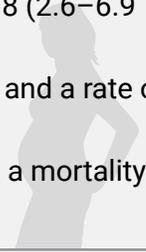
### Adolescents and Young Adults

- People aged 15–24 account for approximately 50% of the 20 million new STIs in the United States each year, yet approximately 25% of the sexually active population.
  - People aged 15–24 account for 62% of chlamydia cases.
  - Among females, those aged 20–24 had the highest rate of reported gonorrhea cases; those aged 15–19 had the second highest rate.
  - The rate of P&S syphilis among females aged 15–24 increased 100% from 2014 to 2018.
  - Young people aged 15–24 account for 49% of HPV infections.<sup>118</sup> Yet only 51% of adolescents and young adults are fully vaccinated against HPV.<sup>87</sup>
- 

### Men Who Have Sex with Men

- MSM accounted for 54% of reported P&S syphilis cases.
  - The rate of P&S syphilis among MSM in 2018 was 37 times the national rate of 10.8 P&S syphilis cases per 100,000.<sup>a</sup>
  - Gonococcal isolates from MSM are more likely to exhibit AMR than isolates from men who have sex with women only.
  - Ten percent of new HIV infections among MSM are estimated to be attributable to gonorrhea and chlamydia, equating to 2,600 HIV infections each year.<sup>66</sup>
  - Less than 20% of MSM living with HIV receive extragenital gonorrhea or chlamydia screening, based on CDC screening recommendations for MSM.<sup>119</sup>
- 

### Pregnant Women

- The rate of P&S syphilis among females aged 15–44 increased 165% from 2014 to 2018 (2.6–6.9 cases per 100,000).
  - The rate of congenital syphilis cases has increased 185% since 2014, with 1,306 cases and a rate of 33.1 cases per 100,000 live births in 2018.
  - In 2018, congenital syphilis cases included 78 syphilitic stillbirths and 16 infant deaths, a mortality rate of 7.2%.
- 

<sup>a</sup> Estimated rates of P&S syphilis among MSM were calculated by dividing the number of P&S syphilis cases reported among MSM in 2018 by the estimated number of MSM in 2018. See CDC 2018 Surveillance Report (Figure 39) for numerator and Grey et al.<sup>120</sup> for denominator.

## Subgroups

### Racial and Ethnic Minorities

Blacks, AI/AN, and Hispanics have higher reported rates of STI than whites.



**Chlamydia:** The rate of reported chlamydia cases among Black males was 6.8 times the rate among white males; among Black females was 5.0 times the rate among white females; among AI/AN was 3.7 times the rate among whites; and among Hispanics was 1.9 times the rate among whites.



**Gonorrhea:** The rate of reported gonorrhea cases among Blacks was 7.7 times the rate among whites; among AI/AN was 4.6 times the rate among whites; and among Hispanics was 1.6 times the rate among whites.

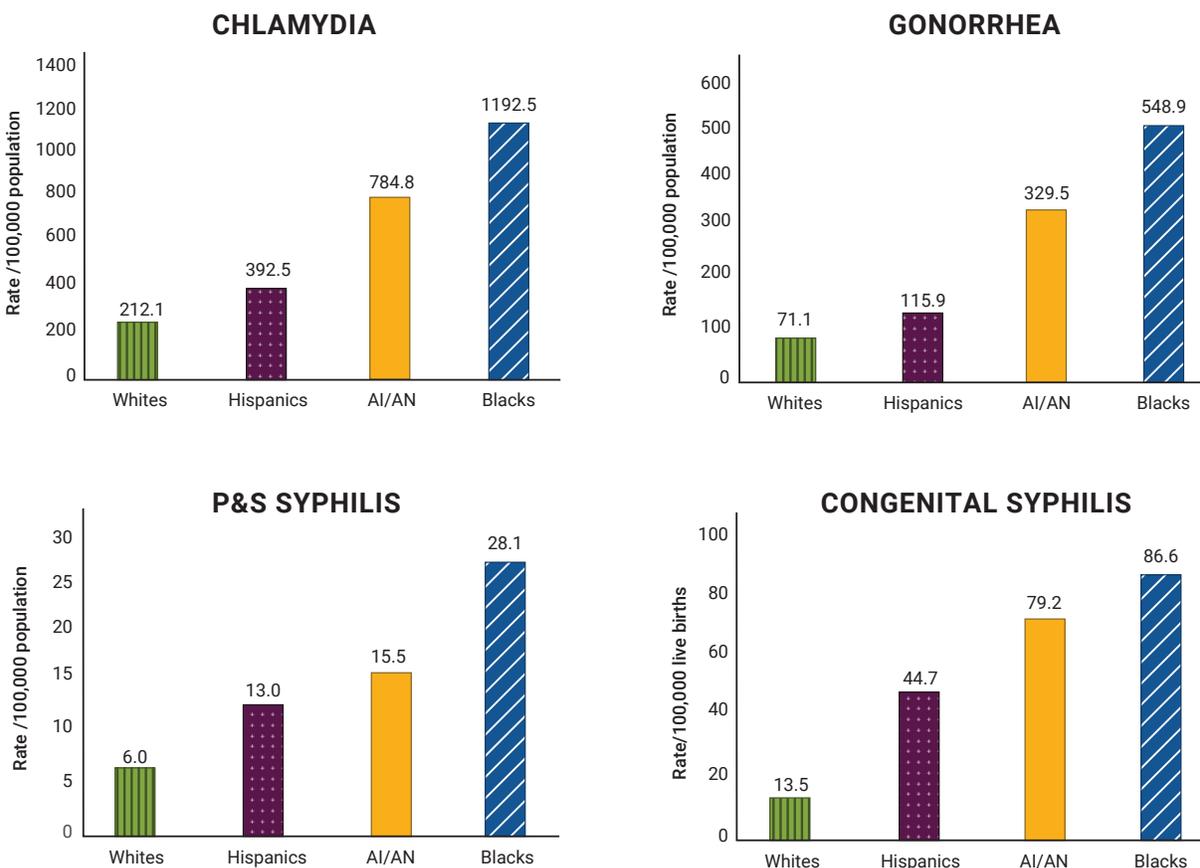


**P&S Syphilis:** The rate of reported P&S syphilis cases among Blacks was 4.7 times the rate among whites; among AI/AN was 2.6 times the rate among whites; and among Hispanics was 2.2 times the rate among whites.



**Congenital Syphilis:** The rate of reported congenital syphilis cases among Blacks was 6.4 times the rate among whites; among AI/AN was 5.9 times the rate among whites; and among Hispanics was 3.3 times the rate among whites.

Figure 5 depicts disparities in the rates of reported chlamydia, gonorrhea, P&S syphilis, and congenital syphilis among selected racial and ethnic groups. Please note that the scale among each of the graphs below are different.

