Program Operation Considerations for Sexually Transmitted Infection Prevention

2025

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PROGRAM OPERATION CONSIDERATIONS FOR STI PREVENTION

Introduction

Foreword

DEAR PARTNERS IN PREVENTION,

I am pleased to share the Program Operation Considerations for Sexually Transmitted Infection Prevention. This resource provides sexually transmitted infection (STI) programs with suggestions and considerations for planning, implementing, and evaluating STI prevention program activities. It is written for STI program managers and staff who have the demanding task of implementing, operating, and managing a prevention program while navigating constantly changing circumstances.

Preventing and reducing STIs is complicated by a variety of additional factors such as health care access, stigma associated with STIs, and lack of knowledge or misinformation about STIs. STI program managers may face challenges that are technical, policy-related, and/or fiscal, and that involve human resource management and intergovernmental relations. This resource is designed to support STI program managers and staff from various backgrounds in a way that is adaptable to local context. Whether STI program managers are from state, tribal, local, or territorial jurisdictions, I hope that these Considerations will assist them with navigating challenges using current resources and informative examples from the field of evidence-based practices to further enhance STI programmatic activities.

This document is separated into seven sections: Leadership & Program Management, Program Evaluation, Surveillance & Data Management, Medical & Laboratory Services, Disease Intervention, Community Engagement, and Outbreak Response. This resource focuses on evidence-based community interventions and addressing factors that affect aspects of STI prevention and control. Additionally, critical intersectional topics are emphasized, such as congenital syphilis, syndemics, and outbreaks.

This resource was developed collaboratively with input and guidance from CDC subject matter experts and external STI experts and consultants. This text provides overviews of topics relevant to STI prevention, highlights evidence-based practices, and offers training and professional development resources to support STI prevention efforts. It is our hope that these resources will continue to be widely used across the country in future planning and management of STI prevention efforts.

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Introduction—Program Operation Considerations for Sexually Transmitted Infection (STI) Prevention

The intended audience for this document is state, tribal, local, and territorial (STLT) STI program managers, staff, and other leaders involved in planning, implementing, and evaluating STI prevention programs. Content is divided into topical chapters that reflect the scope of an STI program. Each chapter provides a brief overview of the topic, highlights evidence-based best practices, provides training and professional development resources, details important resources, and provides real-life case studies as examples.

This document emphasizes key intersectional topics, such as congenital syphilis, syndemics, and outbreaks. Because the content in each chapter connects to content in other chapters, cross-references are provided throughout to help readers easily find more information.

These Considerations address the daily operations of STI programs. At the same time, the chapters address emerging issues and problems, suggest potential evidence-based interventions, highlight evidence-based best practices, and provide cost-effective options. Because programs are unique and locally driven, the information presented should be viewed as considerations for operation rather than requirements. All STI programs can establish their own local priorities, determine available resources, and evaluate their needs to control STIs based on the demographic distribution of infections in their areas and the conditions of their grants, contracts, or cooperative funding agreements.

STLT STI programs function in unique and complex social, governmental, and cultural environments. Some STI programs are fully integrated with other programs, such as human immunodeficiency virus (HIV) prevention, while others are not. Each jurisdiction differs in the prevalence and distribution of morbidity within its population, as well as the amount of financial resources allocated to STI prevention. Due to these differences, this resource provides information that may be tailored to meet the needs of a jurisdiction's priorities, morbidity, and resources.

To ensure appropriate engagement throughout the life cycle of a program, each STI program may research and determine the most appropriate and comprehensive list of partnerships representing those having an interest in their work. Any relevant parties listed in this document should be considered a guide and not a prescriptive or exhaustive list of those with whom STI programs should partner. STI programs may wish to continually revisit and reassess relevant partners as conditions change.

While some publications commonly use the term "sexually transmitted infection" (STI), which refers to a pathogen that causes infection through sexual contact, others use the term "sexually transmitted disease" (STD), which refers to a recognizable disease state that has developed from an infection. STDs are a subset of STIs, and CDC's National Notifiable Diseases Surveillance System (NNDSS) characterizes STDs as "diseases and conditions" rather than as infections. Consistent with the Consensus Study Report published by the National Academies of Science, Engineering, and Medicine in 2021, *Sexually Transmitted Infections: Adopting a Sexual Health Paradigm*,[1] this resource generally uses "STI" because the goal of STLT STI programs is to prevent and treat infections before they develop into a disease state.

Each chapter of this resource is designed to provide an overview of the topical areas necessary for success in STI prevention, including evidence-based best practices and examples from the field.

Program managers will face numerous obstacles, and although all chapters may not be relevant at any given moment, situations can change rapidly.

Familiarity with the content of these chapters may help a program manager quickly find information and resources when a challenge arises. This information may also provide STI program managers with ideas for improvement in daily activities and program planning.

To develop this resource, the Illinois Public Health Institute (IPHI) team held 16 subject matter expert (SME) workshops between March and June 2023 to gather recommendations. Each workshop was dedicated to a topic area and included participation from Centers for Disease Control and Prevention (CDC) SMEs and external consultants. Ahead of each workshop, SMEs were provided with questions to help identify current evidence-based best practices, outdated language, opportunities to restructure the document, guidance for outbreak response, and professional development resources across all sections. Throughout the development of the chapters, SMEs were continually consulted and reviewed all chapters to ensure that vital content is included and that all information is clear, concise, accessible, and easy to understand.

This document may be viewed as a companion to other publications such as Recommendations for *Providing Quality Sexually Transmitted Disease Clinical Services, 2020*[2] that assist in providing a comprehensive overview of STI prevention program activities.

Note: Links and resources in this document were current as of January 1, 2025.

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1 National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Population Health and Public Health Practice; Committee on Prevention and Control of Sexually Transmitted Infections in the United States. *Sexually Transmitted Infections: Adopting a Sexual Health Paradigm*. Edited by Jeffrey S. Crowley et. al., National Academies Press (US), 24 March 2021. doi:10.17226/25955.

2 Barrow, Roxanne Y., et al. "Recommendations for Providing Quality Sexually Transmitted Diseases Clinical Services, 2020." *MMWR Recommendations and Reports*, vol. 68, no. 5, 2020. http://dx.doi.org/10.15585/mmwr.rr6805a1.

PROGRAM OPERATION CONSIDERATIONS FOR STI PREVENTION

Leadership & Program Management

Introduction

Effective leadership enables program managers to not only lead their teams but also lead their communities and vested partnerships in sexually transmitted infection (STI) prevention. The goal of this resource is to help program managers, especially those who are new to the field, feel comfortable and confident in leading STI prevention efforts. Quality leadership is essential to overcoming complex challenges, providing structure and guidance to the program and staff leading the efforts, determining the direction of the program, and setting expectations for success. This chapter provides information for STI program managers on effective leadership and how an STI prevention program might be managed.

STI prevention programs exist in unique, complex, and dynamic social and health service settings. There are significant differences in availability of resources and range and extent of services among different project areas. These differences include the:

- burden of various STIs and health conditions in communities,
- range of public health communicable disease laws that apply to STIs,
- range and extent of preventive health services available, and
- availability of resources to provide STI services.
- Regardless of an STI program manager's background, it may be very helpful to review this entire resource. All chapters in this resource have been carefully designed to provide an overview to each of the topical areas needed for success in this role.

Program managers are encouraged to adapt the contents of this chapter to meet their specific local area needs. This chapter includes the basic principles of leadership and STI program management, but the information included is not exhaustive. For more details on specific topics, please look to the references and resources provided throughout the chapter.

What Is Leadership?

Sometimes the terms "leadership" and "management" are used interchangeably. While they are certainly related, they are not the same concepts.

Leadership is typically defined by its characteristics or the competencies needed by a leader. "In the era of Public Health 3.0, public health leaders work across sectors to address the social, environmental, and economic determinants of health."[3] "Leadership in public health can be observed, demonstrated, and fostered at all levels of an organization, irrespective of power and formal responsibilities afforded to management positions within a bureaucracy."[4]

Three types of leadership have been proposed as the most useful approaches to "improve health through a population-level-focused and community-centered public health approach."[5] These are:

- **Collective leadership** is a model that moves toward shared power. Collective leaders develop a sense of self-awareness, practice humility, remain open to learning, and actively seek to learn from, partner, and share power with those most affected by the challenges they hope to address. They prioritize investment in human capital and measure success in their capacity to collaborate and produce collective achievements. Developing mutually beneficial partnerships and relationships is essential in framing a shared vision and establishing goals and metrics for success.
- **Adaptive leadership** is an approach that prioritizes community engagement and meets communities where they are. Adaptive leaders are sensitive to community values and beliefs and work with communities to identify challenges and build solutions. Adaptive public health leaders are effective in helping to manage the stress that comes with change. This model complements collective leadership by highlighting the importance of trauma-informed care and asking public health leaders to ensure a safe, collaborative space while listening to the community. Most public health challenges require adaptive leadership skills and abilities.
- **Emergent leadership** complements the collective and adaptive leadership models and is intended to generate transformational change through applied systems theory.

According to an extensive review of leadership in public health,[6] five general categories of leadership competencies (also termed capabilities) were identified related to managing the self, building teams, achieving results, creating coalitions, and transforming systems. A brief description of each appears in the table below.

Table 1.1

SUGGESTED PUBLIC HEALTH LEADERSHIP COMPETENCIES OR CAPABILITIES[7]

COMPETENCY/CAPABILITY	DESCRIPTION
Lead self	Self-motivated leaders are self-aware, manage themselves, demonstrate character, and are able to work independently with little direction.
Engage others	Engaging leaders foster the development of others, contribute to the creation of healthy organizations, communicate effectively, and build teams.
Achieve results	Goal-oriented leaders set direction, strategically align decisions with vision, values, and evidence, take action to implement decisions, and regularly assess and evaluate process, impacts, and outcomes.
Develop partnerships	Collaborative leaders purposely build partnerships and networks to create results, demonstrate a commitment to patients and service, mobilize knowledge, and navigate sociopolitical environments.
Systems transformation	Successful leaders demonstrate systems/critical thinking, problem-solving skills, encourage and support innovation, orient themselves strategically to the future, and champion and orchestrate change.

RESOURCE

Resources for Leadership & Program Management

Reimagining Public Health Leadership|APHA

TRAINING & PROFESSIONAL DEVELOPMENT FOR LEADERSHIP & PROGRAM MANAGEMENT

Adaptive Leadership: Strategies for Public Health|CDC TRAIN

The North Dakota Public Health Training Network has video lectures on Public Health Leadership and Management posted on YouTube at the links below.

- (L003) Public Health and Leadership—Introduction
- (L006) Introduction to Management and Public Health Leadership
- (L007) Management Functions—Management and Public Health Leadership

What Is Program Management?

Program management can be thought of as an organizational function that oversees a group of individual projects or interventions (such as STI clinics, community outreach and education, and policy) linked together through a shared organizational goal (such as to reduce the number of STIs) or common area of impact. Grouping these interventions together in a unified program increases the likelihood of success by achieving synergy between the interventions, consistent management, and greater visibility to relevant parties. Program management relates to the coordination and oversight of day-to-day activities needing to be carried out to achieve a leadership vision.

Onboarding for New STI Program Managers

What should a new STI program manager expect?

An effective STI program manager possesses a wide range of managerial skills and technical knowledge. Those responsible for managing and directing STI programs come from a variety of backgrounds: some may have bachelor's degrees in different subjects with little to no STI experience, while others may have advanced public health degrees, and others may be medical professionals or former Disease Intervention Specialists (DIS). As a result of this wide range of knowledge and experience, some content in this chapter may be known to readers already while other content may be new. Additionally, the structure and organization of a given STI program necessitates varying duties for the program manager—for example, one who manages a county health department STI program has different responsibilities than that of a tribal, territorial, or state STI program manager.

Preventing and reducing STIs are complicated by a variety of additional factors such as health care access, differences in STI prevalence and incidence, stigma associated with STIs, and lack of knowledge or misinformation about STIs. STI program managers may face challenges that are technical, policy-related, legal, and/or fiscal, and that involve human resource management and intergovernmental relations, thus complicating the basic job. In the book, *Impossible Jobs in Public Management*, the authors propose four conditions that make a job "impossible." These are:

1. the publicly perceived legitimacy of the clientele;
2. the intensity of the conflict among the agency's constituencies;
3. the public's confidence in the authority of the profession; and
4. the strength of the agency's long-term, idealistic goal.[8]

The book's authors propose that any agency serving the public may have a strong, long-term, idealistic goal, but the various climates in which the agency operates may compromise attainment of that goal. Applying this idea to a state, tribal, local, or territorial (STLT) STI program means there may be challenges inherent in the role that make successful completion of STI work demanding and can make the job feel "impossible." Success will often depend on one's ability to think outside the box. This information is not meant to discourage program managers, but to both acknowledge these challenges and to help program managers develop the determination needed to face challenges with confidence and conviction.

CDC provides funding to health departments to implement and strengthen STI prevention and control programs. A new STI program manager likely will not be required to create an STI program from scratch. Rather, they will step into a defined role with staff already hired, funding in place, and policies and procedures already in place; and they may have little ability to change these factors. Because of this reality, there will be limited opportunity for the STI program to begin with a community or statewide needs assessment to build a new program. Additionally, the STI program manager may only be able to accomplish incremental change rather than a complete overhaul. This should not be viewed as a failure.

Program managers will face numerous challenges, and it is true that not all sections of this resource may be relevant at any given moment, depending on their specific situations. However, it is also true that situations can change very quickly; even if an STI program manager does not currently have the resources to take on certain tasks, the situation could change quickly. Conversely, funding believed to continue into the future could suddenly be lost due to budgetary issues outside of the control of an STI program. Program managers need to be effective, dynamic leaders, ready to change direction and course quickly and without hesitation. Even the most experienced leaders should prepare themselves so they can be ready to face unprecedented challenges.

RESOURCES

Resources for Leadership & Program Management

If STI program managers have any questions, they may consult their CDC project officer, who can provide information, share best practices, facilitate collaboration with other CDC-funded programs, and find appropriate staff at CDC to help answer specific questions. Program managers could also reach out to STI managers in other states or through CDC to find additional support. In some situations, mentoring by an experienced STI program manager may be helpful by providing insight to the role, highlighting potential solutions to questions, and also sharing case-specific strategies that a new manager could adopt. STI program managers could take advantage of peer-to-peer learning opportunities coordinated by their CDC project officer or other partner organizations.

CDC PCHD Basecamp

My NCSD Homepage

What is essential learning for new STI program managers?

New STI program managers can benefit by having a solid understanding of key concepts and factors that will impact their role. The following is a suggested progression of training topics and material (when possible) on these foundational topics. These trainings are offered in a stepwise fashion because understanding will build incrementally. Some find a checklist to note dates of accomplishment to be a valuable training tool, so an example checklist is included as an appendix to this resource.

BEST PRACTICE

New STI program managers can benefit by having a solid understanding of key concepts and factors that will impact their role.

TRAINING & PROFESSIONAL DEVELOPMENT

FOR LEADERSHIP & PROGRAM MANAGEMENT

For foundational knowledge on STIs, new managers can consider completing the following trainings:

- DIS Fundamentals Training Plan | CDC TRAIN, which includes eight disease-based learning modules (provides fundamental disease intervention (DI) skills for those conducting partner services)
- National STD Curriculum | University of Washington Infectious Diseases Education & Assessment (IDEA) Program, all modules (clinical curriculum geared toward medical providers)

1. STIs—including natural history, transmission, prevention, symptoms, and sequelae.
2. Local training and key information on how STI programs operate, including how the agency employing them (whether a state, tribal, or local health department or nonprofit agency) fits into the state's organizational authority (see Resources box for more information) for health entities. Understanding how this applies to STI programs is important to correctly address local problems—for example, when declaring an outbreak or seeking a treatment order.

RESOURCES

Resources for Leadership & Program Management

ASTHO Profile of State and Territorial Public Health | ASTHO—Navigate to Governance tab from the three-line icon at top right of the website screen for more information.

State and Local Regulatory Authority in Public Health | Public Health Law Center

New Health Officials: Resources | Public Health Gateway | CDC

Principles of Home Rule | National League of Cities

3. Disease intervention activities and practices, including:
   a. how the jurisdiction's DIS are allocated,
   b. STI clinical services available in the jurisdiction,
   c. prioritization of cases for DIS investigation, and
   d. status of STI morbidity in the jurisdiction.

CROSS-REFERENCE

For more information and resources on these essential topics, see the Surveillance & Data Management chapter, the Medical & Laboratory Services chapter, and the Disease Intervention chapter.

4. The STI organization's key federal partnerships including:

Agencies of Federal Government

- Centers for Disease Control and Prevention (CDC), through the Division of STD Prevention (DSTDP)—the main funder of STI programs in the U.S.—and the Division of HIV Prevention (DHP)
- Ryan White HIV/AIDS Program | HRSA funds primary care services for those with HIV infection
- Maternal and Infant Health: An Overview | Maternal Infant Health | CDC
- STI National Strategic Plan Overview | HHS
  The STI National Strategic Plan aims to provide a road map for a broad range of relevant partners—including public health, health care, government, community-based organizations (CBO), educational institutions, researchers, private industry, and academia—to develop, enhance, and expand STI prevention and care programs at the STLT and national levels.

National organizations and associations

- Association of State and Territorial Health Officials (ASTHO)—a national nonprofit association that supports the work of state and territorial public health officials and advocates for public health policy nationwide.

- Council of State and Territorial Epidemiologists (CSTE)—a national nonprofit association of public health epidemiologists in U.S. member states and territories.
- National Alliance of State and Territorial AIDS Directors (NASTAD)—a nonpartisan nonprofit association that represents public health officials who administer HIV and hepatitis programs in the U.S.
- National Association of County and City Health Officials (NACCHO)—a national nonprofit association representing local public health departments in the U.S.
- National Coalition of STD Directors (NCSD)—a national public health membership organization representing health department STI directors, their support staff, and community-based partners across the U.S.

5. Training on the role of partnerships with local health care providers—including physicians, advanced practice providers, and other medical professionals, hospitals, community health centers/Federally Qualified Health Centers (FQHCs), and other clinics.

   In the U.S., private health care providers (not dedicated STI clinics) test most patients for STIs, report the majority of cases, and treat the majority of patients.[9] As such, they are vital partners in STI prevention and control.

CROSS-REFERENCE

Community Engagement for Leadership & Program Management

For more information on how to build and sustain meaningful partnerships, see the Community Engagement chapter of this resource.

6. Laboratories—The new STI manager will often develop a relationship with the public health laboratory serving the jurisdiction.

CROSS-REFERENCE

Medical & Laboratory Services for Leadership & Program Management

See the Medical & Laboratory Services chapter of this resource for more information on the laboratory services functions of an STI program.

7. Local health departments, CBOs that work with STI program clients, maternal and child health programs, and HIV programs. It is through these organizations that many STI program clients will be identified or referred.
8. State-level decision-makers affecting the jurisdiction's STI program. These could include the state epidemiologist, STI and HIV program managers and programs, and the state health commissioner, among others.
9. Detailed information about the current state of the new program manager's specific STI program in the STLT jurisdiction, including its:
   - organizational chart, staff contact information, and staff areas of expertise;
   - current program functions;
   - current funding streams;
   - current mission statement, vision statement, goals, values, and strategy (if these exist);
   - current partnerships and collaborations;
   - current grants and grant cycle schedules;
   - current status of the program: gaps, needs, and urgent tasks; and
   - current program technology and program resources.

10. STI program managers benefit from having an understanding of basic epidemiologic principles and practices so they may understand what the determinants of STI rates are in their jurisdiction. CSTE has a self-assessment tool that helps identify the level of proficiency with Applied Epidemiology Competencies (AECs) so that a person with responsibility for epidemiology may seek additional training to address the competencies. The self-assessment tool may be found at this link: Applied Epidemiology Competencies (AECs)|CSTE.

CROSS-REFERENCE

Outbreak Response for Leadership & Program Management

During infectious disease outbreaks, STI program managers and their teams will likely have a primary role in managing the outbreak, often including conducting investigations of STIs. Effective leadership skills are helpful during an outbreak response, but STI program managers may also want to review additional skills detailed in the Outbreak Response chapter of this document for more information.

CROSS-REFERENCE

Surveillance & Data Management for Leadership & Program Management

Within the Surveillance & Data Management chapter of this resource, many training links and basic epidemiologic information are provided to assist STI program managers.

Resource Management for STI Programs

STI programs rely on both financial and human resources. Financial resources often come from a variety of sources that include federal, state, local, and philanthropic, as well as those received from fees or medical billing. Human resources include the staff working in the STI program as well as the community partners assisting STI programs with achieving goals and serving patients.

As described throughout this document, resources in public health, particularly in STI prevention, can change quickly and drastically without warning. For this reason, an effective leader benefits from a strategic approach to managing the resources available to STI program managers. The key resources for STI programs can be organized into three categories: funding, workforce, and partnerships.

Funding

At the federal level, the federal government is accountable to Congress and the taxpaying public to act as good stewards of public funds by ensuring these funds are used to deliver the measurable outcomes intended by the program. This responsibility extends to public managers in all levels of government, regardless of the program area. STI program managers can use information in this section to help them handle public funds responsibly and in line with the law.[10]

GRANTS

STLT jurisdictions may all have different methods of responding to local grant opportunities and notices of federal funding opportunities (NOFO)—some STI program managers write the application on behalf of the health department while others have grant writers who perform this function. When the applicant is a state government, personnel from the Finance section are often directly involved with budget development. Likewise, multiple state reviews may be required before submission, thus adding to preparation time. New STI program managers would benefit by learning their jurisdiction's process before an application needs to be written.

It is beyond the scope of this resource to state exactly what items will be required by any local or federal NOFO. CDC requirements for applications in response to the STI NOFO may differ depending on the project period (usually five years) and the budget period (usually one year). However, most applications—whether local, federal, or philanthropic—require the same general items. These include a problem statement, how the applicant plans to address the problem, and a budget.

CROSS-REFERENCE

Program Evaluation for Leadership & Program Management

For details and resources on how to define goals and objectives, please refer to the Program Evaluation chapter of this resource.

There are two primary CDC methods of funding: grants and cooperative agreements. A grant is a type of

> financial assistance support mechanism providing money, property, or other direct assistance in lieu of money, or both, to an eligible entity to carry out an approved project or activity… A grant is used whenever the awarding office anticipates *no substantial programmatic involvement* with the recipient during performance of the financially assisted activities.[11]

Conversely, a cooperative agreement is used when there will be substantial federal programmatic involvement.[12] Substantial involvement means that the awarding office program staff will collaborate or participate in project or program activities as specified in the NOFO. STI programs funded by CDC at the STLT levels (if directly funded) are assigned a CDC project officer who will work with the STI program manager to provide technical assistance throughout the period of the cooperative agreement.

RESOURCES

Resources for Managing Funding

Grants|Funding|CDC

Tips for Preparing Grant Applications|Grants|CDC

About STI Funding|STI Funding|CDC

Federal Grants Management Training Series|CDC TRAIN—a self-guided training series that provides nonfederal entities with the information needed to assist with the successful and compliant management of federal grants and cooperative agreements

How to Apply|Grants|CDC

Budget Preparation Guidelines|CDC

SPACE Tool 2.0—STI Prevention Allocation Consequences Estimator—a tool created for state and local STI programs to estimate the impact of changes in their budgets

340B PROGRAM

While a state may purchase its own medications from a variety of sources to treat STIs, an important resource that allows STI programs funded by CDC through its authority under section 318 of the Public Health Service Act to buy discounted STI medication is the federal 340B Drug Pricing Program administered by Health Resources and Services Administration's (HRSA) Office of Pharmacy Affairs (OPA). This program allows certain covered entities (such as community health centers, Ryan White HIV/AIDS Program (RWHAP) grantees, and tuberculosis (TB) or STI programs/STI clinics, among others) to purchase medications at a price that is often deeply discounted from the price otherwise available to clinics.[13] Entities must register on the HRSA website during the first 15 days of the calendar quarter before their first purchase.[14] Each state's STI program manager assures HRSA that the clinics applying are considered STI clinics receiving 318 funding or in-kind services in that jurisdiction. The patient does not need to have any type of insurance to receive these discounted medications. Eligible medications are not limited to only those that treat the STI, provided that the medication is "associated with a service for which the covered entity is responsible… to the patient, to the extent it aligns with the patient definition and is consistent with the scope of the [318] grant."[15]

STI program managers are encouraged to reference the current cooperative agreement or grant restrictions and their notice of award, as well as seek clarification from their CDC project officer.

STI DRUG SHORTAGES

According to the Food and Drug Administration (FDA), drug shortages "can occur for many reasons, including manufacturing and quality problems, delays, and discontinuations."[16] When the drugs in short supply are used to treat STIs, it may cause difficulties for jurisdictional STI programs and STI clinics in addition to clinicians in private practice who may be unable to treat patients and prophylactically treat partners. STI programs may consult CDC STI Treatment Guidelines for alternative therapies to use until the first-line recommended treatment is no longer in short supply. Visit the FDA's Drug Shortages page for more information on all current and resolved drug shortages and discontinuations. The FDA has a mobile app to track drug shortages. More information about the mobile app can be found in this announcement from NACCHO: FDA Launches Drug Shortages App.

CDC's STI Treatment Guide Mobile App offers quick and easy access to streamlined STI prevention, diagnostic, and treatment recommendations and is updated with alerts when there is a drug shortage. Additional information about the availability of STI testing and treatment products can be found here: Availability of STI Testing & Treatment Products|CDC.

Steps jurisdictions may take during times of low availability of STI treatment products include:

1. Monitor inventory so that the jurisdictional STI program is aware of the amount of stock on hand and corresponding medication expiration dates. Contact the local distributor of medication used by the STI program to determine their stock on hand and notify the manufacturer if the distributor has less than a two-week supply.
2. Develop a treatment priority strategy based on the expected number of patients and partners needing treatment and the amount of stock on hand. Such a priority should emphasize treatment of pregnant women and babies (if they are unable to be treated with an alternative medication).[17]
3. Communicate with health care providers and pharmacists to make them aware of the problem and any plan suggested to address it.
4. Notify DSTDP for situational awareness. STI programs may reach out to the jurisdictional CDC project officer for assistance and questions.

Some STLT STI programs have also polled each STI clinic in their jurisdiction to assess the stock on hand at the clinic level to determine whether inventory may be shifted from a clinic in a low morbidity area to one in a higher morbidity area until the shortage is resolved.

RESOURCES

Resource for Improving Access to Critical Medications

Improving Access to Critical Medications: A Policy Toolkit for Health Agency Program Leadership|ASTHO

TRAINING & PROFESSIONAL DEVELOPMENT

FOR LEADERSHIP & PROGRAM MANAGEMENT

The 340B Prime Vendor Program, as part of its agreement with HRSA, provides online tutorials, templates, and other tools to aid in educating and informing relevant parties about the 340B Program.

Specifically, the 340B Prime Vendor offers educational programs, including 340B University and 340B University OnDemand. They also operate a call center and have a database of FAQs. These educational materials have been reviewed and approved by HRSA. Please visit the 340B Prime Vendor Program website for more information.

Additional resources are available through NCSD: 340B Basics and Beyond|NCSD and 340B and Ending the Epidemics|NCSD

Workforce

The workforce can be considered the most important asset of any STI program, as a capable workforce can support leadership in navigating volatile conditions related to other resources, such as funding.

To run an STI program effectively, the minimum staff functions are as follows:

- surveillance,
- epidemiology,
- grants and contracts management, and
- disease intervention.

The roles and responsibilities of staff who carry out these functions can be combined or separated depending on local factors including jurisdictional limitations, disease burden, and resources. For example, if there is a staff departure, some staff may need to be cross-trained and assist in other program areas to effectively continue the work of the program. This can be achieved through prioritization of the most important work and the most urgent deadlines. STI program managers may contact their CDC project officer to obtain more direct guidance on how to balance roles and responsibilities for their specific program.

RECRUITMENT AND HIRING

To find the best employees, it is helpful to cast a wide net. Having relationships in the communities a program serves can assist in making sure communities feel heard and their needs are being met. Community partners can also play key roles in recruitment and hiring.

Commonality between patients and their providers results in improved communication, decision-making, and adherence to care plans for some patients.[18] When STI programs and clinics hire staff who come from the communities they serve, it may help clients feel more comfortable, and the resulting satisfaction may contribute to enhanced health care experiences and outcomes.[19]

In the case of STI programs, the role of DIS can be a particularly good fit for people who come from the communities a program serves.[20]

It can be helpful to share job listings with community partners in advance to review the job description and qualifications. To help make sure that job postings reach members of priority populations, STI program managers can consider partnering with community organizations and local or statewide agencies that work directly with these populations to determine the best places to distribute the job posting.

Local academic institutions can also be great partners for recruitment and hiring. For example, STI programs can work with undergraduate public health programs to encourage public health students to consider health departments and other public health agencies.

HIRING AND RECRUITMENT

APHA provides suggestions for recruitment and hiring.[21]

Instead of relying on academic credentials to identify quality candidates, consider adding supplementary or replacement experiential qualifications such as experience with community engagement.

To increase transparency in hiring, consider:

- including salaries in job postings,
- being explicit about the hiring timeline, and
- communicating with rejected candidates about how they could improve their candidacy for future openings.

For more resources for hiring, see the Resources box below.

RESOURCES

Resources for Hiring in STI Programs

DIS Funding Barriers and Ideas | NCSD

DIS Interview Questions | NCSD

TRAINING AND PROFESSIONAL DEVELOPMENT

Once quality staff are hired, they need to be trained. People come to STI work from many different backgrounds, and each program and role has different needs, so it is impossible to provide prescriptive guidance on training. However, for STI program staff who are new to public health or new to STIs, the following trainings may be useful to get them up to speed.

- CDC Public Health 101 Training Plan | CDC TRAIN
- National STD Curriculum | University of Washington Infectious Diseases Education & Assessment (IDEA) Program (clinical curriculum geared toward medical providers)
- DIS Fundamentals Training Plan | CDC TRAIN

Professional development goes beyond initial training to help staff strengthen or develop new skills. Providing professional development for staff is a way to recognize and appreciate the potential of high-performing staff as well as to help boost the confidence of staff who are struggling in certain areas. Investing in staff professional development may also help with employee satisfaction and retention.

RESOURCES

Resources for Professional Development for STI Program Staff

Workforce Development | CDC—a collection of resources from CDC and partners to support efforts to develop, train, and sustain a strong public health workforce.

DIS Training Plan | NCSD—includes foundational, advanced, and topic-specific trainings for DIS.

National Network of STD Clinical Prevention Training Centers | NNPTC

About Training and Workforce Development | Division of Laboratory Systems (DLS) | CDC

Training | Health Care Education & Training—provides trainings, webinars, and learning modules on a variety of topics for professionals in the field of sexual health.

Cross-training is also a valuable investment in STI program staff. It can be particularly helpful in small program teams, as people may need to wear multiple hats during emergencies. Any staff who may play a role in outbreak response may benefit from taking the Federal Emergency Management Agency (FEMA) Incident Command System (ICS) trainings: ICS Resource Center | FEMA.[22] Opportunities also exist for cross-training DIS staff to support other types of infectious disease work.[23]

For more information on training and resources related to specific areas covered in this resource—such as Program Evaluation, Surveillance & Data Management, Disease Intervention, or Community Engagement—refer to the Training & Professional Development boxes in the appropriate chapters.

STI program managers themselves can also benefit from ongoing training and professional development. Issues like fair decision-making, conflict management, coaching, and performance management are some examples of areas for managerial professional development. See the Resources box below for more information.

RESOURCES

Resources for Leadership & Program Management

Public health leadership and management in the era of Public Health 3.0|Journal of Public Health Management and Practice

Using Fair Process to Make Better Decisions| The Management Center—describes a process for including your team in a meaningful way in the decision-making process for things that will affect them.

6 Tips for Leading Through Conflict in the Workplace|Center for Creative Leadership

5 Strategies for Conflict Resolution in the Workplace|Harvard Business School

CROSS-REFERENCE

Outbreak Response for Leadership & Program Management: Building Surge Capacity

In an outbreak situation, an STI manager may need to quickly identify additional staff who can help with such tasks as data entry, calling health care providers, medical chart abstraction, case interviewing, and testing, among others. This rapid need for staffing, or surge capacity, is vital to a speedy outbreak response.

A method to consider putting into place prior to an outbreak is to establish a relationship with a local school of public health for this purpose. Four pilot universities were identified to receive a CDC grant in 2000 to create Academic Centers for Public Health Preparedness. As of 2009, this innovative way of using public health students to aid in outbreak investigations included 37 schools of public health. While this grant funding has ended, STI programs could create such partnerships with local universities' schools of public health on their own.

> Local and state public health departments often require surge capacity during emergencies or unusually large outbreaks.... A program using student or faculty volunteers provides surge capacity for the health department at low cost, while providing the volunteers an opportunity to obtain experience in public health practice at a local health department.[24]

For more information on responding to outbreaks, see the Outbreak Response chapter of this resource.

Partnerships

Partnerships with relevant organizations and individuals are important for any STI program to achieve its objectives. An examination conducted in 2009 among 58 STLT STI programs found that 516 different partnerships (median of seven) were identified by these programs, including health care providers, public health agencies, nonprofit community-based organizations, and members of affected communities.

Identified most often were CBOs, cited by 17 percent of STI programs; school-based health clinics, cited by 12.7 percent; and correctional facilities, cited by 11.9 percent.[25] Leaders of STI programs often have the responsibility to identify, create, and maintain productive partnerships in their jurisdictions.

CROSS-REFERENCE

STI programs cannot do all the work needed to reduce STIs alone; they require many partnerships in order to be effective. Important partnerships for STI programs are discussed in more detail in the Medical & Laboratory Services, Disease Intervention, Community Engagement, and Outbreak Response chapters of this resource.

BEST PRACTICE

An effective leader benefits from a strategic approach to managing the resources available to STI program managers.

FOCUS ON CONGENITAL SYPHILIS (CS)

STI program leadership needs an ongoing understanding of not only the number of CS cases in the jurisdiction but also of what institutional and patient-level factors contribute to morbidity. Consider using the CS missed opportunities cascading framework[26] to categorize reasons why each CS case was not prevented in a jurisdiction to inform prevention efforts. Achieving this local understanding allows the STI program to prioritize prevention interventions.

Policy Process

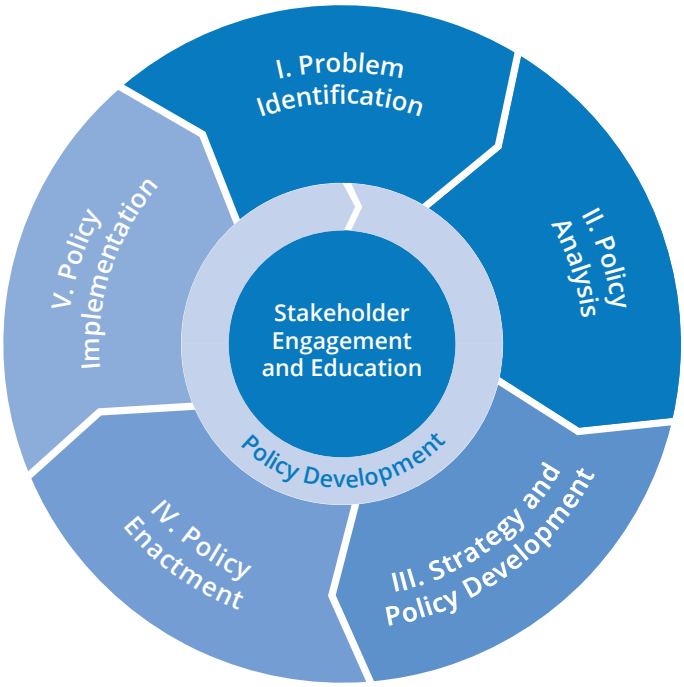
Involvement in policy

STI program managers will often have responsibility for suggesting new policies or amendments to existing policies. An extensive discussion of policy can be found in the Disease Intervention chapter of this resource. Additional information can be found on CDC's POLARIS portal for navigating policy-relevant tools, trainings, and resources. There are several models of the policy process, often using a cycle, since it is expected that a policy may be changed after evaluation to make improvements. In CDC's Policy Process cycle, evaluation is seen as ongoing so that changes can be incorporated. The steps in CDC's Policy Process cycle are all expected to include involvement of relevant parties and are delineated as:

- *Problem identification*—Specifically identify the problem your policy seeks to address. Use data to describe the problem. Be specific—for example "lack of access to fresh fruits and vegetables" (instead of "obesity") or "barriers to sustaining HIV treatment" (instead of "HIV and AIDS").
- *Policy analysis*—This step requires an examination of possible policy decisions that could be made. This is usually done through a literature review, seeking out existing policies on the topic that might have been effective in other jurisdictions, and searching best practices. After options are identified, they are prioritized, often by use of public meetings involving relevant parties, to identify the most promising solution to the problem.
- *Strategy and policy development*—Develop the methods that will be used to move the chosen policy from an idea to a reality. These can include logistical steps and creating a list of those who would support and oppose the policy as well as creating documents to explain the need for the policy chosen.
- *Policy enactment*—This step formalizes the policy as agreed upon, through passing legislation, promulgating rules, or creating an institutional policy.
- *Policy implementation*—This is where the policy, as enacted, is put into place.

Figure 1.1

THE POLICY CYCLE



Source: CDC Policy Process | POLARIS | Policy, Performance, and Evaluation | CDC

The limits to STI program staff involvement with legislation are discussed below, but there are still many policy actions that are permissible for STI programs that can make a positive difference to the communities they serve.

Some scholars categorize policy as "big P" and "little p" policy. "Big P" policy refers to legislation or formal laws, rules, and regulations enacted by elected officials, such as a state legislature or the United States Congress (Brownson, Chriqui, & Stamatakis, 2009; The Community Foundation for Greater Atlanta, 2008). These policies include laws that regulate the resources

and behaviors of individuals, organizations, and businesses. In contrast, "little p" policy refers to policies (e.g., organizational guidelines, internal agency decisions, or memoranda) that guide organizational behavior and functions.[27]

Creating STI clinic policies and procedures is an example of "little p" policy that can improve the experience and care of patients. Providing data and resources to help communities create health care facility policies that are welcoming to STI patients is another example of how STI leaders can be involved in policy. When an STI program manager assists with the state's revision of its communicable disease reporting regulation, this also constitutes policy involvement.

Allowable policy practices

An organization receiving federal funding is prohibited from lobbying state, federal, or local legislators to influence legislation or increase funding.[28] Certain policy practices, however, are not prohibited. STI programs may perform such activities as:

- providing materials to lawmakers, the public, or the media that describe the performance of a federally funded program, how the organization uses federal funding, or what it accomplishes;
- providing an analysis of a specific piece of legislation on an organization's website or elsewhere, including information on how it might impact people;
- inviting lawmakers to visit a program so they can see how funding is being used; and
- providing factual testimony to state, local, or federal lawmaking bodies.

While policy activities represent an important function of STI programs, care must be taken to understand the limits of what constitutes allowable activities. Since violating this prohibition has such serious consequences for federally funded programs, it would be important to always reference the terms and conditions listed in the federal funding award and seek guidance from local supervisors, the CDC project officer, and/or legal counsel before proceeding.

RESOURCES

Policy Resources for Leadership & Program Management

A Quick-Start Guide to Using Evidence-Based Policy at a Local Level|CDC

State statutes explicitly related to sexually transmitted diseases in the United States, 2013|Public Health Law Research|Temple University

Policy Considerations for Reducing Congenital Syphilis|ASTHO

Policy Success Stories|NCSD

BEST PRACTICE

While certain policy activities represent an important function of STI programs, care must be taken to understand the limits of what constitutes allowable activities.

Communications

Communication is another important piece of leadership for STI program management. While communications for STI programs are covered in greater detail in other chapters, certain aspects of communications are particularly relevant for leadership. A primary responsibility of leadership is understanding the intended or desired audiences for communications and the best means of relaying those messages, while taking into consideration contextual factors specific to a given time and jurisdiction.

While program staff can prepare and carry out many communications tasks for an STI program, media engagement will likely be the responsibility of the program manager or the designated media liaison for the health agency. In some jurisdictions, program staff are prohibited from having direct contact with the media, so STI program staff's role is to act as subject matter experts (SMEs) on the communication by drafting it for higher-level review. If the communication is intended for a website there likely will be other health agency personnel, such as information technology (IT) staff, who will need to be involved. STI program managers can determine who in their organization is the designated communications contact. The resources below provide an overview of health communications and links to further relevant information.

RESOURCES

Resources for Communications

Gateway to Health Communication | CDC

Guidance & Tools | Health Literacy | CDC

CROSS-REFERENCE

For more information on STI program communications related to the following topics, see the associated chapters.

Program Evaluation—dissemination of evaluation results

Surveillance & Data Management—informing the public and policymakers about disease prevalence and trends

Community Engagement—understanding and engaging with communities for effective communications

Outbreak Response—declaring an outbreak and informing the public

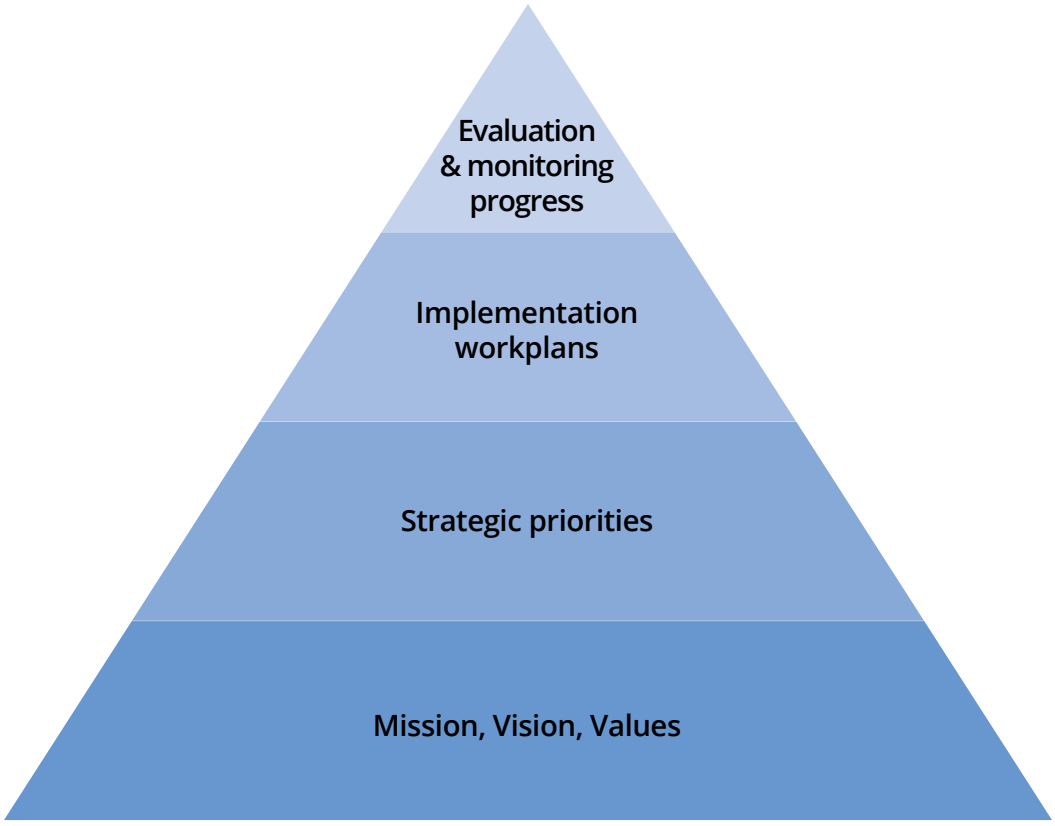
Strategic Planning

Once STI program managers understand their staff needs, community needs, and available resources, they can consider engaging in strategic planning. Strategic planning helps guide and coordinate a program's efforts to avoid a reactionary "crisis management" approach to STI prevention.

The Public Health Accreditation Board (PHAB) Strategic planning is a process for defining and determining an organization's roles, priorities, and direction. A strategic plan sets forth what an organization plans to achieve, how it will achieve it, and how it will know if it has achieved it. The strategic plan provides a guide for making decisions on allocating resources and on taking action to pursue strategies and priorities.[29]

Figure 1.2

ELEMENTS OF A STRATEGIC PLAN



Source: Association of State and Territorial Health Officials. Strategic Planning Guide: Guidance and Resources to Assist State and Territorial Health Agencies in Developing a Strategic Plan. www.astho.org/globalassets/pdf/accreditation/strategic-guidance-planning-guidance-and-resources-for-sthos.pdf.

Table 1.2

KEY TERMS FOR STRATEGIC PLANNING

STRATEGIC PLANNING COMPONENT	DESCRIPTION
Mission	One sentence that clarifies why the organization exists, what it does, and whom it serves
Vision	A concise statement (usually one sentence) that articulates what the organization wants to achieve and what success would look like
Values	Definitions of specific characteristics the organization wants to be known by and/or knows they need to improve upon that the organization sees as important enough to track and measure at periodic intervals
Goals	A broad statement about the long-term expectation of what should happen as a result of the program (the desired result). Serves as the foundation for developing program objectives. Criteria: 1. Specifies the STI problem or STI-related health factors. 2. Identifies the priority population(s) for the program.
Objectives	Statements describing the results to be achieved and the manner in which they will be achieved. Multiple objectives are usually needed to address a single goal. SMART attributes are used to develop clearly defined objectives.[30] • **S**pecific: includes the "who," "what," and "where." Use only one action verb to avoid issues with measuring success. • **M**easurable: focuses on "how much" change is expected. • **A**chievable: realistic given program resources and planned implementation. • **R**elevant: relates directly to program/activity goals. • **T**ime-phased: focuses on "when" the objective will be achieved.

The mission, vision, and values form the foundation of a strategic plan. Strategic priorities build upon this foundation by focusing the plan and articulating goals and objectives to achieve those priorities.

Detailed work plans are then developed and implemented. Once implementation is underway, monitoring and evaluation are carried out to measure progress and identify successes, as well as opportunities for course correction.

CROSS-REFERENCE

Program Evaluation for Leadership & Program Management

For more information on goals, objectives, and why, when, and how to conduct evaluation, see the Program Evaluation chapter of this resource.

STI STRATEGIC PLANNING AS ADAPTIVE EVOLUTION

Strategic planning can also be viewed as a cyclical process, with sequential steps circling back to the beginning for continuous evolution.

Figure 1.3

STRATEGIC PLANNING PROCESS

Source: Association of State and Territorial Health Officials. Strategic Planning Guide: Guidance and Resources to Assist State and Territorial Health Agencies in Developing a Strategic Plan. *www.astho.org/globalassets/pdf/accreditation/strategic-guidance-planning-guidance-and-resources-for-sthos.pdf*.

This cyclical view of strategic planning may be particularly useful for STI program managers, as public health funding and priorities can change suddenly and substantially. For this reason, it can be helpful if a strategic plan is flexible and allows for ongoing adjustments of program operations as new appropriations, laws, rules, trends, funding opportunities, and crises come into effect. Effective leadership will require STI program managers to be as flexible as possible when shifting priorities to maximize federal spending and meet their program's needs.

While many detailed guides exist for every step of strategic planning, the ASTHO Strategic Planning Guide offers this helpful overview that can be particularly relevant for STI program managers in fast-changing environments:

> In short, the key to high strategic effectiveness is formulating a "good enough" plan [and] implementing it with candor about what is working and what is not so that real-time adjustments can be made to make the plan increasingly more effective.[31]

The "good enough" qualifier is not meant to minimize the importance of a well-thought-out plan but to warn against perfectionism. In selecting a time and focus for strategic planning, STI program managers are encouraged to start where it makes the most sense for their program based on their assessment of staff needs, community needs, and available resources.

RESOURCES

Resources for Strategic Planning

How-to guides, workbooks, and videos along with examples of high-quality strategic plans at the local health department level: Strategic Planning | NACCHO and Mobilizing for Action through Planning and Partnerships (MAPP) | NACCHO

Detailed guidance and examples of each element of a strategic plan at the state health department level: Strategic Planning Guide | ASTHO

STI Prevention Priorities | CDC

STI National Strategic Plan (2021–2025) | HHS

STI Federal Implementation Plan (2021–2025) | HHS

The Indigenous HIV/AIDS Syndemic Strategy | Indian Country ECHO

BEST PRACTICE

Communications and strategic planning are important pieces of leadership for STI program management.

Conclusion

This chapter provides information and best practices for STI program managers on effective leadership and how all aspects of a program might be managed. It also includes information pertaining to principles and models of leadership, onboarding considerations for new STI program managers and other STI staff, resource management, communications, policy practices, and strategic planning. The information and resources presented throughout this chapter can empower STI leaders to confidently and competently lead and manage their jurisdiction's STI program and its resources and to communicate its importance to staff and communities impacted by STIs.

STI program staff can use this chapter, along with the others in this resource, as a reference throughout program or policy planning, implementation, and evaluation to refresh their memory as needed, or to dig deeper into the additional resources for more information regarding a particular task.

BEST PRACTICES FOR LEADERSHIP & PROGRAM MANAGEMENT

- *New STI program managers can benefit by having a solid understanding of key concepts and factors that will impact their role.*
- *An effective leader benefits from a strategic approach to managing the resources available to STI program managers.*
- *While certain policy activities represent an important function of STI programs, care must be taken to understand the limits of what constitutes allowable activities.*
- *Communications and strategic planning are important pieces of leadership for STI program management.*

Endnotes

[3] Fraser, Michael, "Public Health Leadership and Management in the Era of Public Health 3.0." *Journal of Public Health Management and Practice*, vol. 23, no. 1, 2017, pp. 90–92. doi: 10.1097/PHH.0000000000000527.

[4] Strudsholm, Tina and Ardene Robinson Vollman. "Public Health Leadership: Competencies to Guide Practice." *Healthcare Management Forum*, vol. 34, no. 6, 2021, pp. 340–345. doi: 10.1177/08404704211032710.

[5] American Public Health Association. *Reimagining Public Health Leadership for Health Equity: Moving Toward Collective and Community-Centered Applied Practice*. 8 November 2022. www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2023/01/18/public-health-leadership.

[6] Strudsholm, Tina and Ardene Robinson Vollman. "Public Health Leadership: Competencies to Guide Practice." *Healthcare Management Forum*, vol. 34, no. 6, 2021, pp. 340–345. doi: 10.1177/08404704211032710.

[7] Ibid.

[8] Hargrove, Erwin C. and John C. Glidewell, editors. *Impossible Jobs in Public Management*. University Press of Kansas, 1990.

[9] Barrow, Roxanne Y., et al. "Recommendations for Providing Quality Sexually Transmitted Diseases Clinical Services, 2020." *MMWR Recommendations and Reports*, vol. 68, no. 5, 2020. doi: 10.15585/mmwr.rr6805a1.

[10] "Office of Federal Financial Management." *The White House*, https://obamawhitehouse.archives.gov/omb/financial_default.

[11] "Dictionary of Terms." *Centers for Disease Control and Prevention*, www.cdc.gov/grants/dictionary-of-terms/.

[12] Ibid.

[13] National Coalition of STD Directors. *The 340B Drug Pricing Program: Frequently Asked Questions*. 2021. www.ncsddc.org/wp-content/uploads/2021/10/340B-Medicaid-Drug-Pricing-FAQs.pdf.

[14] "340B Drug Pricing Program: Sexually Transmitted Disease Clinics." *Health Resources and Service Administration*, www.hrsa.gov/opa/eligibility-and-registration/specialty-clinics/sexually-transmitted-disease.

[15] "FAQs." *Health Resources and Services Administration*, www.hrsa.gov/opa/faqs.

[16] "Drug Shortages." *Food and Drug Administration*, www.fda.gov/drugs/drug-safety-and-availability/drug-shortages.

[17] Workowski, Kimberly A., et al. "Sexually Transmitted Infections Treatment Guidelines, 2021." *MMWR Recommendations and Reports*, vol. 70, no. 4, 2021, pp. 1–187. doi: 10.15585/mmwr.rr7004a1.

[18] Rosenkranz, Kari M., et al. "Diversity, Equity and Inclusion in Medicine: Why It Matters and How Do We Achieve It?" *Journal of Surgical Education*., vol. 78, no. 4, 2021, pp. 1058–65, doi: 10.1016/j.jsurg.2020.11.013.

[19] Greever-Rice, Tracy, et al. "Integrating the Lived Experience Conditions and Care in the ECHO Model." *Missouri Medicine*, vol. 117, no. 3, 2020, pp. 241–244.

[20] Taylor, Chris. "A Look at a Critical Player in Public Health, Disease Intervention Specialists." *Association of State and Territorial Health Officials*. 13 April 2023. www.astho.org/communications/blog/look-at-critical-player-in-ph-disease-intervention-specialists/.

[21] American Public Health Association. *Reimagining Public Health Leadership for Health Equity: Moving Toward Collective and Community-Centered Applied Practice*. 8 November 2022. www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2023/01/18/public-health-leadership.

[22] "ICS Resource Center." *Federal Emergency Management Agency*, https://training.fema.gov/emiweb/is/icsresource/trainingmaterials/.

[23] "Public Health Cross-Training for Communicable Disease Specialists (CDS)." *Georgia Department of Public Health*, www.dph.georgia.gov/STDs/public-health-cross-training-communicable-disease-specialists-cds.

[24] Gebbie, Eric N., et al. "Training for and Maintaining Public Health Surge Capacity: A Program for Disease Outbreak Investigation by Student Volunteers." *Public Health Reports*, vol. 122, no. 1, 2007, pp. 127–133. doi: 10.1177/003335490712200119.

[25] Ibid.

[26] McDonald, Robert, et al."Vital Signs: Missed Opportunities for Preventing Congenital Syphilis—United States, 2022." *MMWR Recommendations and Reports*, vol. 72, no. 46, 2023, pp. 1269–1274. doi:10.15585/mmwr.mm7246e1.

