



## **Guidance for Syphilis Elimination Effort Evidence-based Action Planning**

Syphilis Elimination (SE) activities are more likely to be successful when they are carefully planned, managed, and monitored. Evidence-based action planning is a strategy to assist the planning and management of syphilis prevention and control programs. The epidemiology of syphilis is always changing. SE programs must respond to changes in the epidemiology by directing efforts toward emerging at-risk populations. Furthermore, awareness of the costs and benefits of different interventions will help programs choose the most efficient intervention activities.

An evidence-based action plan guides the collection of information on the target populations, interventions provided, resource allocated, and outcomes in order to facilitate program assessment, improve effectiveness, and inform decisions about future program development.<sup>1 2</sup> Evidence-based action plans give credibility to the organization, ensure that all components of a local intervention are considered, ground interventions in reality, and improve efficiency and accountability.

A number of state and local STD programs are moving toward a more evidence-based approach to syphilis prevention and control interventions. The purpose of this document is to provide guidance for the development of an SE Evidence-based Action Plan that will facilitate gathering information and tracking resources, and provide a framework for ongoing evaluation of syphilis interventions.

### **All HMAs will create an annual evidence-based Action Plan**

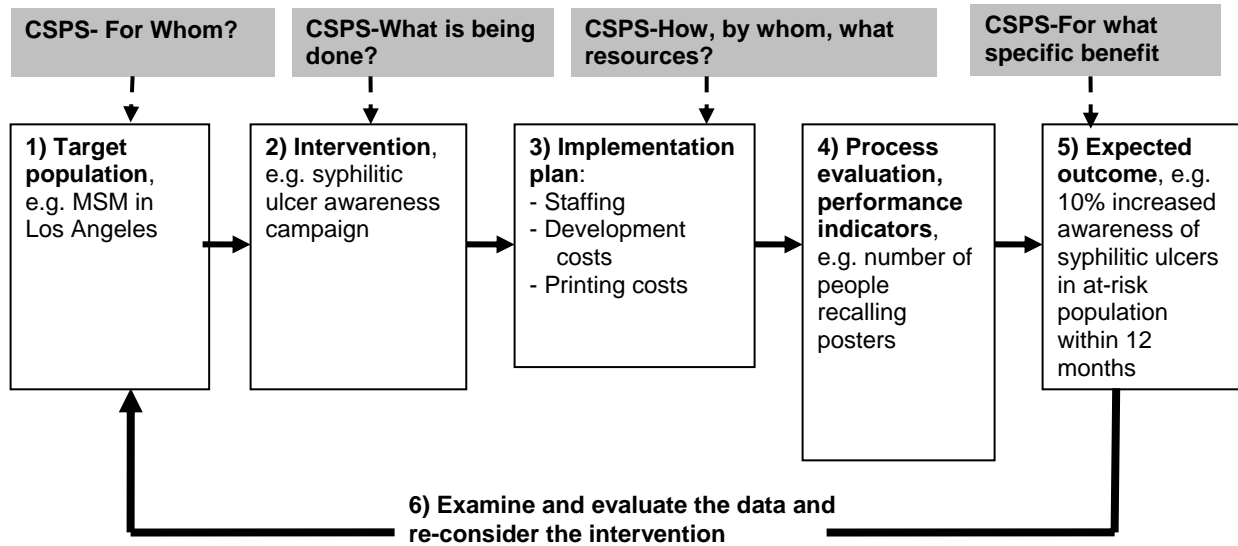
The *Comprehensive STD Prevention Systems* (CSPS) grant guidance requires that SE applications include a Syphilis Elimination Monitoring Plan that monitors the activities and progress toward meeting the objectives developed for each SE strategy. This guidance is not an expanded scope of work, but rather it is aimed at providing more clarification regarding the content of the monitoring plans. Beginning in fiscal year 2008, SE programs will be required to use an evidence-based action plan.<sup>3</sup> SE grantees will be asked to describe action plans for their SE interventions using the guidance provided below. Activities included in the plan should be those conducted by the state or local health departments and those conducted by community-based organizations (CBOs) that receive funding from the health department.

In FY2008 each SE grant applicant will be required to submit a monitoring plan for its interventions, using the format in this action planning guidance. For ongoing interventions, the program must provide data on the target population, the intervention, resources used, performance indicators, and outcomes. If an intervention is new to the program, then a plan for collection of data to measure the outcomes will be required. In future years, programs will be asked to use the data collected to improve interventions.

SE action plans should be reviewed regularly. It is recommended that local SE coordinators review progress at least quarterly. As is already required by the CSPS, six-month performance reports will be submitted to CDC. Annual SE action plans and progress reports prepared by the project areas will be reviewed by the CDC program consultant and the CDC Syphilis Elimination Effort Implementation Monitoring Group (SEE IMG) for compliance with the requirements of individual monitoring plans.

# The Syphilis Elimination evidence-based Action Planning framework<sup>4</sup>

Note- An action plan is needed for each SE intervention.



## Understanding the elements of the Action Plan

In general, individual syphilis prevention and control activities are parts of a whole STD control effort or local public health program. Therefore it is important to understand and appreciate the influence of relationships both between the components of an STD program and between the elements of the SE action plan.

For ongoing interventions, elements 1–6 of the six elements described below will be required in grant applications and six-month progress reports; only elements 1–5 will be required for a new intervention.