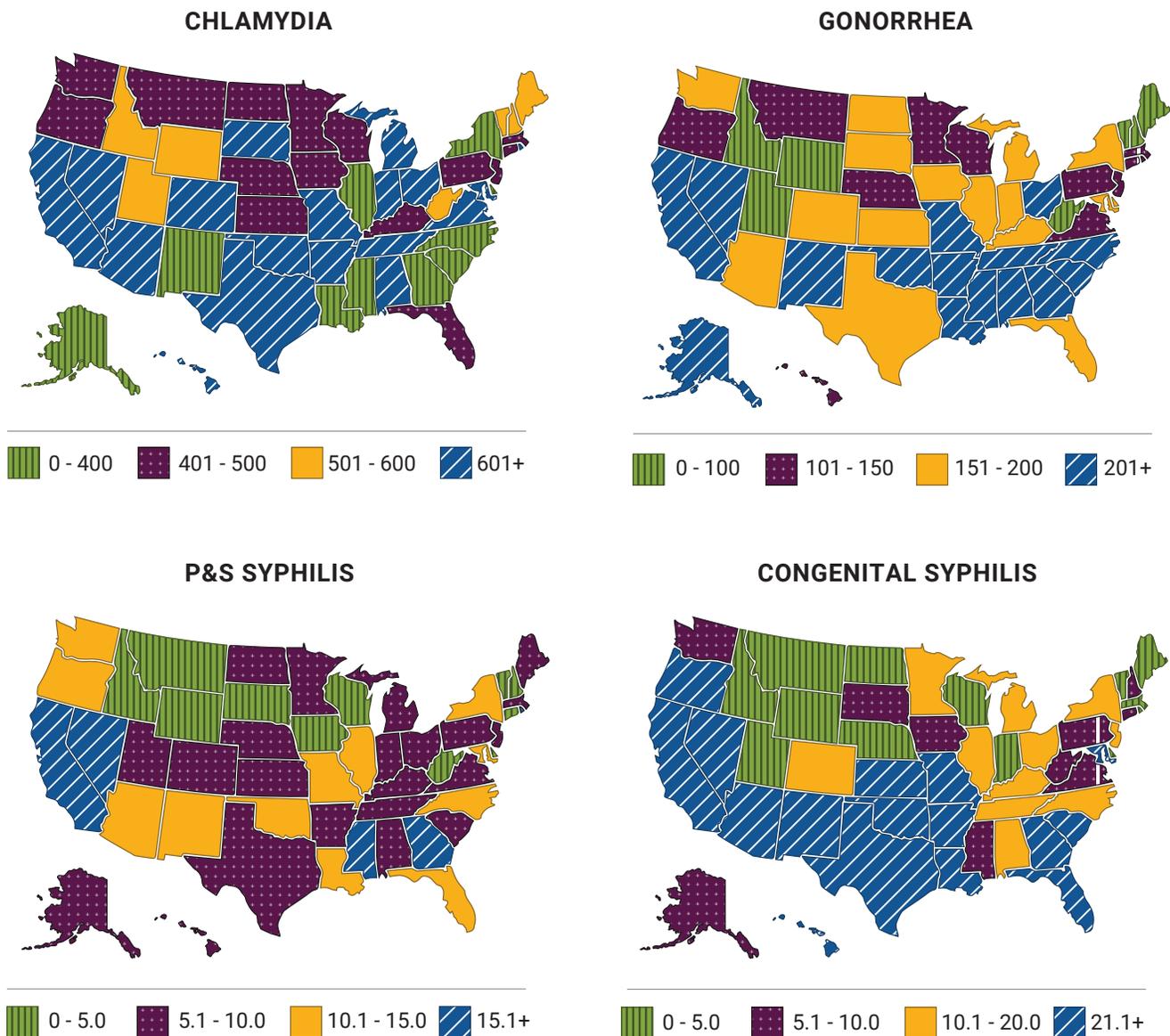


**Figure 5.** Disparities in reported rates of STIs by race/ethnicity, 2018<sup>1</sup>

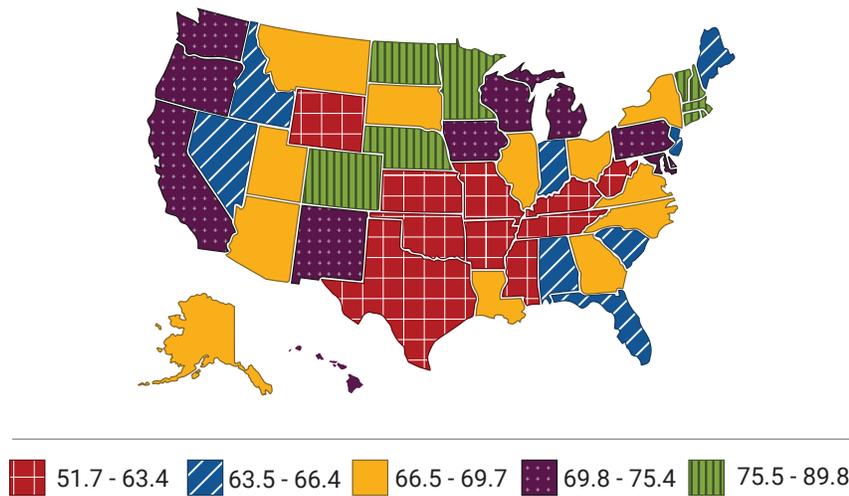
## Geographic Regions

The South and West, as defined by the [U.S. Census Bureau](#), are the U.S. regions most heavily impacted by the overall STI epidemic (see Figures 6 and 7). The 2018 rates of reported cases for each of the three STIs including congenital syphilis (Figure 6), along with rates of HPV vaccination (Figure 7), were as follows:

-  **Chlamydia:** highest in the South
-  **Gonorrhea:** highest in the South and the West
-  **P&S Syphilis:** highest in the West
-  **Congenital Syphilis:** highest in the West
-  **HPV** vaccination series initiation and completion rates: lowest in the South<sup>121</sup>



**Figure 6.** Rates of reported cases by state, per 100,000 population, 2018.<sup>1</sup> For congenital syphilis, rates of reported cases by state, per 100,000 live births.



**Figure 7.** Percentage of adolescents (male and female, ages 13–17) who have received at least one dose of the HPV vaccine, 2018<sup>121</sup>

### **High-Impact Settings**

Using a syndemic approach, work to engage these groups may be more efficient and effective by identifying settings where people with STIs and other risk factors commonly receive services. Settings with high numbers of people who are members of priority populations or are affected by other components of the syndemic can also provide opportunities to efficiently identify, screen, treat, and vaccinate large numbers of disproportionately affected populations. These settings include schools and institutions of higher learning, career training programs, military bases, correctional institutions, homeless service providers, crisis centers, SUD treatment programs, and syringe services programs. Outreach to and assessment of individuals as part of regular intake in settings with a high proportion of people at risk can maximize limited staff and resources and identify individuals in need of prevention and screening.

### **PRIORITY POPULATIONS MAY DIFFER BY STAKEHOLDER**

Understanding of the priority populations highlighted in this plan will be useful for federal and nonfederal partners whose purview includes the whole nation. However, different and/or additional populations and communities may be disproportionately impacted by STIs, depending on the stakeholder’s jurisdiction, community, or purview.