[27] McGrath, Robert J., et al. *Health Policy Analysis: Framework and Tools for Success*. Springer, 2014.

[28] "Federal Restrictions on Lobbying for HHS Financial Assistance Recipients." *U.S. Department of Health and Human Services*, www.hhs.gov/grants-contracts/grants/grants-policies-regulations/lobbying-restrictions.html.

[29] "Standards and Measures Version 2022." *Public Health Accreditation Board*, www.phaboard.org/accreditation-recognition/version-2022/.

[30] Centers for Disease Control and Prevention. *Evaluation Briefs: Writing SMART Objectives*. www.cdc.gov/healthy-youth/funded-programs/pdf/brief3b.pdf.

[31] Association of State and Territorial Health Officials. *Strategic Planning Guide: Guidance and Resources to Assist State and Territorial Health Agencies in Developing a Strategic Plan*. https://www.astho.org/topic/resource/strategic-planning-guide/.

PROGRAM OPERATION CONSIDERATIONS FOR STI PREVENTION

Program Evaluation

Introduction

Program evaluation enables sexually transmitted infections (STI) program staff, partners, and others that may be affected by the evaluation results to understand what is working or not working within their program and to use those results to improve their efforts. This chapter provides information for STI program managers and their teams on how to design and implement a program evaluation.

This chapter will connect program staff with the tools needed to confidently integrate program evaluation into their daily work. This resource touches on basic principles of program evaluation, but the information included is not exhaustive. For more detailed information on various evaluation topics, please look to the references and resources provided throughout the chapter. For any questions that may arise, STI program managers can consult their Centers for Disease Control and Prevention (CDC) project officer.

What Is Program Evaluation?

The CDC Program Evaluation Framework[32] defines evaluation as a scientific activity that uses systematic data collection and analysis of programs, policies, and organizations to assess their effectiveness and efficiency. Program evaluation can be a key tool for gathering evidence about the effectiveness and efficiency of STI programs, and it offers the opportunity to review, analyze, and modify STI prevention program efforts as necessary. Effective evaluation processes are *participatory* and *responsive* to the needs of the program and its relevant parties.

BEST PRACTICE

*Evaluation processes at their best are **participatory** and **responsive** to the needs of the program and its relevant parties.*

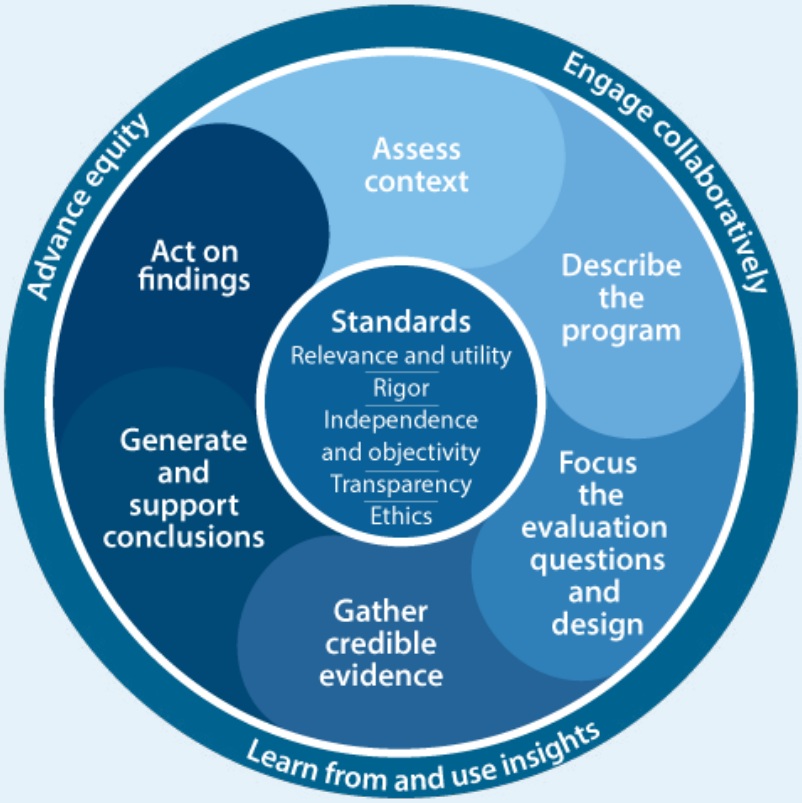
There are a variety of different purposes for conducting program evaluation. These can include:

- gaining insight into a program,
- documenting program progress,
- assessing effects of the program,
- assessing barriers and facilitators for successful program implementation,
- assessing cost/benefit analysis,
- identifying and elevating the strengths and achievements of a program,
- identifying ways to make the program better,
- changing practices,
- catalyzing self-reflection by relevant parties about their program, and
- demonstrating accountability to funders and policymakers.

Different types of evaluation are used for different purposes at different points in the life of a program. Program evaluation can be highly technical or relatively simple. The scope of evaluation can range widely as well, from small-scale to large-scale. Evaluations may produce results that highlight successes or uncover areas for improvement; both types of findings are valuable to STI program staff. The CDC Program Evaluation Framework identifies the following key components of evaluation.

Figure 2.1

FRAMEWORK FOR PROGRAM EVALUATION IN PUBLIC HEALTH



Evaluation steps:

1. Assess context
2. Describe the program
3. Focus the evaluation questions and design
4. Gather credible evidence
5. Generate and support conclusions
6. Act on findings

Cross-cutting actions:

- Engage collaboratively
- Advance equity
- Learn from and use insights

Evaluation standards:

- Relevance and utility
- Rigor
- Independence and objectivity
- Transparency
- Ethics

Source: Kidder, Daniel P., et al. "CDC Program Evaluation Framework, 2024." *MMWR Recommendations and Reports*, vol. 73, no. 6, 2024, pp. 1–37. doi: 10.15585/mmwr.rr7306a1.

It is worth noting that most of program evaluation does not allow for claims of causality; that is beyond the scope of program evaluation as described in this chapter. Attempting to prove causality would require a rigorous scientific approach, so this chapter will not address causality.

Program evaluation is most powerful when it is fully integrated into the entire lifecycle of a program, from program inception and planning to implementation, sustained delivery, and re-design.[33]

BEST PRACTICE

Program evaluation is most powerful when it is fully integrated into the entire lifecycle of an STI program.

Why is STI program evaluation necessary?

Over the past few decades, public health programs have grown more complex, increasingly engaging larger numbers of community members and organizations. Moreover, the context—the setting and environmental influences (e.g., laws, regulations, political climate)—in which STI programs operate has also become more complex. Programs that work well in some settings may fail in others because of differences in fiscal, socioeconomic, demographic, interpersonal, and interorganizational settings.

Additionally, while programs have become more complex, the demands for accountability have increased as well. These changes in the environment in which STI programs operate mean that strong program evaluation is essential now more than ever. The first step of the CDC program evaluation framework—"assess context"—acknowledges the importance of these external factors in program evaluation.

Program evaluation provides STI program staff with the tools to address questions about program effectiveness that will arise over the life of a program. Addressing these questions requires careful attention to documenting and measuring the program's implementation, lessons learned, and its success in achieving intended outcomes. The results of program evaluation can be used to document successes and achievements, identify barriers to implementation and areas for improvement, and be accountable to key relevant parties by providing evidence to funders and the public that public funds are having an impact. Program evaluation demonstrates effectiveness of interventions and will strengthen a program's ability to illustrate the value it brings to the public.

BEST PRACTICE

STI program evaluation can be useful to document successes and achievements, identify barriers to implementation and areas for improvement, provide accountability to relevant parties, and demonstrate the need for resources.

Is research experience necessary to conduct STI program evaluation?

It is not necessary for STI program staff to have specialized expertise to plan or conduct a program evaluation. Program evaluation is an activity that anyone can do, regardless of their level of experience and resources, and it yields important benefits.

Evaluation is a broad concept, and many STI program staff may already have relevant expertise without realizing it.

> Most [STI] programs engage in evaluation of some kind or another on a regular basis, for example, when they systematically review their partner services data and indicators for any issues or when they pilot test a new way of conducting community education or outreach. Any time that staff use data or experience to make changes, decisions, or judgments about their program, they are undertaking evaluation in one sense. By drawing explicitly on the principles of evaluation when doing so, however, they may take those efforts to another level of rigor and usefulness.[34]

Ongoing evaluation is critical to developing and sustaining high-quality and appropriately focused STI program efforts, therefore it can be to the program's benefit to ensure that all staff are aware of and engaged in their program's evaluation.

BEST PRACTICE

Ensure that all program staff and relevant parties are aware of and, ideally, engaged to some extent in STI program evaluation.

Planning an STI Program Evaluation

When should a program start planning for evaluation?

The CDC Program Evaluation Framework encourages "initiating evaluation activities at the beginning of a program" as a part of program planning.[35] Program evaluation can be understood as an integral part of the overall program planning process. For evaluation to contribute meaningfully to an STI program, it is essential that program staff plan for evaluation from the beginning and throughout the implementation lifecycle, rather than waiting until a program or intervention is underway before thinking about evaluation.

Conducting an evaluation takes time and resources. When designing programs, detailed evaluation steps and costs can be included as part of the project action plan and budget. Consider developing a plan of evaluation for each essential program component, including how and when each will be evaluated and how the evaluation will be used to improve the program.

Early planning for evaluation enables gathering the right data, at the right time, for the right purpose. This is especially important for determining if the program's activities are having the desired outcomes.

BEST PRACTICE

Plan and budget for evaluation early in program development.

CROSS-REFERENCE

Outbreak Response for Program Evaluation

Outbreak responses are typically evaluated for effectiveness—at least at the end of the response, when it is believed the outbreak has been brought under control—and sometimes during the response itself, to test the effectiveness of a particular intervention (e.g., is the outreach testing yielding additional cases?). The evaluation concepts discussed in this chapter can be used for evaluation of an outbreak response—particularly process and outcome evaluations. See the Outbreak Response chapter of this document for more information and resources.

Why and when do relevant parties need to be involved in STI program evaluation?

The first step in CDC's program evaluation framework is to identify and involve the relevant parties for planning and implementing evaluation activities. Relevant parties are essential partners including individuals or organizations directly or indirectly affected by a program and/or its evaluation results. Involving relevant parties in every stage of the process can lead to relevant and successful evaluations.

At a minimum, four types of relevant parties can be involved in an STI program evaluation process:

- implementers,
- decision-makers,
- participants, and
- partners.

Table 2.1

Types of relevant parties	Definition	Examples
Implementers	Those directly involved in the operations of the STI program	• STI director • STI program manager • Staff (field operation manager, front-line supervisor, Disease Intervention Specialist (DIS), service providers, health educators, laboratory technicians, clerical staff, among others) • Volunteers and consultants
Decision-makers	Those in a position to do or decide something about the STI program	• STI director • STI program manager • Health department director
Participants	Those being served or affected by the STI program	• Clients/patients • Community members • Community-based organizations (CBOs) • Health service providers/STI clinic staff
Partners	Those who actively support and/or have invested in a program or in the population the program serves	• Funders (federal, state, local) • Academic organizations • Coalition partners • Faith-based community • CBOs • Professional organizations • Advocacy groups • Government officials and elected representatives • Representatives of correctional systems (adult, juvenile) • Representatives of the school system

Engaging a range of relevant parties with different perspectives on a program helps cultivate both internal and external "buy-in" and support for the evaluation process; it provides opportunities for program staff to understand the issues that are important to these parties as well as to address their concerns and questions about the evaluation. Relevant party involvement can also make the evaluation process more objective, enhance communication among key parties, increase buy-in for the program itself among relevant parties, and ensure that data collection is thorough and complete.

Involve relevant parties in key activities throughout the planning and implementation of the evaluation. Some of these activities can include:

- identifying and prioritizing program activities to be evaluated;
- overcoming resistance to evaluation and identifying benefits;
- developing evaluation questions that are grounded in the perceptions, experiences, and interests of relevant parties;
- selecting appropriate and acceptable evaluation methods;
- reviewing evaluation findings and making program recommendations; and
- disseminating (sharing) and using evaluation findings for program improvement.

How frequently a program meets with relevant parties depends on the timeline for the evaluation. Plan regular meetings to discuss the purpose and progress of the evaluation, and keep the relevant parties involved and informed throughout the evaluation process.

COMMUNITY ENGAGEMENT AND PROGRAM EVALUATION

As with every part of an STI program, relevant parties can also be involved early in the planning of an evaluation and throughout its duration, up to and including sharing the results and determining how to act upon them.

BEST PRACTICE

Engage relevant parties early and often throughout the evaluation process for more robust processes, results, and adoption of findings.

RESOURCES

Resource for Engaging Relevant Parties in Program Evaluation

For additional information on identifying and determining involvement of relevant parties, see Module 1of the National Coalition of STD Director's (NCSD) STD Program Evaluation Trainings and Tools (STD PETT).

How can assessing needs and defining program goals/objectives support STI program evaluation?

Describing the program is the second step in CDC's Program Evaluation Framework. Note that this step involves describing the program and not the evaluation. A comprehensive program description ensures that program staff, evaluators, and other relevant parties share a clear understanding of what the program entails and how its goals and objectives will be achieved. This understanding among relevant parties sets the stage for program evaluation and can be helpful in strategic planning and performance measurement.

Describing the program includes explaining the health problems (e.g., syphilis, gonorrhea, chlamydia) addressed by the program, how these affect different segments of the population, and any trends that may be occurring. This information can be obtained from a needs assessment.

WHEN TO CONDUCT A NEEDS ASSESSMENT

Knowing the STI prevention and control needs of a project area provides an important foundation for understanding the focus of the program. It can also help program staff to develop realistic and measurable objectives and plan program activities accordingly. A needs assessment is critically important when planning a new service, though it may not be feasible for ongoing program activities.

If time and resources allow, a needs assessment can be a good starting point for program planning by helping program staff identify and measure gaps between "what is" and "what ought to be." This knowledge can then be used to set program priorities and to develop program interventions and activities that reflect those priorities.

CROSS-REFERENCE

Community Engagement for Program Evaluation

Refer to the Community Engagement chapter of this resource for more information on conducting community needs assessments.

RESOURCES

Resources for Conducting a Needs Assessment

For more detailed guidance on why, when, and how to conduct a needs assessment, see Module 2 of NCSD's STD PETT.

STD Preventive Services: Gap Assessment Toolkit | CDC

Step 1—Assess the Context | Program Evaluation | CDC

Needs Assessment Guide | National Minority AIDS Council

HOW TO DEVELOP PROGRAM GOALS AND MEASURABLE OBJECTIVES

Goals and objectives are essential in program planning because they establish criteria and standards against which STI program managers can evaluate program performance. It will be necessary to identify the goals and objectives of the program component or intervention to be evaluated.

STI-related program goals and objectives may be based on:

- the STI program's cooperative agreement with CDC;
- program needs (identified through a needs assessment, if possible);
- time, staff, and funding constraints;
- STI National Strategic Plan Overview | HHS; and
- Healthy People 2030 objectives.

Table 2.2

Goal	Objectives
A broad statement about the long-term expectation of what should happen as a result of the program (the desired result). Serves as the foundation for developing program objectives. Criteria: 1. Specifies the STI problem or STI-related health risk factors. 2. Identifies the priority population(s) for the program.	Statements describing the results to be achieved, and the manner in which they will be achieved. Multiple objectives are usually needed to address a single goal. SMART attributes are used to develop clearly defined objectives.[36] • **S**pecific: includes the "who," "what," and "where." Use only one action verb to avoid issues with measuring success. • **M**easurable: focuses on "how much" change is expected. • **A**chievable: realistic given program resources and planned implementation. • **R**elevant: relates directly to program/activity goals. • **T**ime-phased: focuses on "when" the objective will be achieved.

Note: Objectives are different from listing program activities. Objectives are statements that describe the results to be achieved and help monitor progress toward program goals. Activities are the actual actions that are implemented as part of the program.

EXAMPLE

Example: How a program activity differs from an objective

Goal: Reduce gonorrhea rates among male adolescents in County Z.

Activity: Educate providers on appropriate treatment for gonorrhea.

SMART process objective: By (month/year), (X%) of providers who reported incorrect gonorrhea treatment in County Z will be contacted and provided up-to-date treatment guidance within one month of their report.

RESOURCES

Resources for SMART Goals

SMART Framework | Youth Advisory Councils | CDC

Evaluation Briefs: Writing SMART Objectives | CDC

BEST PRACTICE

Clear goals and SMART objectives facilitate effective and efficient program planning overall and evaluation specifically.

HOW TO FOCUS AN EVALUATION WITH A LOGIC MODEL

Logic models are a good tool to help focus an evaluation to quickly determine what to measure and what areas of the program might be most in need of evaluation.

Logic models are useful to:

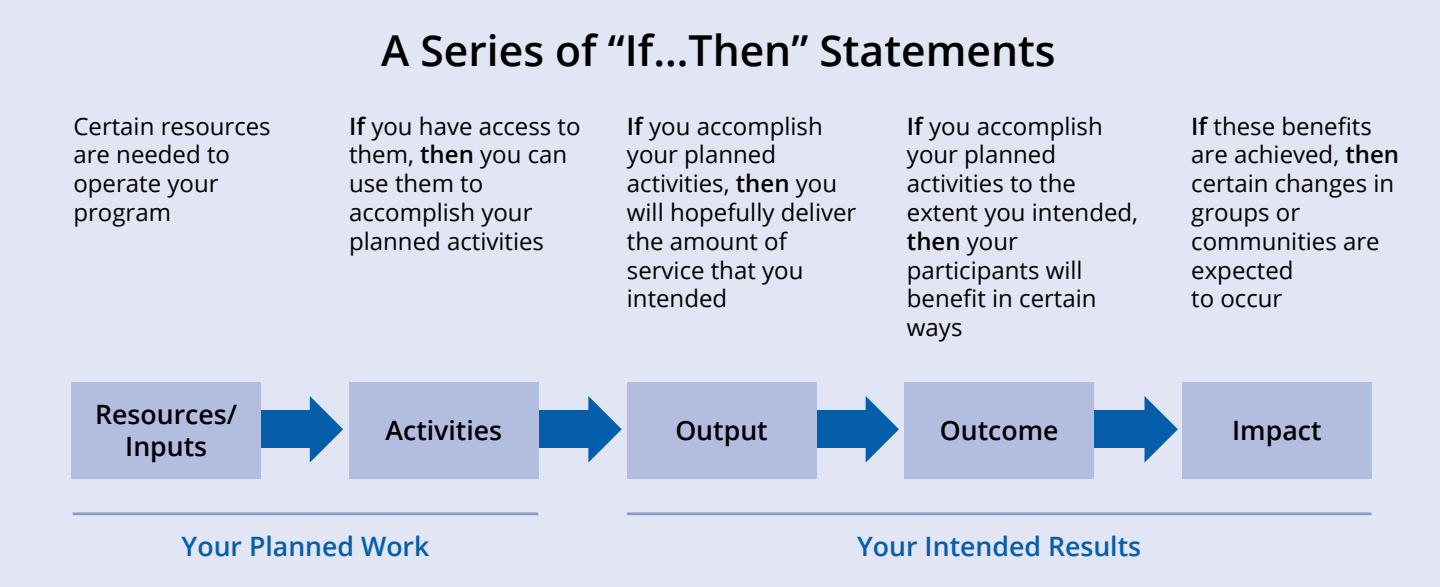
- build understanding and clarity about the program,
- identify resources needed for the program,
- identify the sequencing of activities that will be implemented, and
- serve as a basis for program evaluation.

Funders often require a logic model to be submitted with the application for funds so they can see a visual depiction of what the program aims to accomplish and by what means.

A logic model identifies a program's main components and how they relate to one another. Logic models include process and outcome components. Figure 2.2, below, illustrates the basic "if…then" logic underpinning a logic model. The left-hand side of the logic model shows the process components that correspond to the actions planned for an STI program. The right-hand side depicts the program outcomes, or the intended effects an STI program will have among people who are at increased risk for STIs.

Figure 2.2

LOGIC MODEL STRUCTURE



Source: *Centers for Disease Control and Prevention. Heart Disease and Stroke Prevention Program Evaluation Guide: Developing and Using a Logic Model*. www.cdc.gov/cardiovascular-resources/media/pdfs/logic_model.pdf.

See Components of an STI Program Logic Model in the Appendix for a definition of each element of a logic model along with relevant examples of each element for STI programs.

The goals, process objectives, and outcome objectives that have already been articulated for a program can provide content for the process and outcome components of a logic model, and vice versa. Essentially, process objectives contain content that will help in writing inputs, activities, and outputs. Short-term objectives have content for short-term outcomes; intermediate objectives have content for intermediate outcomes; and long-term objectives have content for long-term outcomes.

TIP

When developing new activities, some programs have found it beneficial to first work with relevant parties to develop the backward logic model and then develop their SMART objectives. They found that understanding the logic of a new activity helped them achieve clarity with relevant parties and design realistic and achievable objectives.

BEST PRACTICE

Logic models developed from an STI program's goals and objectives can help focus and set the foundation for evaluation.

RESOURCES

Resources for Developing Goals, Objectives, and Logic Models

For more details on developing goals, objectives, and logic models, see Module 2 of NCSD's STD PETT and Step 2—Describe the Program | Program Evaluation | CDC.

Resources for logic models:

- Heart Disease and Stroke Prevention Program Evaluation Guide: Developing and Using a Logic Model | CDC
- Developing a Logic Model Guide | Indiana Youth Institute
- Logic Models for Prevention Program Monitoring and Evaluation | CDC TRAIN (self-guided online training course)

How can an evaluation be tailored to a program and its relevant parties' needs?

FOCUSING THE EVALUATION QUESTIONS AND DESIGN

Focusing the evaluation questions and design is the third step in CDC's Program Evaluation Framework. A focused evaluation makes it possible to answer questions about the STI program that are of greatest concern to program staff and other relevant parties.

This is based on the assumption that the entire program does not need to be evaluated at any point in time. Rather, the evaluation(s) conducted will most likely be of a program component or activity, and will focus on what question is being asked, by whom, and what will be done with the information.

The following steps can be taken to help program staff and relevant parties focus an STI program evaluation.

Step 1. Decide on the purpose(s) of the evaluation.

The purpose of an evaluation is what a program intends to learn from the evaluation activities. This serves as the basis for the evaluation design, questions, and methods. Thoughtfully conducting this first step can prevent premature decision-making regarding how to carry out the evaluation.

Step 2. Identify and engage the *users* of the evaluation results.

The users of an evaluation are the specific people who receive and use evaluation findings (e.g., relevant parties including funders and local health department officials). Engagement with and support from the users increases the likelihood that the evaluation results will be used to improve the program or program activity under evaluation.

Step 3. Identify the *uses* of the evaluation results.

The uses of an evaluation are the specific ways that program staff and relevant parties plan to use the evaluation findings. To identify the uses of the evalu-ation, program staff and the various relevant parties can discuss the different expectations and needs they have for the evaluation.

Once program staff and relevant parties have identified their expectations for conducting an evaluation, they can prioritize the various uses of the evaluation.

RESOURCES

Resources for Focusing an Evaluation and Prioritizing Evaluation Focus Areas

For more detailed information on how to focus an evaluation and tools to help with prioritizing evaluation focus areas, see Module 3 of NCSD's STD PETT and Step 3—Focus the Evaluation Questions and Design|Program Evaluation|CDC.

BEST PRACTICE

Clarifying the purpose(s), users, and uses of a program evaluation before beginning can help focus the process and ensure the usefulness of the results.

PLANNING AN EVALUATION WITH LIMITED RESOURCES

As most STI programs face funding and other resource constraints, designing an evaluation requires making choices between various approaches; each choice is subject to trade-offs between accuracy, time, and other resources. Some of those choices include: what data are collected from whom, the type of information collected (e.g., qualitative data or quantitative data), timing of measurements (e.g., pre- and post-intervention), and measurement techniques (e.g., single versus multiple measures). The quantity and quality of information to be produced and the costs associated with each can also be considered in evaluation planning.

As part of evaluation planning, STI program staff may take stock of the resources and personnel available for the evaluation and develop a plan and budget to staff and carry out the evaluation.

Small STI programs may scale down by conducting an evaluation of just one intervention at a time rather than the entire program. Focusing on a single intervention will be more time-limited and less resource intensive than evaluating the entire program.

Programs may consider taking advantage of their state's resources. For example, some states have divisions that do Lean Six Sigma and other quality improvement projects for the health department or other state government agencies they work with. Additionally, STI program managers may consider reaching out to their project officer at CDC. They may be able to work with STI program teams and Division of STD Prevention (DSTDP) staff to plan and conduct evaluations.

If a program does decide to bring in external assistance, doing so early will benefit the process overall as their input can help shape the planning phase and improve the efficiency and effectiveness of the evaluation overall.

COMMUNITY ENGAGEMENT AND PROGRAM EVALUATION: BUILDING PARTNERSHIPS

One way to rise above resource constraints that can limit program evaluation options is to leverage community partnerships to fill staff and other resource gaps. For example, evaluation provides an excellent opportunity to strengthen relationships with universities and other organizations that specialize in public health program evaluation. Their expertise can strengthen an evaluation, while the evaluation can provide opportunities for their students or staff to gain hands-on or pro bono experience.

TRAINING & PROFESSIONAL DEVELOPMENT FOR PROGRAM EVALUATION

If program staff are available to do the required evaluation work but lack the necessary skills, consider professional development in these skill areas, which in the long run can be very beneficial for the STI program. Training staff to use these evaluation tools is a good place to start.

Resources for additional training and professional development on STI program evaluation include:

- STD Program Evaluation Trainings and Tools (PETT)|NCSD
- Learning Center|NCSD
- National Network of STD Clinical Prevention Training Centers
- Summer Evaluation Institute|American Evaluation Association

STI program managers can also contact their CDC project officer to request evaluation technical assistance from DSTDP.

BEST PRACTICE

Evaluation can seem overwhelming to programs with limited resources. Leveraging all available resources from CDC, DSTDP, and community partnerships—such as academic partners—can help fill gaps in skills and staffing.

TYPES OF EVALUATION AND WHEN TO USE THEM

There are many different types of evaluation designs. Because STI programs vary widely across the U.S., it is impossible to prescribe a single type of evaluation as the definitive approach. Each program may use different evaluation questions to assess its activities at different points in time, and each of those questions will require the analysis of different outcomes and indicators.

Some of the most common evaluation approaches include formative evaluation, evaluability assessment, process evaluation/implementation evaluation, outcome evaluation/effectiveness evaluation, economic evaluation, and impact evaluation. Table 2.3 describes each approach, what it measures, and why it is useful.

Table 2.3

EVALUATION APPROACHES AND THEIR FUNCTIONS

EVALUATION APPROACH	WHAT IT MEASURES	WHY IT IS USEFUL
Formative evaluation Needs assessment Evaluability assessment	Relevance of proposed program elements to priority populations Feasibility of program evaluation based on goals and objectives	Identify necessary modifications before program implementation begins Maximize likelihood of program success
Process evaluation (implementation evaluation)	How well program is working Fidelity to program design Accessibility to and acceptance by priority populations	Identify early warning signs of potential problems Monitor progress and achievement of program plans and activities
Outcome evaluation (effectiveness evaluation)	Extent of program's effects on priority populations	Determine effectiveness of program in meeting its objectives
Economic evaluation Cost analysis Cost-effectiveness evaluation Cost-benefit analysis Cost-utility analysis	Direct and indirect costs of resources used in a program compared to outcomes	Assess costs relative to effects
Impact evaluation	Degree to which program is meeting or has met its ultimate goal(s)	Provide evidence for use in decision-making

Adequately determining appropriate costs can be difficult, but CDC developed STI Costs (STIC) Figure, an easy-to-use Excel spreadsheet tool for economic evaluations. After the inputs are entered into the spreadsheet (such as the number of female syphilis case patients treated), the tool will calculate the direct and indirect costs prevented. In this way, an STI program may demonstrate to health care providers, policymakers, and the public that STI prevention and treatment efforts are saving money.

RESOURCES

Resources for Economic Evaluation for STI Programs

STIC Figure 2.0|STI|CDC

Economic Evaluation Overview|POLARIS|Policy, Performance, and Evaluation|CDC

Program Evaluation Tip Sheet: Economic Evaluation|CDC

RESOURCE

Resources for Types of Evaluation

For more detailed information on different types of evaluation as well as when and how to use them, see Module 3 of NCSD's STD PETT.

FOCUS ON CONGENITAL SYPHILIS (CS)

STI program staff may consider regularly assessing how well the STI program meets performance measures—locally determined or required by the CDC cooperative agreement—pertaining to syphilis testing for women who may be pregnant and indicators of timeliness of treatment. Consider conducting a review of CS cases on a periodic basis. A useful tool for evaluating a program's efforts to address CS is the congenital syphilis prevention cascade.[37]

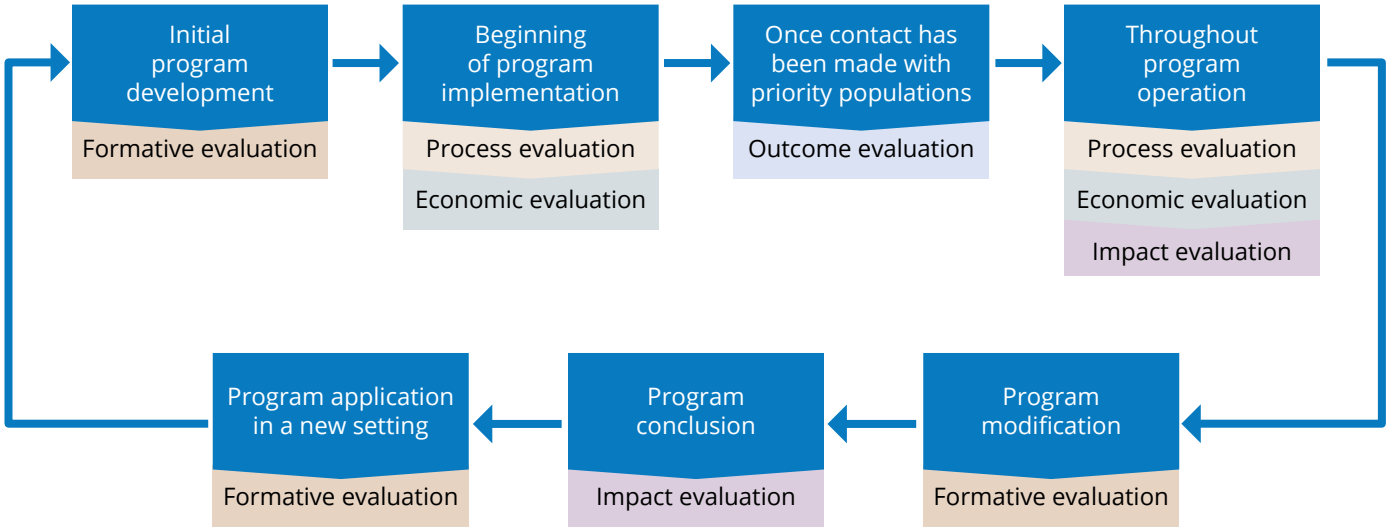
Evaluation activities can also follow a program's developmental stages. In general, there is a natural developmental sequence that intervention programs follow, and the evaluation activities can appropriately match the development level of the intervention. The program stage will determine the level of effort and the methods to be used.

BEST PRACTICE

There are many different types of evaluation approaches. STI program managers can use the tools and resources provided here to determine which is the most appropriate and useful for their situation.

Figure 2.3

EVALUATION APPROACHES THROUGHOUT A PROGRAM CYCLE



Collecting Data for Evaluation

The information gathered in an evaluation must be reliable and applicable for the program and relevant parties. Gathering credible evidence means that the data collected answer the evaluation questions that have been developed.

What are evaluation indicators and which ones should be used?

The next step in an evaluation is to select the measures, or indicators, that will be used to determine the progress a program or activity is making.

An indicator is a marker of accomplishment or progress. It is a specific, observable, and measurable accomplishment or change that shows the progress made toward achieving a specific output or outcome in a logic model or work plan. Common examples of indicators include participation rates, attitudes, individual behaviors, community norms, policies, health status, incidence, and prevalence.

The indicators selected will answer the evaluation questions and help determine whether or not program objectives have been achieved.

Well-defined indicators are:

- specific—provide a clear description of what is to be measured;
- observable—focus on an action or change; and
- measurable—quantify change, usually reported in numerical terms (count, percentage/proportion, or ratio).

This means that they can be seen (e.g., observed behavior), heard (e.g., participant responses), or read (e.g., agency records).

DSTDP has developed a set of indicators that are referred to as performance measures, and each project area receiving DSTDP funds is required to report on the indicators that apply to them.

These indicators can be linked to the outputs component of the program logic model(s) that have been developed for the overall program and can provide a notion of where things stand and how to improve performance.

BEST PRACTICE

Well-defined evaluation indicators are specific, observable, and measurable and meet the criteria of usefulness, feasibility, and adequacy.

RESOURCES

Resources for Program Evaluation

For detailed information on choosing appropriate and reliable indicators to answer evaluation questions, see Module 4 of NCSD's STD PETT and Step 4—Gather Credible Evidence | Program Evaluation | CDC.

How are data sources selected for STI program evaluation?

The next step is to decide from where or from whom the data will be obtained to measure each indicator. When choosing data sources, ensure the data from the chosen source will actually answer the evaluation questions. In some cases, accessing the most useful data or data sources may be impractical, due to budgetary or resource constraints, so STI programs may need to prioritize which data are most essential. Example data sources that might be considered are presented in Table 2.4, along with some advantages and disadvantages for each source.

Table 2.4

POSSIBLE DATA SOURCES AND THEIR ADVANTAGES/DISADVANTAGES

Data source: documents

EXAMPLES	ADVANTAGES	DISADVANTAGES
• Grant proposals • Administrative records • Registration/enrollment forms • Surveillance reports • Database records • Web pages • Minutes of meetings • Brochures	• The data are available and accessible. • Staff may know how the data were collected if gathered by the program.	• The value of the data depends on how accurately and consistently it was recorded. • Existing records may not have the data collected in the needed format. • Existing records may not contain all the data needed for evaluation. • Due to privacy considerations, the program may not have permission from clients to use the information in their existing records for this purpose.

Data source: individuals

EXAMPLES	ADVANTAGES	DISADVANTAGES
• STI clients' or former clients' knowledge, attitudes, or skills during and after an activity • Priority population(s) perception and/or acceptability of a new modality • Changes in STI clients' behavior	• These are data a program collects directly from its priority populations (primary data).	• Reports from individuals and self-report data may be unreliable. However, when a combination of data sources is used (e.g., individuals and data records), the combined set of data can provide useful information. • When obtaining information directly from individuals (e.g., face-to-face interviews) be aware of the possibility of receiving socially desirable responses. For example, a client who has several sexual partners may report in an interview that they only have one because they feel that is the more acceptable response.

Data source: observations

EXAMPLES	ADVANTAGES	DISADVANTAGES
• Meetings • Client encounters • Data observed by staff or by a trained observer on indicators related to behavior, facilities, and environments among others	• The data provide information on verbal/non-verbal behavior and skills. • The data can be used to supplement self-report information.	• The value of the data depends on the training and skills of the observer and the specificity of the instrument used to rate the observations. • Ratings may vary if there is more than one observer.

PROGRAM EVALUATION DATA COLLECTION

When collecting data for program evaluation, STI program teams can identify opportunities to collect and examine data that may reveal social and other factors that can lead to disproportionately high STI rates among some groups.

The following data sources are relevant to STI program evaluation:

- Data Set: Directory of Social Determinants of Health at the Local Level|CDC
- Social Determinants of Health|Health Disparities in HIV, Viral Hepatitis, STDs, & Tuberculosis|CDC
- Social Determinants of Health Database|Agency for Healthcare Research and Quality
- About AtlasPlus|CDC NCHHSTP
- Health Equity|STI|CDC
- Social Vulnerability Index|Place and Health—Geospatial Research, Analysis, and Services Program (GRASP)|ATSDR
- PLACES: Local Data for Better Health|PLACES|CDC

To identify good data sources for evaluation, the following data selection criteria can be applied:

- quality data,
- data that can be cleaned,
- data that staff have autonomy over, and
- driven by the topic of the evaluation.

WHY IS IT IMPORTANT TO ESTABLISH CLEAR PROCEDURES FOR DATA COLLECTION?

Data collection involves administering instruments and gathering and organizing responses before analysis. A number of factors can affect the quality, and thus the credibility, of the information that is assembled.

Data collection procedures should contribute to the reliability and validity of the data collection methods and measures.

- Methods are reliable if they obtain similar or identical results when used repeatedly.
  - » Example: If a blood test is repeated three times on the same blood sample, the test would be reliable if it generated the same results each time.
- Valid methods/measures are those that actually measure what they are supposed to measure.
  - » Example: A question that asks sexually active individuals how often they use a condom is valid if it accurately measures their actual frequency of condom use. It is not valid if, instead, respondents interpret that they are being asked how frequently they should use condoms.

RESOURCE

Resource for Collecting Evaluation Information

- See Module 4 of NCSD's STD PETT for more detailed information on determining the data sources and methods to measure indicators and establishing a clear procedure to collect evaluation information.

Analyzing Evaluation Data

How can data be transformed into actionable recommendations?

Once data have been collected, they can be analyzed and transformed into recommendations. This starts with interpreting the data—considering the context in which the evaluation took place, how the data align with the program plan, and identifying strengths and weaknesses. Synthesizing these interpretations will prepare STI program staff to develop recommendations based on the results.

INTERPRETING DATA

Sound data interpretation can help identify the factors that facilitate and inhibit the achievement of program objectives. Meeting with an STI program's relevant parties to discuss evaluation results can inform interpretation of those results, as they may have different perspectives on and explanations for what was observed.

The following steps may be taken to determine what evaluation findings suggest about a program:

Step 1. Organize the evaluation findings.

Match the data with the purpose of the evaluation, the evaluation questions, and corresponding indicators that were developed when planning the evaluation.

Step 2. Consider issues of context when interpreting the results.

Data often do not explain why the findings are what they are. Information obtained from the evaluation needs to be interpreted based on larger contextual issues.

Step 3. Determine the practical significance of what has been learned.

When interpreting evaluation findings, STI programs can ask "so what?"

This is important because one of the purposes of conducting program evaluation is to improve programs. Therefore, the evaluation results can be used to modify aspects of the program, strengthen current activities, or change what may not be working.

If the program objectives are not met, determine the resulting consequences (e.g., priority population is not being reached, etc.) and review the logic model links to help understand why the activities that were planned and undertaken did not lead to the expected result or why the activities were not implemented as planned.

Likewise, determine the significance of meeting the objectives (e.g., reduction of disease transmission rates).

Step 4. Discuss what is working well and what is not.

Identifying and reporting the strengths and weaknesses of the program provides an opportunity to highlight and strengthen factors that affect its success. There can be a balance between what is working and what is not, since both can be used to strengthen and improve program activities.

Step 5. Discuss the limitations of the evaluation.

When interpreting results, acknowledge the limitations of the evaluation including the limitations of the evaluation design and the data collection methods. For example, one limitation may be the inability to include some questions due to the need to keep the data collection instrument brief.

Step 6. Synthesize the evaluation findings.

The final step in data interpretation is to link all the findings to the evaluation questions and to tell a story. This will briefly, yet comprehensively, highlight what the findings indicate about the program component or activity evaluated.

JUSTIFYING CONCLUSIONS

Justifying conclusions involves comparison of the findings with results from different sources, including national standards, previous research, similar programs, and the program's previous and expected performance.

To ensure conclusions are thoroughly justified, go through each of the following steps:

1. If multiple methods have been employed, compare different methods for consistency in findings.
2. Consider if there are alternative explanations for the results.
3. Document potential biases.
4. Use existing standards—including the STI National Strategic Plan and Healthy People 2030 Objectives—as a starting point for comparisons.
5. Assess consistency of the results with theories supported by previous research.
6. Look at how the results compare with those of similar programs.
7. Compare program outcomes with those of previous years.
8. Compare actual with intended outcomes.
9. Consider whether the results are similar to what was expected. If not, consider why they may be different.

RESOURCES

Resources for Analyzing Evaluation Data

For additional information on analyzing evaluation data and drawing conclusions, see Module 5 of NCSD's STD PETT and Step 5—Generate and Support Conclusions | Program Evaluation | CDC.

DEVELOPING RECOMMENDATIONS

Once evaluation data have been analyzed and interpreted, the next step is to develop recommendations for action. Recommendations for action are based on the interpretation of the evaluation findings.

How recommendations are framed depends on the users and the purpose of the evaluation. During the process of developing recommendations, review the purpose of the evaluation and its users with the relevant parties.

- Purpose of the evaluation

  The purpose(s) of the evaluation identified early in the process can guide the recommendations. For example, is the purpose of the evaluation to identify ways to improve the functioning of the program? To demonstrate program effectiveness? To demonstrate accountability for resources?

- Users of the evaluation results

  The recommendations can be tailored to the needs of the relevant parties. These individuals or organizational representatives become the audience(s) for the evaluation recommendations; consequently, it is necessary to know what information they want and what is important, relevant, and useful to them. Tailoring the recommendations to the audience(s) increases ownership and motivation to act on what is learned.

BEST PRACTICE

When conducting a program evaluation, ensure that findings are translated into recommendations that are applicable, actionable, and used for programmatic decision-making.

Disseminating Evaluation Results

How are evaluation results shared?

Dissemination is the process of communicating the procedures, results, and the lessons learned from an evaluation. Once recommendations have been developed based on the evaluation findings, the results of the evaluation can be shared with relevant parties and other possible audiences. The methods selected to communicate evaluation findings depend on the information needs of the relevant parties and other users of the evaluation and their preferences for format and style.

It is important to carefully consider the most useful ways to disseminate evaluation findings to relevant parties and other audiences. Appropriate dissemination can facilitate the translation of evaluation findings into informed decision-making and action.

Some of the audiences to consider how best to reach are:

- decision-makers,
- program staff,
- program participants,
- local media,
- the communities the program serves, and
- legislators.

The table below explores the needs and most useful formats for sharing evaluation findings with examples of relevant parties. It can be used as a template to consider each intended audiences' different needs and interests. Ask relevant parties which formats they prefer as part of ongoing engagement.

Table 2.5

USER-SPECIFIC FORMATS FOR SHARING EVALUATION FINDINGS

ROLE	NEEDS	SUGGESTED FORMAT
Decision-makers (e.g., the STI Director/Manager or the Health Commissioner)	Complete information, such as a full program description, evaluation methodology/process, and detailed results and recommendations.	A complete evaluation report, with findings highlighted in an executive summary (summary of the evaluation).
STI program staff	Complete information, as well as collaborative processing and debriefing to determine next steps.	Detailed report, as well as in-depth discussion of the findings and implications of the evaluation for program activities.

RESOURCES

Resources for Program Evaluation

Evaluation Reporting: A Guide to Help Ensure Use of Evaluation Findings | CDC

Making Data Talk: A Workbook | NIH

Decision-makers are most familiar with a standard evaluation report (see resources above for more details). Other more traditional methods for sharing evaluation findings include oral presentations, fact sheets, or local radio.

Over the past few decades, a wealth of new tools have emerged that can facilitate more creative approaches to sharing evaluation findings in more engaging ways. Some of these newer tools include:

- social media,
- web platforms for dashboard programs,
- data automation systems,
- updated data visualization techniques, and
- using data-sharing systems to disseminate evaluation results quickly.

Though evaluations can serve various purposes including documentation and accountability, the full potential of evaluation can be realized when its results are applied for program improvement. When choosing formats for sharing evaluation findings, consider which would be most actionable for the intended audiences. More actionable tools for evaluation dissemination include things like developing short report dashboards or rapid feedback reports—whatever can be done to increase evaluation utility so that relevant parties can quickly incorporate evaluation data to lift up what works and improve where needed.

CROSS-REFERENCE

Leadership & Program Management and Community Engagement for Program Evaluation

For more information on communications for STI programs, see the Leadership & Program Management and Community Engagement chapters of this resource.

BEST PRACTICE

To ensure that program evaluation findings can be quickly and easily incorporated into actions to improve an STI program, tailor dissemination formats and strategies to the unique needs and interests of each relevant party.

RESOURCES

Resources for Sharing Evaluation Results and Lessons Learned

- For more detailed information on sharing evaluation results and lessons learned with relevant parties, see Module 6 of NCSD's STD PETT and Step 6—Act on Findings | Program Evaluation | CDC.

Application of Evaluation Results

How can evaluation findings be applied?

In some ways, the measure of success for an evaluation is whether the results are used in a meaningful way. The practical use of evaluation results and recommendations is not automatic. Too frequently evaluations are performed and it is assumed that appropriate action will occur.

Program staff can plan for and take deliberate action to ensure that findings are disseminated appropriately and used properly. Frequent feedback to and from all the relevant parties is essential for ensuring use. It is a good practice for STI program managers and staff to develop a system of follow-up to determine the who, how, and when of operationalizing the recommendations.

With the results of the evaluation, a new process can be undertaken to refine the program, elevate the activities and processes that work well, cease activities that do not work, and/or develop new interventions in areas of need. Evaluations are opportunities to improve programs and plan for the future, and they can be conducted as such.

CHECKLIST

Use evaluation findings to modify, strengthen, and improve a program

- ✓ Work with relevant parties throughout the evaluation process so the results are actually used.
- ✓ Share information about the evaluation in a timely manner.
- ✓ Choose methods of sharing evaluation findings that will encourage evaluation use.
- ✓ Follow up with decision-makers and other relevant parties on the progress toward implementing recommendations.
- ✓ Use the evaluation findings to:
  - understand how the program is implemented,
  - get an idea about the program's effectiveness,
  - identify training and technical assistance needs,
  - allocate program resources, and
  - identify funding for program continuation.

BEST PRACTICE

Develop a clear plan for periodic follow-up with program staff and relevant parties to ensure that actions are taken to implement changes and improvements based on the program evaluation findings.

Conclusion

Given the increasing complexity of both public health programs and the contexts in which STI programs operate, program evaluation is an important tool for validating and continually improving upon the work of STI programs, as well as documenting its impacts in their jurisdictions. This chapter provides information and resources to empower STI program staff to tailor program evaluation to their local needs and resources, make evaluation an ongoing and essential part of their program's work, and communicate its importance to staff and other relevant parties. It is helpful to remember that program evaluation is a tool, not an end in itself. STI program evaluation findings are most useful when they are applied through informed programmatic decision-making toward the goal of improving sexual health and wellness.

BEST PRACTICES FOR PROGRAM EVALUATION

- *Evaluation processes at their best are participatory and responsive to the needs of the program and its relevant parties.*
- *Program evaluation is most powerful when it is fully integrated into the entire lifecycle of an STI program.*
- *STI program evaluation can be useful to document successes and achievements, identify barriers to implementation and areas for improvement, provide accountability to relevant parties, and demonstrate the need for resources.*
- *Ensure that all program staff and relevant parties are aware of and, ideally, engaged to some extent in STI program evaluation.*
- *Plan and budget for evaluation early in program development.*
- *Engage relevant parties early and often throughout the evaluation process for more robust processes, results, and adoption of findings.*
- *Clear goals and SMART objectives facilitate effective and efficient program planning overall and evaluation specifically.*
- *Logic models developed from STI program goals and objectives can help focus and set the foundation for an evaluation.*
- *Clarifying the purpose(s), users and uses of a program evaluation before beginning can help focus the process and ensure the usefulness of the results.*
- *Evaluation can seem overwhelming to programs with limited resources. Leveraging all available resources from CDC, DSTDP, and community partnerships—such as academic partners—can help fill gaps in skills and staffing.*
- *There are many different types of evaluation approaches. STI program managers can use the tools and resources provided here to determine which is the most appropriate and useful for their situation.*
- *Well-defined evaluation indicators are specific, observable, and measurable and meet the criteria of usefulness, feasibility, and adequacy.*
- *When conducting a program evaluation, ensure that findings are translated into recommendations that are applicable, actionable, and used for programmatic decision-making.*
- *To ensure that program evaluation findings can be quickly and easily incorporated into actions to improve an STI program, tailor dissemination formats and strategies to the unique needs and interests of each relevant party.*
- *Develop a clear plan for periodic follow-up with program staff and relevant parties to ensure that actions are taken to implement changes and improvements based on program evaluation findings.*

RESOURCES

Additional Program Evaluation Resources:

- CDC Approach to Program Evaluation | Program Evaluation | CDC
- CDC Program Evaluation Framework Action Guide | Program Evaluation | CDC
- STI Program Management and Evaluation | CDC
- Program Evaluation for STD Programs: In Support of Effective Interventions
- Program Evaluation Glossary | U.S. Environmental Protection Agency

Endnotes

[32] Kidder, Daniel P., et al. "CDC Program Evaluation Framework, 2024." MM*WR Recommendations and Reports*, vol. 73, no. 6, 2024, pp. 1–37. doi: 10.15585/mmwr.rr7306a1.

[33] Kidder, Daniel P. and Thomas J. Chapel. "CDC's Program Evaluation Journey: 1999 to Present." *Public Health Reports*, vol. 144, no. 4, 2018, pp. 356–359. doi: 10.1177/0033354918778034.

[34] Carter, Marion W. "Program Evaluation for Sexually Transmitted Disease Programs: In Support of Effective Interventions." *Sexually Transmitted Diseases*, vol. 43, no. 2, 2016, pp. S11–7. doi:10.1097/OLQ.0000000000000281.

[35] Kidder, Daniel P., et al. "CDC Program Evaluation Framework, 2024." *MMWR Recommendations and Reports*, vol. 73, no. 6, 2024, pp. 1–37. doi: 10.15585/mmwr.rr7306a1.

[36] Centers for Disease Control and Prevention. *Evaluation Briefs: Writing SMART Objectives*. www.cdc.gov/healthy-youth/funded-programs/pdf/brief3b.pdf.

[37] O'Callaghan, Kevin P., et al. "The Congenital Syphilis Prevention Cascade: Reimagining a Missed Prevention Opportunities Framework for Effective Intervention." *Sexually Transmitted Diseases*, vol. 51, no. 1, pp. 8–10. doi: 10.1097/OLQ.0000000000001892.

PROGRAM OPERATION CONSIDERATIONS FOR STI PREVENTION

Surveillance & Data Management

Introduction

Timely, quality, and complete surveillance data are critical to accurate monitoring of sexually transmitted infections (STIs) in a local jurisdiction. To be able to generalize or draw conclusions about a community from public health surveillance data, the system must accurately portray the incidence of a health event in a population. This chapter examines the objectives, components, and operations of such a system, provides resources and best practices to assist new STI program managers, and contains links to important information such as surveillance case definitions for STIs.

Since all jurisdictions have various existing STI surveillance systems that have been in place for many years, the material presented here could be used in conjunction with a local surveillance system to identify improvements or to conduct a surveillance system assessment. It is important to note that each health jurisdiction uses different surveillance methods and databases,[38] so there is no one-size-fits-all practice in this chapter.

In most jurisdictions, STI program leadership is not the ultimate decision-maker when choosing surveillance systems or methods. Other decision-makers often include the health commissioner, information technology (IT) leaders, and policymakers affecting a jurisdiction's communicable disease reporting statute or regulation. STI program managers may benefit from understanding the current functioning of their own surveillance system as a first step.

What Is Public Health Surveillance?

Public health surveillance is the foundation of epidemiology. It is the

> ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health.[39]

Through the process of public health surveillance, health authorities count disease occurrence, identify trends in distribution of diseases, identify disease outbreaks, evaluate existing program efforts, and inform the public, partners, and collaborators.

There are many characteristics of a surveillance system that are deemed important. Those most cited are:

- *Timeliness:* How quickly after patient diagnosis is the report received by the health authority?
- *Completeness:* Are all the variables requested by the health authority submitted by the provider?
- *Accuracy:* How well does the information given in the report reflect reality?

Public health surveillance data have been referred to as "information for action" because the health authority does not simply collect data for its own sake; it uses the data to take meaningful action to address the public health problem and to improve the health of populations. Such actions may include conducting case investigations, disseminating public reports and communications, planning, and implementing new programs or policies or evaluating existing programs and policies.[40]

> **"[Public health data] collection and analysis should not be allowed to consume resources if action does not follow."**
>
> Foege et al., 1976[41]

A public health surveillance system should be able to help evaluate public health actions, including the surveillance system itself.

What Are Some Types of STI Surveillance Systems?

Public health surveillance data for STIs are usually collected and used explicitly for a specific surveillance purpose, such as describing trends in existing morbidity, identifying outbreaks, and monitoring the impact of STI program interventions. While there are many types of public health surveillance used for other diseases and conditions, those used most often for STI data include:

- *Case-based reporting* is the process of reporting individual cases of STIs by providers and/or laboratories to STLT health departments and then from the health jurisdiction with responsibility for transmitting data to CDC. Case reports remain the most common source of STI surveillance data for STLT health departments. A drawback of relying solely on case reports is that they are heavily influenced by issues such as changes in diagnostic test technology, the asymptomatic nature of many STIs, and changes in screening practices.
- *Sentinel surveillance* refers to a system whereby specific sites (clinics, federally qualified health centers [FQHCs], long-term care facilities, hospitals, providers, etc.) are identified by the health authority as meaningful in terms of their ability to provide early identification of the disease of interest.[42] It may also include collecting data to better understand people at increased risk for STIs or who were tested for STIs. This informs the health authority about risk factors or prevalence, often more quickly and easily than relying on the routine public health surveillance system.

  Reviewing trends in sentinel populations can assist in the interpretation of national case report data. Good sentinel populations for disease surveillance are those where infection is likely to be found, testing is not based on symptoms, testing practices remain consistent over time, and a large and consistent fraction of the population is tested.[43]

  Another way that a sentinel surveillance system may be used is by encouraging people in the community who are unaware they may be infected with the organism of interest to come forward for screening. STI programs sometimes conduct door-to-door testing in a specific neighborhood or community. Many state and local clinics collect and periodically examine positivity rates among STI clinic patients screened for syphilis, gonorrhea, or chlamydia.

  For STIs, the programs involved in the STI Surveillance Network (SSuN) are examples of sentinel sites. For more information, see STI Surveillance Network (SSuN) | CDC.

- *Enhanced surveillance* may be initiated by CDC or STLT health authorities when there is a health problem about which a rapid understanding is needed and when data are not otherwise available. Some examples include:
  - when an increase in ocular syphilis cases was noted in the U.S., CDC created a special case report for this purpose and collected data to describe the extent of the problem;[44]
  - when an uptick in disseminated gonorrhea cases was noted;[45, 46] and
  - during local outbreaks of disease.
- *Opportunistic surveillance* is the practice of using sources of data not commonly associated with epidemiology, such as claims data or social media data, to inform decision-makers about a problem. "While not intended for public health surveillance, these data can be used to track trends in STI incidence and prevalence…"[47] Opportunistic surveillance may also include the use of "big data."

  "Big data" are sets of data so large you need a computer with specialized software to analyze patterns and trends. In health care, big data plays a crucial role in helping to understand patient populations and their health care needs.[48]

Assessing positivity rates (the proportion of those testing positive for an infection compared to all those tested for the infection at the venue) is also a method of opportunistic surveillance.

Table 3.1

EXAMPLES OF STRATEGIES FOR STI SURVEILLANCE

CHARACTERISTIC	CASE REPORTING	SENTINEL SURVEILLANCE	OPPORTUNISTIC SURVEILLANCE: POSITIVITY IN SCREENED POPULATIONS	OPPORTUNISTIC SURVEILLANCE: ADMINISTRATIVE DATA	POPULATION-BASED STUDIES
Population	Entire population	Representative sample of population	People tested or screened for STIs	People receiving care in health system	Representative sample of population
Methods	Case reports submitted by health care provider or laboratory	Data collected from a sample of sites, following common protocols	Review of positivity (number of positive tests divided by number of tests completed)	Review of routinely collected data such as billing, pharmacy, and laboratory records	Probability survey of defined population
Strengths	Routinely collected; national coverage	Allows for detailed information to be collected; flexible	Accounts for changes in screening coverage	Large volume of data; often has unique identifiers to create cohorts	Can estimate population prevalence
Weaknesses	Does not account for changes in population screened or diagnostic tests used; limited variables collected	May not be representative of population of interest	Not general-izable to the unscreened population; trends affected by changes in screening criteria	Limited information available; not generalizable to people not in care	Expensive and labor intensive; not timely
Example	Nationally notifiable: chlamydia, gonorrhea, syphilis, and chancroid	STI Surveillance Network (SSuN); Combatting Antimicrobial Resistant Gonorrhea and Other STIs (CARGOS)	National Job Training Program	Medicaid data	National Health and Nutrition Examination Survey (NHANES)

Source: Torrone, Elizabeth A. and Kyle T Bernstein. "Surveillance for Sexually Transmitted Diseases." Concepts and Methods in Infectious Disease Surveillance, edited by Nkuchia M. M'ikanatha and John K. Iskander, John Wiley & Sons, Ltd, 2014, pp. 122–131. doi: 10.1002/9781118928646.ch12.

Jurisdictions use public health information systems to collect, store, and process case report data in their jurisdiction, and, for notifiable diseases, to transmit the data to CDC for national surveillance. Often the public health surveillance system is an integrated system that is used for all reportable diseases and conditions in the jurisdiction, not just those that are sexually transmitted. The STI program manager may have little influence over the information system chosen. STI program managers may benefit from working with the assigned IT personnel to understand their specific data system. Policies and procedures for all aspects of the STI surveillance process and system are beneficial to create and disseminate among staff working with surveillance data. Examples of public health information systems (PHIS) can be found on this website: Public Health Information Systems (PHIS)|CDC.

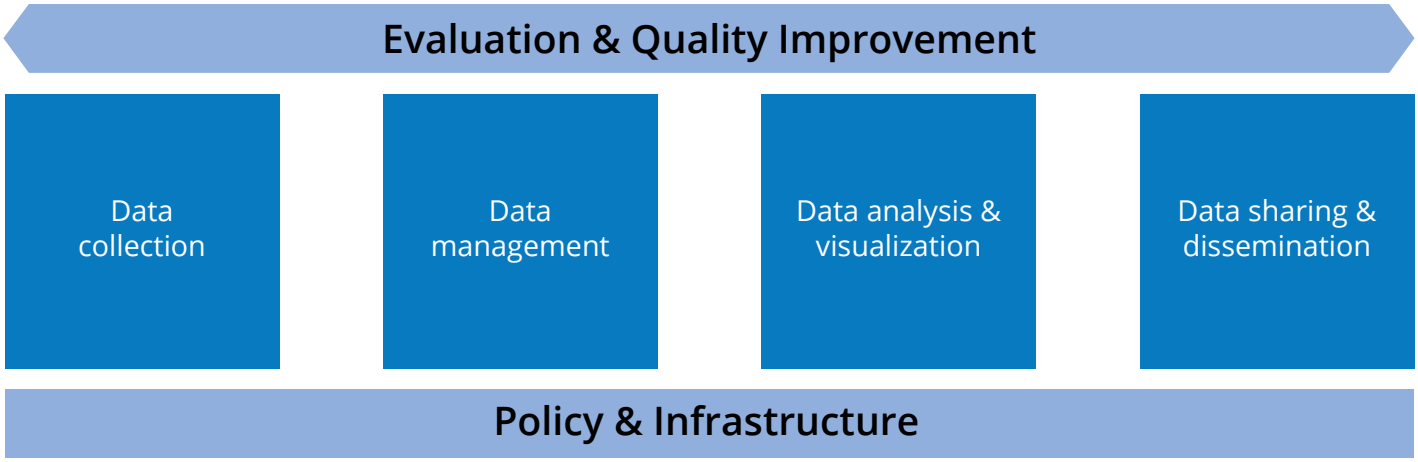
Components and Operations of a Surveillance System for STIs

In 2019, CDC and the Council of State and Territorial Epidemiologists (CSTE) published The Sexually Transmitted Disease (STD) Surveillance Capacity Framework Guidance to assist STLT health departments in accomplishing this important work according to best practices, to improve the quality of STI surveillance, and to maximize the impact of disease prevention. The STD Surveillance Capacity Framework Guidance was created in collaboration with surveillance subject matter experts from CDC, CSTE, and representatives from STLT STI surveillance programs. It describes six categories that are important for STI programs to address:

1. policy and infrastructure (overarching),
2. data collection,
3. data management,
4. data analysis and visualization,
5. data sharing and dissemination, and
6. evaluation and quality improvement (overarching).

Figure 3.1

STD SURVEILLANCE CAPACITY FRAMEWORK GUIDANCE



Source: Council of State and Territorial Epidemiologists (CSTE). The STD Surveillance Capacity Framework Guidance. 2019. https://cdn.ymaws.com/www.cste.org/resource/resmgr/std/Capacity_Framework_Survey.pdf.

Within each category, activities are identified as *foundational* (core to understanding trends in STIs that are completed by all STI surveillance programs) or *enhanced* (important to understanding trends in STIs that are completed after full implementation of foundational activities). STI program managers and others working in STI surveillance may benefit from reviewing the Framework to understand the activities recommended for each category. The STD Surveillance Capacity Framework Guidance also contains many important links to additional resources for training and policies and includes examples of how local areas have implemented the foundational or enhanced activities. Each category is briefly described below.

1. Policy and infrastructure—an overarching framework referring to the "backbone" of an STI surveillance program, or "the structure, authority, and policies that must exist before other activities and functions can be carried out."[49]
2. Data collection—the first step of STI surveillance once policy has established the program's authority and the necessary infrastructure is in place. Data collection can be conducted through electronic laboratory reporting and manual or electronic case reporting.

3. Data management—After data are collected in the step above, data are organized, maintained, and managed. This includes such functions as deduplication of records, automation of functions, and matching to other registries (e.g., HIV) to enhance case finding and completeness.
4. Data analysis and visualization—After data management, data analysis can be conducted to create simple tables or frequencies and case rates to understand trends. More sophisticated analysis may include network analysis or emergent outbreak detection.
5. Data sharing and dissemination—It is crucial for STI programs to share findings from data analysis with key partners and the public. This may be accomplished through agency websites, dashboards, direct messaging, and traditional and social media.
6. Evaluation and quality improvement—Similar to policy and infrastructure, this category pertains to all other categories in the Framework. STI surveillance functions need to be evaluated periodically to identify areas in need of quality improvement and recommend action.[50]

SURVEILLANCE & DATA MANAGEMENT

"Public health data and data systems take the pulse of our society; they measure and indicate how well we sustain the life and vitality of our population and our democracy.... To be meaningful, data must reflect accurate and timely information about all population groups and their individual and collective capacities to experience health and well-being."[51]

The following resources can provide assistance in incorporating these principles into an STI program's surveillance and data management efforts:

- Data Modernization Initiative Strategic Implementation Plan|CDC
- Operationalizing the CARE and FAIR Principles for Indigenous data futures

Policy and Infrastructure

Legal authority allowing public health agencies to collect data

Each jurisdiction has statutes or regulations that give the health department the authority to determine which communicable diseases are reportable and that require health care providers to make such reports. Laboratories are required to report reactive tests indicative of specific diseases. The process of creating such statutes and regulations is generally a shared responsibility between the state legislature and the state health department.

Some jurisdictions (state, tribal, territorial) allow local health entities to enact reporting regulations as well, especially during outbreaks of disease occurring in a local area. The list of which diseases are required to be reported to the state varies between states. Typically, communicable disease reporting regulations are updated every few years or when necessary. Each state's epidemiologist is usually the lead on this process.

Some states' communicable disease reporting requirements are legislatively mandated, but most are mandated through regulations (rules) made by the health entity rather than by the state legislature. Communicable disease reporting that is specified by regulations is more flexible than those specified by statutes, due to the ability of the state's chief health officer or epidemiologist to make changes quickly as new conditions arise.

Public Health and Data Authority|CDC

SEXUALLY TRANSMITTED DISEASES THAT ARE NOTIFIABLE TO CDC AS OF 2024 INCLUDE:[52]

Chancroid

Chlamydia *(Chlamydia trachomatis* infection)

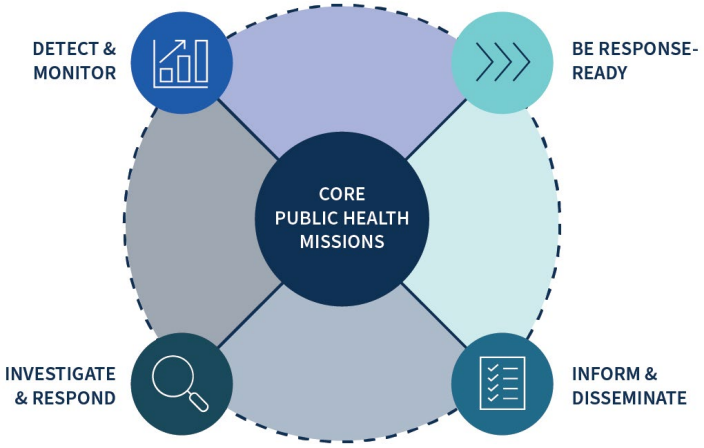
Congenital syphilis (including syphilitic stillbirth)

Gonorrhea *(Neisseria gonorrhoeae* infection)

Syphilis

Figure 3.2

CDC PUBLIC HEALTH DATA STRATEGY



Source: The Public Health Data Strategy|The PHDS|CDC

What is meant by a notifiable or reportable disease?

Notifiable diseases are those that when diagnosed are submitted to CDC for national surveillance, while reportable diseases are those that each state or territory decides are important locally to be informed about by health care providers and laboratories. A designated disease or condition can be part of a jurisdiction's surveillance system yet not nationally notifiable.

Table 3.2

REPORTABLE VERSUS NOTIFIABLE DISEASES AND CONDITIONS

REPORTABLE DISEASES AND CONDITIONS	NOTIFIABLE DISEASES AND CONDITIONS
✓ Each state or territory sets local laws and rules for which diseases and conditions must be locally reported.	✓ CSTE and CDC identify the list of nationally notifiable diseases and conditions.
✓ Health care professionals, laboratories, hospitals, and other providers are required by state law or regulation to inform public health departments when a person is diagnosed.	✓ States voluntarily inform CDC when a person meets certain criteria to become a case.
✓ Public health departments collect information about the person and how they became ill.	✓ Case notifications do not contain personally identifiable information.
✓ This information is used to locate the source of an outbreak and prevent spread.	✓ CDC uses data to monitor, measure, and alert individual communities or the nation to outbreaks and other public health threats.
✓ The list of diseases and conditions can change every year.	✓ The list of about 120 diseases and conditions is updated every year.

Adapted from: "What is Case Surveillance?" Centers for Disease Control and Prevention, www.cdc.gov/nndss/about/index.html.

The National Notifiable Diseases Surveillance System (NNDSS) is a multifaceted public health disease surveillance system that allows public health officials to monitor the occurrence and spread of about 120 diseases and conditions such as tuberculosis, anthrax, and mumps, in addition to some STIs. The list of notifiable diseases by year can be found here:

National Notifiable Conditions (Historical)|National Notifiable Diseases Surveillance System (NNDSS)|CDC.

STLT health departments notify CDC of cases of specific diseases and conditions that they identify in their jurisdictions. Many health departments and partner organizations, such as the CSTE, use components of the NNDSS to:

- collect, manage, analyze, interpret, and disseminate health-related data for diseases and conditions designated as nationally notifiable;
- develop and maintain national standards—such as consistent case definitions for nationally notifiable diseases and conditions—that are applicable across states;
- maintain the official national notifiable diseases statistics;
- provide detailed data to CDC programs to help identify specific disease trends;
- work with other jurisdictions and partners to implement and assess prevention and control programs; and
- track national health trends published in summarized data findings from 57 state, territorial, and local reporting jurisdictions in the *Morbidity and Mortality Weekly Report (MMWR)*.[53]

How is public health surveillance operationalized?

To ensure consistency among reports being sent to the public health surveillance system, the case must meet an established surveillance case definition.

> A surveillance case definition is a set of uniform criteria used to define a disease for public health surveillance. Surveillance case definitions enable public health officials to classify and count cases consistently across reporting jurisdictions.[54]

RESOURCE

Resource for Surveillance Case Definitions

Surveillance Case Definitions for Current and Historical Conditions | CDC

While health jurisdictions may create their own case definitions, using the definitions set by the CSTE Position Statements ensures that data being sent to CDC are consistent between jurisdictions.

A surveillance case definition will typically consist of laboratory and clinical criteria that must be present in the patient (case). For some conditions, such as syphilis, epidemiologic criteria may also be required. A surveillance case definition is used for routine, ongoing collection of data and differs from that which will be used during outbreak investigation. CSTE determines which conditions should be nationally notifiable and works with CDC to establish and update the surveillance case definitions. State and territorial health departments create and send standards-based case notifications to CDC for notifiable conditions.

Most jurisdictions require both laboratories and health care providers to make a communicable disease report on one individual case. While this may seem redundant, it serves to increase the likelihood that a disease will be reported by at least one source. Also, most case reporting forms require different variables to be reported by health care providers than what is reported by laboratories. For example, a lab report is highly unlikely to know the medication with which the patient was treated, while the health care provider might be unlikely to know the specific lab assay used to test the specimen.

In summary, public health surveillance is operationalized through: 1) the establishment of a jurisdictional list of reportable diseases and conditions and procedures, 2) CSTE and CDC establishment of the list of diseases and conditions about which data are requested, and then 3) subsequent reporting of these diseases and conditions by health care entities when criteria are met.

BEST PRACTICE

When communicable disease reporting case definitions for a state, tribal, local, or territorial jurisdiction are consistent with the CSTE surveillance case definitions, data transmitted to CDC are comparable to other jurisdictions.

CROSS-REFERENCE

Outbreak Response for Surveillance & Data Management

During local outbreaks of disease, most state communicable disease rules allow for expansion of reporting in situations of public health threat or outbreak. Often, a separate data collection tool is developed to capture variables of specific interest to the outbreak. Please refer to the Outbreak Response chapter of this resource for additional information.

Data Collection

Most data pertaining to STIs are acquired via case-based reporting using communicable disease report (CDR) forms, electronic case reporting (eCR), and electronic laboratory reporting (ELR), supplemented by data collected during case investigations. Following the principle that public health data are information for action, the information gained from case or lab reports is often used by STI programs to calculate incidence and prevalence among specific groups (by age, geographic location, race, etc.) to support program planning decisions or evaluate effectiveness of interventions.[55] These data are also used to formulate disease intervention responses.

CROSS-REFERENCE

Disease Intervention for Surveillance & Data Management

Please refer to the chapter on Disease Intervention for additional information.

The STI National Strategic Plan contains several strategies to improve collection and use of STI data. STI programs could benefit by incorporating as many of the strategies as possible to better understand the extent of how STIs are affecting their communities.

STRATEGIES TO IMPROVE COLLECTION AND USE OF STI DATA FROM THE STI NATIONAL STRATEGIC PLAN

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 sequels 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.

Source: U.S. Department of Health and Human Services. Sexually Transmitted Infections National Strategic Plan for the United States: 2021–2025. 2020. www.hhs.gov/sites/default/files/STI-National-Strategic-Plan-2021-2025.pdf.

Core variables are requested to be collected for reports of STIs so that transmission of notifiable diseases to CDC is consistent between jurisdictions. Core variables are those deemed essential for counting and/or investigating reported cases accurately and for describing trends in reported cases in key populations at the local and state level. Core variables vary by disease.

Many health jurisdictions conduct enhanced surveillance for gonorrhea among identified populations for which additional core variables are collected. These core variables may include clinical, demographic, and provider-level variables including but not limited to diagnosing facility type, specimen collection date, anatomic site(s) of infection, sex of sex partner(s), previous history of *Neisseria gonorrhoeae* infection, gonorrhea-related sequelae (i.e., presence of pelvic inflammatory disease [PID], disseminated gonococcal infection), and treatment provided and dose of treatment/antibiotic).[56]

Core variables collected for syphilis differ by stage. In addition to the core variables, items required to be reported to the health jurisdiction typically include patient-identifying and locating information, onset date of symptoms or date of diagnosis, and treatment prescribed or administered. Other data collection requirements are normally left to the local health jurisdiction.

Reporting requirements are also time-specific, per each state's statute or regulation, to provide the best opportunity for disease intervention. For example, many states specify time frames for reporting of STIs, which usually range between 24 hours after diagnosis to several days.

As described in the section *How is public health surveillance operationalized?*, communicable disease reporting regulations and statutes typically require both the laboratory and the health care provider to make a report to the health jurisdiction. The methods used for this are traditional, paper-based laboratory reports or ELR and traditional, paper-based communicable disease case reports or electronic case reports (eCR). Most states have transitioned from using an exclusively paper-based method to an automated system, while jurisdictions other than states may still use traditional methods.[57, 58]

ELECTRONIC LABORATORY REPORTING (ELR)

According to CDC, ELR is the transmission of digital laboratory reports from laboratories to health care and public health partners. This automates the reporting process by translating information into an electronic message that can be automatically sent and processed.[59]

ELECTRONIC CASE REPORTING (eCR)

According to CDC, eCR is the automated exchange of case report information between health care facilities and public health agencies. This method securely transfers data for disease tracking, case management, and contact tracing.[60]

Figure 3.3

BENEFITS OF ELECTRONIC CASE REPORTING

eCR replaces manual case reports that are generally done by mail, phone, fax, or through an online portal

FOR HEALTH CARE PROVIDERS	FOR PUBLIC HEALTH AGENCIES
• Saves time by eliminating manual data entry and reporting • Streamlines reporting to multiple jurisdictions • Fulfills the CMS Promoting Interoperability Program requirements for eCR • Can fulfill legal reporting requirements • Can be implemented for all reportable conditions	• Enables bidirectional data exchange • Provides more complete data to support outbreak management • Efficiently monitors the spread of reportable diseases • Reduces response time with automated information • Supports submission of case-base data (without identifiable information) to CSC through the National Notifiable Diseases Surveillance System

Source: "What is eCR?" Centers for Disease Control and Prevention, www.cdc.gov/ecr/php/about/index.html.

Studies demonstrate that adoption of an ELR and eCR method of reporting can be more timely, accurate, and complete than other methods. For example, in Illinois, a 2019 study described that

> manual reporting remains a huge burden; 90–93% of [chlamydia and gonorrhea] cases were reported to Illinois Department of Public Health (IDPH) via electronic laboratory reporting (ELR), and the remaining were reported through web-based data entry platforms, faxes, and phone calls… However, cases reported via ELRs only contain information available to a laboratory facility and do not contain additional data needed for public health.[61]

In addition "…eCR demonstrated a more complete case report and represents a promising future of reducing provider burden for reporting cases."[62]

Additionally, an Oregon study conducted in 2020 found that

> the eCR approach was successful in identifying CT [chlamydia trachomatis] and GC [Neisseria gonorrhoeae] cases and provided a more complete set of information to assist public health authorities when compared with ELRs. Electronic case reporting has the potential to automate and relieve staff burden on an important reporting requirement for clinical providers.[63]

RESOURCES

Resources for ELR and eCR

Electronic Laboratory Reporting (ELR)|CDC

What is eCR?|eCR|CDC

The Difference Between eCR and Traditional Case Reporting|CDC

Infectious Disease Reporting and Data|Vermont Department of Health—example of state website giving information about disease reporting including regulations, forms, and link to electronic case reporting form.

Electronic Case Reporting for Sexually Transmitted Infections|Public Health Informatics Institute

Because of the volume and complexity of STI data collection, it may be difficult to accomplish these important tasks unless there is an identified STI surveillance coordinator at as many jurisdictional levels as needed (e.g., state, territorial, tribal, and county or city health departments). An STI surveillance coordinator position can help to ensure quality, timeliness, and accuracy of data. Duties of such positions often include:

- data management of STI surveillance and laboratory databases;
- deduplication of cases;
- data mining for missing variables;
- manage complex databases;
- ensure all data are electronically imported or manually entered;
- conduct quality assurance activities of data;
- develop and disseminate data reports;
- write data management and dissemination procedures;
- collaborate with IT staff to ensure that all data hardware and software systems are maintained for efficient operations and that all data are protected in a secure environment for confidentiality purposes;
- present epidemiological data to program work groups, community groups, local agencies, at national meetings, and to policymakers; and
- communicate with regional staff.

TIP

An issue faced by many STI programs concerns the difference between a clinical diagnosis and the surveillance case definition that most often occurs in syphilis and congenital syphilis (CS) cases but can happen with any STI diagnosis. When a clinician makes their diagnosis, it may not conform to the specific criteria required by the surveillance case definition. "Surveillance case definitions are not intended to be used by health care providers for making a clinical diagnosis or determining how to meet an individual patient's health needs."[64] This discrepancy may cause confusion for the DIS assigned the case investigation or for the STI surveillance coordinator. New DIS sometimes believe they are supposed to accept the clinician's diagnosis even though it conflicts with their training for syphilis staging and the syphilis surveillance case definition. Correctly staging the syphilis infection, or correctly apply the surveillance case definitions for chlamydia or gonorrhea, within the STI surveillance system ensures consistency of national reporting. This sometimes involves collaborating with the patient and clinician to collect additional samples for testing or other information needed to stage the syphilis case.

TRAINING & PROFESSIONAL DEVELOPMENT

FOR SURVEILLANCE & DATA MANAGEMENT

The Core Competencies for Public Health Professionals was created in 2021 by the Council on Linkages Between Academia and Public Health Practice. Domain 1 addresses Data Analytics and Assessment Skills.

Training courses to address these competencies can be found in CDC TRAIN as part of the Public Health 101 series. These online courses are free. All STI personnel with responsibilities for surveillance and data management are encouraged to complete this series. A link to the public health surveillance training is here: Introduction to Public Health Surveillance | CDC TRAIN

STI program staff with responsibilities for surveillance may also receive training through mentorship with other staff who do this work. Funded programs may contact CSTE, National Coalition of STD Directors (NCSD), and the jurisdiction's CDC project officer to coordinate additional trainings, mentorship, and support.

BEST PRACTICE

For the regular review of STI case report data, jurisdictions could consider forming a data quality work group to discuss increases or decreases in case reports, as well as the completeness and timeliness of case reporting, and identify and initiate action items for follow-up.

Data Management

Data management activities primarily concern the quality and completeness aspects of surveillance. Most STI programs with responsibility for sending case notifications to CDC employ an identified person as data manager for this purpose. The STI data manager will regularly perform functions that deduplicate records and perform other data-cleaning activities on a routine basis. This position will also ensure that the core variables are being collected on reports of chlamydia, gonorrhea, and syphilis. The STI data manager is often the person who directly interacts with other IT professionals regarding incoming electronic laboratory reports. Many jurisdictions also conduct manual or automatic matching of cases between the STI database and other relevant databases, such as Enhanced HIV/AIDS Reporting System (eHARS) for HIV.

RESOURCE

Resource for Surveillance & Data Management

STI Informatics & Surveillance | CDC

THE ROLE OF SYNDEMICS IN PUBLIC HEALTH SURVEILLANCE

A syndemic is defined as a "population-level clustering of social and health problems."[65] The criteria of a syndemic are:[66, 67]

1. Two (or more) diseases or health conditions cluster within a specific population;
2. Contextual and social factors create the conditions in which two (or more) diseases or health conditions cluster; and
3. The clustering of diseases results in adverse disease interaction, either biological or social or behavioral, increasing the health burden of affected populations.

Specifically, for STI programs, one can understand it this way:

> HIV, substance use, and viral hepatitis affect similar populations as STIs and each of these health concerns directly affects the others. A holistic, whole-of-society approach, including addressing social and economic barriers, is required to improve this syndemic and America's health.[68]

STI programs can benefit from integrating their STI surveillance system with their HIV surveillance system due to the high volume of co-infections. Some programs do this through a direct linkage while others use a method of periodic data matching between systems. A project was conducted in three states and the District of Columbia to assess the costs involved in this integration and identify the benefits in terms of HIV cases averted. Findings included that while the annualized cost of surveillance system integration was between $437,000 and $447,000, it is anticipated that this investment would result in future cost savings since a small number of HIV cases averted (between 13 and 22) are needed to break even.[69]

Data Analysis and Visualization

Statisticians and epidemiologists receive training in a variety of analytical methods that require knowledge of the underlying statistical and mathematical foundations used to develop those techniques and their proper application. Providing an exhaustive and detailed description of the different methods available to explore, summarize, analyze, or display surveillance data goes well beyond the scope of information that can be provided within this resource. Most, if not all, STI programs have access to such personnel to conduct data analysis. Some resources that may be helpful are provided at the end of this chapter. Some considerations are presented below that may assist the STI program manager to be involved in data analysis if they have not had experience with this.

Proceed from the simple to the complex

Start by asking one question for which an answer is wanted. For example, how many cases of a given STI were reported each year? Then, look at characteristics of the cases, such as demographics.

Reviewing the basics first will point a data analyst toward more complex questions. Some standard methods of conducting a preliminary analysis of data for STIs include calculating incidence rates by disease and then specific to sex of patient, specific to age group, or high morbidity geographic areas.[70]

Become intimately familiar with program data

Such familiarity can only happen if one regularly reviews data. Many epidemiologists and others responsible for data analysis make a habit of reviewing data on a monthly or quarterly basis. Waiting until the end of the data year may hinder timely decision-making and interventions. Only by knowing one's program data can one understand and appropriately interpret the results of more complicated analyses. It can also help to quickly identify a potential outbreak situation. If after regular monthly review, one understands the expected level of disease, then one can clearly see when there has been an increase. Asking the proper questions of the data can often drive the type and direction of the analysis needed.

Ensure valid data

The final guiding principle of data analysis is a familiar one: "garbage in; garbage out." How much care is given to collecting and managing the data in standard ways to minimize error and maximize validity? Just because data are stored in a computer and because computer programs can generate official-looking reports from those data does not necessarily mean the data are valid. Validity of data can be accomplished by periodically reviewing a random selection of source documents such as patient charts, laboratory reports, and case reports and comparing them to the outcome data. Consider regularly assessing the completeness of the data received and then take steps to secure missing data.

RESOURCES

Resources for Analysis and Interpretation of Surveillance Data

One reference that STI programs may find helpful in preparing for the analysis and interpretation of surveillance data is the book, *Principles and Practice of Public Health Surveillance*.[71] This book presents an overview of the types of analytical presentations and methods that are commonly employed, and it discusses many of the associated data issues that can be considered in analyzing and interpreting data.

Another resource is the free, online book: The CDC Field Epidemiology Manual|Field Epi Manual|CDC.

CDC has a resource called AtlasPlus which is an interactive tool that gives users the ability to create customized tables, maps, and charts using nearly 20 years of CDC's surveillance data on HIV, viral hepatitis, STIs, and TB. AtlasPlus also provides access to indicators that allow users to view social and economic data in conjunction with surveillance data for each disease.

Analysis and Interpretation of Public Health Data: Part 1 and Part 2|CDC TRAIN

BEST PRACTICE

Regular analysis of STI data can help an STI program to understand the distribution of STIs in the jurisdiction, identify trends, and quickly identify outbreaks.

VARIABLES TO CONSIDER FOR STI SURVEILLANCE

Variables that aid in understanding the demographics of specific populations affected by STIs may not be uniformly collected by STI data systems. Other variables of interest may only be collected if the patient was interviewed, rather than for all cases reported. When data analysis is performed, it may be evident in what is not being reported that STI programs lack a comprehensive understanding of these important factors. Data analysis may assist in identifying important variables not being collected. While it may not be feasible for a state STI program to expand its public health surveillance system to include additional variables, utilizing an alternate method of public health surveillance rather than case-based reporting, such as special surveillance or population-based surveillance, may be a way to gain a deeper understanding.

Sometimes variables of importance that aid in understanding STI or HIV cases are not available to a health jurisdiction. CDC's Social Vulnerability Index has been used to attempt to better understand the extent of HIV infection among those experiencing social vulnerability. One study found that rates of chlamydia and gonorrhea cases were "approximately 1.0 to 2.4 times higher in high vulnerability counties than low vulnerability counties."[72]

Social Vulnerability Index|Place and Health—Geospatial Research, Analysis, and Services Program (GRASP)|ATSDR

Data Sharing and Dissemination

STI data files are de-identified in the process of electronic transmission from the health jurisdiction to CDC through the National Electronic Disease Surveillance System (NEDSS). Similarly, jurisdictions de-identify all data when preparing for a public release so that an individual cannot be identified.

When releasing data for geographic units with smaller populations, or for demographic groups with small numbers, care is taken to avoid the possible identification of individuals. This may include data-suppression guidelines, which may vary by jurisdiction.

STI program managers for a state health department typically have responsibility, shared with the state's epidemiologist, to confirm the accuracy of annual STI data submitted to CDC to close out the data year.

INTERSTATE COMMUNICATIONS CONTROL RECORDS (ICCR)

Sometimes, a communicable disease report needs to be sent from one health jurisdiction to another. This may occur when a patient needs follow-up because they live in one state but received care in another, the lab specimen of a patient was sent to a laboratory out of state, or a patient is tested in one state and needs treatment or follow-up in their home state. A specific type of communication unique to STI programs facilitates this secure transmission of confidential information in a timely manner. STLT STI programs identify one ICCR point of contact who oversees this process of information transmittal. This method is also required for sending requests for partner services between jurisdictions.

RESOURCE

Resources for Surveillance & Data Management

Integrated Surveillance Information Systems/ NEDSS | National Notifiable Diseases Surveillance System (NNDSS) | CDC

STI Communication Resources & Social Media | CDC

An important step in the data process is to inform the public, policymakers, and partners about the levels of disease in the jurisdiction, trends observed or predicted, and methods of prevention, including actions an individual may take to protect themselves. Many states choose to do this for routine data by publishing morbidity reports on their websites. Some examples are linked in the resource box on the next page. It is most effective if communications are tailored to the specific needs of the target audience.

Infographics are also helpful in highlighting STI surveillance data. For example,

- A concise interpretation of the data presented when creating reports detailing case reporting or prevalence monitoring can aid understanding and application of the data.
- Annual reports of incidence rates and prevalence (if available) are enhanced by describing trends by demographic and socioeconomic variables as well as all other variables of local importance.
- Feedback reports to health care providers of data that identify their specific contributions to STI prevention efforts, prevalence data to guide their screening practices, and feedback on screening coverage, if available, may improve provider reporting.
- Newsletters or media releases that provide clear, concise data interpretation and advice to clinicians, laboratory directors, and community groups can help inform the public.
- Health alerts to targeted providers that present information that would serve to stimulate additional reporting, e.g., reports of outbreak investgations or unexpected changes in epidemiological patterns can help inform health care providers.

> **"Public health decision-making depends on three types of knowledge (surveillance, scientific research, and lay experience). Surveillance knowledge includes statistics that measure health outcomes, health care performance, and other determinants of health. Public health practitioners need to understand and effectively communicate these three complementary types of knowledge. This may involve the use of a variety of communication vehicles such as formal surveillance reports or bulletins, annual reports, teleconferences with partners, media conferences, media releases, and public advisories."**
>
> Choi, 2012[73]

RESOURCES

Example Jurisdictional Guidelines for the Public Release of Public Health Data and Jurisdictional Morbidity Reports

Guidelines for Public Release of Data | New Hampshire Department of Health and Human Services

Guidelines for the Release of Public Health Data Derived from Personal Health Information | Montana Department of Public Health and Human Services

Statistics, Data, & Reports | Los Angeles County

Reportable and Infectious Diseases Data | Florida HealthCHARTS

BEST PRACTICE

Regular sharing of STI data with the public, policymakers, affected community members, partners, and STI program staff can facilitate transparency and inform public health actions.

Data sharing is permissible under the Health Insurance Portability and Accountability Act (HIPAA) of 1996 for public health purposes and must adhere to the data-sharing agreement and other policies governing use of these data. It is critical that jurisdictions engage their legal counsel prior to entering into a data-use agreement and during the performance of a data-sharing agreement to have a clear understanding of their authorities and obligations under the agreement.

Figure 3.4

Data sharing: Granting certain individuals or organizations access to data that contain personally identifiable information with the understanding that personally identifiable or potentially identifiable data cannot be re-released further unless a special data-sharing agreement governs the use and re-release of the data and is agreed upon by the receiving program and the data provider(s).

STI program managers are encouraged to familiarize themselves with CDC's Data Security and Confidentiality Guidelines for HIV, Viral Hepatitis, STDs, and Tuberculosis Programs, which outlines ten principles that "guide the collection, storage, and use of data for legitimate public health purposes."[74]

Legitimate public health purposes can be defined as a population-based activity or individual effort aimed primarily at the prevention of injury, disease, or premature mortality. This term also refers to the promotion of health in the community, including:

1. assessing the health needs and status of the community through public health surveillance and epidemiologic research;
2. developing public health policy; and
3. responding to public health needs and emergencies.

Public health purposes can include analysis and evaluation of conditions of public health importance and evaluation of public health programs.[75]

Figure 3.5

TEN GUIDING PRINCIPLES FOR DATA COLLECTION, STORAGE, SHARING, AND USE TO ENSURE SECURITY AND CONFIDENTIALLY

1.	**Public health data should be acquired, used, disclosed, and stored for legitimate public health purposes.**
2.	**Programs should collect the minimum amount of personally identifiable information necessary to conduct public health activities.**
3.	**Programs should have strong policies to protect the privacy and security of personally identifiable data.**
4.	**Data collection and use policies should reflect respect for the rights of individuals and community groups and minimize undue burden.**
5.	**Programs should have policies and procedures to ensure the quality of any data they collect or use.**
6.	**Programs have the obligation to use and disseminate summary data to relevant stakeholders in a timely manner.**
7.	**Programs should share data for legitimate public health purposes and may establish data-use agreements to facilitate sharing data in a timely manner.**
8.	**Public health data should be maintained in a secure environment and transmitted through secure methods.**
9.	**Minimize the number of persons and entities granted access to identifiable data.**
10.	**Program officials should be active, responsible stewards of public health data.**

Adapted from: Lee, Lisa M, and Lawrence O. Gostin. "Ethical Collection, Storage, and Use of Public Health Data: A Proposal for National Privacy Protection." *JAMA*, vol. 302, no. 1, 2009, pp. 82–84. doi: 10.1001/jama.2009.958.

Source: Centers for Disease Control and Prevention. Data Security and Confidentiality Guidelines for HIV, Viral Hepatitis, Sexually Transmitted Disease, and Tuberculosis Programs: Standards to Facilitate Sharing and Use of Surveillance Data for Public Health Action. 2011. www.cdc.gov/sti/media/pdfs/PCSIDataSecurityGuidelines.pdf.

The Data Security and Confidentiality Guidelines also lay out many standards, based on the ten guiding principles, which are recommended "to ensure the security, confidentiality, and appropriate use, including sharing, of data collected by National Center for HIV, Viral Hepatitis, STD, and Tuberculosis Prevention (NCHHSTP)-funded programs."[76]

BEST PRACTICE

Ensure ongoing security of STI data.

RESOURCES

Resources for Data Security and Confidentiality

Data Security and Confidentiality Guidelines for HIV, Viral Hepatitis, Sexually Transmitted Disease, and Tuberculosis Programs: Standards to Facilitate Sharing and Use of Surveillance Data for Public Health Action | CDC

Data Security & Confidentiality | Program Collaboration and Service Integration | CDC

Data Sharing and Collection Principles and Standards | Program Collaboration and Service Integration | CDC

Summary of the HIPAA Privacy Rule | HHS.gov

Evaluation and Quality Improvement

Periodic evaluation of a surveillance system helps to ensure the system serves a useful function and is meeting its objectives. Findings of the evaluation can be shared with program evaluation teams for continuous quality improvement. Typically, an evaluation includes such items as:

- an explicit statement of the purposes and objectives of the system,
- a description of its operation,
- documentation of how the surveillance system has been useful,
- an assessment of its different attributes, and
- estimates of its cost.

RESOURCES

Resource for Surveillance System Evaluation

According to CDC's Updated Guidelines for Evaluating Public Health Surveillance Systems, the recommended evaluation method for surveillance systems mirrors that of CDC's Program Evaluation Framework.

CROSS-REFERENCE

Program Evaluation for Surveillance & Data Management

For more detailed information on evaluation of STI programs, see the Program Evaluation chapter of this resource.

TASKS FOR EVALUATING A PUBLIC HEALTH SURVEILLANCE SYSTEM[77]

- **A.** Engage the interested parties in the evaluation.
- **B.** Describe the surveillance system to be evaluated.
  - **B1.** Describe the public health importance of the health-related event under surveillance.
  - **B2.** Describe the purpose and operation of the surveillance system.
  - **B3.** Describe the resources used to operate the system.
- **C.** Focus the evaluation design.
- **D.** Gather credible evidence regarding the performance of the surveillance system.
  - **D1.** Indicate level of usefulness.
  - **D2.** Describe each system attribute.
- **E.** Justify and state conclusions and make recommendations.
- **F.** Ensure use and share lessons learned.

BEST PRACTICE

Consider conducting a periodic evaluation of the public health surveillance system for STIs to identify strengths and areas needing improvement.

How Does Syphilis Surveillance Differ from Other STIs?

Unlike gonorrhea and chlamydia, where a reactive test usually indicates a new case for reporting purposes, a reactive syphilis test does not necessarily indicate a new syphilis case. This determination is made based on the patient's syphilis titer, symptoms, epidemiological data, and prior infection and treatment history.

In most health jurisdictions, incoming reactive syphilis laboratory tests ("reactors" or "serologies") are either prioritized for investigation as a new infection or are closed without investigation after a record search is completed and a previous history of testing and treatment is found. There is a difference between prioritizing a syphilis reactor for case investigation and determining whether the report represents a new case of syphilis and staging the case. Health jurisdictions make determinations about which cases are a priority for investigation (consisting of treatment confirmation, patient interview, and offer of partner services) based on local syphilis morbidity and local resources. Health jurisdictions usually strive to prioritize reactors for investigation if they may represent a new infectious case of syphilis. Health jurisdictions may close incoming reactors without assigning for investigation if it is believed they represent syphilis staged as greater than one year's duration (not infectious). Sometimes the syphilis stage cannot be determined without an initial case investigation. If a reactor is prioritized for investigation, the next step taken in most health jurisdictions—especially those with high syphilis case volume—is to assign the reactor for investigation as high, medium, or low priority depending on their likelihood of representing a new infectious case of syphilis. When a health jurisdiction has sufficient staff resources (usually DIS) to conduct investigations on incoming reactors, such prioritization may not take place because all reactors are investigated. Staff with the responsibility for prioritizing incoming reactors for investigation or closure require specific training in interpretation of syphilis test results. Interpretation of syphilis test results is complex and technical but is necessary to correctly perform this prioritization. The best source for this knowledge is often from an experienced DIS or a DIS supervisor. Some criteria used for determining which reactors to assign for further investigation include pregnancy, high titer, HIV co-infection, or age. These are best defined locally based on the health jurisdiction's syphilis morbidity trends.

A tool used by STI programs for decades is the "reactor grid," which allows the data or program staff responsible for making these determinations on priority to uniformly make these decisions.

However, reactor grids are tools that were designed for use before the widespread adoption of ELR. Such grids are also widely acknowledged to be unreliable, and prior studies have demonstrated that many potential cases were missed. CDC's National Center for HIV, Viral Hepatitis, STD, and Tuberculosis Prevention collaborated with the Florida Department of Health and the New York City Department of Health and Mental Hygiene to develop a computational algorithm to prioritize syphilis reactors for further investigation by health departments.

> With electronic laboratory reporting, it is possible to compare every reported syphilis serology result added into the surveillance systems with previously reported serologies.[78, 79]

It was demonstrated that the proposed algorithm significantly increased accuracy (99.4% sensitive), and that the automated process would replace much or all of the manual work, allowing for reallocation of those resources for investigating the prioritized serologies.[80]

Prioritization decisions about which reactor to close and which to assign for investigation can be made locally, since it is expected that one statewide prioritization grid would not fit all local jurisdictions which may be experiencing higher or lower levels of syphilis cases. Similarly, these prioritization decisions can be reexamined annually, or as needed, to ensure they still are effective.

FOCUS ON CONGENITAL SYPHILIS (CS)

To assist STI program leadership in understanding CS morbidity in their jurisdiction, analysis of public health surveillance data is improved if the extent to which current and recent pregnancy status is documented in case investigations and reports, regardless of stage of syphilis infection. Accomplishing this may mean the jurisdiction's communicable disease report forms be amended to include pregnancy status if this is not currently present. Steps could be taken to improve reporting and collecting this information, if needed.

Data analysis personnel and epidemiologists often undertake periodic examinations to identify potential increases in pregnant women with syphilis and CS cases. Consider using the CS missed opportunities cascading framework to categorize reasons each CS case in a jurisdiction was not prevented to inform prevention efforts.[81, 82]

Data analysis personnel and epidemiologists could also consider a periodic analysis of the rate of CS cases averted for the entire jurisdiction and then by sub-jurisdictions to identify differences and assist with program planning.[83] When such an analysis was performed in New York, it informed the STI program that the county with the highest level of P&S syphilis cases outside of New York City also achieved the greatest number of CS cases averted.[84] Digging into reasons for this, the STI program was able to identify several policy and programmatic changes that could then be replicated in other areas.

RESOURCES

Resources for Syphilis Surveillance

Should Your Jurisdiction Automate a Syphilis Record Search Process? YES! | NCSD

Resources for Case Notification | STI Informatics | CDC

Syphilis Surveillance Supplemental Slides | STI Statistics | CDC

Training webinar series from CSTE: Case-based Surveillance for Syphilis

Automated Record Search and Review Algorithm for Syphilis on GitHub (Instructions included)

Web-based, open-source Syphilis Reactor Grid Evaluator[85]

RESOURCES

Additional Resources for Surveillance & Data Management

Teutsch, Steven M. and R. Elliott Churchill, editors. *Principles and Practice of Public Health Surveillance*. 2nd ed., Oxford University Press, 2000.

Updated Guidelines for Evaluating Public Health Surveillance Systems | CDC

STD Surveillance Tips | CDC

County-level Syphilis Data | STI Statistics | CDC

Webinar Library | CSTE

The CDC Field Epidemiology Manual | Field Epi Manual | CDC

Public Health Data Policy and Standards | CDC
Data Modernization Initiative | CDC

Conclusion

Surveillance and data management are essential tools for a successful STI program. This chapter provides examples of the necessary tools and resources to empower STI program staff to create and oversee public health surveillance systems for STIs in their jurisdiction and make effective decisions. For the greatest impact, STI programs can involve all relevant community partners throughout the development, implementation, and evaluation of surveillance and data management processes to ensure an efficient and effective public health surveillance system.

BEST PRACTICES FOR SURVEILLANCE & DATA MANAGEMENT

- *When communicable disease reporting case definitions for a state, tribal, local, or territorial jurisdiction are consistent with the CSTE surveillance case definitions, data transmitted to CDC are comparable to other jurisdictions.*
- *For the regular review of STI case report data, jurisdictions could consider forming a data quality work group to discuss increases or decreases in case reports, as well as the completeness and timeliness of case reporting, and identify and initiate action items for follow-up.*
- *Regular analysis of STI data can help an STI program to understand the distribution of STIs in the jurisdiction, identify trends, and quickly identify outbreaks.*
- *Regular sharing of STI data with the public, policymakers, affected community members, partners, and STI program staff can facilitate transparency and inform public health actions.*
- *Ensure ongoing security of STI data.*
- *Consider conducting a periodic evaluation of the public health surveillance system for STIs to identify strengths and areas needing improvement.*

Endnotes

[38] "STI Informatics: Public Health Information Systems (PHIS)." *Centers for Disease Control and Prevention*, www.cdc.gov/sti-informatics/php/training/phis.html.

[39] German, Robert R., et al. "Updated Guidelines for Evaluating Public Health Surveillance Systems: Recommendations from the Guidelines Working Group." *MMWR Recommendations and Reports*, vol. 50, no. 13, 2001, pp. 1–35.

[40] Thacker, Stephen B. and Ruth L. Berkelman. "Public Health Surveillance in the United States." *Epidemiologic Reviews*, vol. 10, no. 1, 1988, pp. 164–190. doi: 10.1093/oxfordjournals.epirev.a036021.

[41] Foege, Wm. H., et al. "Surveillance Projects for Selected Diseases." *International Journal of Epidemiology*, vol. 5, no. 1, 1976, pp. 29–37. doi: 10.1093/ije/5.1.29.

[42] Murray, Jillian and Adam L. Cohen. "Infectious Disease Surveillance." *International Encyclopedia of Public Health (Second Edition)*, 2017, pp. 222–229.

[43] Lazenby, Gweneth B., et al. "Developing Sentinel Surveillance for Chlamydia and Gonorrhea using Test Results from Routine Screening during Pregnancy." *Sexually Transmitted Diseases*, vol. 50, no. 1, 2023, pp. 21–27.

[44] Oliver, Sara E., et al. "Ocular Syphilis—Eight Jurisdictions, United States, 2014–2015." *MMWR Weekly Report*, vol. 65, no. 43, 2016, pp. 1185–1188.

[45] Nettleton, William D., et al. "Notes from the Field: Ongoing Cluster of Highly Related Disseminated Gonococcal Infections—Southwest Michigan, 2019." *MMWR Weekly Reports*, vol. 69, no. 12, 2020, pp. 353–354. doi: 10.15585/mmwr.mm6912a5.

[46] Centers for Disease Control and Prevention. *Disseminated Gonococcal Infection Case Reporting Form*, www.cdc.gov/sti/media/pdfs/2024/04/dgicasereportingform-508.pdf.

[47] Torrone, Elizabeth A. and Kyle T Bernstein. "Surveillance for Sexually Transmitted Diseases." *Concepts and Methods in Infectious Disease Surveillance*, edited by Nkuchia M. M'ikanatha and John K. Iskander, John Wiley & Sons, Ltd, 2014, pp. 122–131. doi: 10.1002/9781118928646.ch12.

[48] "How Big Data is Helping Monitor STD Rates and Get People Tested." Inside AI New. 19 January 2019. https://insideainews.com/2019/01/19/how-big-data-is-helping-monitor-std-rates-and-get-people-tested/.

[49] Council of State and Territorial Epidemiologists (CSTE). *The STD Surveillance Capacity Framework Guidance*. 2019. https://cdn.ymaws.com/www.cste.org/resource/resmgr/std/Capacity_Framework_Survey.pdf.

[50] Ibid.

[51] National Commission to Transform Public Health Data Systems. *Charting a Course for an Equity-Centered Data System*. Robert Wood Johnson Foundation. 1 October 2021. https://www.rwjf.org/en/insights/our-research/2021/10/charting-a-course-for-an-equity-centered-data-system.html.

[52] "National Notifiable Conditions (Historical)." *Centers for Disease Control and Prevention*, https://ndc.services.cdc.gov/search-results-year/.

[53] Centers for Disease Control and Prevention. *National Notifiable Diseases Surveillance System: Monitoring the Occurrence and Spread of Diseases*. https://stacks.cdc.gov/view/cdc/26474/cdc_26474_DS1.pdf.

[54] "Surveillance Case Definitions for Current and Historical Conditions." *Centers for Disease Control and Prevention*, https://ndc.services.cdc.gov/.

[55] Clay, Patrick A., et al. "Using Infection Prevalence, Seroprevalence and Case Report Data to Estimate Chlamydial Infection Incidence." *Sexually Transmitted Infections*, vol. 99, no. 8, 2023, pp. 513–519.doi: 10.1136/sextrans-2023-055808.

[56] Council of State and Territorial Epidemiologists. *Enhanced Gonorrhea Surveillance Toolkit*. 2020. https://cdn.ymaws.com/www.cste.org/resource/resmgr/std/CSTE-toolkit-final-PDF.pdf.

[57] Centers for Disease Control and Prevention, Association of Public Health Laboratories, and Council of State and Territorial Epidemiologists. *Electronic Case Reporting (eCR): Onboarding Guide for Healthcare Organizations*. https://ecr.aimsplatform.org/cms/resources/blocks/ecr-onboarding-guide-for-healthcare-organizationsgeneric-ehrcleared.pdf.

[58] "Integrated Surveillance Information Systems/NEDSS." *Centers for Disease Control and Prevention*, www.cdc.gov/nndss/what-is-case-surveillance/nedss.html.

[59] "Electronic Laboratory Reporting (ELR)." *Centers for Disease Control and Prevention*, www.cdc.gov/electronic-lab-reporting/php/about/index.html.

[60] "What is eCR?" *Centers for Disease Control and Prevention*, www.cdc.gov/ecr/php/about/index.html.

[61] Mishra, Ninad, et al. "Automating Case Reporting of Chlamydia and Gonorrhea to Public Health Authorities in Illinois Clinics: Implementation and Evaluation of Findings." *JMIR Public Health and Surveillance*, vol. 9, 2023.

[62] Ibid.

[63] Todd, Jonathan V., et al. "Automating Case Reporting of Chlamydia and Gonorrhea to Public Health Authorities in Oregon Clinics." *Sexually Transmitted Diseases*, vol. 49, no. 1, 2022, pp. 38–42. doi:10.1097/OLQ.0000000000001507.

[64] "Surveillance Case Definitions for Current and Historical Conditions." *Centers for Disease Control and Prevention*, https://ndc.services.cdc.gov/.

[65] Singer, Merrill et al. "Syndemics and the Biosocial Conception of Health." *Lancet*, vol. 389, no. 10072, 2017, pp. 941–950. doi:10.1016/S0140-6736(17)30003-X.

[66] Ibid.

[67] "NCHHSTP Syndemic Approach." *Centers for Disease Control and Prevention*, www.cdc.gov/nchhstp/about/syndemic.html.

[68] Centers for Disease Control and Prevention. *Turning the Tide on STIs: Integrating Services to Address the Syndemic of STIs, HIV, Substance Use, and Viral Hepatitis*. www.cdc.gov/sti/media/pdfs/2024/11/Syndemic-Infographic-11-08-2024.pdf.

[69] Vaaler, Margaret and Jon Hecht. "A Cost Analysis of the Enhancing Linkage of STI and HIV Surveillance Data SPNS Initiative." *National Ryan White Conference on HIV Care and Treatment*, 2022. www.targethiv.org/sites/default/files/RWNC2020/20569_Vaaler_A_Cost_Analysis.pdf.

[70] Teutsch, Steven M. and R. Elliott Churchill, editors. *Principles and Practice of Public Health Surveillance*. 2nd ed., Oxford University Press, 2000.

[71] Ibid.

[72] Copen, Casey E., et al. "County-Level Chlamydia and Gonorrhea Rates by Social Vulnerability, United States, 2014–2018." *Sexually Transmitted Diseases*, vol. 49, no. 12, 2022, pp. 822–825. doi: 10.1097/OLQ.0000000000001667.

[73] Choi, Bernard C. "The Past, Present, and Future of Public Health Surveillance." *Scientifica* (Cairo), vol. 2012, 2012. doi: 10.6064/2012/875253.

[74] Centers for Disease Control and Prevention. *Data Security and Confidentiality Guidelines for HIV, Viral Hepatitis, Sexually Transmitted Disease, and Tuberculosis Programs: Standards to Facilitate Sharing and Use of Surveillance Data for Public Health Action*. 2011. www.cdc.gov/sti/media/pdfs/PCSIDataSecurityGuidelines.pdf.

[75] Ibid.

[76] Ibid.