Stakeholders whose purview is more specific are encouraged to review the data for their population(s)—and the interplay with the social determinants of health—to help prioritize their STI interventions and guide efforts for the most impact. For example, on a federal level, agencies such as the Indian Health Service, Department of Veterans Affairs, Department of Defense, and Administration for Community Living serve specific populations within the United States. State, tribal, territorial, and local jurisdictions, as well as schools and other educational institutions and systems, should review the data that pertain to their jurisdiction. Health care providers, health plans, community-based and faith-based organizations, and advocacy groups should review the data that pertain to the populations and communities they serve. Stakeholders are also encouraged to consider those who may be at-risk for STIs and face barriers to prevention and care, for whom data might not be available. Clinical guidelines for risk assessment further identify groups recommended for STI screening and should help inform stakeholders’ approaches.<sup>35</sup> These reviews will help each stakeholder determine how and where best to focus its efforts and resources to achieve results with the highest impact.

## E. Indicators

The STI Plan identifies seven core indicators to measure progress. Some of the core indicators are also stratified by one or more of the priority populations or their subgroups so that progress can be measured toward reducing disparities, establishing seven disparities indicators.

Indicators were selected based on the following criteria:

- relate to at least one of the STIs covered by the STI Plan;
- relate to at least one of the STI Plan's goals;
- reflect current STI science, policy, and medical screening practices and guidance;
- convey improvement (or lack of improvement) in STI health;
- use quantitative data from a robust nationally representative data source;
- can be stratified including by priority populations; and
- have a significant impact on the STI epidemic.

For each indicator, the STI Plan records baseline measurements and establishes annual targets through 2030. This approach provides sufficient time to reverse the worsening trends in STI rates in the United States. Appendix A describes the methodology for choosing indicators and the target-setting process. Appendix B sets forth the annual targets for each core and disparities indicator as well as describes the data source for each indicator.

Both the core and disparity indicators use existing data sources based on national data (described in the Data Sources section of Appendix B). These sources were selected because they

- generate data regularly and consistently—enabling nationwide, cross-year comparisons; and
- allow for stratification by age, geographic region, race, ethnicity, and sex, and, when available, sex of sex partners.

Finally, the STI Plan recommends development of three additional indicators—referred to as developmental indicators. Nationally representative data for these developmental indicators are not currently collected, and doing so would fill in critical gaps in measuring the nation's efforts to address the STI epidemic.

**Table 3. STI Plan Core Indicators**

Core Indicator	Related STI Plan Goals	Measure	Baseline <sup>a</sup>	5-Year Target	10-Year Target	Data Source <sup>b</sup>
<b>1. Increase the percentage of adolescents aged 13–17 years who receive the routinely recommended doses of HPV vaccine</b>						
	1, 2, 4	Percentage	51.0 (2018 baseline)	80.0	85.0	NIS-Teen
<b>2. Reduce P&amp;S syphilis rate<sup>c</sup></b>						
	1, 2	Rate/100,000	13.6	13.2	12.2	NNDSS
<b>3. Reduce rates of congenital syphilis rate<sup>c</sup></b>						
	1, 2, 4	Rate/100,000	67.7	57.6	33.9	NNDSS
<b>4. Reduce gonorrhea rates<sup>c</sup></b>						
	1, 2	Rate/100,000	221.9	215.3	199.7	NNDSS
<b>5. Increase chlamydia screening in sexually active females aged 16–24 years</b>						
	1, 2, 4	Percentage	58.8	66.4	76.5	HEDIS
<b>6. Reduce PID in females aged 15–24 years<sup>c</sup></b>						
	1, 2, 4	Rate/100,000	171.6	161.3	137.3	HCUP NEDS
<b>7. Increase condom use at last sexual encounter among sexually active high school students<sup>c</sup></b>						
	1, 4	Percentage	51.3	53.5	56.5	YRBSS

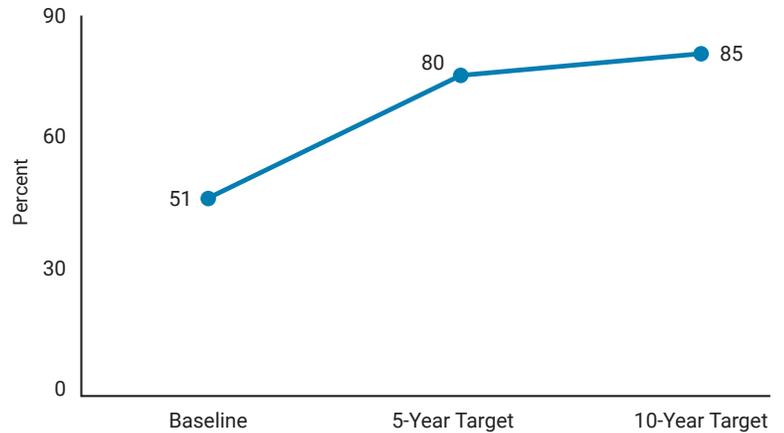
<sup>a</sup> 2020 unless indicated otherwise. 2020 data points are projected based on indicator trajectory in recent years.

<sup>b</sup> See Appendix B for descriptions of data sources.

<sup>c</sup> This core indicator has a corresponding disparities indicator(s).

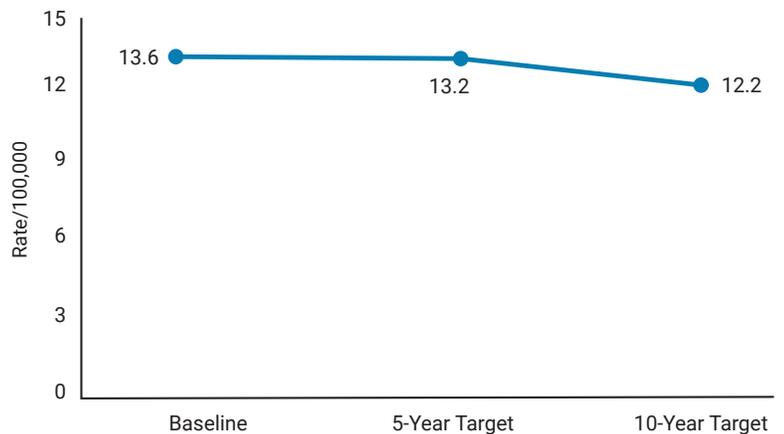
### 1. Increase the percentage of adolescents aged 13–17 years who receive the routinely recommended doses of HPV vaccine to 80% by 2025 and 85% by 2030

Approximately 92% of HPV-associated cancers can be prevented by the safe and effective HPV vaccine.<sup>64</sup> The ACIP currently recommends that all preteen boys and girls receive the HPV vaccine at ages 11 or 12; the series can begin at age 9.<sup>122</sup> In addition, adolescents and young adults aged 13–26 are recommended to receive a catch-up vaccination series.<sup>123</sup> Increasing HPV vaccination among adolescents will have a significant impact in reducing HPV infections, precancerous lesions, and HPV-associated cancers.