[77] Centers for Disease Control and Prevention. "Updated Guidelines for Evaluating Public Health Surveillance Systems." *MMWR Recommendations and Reports*, vol. 50, no. 13, pp. 1–35

[78] Karki, Saugat, et al. "An Automated Syphilis Serology Record Search and Review Algorithm to Prioritize Investigations by Health Departments." *Sexually Transmitted Diseases*, vol. 48, no. 12, 2021, pp. 909–914. doi: 10.1097/OLQ.0000000000001489.

[79] Matthias, James, et al. "Evaluation of Automated Processing of Electronically Reported Serological Tests for Syphilis Using Current and Historical Syphilis Results Compared With Traditional Reactor Grid Processing in Florida." *Sexually Transmitted Diseases*, vol. 51, no. 6, 2024, pp. 420–424. doi: 10.1097/OLQ.0000000000001952.

[80] Centers for Disease Control and Prevention. STD *Surveillance Tips*, www.cdc.gov/sti-informatics/media/pdfs/2024/07/std-surveillance-tips.pdf.

[81] McDonald, Robert, et al."Vital Signs: Missed Opportunities for Preventing Congenital Syphilis—United States, 2022." *MMWR Recommendations and Reports*, vol. 72, no. 46, 2023, pp. 1269–1274. doi: 10.15585/mmwr.mm7246e1.

[82] O'Callaghan, Kevin P., et al. "The Congenital Syphilis Prevention Cascade: Reimagining a Missed Prevention Opportunities Framework for Effective Intervention." *Sexually Transmitted Diseases*, vol. 51, no. 1, 2024, pp. 8–10. doi: 10.1097/OLQ.0000000000001892.

[83] Kidd, Sarah, et al. "Use of National Syphilis Surveillance Data to Develop a Congenital Syphilis Prevention Cascade and Estimate the Number of Potential Congenital Syphilis Cases Averted." *Sexually Transmitted Diseases*, vol. 45, no. 9S, 2018, pp: S23–S28. doi: 10.1097/OLQ.0000000000000838.

[84] Drame, Fanta Nani, et al. "Best practices implementation: congenital syphilis prevention efforts in Monroe County, New York, 2018." *Sexually Transmitted Diseases*, vol. 49, no. 4, 2022, pp. 310–312. doi: 10.1097/OLQ.0000000000001588.

[85] Avoundjian, Tigran, "A Web Application to Facilitate Syphilis Reactor Grid Evaluations." *Sexually Transmitted Diseases*, vol. 45, no. 2, 2018, pp. 75–80. doi: 10.1097/OLQ.0000000000000699.

PROGRAM OPERATION CONSIDERATIONS FOR STI PREVENTION

Medical & Laboratory Services

Introduction

STI clinics typically provide same-day comprehensive STI evaluation and treatment services for patients and their sexual partners on a free or low-cost basis. STI clinics also provide a unique opportunity to intervene to address STIs and other health conditions.

Centers for Disease Control and Prevention (CDC) STI Treatment Guidelines describe five major strategies for the prevention and control of STIs:

1. accurate risk assessment and education and counseling of people regarding ways to avoid STIs through changes in sexual behaviors and use of recommended prevention services;
2. pre-exposure vaccination for vaccine-preventable STIs;
3. identification of people with an asymptomatic infection and people with symptoms associated with an STI;
4. effective diagnosis, treatment, counseling, and follow-up of people who have an STI infection; and
5. evaluation, treatment, and counseling of sex partners of people who have an STI infection.[86]

This chapter provides information to those responsible for management or oversight of STI clinics in their jurisdictions about the range of practices and policies to consider so that a comprehensive and high-quality service is delivered to patients. Each jurisdiction can use this chapter to tailor the recommended services to their own needs and resources and to decide those that would be most beneficial to their client base.

Medical Services for STIs

CDC recommends five strategies for prevention of STIs.[87] Table 4.1 presents each strategy along with suggested action steps for STI clinics.

Table 4.1

SUGGESTED ACTION STEPS FOR STI PREVENTION AND CONTROL STRATEGIES

STEP	STI PREVENTION AND CONTROL STRATEGY	SUGGESTED ACTION STEPS
1	a) Accurate risk assessment, and b) Education and counseling of people regarding ways to avoid STIs through changes in sexual behaviors and use of recommended prevention services	a) This strategy begins with the clinician or Disease Intervention Specialist (DIS) taking a sexual history.[88] A recommended method is to use the "5 Ps." These are 1) Partners 2) Practices 3) Protection from STIs 4) Past history of STIs 5) Pregnancy intention b) Behavioral counseling for STIs means providing information on common STIs and transmission, aiming to increase motivation or commitment to safer sex practices, providing training to the patient in condom use and communication with partners about safer sex, problem-solving, and other pertinent skills.[89] DIS receive extensive training in conducting this type of counseling. Guide to Taking a Sexual History|STI|CDC
2	Pre-exposure vaccination for vaccine-preventable STIs	STI clinics could explore offering vaccines for hepatitis A, hepatitis B, human papillomavirus (HPV), and meningococcal disease and mpox as indicated. ACIP Vaccine-Specific Recommendations|CDC
3	Identification of people with an asymptomatic infection and people with symptoms associated with an STI	This strategy is accomplished through screening for infections and conducting clinical examinations for people with symptoms. STI Treatment Recommendations|CDC Getting Tested for STIs|STI|CDC
4	Effective diagnosis, treatment, counseling, and follow-up of people who have an STI infection	This strategy is often accomplished by implementing quality care standards in clinical settings[90] and following standards of practice including the CDC STI Treatment Guidelines. Collaboration with DIS may help facilitate treatment of patients and partners as resources allow. Sexually Transmitted Infections Treatment Guidelines, 2021|CDC
5	Evaluation, treatment, and counseling of sex partners of people who have an STI infection	This strategy is primarily accomplished by DIS and other disease intervention (DI) professionals after they have interviewed the patient and elicited exposed sex or needle-sharing partners who are then notified of the exposure and provided with behavioral counseling, testing, and treatment as needed.

What are the important components of an STI clinic?

The main components of an STI clinic can be divided into two broad categories: a) accessibility and clinic environment and b) range of services.

ACCESSIBILITY AND CLINIC ENVIRONMENT

Accessibility of health care services means "the timely use of personal health services to achieve the best health outcomes" and includes the ability to receive care when there is a perceived need for care.[91] In its broadest sense, accessibility refers to many features that can either facilitate people's ability to use the clinic or can pose barriers to use. Barriers and facilitators may be physical, structural, attitudinal, or perceived. At any point from when a person realizes they need to go to an STI clinic to the time they are put into an exam room, there are numerous missed opportunities that may result in the person not receiving care. A primary barrier to access to STI clinics may be stigma.

> Stigma in health care facilities may have the effect of:
>
> ...negatively affecting people seeking health services at a time when they are at their most vulnerable. In health facilities, the manifestations of stigma are widely documented, ranging from outright denial of care, provision of substandard care, physical and verbal abuse, to more subtle forms, such as making certain people wait longer or passing their care off to junior colleagues. As a result, stigma is a barrier to care for people seeking services for disease prevention.[92]

Furthermore, one of the first things a person notices about an STI clinic is its name. It may pose a barrier to care when a health care facility has a name that may be stigmatizing.[93] People may have less concern about being seen entering a facility with a neutral name than one that has "sexually transmitted infection" or "disease" in its title, so care can be taken when choosing a clinic name.

Other barriers for prospective patients accessing STI clinics may include:

- if the patient is not able to easily access the clinic without a car or other mode of transportation;
- if the patient is not able to schedule an appointment due to strict clinic appointment times with no flexibility;
- if the patient is required to wait for care or for long periods of time;
- if the patient is not able to access the clinic in the evenings or weekends; or
- if the patient is not able to access any walk-in appointments when they are experiencing symptoms or have the time available to receive care.

Once a prospective patient arrives at the clinic, the immediate environment of the reception and waiting area is also an important feature. STI clinics can consider the following questions when addressing the accessibility of the waiting area:

- Is there appropriate signage showing new patients where to go?
- Are there stairs or other physical barriers to entry? Wheelchairs available? Elevators?
- How well do clinic staff reflect the populations they serve?
- When entering the clinic, are patients greeted without judgment and made to feel welcome?
- Is there a private area where they may confidentially relay their reason for their visit? How long is the wait time?
- For people with low literacy, filling out intake forms can be a barrier. How does your clinic assist with this in a non-stigmatizing way?
- Are clinicians, lab personnel, and DIS trained to interact appropriately with patients?
- Is a payment source (money or insurance) required to receive services?
- Is documentation (such as a driver's license) required for services?
- Are there non-stigmatizing, plain language education resources available for those in the waiting room who may want to learn more about STIs and other sexual health concerns?

RESOURCES

Resources for American Indian and Alaska Native (AI/AN) Medical Services

For Providers | Sexually Transmitted Infections (STI) | Indian Health Service (IHS)

Northwest Portland Area Indian Health Board Extension for Community Healthcare Outcomes (ECHO)

Telehealth is a broad term encompassing all health care services that occur over digital technology, including education, training, and administration. Telemedicine is a subset of telehealth that focuses on using technology to connect a patient to a health care provider. Utilizing telemedicine may be an effective way to improve STI clinic accessibility by closing gaps in STI testing and treatment, ensuring access to health care providers, and supporting self testing, especially in rural areas.[94]

Telemedicine care may be appealing to individuals who do not feel comfortable seeking in-person STI care due to stigma or privacy concerns or who experience barriers to seeking in-person care due to distance, lack of transportation, lack of health care providers in rural areas, lack of childcare or inability to get time off of work. Offering telehealth services may increase health care access for those who have faced such barriers.[95]

> Telehealth approaches have been shown to reduce patient surges in health care facilities, expand access to specialty health care providers for underserved regions and populations, enhance patient education, augment the expansion of mental health services, and decrease wait times for specialty care during the pandemic…[96]

According to the Kaiser Family Foundation, several mobile apps and online services provide STI consultation, testing, and treatment, with some mailing or prescribing treatments for those testing positive. However, some mobile apps may not be fully compliant with federal or state laws to protect patient privacy. An additional concern is that telemedicine care for STIs can have prohibitive out-of-pocket costs for patients, sometimes more than $500 per visit.[97]

STI TESTING OUTSIDE OF CLINCIAL SETTINGS

Some people may be reluctant to go to an STI clinic or have scheduling problems with clinic appointments. The ability to collect and/or perform STI tests at home may represent a promising new strategy for improving access to STI care. Self-collection (where the patient collects the specimen and mails it to a lab) and self-testing (where the patient both collects and processes the specimen) are emerging options.[98] However, as of the time of this writing, there are limited FDA-approved options available. While this may represent an opportunity for STI prevention, challenges remain. Some drawbacks of these services include potential lack of coordination with local health departments for follow-up and the risk that patients may not access treatment if they receive a positive result.[99]

Additionally, telemedicine for acute symptomatic STIs is limited to the lack of diagnostic testing and physical exam capabilities.

In summary, it is advantageous for STI program leadership to think about the accessibility of all aspects of the STI clinic from the point of view of a prospective patient to take steps for improvement. Soliciting patient feedback via a patient satisfaction survey of the STI clinic may provide valuable information for improvement of services, help identify clinic successes, and offer insight on how to further expand access.

BEST PRACTICE

Solicit feedback from patients of the STI clinic to improve services, identify successes, and ensure accessibility.

RESOURCES

Resources for Telehealth

Best Practice Guides for Telehealth|HHS

Telehealth Practitioner's Guide for HIV Prevention and Care|Health HIV

Ethical Practice in Telemedicine|AMA

Toolkit from Centers for Medicare and Medicaid Services on Telehealth: Telehealth for Providers: What you need to know|CMS

MEDICAL & LABORATORY SERVICES

The National CLAS Standards are a set of 15 action steps intended to improve the quality of health care by providing a blueprint for individuals and health care organizations to implement appropriate and acceptable services.

The U.S. Department of Health and Human Services (HHS) provides resources and webinar presentations to help health care providers implement the CLAS Standards:

- Resource Library|HHS
- Presentations|HHS

TIP

Making the STI clinic a welcoming environment can be accomplished by such practices as:

- Posting patient-centric policies
- Displaying brochures or posters that reflect the community
- Hiring staff that reflect the community
- Requiring staff at all levels to participate in regular, ongoing trainings
- Ensuring all policies and practices are reflective of a welcoming atmosphere

BASIC, SPECIALIZED, AND EXPRESS CLINIC STRUCTURES

CDC's Recommendations for Providing Quality STD [Sexually Transmitted Disease] Clinical Services (QCS) describe two common ways clinical services are structured: "basic care," commonly used by primary care settings where patients are seen for various health conditions, and "specialized care," delivered in STI specialty care settings where the focus of the clinic is on STI care. Specialty care is defined as a place where patients are provided with timely, comprehensive, confidential, and culturally sensitive care.[100] However, if a jurisdiction lacks resources (funding, staffing) to operate a specialized care setting, then many state and local programs use the basic care approach. Primary care providers offering STI testing often use a basic care model.

As can be seen in Figure 4.1, services provided in a basic clinic include but are not limited to: an assessment of the patient's specific risk for STIs; screening for asymptomatic people with subsequent treatment if the test result is reactive; and an exam for diagnosis, testing, and treatment if the patient presents with symptoms.

STI clinics providing basic care services may not have a DIS on-site. Services in a specialized STI clinic include all those in the basic model with the addition of same-day diagnosis and treatment by injection for syphilis and gonorrhea, plus several laboratory tests giving immediate results (STAT) among other services. Specialized clinics often have a DIS on-site to interview patients immediately after diagnosis.

This immediate intervention allows DIS to talk to patients about their current infection and often leads to better discussions because the patient may need assistance contacting their partners—compared to follow-up occurring days or weeks after the initial diagnosis.

CROSS-REFERENCE

Disease Intervention for Medical & Laboratory Services

For more information, refer to the Disease Intervention chapter of this resource.

Figure 4.1

SELECT DISTINCTIONS BETWEEN BASIC AND SPECIALIZED CARE AS DESCRIBED IN "RECOMMENDATIONS FOR PROVIDING QUALITY SEXUALLY TRANSMITTED DISEASES CLINICAL SERVICES, 2020"

SELECT SERVICES PROVIDED WITHIN LEVELS OF CARE	
Basic STI Care	**Specialized STI Care**
Recommended risk assessment Screening and treatment of those identified with asymptomatic infection Diagnosis and treatment of patients with common symptomatic infections	Basic STI care Same-day diagnostic and treatment services Syphilis testing Screening, assessment, and treatment of trichomoniasis Gram stain/wet mount Gonorrhea cultures Benzathine penicillin Ceftriaxone PrEP and nPEP provision

Source: Barrow, Roxanne Y., et al. "Recommendations for Providing Quality Sexually Transmitted Diseases Clinical Services, 2020." MMWR Recommendations and Reports*, vol. 68, no. 5, 2020. doi: 10.15585/mmwr.rr6805a1.*

A third commonly used way to deliver STI screening services is through an "express clinic," or "fast-track" clinic. An express STI clinic is defined as triage-based STI screening without a full clinical examination.[101] An express clinic may operate on an as-needed basis during times of high demand, at an outreach event, or it may be an ongoing feature of the local area to assist with providing rapid testing. Express clinics may also operate as an adjunct to a basic or specialized STI clinic in order to increase clinic capacity and improve clinic flow. An express or fast-track clinic typically has a method of triaging prospective patients to rule out those with symptoms or who are exposed partners to a case of an STI because these patients need an exam and a more comprehensive service. Such clinics seek to identify those without symptoms who are requesting a screening test or who make it a practice to be screened for STIs at a regular interval. Typically, a brief screening is performed. Then, samples are collected for testing for gonorrhea, chlamydia, syphilis, and HIV; the patient typically self-collects the sample. Express clinics may have the capacity to perform rapid testing with results delivered at the same visit, or they may choose to simply collect the samples and send them all to a clinical laboratory with results given to the patient at a later date. "Express STI services increase clinic capacity, reduce time to treatment, and reduce visit time, therefore making them an important tool for increasing access and testing while maximizing available resources."[102]

RESOURCES

Resources for Medical Services

Report on Express Clinics for STI | NACCHO
Implementation Guide for Express Clinics | NACCHO

Capacity building for STI clinics: Clinic+: The STD and Sexual Health Clinic Initiative | NCSD

Resources to help implement CDC's Recommendations for Providing Quality STD Clinical Services, including a Toolkit: STD QCS | CDC

Get Tested: HIV, STD, and Hepatitis Testing and Vaccine Locator | CDC

Providing Optimal Care for your MSM Patients | NCSD and NASTAD

Sometimes an STI clinic may want to provide STI testing, care, and treatment through alternative models like telehealth, pharmacy-based services, self-collected testing, and mobile field-based units, in line with Strategy 3.4.1 in the STI National Strategic Plan.[103] See the Outbreak Response chapter for more information on outreach and pop-up clinics.

Establishing a mobile clinic requires leveraging community partnerships, as the average annual cost per mobile clinic was $632,369 between 2007 and 2017, with most clinics funded primarily through philanthropy and federal funding.[104] Some clinics have had success working with a community partner who has an existing mobile unit to use the mobile unit periodically or temporarily during an outbreak. STI clinic leaders who wish to use mobile clinics may consider such items as staffing, ensuring tests offered have the appropriate Clinical Laboratory Improvement Amendments (CLIA) level, identifying a clinical laboratory, determining proper sample processing and storage, writing specimen handling procedures that ensure quality of specimens delivered to clinical laboratories, and supply ordering and storage for the mobile unit. It is also helpful to plan periodic evaluations of test yield for number of tests performed and positivity to ensure that this method is cost-effective.

CROSS-REFERENCE

Program Evaluation for Medical & Laboratory Services

For more information on program evaluation, see the Program Evaluation chapter of this resource.

RESOURCE

Resources for Mobile Clinics

Harvard University database on U.S. mobile health clinics: Mobile Health Map

Policies and procedures

All health care facilities function under sets of policies and procedures that outline expected clinical and other types of services to ensure the facility meets all required quality standards. An STI clinic, as a health care facility, will have a comprehensive set of policies and procedures about which all staff are required to be knowledgeable. A policy sets out what should be done and why, while a procedure sets out the exact steps to be taken. Some considerations for types of policies are discussed below. These include, for example:

- registration;
- clinic flow;
- medical records, fees, and billing;
- clinic management structure;
- roles and performance standards; and
- safety and emergency plans and procedures.

It can be helpful to consider policies and procedures as "living" documents that are regularly assessed, updated, and used by staff rather than written once and left on the shelf.

CROSS-REFERENCE

Leadership & Program Management for Medical & Laboratory Services: STI Drug Shortages

When the drugs in short supply are used to treat STIs, it may cause difficulties for jurisdictional STI programs and STI clinics in addition to clinicians in other settings who may be unable to treat patients and prophylactically treat partners. Visit the Food and Drug Administration's (FDA) Drug Shortages page for more information on all current and resolved drug shortages and discontinuations.

See the Leadership & Program Management chapter of this resource for further information about STI drug shortages and steps jurisdictions may take during times of low availability of STI treatment products.

REGISTRATION

Registration is a critical component of an efficient and successful clinic. Registration personnel see patients first; therefore, they set the tone for the visit and may influence patient attitudes.

> Creating a welcoming clinical environment for all patients should begin at registration.[105]

Patient contact information can be updated at every visit in the event that follow-up is needed. When a substantial proportion of patients needing follow-up testing, treatment, or disease intervention services cannot be located because of false identities or addresses, the clinic may want to consider other methods to ensure follow-up, including a policy of requesting identification at registration. It may be useful to have a supervisor speak with patients who cannot provide identification to explain the importance of obtaining accurate information for the purpose of follow-up.

PRIORITIZING CLIENT VISITS REQUESTED BY DIS

Effective STI clinics use a system to prioritize clients referred by DIS to ensure they are seen on the same day. Clients referred by DIS most often need urgent, immediate attention, including clients coming to the clinic after a field visit by DIS for treatment of an existing infection or needing an exam for an exposure to an infection. DIS-referred clients are immediately taken to a DIS or clinician, depending on the service needed, rather than having to wait. This requires clinics to determine how they can best integrate DIS patients with other clinic patients. Some clinics may choose to develop a confidential method of alerting registration of the names of people expected in and identifying to the clinician the service needed and infection being experienced or having been exposed to. Others may want to consider allowing DIS to have blocks of time on the clinic schedule and allow them to schedule patients themselves.

CLINIC FLOW

The term "clinic flow" refers to the movement of patients within a health care facility. It begins with patient entry to the facility and encompasses medical care, resource allocation, decision-making, and the establishment of efficient internal systems. Optimizing clinic flow is crucial for two main reasons: patient safety and quality of care. An efficient clinic flow not only improves operational efficiency but also contributes to patient satisfaction and safety.[106]

Clinic flow can facilitate the effective use of personnel and physical facilities while preserving confidentiality, dignity, and excellent medical care. It can be useful for clinics to routinely evaluate space and financial resources critical to providing adequate services. The sequence of services can be set up in an intuitive and logical way so that confusion or unnecessary delays for patients are avoided, with an emphasis on staff moving when necessary so that patients make as few moves as possible. Special stops (such as for venipuncture or treatment) often become a bottleneck. They tend to compromise efficient clinic operation with delays for patients because of the need for specialized staff, separate rooms, and separate waiting areas.

Clinics can look at their space and staffing availability to determine how to comfortably move patients through the clinic with resources available. For example, individual clinicians can safely perform venipuncture in the examination room. Some clinics use separate waiting areas efficiently by designating one as "initial" for patients who have not yet been seen by a clinician, and a smaller one in a more confidential part of the facility where patients who have already been evaluated can wait for such services as STAT test results, DIS interview, or post-vaccination observation. Some clinics have improved clinic flow by implementing patient self-check-in or use of kiosks for check-in.

An issue for clinic flow and patient satisfaction concerns the length of time of the total clinic visit from the patient perspective. "Potential barriers [to attending an STI clinic] include the effort that clients must make to surmount barriers to facility attendance, such as time and effort to get to a clinic, waiting time at a clinic."[107] In order to come to a clinic, many people also have to arrange child care, transportation, or time off work, so for them, the STI clinic visit needs to be as short as possible while still providing quality and comprehensive services.

A patient visit to any health care provider includes travel time to get there, time spent in the waiting room, time with the clinician, possibly time spent collecting specimens, and time to check-out. Studies of urgent care, hospital emergency departments (ED), and primary care practices show a continuum of time for a patient visit ranging from two hours (doctor's office) to more than four hours (ED).[108] Some STI clinics strive to complete a full clinic visit (time from check-in at registration through check-out including exam, treatment, and specimen collection) in under 1.5 hours. (This does not include HIV or syphilis interview sessions, partner services, or special circumstances that will vary in length depending on the STI diagnosis and individual patient needs.) Many clinics use time and motion studies to determine the length of time for a clinic visit overall, and to identify where the bottleneck areas are. Often this is done annually, but it can also be done on an as-needed basis as problems arise with clinic wait times for patients.

BEST PRACTICE

Regularly conduct time and motion studies to determine the length of time for a clinic visit overall and to identify where the bottleneck areas are.

MEDICAL RECORDS, FEES, AND BILLING

Patient medical records can be maintained electronically or by a paper filing system. Electronic health records (EHRs) are "digital (computerized) versions of patients' paper charts…and they bring together in one place everything about a patient's health."[109] According to CDC, as of 2021, 88 percent of office-based physicians used electronic health records and systems.[110]

EHRs may offer many advantages, including:

- EHRs contain information about a patient's medical history, diagnoses, medications, immunization dates, allergies, radiology images, and lab and test results.
- EHRs offer access to evidence-based tools that providers can use in making decisions about a patient's care.
- EHRs automate and streamline providers' workflow and allow a clinic to evaluate their own data to make workflow changes as needed.
- EHRs increase organization and accuracy of patient information.

According to a survey conducted by the National Association of County and City Health Officials (NACCHO), in 2015 only 42 percent of local health departments used EHRs.[111] There have been very few published studies discussing use of EHRs in STI clinics.[112]

NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE (DOHMH) USE OF EHR IN STI CLINIC

New York City DOHMH implemented an electronic medical record system in the city's STI clinics to facilitate access to medical records across and within clinics and to allow assessments of patient characteristics and service provision. The electronic medical record system has fulfilled these expectations and, moreover, has provided readily analyzable data that have led to changes in clinical practices, including more effective staff use, increased disease detection, and increased clinic capacity.[113]

Whether a paper system or a digital system is used, the same confidentiality principles apply: patient medical information is protected under the Health Insurance Portability and Accountability Act (HIPAA) for "covered entities" and most state laws; access to records should be limited to those who need to provide care; and release of records is prohibited without patient written permission in most situations. STI programs themselves likely are not considered a covered entity under HIPAA, but an STI clinic that "transmit[s] health information electronically in connection with a transaction covered in the HIPAA Transactions Rule [is] a covered entity."[114] STI program leadership could consult with their jurisdiction's HIPAA privacy officer for jurisdiction-specific guidance. STI clinics can have policies to list staff having access to the patient's records and procedures describing handling and release of these records. A resource to assist in understanding this is Data Security & Confidentiality | Program Collaboration and Service Integration | CDC.

Medical records contain important and confidential information. Paper records can be stored in locked files or locked rooms that are easily accessible to clinic personnel but inaccessible to unauthorized people.[115] Medical records that are related to cases being managed by DIS can be readily accessible to the DIS. These medical records can be removed from desktops and filed in locked desk or file drawers whenever the staff person leaves the desk and at the end of each day. Computerized medical records also have rigorous access protection procedures to prevent unauthorized entry into the file, as well as back-up filing to prevent the loss of information. STI personnel can consult with their IT departments to ensure confidentiality of electronic records.

Within a medical record, sufficient demographic and locating information, including place of employment and emergency contact, may help to identify and locate patients promptly. The medical record contains accurate information on symptoms, medical history, physical examination findings, laboratory tests, diagnoses, and treatment. Brief narrative descriptions may accompany items needing additional explanation or to document other relevant information.

RESOURCES

Resources for Privacy and Security

Health Insurance Portability and Accountability Act of 1996 (HIPAA)|Public Health Law|CDC

HIPAA Basics for Providers: Privacy, Security, & Breach Notification Rules|CMS

Policy & Guidelines for Physical Security|Health Insurance Portability and Accountability Act|Yale

"Safety-net [STI] services continue to be needed across the U.S., even in areas with high insurance coverage."[116] STI clinics often aim to provide services on a free or low-cost basis in order to serve the greatest number of people experiencing STIs. Some clinics bill patients' insurance for services. However, many patients lack health insurance or do not want to use it due to confidentiality concerns. In a study published to better understand the cost of providing STI clinical services in Rhode Island and the role of Medicaid billing, the authors' findings:

> suggest that an [STI] clinic can be viable, even when not all visits are billed to an insurer and provide services even to those who are uninsured without facing a deficit.
>
> Encouraging patients to use insurance to cover visits may be challenging and present an ethical dilemma. In a previous study, fewer than half of patients were willing to use insurance. Nearly two thirds of patients cite privacy as the biggest barrier to using insurance for services and the risk of exposure of receipt of [STI] services on an insurance bill or explanation of benefits may be a deterrent to seeking care, especially for youth covered by a parent's plan or partner covered by a spouse's plan. One of the primary reasons patients cite for obtaining testing at an [STI] clinic rather than a primary care clinic is because of preferences for anonymity and the option to not have their testing disclosed to a provider or on an electronic medical record.[117]

RESOURCES

Resources for Billing Best Practices

STD Training and Technical Assistance Center (TAC) Billing Toolkit|NCSD

Best Practices for Efficient Integration of Billing for STD Services|STD TAC|NCSD

CROSS-REFERENCE

Leadership & Program Management for Medical & Laboratory Services: 340B drug program

See Leadership & Program Management for more information about the 340B program.

MANAGEMENT STRUCTURE

Often in specialized clinic management structures, one person (usually the clinic manager) has the authority to develop and implement clinic goals, policies, and procedures, as well as to manage personnel, orchestrate all clinic functions, and ensure quality of care. Delegation of clinic manager functions depends on clinic resources, staffing, and space. Working as part of the clinic management team, the medical director supports and complements the efforts of the clinic manager by carrying out additional special medical duties, such as ensuring clinicians are credentialed; providing accurate, appropriate clinical care; and developing new clinical guidance and clinical procedures. The interrelationship between management staff members (clinic manager, medical director, laboratory director, DIS supervisor, and other supervisory staff members) is critical to accomplishing STI prevention program objectives.

CLINIC MANAGER

To competently oversee important aspects of STI clinic functioning, the following knowledge, skills, and abilities are beneficial:

1. clinic management training;
2. public health experience or an orientation toward STI intervention concepts and activities to understand the needs of DIS supervisors and staff;
3. financial recordkeeping, budgeting, and billing; and
4. understanding of standard laboratory procedures and methods to coordinate clinical and laboratory functions effectively.

The clinic manager carries out various personnel management responsibilities. These include, but are not limited to:

1. developing accurate job descriptions and reasonable performance standards for clinicians;
2. providing staff orientation, familiarity with work plans, and knowledge of performance expectations;
3. arranging for adequate staffing to care for the patient population (even when vacations are scheduled); and
4. assuring staff training and updates in STI patient management and standard precautions.

The clinic manager also manages the clinic's day-to-day operations to ensure that:

1. clinic policies and procedures for all aspects of clinic operations are developed, implemented, and updated;
2. the clinic manual is current and accessible to all employees, visiting clinicians, and clinicians-in-training;
3. information is communicated to all staff through regular staff meetings and that staff members are encouraged to make suggestions about policies;
4. standard precautions are observed by all personnel;
5. patient flow is optimal including developing policies for triage, quality assurance procedures for the clinical aspects are implemented and maintained;
6. the clinic facility, including equipment and supplies, is adequate for the patient population;
7. appropriate medical oversight is available as needed;
8. quality assurance functions related to clinic operations are performed at regular intervals and the results are used to modify operations manuals; and
9. clinic performance metrics are developed and tracked.

MEDICAL DIRECTOR

The responsibilities of the medical director include, but are not limited to:

1. ensuring the best use of non-physician providers within the limits of jurisdictional regulations;
2. drafting and signing standing orders for non-physician clinicians and acting as the final authority on medical care in the clinic;
3. being available, or arranging for other physician coverage in the director's absence, for consultation with non-physician clinicians during all clinic hours;
4. identifying and assisting with the training of clinicians to improve clinical practice and learn new techniques;
5. assisting the clinic manager in clinician performance evaluations by observation and chart reviews;
6. assuring that clinical protocols are up-to-date and appropriately used;
7. routine auditing of medical records to ensure quality clinical care and that clinic protocols are followed; and
8. seeing patients in the STI clinic on a routine basis.

Basic clinic management structure may require fewer staff and often does not require an on-site medical director. If the local jurisdiction allows non-physician clinicians to work under standing orders from a physician, the medical director's role may be limited to true emergencies, periodic record review, and creation of standing orders for testing and treatment.

ROLES AND PERFORMANCE STANDARDS

Specific training for new STI clinicians can enhance the comfort level and skill of the new clinician. Available clinical training includes the National STD Curriculum, the National HIV Curriculum, and clinical training course(s) at an STD/HIV Prevention Training Center. Training in motivational interviewing techniques is also beneficial.

The use of non-physician clinicians, such as nurse practitioners (NPs) and physician's assistants (PAs), is critical to efficient use of often limited resources for STI clinics. Non-physician clinicians can medically manage most STIs.

Some clinics use a method whereby a single clinician manages each patient throughout their whole visit. This can lessen the patient's sense of fragmentation and impersonal interaction. Other clinics use a different method in which care is provided by multiple clinicians and staff to the maximum point allowed by their respective licenses. This method uses registered nurses (RNs) and medical assistants (MAs) to manage many tasks such as leading PrEP visits or conducting express testing. This usage reserves expensive MD, PA, and NP staff for the tasks for which only they have the scope of practice to perform. Some professional groups advocate extending this to include licensed vocational nurses (LVN) and licensed practical nurses (LPN).[118]

The extent to which various categories of non-physicians can function as clinicians is defined in medical and nurse practice statutes and legal precedent in each jurisdiction.

TRAINING & PROFESSIONAL DEVELOPMENT FOR MEDICAL SERVICES

Home | National Network of STD Prevention Training Centers

National STD Curriculum | University of Washington Infectious Diseases Education & Assessment (IDEA) Program

National HIV PrEP Curriculum | University of Washington Infectious Diseases Education & Assessment (IDEA) Program

AIDS Education and Training Centers National Coordinating Resource Center (AETC NCRC)

AETC National HIV Curriculum | AIDS Education and Training Centers National Coordinating Resource Center (AETC NCRC)

Web-based training on motivational interviewing: Motivational Interviewing | CDC TRAIN

TIP

The manner in which clinicians relate to patients, especially in an STI clinic, is critical to patient acceptance and follow-through on treatment, behavioral intervention, and prevention of transmission to others. Clinicians can practice with sensitivity, awareness, and compassion for the unique needs of the patient.

Patient-centered care may increase patient comfort and satisfaction, which then may contribute to enhanced health care experiences and outcomes.[119, 120]

Patients' perceptions and experiences during the examination can influence their willingness to comply with staff instructions at any step in the process. The importance of good interviewing, rapport building, counseling, and education skills on the part of the clinician cannot be overstated. All relevant medical history, risk assessment, examination, diagnosis, and treatment can be accurate and noted in the medical record in a timely manner. Clinicians can provide specific and clear counseling messages that allow the patient time to ask questions. Clinicians may help facilitate a seamless transfer of the patient to other team members, such as a DIS, when appropriate.

Clinicians can help a DIS build rapport and encourage patients to be forthcoming and truthful to the DIS to help them manage their infection and find contacts that need testing and treatment.

RESOURCES

Resources for Patient-Centered Care in Medical Services

Improving Cultural Competence Quick Guide for Clinicians—Based on Number 59 in the Treatment Improvement Protocol (TIP) Series | SAMHSA

Engaging with Sensitivity: Techniques for Interviewing Persons Experiencing Homelessness, Disability, and Substance Use Disorders | CSTE

TRAINING & PROFESSIONAL DEVELOPMENT FOR PATIENT-CENTERED CARE IN MEDICAL SERVICES

Cultural Awareness: Introduction to Cultural Competency and Humility | CDC TRAIN

CLINIC MANUALS

Clinic manuals often include all policies and procedures that relate to the operation of the clinic. These include personnel policies and medical protocols that are followed in the local area. Current and signed standing orders for non-physician clinicians can be included if required or not prohibited by jurisdictional laws and regulations (medical and nurse practice acts). Manuals are often used to train new staff and are most useful when they are readily available to staff for consultation when needed. It may be beneficial to update them regularly to optimize their utility and to require new staff to review the manuals.

RESOURCES

Resources for Standard Operating Procedures for Medical Services

The Texas Department of State Health Services has shared its operating procedures for STI/HIV: Program Operating Procedures and Standards (POPS)|Texas DSHS

This is the chapter from Texas Program Operating Procedures concerning STI clinical services: POPS Chapter 12—STD Clinical Standards|Texas DSHS

In addition to personnel policies and medical protocols, the STI clinic may create policy and procedure manuals covering (at minimum) safety and emergency policies and procedures and other miscellaneous items.

Safety and emergency policies may list the types of equipment needed to be kept on hand to deal with emergencies, such as epinephrine, a crash cart, an automated external defibrillator (AED), naloxone, oxygen tanks, or a wheelchair. Conducting regular emergency drills helps ensure that all staff members recognize emergencies, know their roles and responsibilities, know the location and contents of emergency supplies, can use all equipment properly, and follow established protocols.

SAFETY

USE OF STANDARD PRECAUTIONS

Standard precautions are a set of protocols designed to reduce the risk of (or prevent) transmission of pathogens. Standard precautions should be observed by all clinical personnel for all patients as part of routine infection control.[121] Clinicians, laboratory technicians, phlebotomists, and other health care professionals routinely come into contact with blood and body fluids during the course of examination and testing. Bloodborne pathogens of primary concern in health care facilities are HIV, hepatitis B virus (HBV), and hepatitis C virus (HCV).[122]

RESOURCES

Resources for Standard Precaution in Medical Services

Standard Precautions for All Patient Care|Infection Control|CDC

Laboratories—Overview|Occupational Safety and Health Administration

HOW TO HANDLE OCCUPATIONAL EXPOSURES

Occupational HIV transmission is extremely rare, but any time a health care worker experiences an occupational exposure to blood or body fluids it is cause for concern. The Occupational Safety and Health Administration (OSHA) requires health care providers to have written policies to prevent and address needlestick injuries on the job.[123, 124]

STI clinic policies and clear procedures can assist employees in this situation so that they understand what actions to take immediately, and how and when to report the incident. STI clinics could have a supply of PEP drugs on hand and develop a protocol for how to access and administer the drugs quickly after exposure.

Figure 4.2

HOW CAN ORGANIZATIONS MAKE A DIFFERENCE?

Occupational exposure is considered an urgent medical concern and should be managed immediately after possible exposure—the sooner the better; every hour counts.
Review CDC's guidelines for the management of occupational HIV exposures. When personnel are exposed, CDC recommends immediate treatment with PEP to prevent infection.
Train personnel in infection control procedures.
Remind personnel to report occupational exposures immediately after they occur.
Develop and distribute written policies for the management of occupational exposures.
Promote the use of safety devices to prevent sharps injuries.
Report all cases of occupational HIV exposure to state health department HIV surveillance staff and the CDC coordinator at 404-639-2050.

Source: HIV and Occupational Exposure | HIV | CDC

AGENCY REQUIREMENTS FOR STAFF PROTECTION

These could include such items as any vaccines mandated (such as hepatitis B for those handling blood), tuberculosis (TB) testing if required, protocol for management of occupational exposure to blood, and personal protective equipment (PPE). All clinical staff members should be trained in cardiopulmonary resuscitation (CPR)[125] and be able to respond appropriately in an emergency.

WEATHER EVENTS AND OTHER THREATS NECESSITATING EVACUATION

These policies instruct employees on how to safely leave the building and where to meet.

EMERGENCY

A threefold approach that addresses prevention, preparation, and action can help healthcare practices develop or evaluate their emergency response plans, implement comprehensive emergency management procedures, support staff training and readiness, and reinforce a culture of safety.[126]

STI clinics may experience medical and other emergencies, such as anaphylaxis after benzathine penicillin G injection. Utilizing the three-pronged approach described above, clinics could consider training in CPR and use of emergency equipment such as AED and naloxone. Policies and procedures for a variety of medical and other types of emergencies can be developed and communicated to all staff. Examples of nonmedical emergency situations that may occur include:

- **Potential incidents of violence in clinic—** Staff members can be trained in specific safety procedures and de-escalation techniques, when appropriate, for managing potential incidents of violence or abuse in the clinic, including an active shooter.
- **Identifying patients experiencing or at risk of harm—**It is helpful if STI clinics have clear policies for staff when they identify a patient expressing thoughts of suicide, who is experiencing intimate partner violence, or who is being trafficked so that staff know how to handle these difficult situations. Training can be provided to staff on these topics to increase their comfort and confidence in handling these situations.

RESOURCES

Resources for Emergencies in Medical Services

Mandatory Reporting and HIPAA Compliance | Administration for Children and Families

Policies and Procedures | Human Trafficking Collaborative | University of Michigan

About Sex Trafficking | Sexual Violence Prevention | CDC

Lifesaving Naloxone | Stop Overdose | CDC

CROSS-REFERENCE

Outbreak Response for Medical & Laboratory Services

Outbreaks are unique types of emergencies that may require changes to normal practices and procedures, notably, changes to clinic operations for medical and laboratory services to accommodate the outbreak response. STI clinics may conduct their own outbreak response planning, including tabletop exercises (TTX), in order to be fully prepared before an emergency occurs. The importance of addressing surge staffing cannot be overstated. Once an outbreak occurs, many more staff may be needed to perform a variety of tasks to help resolve it, so it can be helpful for the agency to have procedures in place for expedited hiring and onboarding—ideally, using a pre-selected group of people able to serve as surge staff. Regular clinic staff may need to be reassigned to other duties during an outbreak, making cross-training in advance of an outbreak a necessity.

See Outbreak Response for more information.

MISCELLANEOUS PROCEDURES AND POLICIES

These may include topics such as use of technology for patient test results or appointment reminders, use of social media, and use of telemedicine.

BEST PRACTICES

- *Maintain a comprehensive set of policies and procedures, on which staff receive training and have access to at all times.*
- *Routinely review and update clinic policies and procedures.*

Considerations for STI/HIV medical care for minors and young adults

Confidentiality is an important concern for those experiencing STIs. This issue impacts access to STI services by minors and young adults in two ways:

1. Ability to give consent for their own STI care without needing parental consent; and
2. If the clinician bills health insurance for services for youth who are covered under another person's health insurance plan, such as their parent's.[127]

The resource below gives information specific to each state. Those responsible for STI clinic policies are encouraged to identify their own state law pertaining to minor consent. This will assist the clinic staff working with minors to understand prohibitions from releasing protected health information (PHI) to anyone, including parents, without the written consent of the minor.

RESOURCES

Resources for Minor Consent Laws

Resources on Minor Consent for STI Services | NCSD

Insurance billing practices compound confidentiality complications for minors and young adults.[128]

Clinics may consider reviewing their billing practices regarding patient confidentiality or directly discuss potential disclosures with minor and young adult patients. Some clinics opt to absorb the cost of tests rather than going through insurance so that there will be no Explanation of Benefits (EOB) that may breach a patient's confidentiality. In some states, minors and young adults can make a request that the health insurer not disclose any services provided to the policyholder of the plan, which the insurer must honor.[129]

Range of medical services

According to CDC's Recommendations for Providing Quality STD Clinical Services, 2020, a comprehensive sexual history, physical exam, risk assessment, prevention services, screening, partner services, and treatment, and referrals are all necessary for a quality STI clinic visit.[130]

SCREENING

Screening differs from diagnostic testing in that screening is performed on a population basis without regard to individual patient risk or symptoms; in other words, "all people coming to the STI clinic," "all sexually active females under age 25," or "all pregnant women." Screening tests are the only method for identifying asymptomatic infections.

Commonly used screening tests for STIs include those for gonorrhea, chlamydia, syphilis, hepatitis B, hepatitis C, HIV, and trichomoniasis. Screening allows calculations of prevalence in the facility or among the population because one has data on all people, including the negative tests for denominator. Screening is especially important for STI clinics due to the asymptomatic nature of many STIs.

PROPHYLACTIC TREATMENT

Many STI clinics provide prophylactic treatment for HIV infection, including PrEP and PEP to eligible patients. As of 2024, doxycycline is recommended as post-exposure prophylaxis to prevent bacterial STIs in certain populations (doxy PEP).[131, 132]

"Clinicians' efforts to ensure treatment of patients' sex partners can reduce the risk for reinfection and potentially diminish transmission of STIs."[133]

People exposed through sexual contact with a person who has primary, secondary, or early latent syphilis should be evaluated clinically and serologically and treated according to the recommendations outlined in the STI Treatment Guidelines.[134] Treatment of partners to case patients with chlamydia or gonorrhea may be accomplished through a clinic visit or expedited partner therapy (EPT), based upon treatment guidelines and dependent on jurisdictional laws and policies.[135, 136, 137]

RESOURCES

Resources for Prophylactic Treatment

Expedited Partner Therapy|CDC

Legal Status of Expedited Partner Therapy (EPT)|STI|CDC

Clinical Treatment of Gonorrhea|Gonorrhea|CDC

SEXUAL HISTORY

According to CDC's Recommendations for Providing Quality STD Clinical Services, 2020, "a sexual history and risk assessment are foundational to providing quality STI care services. A complete sexual history includes inquiring about the five Ps (i.e., partners, practices, protection, past history of STDs, and [...] pregnancy).... The sexual history and risk assessment should be available as part of an initial comprehensive or annual visit; a visit for reproductive, genital, or urologic issues; or a visit for [STI]-related symptoms, [STI]-related concerns, or concerns about preventing or achieving pregnancy."[138]

STIs can lead to severe health complications, such as infertility, ectopic pregnancy, and congenital infection.[139] As outlined in CDC's Recommendations for Providing Quality STD Clinical Services, 2020, a test for pregnancy could be available at the time of patient visit in settings providing basic STI care and should be available in settings providing specialized STI care; cervical cancer screening should be available in settings providing basic and specialized STI care.

VACCINES

An additional STI prevention strategy is vaccination for hepatitis A and B viruses, HPV, and meningococcal disease and mpox if indicated. STI clinics are encouraged to provide these to clients if resources permit.[140]

OTHER SERVICES THAT SUPPORT HEALTH

Other services a clinic may wish to offer include on-site condom provision; having a health insurance navigator available; and having staff representing HIV services, such as care coordination or PrEP, to directly enroll new clients in those services while at the STI clinic.

SCREENING EFFORTS FOR SYPHILIS

In counties with a rate of primary & secondary syphilis among women aged 15–44 years above 4.6 per 100,000 people, offering syphilis testing to sexually active women and their sex partners "might help identify syphilis cases and prevent spread… and reduce congenital syphilis."[141] In counties at or below a rate of 4.6 per 100,000 cases of primary and secondary syphilis among women aged 15–44, providers should continue to assess individual risk factors to determine screening needs, as outlined in existing screening guidelines.[142]

U.S. county syphilis rates can be found at this link: County-level Syphilis Data|STI Statistics|CDC.

REFERRALS

Referrals for medical and nonmedical services are a part of the services provided by a comprehensive STI clinic. STI clinics and patients benefit from close partnerships with community health care providers and a variety of service providers in order to give patients all needed tools to manage their health.

RESOURCES

Resources for Medical Services

Doxy PEP for Bacterial STI Prevention | STI | CDC

Preexposure Prophylaxis for the Prevention of HIV Infection in the United States (2021 Update)—Clinical Practice Guideline | CDC

Post-Exposure Prophylaxis | HIV.gov

PrEParing DIS to Connect MSM Clients to PrEP | NCSD

Planning Toolkit for Using CDC's Recommendations for Providing Quality Sexually Transmitted Diseases Clinical Services, 2020 | NACCHO

STD Preventive Services Gap Assessment Toolkit | CDC

EXPANSION OF CLINIC DATA COLLECTION

STI clinics can consider expanding data collection items for patients to include the following:

- pregnancy status, including prenatal care provider and estimated due date,
- anatomical specimen collection sites for each test,
- sexual orientation,
- sex of partners, and
- race and medical history if not already collected.

These expanded data points can assist the STI program to better understand its STI clinic clients' needs for purposes of program planning and evaluation.

RESOURCES

Resources for Taking a Sexual History

A Guide to Taking a Sexual History | CDC

Sexual Health and Your Patients: A Provider's Guide | NCSH

Sexual Health History: Techniques and Tips | AAFP

Everyone should be doing it: taking a sexual history (Web-Based) | CDC TRAIN

PrEP Education for Youth-Serving Primary Care Providers Toolkit: Clinical Tools Section 1.7: Taking a Sexual History | Sexuality Information and Education Council of the United States

Taking Routine Histories of Sexual Health: A System-Wide Approach for Health Centers | National LGBTQIA+ Health Education Center

Resources for STI Vaccination

Viral Hepatitis Among Men Who Have Sex with Men | Viral Hepatitis | CDC

HPV Vaccination | CDC

Mpox Vaccination | Mpox | CDC

What community partnerships are needed to support STI medical services?

Productive working relationships between the STI clinic and local medical professionals (such as the health department, local health officer, specialist physicians) can facilitate optimal patient care. (Non-medical partnerships are discussed in the Community Engagement section of this chapter.) Common patient-related needs include:

- a referral source for desensitization for penicillin-allergic pregnant women with syphilis;
- primary care physicians and community or rural health centers accepting new patients;
- physician specialists (infectious disease, ophthalmology, neurology) for complicated cases of STIs not normally managed in clinic (disseminated gonococcal infections, ocular syphilis);
- HIV medical and care coordination services;
- housing assistance;
- Supplemental Nutrition Assistance Program (SNAP) or Women, Infants, and Children (WIC) programs;
- behavioral health services;
- substance use treatment services/medicated assisted therapy;
- health insurance navigator; and/or

Additionally, including these partners in the creation of outbreak response plans results in them being informed and prepared for a coordinated response.

CROSS-REFERENCE

Outbreak Response for Medical Services

See also the Outbreak Response chapter in this resource.

BEST PRACTICE

STI clinics and patients benefit from a variety of productive working relationships with local health care providers to whom patients can be referred.

Screening, Treatment, and Quality Guidelines for STIs

CDC Screening Guidelines for STIs

CDC publishes comprehensive screening recommendations and considerations, some of which are different than those recommended by the U.S. Preventive Services Task Force (USPSTF). CDC's screening recommendations and considerations include information by population group.

RESOURCE

Resources for CDC Screening Guidelines for STIs

CDC's STI Screening Recommendations and Considerations by Disease or by Population

USPSTF Recommendations for STIs

The USPSTF is convened by the Agency for Healthcare Research and Quality (AHRQ) to make evidence-based recommendations about clinical preventive services such as screenings, counseling services, and preventive medications. Task Force members include experts in prevention and evidence-based medicine. They conduct a rigorous review of evidence before categorizing their recommendations as a letter grade based on the strength of the evidence, weighing the balance of benefits and risk of harm. The USPSTF recommendations also form the basis for decisions made by commercial health insurers about whether or not to cover a particular prevention intervention.

RESOURCES

Resources for USPSTF Recommendations for STIs

Recommendation: Chlamydia and Gonorrhea: Screening | USPSTF

Recommendation: Human Immunodeficiency Virus (HIV) Infection: Screening | USPSTF

Recommendation: Prevention of Acquisition of HIV: Preexposure Prophylaxis | USPSTF

Recommendation: Sexually Transmitted Infections: Behavioral Counseling | USPSTF

Recommendation: Syphilis Infection in Nonpregnant Adolescents and Adults: Screening | USPSTF

Recommendation: Syphilis Infection During Pregnancy: Screening | USPSTF

CDC Recommendations for Providing Quality Sexually Transmitted Diseases Clinical Services

In 2020, CDC published recommendations to help clinicians in a variety of health care settings understand how to provide high-quality clinical services for STIs. These recommendations are outlined in eight sections:

1. sexual history and physical exam,
2. prevention,
3. screening,
4. partner services,
5. evaluation of STI-related conditions,
6. laboratory,
7. treatment, and
8. referral to a specialist for complex conditions.[143]

Having an understanding of these recommendations allows those with responsibility for oversight of their local STI clinics to incorporate best practices. These recommendations are integrated throughout this chapter.

RESOURCE

Resource for Clinical Services

Recommendations for Providing Quality Sexually Transmitted Diseases Clinical Services, 2020|MMWR

CDC STI Treatment Guidelines

CDC periodically convenes a panel of experts to review the evidence and provide recommendations for the most effective prevention, screening, diagnostics, treatment, and other management considerations for STIs. These guidelines form the basis for best practice guidelines not only for STI or public health clinics but for all clinicians providing care for STIs.

RESOURCE

Resource for STI Treatment Guidelines

STI Treatment Guidelines|CDC

STI Treatment Guidelines: Provider Resources|CDC

BEST PRACTICE

STI clinic managers and medical directors can reference federal recommendations and guidelines for quality services.

CROSS-REFERENCE

Outbreak Response for Medical Services

In the case of an STI outbreak, the following key steps are often taken by STI clinics:

- Involve STI clinic personnel in outbreak response planning and response.
- Increase STI clinic hours and access to free testing for not only the outbreak infection but also all comorbid infections for affected populations.
- STI clinic staff may provide services in other venues during an outbreak, such as mobile units in the community experiencing the outbreak, co-location with community-based organizations (CBOs) serving the population experiencing the outbreak, and at satellite clinics.

Please see the Outbreak Response chapter of this resource for further information about the involvement of clinical staff in responding to an STI outbreak.

Laboratory Services for STIs

According to the Recommendations for Providing Quality Clinical Sexually Transmitted Diseases Clinical Services,

> Specialty care settings should offer same-diagnostic testing and treatment for patients with [STI]-related conditions and for sex partners of patients with a diagnosed sexually transmitted infection. With rapid laboratory results, treatment delays are reduced, resulting in fewer complications, less onward transmission of [STIs], less time spent tracking and verifying treatment for those who fail to return after a positive test result, and more prudent use of antimicrobials based on less empiric treatment.[144]

STI clinics may decide which laboratory tests they have the capacity to provide on-site, also known as point-of-care (POC), and which they will send to a clinical laboratory for processing after specimen collection.

Basic care settings are not expected to have the ability to offer same-day diagnostic testing and treatment or rapid tests available. However, thermometers and pH paper should be available at the time of patient visits.[145]

Furthermore, basic care settings could offer: [146]

- phlebotomy;
- tests for trichomoniasis;
- tests for bacterial vaginosis;
- tests for vulvovaginal candidiasis;
- urine dipstick;
- urinalysis with microscopy;
- tests for pregnancy; or
- tests for HIV.

Specific point-of-care lab tests recommended to be provided in specialty STI clinics include all those listed for the basic care setting, plus:[147]

- Gram stain, methylene blue, or gentian violet stain for urethritis;
- on-site qualitative nontreponemal serologic test for syphilis; and
- darkfield microscopy for syphilis.

Rapid HIV testing could also be offered.[148]

A clinic providing basic or specialty care could also consider providing rapid tests for gonorrhea, chlamydia, and syphilis (treponemal).