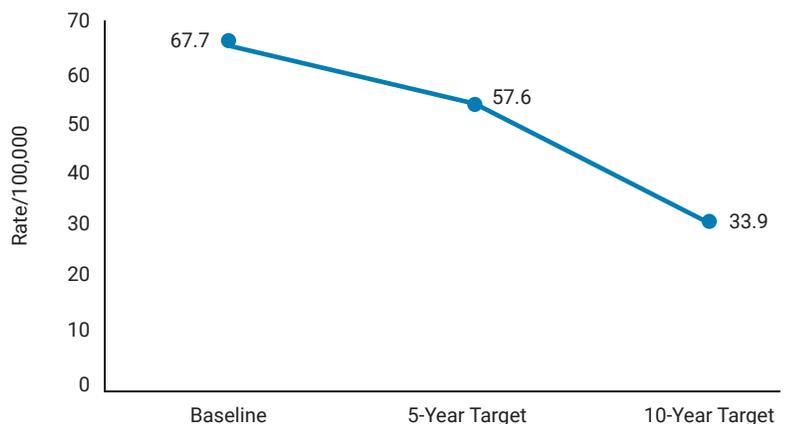
### 2. Reduce P&S syphilis rate by 3% by 2025 and 10% by 2030

The rate of P&S syphilis increased by 71% from 2014 to 2018.<sup>1</sup> Cases have risen disproportionately among MSM, accounting for 54% of the total reported P&S syphilis cases in 2018.<sup>1</sup> Rates of P&S syphilis among females have increased substantially in recent years as well,<sup>1</sup> suggesting a rapidly growing heterosexual epidemic. Reducing the rate of P&S syphilis will prevent the spread of new infections and the adverse health outcomes associated with P&S syphilis, such as neurosyphilis, ocular syphilis, and congenital syphilis. Reducing P&S syphilis among MSM will also help avert future HIV infections.



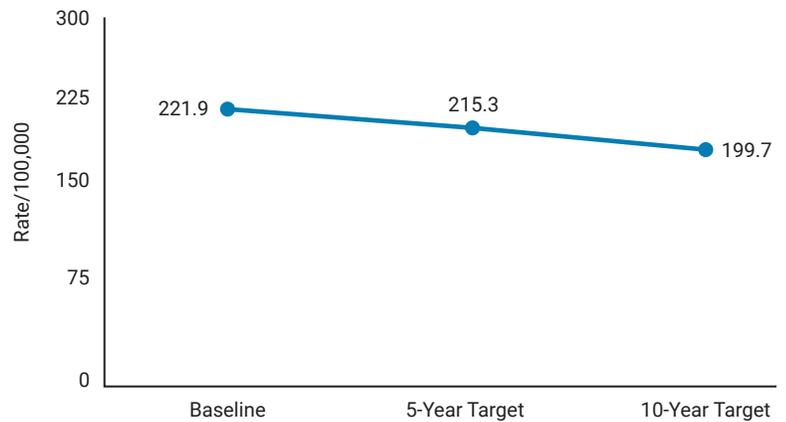
### 3. Reduce congenital syphilis rate by 15% by 2025 and 50% by 2030

Congenital syphilis reflects multiple missed opportunities for prevention, timely diagnosis, and treatment of syphilis in a pregnant woman. From 2014 to 2018, the rate of congenital syphilis cases increased by 185%, paralleling increased rates of P&S syphilis among reproductive-aged women in the United States.<sup>1</sup> Reducing the rate of congenital syphilis will result in fewer stillbirths, infant deaths, miscarriages, and long-term health consequences.



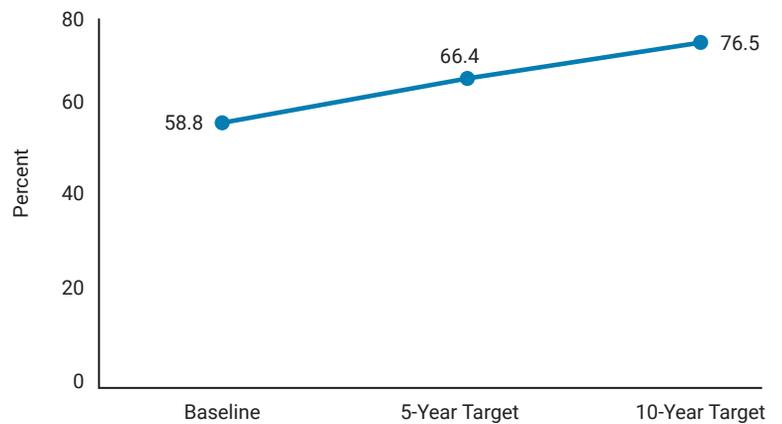
#### 4. Reduce gonorrhea rate by 2% by 2025 and 10% by 2030

Rates of reported gonorrhea increased by 63% from 2014 to 2018.<sup>1</sup> Untreated gonorrhea can lead to PID and facilitate HIV transmission.<sup>124</sup> Treatment and control of *N. gonorrhoeae* have been complicated by AMR. Because of the development of AMR to multiple classes of antibiotics, including current first-line therapies, the organism has been designated as one of five urgent threat–level pathogens in the United States in 2019.<sup>53</sup> Reducing gonococcal infections can reduce these adverse health outcomes and treatment challenges and can reduce further transmission.



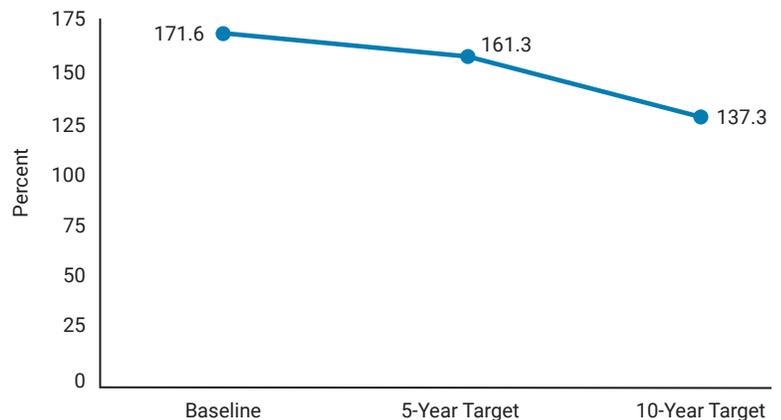
#### 5. Increase chlamydia screening in sexually active females aged 16–24 years by 13% by 2025 and 30% by 2030

Chlamydia, the most common bacterial STI, had a reported rate of 539.<sup>9</sup> for every 100,000 people in the United States in 2018.<sup>1</sup> It is often asymptomatic, and disproportionately impacts adolescent girls and young women. When left untreated, it can lead to long-term health consequences such as PID and infertility; routine screening can shorten duration of infection and prevent PID.<sup>68, 125, 126, 127</sup> Both CDC and the United States Preventive Services Task Force (USPSTF) recommend annual screening for chlamydia in sexually active women younger than age 25;<sup>35</sup> however, screening remains suboptimal.



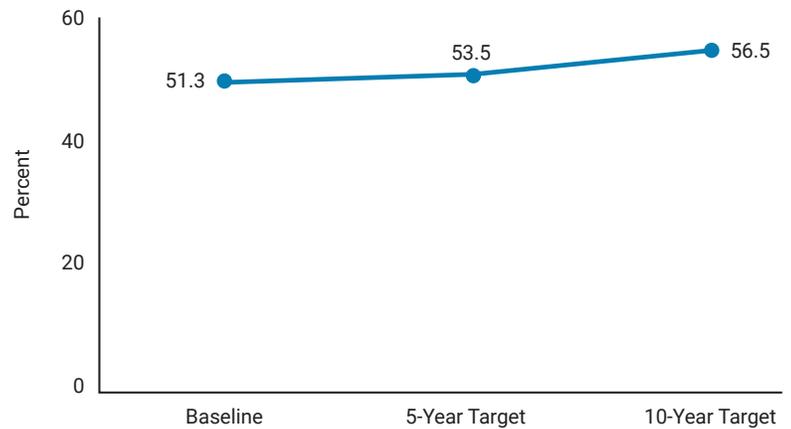
#### 6. Reduce PID in females aged 15–24 years by 6% by 2025 and 20% by 2030

In women, untreated chlamydial and gonococcal infections can cause PID. Data from studies suggest that as much as 10% of untreated chlamydial infections progress to clinically diagnosed PID, and the PID risk with untreated gonococcal infection may be even higher.<sup>128, 129, 130</sup> PID can result in inflammation and damage to the fallopian tubes, elevating the risk of infertility and ectopic pregnancy. It can also be a cause of chronic pelvic pain.<sup>1</sup> An important public health measure for preventing PID in young women is through prevention and early identification and treatment of chlamydial and gonococcal infections.