TIP

According to the Recommendations for Providing Quality Clinical Sexually Transmitted Diseases Clinical Services, the list of tests that should be provided through a clinical laboratory in settings providing basic and specialty STI care include:[149]

- urogenital nucleic acid amplified testing (NAAT) for gonorrhea and chlamydia;
- extragenital (pharynx and rectum) NAAT for gonorrhea and chlamydia;
- quantitative nontreponemal serologic test for syphilis;
- treponemal serologic test for syphilis;
- HSV viral culture or PCR;
- HSV serology;
- antigen/antibody HIV test;
- tests for HPV-associated cancer screening; and
- testing for hepatitis A, B, and C;

For specialized settings, the following additional tests should be provided (these are optional for basic settings):[150]

- gonorrhea culture;
- gonorrhea antimicrobial susceptibility testing; and
- NAAT for trichomoniasis.

Laboratory tests are classified by the FDA with regard to their CLIA category as either moderate or high complexity or as waived. In addition, some tests are considered Provider-performed Microscopy Procedures. These designations dictate the type of laboratory and personnel authorized to process them. Tests categorized as moderate or high complexity tests are called non-waived tests. A waived test is one that is simple to perform, usually a POC test, which has a low risk of an incorrect result. In general, tests performed by clinical laboratories, such as urogenital NAATs for chlamydia and gonorrhea, are non-waived tests; while those performed in the clinic itself, such as a pregnancy test, a rapid syphilis or rapid HIV test, are waived tests.

CDC has published recommendations for laboratory testing for gonorrhea, chlamydia, and syphilis infections. It may be helpful for STI program leaders with responsibility for laboratory services in their jurisdictions to familiarize themselves with these guidelines so they may understand best practices.

RESOURCES

Resources for Laboratory Services

Laboratory Director Responsibilities | CMS

How to Apply for a CLIA Certificate, Including International Laboratories | CMS

THE IMPORTANCE OF TURNAROUND TIME (TAT)

Laboratories often use TAT as a measure of effectiveness. This is defined as the interval between when the specimen arrives at the laboratory to the point when the final result is reported out. Different assays take different amounts of time to process, so this time varies. STI programs strive for a sense of urgency in most aspects of clinical care in order to have the greatest likelihood of interrupting disease transmission and preventing complications of the infection in the patient. STI programs often assess additional measures of TAT than the one used by laboratories to cover all aspects of the test process.

> Clinicians consider TAT from the time the test is ordered to results reporting, whereas laboratory professionals usually use specimen receipt to reporting of results as the TAT. There are many factors which are beyond the jurisdiction of the laboratory which influence TAT. Such non-analytical delays may be responsible for up to 96% of total TAT.[151]

For example, in addition to lab TAT, STI clinics extend this to assess the time from specimen collection to receipt by the laboratory, time from receiving the final result to patient notification of result, and time from patient notification to treatment.

MEASUREMENT	QUESTIONS TO CONSIDER FOR PROGRAM IMPROVEMENT
Specimen collection to lab receipt	Are specimens being "batched" for transport (which may cause delays)? Has a courier service been considered? Is there a problem with postal mail?
Result received to patient notification	Notifying the patient the same day as result received is optimal. Do clinic policies support this? Is electronic messaging through a patient portal being used effectively? Do staff need training? What is hindering notification? (Poor patient contact information?)
Patient notification to treatment	For optimal disease intervention, treatment will occur as close to patient notification as possible. Does the clinic prioritize appointments for patients needing treatment? How quickly do DIS locate patients who were unable to be notified by phone or text?

Many programs regularly assess TAT for key provider partnerships (STI clinics, community health centers, etc.) in order to assist with improvement.

CDC Laboratory Recommendations for Gonorrhea and Chlamydia Testing

CDC's Recommendations for the Laboratory-Based Detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae*—2014 contains CDC recommendations regarding screening tests to detect chlamydia and gonorrhea infections. It recommends using FDA-cleared NAATs as screening or diagnostic tests for chlamydia and gonorrhea. Additionally, maintaining the capability to culture for *N. gonorrhoeae* in laboratories throughout the country is important.[152]

This document also specifies preferred anatomic sites for specimen collection.

RESOURCES

Resources for Medical & Laboratory Services

STI Treatment Guidelines|CDC

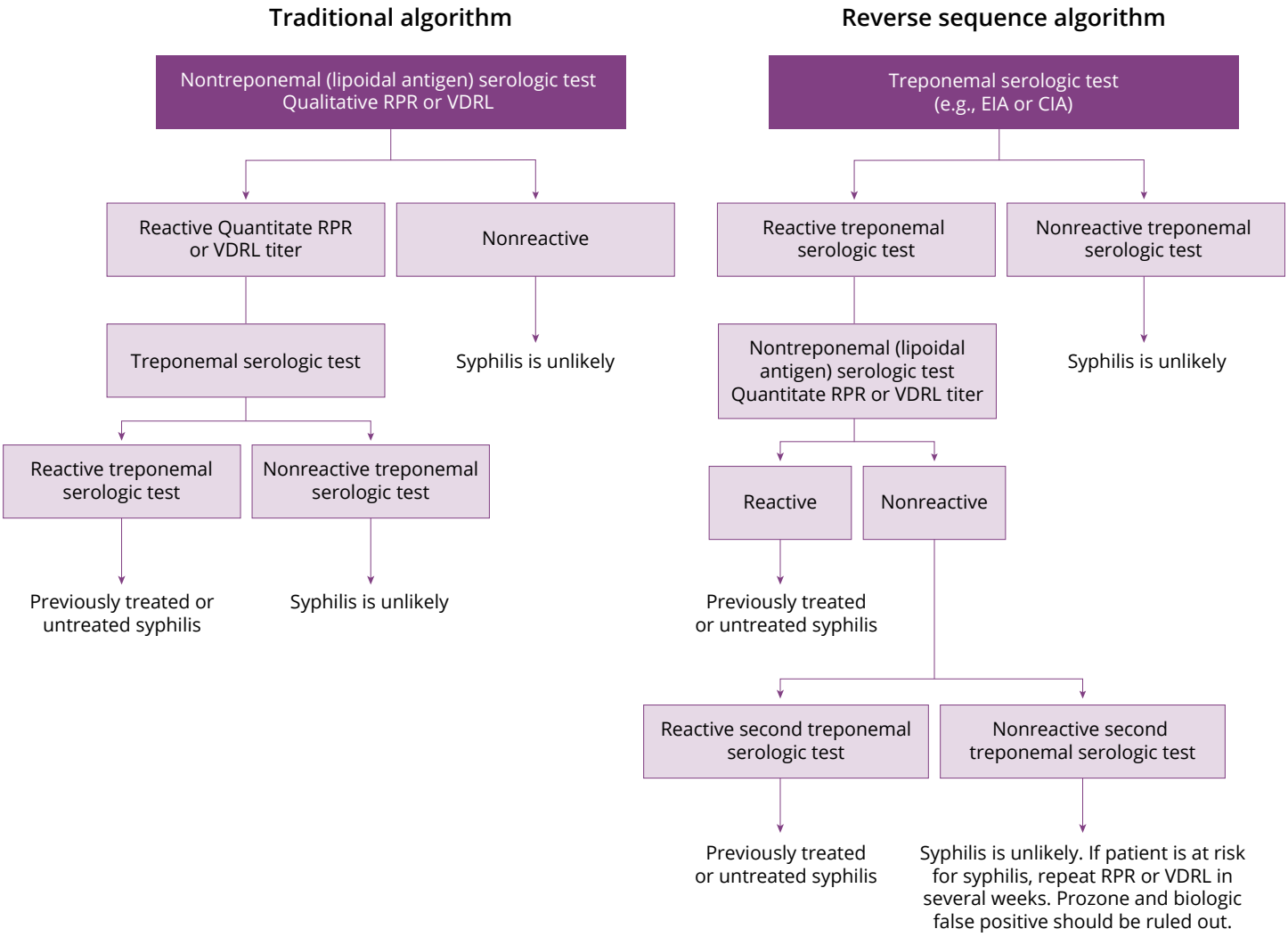
Recommendations for the Laboratory-Based Detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae*—2014|CDC

CDC Laboratory Recommendations for Syphilis Testing

CDC's Laboratory Recommendations for Syphilis Testing, United States, 2024 contains CDC recommendations for tests that can support a diagnosis of syphilis. A presumptive diagnosis of syphilis requires use of both syphilis serologic nontreponemal and treponemal tests in an algorithm. Clinical interpretation of syphilis laboratory test results must be used in conjunction with the patient's clinical symptoms, medical history, and other clinical and/or laboratory findings to produce an overall clinical diagnosis.[153]

Figure 4.3

TRADITIONAL VS REVERSE SEQUENCE TESTING ALGORITHMS FOR SYPHILIS



Abbreviations: CIA = chemiluminescence immunoassay; EIA = enzyme immunoassay; RPR = rapid plasma regain; TPPA = *Treponema pallidum* particle agglutination; VDRL = Venereal Disease Research Laboratory.

Source: *CDC Laboratory Recommendations for Syphilis Testing, United States, 2024|MMWR*

RESOURCE

Resource for Laboratory Recommendations for Syphilis Testing

CDC Laboratory Recommendations for Syphilis Testing, United States, 2024|MMWR

Considerations for the Implementation of Point of Care Tests for Syphilis|HHS

CROSS-REFERENCE

Outbreak Response for Laboratory Services

In the case of an outbreak, the following key steps can be taken by STI laboratories:

- Involve STI laboratory personnel in outbreak response planning and implementation.
- STI laboratories may need to prioritize STI testing during an outbreak, train additional staff in venipuncture or rapid test processing, or add testing (STAT rapid plasma reagin [RPR] or rapid testing for syphilis or HIV, pregnancy).
- STI laboratories may need to expedite reporting of reactive test results during an outbreak.

Please see the Outbreak Response chapter of this resource for further information about the involvement of laboratory staff in responding to an outbreak.

RESOURCES

Resources for Outbreak Response

Laboratory Response Network (LRN)|CDC

STI Program Resources: Guidance for outbreak detection, response plans, and control activities|STI|CDC

STD Outbreak Response Plan Guide|CDC

Disease Intervention Specialist (DIS) Role in STI Clinics and Laboratory Testing

The work performed by DIS is essential to the successful operation of an STI clinic. DIS reinforces the education and counseling messages provided by the clinician during the examination.

More importantly, they are the only personnel specifically trained, using motivational interviewing techniques, to interview and counsel patients and perform investigations to locate people exposed to STIs for the purpose of getting them to a clinic for examination, treatment, and prevention counseling.

DIS also extend STI lab services by providing venipuncture in the field as well as specimen collection and rapid test processing (depending on the laws and policies in the jurisdiction). Managers of STI clinics can ensure that STI clinic policies specify lab procedures for POC test processing and handling specimens collected through field testing by DIS to ensure quality of results and adherence with CLIA regulations.

CROSS-REFERENCE

Disease Intervention for Laboratory Services

In general, it is preferable that an STI clinic patient is not required to repeat the same information to several people during the clinic visit. It is helpful for STI clinic policies, procedures, and forms to reflect that only pertinent information be gathered at each stage of the visit to avoid repetition. For example, registration information collected on the intake form will be different than what is collected during the exam by the clinician and noted in the EHR or paper record. Additionally, different information will be collected by the DIS.

However, there may be good reasons for asking about sensitive information a few times—for example, by the clinician and then by the DIS— because patients are often reluctant to be forthcoming about sensitive topics such as substance use and sexual behavior. Information given by the patient may not reflect the patient's actual behaviors. Patients may be hesitant to share behaviors about which they may be ashamed with the doctor with whom they have an ongoing relationship due to stigma associated with these behaviors.[154] This sometimes even happens in settings such as an STI clinic. For this reason, DIS are trained to spend more time building rapport to elicit sensitive information such as substance use and sexual behaviors that may not have been obtained by the clinician.

For more information on disease intervention, see the Disease Intervention chapter of this resource.

Community Engagement

In addition to establishing productive working relationships with local health care providers, STI clinics benefit by establishing and maintaining a range of nonmedical partnerships in the community served. People who live in settings that put them at increased risk for STIs are often affected by comorbid infections and conditions, as well as other factors. Providing services for STI should take a whole-person approach.

This involves STI clinic medical personnel not just treating the STI but assisting with the information about the patient's circumstances and then by providing community referrals. STI clinic laboratory personnel should assist with training needed to implement community-based testing and ensure adherence to CLIA requirements.

Often, DIS are instrumental in identifying community partnerships during performance of field work. STI programs and STI clinics may formally create these partnerships and negotiate memoranda of understanding to delineate formal partnership activities. Examples of such nontraditional partnerships employed by STI programs and clinics include:

- local correctional facilities;
- clubs and bars frequented by populations disproportionately affected by STIs;
- community gathering spots, such as churches, food pantries, neighborhood centers, liquor stores, and convenience stores;
- local substance use treatment centers;
- CBOs that offer services for those experiencing homelessness; and
- drop-in centers frequented by communities disproportionately affected by STIs.

CROSS-REFERENCE

Community Engagement for Medical & Laboratory Services

For more information, see the Community Engagement chapter of this resource.

Actively involving the people or communities at increased risk for or experiencing STIs to the greatest extent possible may lead to better health outcomes. DIS sometimes encounter these community representatives, whether they are formally identified leaders (church pastor, CBO director) or informally identified leaders (community members known for their intelligence, wisdom, and interpersonal qualities). These are people that other community members respect and go to for advice and knowledge.

EXAMPLE

Real World Applications

One state department of health's STI program engages with its community by partnering with agencies that are part of its congenital syphilis review board and congenital syphilis task force. Through collaborative efforts with CBOs, tribal health groups, and organizations serving people experiencing homelessness, the STI program works to identify ways to reach the population at risk. Targeted outreach testing events are conducted to support identification of new syphilis infection in communities, with nursing staff providing STI screening and treatment services.

In another state, an STI clinic and the county health department have developed strong partnerships with council members, fire and police departments, and other community partners to broadly share information and messaging on STI prevention, detection, and treatment services. They also broadly advertise services through social media platforms and partner communication platforms.

FOCUS ON CONGENITAL SYPHILIS (CS)

All women who may become pregnant and who have tested positive for any STI should immediately have a pregnancy test performed.[155] Likewise, when a pregnant woman visits an STI clinic or health care setting, they should be tested for STIs, particularly syphilis.[156] These actions ensure that both syphilis and pregnancy may be addressed simultaneously for optimal results (e.g., immediate treatment for syphilis and referral to prenatal care). Using STAT rapid plasma reagin (RPR) tests in the clinical setting or rapid syphilis tests in the field or other settings can expedite syphilis diagnosis for early treatment. Rapid syphilis testing and treatment should be particularly considered for pregnant women who might not otherwise receive adequate prenatal care.

CDC recommends clinicians

> [c]onsider starting syphilis treatment right away following a positive rapid syphilis test during pregnancy if the patient faces greater obstacles to ongoing care (and still send for full confirmatory syphilis testing for optimal patient follow-up). Use rapid syphilis testing and treatment during pregnancy in settings, such as emergency departments, syringe service programs, prisons/jails, maternal and child health programs.[157]

Conclusion

This chapter can assist STI program leaders in creating and overseeing STI clinics in their jurisdictions to ensure accessibility and quality of medical and laboratory services. Each jurisdiction may use this chapter to tailor the recommended services to their own needs and resources and to decide which would be most beneficial to their client base. Providing easily accessible, patient-focused, and high-quality STI clinical services enhances the ability of an STI program to meet its goals of preventing and controlling STIs in the jurisdiction.

BEST PRACTICES FOR MEDICAL & LABORATORY SERVICES

- *Solicit feedback from patients of the STI clinic to improve services and ensure accessibility.*
- *Regularly conduct time and motion studies to determine the length of time for a clinic visit overall, and to identify where the bottleneck areas are.*
- *Maintain a comprehensive set of policies and procedures, on which staff receive training and have access to at all times.*
- *Routinely review and update policies and procedures.*
- *STI clinics and patients benefit from a variety of productive working relationships with local health care providers to whom patients can be referred.*
- *STI clinic managers and medical directors can reference federal recommendations and guidelines for quality services.*

Endnotes

[86] Workowski, Kimberly A., et al. "Sexually Transmitted Infections Treatment Guidelines, 2021." *MMWR Recommendations and Reports*, vol. 70, no. 4, 2021, pp. 1–187. doi: 10.15585/mmwr.rr7004a1.

[87] Ibid.

[88] "Guide to Taking a Sexual History." Centers for Disease Control and Prevention, www.cdc.gov/sti/hcp/clinical-guidance/taking-a-sexual-history.html.

[89] U.S. Preventive Services Task Force. "Behavioral Counseling Interventions to Prevent Sexually Transmitted Infections: Recommendation Statement." *JAMA*, vol. 324, no. 7, 2020, pp. 674–681. doi:10.1001/jama.2020.13095.

[90] Barrow, Roxanne Y., et al. "Recommendations for Providing Quality Sexually Transmitted Diseases Clinical Services, 2020." *MMWR Recommendations and Reports*, vol. 68, no. 5, 2020. doi: 10.15585/mmwr.rr6805a1.

[91] Agency for Healthcare Research and Quality. *2021 National Healthcare Quality and Disparities Report*. 2021. www.ncbi.nlm.nih.gov/books/NBK578537.

[92] Nyblade, Laura, et al. "Stigma in Health Facilities: Why it Matters and How We Can Change It." *BMC Medicine*, vol. 17, no. 1, 2019. doi: 10.1186/s12916-019-1256-2.

[93] Ibid.

[94] "STI Awareness Week: Healthcare Providers." *Centers for Disease Control and Prevention*, www.cdc.gov/sti-awareness/talktesttreat/providers.html.

[95] Valentine, Jo A., et al. "Telehealth Services: Implications for Enhancing Sexually Transmitted Infection Prevention." *Sexually Transmitted Diseases*, vol. 49, no.11S, 2022, pp. S36–S40. doi: 10.1097/OLQ.0000000000001699.

[96] Neri, Antonio J., et al. "Telehealth and Public Health Practice in the United States—Before, During, and After the COVID-19 Pandemic." *Journal of Public Health Management and Practice*, vol. 28, no. 6, 2022, pp. 650–656. doi: 10.1097/PHH.0000000000001563.

[97] KFF. *Telemedicine in Sexual and Reproductive Health*. 19 November 2019. www.kff.org/report-section/telemedicine-in-sexual-and-reproductive-health-issue-brief/.

[98] Kersh, Ellen N. et al. "At-Home Specimen Self-Collection and Self-Testing for Sexually Transmitted Infection Screening Demand Accelerated by the COVID-19 Pandemic: a Review of Laboratory Implementation Issues." *Journal of Clinical Microbiology*, vol. 59, no. 11, 2021. doi:10.1128/jcm.02646-20.

[99] Ibid.

[100] Barrow, Roxanne Y., et al. "Recommendations for Providing Quality Sexually Transmitted Diseases Clinical Services, 2020." *MMWR Recommendations and Reports*, vol. 68, no. 5, 2020. doi: 10.15585/mmwr.rr6805a1.

[101] Zigman, Julia. "Implementing Express STI Services: New Report and Clinic Guide from NACCHO's STI Express Initiative." National Association of County and City Health Officials. 12 April 2021. www.naccho.org/blog/articles/sti-express-initiative-final-report.

[102] Ibid.

[103] U.S. Department of Health and Human Services. *Sexually Transmitted Infections National Strategic Plan for the United States: 2021–2025. 2020.* www.hhs.gov/sites/default/files/STI-National-Strategic-Plan-2021-2025.pdf.

[104] Malone, Nelson C., et al. "Mobile Health Clinics in the United States." *International Journal for Equity in Health*, vol. 19, no. 1, 2020, pp. 40. doi: 10.1186/s12939-020-1135-7.

[105] "Guide to Taking a Sexual History." *Centers for Disease Control and Prevention*, www.cdc.gov/sti/hcp/clinical-guidance/taking-a-sexual-history.html.

[106] Marco, Jason D. "17 Tips to Improve Patient Flow That Will Impact Efficiency." *CHT Healthcare*. 16 February 2023. www.chthealthcare.com/blog/patient-flow.

[107] Hogben, Matthew, et al. "Factors Associated with Sexually Transmitted Disease Clinic Attendance." *International Journal of Nursing Studies*, vol. 41, no.8, 2004, pp. 911–920. doi: 10.1016/j.ijnurstu.2004.04.005.

[108] "How Much Time Does A Doctor Visit Really Take?" *First Stop Health*, https://blog.firststophealth.com/business-blog/how-much-time-does-doctor-visit-really-take.

[109] "What Are Electronic Health Records (EHRs)?" *Office of the National Coordinator for Health Information Technology*, www.healthit.gov/topic/health-it-and-health-information-exchange-basics/what-are-electronic-health-records-ehrs.

[110] "Electronic Medical Records/Electronic Health Records (EMRs/EHRs)." *Centers for Disease Control and Prevention*, www.cdc.gov/nchs/fastats/electronic-medical-records.htm.

[111] Williams, Karmen S. and Gulzar H. Shah. "Electronic Health Records and Meaningful Use in Local Health Departments: Updates From the 2015 NACCHO Informatics Assessment Survey." *Journal of Public Health Management and Practice*, vol. 22, Suppl. 6, 2016, pp. S27–S33. doi: 10.1097/PHH.0000000000000460.

[112] Paneth-Pollak, Rachel, et al. "Using STD Electronic Medical Record Data to Drive Public Health Program Decisions in New York City." *American Journal of Public Health*, vol. 100, no. 4, pp. 586–590. doi: 10.2105/AJPH.2009.175349.

[113] Ibid.

[114] "Are state, county or local health departments required to comply with the HIPAA Privacy Rule?" U.S. Department of Health and Human Services, www.hhs.gov/hipaa/for-professionals/faq/358/are-state-county-or-local-health-departments-required-to-comply-with-hipaa/index.html.

[115] Alder, Steve. "HIPAA Compliance and Medical Records: 2024 Update." *The HIPAA Journal*. 8 January 2024. www.hipaajournal.com/hipaa-compliance-and-medical-records/.

[116] Dean, Lorraine T., et al. "The Affordability of Providing Sexually Transmitted Disease Services at a Safety-net Clinic." *American Journal of Preventative Medicine*, vol. 54, no. 4, 2018, pp. 552–558. doi: 10.1016/j.amepre.2017.12.016.

[117] Ibid.

[118] Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN). *The Use of Licensed Practice/Vocational Nurses in Clinical Settings*. 2023. www.jognn.org/article/S0884-2175%2823%2900033-3/pdf.

[119] Greever-Rice, Tracy, et al. "Integrating the Lived Experience Conditions and Care in the ECHO Model." *Missouri Medicine*, vol. 117, no. 3, 2020, pp. 241–244.

[120] "The Value of the Lived Experience of Front Line Caregivers, Patients and Families in Reducing Hospital-Associated Harm." Quality Improvement Organizations, www.qioprogram.org/quality-in-action-blog-series/value-lived-experience-front-line-caregivers-patients-and-families.

[121] CDC's Core Infection Prevention and Control Practices for Safe Healthcare Delivery in All Settings." *Centers for Disease Control and Prevention*, www.cdc.gov/infection-control/hcp/core-practices/.

[122] "Bloodborne Infectious Diseases Risk Factors." *Centers for Disease Control and Prevention*, www.cdc.gov/niosh/healthcare/risk-factors/bloodborne-infectious-diseases.html.

[123] "HIV and Occupational Exposure." *Centers for Disease Control and Prevention*, www.cdc.gov/hiv/causes/occupational-transmission.html.

[124] "Quick Reference Guide to the Bloodborne Pathogens Standard." *Occupational Safety and Health Administration*, www.osha.gov/bloodborne-pathogens/quick-reference.

[125] Smith, Timothy M. "Why Everyone Should be Trained to Give CPR." *American Medical Association*. 8 August 2022. www.ama-assn.org/delivering-care/public-health/why-everyone-should-be-trained-give-cpr.

[126] Cascella, Laura M. "Managing Medical Emergencies: A Three-Pronged Approach for Healthcare Practices." *MedPro Group*, www.medpro.com/medical-emergencies-three-pronged-approach.

[127] Leichliter, Jami S., et al. "Confidentiality Issues and Use of Sexually Transmitted Disease Services Among Sexually Experienced Persons Aged 15–25 Years—United States, 2013–2015." *MMWR Recommendations and Reports*, vol. 66, no. 9, 2017, pp. 237–241. doi: 10.15585/mmwr.mm6609a1.

[128] Kristoff, Iris, et al. "Health Care Communication Laws in the United States, 2013: Implications for Access to Sensitive Services for Insured Dependents." *Journal of Public Health Management and Practice*, vol. 23, no. 2, 2017, pp. 148–151. doi: 10.1097/PHH.0000000000000418.

[129] Ibid.

[130] Barrow, Roxanne Y., et al. "Recommendations for Providing Quality Sexually Transmitted Diseases Clinical Services, 2020." *MMWR Recommendations and Reports*, vol. 68, no. 5, 2020. doi: 10.15585/mmwr.rr6805a1.

[131] Luetkemeyer, Anne F. et al. "Postexposure Doxycycline to Prevent Bacterial Sexually Transmitted Infections." *New England Journal of Medicine*, vol. 388, no. 14, 2023, pp. 1296–1306. doi: 10.1056/NEJMoa2211934.

[132] Bachmann, Laura H. et al. "CDC Clinical Guidelines on the Use of Doxycycline Postexposure Prophylaxis for Bacterial Sexually Transmitted Infection Prevention, United States, 2024." *MMWR Recommendations and Reports*, vol. 73, no. 2, 2024, pp. 1–8. doi: 10.15585/mmwr.rr7302a1.

[133] Workowski, Kimberly A., et al. "Sexually Transmitted Infections Treatment Guidelines, 2021." *MMWR Recommendations and Reports*, vol. 70, no. 4, 2021, pp. 1–187. doi: 10.15585/mmwr.rr7004a1.

[134] Ibid.

[135] "Expedited Partner Therapy." *Centers for Disease Control and Prevention*, www.cdc.gov/std/treatment-guidelines/clinical-EPT.htm.

[136] "Legal Status of Expedited Partner Therapy." *Centers for Disease Control and Prevention*, www.cdc.gov/sti/php/ept-legal-status/.

[137] "Clinical Treatment of Gonorrhea." *Centers for Disease Control and Prevention*, www.cdc.gov/gonorrhea/hcp/clinical-care/.

[138] Barrow, Roxanne Y., et al. "Recommendations for Providing Quality Sexually Transmitted Diseases Clinical Services, 2020." *MMWR Recommendations and Reports*, vol. 68, no. 5, 2020. doi: 10.15585/mmwr.rr6805a1.

[139] Ibid.

[140] Ibid.

[141] McDonald, Robert, et al."Vital Signs: Missed Opportunities for Preventing Congenital Syphilis—United States, 2022." *MMWR Recommendations and Reports*, vol. 72, no. 46, 2023, pp. 1269–1274. doi:10.15585/mmwr.mm7246e1.

[142] Ibid.

[143] Barrow, Roxanne Y., et al. "Recommendations for Providing Quality Sexually Transmitted Diseases Clinical Services, 2020." *MMWR Recommendations and Reports*, vol. 68, no. 5, 2020. doi: 10.15585/mmwr.rr6805a1.

[144] Ibid.

[145] Ibid.

[146] Ibid.

[147] Ibid.

[148] Ibid.

[149] Ibid.

[150] Ibid.

[151] Goswami, Binita, et al."Turn Around Time (TAT) as a Benchmark of Laboratory Performance." *Indian Journal of Clinical Biochemistry*, vol. 25, no. 4, 2010, pp. 376–379. doi: 10.1007/s12291-010-0056-4.

[152] Papp, John R., et al. "Recommendations for the Laboratory-based Detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae*—2014." *MMWR Recommendations and Reports*, vol. 63, no. 2, 2014, pp. 1–19.

[153] Papp, John R., et al. "CDC Laboratory Recommendations for Syphilis Testing, United States, 2024." *MMWR Recommendations and Reports*, vol. 73, no. 1, 2024, pp. 1–32. doi: 10.15585/mmwr.rr7301a1.

[154] Centers for Disease Control and Prevention. *Clinicians' Quick Guide: Discussing Sexual Health With Your Patients*. www.cdc.gov/hivnexus/media/pdfs/2024/04/cdc-lsht-prevention-brochure-clinicians-quick-guide-discussing-sexual-health-your-patients.pdf.

[155] Workowski, Kimberly A., et al. "Sexually Transmitted Infections Treatment Guidelines, 2021." *MMWR Recommendations and Reports*, vol. 70, no. 4, 2021, pp. 1–187. doi: 10.15585/mmwr.rr7004a1.

[156] Ibid.

[157] "U.S. Syphilis Cases in Newborns Continue to Increase: A 10-Times Increase Over a Decade." *Centers for Disease Control and Prevention*, www.cdc.gov/media/releases/2023/s1107-newborn-syphilis.html.

PROGRAM OPERATION CONSIDERATIONS FOR STI PREVENTION

Disease Intervention

Introduction

Disease intervention is an essential part of program operations for sexually transmitted infections (STIs), the purpose of which is to interrupt disease transmission. While many activities discussed in this chapter are within the scope of STI programs and leaders, some are outside the responsibility of STI programs because they require change among institutions, private health care facilities, or even the entire population. Nonetheless, STI program leaders can participate in community initiatives to effect change that will benefit STI control. This chapter describes four types of disease intervention related to STIs and provides resources to inform new STI program leaders, managers, and staff as they reduce STIs in their communities.

This chapter conveys a syndemic approach[158, 159] to disease intervention. The high rate of STI and human immunodeficiency virus (HIV) coinfection and the influence of other factors can affect aspects of STI prevention and control. Addressing STI prevention through a syndemic approach with the goal of improving health and quality of life for people with and at risk for STIs provides an opportunity for a more holistic approach to individual and population health and improved efficiency in providing services.[160]

This chapter also incorporates a framework based on sexual health and well-being as outlined in the report *Sexually Transmitted Infections: Adopting a Sexual Health Paradigm*, published in 2021 by the National Academies of Sciences, Engineering, and Medicine.[161]

What Is Disease Intervention?

Disease intervention, sometimes abbreviated as DI, includes any activity undertaken to identify people who don't know they may be infected and help people receive treatment fast.[162]

Disease intervention for STIs rapidly identifies people who do not know they might have an infection, through such activities as screening or partner services, sometimes abbreviated as PS. Second, it helps people receive treatment as quickly as possible. Both actions can stop diseases from spreading and prevent serious health problems as a result.[163]

Primary prevention activities are those that happen before an infection occurs and can be especially helpful as disease intervention strategies. Recommended primary prevention activities for STI programs and clinicians include but are not limited to:[164, 165]

- condom provisions;
- pre-exposure vaccinations for hepatitis A virus (HAV), hepatitis B virus (HBV), and human papillomavirus (HPV) or mpox as indicated;
- pre-exposure prophylaxis (PrEP) for HIV prevention;
- doxycycline postexposure prophylaxis (doxy PEP) for STI prevention;[166, 167] and
- behavioral and prevention counseling.

Examples of primary prevention programs would be to provide education on STIs and HIV to those not yet sexually active or provide consultation and technical assistance to community health educators. Vaccinating youth for HPV who are not yet sexually active is another example of primary prevention.

Secondary prevention activities are those that identify a disease before symptoms appear so that treatment may be provided early. There are many advantages to this including limiting the spread of that infection, avoiding complications of infection, preventing infections from being passed to neonates, and more.[168] Targeted screening for STIs and HIV, including field testing, community outreach, and education are all examples of secondary prevention activities. Screening is discussed in the Medical & Laboratory Services chapter of this resource. Other activities to consider include ensuring all pregnant women are tested for syphilis and all women of reproductive age with syphilis receive pregnancy testing.

What is doxycycline postexposure prophylaxis (doxy PEP)?

In June 2024, CDC recommended doxy PEP as a prevention measure for selected populations who have had a bacterial STI (specifically syphilis, chlamydia, or gonorrhea) diagnosed in the past 12 months.

Doxycycline taken within 72 hours after sex has been shown to reduce syphilis and chlamydia infections by >70% and gonococcal infections by approximately 50%.[169]

RESOURCES

Resources for doxy PEP

Preventing STIs with Doxy PEP|STI|CDC

Information for health care providers:
Doxy PEP for Bacterial STI Prevention|STI|CDC

CDC recommends that doxy PEP be implemented in the context of a comprehensive sexual health approach, including risk reduction counseling, STI screening and treatment, recommended vaccination, and linkage to HIV PrEP, HIV care, or other services as appropriate. During the comprehensive clinic visit, certain populations who have had a bacterial STI diagnosed in the past 12 months should receive counseling that doxy PEP can prevent these infections via a self-administered dose taken within 72 hours after having oral, vaginal, or anal sex.[170]

Many STI clinics are now offering doxy PEP to patients. STI programs wishing to provide this may seek assistance from their CDC project officer.

THIS CHAPTER DIVIDES DI ACTIVITY INTO FOUR SECTIONS:

- partner services,
- HIV treatment,
- outbreak response, and
- health policy.

Partner Services as Disease Intervention

What are partner services?

According to CDC's Recommendations for Partner Services for HIV Infection, Syphilis, Gonorrhea, and Chlamydial Infection (2008),

> Partner services (PS) are a broad array of services offered to persons with HIV infection, syphilis, gonorrhea, or chlamydial infection and their partners. A critical function of partner services is partner notification, a process through which infected persons are interviewed to elicit information about their partners, who can then be confidentially notified of their possible exposure or potential risk.[171]

Partners can be notified numerous ways including in person, by telephone, or via digital or electronic means such as by email or through a social networking application.

Partner services are often offered to the people diagnosed with STIs or HIV, sometimes referred to as the original or index person, in the context of a case investigation conducted by a DI professional. Partner services include both partner notification and other services needed by the original person and people exposed to STIs such as: case management and contact tracing, including elicitation and notification of partners; prevention counseling; testing for HIV and other types of STIs (not necessarily limited to syphilis, gonorrhea, and chlamydial infection); hepatitis screening and vaccination; treatment or linkage to medical care; linkage or referral to other prevention services (e.g., reproductive health services, prenatal care, substance use treatment, social support, housing assistance, legal services, mental health services, and more).

When conducted with infections other than STIs or HIV, such as coronavirus disease 2019 (COVID-19) or meningitis, partner services are commonly referred to as "contact tracing." Partner services are also considered an effective method of secondary prevention since they often identify a new infection in the exposed partner.[172]

Notifying partners through the use of technology such as email, social media, dating apps or through text is often referred to as technology-based partner services notification or internet partner services (IPS). Use of technology helps to identify and collect location information of partners and is bound by the same rules of confidentiality as in-person or telephone based partner services. IPS can also assist patients who choose to notify partners on their own. Many people diagnosed with

an STI or HIV choose a variety of different methods to notify partners, with some partners being informed by the original person themselves, other partners being informed by the disease intervention specialist (DIS), and others informed through IPS.

The adoption of technology can increase the number of partners notified, screened or tested, and potentially diagnosed. Additionally, and perhaps most importantly, technology-based partner services can reach partners who otherwise may not have been notified of their STI or HIV exposure. It also provides a means of notifying partners when distance is a barrier (such as in rural areas) and resources are limited.[173]

A method of partner services that does not require public health intervention is expedited partner therapy (EPT). This is an evidence-based, clinical strategy specific to chlamydia or gonorrhea in which sex partners of patients diagnosed with chlamydia or gonorrhea are provided with prescriptions or medications by the original person from the clinician without the health care provider first examining the partner.[174]

> **"Although at first glance partner services may seem to be a simple and straightforward public health intervention, it is in fact a complex set of interventions, each requiring skilled and timely actions."[175]**
>
> Hogben et al., 2016

TIPS FOR CONTACTING PATIENTS

Alternative contact methods are routinely used by DIS in U.S.-based STI programs for case investigation—not just during outbreak investigations. Some jurisdictions also use social media and other platforms for an initial record search at the beginning of an investigation. Many jurisdictions are using these alternative methods of communication for routine investigation activities, especially due to their increased use in tuberculosis (TB) case investigation and COVID-19 case investigations. These methods of communication are standard practice in many but not all jurisdictions.

Many jurisdictions use these strategies in non-outbreak times for at least a subset of patients. For instance, patients that live in more geographically remote areas may be more likely to be interviewed via phone, whereas patients living in the city may still be initially assigned for in-person outreach.

Regardless of outbreak status, if in-person contact methods are unsuccessful, DIS often attempt phone/internet outreach.

Such methods may include:

- telephone or text;
- social media;
- social and dating apps; and
- video conferencing.

Dating apps might be difficult to access unless the jurisdiction has an agreement with the technology provider, since the purpose of these apps is not for governmental investigations. An STI program could seek assistance from public health lawyers to incorporate new technologies like social media and video conferencing into DIS outreach. Each jurisdiction may consider its own statutes and regulations.

HOW CAN SOCIAL NETWORKS ASSIST WITH DISEASE INTERVENTION?

Recent developments in social network analysis are advancing "network epidemiology," which focuses on connections between individuals as pathways for disease transmission, which is particularly relevant for STI prevention.[176] Principles of social network analysis can be applied to STI prevention through social and sexual network-based interventions.

Studies show that social and sexual network-based interventions can be useful in sharing information, recruiting contacts for STI testing, and partner notification.[177, 178] Some examples of social and sexual network interventions that have demonstrated evidence of effectiveness for HIV include popular opinion leaders delivering health messages to their community and peer leaders spreading information on healthy behaviors within their networks. Some social network interventions recruit and train leaders from within the community to deliver risk reduction messages to their peers. Such interventions may result in declines in self-reported partner concurrency, condomless anal intercourse, and intercourse with partners with unknown HIV status.

COMMUNITY ADVISORY BOARDS

Research shows that there are higher rates of STIs among some racial or ethnic minority groups compared to White people.[179, 180] It is important to understand that these higher rates are not caused by race, ethnicity, or heritage, but by social conditions that are more likely to affect certain populations.[181] When planning social and sexual network-based interventions, STI program teams can identify opportunities to address health disparities and to partner with trusted community members in these efforts.

Community advisory boards can leverage community resources and expertise that can be used in social and sexual network-based interventions.

The Baltimore City Health Department (BCHD) Youth Advisory Council, or YAC, partnered with responsible youth to provide meaningful, engaging outreach to their peers to help lower rates of chlamydia and gonorrhea. With the support of appropriate trainings on decision-making and other outreach activities, the YAC participated in outreach events such as information sessions at community health fairs and citywide health expos.

For more information on addressing STIs in partnership with community leaders, see the Community Engagement chapter of this resource.

RESOURCES

Resources for Partner Services

Partner Services|HIV Nexus|CDC

The Toolkit for Technology-based Partner Services|CDC

Expedited Partner Therapy for Sexually Transmitted Infections

Effective Interventions|HIV Partners|CDC

Partner Services in Adults with Acute and Early HIV Infection

Partner Services in STD Prevention Programs: A review

Internet-Based Partner Services in US Sexually Transmitted Disease Prevention Programs: 2009–2013

ARE PARTNER SERVICES EFFECTIVE?

Public health initiatives are often evaluated by whether they are effective (do they work?) and efficient (how do the resources expended relate to the value achieved?). Implementation of disease intervention activities, including partner services, differs based on public health priorities, funding resources, and jurisdictional organization.[182] In some populations and circumstances, partner services are effective to reduce STIs and are efficient.[183, 184 ,185] Partner services are especially valuable methods of case finding during outbreaks.[186, 187] Studies have demonstrated that partner services for STIs or HIV are effective in identifying previously unknown cases of infection, interrupting disease transmission, and re-linking to care those with HIV who have discontinued care.[188] The effectiveness of partner services varies by infection and by population studied and may be as low as 20% among some groups such as GBMSM with syphilis.[189]

Another qualification to the claim that partner services are effective is that studies and STI programs only have the ability to report on partner services for which they have data—when performed by a DI professional. The extent to which partner services occurs between the original person and their exposed partners is unknown, so this method of partner services is unable to be quantified for evaluation of effectiveness.

There are some conditions in which partner services are not as effective as other types of interventions. For example, if the infection is highly prevalent in the population (such as chlamydia is in many areas), partner services might not be an effective or efficient intervention.[190]

Periodic examination of the efficacy of local partner services activities can provide valuable data for program improvement. Such examinations can inform STI program leadership about effectiveness and efficiency. Effectiveness is often assessed through performance measures. Performance measures represent the ongoing use, monitoring, and reporting of select process or outcome indicators against benchmarks for accountability to interested parties such as funders, policymakers, and the general public. Performance measurement can serve as an indicator of program success or an early warning to program staff of potential challenges in program implementation or success. STI programs often review their performance data on a quarterly basis.

Performance measures established by CDC may help STI programs understand how well their partner services program functions and can indicate where improvements could be made. Funded jurisdictions may refer to their CDC cooperative agreement for specific program requirements. STI programs locally can create their own performance measures for monitoring that fit their specific needs.

Measures like these can be particularly useful at the local level to drive cycles of continuous quality improvement through the Plan-Do-Study-Act framework. Through this process, programs iteratively plan and carry out program improvements, study the impact of those improvements, and go on to act on the findings, making further improvements.[191]

EXAMPLE

Performance Measures for Syphilis Partner Services

The performance measures below are presented as examples and may change in future funding announcements.

Contact index = (# of contacts initiated for partner services) / (# of cases interviewed)

Exam rate = [(# of contacts examined (tested) within 30 days before or after the index patient's initial specimen collection / (# of contacts (partners) initiated for partner services)] * 100

Disease intervention rate = [(# of cases with at least 1 contact (partner) treated for syphilis within 30 days before or after the index patient's initial specimen collection) / (# of cases interviewed)] * 100

Brown University and the Rhode Island Department of Health conducted a DIS Community Assessment Project[192] to help improve health outcomes, prevent ongoing disease transmission, and best meet the needs of young GBMSM patients with STIs or HIV and their partners. Interviews with key informants, members of the community most affected by STIs and HIV, were conducted to inform the project.

> Potential points of innovation were noted throughout the DIS process, including who you reach out to (e.g., broader sexual networks, peers), who reaches out (e.g., clinic staff, continuity of staff), how you reach out (e.g., new technology), what you discuss and offer (e.g., referral to same-day and/or telehealth).[193]

RESOURCES

Resources for Disease Intervention

National HIV Prevention Program Monitoring and Evaluation Data | HIV Data | CDC

National TB Program Objectives and Performance Targets 2030 | Information for Tuberculosis Programs | CDC

The Community Preventive Services Task Force (CPSTF) recommends partner services interventions to increase HIV testing. Systematic review evidence shows interventions are effective at identifying and testing sexual and needle-sharing partners of people newly diagnosed with HIV infection, which improves health for population groups disproportionately affected by HIV. Economic evidence indicates partner services interventions to increase HIV testing are cost-effective.[194]

Who should be offered partner services?

STI programs make local decisions about which infections are to be investigated for the offer of partner services. This prioritization of STI cases to assign to a DIS for interview depends on the burden of disease in the local area and the resources (usually the number of full-time DIS) available. Many STI programs are only able to prioritize infectious syphilis and some HIV cases, while others are also able to include gonorrhea and some high priority chlamydia cases, including teens or pregnant women. During outbreak conditions, such as mpox or COVID-19, resources may be allocated to contact tracing on an emergency basis. There is no one-size-fits-all guidance that can be given to assist an STI program manager to make this decision.

Typically, jurisdictions consult local supervisors, epidemiologists, and a CDC project officer or other STI program managers to determine which infections they might pursue during any given time frame. Jurisdictions also are able to change their investigation priorities when an outbreak occurs to focus efforts on addressing the rise of infections.

STI programs often prioritize partner services for conditions and people who could most benefit from receiving those services, and where the program can have the most disease intervention impact. State, tribal, local, and territorial (STLT) health departments have the authority and autonomy to determine prioritization of infectious disease case investigation and contact tracing (partner services) activities based upon STLT legislation, regulations, guidance, resources, policies, and federal funding requirements. Prioritization is accomplished through local data analyses to determine which conditions and populations are priority. Staffing levels and workload can be considered in this decision. DIS can consult their supervisor to gain an understanding of local health department STI and HIV priorities.

Jurisdictions typically prioritize the following populations for partner services into categories based on who needs intervention. Below is an example of how jurisdictions might prioritize their cases:

Highest priority:

- women who are pregnant with newly diagnosed early syphilis (the primary, secondary, or early latent stages of syphilis infection) or HIV infection,
- people with newly diagnosed/reported early syphilis,
- people with newly diagnosed HIV infection, and
- those with antibiotic resistant gonorrhea.

Next highest priority, if local resources allow:

- people with newly diagnosed/reported gonorrhea or chlamydial infection, and
- people with a previous HIV diagnosis who identify partners not previously informed of their exposure.

Other groups to consider for prioritization of partner services, as local resources permit:

- people with previously diagnosed HIV who have a new STI diagnosis, and those who return to care with an elevated viral load (e.g., >50,000 copies of RNA/mL, as a high serum viral load is associated with increased risk for HIV transmission);
- others potentially involved in transmission (e.g., including social networks who may share risks and partners) and people suspected to be part of a rapidly growing cluster or outbreak; and
- people with newly diagnosed/reported chlamydial infection can be offered partner services, which may include strategies such as expedited partner therapy.

EXAMPLE

How Evaluation of Partner Services Can Assist with Prioritization

Upon review of staffing and workload, your jurisdiction realizes there are too many cases of early syphilis to offer partner services to 100% of them. It is not an option to increase staffing at this time. In your area, GBMSM represent the majority of your jurisdiction's early syphilis cases. Analysis of partner services outcome data reveals 60% of the syphilis cases among GBMSM do not result in a public health benefit (such as new cases identified and treated or new contact identified and provided with prophylactic treatment). Using demographic, risk factor, outcome, and other case data, you create a profile of cases among GBMSM where you can realize efficiency—that is, having the greatest disease intervention impact for the least amount of resources so that these cases may be prioritized for interview and partner services.

CROSS-REFERENCE

Program Evaluation for Disease Intervention

For more information and resources on how to conduct program evaluation for STI programs, see the Program Evaluation chapter of this resource.

BEST PRACTICE

Use local data to prioritize which infections and population groups are offered partner services.

Who provides partner services?

A wide variety of personnel classifications may conduct DI activities, including non-licensed professionals (e.g., epidemiologists, linkage to care coordinators, public health investigators) and licensed professionals (e.g., nurses, social workers). The DI workforce is a critical component of today's public health infrastructure, providing daily support to STIs, HIV, TB, hepatitis, and other infectious disease programs.[195] Partner services for STIs and HIV are most often provided by DIS and other DI professionals.

Disease intervention professional is defined as any public health professional who conducts disease intervention activities, including, but not limited to, the following: person-centered interviews, collection of enhanced surveillance and community assessment data, partner services to include contact tracing, field investigation, directly observed therapy, field specimen collection, field investigation in outbreaks and emergency preparedness, community outreach, collaboration with medical providers, and navigation of health care systems to ensure evaluation and treatment of people diagnosed with or potentially exposed to infectious disease. Relevant program areas include STI, HIV, TB, viral hepatitis, and other infectious outbreak investigation and emergency preparedness and response.

HEALTHCARE PROVIDERS AS DI PROFESSIONALS

While most STIs are diagnosed by private health care providers/clinicians, it is believed that most partner services are delivered by DI professionals.[196] When DI professionals conduct partner services they record this in a database which results in an ability to quantify the extent of partner services; however, partner services are unable to be documented when performed by the original person themselves when they inform their exposed partners, or by a health care provider/clinician. Clinicians often do not directly perform partner services on behalf of their patients with an STI or HIV infection diagnosis; rather, they will direct the patient to inform their own exposed partners. In some jurisdictions, clinicians can also provide EPT to their patients with chlamydia and gonorrhea to deliver partner treatment, which helps reduce the reinfection risk to the original person. Clinicians can also evaluate and treat sex partners as well as cooperate with local DI professionals.[197] Health care providers also play an important role in disease intervention by providing prophylactic treatment for syphilis and other STIs to exposed partners to known cases.

> Time spent counseling patients about the importance of notifying partners is associated with improved notification outcomes. When possible, clinicians should advise persons to bring their primary sex partner with them when returning for treatment and should concurrently treat both persons. Although this approach can be effective for a main partner, it might not be a feasible approach for additional sex partners. Evidence indicates that providing patients with written information to share with sex partners can increase rates of partner treatment.[198]

DISEASE INTERVENTION SPECIALISTS AS DI PROFESSIONALS

Health departments use different position titles for staff who conduct partner services activities (e.g., disease intervention specialists, communicable disease investigators, public health investigators, public health advisors, public health representatives, public health nurses, and linkage to care coordinators). In this resource we use the most common term, DIS. DIS may work in a variety of settings, including STI clinics, health departments, community health centers, HIV treatment facilities, family planning clinics, or other clinical settings.

For decades, DIS have played a critical role in public health in the United States, particularly in the prevention and control of STIs and other communicable diseases.[199] DIS are public health professionals who use contact tracing and case investigation to prevent and control infectious diseases. While these professionals originated from the field of STIs and HIV, the investigative skills have expanded to include TB as well as outbreak responses for anthrax, flu, measles, food-borne illnesses, Zika, Ebola, and COVID-19. They have also provided emergency response support after natural disasters (e.g., hurricanes Hugo, Katrina, and Michael).[200]

DIS possess unique skills designed for disease intervention and investigation. With skills in problem-solving, motivational interviewing, negotiation, and communication, DIS specialize in:

- public health investigations,
- case management and analysis,
- provider and community engagement, and
- outbreak detection and response.[201]

Regardless of the name used or the setting in which they work, the critical commonality is that all DIS have successfully completed the same basic training, whether delivered by CDC, through the National Network of Disease Intervention Training Centers (NNDITC), or a state-based DI Training course. Depending on when the DIS was trained, this could have been called Introduction to Sexually Transmitted Disease (STD) Interviewing (ISTDI) or Passport to Partner Services.

TRAINING & PROFESSIONAL DEVELOPMENT FOR DISEASE INTERVENTION

Disease Intervention Specialist: Retention, recruitment, and training | CDC (webinar on YouTube)—(~4 hours) on hiring, training, and retention of DIS—also discusses partner services

Clinician and Patient Resources | HIV Nexus | CDC—HIV partner notification for clinicians

HOW ARE DIS TRAINED?

CDC's Division of STD Prevention has historically provided funding and technical assistance for training of DIS and accomplished this through a network of STD/HIV prevention training centers and agencies hosting virtual content, the National Network of Disease Intervention Training Centers (NNDITC). Each jurisdiction's STI program manager ensured that DIS were trained in the most current curriculum and often delegated this responsibility to mid-level managers with DI experience at STLT governments. At the STI clinic level, these positions might be referred to as "first-line supervisors."

Table 5.1

CORE COMPETENCIES AND CROSS-CUTTING SKILLS FOR DIS

CORE COMPETENCIES	CROSS-CUTTING SKILLS
Collecting surveillance and health information	Empathetic engagement
Interviewing and case management	Cultural humility
Contact tracing	Active listening skills
Case investigation	Motivational interviewing
Collaboration with healthcare providers	Person-centered communication
Linkage to care and treatment	
Field-based testing and other field-based activities	
Understanding of the clinical and epidemiological features of STIs and HIV	

Unlike many public health professionals such as epidemiologists or health educators, there is no formal educational pathway to become a DIS or DI professional. Training programs require a compilation of federal, state, and local training and other resources. The depth and breadth of activities conducted by DI professionals requires a multifaceted training plan.

Training plans are most effective when they support development of core competencies (see Training Resource box). There is no one training course that will meet all DI training needs. To build disease intervention capacity, STLT public health programs may utilize a comprehensive training plan that includes the following elements:

- knowledge and skill-based training in essential job tasks and competencies;
- on-the-job training to observe and practice DI interviewing and investigation skills;
- ability to perform functions related to diagnostic testing such as venipuncture, specimen handling, and rapid diagnostic test processing;
- awareness of applicable federal, state, tribal, local, or territorial laws and regulations regarding public health authority, communicable disease reporting, confidentiality, privacy, and data security; and
- proficiency in the use of technology to access surveillance and other essential information and facilitate communication with people diagnosed with or exposed to infectious diseases.

WHAT IS A COMMUNITY-EMBEDDED DIS (CEDIS)?

In jurisdictions with clinics providing services to a high volume of patients whose circumstances or behavior put them at increased risk for STIs or HIV, traditional DI can be enhanced by using the Community-Embedded DIS model. In this model, the community organization, not the health department, hires DIS, who are then based at the community clinic. Training for the CEDIS is the same as for other DIS, and the CEDIS often receives the same technical assistance, oversight, and feedback as the health department DIS. CEDIS also have access to the STI program surveillance database to look up and enter case information. This model is already in use in various jurisdictions across the U.S.

The CEDIS model is gaining acceptance due to improved outcomes. For example,

> DIS placement within HIV clinics with high syphilis morbidity resulted in the improvement in the number of completed patient interviews, the number of interviews yielding locatable contacts, time to interview, and the number of partners brought to treatment.[202]

A project assessing syphilis DI outcomes before and after engaging the embedded DIS in a Los Angeles clinic found improvements in all measures of DI.[203]

The evaluation attributes the successes to the following factors:

- prompt access to syphilis cases and laboratory results contributed to the significant decrease in the time to interview new cases and the number of cases lost to follow-up,
- prompt case interviewing could have led to the documented increase in elicited contacts and the significant increase in finding new syphilis cases,
- improved rapport and trust with embedded DIS compared to health department DIS, and
- better acceptance and cooperation from the clinic staff in referring patients to the CEDIS.[204]

TRAINING & PROFESSIONAL DEVELOPMENT FOR DISEASE INTERVENTION

CDC and its partners provide resources to build disease intervention capacity including training plans, eLearning, and interactive instructor-led courses.

STI Prevention Courses | CDC

National Network of Disease Intervention Training Centers

Link to trainings from NNDITC Training—National DITC

STD HIV Partner Services Demonstration Video | CDC TRAIN

DIS Certification link: DIS Certification | NCSD

Disease Intervention Training Plan with Outbreak Response | CDC TRAIN

HIV Public Health Partners | CDC

National HIV Classroom Learning Center

Tuberculosis (TB) Guidance and Training Resources | CDC

Tuberculosis Centers of Excellence for Training, Education, and Medical Consultation (TB COEs) | CDC

Viral Hepatitis Training | CDC

The Introduction to Public Health Practice Training Plan | CDC TRAIN

BEST PRACTICE

Ensure DIS are thoroughly trained in all core competencies and cross-cutting skills in order to provide appropriate services to the communities they serve. This training can include oversight from an experienced DI professional.

How do DIS perform their work?

According to the 2008 CDC publication, Recommendations for Partner Services Programs for HIV Infection, Syphilis, Gonorrhea, and Chlamydial Infection[205] the eight principles identified to guide DIS and others in the performance of partner services are:

1. *Client-centered*—All steps of the partner services process should be tailored to the behaviors, circumstances, and specific needs of each client.
2. *Confidential*—Confidentiality should be maintained and is essential to the success of partner services. Confidentiality also applies to data collected as part of the partner services process. When notifying partners of exposure, the identity of the index patient must never be revealed, and no information about partners should be conveyed back to the index patient.
3. *Voluntary and noncoercive*—Participating in partner services should be voluntary for both infected persons and their partners; they should not be coerced into participation.
4. *Free*—Partner services should be free of charge for infected persons and their partners.
5. *Evidence based*—Partner services should be as evidence-based as possible.
6. *Appropriate*—Partner services should be provided in a nonjudgmental way and be appropriate for each client.
7. *Accessible and available to all*—Partner services should be accessible and available to all people with an infection regardless of where they are tested or receive a diagnosis and whether they are tested confidentially or anonymously. Because of the chronic nature of HIV infection, partner services for HIV should not be a one-time event. They should be offered as soon as people with HIV learn their serostatus and should

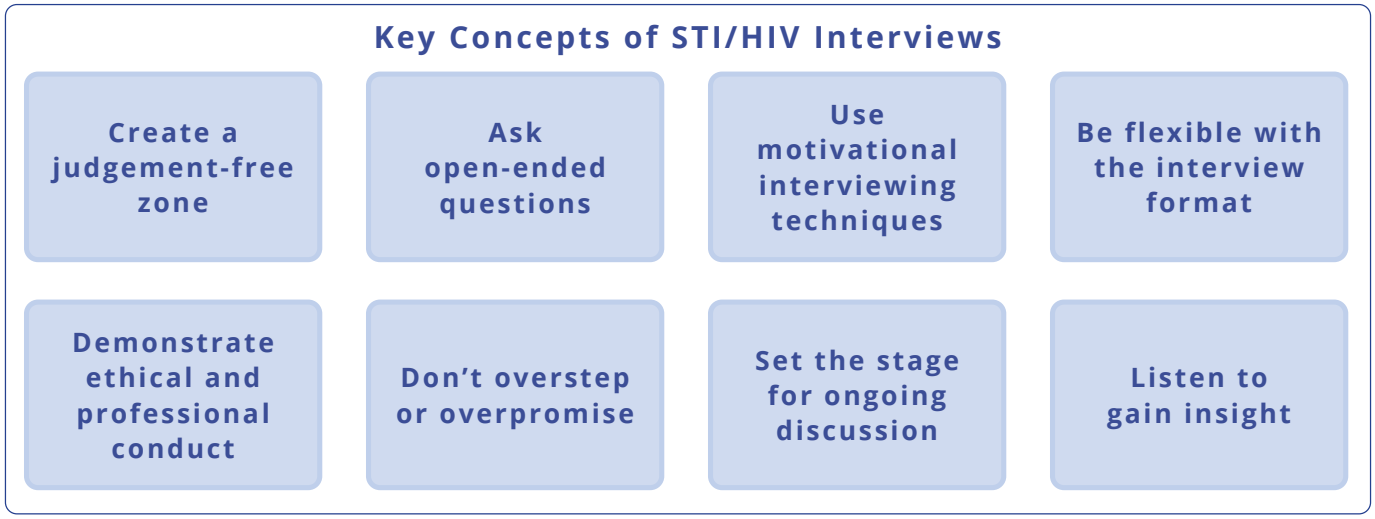
be available throughout their counseling and treatment. People with HIV should have the ability to access partner services whenever needed.

8. *Comprehensive and integrative*—Partner services should be part of an array of services that are integrated to the greatest extent possible for people with HIV infection or other STIs and their partners.

DIS also have a framework for how to conduct an interview with a person diagnosed with an STI or HIV. Training supports this framework and allows DIS the opportunities to practice.

Figure 5.1

FRAMEWORK FOR STI/HIV INTERVIEWS



Adapted from: "STI/HIV Interview Series: Overview of STI/HIV Interviewing. Version 1." National Network of Disease Intervention Training Centers (NNDITC), 22 November, 2022. www.nationalditc.org/training/.

DIS are trained to use a unique tool called Visual Case Analysis, or VCA, that enables them to plot the details of the original person's syphilis infection and view these alongside the details of syphilis infection in their partners. This side-by-side visual analysis of symptoms and other facts can help DIS draw conclusions about which person was the source of the infection and which person(s) were considered "spread" cases. By utilizing this technique, an STI program can feel more confident that it has identified (and treated) all exposed partners of the original syphilis cases so that potential outbreaks are averted, and all people exposed to syphilis are identified.

Visual Case Analysis for Syphilis Case Management, computer-based tool VCAmon—Computer Application for VCA Plotting (iiab.me)

VCA Training | NCSD

BEST PRACTICE

Use the eight principles of partner services to assess DIS competencies and evaluate interview quality.

WHAT ELSE DO DIS DO?

Depending on local decisions, DIS can be involved in all the different types of disease intervention presented in this chapter. While their main role is in performing partner services, DIS are also involved in HIV treatment as disease intervention, outbreak response as disease intervention, health policy as disease intervention, and primary/secondary prevention as disease intervention.

Table 5.2

ACTIVITIES DI PROFESSIONALS MAY PARTICIPATE IN RELATED TO DIFFERENT TYPES OF DISEASE INTERVENTION

HIV TREATMENT	OUTBREAK RESPONSE	HEALTH POLICY	PRIMARY AND SECONDARY PREVENTION
Encouraging HIV testing of all people encountered with an STI or exposed to an STI, resulting in a high volume of new HIV diagnoses.	Observing when infections are increasing in a group of people or in a specific neighborhood.	Being active in community groups for the purpose of keeping STI in the forefront of discussions.	Participating in local screening events such as Pride events, bar or jail screening, or door-to-door activities.
Providing linkage to care including re-engagement for those who have discontinued care.	Providing valuable input to an Outbreak Response Plan due to their familiarity with the community and populations.	Sharing input with policymakers based on their knowledge of the needs of people most at risk for STI.	Giving STI educational presentations in venues such as churches or youth groups.
	Carrying out outbreak response activities such as field testing and door-to-door campaigns.	Contributing to HIV Community Planning Groups as STI experts or participate in local community health needs assessments.	Assisting with partner services.

DI professionals often go above and beyond what is expected of them to assist their clients with needs not directly related to STIs, such as helping them secure food or housing, family planning services, community referrals for a variety of supportive services, or short-term support for substance use treatment. DIS are trained to adopt a holistic method of working with their clients, since many find healthy changes easier to make if they have sufficient support.[206]

BEST PRACTICE

Periodically evaluate the effectiveness of local partner services, making changes to interviewing priorities as needed.

FOCUS ON CONGENITAL SYPHILIS (CS)

Traditional motivators used by DIS for partner elicitation include discussing the risk of STIs to unidentified women who may be or become pregnant. According to one study, a third of CS cases were attributable primarily to a male sex partner who did not inform his pregnant partner who believed they were in a monogamous relationship.[207]

Research shows that those engaging in sexual behavior with people outside of their primary relationship (believed to be monogamous by the other partner) practice safer sex less often with outside partners, thus increasing the monogamous partner's risk for STIs. Those having sex outside the relationship were also less likely to have testing for STIs or discuss safer sex practices with outside partners.[208]

These behaviors place pregnant women who believe their partners to be monogamous at high risk for STIs and present a significant behavioral counseling challenge. DIS and clinicians counseling men with syphilis could discuss these concerns directly. Similarly, when syphilis is diagnosed in a pregnant woman who asserts she is in a monogamous relationship, sensitive confrontation may be effective at helping her understand her true risk.

Many jurisdictions with high rates of maternal and congenital syphilis have collaborated with maternal health programs and developed DIS-based projects specifically to manage maternal and congenital syphilis patients. For example, some STI programs have an identified DIS who is the "CS specialist"; other programs require all DIS who interview a pregnant woman with syphilis to provide ongoing case management services until delivery, while others have created linkages with social service programs for this purpose. STI programs can consult with their assigned CDC project officer for assistance in creating enhanced CS prevention activities.

BEST PRACTICE

Consider facilitating CS prevention by ensuring all women able to become pregnant are counseled at every patient interaction about the risk of syphilis in pregnancy, and by ensuring all men interviewed for any STI are counseled about the risk of CS for partners able to become pregnant.

HIV Diagnosis and Treatment as Disease Intervention

The synergistic relationship between STIs (particularly syphilis) and HIV has long been documented.[209] STI programs serve many people at risk for these infections through the work of STI clinics.

> [STI] specialty or sexual health clinics are a vital partner in reducing HIV infections in the United States. These clinics provide safety net services to vulnerable populations in need of HIV prevention services who are not served by the health care system and HIV partner service organizations. Diagnosis of an STI is a biomarker for HIV acquisition, especially among [people] with primary or secondary syphilis or, among MSM, rectal gonorrhea or chlamydia.[210]

The federal initiative Ending the HIV Epidemic (EHE) identifies four pillars:[211]

1. *Diagnose* all those with HIV as early as possible;
2. *Treat* people with HIV rapidly and effectively to reach sustained viral suppression;
3. *Prevent* new HIV transmissions by using proven interventions; and
4. *Respond* to potential HIV outbreaks to get vital prevention and treatment services to people who need them.

STI programs contribute to all four pillars of EHE through their work. DI professionals fill a primary role in disease intervention by:

- providing HIV testing;
- offering partner services to those diagnosed with HIV or syphilis;
- linking to medical care those who are newly diagnosed with HIV;
- in some areas, helping with provision of PrEP or non-occupational post-exposure prophylaxis (nPEP); and
- re-engaging to medical care those who have discontinued care.

HIV treatment as disease intervention can encompass a range of services beginning with HIV testing. If the person tests positive, they can be immediately (depending on local area resources) linked to medical care for immune system testing and medications. They can be screened for syphilis, gonorrhea, and chlamydia so that those infections can be treated quickly. Provision of partner services helps with disease intervention by identifying new people who can be referred to PrEP as well as identifying new people diagnosed with HIV who can be linked to care and offered behavioral counseling and other supportive services.

The importance of HIV testing

Testing is an important first step in disease intervention for HIV, as a person cannot access antiretroviral therapy (ART) and take other steps to protect their health and prolong their life if they are unaware of their infection. It is estimated that 87% of people with HIV know their status.[212]

This rate varies by geographic region and by population. STI clinics and DIS working in them are important facilitators of HIV testing to populations disproportionately affected. STI clinics perform approximately 20% of all federally funded HIV tests nationally but identify approximately 30% of all new infections.[213]

Partner services for HIV or syphilis

There is a high degree of coinfection with HIV among infectious syphilis cases, primarily among GBMSM. In 2022, 36.4% of MSM with primary and secondary syphilis (P&S) were people with diagnosed HIV.[214]

According to a report from the National HIV Prevention Program Monitoring and Evaluation (NHM&E) describing partner services data that are submitted to CDC twice a year, in 2021 among U.S. HIV prevention programs, 70.5% of partners of people with HIV were tested for HIV through health department partner services activities with 18.1% of them newly diagnosed with HIV.[215]

Many STI programs are involved in disease intervention through ensuring DIS offer partner services to their local priority populations, often people diagnosed with infectious syphilis or HIV. Since there is a high level of coinfection of syphilis and HIV, partner services offered to all people with infectious syphilis, even when the person with syphilis is negative for HIV, serves to identify people who are unaware of their HIV infection. In a study of 725 people with early syphilis conducted between 2016 and 2018 in an EHE-identified county's STI clinic, HIV testing of partners to early syphilis cases who were themselves HIV-negative yielded a 3.5% positivity among the partners.[216] Among partners of HIV-positive early syphilis case patients, 14% were found to be newly HIV-positive. Further, 68% of those living with HIV were retained in care after one year and 60% of those were virally suppressed.[217]

HIV PrEP and nPEP

PrEP is HIV medicine taken to reduce the chances of getting HIV infection. PrEP is used by people who do not have HIV but are at an elevated risk of being exposed to HIV through sex or injection-drug use.

Many STI programs are involved in enrolling eligible people in PrEP, usually through STI clinics or DIS.

There are many barriers to increasing PrEP coverage, including health care access, stigma, cost, too few clinicians with the ability to prescribe, and a lack of information about its benefits among those who are eligible.[218]

The use of antiretroviral drugs to prevent HIV after non-occupational behaviors associated with HIV transmission is called nPEP.[219] Some STI clinics provide nPEP. Behaviors that increase the chances of getting HIV (with partner of unknown HIV status or a partner with HIV who does not have an undetectable viral load) may include:

- condomless receptive and insertive vaginal or anal intercourse;
- sharing needles and drug injection equipment; and/or
- penetrative injuries (e.g., needlestick, human bites, accidents) with exposure to blood or other potentially infected fluids.[220, 221]

RESOURCES

Resources for HIV PrEP and nPEP

Ending the HIV Epidemic in the US Success Stories | EHE Initiative | CDC

Fact sheet for nPEP MidAtlantic AETC nPEP Pocket Guide

PrEP Best Practices Complete List of PrEP Best Practices | Pre-Exposure Prophylaxis (PrEP) Chapter | Compendium | Intervention Research | Research | HIV/AIDS | CDC

Updated Guidelines for Antiretroviral Postexposure Prophylaxis After Sexual, Injection-Drug Use, or Other Nonoccupational Exposure to HIV—United States, 2016 | CDC

PrEParing DIS to Connect MSM Clients to PrEP | NCSD

The importance of linkage and reengagement into HIV care

Linking those with HIV infection to medical care as soon as possible after their positive HIV test can contribute to that patient achieving better health quicker through an immune system assessment, treatment of asymptomatic infections that may be present, and taking advantage of ART.[222] When a person has an undetectable viral load due to taking ART as prescribed, research shows they are unable to transmit HIV to sexual partners.[223] This is a critically important contribution to disease intervention.

As of 2021, 66% of people with HIV in 45 states and the District of Columbia who were in care were virally suppressed.[224] STI clinics and DIS play an important role in linking a newly positive individual to medical care and re-engaging those who have discontinued care in order to achieve this undetectable level.

> Among testing venues, [STI] clinics are high performing in terms of linkage to HIV care within 90 days of diagnosis; during 2013–2017, the percentage of persons with a new diagnosis in an [STI] clinic and linked to care within 90 days increased from 55% to >90%.[225]

BEST PRACTICE

Encourage STI and HIV testing and HIV PrEP, doxy PEP, or nPEP (as indicated) for all interviewed by DIS. Document the offer, the patient's reply, and the linkage plan.

HOW CAN AN STI PROGRAM ASSESS EFFECTIVENESS OF DI FOR HIV?

The HIV care continuum describes the path a person could take from initial diagnosis with HIV through maintaining viral suppression over time (CDC measures viral suppression as a viral load test result of <200 copies/mL at the most recent viral load test during measurement year).[226] Achieving and maintaining viral suppression indicates the person is unable to transmit HIV to their HIV-negative partners through sex.[227]

As of 2022:

- For every 100 people with HIV, 87 knew their status.
- For every 100 people overall with diagnosed HIV, 76 received some care, 54 were retained in care, and 65 were virally suppressed.[228]

Since STLT STI programs are involved with providing HIV testing and linkages to care for those testing positive, one way a program could assess its effectiveness is by periodically calculating the proportion of the people it served according to the Continuum.

Figure 5.2

HIV CARE CONTINUUM

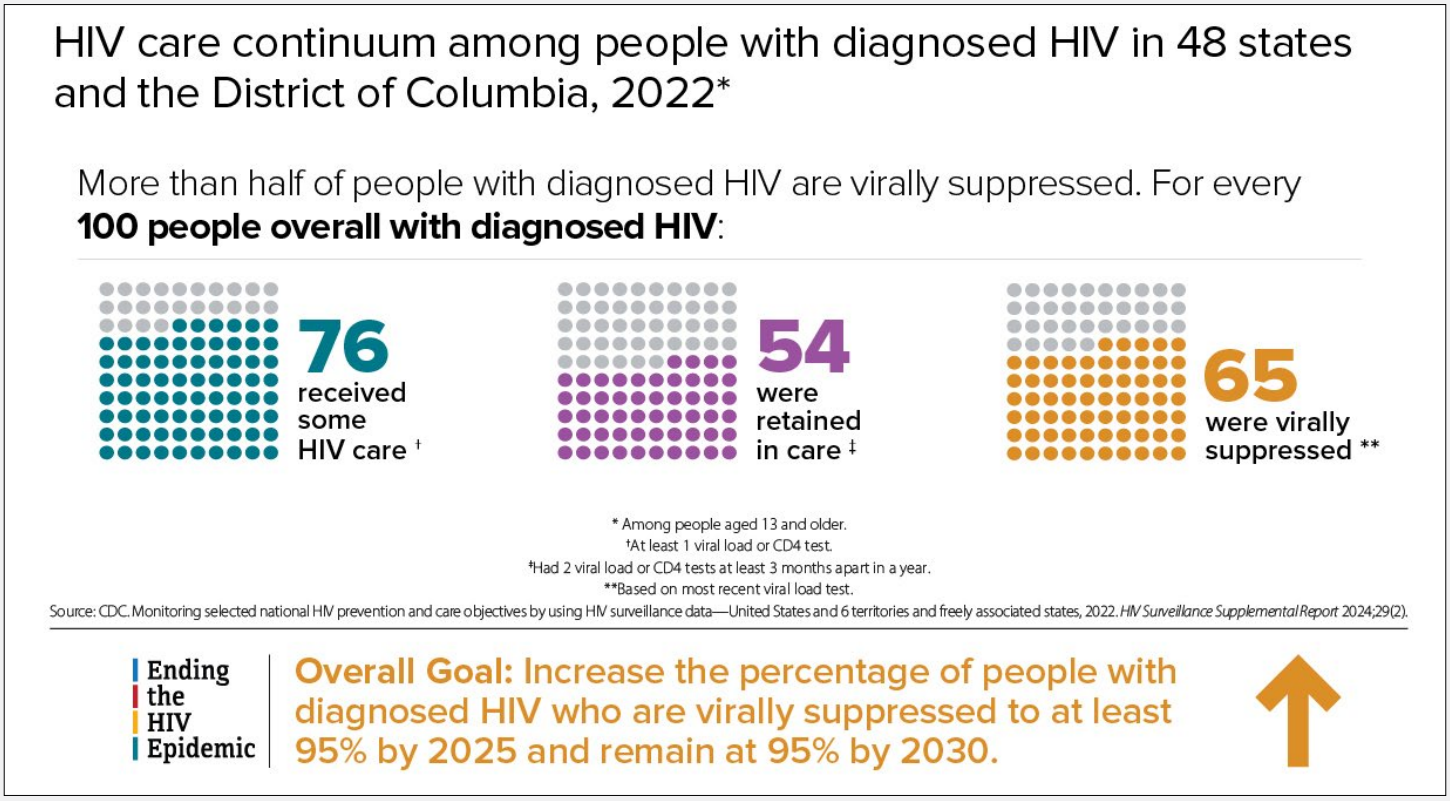
Source: "What is the HIV Care Continuum?" HIV.gov, www.hiv.gov/federal-response/policies-issues/hiv-aids-care-continuum.

Accomplishing this may involve several databases, including a database containing an STI clinic's laboratory records of all patients tested for HIV, an STI case management database containing documentation of linkage to care, and databases from the jurisdiction's Ryan White HIV/AIDS Program (RWHAP) services or eHARS for medical care and viral load information. Gaining a better understanding of the step in the Continuum where proportions are less than optimal can assist an STI program to improve its services.

(Continued on next page)

Figure 5.3

HIV CARE AMONG PEOPLE WITH DIAGNOSED HIV IN 48 STATES AND THE DISTRICT OF COLUMBIA, 2022



Source: "Fast Facts: HIV in the United States." Centers for Disease Control and Prevention, www.cdc.gov/hiv/data-research/facts-stats/index.html.

For example, in a 2024 assessment of DIS services nationally and in Rhode Island conducted by Brown University[229] authors noted in the literature search pertaining to HIV outcomes related to partner services that:

> A total of 16 articles discussed services provided to partners, which included referral to HIV/ STI testing, PrEP, ART [antiretroviral treatment], and social services. Of four articles that discussed the integration of HIV testing and PrEP referral into syphilis partner services, one notably reported that this approach was successful by multiple measures, including greater retention in care and HIV viral suppression.

RESOURCE

Resources for the HIV Care Continuum

Understanding the HIV Care Continuum | CDC

Outbreak Response as Disease Intervention

Whenever a response to bring an outbreak of STIs under control is mounted, the goal is to quickly reduce transmission, an important method of disease intervention. This means that all staff responsible for planning and implementing the outbreak response play a part in disease intervention. Provision of partner services to people with an infection involved in the outbreak can enhance case finding and represents an important contribution to disease intervention.

The Global Outbreak Alert and Response Network asserts that taking rapid action in an outbreak situation can reduce disease transmission.[230] They suggest using the core pillars of the outbreak response: surveillance and contact tracing, testing, case management, infection prevention and control, epidemiological and outbreak analytics, logistics, risk communication, and community engagement.

CROSS-REFERENCE

Outbreak Response for Disease Intervention

For more details, see the Outbreak Response chapter of this resource.

Health Policy as Disease Intervention

CDC defines health policy as "a law, regulation, procedure, administrative action, incentive or voluntary practice of governments and other institutions".[231] In addition to these large-scale policy actions, health policy occurs on a smaller scale when a state, tribal, territorial, city, or county health jurisdiction takes action to improve the health of its population through a statute, regulation, or ordinance. Even health policy changes at smaller levels, such as within a hospital, clinic, health department, or private physician's office, can enhance disease intervention efforts and improve health outcomes.

Policies can act as barriers or facilitators of STI prevention. STI programs may disseminate STI information to policymakers, collaborate with coalitions, and support testimony at state legislative hearings.[232] According to a published review of policy evidence for STI, the authors describe that

> A 2013 compendium of state statutes that explicitly focus on [STIs] other than HIV shows that these laws largely focus on the establishment of [STI] programs and/or clinics, mandatory testing and/or treatment, EPT, and the confidentiality of [STI]-related records.
>
> In addition, an assessment of state disease intervention laws found that most jurisdictions have [STI]-related disease intervention laws.[233]

Most states have specific STI-related policies (statutes or regulations) in place that address various aspects of DI such as mandating public health surveillance activities and case reporting by health care providers, requiring prenatal syphilis screening, and requiring investigations for cases of STIs.[234, 235] STI program managers will benefit from a full understanding of which STI-related statutes or regulations are in place in their jurisdictions.

RESOURCE

Resources for Healthy People 2030

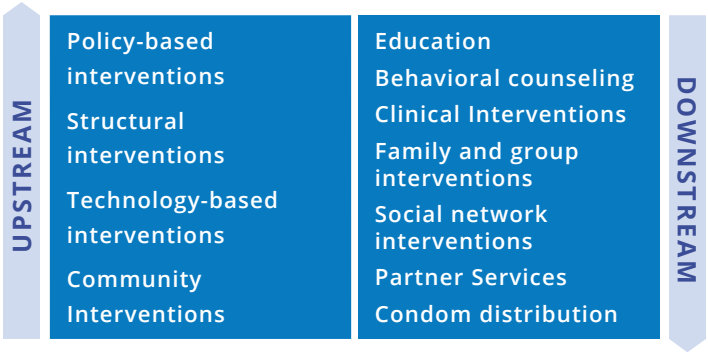
A resource to assist STI program managers in familiarizing themselves with U.S. objectives and activities for STIs is Healthy People 2030, linked here: Sexually Transmitted Infections—Healthy People 2030|health.gov. HP2030 presents an overview of the strategies and objectives, as well as evidence-based resources.

STI program leadership and staff can identify local health policies that may contribute, incrementally, to overall improvements in STI morbidity. An examination of policies related to STIs concluded "policies are an important part of public health interventions, including in the area of [STI] prevention."[236]

Public health interventions can be categorized as targeting "upstream" or "downstream" factors. Upstream interventions involve policy approaches that can affect large populations through increased access or economic incentives, while downstream interventions focus more on individual behavior changes in a clinical setting or medications. Many STI prevention efforts focus on individual-level factors and individual-level interventions. While these have shown evidence of effectiveness, moving more upstream to address social determinants that affect differences in STIs may have a disproportionately greater population benefit while costing less.[237]

Figure 5.4

STI INTERVENTIONS CLASSIFIED ON THE UPSTREAM/DOWNSTREAM CONTINUUM



Adapted from: Hyseni, Lirije, et al. "Systematic Review of Dietary Salt Reduction Policies: Evidence for an Effectiveness Hierarchy?" Public Library of Science ONE, vol. 12 no. 5, 2017, doi: 10.1371/journal.pone.0177535.

RESOURCES

Resources for Community Engagement and Disease Intervention

Different levels of intervention for STI prevention include:

- individual;
- social and sexual networks;
- community; and
- health communications.

CDC's *Community-based Approaches for Reducing STDs* Community Engagement Toolkit[238] is a resource to aid STI programs in using community engagement to increase STI prevention, screening, and treatment and address locally prioritized STI-related factors within communities experiencing high STI incidence and prevelance. To help STI programs operationalize the changes recommended in the Toolkit, experts identify three program-level strategies to address STI disparities.[239]

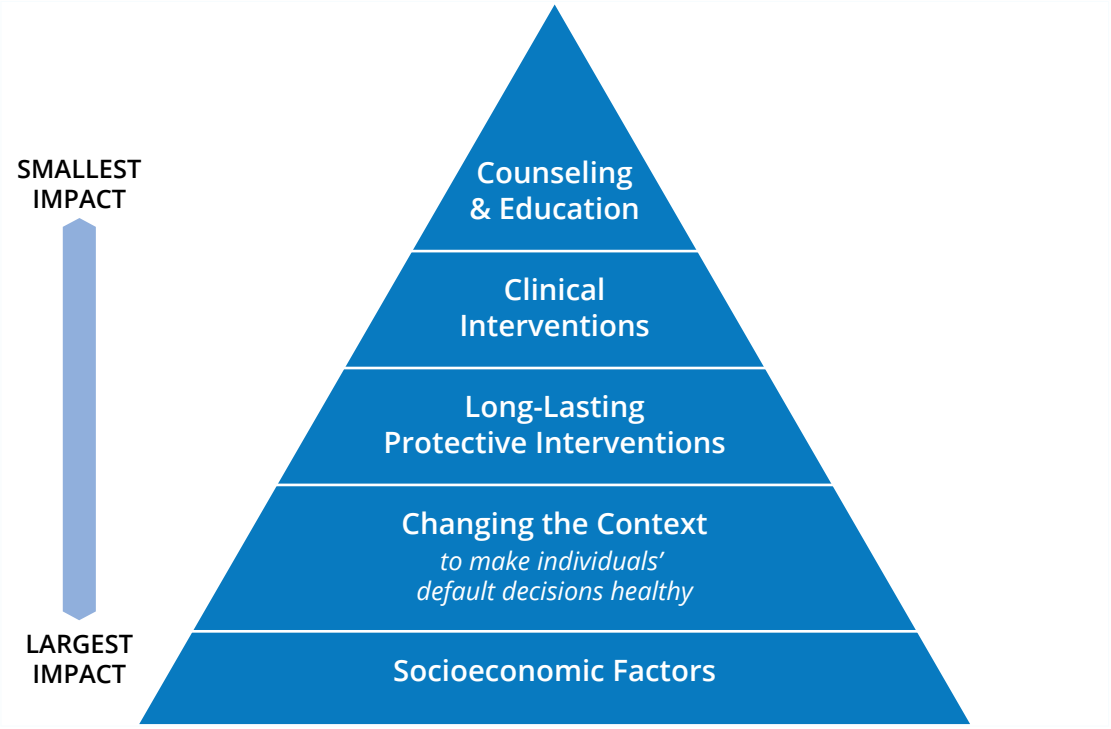
1. Involve community members most impacted by STIs in STI prevention program development and collaborate with partner organizations with resources and the ability to ensure appropriate access of STI prevention and clinical services.
2. Use a trauma-informed care approach when engaging community members regarding their lived experiences to inform the design of STI prevention activities.
3. Implement structural interventions to improve the quality of sexual health services, while ensuring sustainability at full or reduced capacity.[240]

For more information, see the Community Engagement chapter of this resource.

Another way of thinking about public health interventions is using the Health Impact Pyramid.[241] This method identifies the role of upstream versus downstream types of health interventions (counseling and education, clinical interventions, long-lasting protective interventions, changing the context to make individuals' default decisions healthy, and socioeconomic factors) and can be viewed in Figure 5.5. As can be seen from the figure, the base of the pyramid portrays those interventions that have the greatest potential for impact on health because they reach entire populations of people at once and require less individual effort.

Figure 5.5

THE HEALTH IMPACT PYRAMID



Adapted from: "Health Impact in 5 Years." Centers for Disease Control and Prevention, www.cdc.gov/policy/hi-5/index.html.

RESOURCES

Resources for Health Policy as Disease Intervention

CDC Policy Process|POLARIS|CDC

Policy Resources and Trainings|POLARIS|CDC

Structural interventions

Structural interventions refer to activities that promote health by altering the structural context within which health is produced and reproduced.

> Structural interventions differ from many public health interventions in that they locate, often implicitly, the cause of public health problems in contextual or environmental factors that influence…determinants of infection or morbidity, rather than in characteristics of individuals.[242]

Thinking about STI prevention in this way is different than the historical focus on individual-level behavior change. It is believed that structural interventions and policies may be able to reach more people with less effort and be less costly than other types of interventions.[243]

REAL WORLD APPLICATION

An examination of successful strategies for CS prevention was conducted in Monroe County, NY, which reported the highest number of P&S syphilis cases outside of New York City yet had been successful in averting 95% of its CS cases through comprehensive solutions. The authors acknowledge that "successful prevention of CS requires... changes to health and public health infrastructures..."[244] but through use of such tools as letters sent to healthcare providers from the health department director requesting expanded syphilis screening, embedding partner services in more health care settings, and linking directly with substance use care providers and hospital emergency departments for expanded syphilis screening, they were able to achieve this change.

EXAMPLE

Structural Intervention for STI Testing among those Receiving HIV Care

A jurisdiction noticed a very low rate of regular STI testing performed by HIV care providers as recommended for quality clinical care of the person with HIV. Investigating the reasons for this low rate informed the STI program that the HIV care providers felt overwhelmed with all the items they needed to address during the office visit and the providers simply forgot to put in the order for STI testing. Rather than attempting to intervene by changing individual clinician behaviors, the STI program worked with the electronic medical record and laboratory information systems used by the largest practice of HIV care providers to create an automatic laboratory order for STI testing upon patient visit.

RESOURCES

Resources for Disease Intervention

HIV Compendium of Best Practices | HIV Partners | CDC

Combating Congenital Syphilis in Louisiana: Going Beyond the Numbers to Save Babies' Lives | CDC

RESOURCES

Resources for Medical & Laboratory Services and Disease Intervention

Changes at the clinic or laboratory level can be beneficial, although challenging to implement. These might include:

- offering prenatal care, laboratory services, and syphilis treatment that operate on a walk-in basis rather than by appointment; or
- ensuring that all health care providers encountering pregnant women are giving a message about substance use, since studies have shown that many pregnant women who use substances are fearful of the health care system during pregnancy.[245]

For more information on delivering medical and laboratory services for STI prevention, see the Medical & Laboratory Services chapter of this resource.

EXAMPLE

Real World Application of Clinic Policy for STI Prevention

Health policy changes are not limited to wide-ranging federal or state policies but can also be applied to policies within a health care institution such as a hospital, private practice, or health department clinic. The following real scenarios from two jurisdictions are prime examples of how clinic policies can improve or negatively impact patient health outcomes.

1. A woman with untreated secondary syphilis who engaged in commercial sex work was unhoused and was unable to be located by DIS. The woman occasionally sought care from a clinician at a community health center (CHC) who was very concerned about her condition and worked in conjunction with the STI clinic. After several missed appointments with the CHC, one day the patient unexpectedly showed up requesting syphilis treatment. However, since the CHC did not stock benzathine penicillin G, the first-line recommended treatment for secondary syphilis,[246] treatment needed to be arranged at the STI clinic. The CHC clinician quickly facilitated transportation to the STI clinic. This clinic normally served patients on an appointment basis. However, they had policies in place to immediately triage a DIS-referred person with untreated syphilis as urgent. During her appointment, staff identified additional needs of the patient. For example, because it was summertime and the patient worked outside, she was not dressed warmly and the clinic was quite cold from air conditioning. She also told the DIS she had not eaten in two days. The STI clinic had policies in place to provide emergency clothes and food when needed, so they were able to provide for the patient's unique needs. The patient expressed much gratitude to staff and was extremely cooperative with all aspects of the visit.
2. A woman who was 20 weeks pregnant and had untreated early latent syphilis was unable to be located by DIS after many attempts. The DIS learned she had a mental illness, was unhoused, and engaged in commercial sex work. She sporadically checked in with her mother but otherwise had no regular way to be located. After being diagnosed with syphilis during her first prenatal visit, she did not return for follow-up care. When the patient unexpectedly visited her mother's home, her mother seized the opportunity to take her to the prenatal clinic for treatment. Upon arriving at the clinic, the mother explained the situation and asked if anyone could treat her daughter for syphilis. They were turned away because the patient had missed an appointment the day before, and the clinic policy required appointment rescheduling rather than providing immediate care. The patient had no other contact with DIS or the prenatal care provider and remained lost to follow-up.

In summary, STI professionals at all hierarchical levels within the organization have opportunities to contribute to decisions, both large and small, that will serve to facilitate disease intervention.

BEST PRACTICE

Consider upstream policy actions to the greatest extent to maximize disease intervention efficiency and effectiveness.

Conclusion

Disease intervention for STIs is multifaceted and includes more than the provision of partner services to a person with an STI diagnosis. This chapter provides information and resources to assist STLT STI programs to tailor DI activities to their local needs and resources. To have the greatest impact, disease intervention for STIs can be approached from a syndemic approach that improves the health of people living with or potentially at risk for STIs.

BEST PRACTICES FOR DISEASE INTERVENTION

- *Use local data to prioritize which infections and population groups are offered partner services.*
- *Ensure DIS are thoroughly trained in all core competencies and cross-cutting skills in order to provide appropriate services to the communities they serve. This training can include oversight from an experienced DI professional.*
- *Use the eight principles of partner services to assess DIS competencies and evaluate interview quality.*
- *Periodically evaluate the effectiveness of local partner services, making changes to interviewing priorities as needed.*
- *Consider facilitating CS prevention by ensuring all women able to become pregnant are counseled at every patient interaction about the risk of syphilis in pregnancy, and by ensuring all men interviewed for any STI are counseled about the risk of CS for partners able to become pregnant.*
- *Encourage STI and HIV testing and HIV PrEP, nPEP, or doxy PEP for STIs (as indicated) for all those interviewed by DIS. Document the offer, the patient's reply, and the linkage plan.*
- *Consider upstream policy actions to the greatest extent to maximize disease intervention efficiency and effectiveness.*

Endnotes

[158] "Supporting a Syndemic Approach: Preventing Sexually Transmitted Infections." *Association of State and Territorial Health Officials*, 10 December 2023, www.astho.org/advocacy/state-health-policy/legislative-prospectus-series/sti/.

[159] Centers for Disease Control and Prevention. *Turning the Tide on STIs: Integrating Services to Address the Syndemic of STIs, HIV, Substance Use, and Viral Hepatitis*. www.cdc.gov/sti/media/pdfs/2024/11/Syndemic-Infographic-11-08-2024.pdf.

[160] "NCHHSTP Syndemic Approach." *Centers for Disease Control and Prevention*, www.cdc.gov/nchhstp/about/syndemic.html.

[161] National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Population Health and Public Health Practice; Committee on Prevention and Control of Sexually Transmitted Infections in the United States. *Sexually Transmitted Infections: Adopting a Sexual Health Paradigm*. Edited by Jeffrey S. Crowley et. al., National Academies Press (US), 24 March 2021. doi:10.17226/25955.

[162] "Disease Intervention." *Centers for Disease Control and Prevention*, www.cdc.gov/sti/php/projects/disease-intervention.html.

[163] Ibid.

[164] "Primary Prevention Methods, Sexually Transmitted Infections Treatment Guidelines, 2021." *Centers for Disease Control and Prevention*, www.cdc.gov/std/treatment-guidelines/clinical-primary.htm.

[165] "Three Levels of Prevention." *Merck Manual Consumer Version*, www.merckmanuals.com/home/multimedia/table/three-levels-of-prevention.

[166] "Doxy PEP as an STI Prevention Strategy." *Centers for Disease Control and Prevention*, www.cdc.gov/sti/php/from-the-director/doxy-pep-sti-prevention-strategy.html.

[167] Bachmann, Laura H., et al. "CDC Clinical Guidelines on the Use of Doxycycline Postexposure Prophylaxis for Bacterial Sexually Transmitted Infection Prevention, United States, 2024." *MMWR Recommendations and Reports*, vol. 73, no. 2, 2024, pp. 1–8. doi: 10.15585/mmwr.rr7302a1.

[168] Kisling Lisa A. and Joe M. Das. "Prevention Strategies." *StatPearls*. E-book, StatPearls Publishing, 2024. Available from: www.ncbi.nlm.nih.gov/books/NBK537222.

[169] Bachmann, Laura H., et al. "CDC Clinical Guidelines on the Use of Doxycycline Postexposure Prophylaxis for Bacterial Sexually Transmitted Infection Prevention, United States, 2024." *MMWR Recommendations and Reports*, vol. 73, no. 2, 2024, pp. 1–8. doi: 10.15585/mmwr.rr7302a1.

[170] Ibid.

[171] Centers for Disease Control and Prevention. "Recommendations for Partner Services Programs for HIV Infection, Syphilis, Gonorrhea, and Chlamydial Infection." *MMWR Recommendations and Reports*, vol. 57, no. RR-9, 2008, pp. 1–63.

[172] David J. Sencer CDC Museum Public Health Academy. Contact Tracing. www.cdc.gov/museum/pdf/cdcm-pha-stem-lesson-contact-tracing-lesson.pdf.

[173] Kachur, Rachel, et al., "The Use of Technology for Sexually Transmitted Disease Partner Services in the United States: A Structured Review." *Sexually Transmitted Diseases*, vol. 45, no. 11, 2018, pp. 707–712. doi: 10.1097/OLQ.0000000000000864.

[174] "Expedited Partner Therapy." *Centers for Disease Control and Prevention*. www.cdc.gov/sti/hcp/clinical-guidance/expedited-partner-therapy.html.

[175] Hogben, Matthew, et al., "Partner Services in Sexually Transmitted Disease Prevention Programs: A Review." *Sexually Transmitted Diseases*, vol. 43, no. 2S, 2016, pp. S53–S62. doi: 10.1097/OLQ.0000000000000328.

[176] Pagkas-Bather, Jade, et al., "Social Network Interventions for HIV Transmission Elimination." *Current HIV/AIDS Reports*, vol. 7, no. 5, 2020, pp. 450–457. doi: 10.1007/s11904-020-00524-z.

[177] Ibid

[178] Yang, Xing, et al. "Social Network Strategy as a Promising Intervention to Better Reach Key Populations for Promoting HIV Prevention: a Systematic Review and Meta-analysis." *Sexually Transmitted Infections*, vol. 96, no. 7, 2020, pp. 485–491. doi: 10.1136/sextrans-2019-054349.

[179] Hogben, Matthew and Jami S. Leichliter. "Social Determinants and Sexually Transmitted Disease Disparities." *Sexually Transmitted Diseases*, vol.35, no. 12 Suppl, 2008, pp. S13–8. doi: 10.1097/OLQ.0b013e31818d3cad.

[180] Cunningham, Peter J. and Llewellyn J. Cornelius. "Access to Ambulatory Care for American Indians and Alaska Natives; the Relative Importance of Personal and Community Resources." *Social Science and Medicine*, vol. 40, no. 3, 1995, pp. 393–407. doi: 10.1016/0277-9536(94)E0072-Z.

[181] "Health Equity, Sexually Transmitted Infections (STIs)." *Centers for Disease Control and Prevention*, www.cdc.gov/sti/php/projects/health-equity.html.

[182] Leichliter, Jami, et al. "Creating a Sexually Transmitted Infection Disease Intervention Workforce for the 21st Century." *Sexually Transmitted Diseases*, vol. 50, no. 8, pp. S1–S5. doi: 10.1097/OLQ.0000000000001811.

[183] Hogben, Matthew, et al., "Partner Services in Sexually Transmitted Disease Prevention Programs: A Review." *Sexually Transmitted Diseases*, vol. 43, no. 2S, 2016, pp. S53-S62. doi: 10.1097/OLQ.0000000000000328.

[184] Cope, Anna Barry, et al. "Effectiveness of Syphilis Partner Notification After Adjusting for Treatment Dates, 7 Jurisdictions." *Sexually Transmitted Diseases*, vol. 49, no. 2, 2022, pp. 160–165. doi: 10.1097/OLQ.0000000000001518.

[185] Althaus, Cristian L., et al. "Effectiveness and Cost-effectiveness of Traditional and New Partner Notification Technologies for Curable Sexually Transmitted Infections: Observational Study, Systematic Reviews and Mathematical Modelling." *Health Technology Assessment*, vol. 18.2, 2014. doi: 10.3310/hta18020.

[186] Peters, Philip J., et al. "HIV Infection Linked to Injection Use of Oxymorphone in Indiana, 2014–2015." *New England Journal of Medicine*, vol. 375, no. 3, 2016, pp. 229–239. doi: 10.1056/NEJMoa1515195.

[187] Lash, R. Ryan, et al. "COVID-19 Case Investigation and Contact Tracing in the US, 2020." *JAMA Network Open*, vol. 4, no. 6, 2021. doi: 10.1001/jamanetworkopen.2021.15850.

[188] DiOrio, Dawne, et al. "Ending the HIV Epidemic: Contributions Resulting from Syphilis Partner Services." *Sexually Transmitted Diseases*, vol. 47, no. 8, pp. 511–515. doi: 10.1097/OLQ.0000000000001201.

[189] Cope, Anna Barry, et al. "Unnamed Partners From Syphilis Partner Services Interviews, 7 Jurisdictions." *Sexually Transmitted Diseases*, vol. 47, no. 12, pp. 811–818. doi: 10.1097/olq.0000000000001269.

[190] Brandt, Allan M. "The History of Contact Tracing and the Future of Public Health." *American Journal of Public Health*, vol. 112, no. 8, 2022, pp. 1097–1099. doi: 10.2105/AJPH.2022.306949.

[191] American Medical Association (AMA) Steps Forward. *Plan-Do-Study-Act (PDSA): A Step-by-Step Approach to Quality Improvement*. edhub.ama-assn.org/steps-forward/video-player/18909429.

[192] Collins, Alexandra et al. *Rhode Island Disease Intervention Specialist Community Assessment Project*. April 29, 2024. https://bpb-us-w2.wpmucdn.com/sites.brown.edu/dist/0/461/files/2024/05/DIS_report_April_29_FINAL-9ef8f9f482fa1031.pdf.

[193] Ibid.

[194] "HIV Prevention: Partner Services Interventions to Increase HIV Testing." *The Community Guide*. www.thecommunityguide.org/findings/hiv-prevention-partner-services-interventions-increase-hiv-testing.html.

[195] "Bold Investment Reaps Rewards: DIS Supplemental Funding Boosts Workforce Capacity for STI Public Health Programs Nationwide." *Centers for Disease Control and Prevention*. www.cdc.gov/sti-funding/media/pdfs/2024-03-13-dis.pdf.

[196] Barrow, Roxanne Y., et al. "Recommendations for Providing Quality Sexually Transmitted Diseases Clinical Services, 2020." *MMWR Recommendations and Reports*, vol. 68, no. 5, 2020. doi: 10.15585/mmwr.rr6805a1.

[197] National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Population Health and Public Health Practice; Committee on Prevention and Control of Sexually Transmitted Infections in the United States. *Sexually Transmitted Infections: Adopting a Sexual Health Paradigm*. Edited by Jeffrey S. Crowley et. al., National Academies Press (US), 24 March 2021. doi:10.17226/25955.

[198] Workowski, Kimberly A., et al. "Sexually Transmitted Infections Treatment Guidelines, 2021." *MMWR Recommendations and Reports*, vol. 70, no. 4, 2021, pp. 1–187. doi: 10.15585/mmwr.rr7004a1.

[199] "Bold Investment Reaps Rewards: DIS Supplemental Funding Boosts Workforce Capacity for STI Public Health Programs Nationwide." *Centers for Disease Control and Prevention*, www.cdc.gov/sti-funding/media/pdfs/2024-03-13-dis.pdf.

[200] "Disease Intervention." *Centers for Disease Control and Prevention*, www.cdc.gov/sti/php/projects/disease-intervention.html.

[201] Ibid.

[202] Taylor, Melanie M., et al. "Improving Partner Services by Embedding Disease Intervention Specialists in HIV Clinics." *Sexually Transmitted Diseases*, vol.37, no. 12, 2010, pp. 767–770. doi: 10.1097/OLQ.0b013e3181e65e8b.

[203] Rudy, Ellen T., et al. "Community-Embedded Disease Intervention Specialist Program for Syphilis Partner Notification in a Clinic Serving Men Who Have Sex With Men." *Sexually Transmitted Diseases*, vol. 39, no. 9, 2012, pp 701–705. doi: 10.1097/OLQ.0b013e3182593b51.

[204] Ibid.

[205] Centers for Disease Control and Prevention. "Recommendations for Partner Services Programs for HIV Infection, Syphilis, Gonorrhea, and Chlamydial Infection." *MMWR Recommendations and Reports*, vol. 57, no. RR-9, 2008, pp. 1–63.

[206] "What Is Behavior Change in Psychology? 5 Models and Theories." *Positive Psychology*, www.positivepsychology.com/behavior-change/.

[207] DiOrio, Dawne, et al. "Social Vulnerability in Congenital Syphilis Case Mothers: Qualitative Assessment of Cases in Indiana, 2014 to 2016." *Sexually Transmitted Diseases*, vol. 45, no. 7, 2018, pp. 447–451. doi: 10.1097/OLQ.0000000000000783.

[208] Conley, Terri D., et al. "Unfaithful Individuals are Less Likely to Practice Safer Sex than Openly Nonmonogamous Individuals." *Journal of Sexual Medicine*, vol. 9, no. 6, 2012, pp. 1559–1565. doi: 10.1111/j.1743-6109.2012.02712.x.

[209] Cohen, Myron S., et al. "Sexually Transmitted Infections and HIV in the Era of Antiretroviral Treatment and Prevention: The Biologic Basis for Epidemiologic Synergy." *Journal of the International AIDS Society*, vol. 22, no. Suppl 6, 2019. doi: 10.1002/jia2.25355.

[210] Workowski, Kimberly A., et al. "Sexually Transmitted Infections Treatment Guidelines, 2021." *MMWR Recommendations and Reports*, vol. 70, no. 4, 2021, pp. 1–187. doi: 10.15585/mmwr.rr7004a1.

[211] "Ending the HIV Epidemic in the US Goals." *Centers for Disease Control and Prevention*, www.cdc.gov/ehe/php/about/goals.html.

[212] "Fast Facts: HIV in the United States." *Centers for Disease Control and Prevention*, www.cdc.gov/hiv/data-research/facts-stats/index.html.

[213] Ibid.

[214] Centers for Disease Control and Prevention. *Sexually Transmitted Infections Surveillance* 2022. 2024. www.cdc.gov/sti-statistics/archive/index.html.

[215] Centers for Disease Control and Prevention. *Delivery of HIV Partner Services in the United States and Dependent Areas*, 2021. https://stacks.cdc.gov/view/cdc/149048.

[216] DiOrio, Dawne, et al. "Ending the HIV Epidemic: Contributions Resulting from Syphilis Partner Services." *Sexually Transmitted Diseases*, vol. 47, no. 8, pp. 51–515. doi: 10.1097/OLQ.0000000000001201.

[217] Ibid.

[218] Sullivan, Patrick, and Aaron Siegler. "Getting Pre-exposure Prophylaxis (PrEP) to the People: Opportunities, Challenges and Emerging Models of PrEP Implementation." *Sexual Health*, vol. 15, no. 6,2018, pp. 522–527. doi: 10.1071/SH18103.

[219] Centers for Disease Control and Prevention. *Updated Guidelines for Antiretroviral Postexposure Prophylaxis After Sexual, Injection-Drug Use, or Other Nonoccupational Exposure to HIV—United States, 2016*. www.cdc.gov/hiv/pdf/programresources/cdc-hiv-npep-guidelines.pdf.

[220] "Find Answers to Your Questions: HIV Risk Reduction Tool." *Centers for Disease Control and Prevention*, hivrisk.cdc.gov/can-increase-hiv-risk/.

[221] "HIV Risk and Prevention Estimates." *Centers for Disease Control and Prevention*, www.cdc.gov/hivpartners/php/riskandprevention.

[222] "HIV Undetectable=Untransmittable (U=U), or Treatment as Prevention." *National Institute of Allergy and Infectious Diseases*, https://www.niaid.nih.gov/diseases-conditions/treatment-prevention.

[223] Ibid.

[224] "Fast Facts: HIV in the United States." *Centers for Disease Control and Prevention*, www.cdc.gov/hiv/data-research/facts-stats/index.html.

[225] Ibid.

[226] "What is the HIV Care Continuum?" *HIV.gov*, www.hiv.gov/federal-response/policies-issues/hiv-aids-care-continuum.

[227] Ibid.

[228] "Fast Facts: HIV in the United States." *Centers for Disease Control and Prevention*, www.cdc.gov/hiv/data-research/facts-stats/index.html.

[229] Collins, Alexandra, et al. *Rhode Island Disease Intervention Specialist Community Assessment Project*. April 29, 2024. bpb-us-w2.wpmucdn.com/sites.brown.edu/dist/0/461/files/2024/05/DIS_report_April_29_FINAL-9ef8f9f482fa1031.pdf.

[230] Fisher, Dale A., et al. "Back to Basics: The Outbreak Response Pillars." *The Lancet*, vol. 396, no. 10251, 2020, pp. 598. doi: 10.1016/S0140-6736(20)31760-8.

[231] "CDC Policy Process." *Centers for Disease Control and Prevention*, www.cdc.gov/polaris/php/cdc-policy-process/index.html.

[232] Meyerson, Beth E., et al. "STD Program Activity in State Policy Processes, 1995 and 2000." *Sexually Transmitted Diseases*, vol. 30, no. 8, 2003, pp. 614–619. doi: 10.1097/01.OLQ.0000085182.97442.75.

[233] Leichliter, Jami S., et al. "Sexually Transmitted Disease Prevention Policies in the United States: Evidence and Opportunities." *Sexually Transmitted Diseases*, vol. 43, no. 2S, 2016, pp. S113-S121. doi: 10.1097/OLQ.0000000000000289.

[234] Cramer, Ryan, and Jennifer A. Ludovic. "State Policies Relevant to Disease Intervention Specialists in the United States." *Sexually Transmitted Diseases*, vol. 50, no. 8S Suppl 1, 2023, pp. S14–S17. doi: 10.1097/OLQ.0000000000001661.

[235] Warren, Hardin P., et al. "State Requirements for Prenatal Syphilis Screening in the United States, 2016." *Maternal and Child Health Journal*, vol. 22, no. 9, 2018, pp. 1227–1232. doi: 10.1007/s10995-018-2592-0.

[236] Leichliter, Jami S., et al. "Sexually Transmitted Disease Prevention Policies in the United States: Evidence and Opportunities." *Sexually Transmitted Diseases*, vol. 43, no. 2S, 2016, pp. S113-S121. doi: 10.1097/OLQ.0000000000000289.

[237] Frieden, Thomas R. "A Framework for Public Health Action: The Health Impact Pyramid." *American Journal of Public Health*, vol. 100, no. 4, 2010, pp. 590-595. doi:10.2105/AJPH.2009.185652.

[238] Centers for Disease Control and Prevention. *Community-based Approaches to Reducing STDs—Community Engagement Toolkit*. 2019. https://stacks.cdc.gov/view/cdc/149874.

[239] Wright, Shauntā S., et al. "Program-Level Strategies for Addressing Sexually Transmitted Disease Disparities: Overcoming Critical Determinants That Impede Sexual Health." *Sexually Transmitted Diseases*, vol. 48, no. 12, 2021, pp. e174-e177. doi: 10.1097/OLQ.0000000000001426.

[240] Rhodes, Scott D., et al. "Critical Elements of Community Engagement to Address Disparities and Related Social Determinants of Health: The Centers of Disease Control and Prevention Community Approaches to Reducing Sexually Transmitted Disease Initiative." *Sexually Transmitted Diseases*, vol. 48, no. 1, 2021, pp. 49–55. doi: 10.1097/OLQ.0000000000001267.

[241] Frieden, Thomas R. "A Framework for Public Health Action: The Health Impact Pyramid." *American Journal of Public Health*, vol. 100, no. 4, 2010, pp. 590–595. doi:10.2105/AJPH.2009.185652.