## 7. Increase condom use at last sexual intercourse among sexually active high school students by 4% by 2025 and 10% by 2030

When used consistently and correctly, condom use can reduce the risk of acquiring and transmitting STIs.<sup>131</sup> Adolescents and young adults aged 15–24 account for approximately 25% of the sexually active population, yet represent approximately 50% of the 20 million new STIs in the United States each year.<sup>132</sup> Increasing condom use among sexually active youth is a critical STI prevention strategy and complements other primary and secondary prevention efforts to reduce the incidence and prevalence of STIs.



## DISPARITIES INDICATORS

Disparities indicators are core indicators stratified by the priority population most impacted by the STI or related issue. (See Section III.D and Figure 5 for data on disparities by race/ethnicity.) Each disparities indicator uses the same data source as its corresponding core indicator. The geographic regions South and West are defined by and align with [U.S. Census regions](#). Table 4 presents baseline measures (estimated for 2020) as well as 5- and 10-year targets for each disparities indicator. The annual targets for each disparities indicator are presented in Appendix B.

**Table 4.** STI Plan Disparities Indicators

Disparities Indicator	Measure	Baseline <sup>a</sup>	5-Year Target	10-Year Target
<b>8. Reduce P&amp;S syphilis rate in MSM</b>				
	Rate/100,000	461.1	440.4	392.0
<b>9. Reduce congenital syphilis rate among African American/Blacks</b>				
	Rate/100,000	167.5	139.9	75.4
<b>10. Reduce congenital syphilis rate among AI/AN</b>				
	Rate/100,000	207.6	173.3	93.4
<b>11. Reduce congenital syphilis rate in the West</b>				
	Rate/100,000	89.7	74.9	40.3
<b>12. Reduce gonorrhea rate among African Americans/Blacks</b>				
	Rate/100,000	632.9	604.5	538.0
<b>13. Reduce gonorrhea rate in the South</b>				
	Rate/100,000	211.3	201.0	179.6
<b>14. Increase condom use at last sexual encounter among sexually active MSM high school students</b>				
	Percentage	53.8	56.9	61.9

<sup>a</sup> 2020 unless indicated otherwise. 2020 data points are projected based on indicator trajectory in recent years.

## DEVELOPMENTAL INDICATORS

Developmental indicators focus on the need to develop data sources and collect critical data to monitor efforts to reduce STIs in the United States; they represent high-priority issues that do not currently have reliable, nationally representative baseline data. Targets cannot be established for them until the data are collected and trend analysis is performed. Federal partners are encouraged to work toward collecting and analyzing the suggested data. Three developmental indicators are recommended to supplement the core and disparities indicators.

1. Increase the percentage of patients with gonorrhea who are treated with a recommended regimen.
2. Increase the percentage of patients with syphilis who are treated with a recommended regimen.
3. Increase extragenital chlamydia and gonorrhea screening among MSM.

# IV. IMPLEMENTATION AND ACCOUNTABILITY

## A. Federal Partners

The STI Plan presents a framework for reducing the rates and effects of STIs in the United States. Development of the STI Plan was a collaborative process led by federal partners across multiple departments and agencies with input from a wide range of stakeholders.

Federal partners will collaborate to develop an implementation plan to support the STI Plan goals, objectives, and strategies. The Federal Implementation Plan will set forth federal partners' commitments to policies, initiatives, and activities to meet the goals of the STI Plan, and will be published for transparency and accountability. Federal partners' roles in implementation will vary based on the purview of their agencies and how much their activities overlap with the components of the plan.

As part of their ongoing commitment to reduce STIs in this nation, federal partners have committed to serve on an STI implementation working group, continuing to provide their expertise and guidance. This implementation working group will collaborate on addressing STIs in an integrated fashion including with other components of the syndemic. The working group will meet regularly to coordinate activities across agencies and departments, implement lessons learned from epidemiological data and research findings, monitor progress toward the indicator targets, course correct as needed, and report on national progress. As scientific, medical, and public health advances and challenges emerge, new and innovative policies will be developed to complement the existing plan.

## B. Nonfederal Partners

Addressing STIs is not solely a federal activity. Success depends on coordinated action by state, tribal, territorial, and local governments; community-based and faith-based organizations; health plans and providers and other health-related organizations; private industry; nongovernmental organizations; foundations; schools and other avenues for educational activities; researchers; families; and patients and their partners. Its success also depends on a holistic approach to the various parts of the syndemic, including HIV, viral hepatitis, SUD, stigma, and social determinants of health.

Each community and stakeholder brings a unique perspective and plays a critical role in preventing and responding to STIs. Stakeholders are encouraged to use this STI Plan to build their own roadmap to reduce STIs and STI-related health disparities and inequities, and end the STI epidemic among the populations and communities they serve. Stakeholders should consider adopting the vision and goals of this STI Plan; examining challenges from a health equity lens; implementing the objectives and strategies relevant to their role, population(s), and community(ies); applying other evidence-based objectives and strategies; using available data to identify where their resources will have the most impact; and identifying indicators and targets to measure their progress. A data-driven strategy will help stakeholders focus and efficiently and effectively use limited resources. Integrating STI prevention and treatment efforts with other components of the syndemic, including emerging issues such as the COVID-19 pandemic, is also strongly encouraged.

# APPENDIX A: PROCESS/METHODOLOGY FOR DEVELOPING AND ADOPTING THE STI PLAN

The process for developing the STI Plan included engaging federal leadership, experts, and a variety of nonfederal partners to compile subject matter evidence and recommendations on STIs. These data were then synthesized and developed into the vision, goals, objectives, strategies, indicators, and quantitative targets that are the core of the STI Plan. This process also included aligning the components of the STI Plan with the next HIV Plan and Hepatitis Plan.

## FEDERAL LEADERSHIP

### Steering Committee

A federal Steering Committee set the vision, goals, and priority populations and discussed key challenges to be addressed in the STI Plan. The Steering Committee’s work and decision-making was informed by presentations and discussions of national-level data, the work being done and being funded—especially by federal departments and agencies—related to STIs, challenges and gaps in addressing STIs in this nation, and how to integrate and leverage the work being done in other components of the syndemic. The Steering Committee also provided direction for the overall process. In addition, the Steering Committee formed subcommittees to study and propose objectives, strategies, and indicators for each of the STI Plan’s goals and, in doing so, consider information gathered during the public input period. Development of the objectives and strategies was an iterative process among the Steering Committee, the various subcommittees, and those developing the HIV Plan and Hepatitis Plan. The Steering Committee voted on each component of the STI Plan (e.g., vision, goals, objectives, strategies, indicators, and priority populations) and provided input into the quantitative targets for the indicators. The Steering Committee consisted of senior representatives from five federal departments and 15 HHS agencies and offices (see Table A.1) and met monthly from April 2019 through January 2020.