[242] Blankenship, Kim M. et al. "Structural Interventions: Concepts, Challenges and Opportunities for Research." *Journal of Urban Health*, vol. 83, no. 1, 2006, pp. 59–72. doi: 10.1007/s11524-005-9007-4.

[243] Leichliter, Jami S., et al. "Sexually Transmitted Disease Prevention Policies in the United States: Evidence and Opportunities." *Sexually Transmitted Diseases*, vol. 43, no. 2S, 2016, pp. S113–S121. doi: 10.1097/OLQ.0000000000000289.

[244] Drame, Fanta Nani, et al. "Best practices implementation: congenital syphilis prevention efforts in Monroe County, New York, 2018." *Sexually Transmitted Diseases,* vol. 49, no. 4, 2022, pp. 310–212. doi: 10.1097/OLQ.0000000000001588.

[245] Weber, Andrea, et al. "Substance Use in Pregnancy: Identifying Stigma and Improving Care." *Substance Abuse and Rehabilitation*, vol. 12, 2021, pp. 105–121. doi: 10.2147/SAR.S319180.

[246] Workowski, Kimberly A., et al. "Sexually Transmitted Infections Treatment Guidelines, 2021." *MMWR Recommendations and Reports*, vol. 70, no. 4, 2021, pp. 1–187. doi: 10.15585/mmwr.rr7004a1.

PROGRAM OPERATION CONSIDERATIONS FOR STI PREVENTION

Community Engagement

Introduction

The twenty-first century has seen dramatic shifts within the broader field of public health and, specifically, within sexually transmitted infection (STI) prevention. These changes are particularly relevant when it comes to community engagement, as the public health model has shifted from a focus on downstream, individual-level interventions toward upstream approaches focused on partnering with communities and collaboratively addressing public health threats.[247]

This chapter provides an overview of community engagement, how STI programs can better understand the populations they serve, and considerations for conducting STI prevention through a community engagement framework.

What Is Community Engagement?

Community engagement in this chapter refers to partnering with the communities that an STI prevention program serves to ensure that programs and interventions are appropriate and driven by the communities themselves. "Community" in terms of public health can be defined as

> a group of people… who are linked by social ties, share common perspectives, and engage in joint action in geographical locations or settings.[248]

Relevant communities for STI prevention programs can be considered to include the populations that live, work, and play within an STI program's jurisdiction as well as potential or existing partners in STI prevention work, including but not limited to community-based organizations (CBOs), health care facilities, and local businesses. Furthermore, community engagement in public health places emphasis on partnering with populations that are disproportionately affected by public health challenges.[249]

How to Understand the Communities an STI Program Serves

Ultimately, community engagement can be the best way to get to know a community, but data collection and assessments provide an informed foundation from which to approach communities with which an STI program works.

Understanding the community through data

It is important for STI program staff to familiarize themselves with the communities they serve. Census data can be a good place to start to learn about who the members of the community are and where they live.

An STI program's geographic jurisdiction likely contains many smaller areas. Differences may be noted by city, by county, by zip code, by Federal Information Processing Series (FIPS) code, or by geocode. Within a geographic area, differences in STI incidence and prevalence may exist among subgroups such as by sex, race, or ethnicity.

In addition to basic demographic and socioeconomic factors, program staff can work to understand the STI-related problems, their magnitude, and their causes among the population the program serves. For example, does the area have an STI clinic that is easily accessible? Is there public transportation? Does the community lack health care services or other services important for STI prevention? This information can be gathered from existing data or new data collection to inform STI program prevention activities and outreach.

RESOURCES

Resources for Understanding the Community

- AtlasPlus | CDC
- PLACES: Local Data for Better Health | PLACES | CDC
- MUA Find | HRSA Searchable index of medically underserved areas in the U.S.
- Health Data | County Health Rankings & Roadmaps

USE EXISTING DATA OR COLLECT NEW DATA TO DETERMINE THE STI-RELATED PROBLEMS AND THEIR MAGNITUDE AMONG PRIORITY POPULATIONS

To determine the STI-related problems of priority populations, focus on two things:

1. the incidence, prevalence, and trends of STIs among priority populations; and
2. the consequences of STIs in terms of both morbidity and mortality.

CROSS-REFERENCE

Surveillance & Data Management for Community Engagement

For more information on how to find, collect, and analyze data, see the Surveillance & Data Management chapter of this resource.

IDENTIFY POSSIBLE CAUSES OF STIS AMONG PRIORITY POPULATIONS

Data sources that can determine the health status of a program's priority populations may also be used to better understand the causes and associated factors related to acquiring STIs. Causes and factors related to behaviors and use of health services that may play a role in whether priority populations engage in health-promoting behaviors could include:

- environmental factors—such as availability of free or low-cost condoms;
- community and social norms—such as patterns regarding use of condoms with casual partners; and/or
- intrapersonal factors—such as clients' knowledge about STIs, perceptions of risk for STIs, and self-efficacy to negotiate for safer sex practices.

Understanding the community through assessments

There are a few types of assessments that can be conducted to learn more about the community. The assessments most often used by STI programs are community needs assessments and rapid ethnographic assessments.

COMMUNITY NEEDS ASSESSMENTS

Community needs assessments can be very helpful—especially to set up a new STI prevention program or service—but are likely beyond the capacity of most STI programs to conduct otherwise. If capacity exists, a needs assessment can benefit an STI program by helping to:

- clearly determine both the met and unmet STI prevention and control needs within a jurisdiction;
- identify priority populations' service needs related to preventing and treating STIs;
- clearly define a program's purpose and scope;
- identify appropriate goals, objectives, and corresponding program interventions and activities;
- have a baseline from which to measure program achievements over time;
- get community support for a program; and
- provide data to meet funder requirements and to seek additional funding.

TIP

If an STI program cannot undertake its own community needs assessment, it may be able to partner with another entity, such as a community hospital or local health department, that is conducting one to add some STI-related questions.

RESOURCE

Resources for Conducting a Needs Assessment

For additional information on why, when, and how to conduct a needs assessment, see Module 2 of NCSD's STD PETT.

Mobilizing for Action through Planning and Partnerships (MAPP)|NACCHO

RAPID ETHNOGRAPHIC ASSESSMENTS

Rapid ethnographic assessments can also be used to collect contextual factors in the local community. A rapid ethnographic assessment is a qualitative tool sometimes referred to as a rapid ethnographic community assessment, or RECAP. This book is a helpful resource to learn more about RECAP and how to apply it: Rapid Ethnographic Assessments: A practical approach and toolkit for collaborative community research.

Program managers can contact their STI project officer at CDC, who may also be able to assist with learning about and conducting a RECAP. The resources listed below provide citations to two publications describing rapid ethnographic assessments conducted for STIs.

RESOURCES

Resources on Rapid Ethnographic Assessments

Rapid Ethnographic Assessments: A practical approach and toolkit for collaborative community research (book)

Syphilis Prevention: A Rapid Qualitative Assessment of Barriers, and the Public Health Response, in Caddo Parish, Louisiana." *Sexually Transmitted Diseases*, vol. 45, no. 7, 2018, pp. 442–446. doi:10.1097/OLQ.0000000000000787.

Loosier, Penny S., et al. "An Investigation of Early Syphilis among Men who Have Sex with Men: Alaska, 2018: Findings from a 2018 Rapid Ethnographic Assessment." *Journal of Community Health*, vol. 46, no. 1, 2021, pp. 22–30. doi:10.1007/s10900-020-00834-8.

BEST PRACTICE

Understanding the communities an STI program wishes to serve is essential for effective community engagement.

How to Conduct STI Prevention Using a Community Engagement Framework

Once the STI program understands the principles and philosophy of community engagement and has conducted an assessment to better understand the community, the next step is to plan and implement program activities to meet the desired outcomes (usually reducing the level of an STI).

Continuum of community engagement

Most STI programs likely already practice community engagement in their day-to-day work, even if they do not think of it that way. A more intentional approach can help STI program staff and leadership to deepen the level of their community engagement. It can be helpful to envision community engagement existing on a continuum. Moving farther along the continuum requires increasing levels of trust and decision-making. Figure 6.1 presents one such continuum of various levels of community engagement ranging from outreach, at the beginner level, to shared leadership, at the highest level.

Figure 6.1

COMMUNITY ENGAGEMENT CONTINUUM

→ INCREASING LEVEL OF COMMUNITY INVOLVEMENT, IMPACT, TRUST, AND COMMUNICATION FLOW→				
OUTREACH	**CONSULT**	**INVOLVE**	**COLLABORATE**	**SHARED LEADERSHIP**
Some Community Involvement	**More Community Involvement**	**Better Community Involvement**	**Community Involvement**	**Strong Bidirectional Relationship**
Communication flows from one to the other, to inform Provides community with information Entities coexist	Communication flows to the community and then back, answer seeking Gets information or feedback from the community Entities share information	Communication flows both ways, participatory form of communication Involves more participation with community on issues Entities cooperate with each other	Communication flow is bidirectional Forms partnerships with community on each aspect of project from development to solution Entities form bidirectional communication channels	Final decision-making is at community level Entities have formed strong partnership structures
OUTCOMES				
Optimally, establishes communication channels and channels for outreach	Develops connections	Visibility of partnership established with increased cooperation	Partnership building, trust building	Broader health outcomes affecting broader community Strong bidirectional trust built

*Adapted from: "Increasing Level of Community Involvement, Impact, Trust, and Communication Flow." International Association for Public Participation. and "*What is Community Engagement?*" Agency for Toxic Substances and Disease Registry. www.atsdr.cdc.gov/community-engagement/php/chapter-1/what-is-community-engagement.html.*

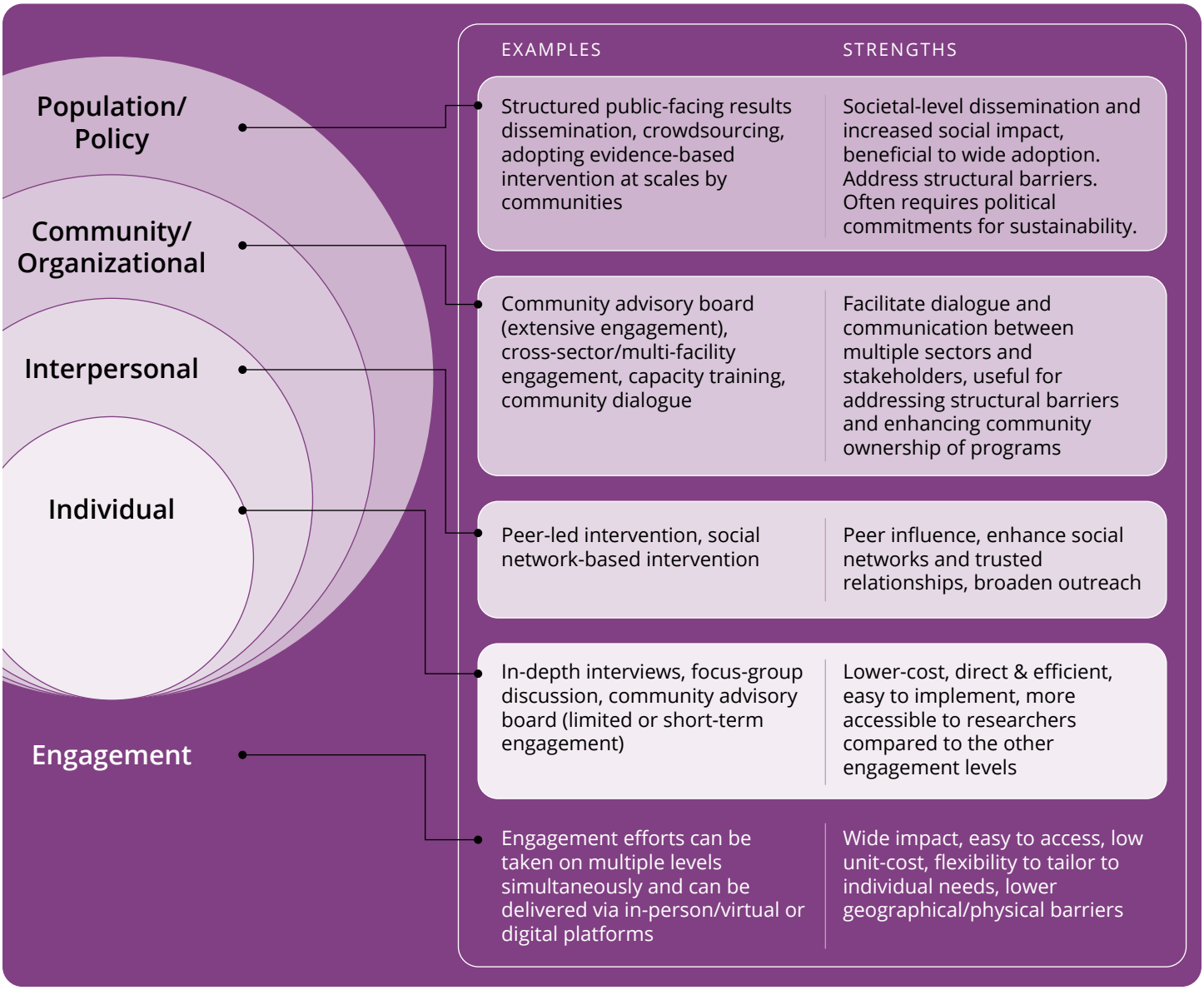
> **"Successful community engagement helps to ensure that outside experts work with rather than merely in communities..., can bolster and harness community assests, and may strengthen individual and community capacity to problem-solve through ongoing participation in the process."**
>
> Rhodes et al., 2021[250]

A 2023 review provides examples of community engagement in STI research at the different levels of the socioecological model—a common framework in public health—which moves from the individual to the interpersonal, to the community/organizational level, and finally to the policy or population level.[251]

Figure 6.2 below describes the types of community engagement the researchers found at each level in the studies they reviewed.

Figure 6.2

COMMUNITY ENGAGEMENT TOOLS IN STI RESEARCH ACROSS THE SOCIOECOLOGICAL MODEL

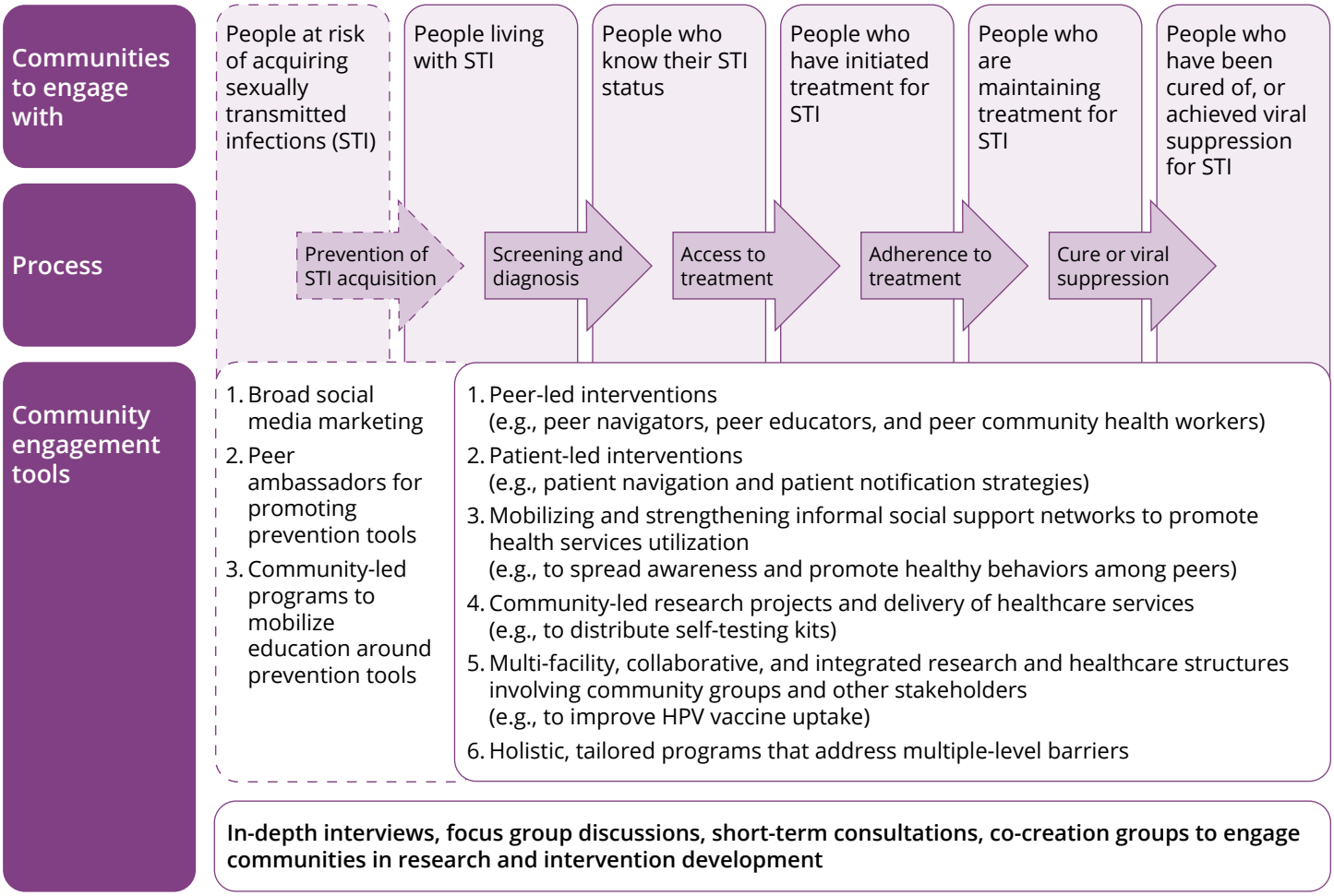


Adapted from: Li, Chunyan, et al. "Community Engagement Tools in HIV/STI Prevention Research." Current Opinions in Infectious Diseases, vol. 37, no. 1, 2024, pp. 53–62. doi:10.1097/QCO.0000000000000993.

Moreover, the 2023 review summarized ways community engagement can be implemented at different phases along the STI prevention and care continuum in Figure 6.3 below.

Figure 6.3

COMMUNITY ENGAGEMENT ALONG THE STI PREVENTION AND CARE CONTINUUM



Adapted from: Li, Chunyan, et al. "Community Engagement Tools in HIV/STI Prevention Research." Current Opinions in Infectious Diseases, vol. 37, no. 1, 2024, pp. 53–62. doi:10.1097/QCO.0000000000000993.

CROSS-REFERENCE

Disease Intervention for Community Engagement

While this chapter provides frameworks and principles for holistic community engagement for STI prevention, the Disease Intervention chapter of this resource goes into detail on the practice of community engagement as it is carried out through various types of disease intervention.

For more information, refer to the Disease Intervention chapter of this resource.

Building upon a foundation of trust

Cultural humility may facilitate the establishment of meaningful relationships with priority populations that are rooted in a solid foundation of trust.

> Trust is an essential component of health promotion. Culture… shape[s] how health is viewed and understood. Individuals and groups carry with them unique histories that shape how information is received and who is trusted to convey information.[252]

One way to begin building trust is through partnerships with CBOs who serve priority populations. The National Academies of Sciences, Engineering, and Medicine 2021 report identifies several promising community-based strategies.[253] These include:

- partnering with faith-based institutions to build capacity and sustainability,
- engaging local businesses through communty-based participatory research (CBPR),
- training and supporting lay health advisers to extend community reach, and
- using street-based and alternative venue outreach.

Other potential partners with whom STI programs can work to increase community trust and engagement could include community/housing development organizations, substance use prevention services, and community-based mobile clinics.

When preparing to engage with priority populations, it is important to be explicit about what kind of support STI programs can provide for external partners. Having a clear understanding of this going into a partnership will both clarify that this is a mutually beneficial relationship and set realistic expectations.

> Provide support for potential external partners. Effective engagement is a learned skill that requires support. Potential partners are likely unfamiliar with the processes and structures that your organization typically uses and, like your staff, may feel burdened by engagement in various forms. Consider the possible funds and other infrastructure that can support partners before you reach out.
>
> Examples could include:
>
> - compensation for their time and effort to engage, along with other tangible tokens of appreciation as preferred by partners and as permitted through available and allowable mechanisms, such as contracts and grants;
> - training or other capacity-building resources to help external partners engage effectively and provide actionable input;
> - accessibility accommodations; or
> - mental health support to work with topics that might reactivate trauma.
>
> It is also important to allow partners to describe the type and nature of support most beneficial to them. Well before you fully enter into any partnership, be certain about your ability to provide various types of support, and understand any limitations on that support (e.g., avoiding unfair competitive advantage) before you engage. Such an approach will help manage expectations on both sides of the relationship.[254]

Beyond simply "allowing" partners to describe the supports they think would be most beneficial, it would be helpful for STI programs to actively seek out the perspectives of those with lived experience before developing an intervention plan. This is an essential step in building trust as a foundation for an effective partnership. It would be helpful for STI programs to "meet people where they are" and prioritize the needs identified by priority populations rather than those the STI program staff may think are most important.

Again, this is essential to building a foundation of trust, agency, and dignity needed for successful community partnerships.

In STI prevention work, program staff will encounter people who embody a broad range of cultures. Building a solid foundation of trust before working with priority populations can help to ensure meaningful collaboration for effective STI prevention.

RESOURCES

Resources for Community Engagement

- National Coalition for Sexual Health|NCSH
- Overview of Sexual Health Message Frameworks|NCSH
- Issue Brief: Key Ingredients for Successful Trauma-Informed Care Implementation| Center for Health Care Strategies

BEST PRACTICE

Building trust with the communities an STI program serves provides a solid foundation from which to engage in meaningful partnerships with priority populations.

CROSS-REFERENCE

Outbreak Response for Community Engagement

Community partnerships are developed as a matter of course between local STI programs and all relevant parties for routine business; but, when an outbreak occurs, these community partners are critical to the success of the response.

Depending on the needs of the affected community, new partnerships may need to be forged quickly during the outbreak. This activity can be aided if STI program personnel at the local level are familiar with local resources and agencies already serving the affected groups.

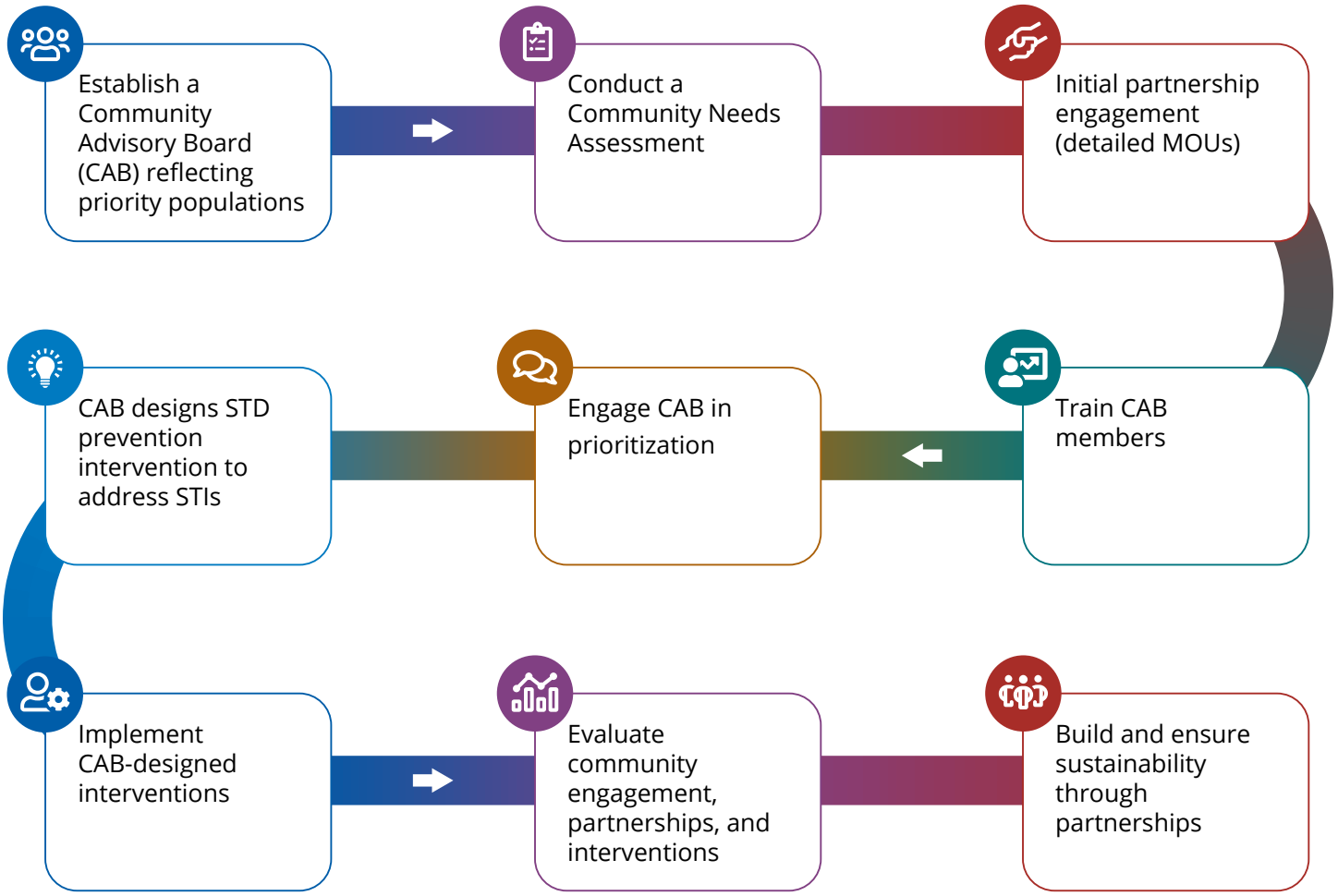
For more information on responding to outbreaks, see the Outbreak Response chapter of this resource.

CDC CARS initiative: Community Approaches to Reducing Sexually Transmitted Disease

A CDC initiative, Community Approaches to Reducing Sexually Transmitted Disease (CARS), provides a promising model for community engagement that increases prevention, screening, and treatment of STIs and prioritizes addressing locally relevant STI-related factors within communities "through the identification and delivery of novel community-driven strategies that harness existing community assets."

Figure 6.4

COMMUNITY APPROACHES TO REDUCING STDS—IMPLEMENTATION MODEL



Adapted from: Centers for Disease Control and Prevention. Community-based Approaches to Reducing STDs-Community Engagement Toolkit. 2019. https://stacks.cdc.gov/view/cdc/149874

CRITICAL ELEMENTS OF COMMUNITY ENGAGEMENT FOR REDUCING STIS

A review of the CARS initiative identified some critical elements of community engagement, including:

1. knowledge of and unflagging commitment to authentic community engagement as an approach to reduce local STI differences (commitment to engagement);
2. commitment to understanding and addressing social determinants of health that affect health and how they relate to STIs;
3. partner flexibility;
4. talented and trusted leadership;
5. participation of partners representing a variety of sectors;
6. collaborative establishment of a vision and mission;
7. open communication and respecting various ways of communicating;
8. shared decision-making;
9. embracing and working through conflict;
10. identifying and leveraging talents, strengths, and resources; and
11. building a shared history of success.[255]

RESOURCE

Resource for Community Engagement

This toolkit provides a detailed road map for building effective, sustainable interventions tailored to the needs of STI-impacted communities or groups: Community-based Approaches to Reducing STDs: Community engagement toolkit | CDC.

FOCUS ON CONGENITAL SYPHILIS (CS)

Perhaps the most difficult obstacle to CS prevention is reaching pregnant women not currently accessing STI or prenatal care, since the first step in CS prevention is syphilis testing during pregnancy. Linkages with community agencies serving women who might be pregnant and not engaged with the health care system—such as substance use disorder programs, mental health programs, emergency departments, Federally Qualified Health Centers (FQHCs), or Maternal Child Health Programs—are key to providing outreach syphilis and pregnancy testing to these individuals.

A 2021 study points out numerous missed opportunities for intervention in a case of CS while also highlighting the importance of linkage to care:

> This case documents multiple missed opportunities for syphilis screening in pregnancy and early intervention at a systems-level. Our case-patient was seen twice in the Emergency Department before her inpatient admission. No STI screening was done at either visit.
>
> If the Emergency Department visit is the first presentation for care, pregnant women should be screened for syphilis in keeping with U.S. Preventive Service Task Force's recommendations. In addition, while hospitalized at 27 weeks gestational age, syphilis treatment could have been initiated based on our patient's reactive RPR even though the confirmatory TP-PA result was not available until after her discharge. This case highlights challenges to treating syphilis during pregnancy, as coexisting social factors, such as lack of insurance, unstable housing, substance use, and history of incarceration of the patient or partner, may lead to lack of prenatal care, missed clinic visits, and barriers to completing timely treatment.[256]

Subsequently, a 2023 Morbidity and Mortality Weekly Report (MMWR) article, "Vital Signs: Missed opportunities for preventing congenital syphilis," recommends screening for syphilis in settings outside of traditional prenatal care to identify and treat women with syphilis who might not otherwise receive adequate prenatal care.[257] Such nontraditional screening sites could include:

- emergency departments,
- jail intake, and
- maternal and child health programs.

Health communications as community engagement

Health communication can serve as a tool for community engagement in interventions at the individual, interpersonal, community, or systems levels. Health communication can be defined as the crafting and delivery of messages and strategies, based on consumer research, to promote the health of individuals and communities.

When communicating with the public, jurisdictions "may be dealing with tight deadlines, complex topics, and distracted or confused audiences."[258] Health communication campaigns may use multi-pronged approaches to communicate, including mass media approaches (e.g., TV, radio, public service announcements, podcasts, paid and earned media advertising, social media), community partnerships, training efforts, and activities by grassroots organizations that have credibility with priority populations. These efforts, blended together in an effective and coordinated manner, may attract more attention, reach more people in the community, and provide the right information in a way that is easy to understand for the audience(s).

Effective relationships and partnerships with community leaders, policymakers, and other key individuals can strengthen health communication campaigns. Those who have influence in the community can be critical in establishing an environment receptive to STI prevention programs and to securing additional resources to support those programs. Many times, partners can reach audiences who are inaccessible to health departments. Partners can be critical vehicles for funneling information, giving a new voice to messages, and for establishing community-level, grassroots support for STI prevention.

RESOURCE

Community Engagement Resources for American Indian/Alaska Native Populations

Resources | Native Health Resources

Meaningful Partnerships to Support Indigenous Health | Cardea Training Center

The proliferation of technologies that can play a role in health communications over the past decades merits special attention. The 2021 National Academies of Science, Engineering, and Medicine report urges caution in the adoption of various technologies for health communications.

> In the context of STI research and prevention, technologies are typically viewed as a tool to deliver interventions.... Technologies also play a more nuanced role in sexual health, however, including affecting people's attitudes and social norms. This requires extensive consideration of when, how, and why they should be incorporated into interventions.... The relationship between people and technologies is complicated and dialectical: technologies not only affect people's sexual health–related attitudes and behaviors, but people's sexual health-related attitudes and behaviors also affect technologies (e.g., people's desire to find new sex and dating partners influences the development of new dating/hookup apps, and their growing use affects people's attitudes and ability to find sex and dating partners). It therefore becomes important to recognize the large and ever-changing role that technologies play in sexual health and intervention delivery.[259]

If a health communications intervention is chosen, then a health communications plan could be established to address program goals and objectives. In developing such a plan, the following steps could be considered:

1. Identify which program objectives might benefit from health communications. Based on these chosen program objectives, determine the health communication objectives.
   - Note that not all program objectives will necessarily benefit from health communication strategies. It's important to understand the limitations of health communications strategies. While communications alone can increase knowledge and awareness of an issue/problem and/or solution, there are other factors—like access to health care, access to interventions, etc.—that can hamper the success of a health communication effort.[260] Those factors can be considered when creating a strategy and may require collaboration with other programs or interventions to overcome. When developing a health communications strategy, it might be useful to consider the change a health department is ideally positioned to support. For instance, would the health department be more effective focusing on population-level behavior change? Individual-level behavior change? For example, one health department may find that their context makes it such that an appropriate objective might be to raise the level of awareness, at the population level, of the significance of the STI problem in an area among community leaders. Informational approaches alone are less likely to be successful in achieving an individual-level behavior change goal and that may be all they have to offer. As such, the health department could adjust their objectives accordingly.
   - Health communications can serve multiple purposes for an STI program, so it is important to distinguish between them when making a health communications plan. For example, health communications can be used as a direct intervention tool, but they can also be used to communicate the value of the program.
2. Identify the intended audience for communication objectives. While there can be more than one intended audience, it may be necessary to prioritize audiences. Examples of priority audiences include consumers, policymakers, community leaders, non-STI public health leaders, and nongovernmental organizations that serve priority populations.
3. Identify strategies that will correspond to the communications objectives and reach the priority audience. Example of a strategy: Influence key community leaders to recognize the importance of access to prenatal care as a way to prevent CS.
4. Conduct a needs assessment. If the STI program lacks resources on its own, they could consider partnering with a hospital or other community agency to include STI-related indicators in that agency's needs assessment. Determine which of these strategies are currently being addressed, what gaps there are in current efforts, and strategies that are not being addressed.
5. Based on gaps, define key health communication strategies.
6. Choose tools to carry out these strategies.
7. Establish a system for evaluating the effect of health communications in meeting the defined objectives.

RESOURCES

Resources for Health Communications Planning

Using language to reduce bias:

- A Guide to Language, Narrative and Concepts | AMA
- Bias-Free Language | APA
- Sexual Health Message Frameworks | NCSH
- Words Matter: Putting an End to "Unsafe" and "Risky" Sex

Ensuring accessibility:

- Digital Accessibility @ HHS | HHS
- Accessibility Technical Resources | HHS
- Disability-Related Resources | EEOC

BEST PRACTICE

Interventions that engage the community at multiple levels and through multiple mechanisms are more likely to have a greater impact on STI prevention.

Conclusion

This chapter provides STI program staff with information on community engagement for STI prevention based on the latest public health principles.

STI program staff can use this chapter as a reference throughout intervention planning, development, and implementation of community engagement activities in order to refresh their memory as needed or to dig deeper into the additional resources for more information regarding a particular task.

BEST PRACTICES

- *Building trust with the communities an STI program serves provides a solid foundation from which to engage in meaningful partnerships with priority populations.*
- *Understanding the communities an STI program wishes to serve is essential for effective community engagement.*
- *Interventions that engage the community at multiple levels and through multiple mechanisms are more likely to have a greater impact on STI prevention.*

Accessible Descriptions for Complex Figures: Community Engagement

Figure 6.2

Community engagement tools in STI research across the socioecological model.

At the population/policy level, examples of community engagement are: structured public-facing results dissemination; crowdsourcing; adopting evidence-based intervention at scales by community. The strengths of these tools include: societal-level dissemination and increased social impact, beneficial to wide adoption; address structural barriers; often requires political commitments for sustainability.

At the community/organizational level, examples of community engagement are: community advisory board (extensive engagement); cross-sector/multi-facility engagement; capacity training; and community dialogue. The strengths of these tools include: facilitate dialogue and communication between multiple sectors and stakeholders, useful for addressing structural barriers and enhancing community ownership of programs.

At the interpersonal level, examples of community engagement tools include: peer-led intervention and social network-based intervention. The strengths of these tools include: peer influence; enhance social networks and trusted relationships; and broaden outreach.

At the individual level, examples of community engagement tools include: in-depth interviews; focus-group discussion; community advisory board (limited or short-term engagement). The strengths of these tools include: lower-cost; direct and efficient; easy to implement; and more accessible to researchers compared to the other engagement levels.

The figure states that engagement efforts can be taken on multiple levels simultaneously and can be delivered via in-person/virtual or digital platforms. The strengths of this approach include: wide impact; east to access; low unit-cost; flexibility to tailor to individual needs; and lower geographical/physical barriers.

◄ *Back to figure 6.2*

Figure 6.3

Examples of community engagement tools along the STI prevention and care continuum.

Communities to engage with include people at risk of acquiring STIs, people living with STIs, people who know their STI status, people who have initiated treatment for STIs, people who are maintaining treatment for STIs, and people who have been cured of or achieved viral suppression for STIs. The processes along the continuum include prevention of STI acquisition, screening and diagnosis, access to treatment, adherence to treatment, and cure or viral suppression.

Community engagement tools for people at risk of acquiring STIs and people living with STIs include broad social media marketing; peer ambassadors for promoting prevention tools; and community-led programs to mobilize education around prevention tools. For the other communities included in the figure, community engagement tools include peer-led interventions (e.g., peer navigators, peer educators, and peer community health workers); patient-led interventions (e.g., patient navigation and patient notification strategies); mobilizing and strengthening informal social support networks to promote health services utilization (e.g., to spread awareness and promote healthy behaviors among peers); community-led research projects and delivery of health care services (e.g., to distribute self-testing kits); multi-facility, collaborative, and integrated research and health care structures involving community groups and other stakeholders (e.g., to improved HPV vaccine uptake); and holistic, tailored programs that address multiple-level barriers.

The figure presents the following community engagement tools for all communities: in-depth interviews; focus group discussions; short-term consultations; and co-creation groups to engage communities in research and intervention development. ◄ *Back to figure 6.3*

Endnotes

[247] DeSalvo, Karen B., et al. "Public Health 3.0: A Call to Action for Public Health to Meet the Challenges of the 21st Century." *Preventing Chronic Disease*, vol. 14, Special Topic, 2017, doi: 10.5888/pcd14.170017.

[248] MacQueen, Kathleen M., et al. "What Is Community? An Evidence-Based Definition for Participatory Public Health." *American Journal of Public Health* vol. 91, no. 12. 2001, pp. 1929–1938. doi: 10.2105/AJPH.91.12.1929.

[249] Israel, Barbara A., et al. "Critical Issues in Developing and Following Community-Based Participatory Research Principles." *Community-Based Participatory Research for Health*, edited by Minkler M. and Wallerstein N. Jossey-Bass, 2003, pp.56–73.

[250] Rhodes, Scott D., et al. "Critical Elements of Community Engagement to Address Disparities and Related Social Determinants of Health: The Centers of Disease Control and Prevention Community Approaches to Reducing Sexually Transmitted Disease Initiative." *Sexually Transmitted Diseases*, vol. 48, no. 1, 2021, pp. 49–55. doi: 10.1097/OLQ.0000000000001267.

[251] Li, Chunyan, et al. "Community Engagement Tools in HIV/STI Prevention Research." *Current Opinions in Infectious Diseases*, vol. 37, no. 1, 2024, pp. 53–62. doi:10.1097/QCO.0000000000000993.

[252] National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Population Health and Public Health Practice; Committee on Prevention and Control of Sexually Transmitted Infections in the United States. *Sexually Transmitted Infections: Adopting a Sexual Health Paradigm*. Edited by Jeffrey S. Crowley et. al., National Academies Press (US), 24 March 2021. doi:10.17226/25955.

[253] Ibid.

[254] "Tips on Engaging Diverse Groups of External Partners." Office of the Assistant Secretary for Planning and Evaluation. https://aspe.hhs.gov/reports/tips-engaging-diverse-groups.

[255] Adapted from: Rhodes, Scott D., et al. "Critical Elements of Community Engagement to Address Disparities and Related Social Determinants of Health: The Centers of Disease Control and Prevention Community Approaches to Reducing Sexually Transmitted Disease Initiative." *Sexually Transmitted Diseases*, vol. 48, no. 1, 2021, pp. 49–55. doi: 10.1097/OLQ.0000000000001267.

[256] Fukuda, Acasia, et al. Congenital Syphilis: A Case Report Demonstrating Missed Opportunities for Screening and Inadequate Treatment Despite Multiple Health Care Encounters during Pregnancy. *Sexually Transmitted Diseases*, vol. 48, no. 9, 2021,: pp. e124–e125. doi:10.1097/OLQ.0000000000001352.

[257] McDonald, Robert, et al."Vital Signs: Missed Opportunities for Preventing Congenital Syphilis—United States, 2022." *MMWR Recommendations and Reports*, vol. 72, no. 46, 2023, pp. 1269–1274. doi:10.15585/mmwr.mm7246e1.

[258] Centers for Disease Control and Prevention. *Health Communication Playbook: Resources to Help You Create Effective Materials*. 2018. www.cdc.gov/nceh/clearwriting/docs/health-comm-playbook-508.pdf.

[259] National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Population Health and Public Health Practice; Committee on Prevention and Control of Sexually Transmitted Infections in the United States. *Sexually Transmitted Infections: Adopting a Sexual Health Paradigm*. Edited by Jeffrey S. Crowley et. al., National Academies Press (US), 24 March 2021. doi:10.17226/25955.

[260] National Institutes of Health. Mak*ing Health Communication Programs Work*. 2001. www.cancer.gov/publications/health-communication.

PROGRAM OPERATION CONSIDERATIONS FOR STI PREVENTION

Outbreak Response

Introduction

Outbreak response relies upon all aspects of program operations. Effective medical and laboratory services, surveillance, and data management can alert sexually transmitted infection (STI) program staff to potential outbreaks of STIs.

However, understanding an outbreak goes beyond traditional surveillance and disease intervention because STI programs take into consideration the specific contexts from which an outbreak emerges. Community engagement can contribute to an understanding of the affected populations. Outbreak response relies upon cohesive preparedness across all aspects of program operations. Leadership is essential to coordinate efforts with government and nongovernmental organizations and communicate information to all relevant parties. Program evaluation informs responses to future outbreaks. The following chapter provides information on these considerations that STI program teams may use to respond to potential outbreaks with appropriate levels of both confidence and humility.

What Is Outbreak Response?

When an outbreak of an STI is suspected in a jurisdiction, there are many steps that an STI program team can take to understand and respond to the outbreak.

Many public health officials investigate outbreaks by breaking the investigation into discrete steps for action and analysis. These steps are presented within each section below as a guide to assist STI program managers and their teams in leading or participating in an outbreak investigation.

Communicable disease outbreaks are investigated in teams. Prior to the emergence of an outbreak, the STI program may identify internal members of a team such as epidemiologists, key staff with subject matter expertise, and organizational decision-makers to assist with resource allocation and policy decisions. Identification of participants and delineation of roles are further discussed in the sections below.

Outbreaks often occur in populations experiencing a variety of challenges. If the outbreak response focuses exclusively on the organism causing the infection without considering the full context of the people affected, the response may not be effective. The syndemics of human immunodeficiency virus (HIV), substance use, and viral hepatitis can affect similar populations as STIs, and each of these health concerns directly affects the others.[261]

Additionally, some emerging infectious diseases may present as directly sexually transmitted (for example, Zika virus and mpox) or within the arena or domain of the sexual experience (such as among those frequenting a commercial sex venue or social gathering). This may require programs to immediately respond to an organism with which they are not familiar.[262] With mpox, for example, "as the number of new cases declined during the fall of 2022, there was intense pressure to bring the mpox response to an end and fold it into ongoing public health work around sexually transmitted infections."[263] Effective outbreak response to emerging infections requires programs to be very flexible and adaptable to the needs of affected populations.

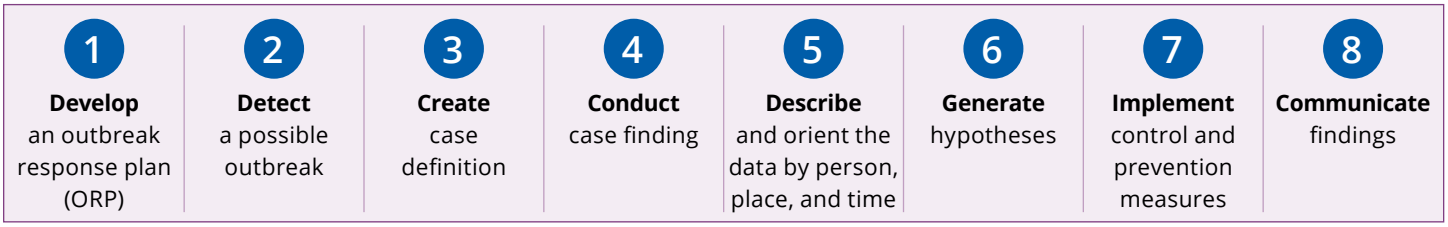
While communication is covered in Step 8 of this chapter, in reality, communicating information pertaining to an outbreak is an essential part of any outbreak response for several reasons. These reasons include, but are not limited to:

- letting state, tribal, local, and territorial (STLT) entities and Centers for Disease Control and Prevention (CDC) leaders know so they can gather more resources to address the outbreak (if needed, depending on severity);
- engaging community partners, the general public, priority populations, staff, and anyone else impacted by the outbreak in outbreak response efforts, and keeping the public informed about important health information in their communities so they can take action to avoid infection or know where to go for testing and/or vaccination.

Clear and effective communication is key to the response effort once an outbreak is identified. STI program managers may work with their local experts and CDC project officer to address an outbreak together.

Figure 7.1

STEPS IN AN STI OUTBREAK INVESTIGATION



How Does an STI Program Plan for an Outbreak?

Step 1

Develop an outbreak response plan

When an increase in STI morbidity or a cluster of cases is noticed in a jurisdiction, STI leaders may need to act quickly to investigate in order to bring a potential outbreak under control. Such quick action is facilitated by an existing outbreak response plan (ORP). The ORP can help achieve effective communication and a coordinated, effective response. In general, the content that may appear in any ORP would include:

- infection-causing organism(s) covered by the plan;
- well-defined thresholds for detection of an outbreak;
- personnel and agencies included in the response plan;
- incident management and communications structure to be employed;
- critical activities to be considered; and
- recovery or resolution.

When an ORP is integrated with other intra-jurisdictional emergency response plans and activities, other resources and capabilities can be quickly leveraged when an outbreak occurs in alignment with legal authorities. When plans are coordinated with other response plans, ongoing activities to prepare for outbreaks—whether or not the disease is sexually transmitted—allow for opportunities such as cross-training of personnel and increased flexibility of capabilities that can increase timely and successful response to outbreaks of STIs. It also enables smooth expansion of a response if the outbreak rapidly increases in scale or scope. An ORP Checklist is included as Appendix 3 to this resource.

RESOURCES

Resources for Outbreak Response Plans (ORP)

For an example of an ORP for STIs, see this ORP from Arizona: Sexually Transmitted Disease Outbreak Response Plan|Arizona Department of Health Services

A presentation from the 2016 Arizona Infectious Disease Conference provides an example of how to create an outbreak response plan using lessons learned from highly pathogenic avian influenza: 10 Things to Consider When Writing Outbreak Response Plans|The Center for Food Security and Public Health|Iowa State University

STI programs often have existing community partnerships for daily operations, but an outbreak may require partnerships with other intra-organizational programs, other agencies, local businesses, or institutions. Ideally, these are identified at the local level and included in outbreak planning or tabletop exercises (TTXs) when possible. Roles and responsibilities would then be identified for all partners if an outbreak occurs. Depending on the context in which an outbreak occurs and the population that is involved, nontraditional partnerships such as legal counsel, law enforcement, or corrections may need to be considered. A jurisdiction may wish to involve the National Network of Disease Intervention Training Centers (NNDITC). Some suggestions for partnerships to consider include, but are not limited to:

- Medical Reserve Corps (local);
- Emergency Management agency staff (state or local);
- STLT health department officials;
- people representing groups at increased risk for STIs and community-based organizations (CBOs) serving them;

- media or communications specialists;
- local health care, behavioral health, and social service providers; and
- federal agencies as needed, such as the Federal Emergency Management Agency (FEMA) and CDC.

INTERJURISDICTIONAL COLLABORATION

Because there may be several health jurisdictions providing STI services who will prepare an ORP, interjurisdictional collaboration in planning can ensure a coordinated response and minimize duplication of response or gaps in response. Local health jurisdiction and the state jurisdiction can consider working together on their respective ORPs.

How can that plan be improved?

A useful way to test an ORP is to conduct an exercise during a non-outbreak period to see which areas need improvement. For example, when the public health emergency requires medication or vaccines to be dispensed quickly, a local jurisdiction can plan a point of dispensing, or POD, event. Colleagues in preparedness and response and other infectious disease programs can often provide context, resources, and frameworks for improving plans.

Open PODs are typically held at public locations such as arenas, community centers, or schools. These locations are often operated by local public health agencies and are where they dispense or administer medical countermeasures (MCMs) to the public. Closed PODs are sites staffed and managed by organizations and agencies (both public and private) to dispense MCMs only to their own populations while continuing operations during a public health emergency. Open and closed PODs can and should be used simultaneously.[264]

Conducting a TTX can also be helpful in planning and improving an STI outbreak response, including leveraging the expertise of colleagues in preparedness and response, infectious disease, and other programs.

> TTXs are discussion-based sessions where team members meet in an informal classroom setting to discuss their roles during an emergency and their responses to a particular emergency situation. A facilitator guides participants through a discussion of one or more scenarios. It involves key personnel discussing simulated scenarios in an informal setting. TTXs can be used to assess plans, policies, and procedures.[265]

RESOURCES

Resources for TTXs and PODs

New York City Emergency Management created a helpful toolkit to prepare for and conduct TTXs: NYC Emergency Management Tabletop Exercise Toolkit: Organizer guide

For a TTX to test existing response plans, policies, and procedures around drug-resistant gonorrhea, see: Antibiotic-Resistant Gonorrhea Tabletop Exercises | CDC

POD training and exercise simulation tool—This is a TEST: Points of Dispensing (POD) | State and Local Readiness | CDC

Disseminating the ORP to all those who will have a participatory role and updating the ORP when significant information changes allows this to be a "living" document used to inform all relevant parties.

How Does an STI Program Detect an Outbreak?

STI programs may be alerted to a possible disease outbreak by local program staff and Disease Intervention Specialists (DIS), clinicians, laboratories, or through routine analysis of surveillance data. Many epidemiologists and others responsible for data analysis make a habit of regularly reviewing data (e.g., monthly, quarterly). Waiting until the end of the data year does not allow for the timely detection and response to aberrations.

Only by knowing a program's data and populations can its staff understand and appropriately interpret the results of more complicated analyses. Regular data review can also make it easier to quickly identify a potential outbreak situation: if, after regular monthly review, one understands the expected level of disease, then one can clearly see when there has been an increase. Sometimes a cluster of cases, or a small group of cases in a specific time and place,[266] can provide early notice that an outbreak is occurring.

CROSS-REFERENCE

Surveillance & Data Management for Outbreak Response

For more information on conducting surveillance and using data to guide STI program work, see the Surveillance & Data Management chapter of this resource.

EXAMPLE

Real World Application

In a routine review of early syphilis cases (the primary, secondary, or early latent stages of syphilis infections) in a county, it was noted that several cases occurred within the last three months in a zip code not typically known to experience any syphilis.

Looking further into this, the STI program noticed all cases in this zip code occurred among people experiencing homelessness who identified a common venue for meeting friends. These cases represent a cluster that should be investigated to prevent further disease transmission.

An example of this also occurred in North Carolina. In 2000, incidence of syphilis reached a historic low in the United States (U.S.), and a little more than a decade ago North Carolina recorded only one single case of congenital syphilis (CS). By 2022, incidence had jumped to 57 congenital cases and no deaths.[267] In 2023, preliminary data indicates that there were at least 72 cases, including ten stillbirths or neonatal deaths.[268] The state has since launched a media campaign, created a new website with testing resources, and started working with a Child Mortality Task Force to review trends and to find out what was contributing to the rise in cases in the state.[269]

Detect a possible outbreak: verify the diagnosis and confirm existence of an outbreak

When detecting a possible outbreak, jurisdictions can check that all cases under consideration are being correctly diagnosed and reported (refer to the chapter on Surveillance & Data Management in this document and CDC's Surveillance Case Definitions). Next, jurisdictions may compare the current number of cases against the expected (or endemic) level. For example, if a suspected outbreak is occurring in a city, the STI program can count the number of cases observed from the time cases began to increase to the present. Then the number of cases for a previous period when an outbreak was not occurring can be determined (sometimes referred to as the baseline).

Before proceeding, STI programs may assess whether the increase in cases observed may be attributable to causes other than a true disease outbreak.[270]

Possible explanations for an increase in the observed number of cases other than an outbreak could include any of the following:[271]

- Increased screening
- Initiation of more sensitive diagnostic tests
  - » Example: When Nucleic Acid Amplification Tests (NAAT) became the standard for *Chlamydia trachomatis* (CT) testing in the early 1990s, it resulted in what appeared to be a dramatic increase in the number of reported cases in the U.S.
- Changes in reporting procedures
  - » Example: Data collection for CT began in 1984 and CT was made a nationally notifiable disease in 1995, but CT was not reported by all 50 states and the District of Columbia (DC) until 2000.
- Change to surveillance case definition
  - » Example: The Council of State and Territorial Epidemiologists (CSTE) updated their syphilis case definition in 2013 and updated their congenital syphilis (CS) case definition in 2014, making the definitions more sensitive, which may have resulted in an increase in cases reported.
- Increased interest in or compliance with reporting
- Laboratory errors or contaminated specimens
- Data entry errors.

It is often informative to consider specific attributes rather than just the raw number of cases in order to fully understand the affected group.

For example, consider cases of Disease X in:

- a specific geographic area;
- a certain age group;
- among those of different races/ethnicities;
- people experiencing unstable housing; or
- people using substances.

It is also useful to include pregnancy status, HIV status, and care-engagement status, if available. Determination of an outbreak is made locally, so STI program staff responsible for outbreak detection may find it helpful to understand the endemic level of each STI in their jurisdiction as a starting point. It is possible—indeed, expected—that a state may not be experiencing a disease outbreak while a county, city, or smaller geographic unit, such as a zip code, may be.

It is helpful at this stage to prepare a monthly count of baseline cases so that monthly mean and standard deviation can be calculated. Different jurisdictions may make different decisions about a threshold level of current cases that must be reached before an outbreak is identified—that is, just how much higher does the number of currently observed cases need to be when compared to the endemic or baseline level?