**Table A.1.** Composition of Federal Steering Committee

Federal Departments	HHS Agencies and Offices	
<ul style="list-style-type: none"> <li>• Department of Defense</li> <li>• Department of Education</li> <li>• Department of Health and Human Services</li> <li>• Department of Housing and Urban Development</li> <li>• Department of Veterans Affairs</li> </ul>	<ul style="list-style-type: none"> <li>• Administration for Children and Families</li> <li>• Administration for Community Living</li> <li>• Centers for Disease Control and Prevention</li> <li>• Centers for Medicare &amp; Medicaid Services</li> <li>• Food and Drug Administration</li> <li>• Health Resources and Services Administration</li> <li>• Indian Health Service</li> <li>• National Institutes of Health</li> </ul>	<ul style="list-style-type: none"> <li>• Office of the Assistant Secretary for Health               <ul style="list-style-type: none"> <li>» Office of Infectious Disease and HIV/AIDS Policy</li> <li>» Office of Minority Health</li> <li>» Office of Population Affairs</li> <li>» Office of the Surgeon General</li> <li>» Office of Women’s Health</li> </ul> </li> <li>• Substance Abuse and Mental Health Services Administration</li> </ul>

## **Subcommittees**

The federal Steering Committee formed five subcommittees and selected subject matter experts from their agencies and offices to participate:

- Primary Prevention;
- Secondary and Tertiary Prevention Including Care;
- Education and Communications;
- Disparities and Coordination; and
- Indicators.

The subcommittees were charged with developing and recommending objectives, strategies, and indicators that address the goals of the STI Plan including the following cross-cutting elements identified by the Steering Committee:

- Disparities;
- Integration with other infectious diseases such as HIV and viral hepatitis;
- Rapid implementation of new scientific advances;
- Social determinants of health; and
- Stigma and discrimination.

The subcommittees met twice per month between July 2019 and October 2019, and the Indicators Subcommittee continued its work through January 2020. The subcommittees developed and prioritized objectives and strategies, as well as indicators and indicator targets. These were then reviewed and refined through an iterative process involving the Steering Committee and ODP leadership. Extensive analyses by ODP identified overlaps, gaps, alignments, and additional areas of integration among the STI Plan, the HIV Plan, and the Hepatitis Plan. The Indicators Subcommittee also worked with its counterparts for developing the HIV Plan and Hepatitis Plan to ensure that the same criteria and methods were used across plans, as appropriate.

## **PUBLIC INPUT**

A crucial component in developing the STI Plan was engagement and input from nonfederal stakeholders. Stakeholders from all sectors and at all levels (i.e., community, state, regional, national) and people whose lives have been affected by STIs were encouraged to provide input on the STI Plan.

### ***Solicitation of Public Input***

To assist in developing the STI Plan, public input on the plan was solicited. Between March and June 2019, two [listening sessions](#) were held via webinar and four were held during national conferences and meetings of relevant stakeholders. The webinars drew more than 1,000 participants, representing 45 states, three U.S. territories, and Canada; comments were received from 125 participants through this process. In addition, a [Request for Information](#) (RFI) published in the *Federal Register* on May 3, 2019, resulted in the receipt of 115 sets of written public comments.

### ***Method of Analysis***

Comments from the virtual listening sessions were professionally transcribed. All verbal and written comments were collated by commenter and organization. A pre-determined coding structure was developed based on questions posed during the listening sessions and in the RFI. Two coders analyzed all comments and coded the comments to themes. Coders reviewed the comment data and updated the codebook based upon dominant and emergent themes present in both listening session and RFI comments. Staff performed a qualitative analysis of all comments using NVivo 12.0, examined them for dominant themes and sub-themes, and matched them to STI Plan goals.

## Commenters

A total of 240 commenters were identified and categorized into various respondent types. Overall, there was strong representation from health care providers (n=48), local health departments (n=34), community-based organizations/faith-based organizations (n=30), national organizations (n=26), and tribes and Indian Country (n=26) (see Figure A.1).



**Figure A.1.** Respondent type for all public comments with available affiliation

## SUMMARY OF FINDINGS

Methods used and findings from the public input, including prominent themes and sub-themes along with supporting comments, were presented to the Steering Committee and the subcommittees. Input received through public comments was extremely valuable, and comments addressed a broad range of STI-related topics that are reflected in the STI Plan's objectives and strategies, including:

- innovation and technology regarding STI diagnostics, therapeutics and vaccines, and research and surveillance;
- provider training including sensitivity training in STIs and sexual health basics;
- use of primary care settings, schools, and nontraditional health care settings for STI prevention and testing services;
- culturally appropriate and inclusive comprehensive sexual health education;
- STI-related stigma and discrimination; and
- social determinants of health.

Many comments pertained to the work or purview of specific agencies. These agency-specific comments were also compiled into individual reports and shared with those agencies for review and consideration.

## DEVELOPMENT OF PRIORITY POPULATIONS

Priority populations are disproportionately affected populations, which are defined as groups of people with a higher burden of disease than others. Prevention and control interventions can focus on priority populations for the highest impact. With the understanding that the STI Plan is a national plan, the Steering Committee reviewed national STD surveillance data to select priority populations. Disproportionately impacted populations will differ by jurisdiction. Therefore, each jurisdiction should review its own data to determine its own priority populations.

As a starting point, CDC's Division of STD Prevention presented data for STDs in general and for the four STIs within the scope of the STI Plan. The data were presented by incidence and prevalence and stratified by a variety of factors, including age group, sex, race/ethnicity, gender of sex partners, urban/rural/other settings, geographic areas, and risk, using 2017 surveillance data. The Steering Committee also looked at identifying disproportionately affected populations that are socially, economically, and/or environmentally disadvantaged. Other agencies that collect STI-related data, such as the Veterans Administration and Indian Health Service, also presented the data for the populations they serve. The Steering Committee reviewed and discussed the surveillance data over several meetings and voted to adopt priority populations based on the available surveillance data. The Steering Committee was selective in the total number of priority populations so that limited resources and interventions can focus on a smaller number of populations to have the most impact on outcomes for the nation.

## DEVELOPMENT OF STI INDICATORS AND TARGETS

### *Indicators*

The Indicators Subcommittee was tasked with developing indicators and targets for the STI Plan. The subcommittee reviewed existing data sources for available STI or STI-related measures, proposed indicators for each of the STI Plan's four goals, and discussed limitations and gaps in existing STI measures and data sources. The Indicators Subcommittee, after consulting with its counterparts for the Hepatitis Plan and the HIV Plan, used the following criteria to select the indicators to recommend to the Steering Committee:

- relate to at least one of the STIs covered by the STI Plan;
- relate to at least one of the STI Plan's goals;
- reflect current STI science, policy, and medical screening practices and guidance;
- convey improvement (or lack of improvement) in STI health;
- use quantitative data from a robust nationally representative data source;
- can be stratified including by priority populations; and
- have a significant impact on the STI epidemic.

Core indicators, which measure progress on a nationwide basis, were chosen by evaluating current STI data, health services, and behavioral trends. To measure progress for priority populations and subgroups most impacted by disparity, the subcommittee also identified the core indicators that should be stratified and used as corresponding disparities indicators. These were further reviewed and refined to maximize measurement of the STI Plan's impact. The Indicators Subcommittee also recommended development of several indicator measures that do not currently have an identified data source but would help measure some high-priority issues. These were also reviewed, and three developmental indicators were chosen.

## Indicator Targets

To set targets for indicators, the Indicators Subcommittee first leveraged prior year data to project the estimated 2020 baseline measures. Members calculated the current trajectory of each indicator based on the most recent years of data and then applied the estimated annual percentage change to the most recent year of available data, projecting out annually until 2020. For example, the rate of gonorrhea increased, on average, 4.6% annually during 2016–2018. Applying this annual increase to the rate in the last year of available data (179.1 per 100,000 in 2018) resulted in a projected 2020 rate of 221.9 per 100,000.

Although the STI Plan is a 5-year plan, the existence of 10-year targets makes clear to federal partners and the nation that sustained efforts are needed to address the STI epidemic. These targets will act as goals to help plan sustained efforts. For STIs with rapidly worsening trends, 5- and 10-year targets were based on smaller percentage improvements to account for the need to reverse those trends. Targets are more aggressive for indicators related to STIs with already available interventions (e.g., chlamydia and congenital syphilis). In addition, targets for the disparities indicators are more aggressive than those for the related core indicators, because greater percentage improvement in the most impacted populations will be needed to reduce the disparity.

In addition, the Indicators Subcommittee set annual targets to help federal partners gauge whether they are on course to reach the longer-term national targets and, if not, examine what course corrections are needed. The approach to setting the annual target for all indicators that monitor disease rates (e.g., rates of gonorrhea) accounted for initial ramping up efforts, which would be slower. Thus, decreases in STI rates are expected to become more pronounced as the plan is implemented. For health services indicators (e.g., chlamydia screening), the rate of improvement declines the closer you get to the target. Therefore, the targets in the final years reflect this expected slowdown in the rate of improvement. HPV vaccination targets are aligned with HHS' initiative to reach 80% coverage in 5 years.

Development of indicators and targets for the STI Plan were also coordinated with *Healthy People 2030* (HP2030) STD measures. For the indicators that are included in both the STI Plan and HP2030,<sup>††</sup> HP2030 targets will be updated to align with the STI Plan once the STI Plan is released.

The STI indicators were reviewed and approved by the Steering Committee. To ensure feasibility and sustainability of data collection and monitoring, the targets were vetted by leadership of the agencies involved in the funding, surveillance, data collection, and database management associated with the STI indicators.

The indicator targets were developed and approved prior to the COVID-19 pandemic. Progress toward the targets will likely be impacted by the pandemic for a number of reasons, including resources being diverted from screening for STIs to aid the pandemic. As federal partners monitor implementation of the STI Plan, the factors that affect progress toward its quantitative targets will be considered and used to inform any course corrections that may be needed.

<sup>††</sup> STI Plan indicators 1, 3, 5, 6, and 8 mirror HP2030 objective measures IID-08, STI-04, STI-01, STI-07, and STI-05.

# APPENDIX B: INDICATORS AND TARGETS

For each indicator, the STI Plan records baseline measurements and establishes 5- and 10-year targets, as well as annual targets to monitor efforts to meet targets. Data sources are based on nationally representative samples. Data sources provide regular and consistent estimated data to enable cross-year comparisons and stratification by age, geographic region, race/ethnicity, and sex, and, when available, sex of sex partners. The data sources are described following the tables of core indicators and disparities indicators and their targets.

## CORE INDICATORS

Table B.1 presents the baseline measurements, annual targets, and data sources for each core indicator. Five- and 10-year targets are bolded and underlined.

**Table B.1.** STI Plan Core Indicators

Core Indicator	Baseline <sup>a</sup>	2021	2022	2023	2024	<b>2025</b>	2026	2027	2028	2029	<b>2030</b>	Data Source <sup>b</sup>
<b>1. Increase the percentage of adolescents aged 13–17 years who receive the routinely recommended doses of HPV vaccine</b>												
Percent	51	57	63	69	75	<b>80</b>	81	82	83	84	<b>85</b>	NIS-Teen
<b>2. Reduce rates of P&amp;S syphilis<sup>c</sup></b>												
Rate per 100,000	13.6	13.5	13.4	13.3	13.3	<b>13.2</b>	13.0	12.8	12.6	12.4	<b>12.2</b>	NNDSS
<b>3. Reduce rates of congenital syphilis<sup>c</sup></b>												
Rate per 100,000	67.7	66.0	64.3	62.3	60.3	<b>57.6</b>	54.2	50.1	45.4	40.0	<b>33.9</b>	NNDSS
<b>4. Reduce gonorrhea rates<sup>c</sup></b>												
Rate per 100,000	221.9	220.8	219.7	218.4	217.1	<b>215.3</b>	213.1	210.4	207.3	203.7	<b>199.7</b>	NNDSS
<b>5. Increase chlamydia screening in sexually active females aged 16–24 years</b>												
Percent	58.8	59.7	60.6	62.2	64.1	<b>66.4</b>	68.0	71.1	73.3	75.0	<b>76.5</b>	HEDIS
<b>6. Reduce PID in females aged 15–24 years<sup>c</sup></b>												
Rate per 100,000	171.6	169.9	168.2	166.1	164.0	<b>161.3</b>	157.9	153.8	149.0	143.5	<b>137.3</b>	HCUP NEDS
<b>7. Increase condom use at last sex among sexually active high school students<sup>c</sup></b>												
Percent	51.3	51.6	51.8	52.3	52.9	<b>53.5</b>	54.2	54.9	55.5	56.0	<b>56.5</b>	YRBSS

<sup>a</sup> Baseline is 2020, except for Indicator 1, which uses a 2018 baseline. 2020 data points are projected based on trajectory in recent years.

<sup>b</sup> HCUP NEDS = [Healthcare Cost and Utilization Project Nationwide Emergency Department Sample](#); HEDIS = [Healthcare Effectiveness Data and Information Set](#); NIS-Teen = [National Immunization Survey-Teen](#); NNDSS = [National Notifiable Diseases Surveillance System](#); YRBSS = [Youth Risk Behavior Surveillance System](#). See Data Sources section below for a description of each data source.

<sup>c</sup> This core indicator has a corresponding disparities indicator(s).

## DISPARITIES INDICATORS

Disparities indicators were identified by evaluating current STI data trends and selecting priority populations and subgroups most vulnerable. Table B.2 presents the baseline measurements and annual targets for each disparities indicator. Five- and 10-year targets are bolded. Each disparities indicator uses the same data source as its corresponding core indicator.