Consultation with the Division of STD Prevention (DSTDP) project officer at CDC and an epidemiologist is recommended when determining if an outbreak exists.

For infections other than syphilis, a simple comparison of the number of expected versus observed cases in the same time period can be used; for example: January to April of last year (LY) versus January to April of the current year (CY) to determine if the amount of the increase is important enough to warrant an outbreak declaration. For syphilis outbreaks, some states use a threshold standard of the baseline monthly mean plus two times the standard deviation, sustained for two months.

EXAMPLE

Syphilis outbreak threshold calculation

Your city reported 158 cases of primary and secondary (P&S) syphilis in the previous calendar year when an outbreak was not occurring.

Entering each month's count of P&S syphilis cases per the example below, one finds the monthly P&S syphilis case mean for the year was 13.2, with a standard deviation (SD) of 3.4. The outbreak threshold calculation of 13.2 + (2 x 3.4) yields a threshold of 19.9 (or 20) cases per month, which must be sustained for two consecutive months.

MS Excel Example Syphilis Outbreak Threshold Calculation

Month (Previous Year)	P&S Syphilis Cases
Jan	10
Feb	13
Mar	14
Apr	20
May	10
Jun	13
Jul	14
Aug	12
Sep	19
Oct	9
Nov	13
Dec	11
Mean	13.16667
SD	3.379977
2X SD	6.759953
Mean Plus 2X SD	19.92662

This year between March and May, your city reported 73 P&S syphilis cases, with 23 cases reported in March; 25 reported in April; and 25 reported in May.

A jurisdiction using this method could declare the existence of an outbreak after April, since the number of cases identified in the months of March and April met the outbreak threshold of 20 each month.

TIP

It is not unusual for STI programs to notice an increase in unknown late (non-infectious) syphilis cases diagnosed approximately one year after an outbreak of primary and secondary (P&S) syphilis. These non-infectious cases may represent outbreak cases that were not identified at the time of the outbreak, so they should not be cause for alarm.

"Because latent syphilis is not transmitted sexually, the objective of treating people in this disease stage is to prevent medical complications of syphilis. Latent syphilis can also be vertically transmitted to a fetus; therefore, the goal of treating a pregnant woman is to prevent congenital syphilis."[272]

After a long or unusually large outbreak of syphilis, the health jurisdiction may recalculate its endemic level of disease if it has not returned to pre-outbreak levels. This is because of the nature of propagated outbreaks, which may result in a higher community level of infection, and because syphilis is able to be transmitted for 12 months if not treated.

RESOURCE

Resource for Outbreak Detection

CSTE created a helpful resource to aid jurisdictions in outbreak detection, which can be found here: Syphilis Outbreak Detection Guidance | CSTE

The document includes examples from selected jurisdictions explaining how they operationalize outbreak thresholds.

BEST PRACTICES

- *Evidence suggests that preparing and testing an ORP before the occurrence of an outbreak can be an effective strategy for managing outbreaks.*
- *Gaining an understanding of the local endemic level of disease and routinely monitoring rates facilitates outbreak detection.*

How Are Outbreaks Investigated?

Once it has been determined that an outbreak exists, investigation of the outbreak can occur. This primarily involves investigation through structured interviews with the case patients (people diagnosed with the disease in question), usually conducted by the Disease Intervention Specialist (DIS).

Sometimes it is also informative to conduct interviews or focus groups with those who are not case patients but who are "key informants," or people who are part of the affected community.

Such methods may include:

- video conferencing;
- telephone or text;
- social media; and
- social and dating apps.

This may require that STI leadership actively involves state or local information technology (IT) professionals to secure access to websites and other resources that are traditionally blocked by security. In the case of social media and social/dating apps, the jurisdiction may need to have protocols in place for these efforts or a Memorandum of Agreement with the social media apps.

For more information on how to conduct disease intervention, refer to the Disease Intervention chapter of this document.

RESOURCES

Resources for Outbreak Investigation

A qualitative tool sometimes used to learn more about factors present in an outbreak is the Rapid Ethnographic Community Assessment or RECAP. This book is a helpful resource to learn more about RECAP and how to apply it: Rapid Ethnographic Assessments: A practical approach and toolkit for collaborative community research (Book)

A jurisdiction's project officer at CDC assigned to the STI program may also be able to assist with learning about and conducting a RECAP.

CROSS-REFERENCE

Disease Intervention for Outbreak Response

The most current training for DIS can guide the interview format and method.

The STI program may need to give DIS specific permission and assistance to use alternative methods to contact and conduct case investigation and partner services during an outbreak if these methods are not already in place in the jurisdiction.

For more information, see the Disease Intervention chapter of this resource.

FOCUS ON CONGENITAL SYPHILIS (CS)

When an outbreak of syphilis is suspected, it is very important that all women who may be pregnant are tested for syphilis as soon as possible and treated quickly, if infected, or prophylactically treated if a partner to an early case patient.

Accomplishing this may involve creating additional partnerships in the community that serve pregnant women, such as:

- emergency departments and urgent care centers;
- Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) nutrition programs;
- maternal care clinics;
- community health centers, Federally Qualified Health Centers (FQHCs), and child welfare agencies;
- substance use disorder programs or outpatient opioid treatment centers.

IDENTIFYING SYPHILIS IN PREGNANCY

Identifying syphilis cases among women who may be pregnant may also require creativity in locating pregnant women who are not accessing prenatal care or who are experiencing social or economic challenges, as they may be at greater risk of having a CS infant or stillbirth.[273] It is extremely challenging to identify people who are not accessing the health care system.[274] Some ways that have been used with success include:

- expanding opt-out syphilis screening of any pregnant women presenting to an emergency department for any reason;
- assisting local CBOs who may encounter pregnant women to conduct rapid syphilis testing; and
- conducting outreach syphilis screening by DIS at venues known to be frequented by pregnant women who may not be involved with health care.[275]

Structural changes can be beneficial, although challenging to implement. These might include offering prenatal care, laboratory services, and syphilis treatment that operate on a walk-in basis rather than by appointment.

RESOURCES

Preventing Congenital Syphilis In The U.S.

Combating Congenital Syphilis in Louisiana: Going Beyond the Numbers to Save Babies' Lives

County-level Syphilis Data|STI Statistics|CDC

At this phase, STI program leadership can ensure that data collected either by DIS during case investigation or through routine public health surveillance provide information on factors that may be driving the outbreak. Such factors could include venues where partners are encountered, behaviors associated with STI transmission that are specific to this outbreak, and access to health care.

Some jurisdictions have addressed this by creating a supplemental data collection tool during outbreaks that focuses on specifically asking about these factors during case investigations.

EXAMPLE

Real World Application

During recent STI outbreaks and areas with increasing cases, one state health department's STI program uses 4–6 supplemental variables to evaluate increased STI risk. These variables include incarceration, drug use, exchanging sex for money, homelessness, history of sex with men, and history of previous infections. While waiting for interviews, this information is pulled from previous records (if available) to generally characterize cases and help with designing prevention and outreach activities.

Create a case definition

Define a case by starting with the surveillance case definition for the disease in question.

To create an outbreak case definition, modify the surveillance case definition to include specific factors relevant to the outbreak being experienced. These factors are the person, place, and time. Constructing an outbreak case definition in this way allows those conducting surveillance and data analysis to accurately categorize incoming reports as belonging to the outbreak or not. Having an outbreak case definition in place also serves to clearly communicate to the response team and the public the exact nature of the outbreak under investigation.

RESOURCES

Resources for Surveillance Case Definitions

Surveillance case definitions can be found on CDC's website. Be sure to bookmark this link for future reference.

Surveillance Case Definitions for Current and Historical Conditions | CDC

CDC also provides brief instructions for how to write an outbreak case definition. While these instructions use the example of a respiratory infection, they are applicable to an STI context: Outbreak and Case Definitions | Unexplained Respiratory Disease Outbreaks (URDO) | CDC

EXAMPLE

Outbreak case definition for HIV

In Indiana's 2015 HIV outbreak, the outbreak case definition was specified as:

Laboratory-confirmed HIV infection newly diagnosed after October 1, 2014, in a person who either resided in Scott County, Indiana, or was named by another case patient as a syringe-sharing or sexual partner.[276]

Conduct case finding

Case finding, including partner services activities, is an important activity to effectively identify as close to 100 percent of cases as possible when working an outbreak.[277, 278, 279] Other ways to find possible outbreak cases include:

- contacting local health care facilities and providers;
- linking with community-based agencies serving the affected population;
- offering door-to-door testing;
- media releases; and
- outreach testing events.

PROGRAM EVALUATION AND OUTBREAK RESPONSE

When an outbreak is first suspected, STI programs can begin drafting evaluation criteria. The most obvious measurement is to compare the number of cases during the outbreak period to the number of cases after the outbreak response has been put into place. However, as more investigation occurs, different data points may be discovered that are important to consider for evaluation of the outbreak response as well, such as:

- co-infections;
- pregnancy;
- social factors implicated in transmission or evident in the population;
- health care access; or
- common venues frequented by case patients and their sexual partners.

Describe and orient the data by person, place, and time

Once as many cases as possible have been identified, descriptive epidemiologic data are generated to show a count. As additional cases are identified, they will need to be added to the outbreak list and included in frequencies below.

Basic descriptors will allow members of the outbreak response team to understand exactly who is affected. These descriptors can include, but are not limited to:

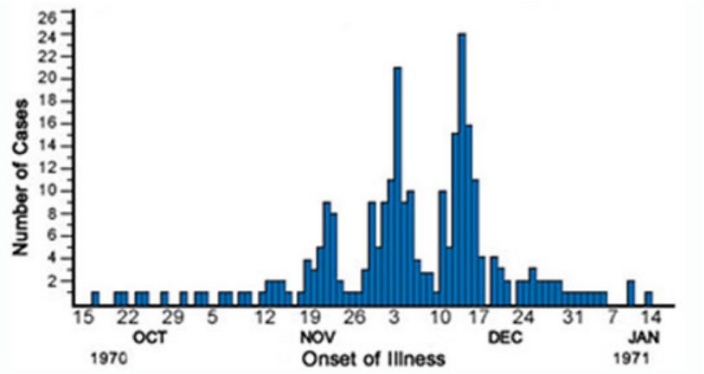
- frequency of sex;
- race/ethnicity;
- age group; and
- other variables.

An epidemic curve (often shortened to "epi curve") can be constructed to portray outbreak data over time.

Figure 7.2

EPI CURVE FOR A PROPAGATED DISEASE OUTBREAK

MEASLES CASES BY DATE OF ONSET IN ABERDEEN, SOUTH DAKOTA, OCTOBER 15, 1970–JANUARY 16, 1971



Source: "Quick-Learn Lesson: Using an Epi Curve to Determine Mode of Spread." Centers for Disease Control and Prevention, www.cdc.gov/training/QuickLearns/epimode/.

Other data visualization methods can also make the data easily understandable. Spot maps and heat maps can portray cases by location and identify potential opportunities to do testing in neighborhoods or locations noted by cases. Creating infographics to explain the nature of the health issue is often an effective way to communicate data. Tables are useful tools to show variables believed to be implicated in the outbreak, such as risk factors or co-infections. Using clear and simple definitions may help to avoid confusion caused by assumptions and misinterpretations. If an outbreak involves cases that are in a neighboring jurisdiction, you might consider how to coordinate and communicate that information.

RESOURCES

Resources for Depicting and Describing Epidemiologic Data

To learn more about epi curves and how to create one, see: Quick-Learn Lesson: Create an Epi Curve | CDC

For more information on describing epidemiologic data, see: Describing Epidemiologic Data | Epidemic Intelligence Service | CDC

BEST PRACTICE:

Gather all outbreak-related data to gain an understanding of who is being affected in the community.

How Does an STI Program Respond to an Outbreak?

Evidence suggests that an effective outbreak response depends on a clear understanding of, and coordination within, established legal and regulatory frameworks. An STI program's agency may have local authority or limitations to formally declare an outbreak. In some states, the state health department has this authority, while in others it rests with the local health department. Some states require the state legislature to declare an outbreak. STI program managers can work to understand the logistics of their local context before experiencing an outbreak. Engaging counsel during outbreak response planning and exercising may be particularly helpful.

The formal step of declaring an outbreak can serve to provide resources for outbreak response that normally are not available to a program. It may also allow STLT officials to seek formal assistance in the form of Epidemiologic Assistance, or "Epi-Aid," from CDC, or calling in reinforcements from other programs or states through Emergency Preparedness routes.

RESOURCE

Resource for Requesting Epidemiologic Assistance from CDC During an Outbreak

To learn more about how Epi-Aid can help during an outbreak and how to request support, see: Requesting EIS Services | Epidemic Intelligence Service | CDC

Often, the success of an outbreak response will require provision of services that are not strictly STI- or health care-related, such as housing or food assistance, domestic violence referrals, and substance use disorder referrals, among others.[280] A current local resource list and established relationships with all referral organizations can be useful for an outbreak response.

COMMUNITY ENGAGEMENT AND OUTBREAK RESPONSE

It is often helpful to include representatives from the community and population affected by the outbreak, if possible, in designing and implementing the outbreak response. This can help to ensure that the interventions designed to stop the outbreak are appropriate for, acceptable to, and fully supported by the people directly involved.

Sometimes, direct involvement of community members is not feasible if the level of stigmatization is high or the community members themselves have significant basic needs that are not being met (such as housing or food insecurity, or domestic violence). In this situation, key informants—people directly serving those in the affected populations—may be asked to participate in response planning and implementation.

Many leaders of outbreak response teams choose to use the Incident Command System (ICS) to manage communications and activities during an outbreak response. The ICS is a management system that facilitates effective and efficient incident management by providing a common organizational structure integrating facilities, equipment, personnel, procedures, and communications.[281]

This method of communication reduces the likelihood that duplication of effort will occur and helps to ensure a coordinated response. Training in this communication method is highly recommended for all staff expected to have a role in an outbreak response.

RESOURCES

Resource for Incident Command Systems for Outbreak Response

For more information about the Incident Command System, including learning materials, training courses, and other resources, see: Emergency Management Insititute: National Incident Management System | FEMA

Step 6

Generate hypotheses

Conducting an analysis of everything learned in the previous steps may allow the outbreak response team to make one or more hypotheses about what factors led to this outbreak and what factors are in place that are maintaining current transmission. This understanding can help guide the response.

Hypotheses generated may be tested using analytic epidemiologic methods (most commonly case control or cohort studies) and may be used to inform control and prevention measures specific to the outbreak factors.

RESOURCES

Resources for Outbreak Response

Online book chapter from CDC Field Epidemiology Manual explaining how to create and test hypotheses: Designing and Conducting Analytic Studies in the Field | Field Epi Manual | CDC

Link to book chapter discussing case control and cohort studies: An Introduction to the Fundamentals of Cohort and Case–Control Studies

Step 7

Implement control and prevention measures

A control measure is one that can be put into place to immediately interrupt disease transmission, while a prevention measure seeks to avoid future transmission. These measures will differ for every outbreak and depend on the infection-causing organism.

Activities to be considered to control an outbreak could include:

- Increase STI clinic hours and access to free testing for not only the outbreak infection but also all comorbid infections for affected populations.
- If injection drug use is implicated in the outbreak, consider partnering with substance use programs.
- Increase public health communications via health alerts, social media, print materials, postcards, radio ads, PSAs, or other means necessary to the affected community to encourage prompt testing and treatment.
- If possible in the jurisdiction, provide incentives for testing and referrals to encourage people at risk to come for testing.
- Speak to local providers about comprehensive sexual health assessments, increasing testing, and talking to patients about risk-reduction strategies.
- Expand condom availability.
- Hire additional staff to meet surge demand.
- Order additional testing and treatment supplies.
- Establish outreach or pop-up clinics in areas easily accessible for the population affected.
- Conduct door-to-door testing if the outbreak is very localized to one specific area.
- Implement changes in laboratory services.

Prevention of STIs in a community may include ensuring that:

- people understand STI transmission and prevention;
- people have the resources and self-efficacy to practice prevention behaviors;
- communities have easily accessible, affordable health care for testing and treatment of STIs; and
- public health policies are in place that are supportive of STI best practices and clinical recommendations (e.g., requiring prenatal testing at specific intervals).

BEST PRACTICE

When responding to an outbreak, include all organizational partners in the response who are identified in the ORP.

How Does an STI Program Know When an Outbreak Is Resolved?

Sometimes it is evident when an outbreak is resolved because the number of cases will drop off significantly; however, sometimes the answer to this question can be unclear if the outbreak was widespread or long-lasting because the underlying level of community infection has increased.

For a point-source outbreak—when people are exposed to the infection-causing organism at one brief point in time and the incubation period is measured in hours to days—the convention in epidemiology is to consider an outbreak resolved when two incubation periods have elapsed without a new case.

However, this method cannot be directly applied to STIs, because these are propagated outbreaks and the incubation period is measured in months (two for gonorrhea and chlamydia, and three for P&S syphilis). Because of this, there is no clear method of establishing that an outbreak is resolved. This is especially true for syphilis outbreaks involving large numbers of people or when the outbreak has lasted several months to a year or more. STI program leadership may consult with their local epidemiologist or reach out to their CDC project officer for assistance in making a determination about whether a syphilis outbreak is resolved.

Is it Necessary to Evaluate the Outbreak Response?

Evaluation of control measures implemented can continuously occur so that adjustments can immediately be made to enhance effectiveness. After the outbreak is controlled, items that may be considered for further evaluation include:

- effectiveness of the response;
- cost of the response;
- relationships with all partners;
- effectiveness of control measures; and
- organization and leadership of the response effort.

If the outbreak persists, then a reassessment of the outbreak hypothesis and interventions implemented may be considered. Many jurisdictions conduct After-Action Reviews (AAR), sometimes informally referred to as a "hotwash," at the conclusion of an emergency response, including when an outbreak response concludes and the outbreak is under control. This ensures that planning assumptions and plans are revised and tested to incorporate findings and lessons from the last response.

More specifically, the objectives of an AAR are:

- to review actions undertaken at each phase of managing a public health event, to identify what worked well, what worked less well, and why;
- to demonstrate the functionality of national capacities in preparing for, detecting, and responding to a public health event;
- to identify the corrective actions or lessons emerging from the management of public health events; and
- to address the challenges made evident through the AAR.

CROSS-REFERENCE

Program Evaluation for Outbreak Response

For more information on how to prepare and conduct an evaluation, see the Program Evaluation chapter of this resource.

BEST PRACTICE

Evaluating the effectiveness of an outbreak response may provide an opportunity to inform future public health actions based on an objective analysis of outcomes.

RESOURCES

Resources for Conducting an After-Action Review of an Outbreak Response

Even though the content of the following concerns drinking water, the material provided is applicable to an STI context.

Debriefing an Incident Drinking Water Advisory Communications Toolbox | Water, Sanitation, & Hygiene-related Emergencies & and Outbreaks | Healthy Water | CDC

Step 8

Communicate findings

Periodic communications are often made throughout the course of an outbreak investigation and response if the jurisdiction's leadership believe this to be warranted. Such communications may be internal and external to the organization. Often, a health department will post weekly case updates or use some type of outbreak "dashboard" on its website for the general public.

This step also refers to writing and disseminating a formal report after the outbreak is resolved to explain the cause(s) of the outbreak and all steps taken by the health jurisdiction so that the audience understands how it was resolved.

RESOURCES

Resources on Communications during an Outbreak Response

Communicating During an Outbreak or Public Health Investigation | Field Epi Manual | CDC

Public Health Outbreak Response Toolkit: Resources for Risk and Outbreak Communication Strategies

EXAMPLE

Final outbreak report

To view an example of a final outbreak report for an HIV outbreak in West Virginia, please see:

Notes from the Field: HIV Outbreak During the COVID-19 Pandemic Among Persons Who Inject Drugs—Kanawha County, West Virginia, 2019–2021 | MMWR

BEST PRACTICES

- *Communicate regularly throughout the outbreak so that the public and those affected are aware of the extent of the problem and what they can do to protect themselves.*
- *Prepare and disseminate a final report after the outbreak is resolved to share lessons learned.*

RESOURCES

Additional Resources for Outbreak Response

For more information on how to prepare for and conduct outbreak response, see the following resources.

Overview of the national objectives, baseline, and evidence-based interventions for STI: Sexually Transmitted Infections—Healthy People 2030|health.gov

The CDC Field Epidemiology Manual|Field Epi Manual|CDC (specifically the chapter describing the steps in outbreak investigation: Conducting a Field Investigation|Field Epi Manual|CDC)

Finelli, Lyn, et al. "Syphilis Outbreak Assessment." Sexually Transmitted Diseases, vol. 28, no. 3, 2001, pp. 131–135.

STI Program Resources|STI|CDC

Outbreak Preparedness, Detection, & Response|STI|CDC

TRAINING & PROFESSIONAL DEVELOPMENT

FOR OUTBREAK RESPONSE

CDC TRAIN provides an online training that may be helpful to staff participating in an outbreak response:

Disease Intervention Training Plan with Outbreak Response|CDC TRAIN

Other useful resources for training on outbreak response include:

- STI Training|STI|CDC
- Emergency Management Institute—National Incident Management System (NIMS)|FEMA
- Online, free textbook on epidemiology that provides further explanation of many of the concepts covered in this chapter

Conclusion

The urgency and potential unfamiliarity of STI outbreaks can make the jobs of STI program staff feel even more stressful. This chapter outlines the steps to follow when responding to an STI outbreak and provides information and resources that may be used as STI program teams act with a calculated balance of preparation and flexibility.

BEST PRACTICES FOR OUTBREAK RESPONSE

- *Evidence suggests that preparing and testing an ORP before the occurrence of an outbreak can be an effective strategy for managing outbreaks.*
- *Gaining an understanding of the local endemic level of disease and monitoring rates routinely facilitate outbreak detection.*
- *Gather all outbreak-related data to gain an understanding of who is being affected in the community.*
- *When responding to an outbreak, include all organizational partners in the response who are identified in the ORP.*
- *Evaluating the effectiveness of an outbreak response may provide an opportunity to inform future public health actions based on an objective analysis of outcomes.*
- *Communicate regularly throughout the outbreak so that the public and those affected are aware of the extent of the problem and what they can do to protect themselves.*
- *Prepare and disseminate a final report after the outbreak is resolved to share lessons learned.*

Endnotes

[261] Centers for Disease Control and Prevention. *Turning the Tide on STIs: Integrating Services to Address the Syndemic of STIs, HIV, Substance Use, and Viral Hepatitis*. www.cdc.gov/sti/media/pdfs/2024/11/Syndemic-Infographic-11-08-2024.pdf.

[262] McQuiston, Jennifer H. "The CDC Domestic Mpox Response—United States, 2022–2023." *MMWR Weekly*, vol. 72, no. 20, 2020, pp. 547–552. doi: 10.15585/mmwr.mm7220a2.

[263] Daskalakis, Demetre, et al. "Lessons From the Mpox Response." *JAMA*, vol. 331, no. 5, 2024, pp. 387–388. doi:10.1001/jama.2023.27868.

[264] "This is a TEST: Points of Dispensing (POD)." *Centers for Disease Control and Prevention*, https://mblc.state.ma.us/costepma/index.php/2020/07/31/what-is-a-tabletop-exercise/.

[265] "What is a Tabletop Exercise?" *Coordinated Statewide Emergency Preparedness—MA*, www.mblc.state.ma.us/costepma/index.php/2020/07/31/what-is-a-tabletop-exercise/.

[266] "Clarifying COVID-19 Terminology." *Johns Hopkins Bloomberg School of Public Health*, https://publichealth.jhu.edu/2020/clarifying-covid-19-terminology.

[267] North Carolina Department of Health and Human Services. *Congenital Syphilis in North Carolina, 2022*. 16 October 2023. https://epi.dph.ncdhhs.gov/cd/stds/figures/2022-CS-factsheet.pdf.

[268] "Syphilis Resources for Providers." *North Carolina Department of Health and Human Services*, www.dph.ncdhhs.gov/epidemiology/communicable-disease/syphilis/providers.

[269] Fernandez, Jennifer. "Congenital Syphilis—An Ancient Scourge—Claimed the Lives of Eight NC Babies Last Year." *NC Health News*. 24 January, 2024. www.northcarolinahealthnews.org/2024/01/24/congenital-syphilis-nc-baby-deaths/#%3A~%3Atext%3DRising%20numbers%26text%3DIn%202000%2C%20incidence%20of%20the%2Ccongenital%20cases%20and%20no%20deaths.

[270] MacDonald, Pia D. M. *Methods in Field Epidemiology*. Jones & Bartlett Learning, 2012.

[271] Adapted from MacDonald, Pia D. M. *Methods in Field Epidemiology*. Jones & Bartlett Learning, 2012.

[272] "Sexually Transmitted Infections Treatment Guidelines, 2021: Latent Syphilis." *Centers for Disease Control and Prevention*, www.cdc.gov/std/treatment-guidelines/latent-syphilis.htm.

[273] DiOrio, Dawne, et al. "Social Vulnerability in Congenital Syphilis Case Mothers: Qualitative Assessment of Cases in Indiana, 2014–2016." *Sexually Transmitted Diseases*, vol. 45, no. 7, 2018, pp. 447–451.

[274] "Overview of Tactics for Modifying Access, Barriers, and Opportunities." *The Community Tool Box*, https://ctb.ku.edu/en/table-of-contents/implement/access-barriers-opportunities/overview/main.

[275] "STI Funding: California Success Bulletins." *Centers for Disease Control and Prevention*, www.cdc.gov/sti-funding/php/success-bulletins/california.html.

[276] Peters, Philip J., et al. "HIV Infection Linked to Injection Use of Oxymorphone in Indiana, 2014–2015." *New England Journal of Medicine*, vol. 375, no. 3, 2016, pp. 229–239. doi: 10.1056/NEJMoa1515195.

[277] Juneau, Carl-Etienne, et al. "Effective Contact Tracing for COVID-19: A Systematic Review." *Global Epidemiology*, vol. 5, 2023. doi: 10.1016/j.gloepi.2023.100103.

[278] DiOrio, Dawne, et al. "Ending the HIV Epidemic: Contributions Resulting from Syphilis Partner Services." *Sexually Transmitted Diseases*, vol. 47, no. 8, 2020, pp. 511–515. doi: 10.1097/OLQ.0000000000001201.

[279] Hogben, Matthew, et al. "The Effectiveness of HIV Partner Counseling and Referral Services in Increasing Identification of HIV-Positive Individuals: A Systematic Review." *American Journal of Preventive Medicine*, vol. 33, no. 2, 2007, pp. S89–S100. doi: 10.1016/j.amepre.2007.04.015.

[280] Samoff, Erika, et al. "HIV Outbreak Control With Effective Access to Care and Harm Reduction in North Carolina, 2017–2018." *American Journal of Public Health*, vol. 110, no. 3, 2020, pp. 394–400. doi: 10.2105/AJPH.2019.305490.

[281] "NIMS Components—Guidance and Tools." *Federal Emergency Management Agency*, https://www.fema.gov/emergency-managers/nims/components.

Glossary

Activities: actual events that take place as part of a program (e.g., develop pamphlet, screen patients).

Adaptive leadership: an approach that prioritizes community engagement and meeting communities where they are.

After-Action Review (AAR): a tool used to provide feedback after an incident that summarizes what took place during the event, analyzes the actions taken by participants, and provides areas needing improvement.

Assay: laboratory test.

Baseline: the measure used as comparison when creating an outbreak threshold.

Basic care: STI care that is usually provided in primary care settings where patients are seen for various health conditions. Services provided typically include risk assessment, screening of asymptomatic people, diagnostic testing of symptomatic people and treatment as needed.

Benzathine penicillin G: Penicillin G benzathine injectable suspension product (Bicillin L-A®) is the standard benzathine penicillin product in the U.S. for treating primary, secondary, and latent syphilis and is the only recommended treatment option for some patients.

Case: one occurrence of disease.

Case-based reporting: the process of reporting individual cases of reportable STIs by providers and/or laboratories to local and state health departments and then from state health departments to CDC.

Case finding: the process of identifying as many people as possible with an infection (cases), usually during an outbreak.

Case patient: a person who has been diagnosed with the infection or disease of interest.

Community-based organization (CBO): a public or private nonprofit organization that is representative of a community and works to meet community needs.

Community capacity: refers to characteristics of communities that affect their ability to identify, mobilize, and address public health problems.

Community engagement: the process of working collaboratively with and through groups of people connected by geographic proximity, special interests, or similar situations to address issues affecting the well-being of those people.

Community needs assessment: a systematic process for gathering, analyzing, and reporting data and information about the characteristics, capacity, needs, and concerns of a community.

Context: the setting and environmental influences in which a program operates (e.g., laws, regulations).

Glossary

Control measure: during an outbreak, an action taken that is believed to immediately stop transmission of the infectious agent.

Core variables: those variables that are requested to be collected for reports of STIs so that the transmission of notifiable disease reports to CDC is consistent between jurisdictions.

Data collection: the process of administering instruments and gathering responses.

Disease Intervention Specialist (DIS): public health professionals who use contact tracing and case investigation to prevent and control infectious diseases.

Dissemination: the process of communicating the procedures, results, and the lessons learned from an evaluation.

Early syphilis: the primary, secondary, or early latent stages of syphilis infection. Duration of infection is less than 12 months.

Economic evaluation: examines programmatic effects relative to the costs of the program. Common approaches include cost analysis, cost-benefit analysis, cost-effectiveness analysis, and cost-utility analysis.

Effectiveness evaluation: this relates to outcome evaluation, and it refers to a program's contribution to produce changes in the priority population or organization.

Electronic case reporting (eCR): the automated exchange of case report information between health care facilities and public health agencies.

Electronic health record (EHR): a digital version of a patient's paper chart. EHRs are real-time, patient-centered records that make information available instantly and securely to authorized users.

Electronic Laboratory Reporting (ELR): the transmission of digital laboratory reports from laboratories to health care and public health partners.

Emerging infectious diseases: those that have not occurred in humans before, have occurred previously but affected only small numbers of people in isolated places, or which have occurred throughout human history but have only recently been recognized as distinct diseases due to an infectious agent.

Endemic: the amount of a health event normally expected to be seen in a jurisdiction.

Epidemic curve, epi curve: a graphic depiction, using a histogram, of the number of cases identified by time, typically used during outbreak investigation.

Evaluation: an assessment using systematic data collection and analysis of one or more programs, policies, and organizations intended to assess their effectiveness and efficiency.

Glossary

Executive summary: a summary of a full evaluation report that concisely describes the evaluation activities, procedures, results, conclusions, and recommendations.

Expedited partner therapy (EPT): the clinical practice of treating the sex partners of patients diagnosed with chlamydia or gonorrhea by providing prescriptions or medications to the patient to take to their partner without the health care provider first examining the partner in order to prevent reinfection of the index patient and prevent further transmission of the STI.

Express clinic: a clinic that provides triage-based STI testing without a full clinical examination.

Fidelity: when a program or intervention is implemented as intended.

Formative evaluation: typically conducted to assess whether a program, policy, or organizational approach—or some aspect of these—is feasible, appropriate, and acceptable before it is fully implemented. This can include process and outcome measures.

Goal: a broad statement related to the purpose of the program, which states what the program will accomplish (the desired result).

Health communication: the crafting and delivery of messages and strategies, based on consumer research, to promote the health of individuals and communities.

Holistic: relating to or concerned with wholes or with complete systems rather than with the analysis of, treatment of, or dissection into parts.

Impact evaluation: Estimates and compares outcomes with and without the program, policy, or organization, usually seeking to determine whether a causal relationship can be established between the activity and the observed outcomes.

Incidence: a measure of the frequency with which new cases of illness, injury, or other health conditions occur among a population during a specified period.

Incident Command System (ICS): a standardized approach to incident management that is used for all kinds of incidents by all types of organizations and at all levels of government.

Incubation period: the time between the point when an infection-causing organism has entered a person and the first appearance of symptoms or a positive test for the infection.

Indicator: a specific, observable, and measurable accomplishment or change that shows whether progress has been made toward achieving a specific program output or outcome.

Glossary

Inputs: the resources (e.g., money, staff, materials) a program dedicates to achieving its goals and activities.

Intermediate outcomes: intended effects of the program that take longer to observe than short-term outcomes.

Internet partner services (IPS): a method of notifying exposed partners using technology such as email, social media and dating apps, and texting.

Intersectionality: interconnected nature of categorizations such as race, class, and sex as they apply to a given individual or group, regarded as creating overlapping and interdependent systems.

Intervention: any program, service, policy, or product that is intended to ultimately influence or change people's social, environmental, and organizational conditions as well as their choices, attitudes, beliefs, and behaviors.

Legitimate public health purpose: a population-based activity or individual effort aimed primarily at the prevention of injury, disease, or premature mortality.

Linguistic competence: the capacity of an organization and its personnel to communicate effectively and convey information in a manner that is easily understood by a variety of audiences including those who have low literacy skills or are not literate, individuals with disabilities, and those who are deaf or hard of hearing.

Logic model: a graphic depiction that presents the shared relationships among the resources, activities, outputs, outcomes, and impact for a program. It depicts the relationship between a program's activities and its intended effects.

Long-term outcomes: intended effects of a program in priority populations that may take several years to achieve, such as reduced disease transmission and incidence.

Moderate or high complexity tests: Classified by FDA as CLIA non-waived tests.

Morbidity: disease.

Mortality: death.

Motivational interviewing: a collaborative conversation style intended to strengthen the client's motivation and commitment to change.

Non-occupational post-exposure prophylaxis (nPEP): short-term treatment started as soon as possible after high-risk non-occupational exposure to an infectious agent, such as HIV.

Notice of Funding Opportunity (NOFO): a formal announcement by an agency of the federal government to inform prospective applicants that funds are available through an application process.

Glossary

Notifiable diseases: diseases that, when diagnosed, requires health providers to report to state or local public health officials.

Objectives: measurable statements that describe the manner in which the program goals will be achieved that help monitor progress toward achieving program goals.

Observation: in a quantitative study, observation relates to gathering numerical data, such as measurements or counts, that can be expressed in terms of a quantitative value. In a qualitative study, observation can be made from document review or from directly observing people, events, or behaviors to collect data.

Opt-out: a way of doing laboratory screening for an infection without requiring a specific patient's written consent for the test; when tests are conducted on an opt-out basis, the patient must decline a specific test.

Original or index person: person with newly diagnosed or reported STI. Also referred to as the original person or original person diagnosed with an STI.

Outbreak case definition: a standardized way of portraying what is meant by a case in a specific outbreak, including standard laboratory and clinical criteria present in the surveillance case definition limited by person, place, and time variables specific to the outbreak. May also include epidemiologic linkages to other cases.

Outbreak response plan (ORP): a written document prepared to delineate what actions the responsible entity will take and who will be involved in a response to a disease outbreak.

Outcome evaluation: a type of evaluation that determines the effects of program activities in priority populations (e.g., changes in knowledge, attitudes, beliefs, skills) or organization. The outcomes components of the logic model (the right side) are used to plan an outcome evaluation.

Outcomes: the intended effects or changes in priority populations resulting from the program.

Outputs: the direct products of program activities or services delivered (e.g., pamphlet developed, patients screened).

Partner services (PS): a broad array of services offered to people with HIV infection, syphilis, gonorrhea, or chlamydial infection and their partners, including notifying partners of their exposure.

Performance measures/measurement: ongoing monitoring and reporting of program accomplishments, particularly progress toward pre-established goals.

Person-centered approach: involves practices that emphasize communication, individuality, autonomy, and dignity of people receiving services, with respectful and non-coercive services led by trained staff.

Glossary

Point-source outbreak: a type of outbreak that has a common source of infection and one in which all people are exposed to the source of infection during a relatively brief period.

Post-exposure prophylaxis (PEP): prevention strategy that involves taking a medication to prevent an infection after a possible exposure. The use of PEP is a common strategy for prevention of HIV and other infections.

Pre-exposure prophylaxis (PrEP): comprehensive HIV prevention strategy that involves the daily use of antiretroviral medications to reduce the risk of HIV infection in HIV-negative individuals.

Prevalence: the number or proportion of existing cases, events, or attributes among a given population at a given point in time.

Prevention measure: during an outbreak, an action recommended that may prevent future transmission of the infectious agent.

Primary and Secondary (P&S) Syphilis: the most infectious stages of syphilis.

Primary data: data directly obtained by the researcher/evaluator (e.g., surveillance, number of sex partners of syphilis cases collected through DIS interviews).

Process components: actions that are planned for a program.

Process evaluation: also referred to as implementation evaluation, is a type of evaluation that determines whether a program and its activities are implemented as intended and why/why not. Information gathered is used for refining or modifying these activities and related procedures. The inputs, activities, and outputs of a logic model are used to plan a process evaluation.

Program: any set of related activities undertaken to achieve an intended outcome.

Process objectives: measurable statements describing program activities and the actions involved in their implementation.

Project officer: the CDC designee to the funded program who ordinarily serves as the first point of contact and may provide technical assistance or referral to another technical monitor or other subject matter experts.

Propagated outbreak: an outbreak that is being transmitted from person to person, with cases occurring over more than one incubation period.

Prophylactic treatment: providing curative treatment, in the absence of test results, to those exposed to an STI for the purpose of stopping incubating infection.

Qualitative Data: type of data collected and analyzed in a non-numerical form.

Quality: reflects the completeness and validity of the data used for surveillance.

Quantitative data: numerical information.

Glossary

Relevant parties: people or organizations having an investment in the evaluation, such as those served or affected by the program, those planning or implementing the program, those who might use the evaluation findings, and those who are skeptical about the program.

Reliability: the consistency of a measure or question in obtaining very similar or identical results when used repeatedly.

Reportable diseases: diseases that each state or territory decides are important locally to be informed about by health care providers and laboratories.

Screening: the presumptive identification of unrecognized and asymptomatic infection by the application of tests that can be applied rapidly.

Secondary data: previously collected local-, state-, or national-level STI-related information (on STIs or priority populations) from other organizations that was not collected specifically for a program's purposes but may prove useful.

Secondary prevention: activities to identify a disease before symptoms appear so that treatment may be provided early.

Sexual health: a state of physical, emotional, mental, and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction, or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination, and violence.

Short-term outcomes: immediate effects of the program on priority populations, such as changes in knowledge, attitudes, skills, awareness, or beliefs.

SMART objectives: an acronym describing criteria used to write objectives that are Specific, Measurable, Achievable, Relevant, and Time-bound.

Specialized clinic: an STI clinic that provides comprehensive, confidential services including same-day diagnostic and treatment services and all services provided by a basic clinic.

Standard precautions: a set of protocols designed to reduce the risk of (or prevent) transmission of pathogens.

Standing orders: the signed instructions of a licensed physician that outline the medical assessment, appropriate testing, and treatment that a clinician may perform or deliver on behalf of the physician.

STAT: in medical terminology, an action that is performed instantly, such as a test.

Stigma: negative attitudes, beliefs, or stereotypes people may hold towards individuals or groups, associated with isolation and rejection.

Strategic planning: a process for defining and determining an organization's roles, priorities, and direction.

Glossary

Surveillance case definition: a set of uniform criteria used to define a disease for public health surveillance that enables public health officials to classify and count cases consistently across reporting jurisdictions.

Syndemic: the co-occurrence of more than one epidemic, as HIV and tuberculosis, or substance use and mental illness, especially in relation to the synergistic biological, social, and psychological interactions of these conditions that contribute to excess burden of disease in a population.

Tabletop exercise (TTX): discussion-based sessions where team members meet in an informal classroom setting to discuss their roles during an emergency and their responses to a particular emergency situation.

Timeliness: refers to the availability of data rapidly enough for public health authorities to take appropriate action.

Titer: the concentration of an antibody, as determined by finding the highest dilution at which it is still able to cause agglutination of the antigen.

Trauma: an event, series of events, or set of circumstances that is experienced by an individual as physically or emotionally harmful or life-threatening and that has lasting adverse effects on the individual's functioning and mental, physical, social, emotional, or spiritual well-being.

Trauma-informed approach, or trauma-informed care: recognition of the widespread impact of trauma and potential paths for recovery; recognition of the signs and symptoms of trauma in clients, families, staff, and others involved with the system; and responses that fully integrate knowledge about trauma into procedures and practices, while seeking to actively resist re-traumatization.

Users of an evaluation: the specific people and organizations that will employ the evaluation findings (e.g., STI program manager, CBO, funder).

Uses of an evaluation: the specific ways that program staff and other relevant parties will apply what is learned from the evaluation (e.g., change STI clinical practice, inform STI prevention policy).

Validity: the extent to which a question, variable, or data measure what they are intended to measure.

Visual Case Analysis (VCA): a paper and electronic tool that allow DIS to plot and view details of the original person's syphilis case in relation to their partners as part of syphilis case management.

Waived tests: classified by FDA as a test that requires a laboratory to have a CLIA certificate of waiver. It is typically a simple test with low risk of an incorrect result—often rapid or point-of-care tests.

Acronyms

AAR: after-action review

AED: automated external defibrillator

AIDS: acquired immunodeficiency syndrome

AMA: American Medical Association

APHA: American Public Health Association

ART: antiretroviral therapy

ASPE: Assistant Secretary for Planning and Evaluation (HHS)

ASTHO: Association of State and Territorial Health Officials

ATSDR: Agency for Toxic Substances and Disease Registry (HHS)

BRFSS: Behavioral Risk Factor Surveillance System

CARS: Community-based Approaches to Reducing Sexually Transmitted Diseases

CBO: community-based organization

CBPR: community-based participatory research

CDC: Centers for Disease Control and Prevention (HHS)

CDR: communicable disease report

CEDIS: community-embedded disease intervention specialist

CHC: community health center

CLIA: Clinical Laboratory Improvement Amendments

COVID-19: coronavirus disease 2019

CPR: cardiopulmonary resuscitation

CPSTF: Community Preventive Services Task Force

CS: congenital syphilis

CSTE: Council of State and Territorial Epidemiologists

CT: *Chlamydia trachomatis*

CY: current year

DI: disease intervention

DIS: disease intervention specialist

DSTDP: Division of STD Prevention (CDC)

eCR: electronic case reporting

ED: emergency departments

eHARS: Enhanced HIV/AIDS Reporting System

Acronyms

EHE: Ending the HIV Epidemic initiative

EHRs: electronic health records

ELR: electronic laboratory report

EOB: explanation of benefits

EPT: expedited partner therapy

FDA: Food and Drug Administration (HHS)

FEMA: Federal Emergency Management Agency

FQHC: Federally Qualified Health Centers

GBMSM: gay, bisexual, and other men who have sex with men

GC: *Neisseria gonorrhoeae*

HBV: hepatitis B virus

HHS: United States Department of Health and Human Services

HIPAA: Health Insurance Portability and Accountability Act

HIV: human immunodeficiency virus

HPV: human papillomavirus

HRSA: Human Resources and Services Administration (HHS)

ICCR: interstate communications control records

ICS: incident command system

IPS: internet partner services

ISTDI: Introduction to STD Interviewing

IT: information technology

LPN: licensed practical nurse

LRN: Lab Response Network

LVN: licensed vocational nurse

LY: last year

MA: medical assistant

MCM: medical countermeasures

MMWR: Morbidity and Mortality Weekly Report

MSM: men who have sex with men

NAAT: nucleic acid amplification tests

NACCHO: National Association of County and City Health Officials

Acronyms

NASEM: National Academy of Sciences, Engineering, and Medicine

NAPA: National Academy of Public Administration

NASTAD: National Alliance of State and Territorial AIDS Directors

NCHHSTP: National Center for HIV, Viral Hepatitis, STD, and Tuberculosis Prevention (CDC)

NCSD: National Coalition of STD Directors

NHM&E: National HIV Prevention Program Monitoring and Evaluation (CDC)

NIH: National Institutes of Health (HHS)

NNDITC: National Network of Disease Intervention Training Centers

NNDSS: National Notifiable Diseases Surveillance System

NOFO: Notice of Funding Opportunities

NP: nurse practitioner

nPEP: non-occupational post-exposure prophylaxis

OPA: Office of Pharmacy Affairs (HHS)

ORP: outbreak response plan

OSHA: Occupational Safety and Health Administration (U.S. Department of Labor)

PA: physician's assistant

P&S (syphilis): primary and secondary syphilis

PEP: post-exposure prophylaxis

PHAB: Public Health Accreditation Board

PHI: protected health information

PHIS: public health information systems

PID: pelvic inflammatory disease

POC: point-of-care

POD: point of dispensing

PPE: personal protective equipment

PrEP: pre-exposure prophylaxis

PS: partner services

QCS: quality clinical services

RECAP: rapid ethnographic community assessment

RN: registered nurse

Acronyms

RPR: rapid plasma reagin

RWHAP: Ryan White HIV/AIDS Program (HHS)

SAMHSA: Substance Abuse and Mental Health Services Administration (HHS)

SD: standard deviation

SMART: specific, measurable, achievable, relevant, and time-bound

SME: subject matter expert

SNAP: Supplemental Nutrition Assistance Program (U.S. Department of Agriculture)

SSuN: STI Surveillance Network

STD: sexually transmitted disease

STD PCHD: Strengthening STD Prevention and Control for Health Departments (cooperative agreement CDC-RFA-PS19-1901)

STI: sexually transmitted infection

STIC: sexually transmitted infection costs

STLT: state, tribal, local, and territorial

TAT: turnaround time

TB: tuberculosis

TB COEs: Tuberculosis Centers of Excellence for Training, Education, and Medical Consultation

TTX: tabletop exercise

USPSTF: United States Preventive Services Task Force

VCA: visual case analysis

WIC: Special Supplemental Nutrition Program for Women, Infants, and Children (U.S. Department of Agriculture)

Appendices

Appendix 1: Sample Checklist for STI Program Manager Training

Employee name: _____ Training Supervisor name: _____

CONTENT	METHOD(S) OF COMPLETION	DATES	INITIALS
Example: Trainee is competent describing sexually transmitted infections and diseases—including natural history, transmission, prevention, symptoms, and sequelae	• *Successfully completed all modules in National STD curriculum* • *Document review (CDC fact sheets on STIs)*	*MM/DD/YY to MM/DD/YY*	*Employee and supervisor could initial here to document completion*
Trainee is competent describing all sexually transmitted infections and diseases—including natural history, transmission, prevention, symptoms, and sequelae.			
Trainee has an understanding of how the STI organization fits into the state's organizational authority for health entities.			
Trainee understands critical information about Disease Intervention, including a) the communicable disease reporting process, disease intervention activities and practices, including how the jurisdiction's DIS are allocated and how they are funded; b) STI clinical services available in the jurisdiction; c) prioritization of DIS case investigations; and d) status of STI morbidity in the jurisdiction.			
Trainee understands the STI organization's key partnerships at the federal level.			
Trainee has been oriented to the jurisdictional health care providers—including doctors, hospitals, and STI clinics and their role in STI prevention and treatment activities.			
Trainee can identify the jurisdictional laboratories, including commercial and public health labs, and understands their roles and challenges in reporting STIs.			
Trainee has an understanding of the local health departments, community-based organizations used by STI program clients, maternal and child health programs, and HIV programs.			
Trainee can name state-level decision-makers affecting the jurisdiction's STI program.			
Trainee understands detailed information about the current state of the new program manager's specific STI program in the STLT jurisdiction, including its: • organizational chart, staff contact information, and staff areas of expertise; • current program functions; • current funding streams; • current mission statement, vision statement, goals, values, and strategy (if these exist); • current partnerships and collaborations; • current grants and grant cycle schedules; • current status of the program: gaps, needs, and urgent tasks; and • current program technology and program resources.			

Appendix 2: Components of an STI Program Logic Model

The table below defines each element of a logic model and provides relevant examples for STI programs.

COMPONENTS	MODEL ELEMENTS	STI PROGRAM EXAMPLES
Process components (planning elements)	Inputs are the resources that go into a program (e.g., money, staff, and materials).	• direct and in-kind funding • assigned staff • community partnerships • equipment
	Activities are the actual events that take place as part of a program.	• conduct screening, testing, and treatment • conduct professional development trainings • develop coalitions • develop educational materials
	Outputs are the direct products of program activities.	• patients screened, tested, and treated for STIs • quality of the professional development activities conducted • coalition meetings held • educational brochures distributed
Outcome components (intended effects)	Short-term outcomes are the immediate effects of a program (e.g., changes in knowledge, attitudes, skills, awareness, or beliefs of priority populations).	• increased proportion of patients treated for STIs • increased identification of partners • increased awareness of STI transmission and prevention among patients • improved condom use skills among patients
	Intermediate outcomes are intended effects of a program that take longer to occur (e.g., changes in policy or individuals' behavior).	• increased proportion of partners treated • decreased number of sexual partners among priority population(s) • increased abstinence among high school students • increased use of condoms among priority population(s)
	Long-term outcomes are intended effects of a program that may take several years to achieve.	• reduced STI transmission • reduced STI prevalence

Appendix 3: Outbreak Response Plan Checklist

OVERVIEW:

This checklist may be used to assist the review and assessment of jurisdictions' outbreak response plans. The major sections and subsections follow the Outbreak Response Plan Guide. This is not an exhaustive list of required outbreak response plan contents. As applicable, ensure verifiable documentation is available for each checklist item.

1.0 BACKGROUND & CONTEXT

- ☐ An STI program structure overview is available and outlines the following:
  - Organizational structure
  - Duties and responsibilities of the STI program
  - Legal authorities if applicable
  - Relevant program information (surveillance systems, disease investigation procedures, etc.)
  - Key points of contact
- ☐ An outbreak response plan revision history log is available.

2.0 OUTBREAK PREPAREDNESS

2.a. Routine Data Review Processes

- ☐ Surveillance systems are clearly defined and mapped to pre-defined metrics, triggers, and/or thresholds used to determine if an outbreak is occurring.
- ☐ Data management standards are defined.
- ☐ Data analysis procedures are defined and tailored to special populations at greater risk of effect by outbreak.
- ☐ Surveillance systems and data management standards are reviewed at least annually.

2.b. Roles and Responsibilities

- ☐ Outbreak response roles, responsibilities, and staff are clearly defined.

2.c. Management Structure

- ☐ Mechanism for coordination and communication with emergency management/operations group is defined and active prior to an outbreak.

2.d. Additional Staffing and Resource Capacity

- ☐ Available resources and funding for outbreak response are defined, and anticipated needs during outbreaks are projected.
- ☐ Required trainings for outbreak response staff are defined.
- ☐ Current DIS staffing footprint is defined, and current STI program and partner services caseloads are documented.
- ☐ DIS staff outside of jurisdiction are identified for potential outbreak response support, and the requirements for assistance are delineated.
- ☐ Non-STI program staff are identified for potential outbreak response support and the requirements are delineated.

2.e. Data Security

- ☐ An outbreak data security plan, or program data security plan, is in place and includes procedures for staff access to PII and PHI.

2.f. Communications Plan

- ☐ A communications plan is in place including designated person(s) responsible for communicating outbreak related messaging in alignment with health department's broader communication, policy, and legal standards.

2.g. Identify, Coordinating, and Engaging with Partners

- ☐ A list of established internal and external partners is readily available for outbreak response including community members in affected communities.
- ☐ Roles and responsibilities of partners during an outbreak response are defined.

2.h. Modification of Standard Disease Prioritization and Program Procedures

- ☐ Standard program structure modification procedures are defined prior to outbreak response.
- ☐ Standard testing and treatment policies to maintain or change during outbreak response are defined.

Appendix 3

3.0 OUTBREAK INVESTIGATION AND RESPONSE

3.a. Objectives

- ☐ Outbreak response objectives are clearly defined.

3.b. Determine the Existence of an Outbreak

- ☐ Surveillance data processes, thresholds, and triggers for response plan initiation are reviewed and up to date.

3.c. Activation of Outbreak Response Plan

- ☐ Scenarios and thresholds for outbreak activation are reviewed and documented.
- ☐ A notification contact list (internal, external, state, and CDC) and procedures for notification are developed and up to date.

3.d. Establish Case Definition and Find Cases

- ☐ Processes and criteria for establishing a case definition are documented and up to date.
- ☐ Partners for case finding are clearly defined and points of contact are included.

3.e. Verify Diagnoses

- ☐ Processes for verifying cases, including review of clinical and laboratory case data, is documented.

3.f. Describe the Data and Determine Who Is at Risk of Becoming Ill

- ☐ Procedures for data collection, management, and analysis are defined including, but not limited to, surveillance/data systems; methodologies; software and tools; key populations and geographic areas; schedule for review of disease and epidemiologic trends; etc.

3.g. Implement Infection, Prevention, and Control (IPC) Measures

- ☐ Procedures and criteria for deploying IPC measures are defined.
- ☐ Protocols for IPC measures including, but not limited to, personal protective equipment; environmental cleaning and disinfection, isolation precautions, etc., are readily available.
- ☐ Available IPC trainings are defined. IPC training gaps and/or needs are projected.

3.h. Implement Partner Services

- ☐ Procedures and protocols for partner services and disease intervention strategies are in place.

3.i. Implement Testing, Treatment, and/or Vaccination Services

- ☐ Protocols for testing, treatment, and vaccination services are available.
- ☐ Processes for deploying and tracking commodities is in place.

4.0 OUTBREAK CLOSURE AND RECOVERY

4.a. Demobilization of Response and Enhanced Monitoring

- ☐ Demobilization criteria are clearly defined.
- ☐ Period of enhanced monitoring or heightened preparedness is defined.
- ☐ Schedule for review of outbreak response plan, including simulation exercises, is established.
- ☐ After-Action Review template is developed, including key participants to be included and community engagement and communication plan following outbreak.

4.b. Evaluate Response

- ☐ Evaluation plan, including evaluation questions, methodologies, performance metrics, data sources, dissemination strategies, etc., is available.
- ☐ Timeline for review of evaluation findings and recommended updates to outbreak response plan is established.