**Table B.2.** STI Plan Disparities Indicators

Disparities Indicator	Baseline <sup>a</sup>	2021	2022	2023	2024	<b>2025</b>	2026	2027	2028	2029	<b>2030</b>
<b>8. Reduce P&amp;S syphilis rate among MSM</b>											
Cases/100,000	461.2	457.7	454.3	450.1	446.0	<b>440.4</b>	433.5	425.2	415.5	404.5	<b>392.0</b>
<b>9. Reduce congenital syphilis rate among African Americans/Blacks</b>											
Rate/100,000	167.5	162.9	158.3	152.8	147.3	<b>139.9</b>	130.7	199.6	106.7	92.0	<b>75.4</b>
<b>10. Reduce congenital syphilis rate among AI/ANs</b>											
Rate/100,000	207.6	201.9	196.2	189.3	182.5	<b>173.3</b>	161.9	148.2	132.2	113.9	<b>93.4</b>
<b>11. Reduce congenital syphilis rate in the West</b>											
Rate/100,000	89.7	87.2	84.7	81.8	78.8	<b>74.9</b>	69.9	64.0	57.1	49.2	<b>40.3</b>
<b>12. Reduce gonorrhea rate among African Americans/Blacks</b>											
Rate/100,000	632.9	628.2	623.5	617.8	612.1	<b>604.5</b>	595.0	583.6	570.3	555.1	<b>538.0</b>
<b>13. Reduce gonorrhea rate in the South</b>											
Rate/100,000	211.3	209.6	207.9	205.8	203.7	<b>201.0</b>	197.5	193.4	188.5	183.0	<b>179.6</b>
<b>14. Increase condom use at last sexual intercourse among sexually active MSM high school students</b>											
Percentage	53.8	53.8	54.2	54.9	55.8	<b>56.9</b>	58.0	59.1	60.0	60.8	<b>61.9</b>

<sup>a</sup> Baseline is 2020 for all of the disparities indicators. 2020 data points are projected based on trajectory in recent years.

## DATA SOURCES

The [Healthcare Cost and Utilization Project Nationwide Emergency Department Sample](#) (HCUP NEDS) is the nation's most comprehensive source of hospital care data, including information on in-patient stays, ambulatory surgery and services visits, and emergency department (ED) encounters. HCUP is a family of databases, software tools, and related products developed through a federal-state-industry partnership and sponsored by the HHS Agency for Health Research and Quality. The database consists of administrative claims data from roughly 30 million ED visits at 950 hospitals that approximate a 20% stratified sample of U.S. hospital-based EDs with records at the ED visit level. HCUP NEDS data are collected annually, but usually with a 3-year delay in reporting.

The [Health Effectiveness Data and Information Set](#) (HEDIS) is a widely used performance improvement tool in the health care field. HEDIS is sponsored by the National Committee for Quality Assurance (NCQA) and contains data on 190 million people who are enrolled in plans that report HEDIS results. NCQA collects HEDIS data annually.

The [National Immunization Survey-Teen](#) (NIS-Teen) is a phone survey sponsored by CDC's National Center for Immunization and Respiratory Diseases (NCIRD) and used to monitor vaccination coverage among teens aged 13–17, including for the HPV vaccine. Data are collected annually.

The [National Notifiable Diseases Surveillance System](#) (NNDSS) is managed by CDC's Center for Surveillance, Epidemiology, and Laboratory Services. The NNDSS collects, analyzes, and publishes health data for approximately 120 nationally notifiable diseases, including chlamydia, gonorrhea, and syphilis. These data, which CDC collects annually from state and local health departments, help public health officials monitor, control, and prevent disease in the United States.

The [School Health Profiles](#) is a system of surveys sponsored by CDC's National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention that assess school health policies and practices in states and large urban school districts. These surveys are conducted every other year, on even calendar years, by education and health agencies.

The [Youth Risk Behavior Surveillance System](#) (YRBSS) is sponsored and used by CDC's National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention to monitor health behaviors—including sexual behaviors related to STI, as well as tobacco, alcohol, and other drug use—that contribute to the leading causes of death, disability, and social problems in the United States. Data are representative of 9th through 12th grade students in public and private schools in the United States and collected every other year on odd calendar years.

# APPENDIX C: FEDERAL STEERING COMMITTEE, SUBCOMMITTEES, AND STAFF

Development and preparation of this first STI National Strategic Plan was led by the U.S. Department of Health and Human Services, Office of the Assistant Secretary for Health through the Office of Infectious Disease and HIV/AIDS Policy.

## Federal Steering Committee Members

### *Chair*

Carol Jimenez, JD  
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Office of Infectious Disease and HIV/AIDS Policy (OIDP)  
Office of the Assistant Secretary for Health (OASH)

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Carlette KyserPegram (beginning July 2020)  
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### ***Indian Health Service (IHS)***

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Jeff McCollum, DVM, MPH  
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# APPENDIX D: ACRONYMS

ACIP	Advisory Committee on Immunization Practices
ACF	Administration for Children and Families
ACL	Administration for Community Living
AI/AN	American Indian/Alaska Native
AIDS	acquired immunodeficiency syndrome
AMR	antimicrobial resistance
CARB	Combating Antibiotic Resistant Bacteria
CDC	Centers for Disease Control and Prevention
CMS	Centers for Medicare & Medicaid Services
DIS	disease intervention specialist
DSTD	Division of STD Prevention (CDC)
DoD	U.S. Department of Defense
DoE	U.S. Department of Education
DOJ	Department of Justice
ECHO	Extension for Community Healthcare Outcomes
ED	emergency department
EHE	Ending the HIV Epidemic
FDA	Food and Drug Administration
HAV	Hepatitis A Virus
HBV	Hepatitis B Virus
HCUP NEDS	Healthcare Cost and Utilization Project Nationwide Emergency Department Sample
HEDIS	Healthcare Effectiveness Data and Information Set
HHS	U.S. Department of Health and Human Services
HIV	human immunodeficiency virus
HPV	human papillomavirus
HRSA	Health Resources and Services Administration
HUD	U.S. Department of Housing and Urban Development
IHS	Indian Health Service
IOM	Institute of Medicine
MPT	multipurpose prevention technology

MSM	men who have sex with men
NAPA	National Association of Public Administration
NASEM	National Academies of Sciences, Engineering, and Medicine
NCHHSTP	National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention (CDC)
NCIRD	National Center for Immunizations and Respiratory Diseases (CDC)
NCSD	National Coalition of STD Directors
NIH	National Institutes of Health
NIS-Teen	National Immunization Survey-Teen
NNDSS	National Notifiable Diseases Surveillance System
OASH	Office of the Assistant Secretary for Health
OIDP	Office of Infectious Disease and HIV/AIDS Policy
OMH	Office for Minority Health
OPA	Office of Population Affairs
OSG	Office of the Surgeon General
OWH	Office on Women's Health
P&S	primary and secondary syphilis
PEP	post-exposure prophylaxis
PID	pelvic inflammatory disease
POC	point of care
PrEP	pre-exposure prophylaxis
RFI	Request for Information
SAMHSA	Substance Abuse and Mental Health Services Administration
SGM	sexual and gender minority
STD	sexually transmitted disease
STI	sexually transmitted infection
SUD	substance use disorder
TAG	Treatment Action Group
U.S.	United States
USPSTF	United States Preventive Services Task Force
VA	U.S. Department of Veterans Affairs
WHO	World Health Organization
YRBSS	Youth Risk Behavior Surveillance Survey

# APPENDIX E: REFERENCES

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