### 1) Target population

The program should describe the target population for the intervention and provide justification for why the target population was selected. Demographic and epidemiologic data should support the choice of the population as a target of the intervention. For example, an intervention may target white men who have sex with men (MSM) between the ages of 25 and 45 years, because they have the highest rates of syphilis.

### 2) Intervention

The intervention may be traditional, (e.g., screening and treatment, partner services, or behavioral change activities) or it may be a novel intervention (e.g. a syphilitic ulcer awareness campaign). Separate monitoring plans may be helpful if the same intervention is used in two different populations (partner notification in the MSM population and partner notification in the heterosexual population) or in two different venues (screening in a mobile van and screening in a jail).

### **3) Implementation plan**

The SE grantee should describe the amount, type, and cost of the resources required to implement the intervention.

### **4) Process evaluation and performance indicators**

The action plan should include performance indicators such as: the number of syphilis tests conducted per month; the number of provider visits per month; the number of partners elicited per month; the number of people who recall seeing a poster.

### **5) Expected outcomes**

The ideal long term outcome is the decreased incidence of P&S syphilis. However, short term outcomes such as increased awareness of a campaign in the community, or intermediate outcomes such as behavior change in the at-risk population or practice changes among private healthcare providers, may be used in the plan.

### **6) Examine and evaluate the data and re-consider the intervention**

SE programs should regularly review the data collected to determine the effectiveness of an intervention in achieving stated program objectives. SE programs are asked to use these data to analyze the success of interventions during the current year and to inform the development of subsequent interventions. Starting in FY2009, if an intervention is demonstrated not to be effective in achieving the determined outcome, then in the application the program will provide a description of planned changes in the intervention or reallocation of SE resources to achieve the stated outcome. Alternatively, the program may provide justification for continuation of the intervention without change.

## Action Planning Examples

To illustrate how the guidance may be applied, below is a series of examples using four (4) commonly implemented intervention activities. In each of the examples, the intervention described may be conducted either by a state or local health department or by a CBO that is funded by the health department. Please note that these are only examples and are not intended to include all intervention possibilities or to set standards for intervention effectiveness.

### Example A – Screening for syphilis in a mobile van

#### 1) Target population

The primary and secondary (P&S) syphilis rate in city A in 2005 among men was 20.0/100,000 and among women 0.3/100,000. Other studies have found that MSM accounted for 95% of P&S syphilis cases in men reported in city A. The intervention is targeted to MSM, because they have the highest P&S syphilis rate in the city.

#### 2) Intervention

A mobile van goes into the community three nights each week, from 6:00 pm to 12:00 am. Although the location of testing varies from night to night, area selection was guided by findings from an ethnographic study that identified venues with the highest prevalence of high-risk MSM behaviors. The van is clearly marked as a free syphilis testing facility, and staff members congregate outside of the van to enable them to engage interested individuals who may approach. After soliciting a focused medical history and contact information, a venipuncture is performed and the collected specimen is transported to the state laboratory the following morning.

#### 3) Implementation plan

Staffing the van requires two employees to spend six hours per day for three days each week, working 50 weeks per year.

- The input of labor hours each year:  
 $1800 \text{ hours/year} \times \$20/\text{hour} = \mathbf{\$36,000/\text{year for labor costs}}$
- Cost to operate the van each year (includes lease payments, insurance, fuel, and maintenance):  
 $\mathbf{\$50,000/\text{year for van costs}}$
- Specimen collection materials (venipuncture equipment, vacutainers, etc.):  
 $\$2.00/\text{test} \times 3000 \text{ test/year} = \mathbf{\$6000/\text{year for testing supplies costs}}$

#### 4) Process evaluation and performance indicators

The program finds that over a one-year period it screens an average of 20 people each day, three days each week, and 50 weeks each year. The process measure is the number of people tested in the van each year: **3000 individuals**

#### 5) Expected outcomes

The program finds that among 3000 people screened during the year, it diagnoses nine early syphilis cases. Ideally the long-term outcome will be decreased incidence of P&S syphilis, so surveillance data will be monitored for rates in the following fiscal year.

#### 6) Examine and evaluate the data and re-consider the intervention

The program reviews the data collected from the previous year:

- The input of labor hours per case of early syphilis diagnosed:  
 $1800 \text{ hours/year} \div 9 \text{ cases/year} = \mathbf{200 \text{ hours/early syphilis case}}$
- The cost per case of early syphilis diagnosed (a staff salary of \$20/hour, an annual van cost of \$50,000, and testing supplies cost of \$6000):  
 $(200 \text{ hours/case} \times \$20/\text{hour}) + (\$50,000 \div 9 \text{ cases}) + (\$6000 \div 9 \text{ cases}) = \mathbf{\$10,223/\text{early syphilis case}}$

After re-considering the intervention, the program determines that too many staff hours were put into the intervention for the outcome achieved.

Note – Please see Ciesielski *et al.* who reported that 0.3% of individuals tested in a mobile van were diagnosed with early syphilis.<sup>5</sup>

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### Example B – Screening for syphilis in a jail

#### 1) Target population

The incarcerated population in city B is at increased risk for STDs. The prevalence of early syphilis among screened inmates in jails from 2000-2003 was found to be 1.3%, and was the highest rate found among several non-medical screening venues.<sup>5</sup> The screening intervention is targeted at the jail population because of its high rates of early syphilis.

#### 2) Intervention

The intervention occurs at two correctional facilities:

a) County jail – Screening occurs from 7:00 am to 11:00 pm seven days per week for 50 weeks per year. Each day is divided into two, eight-hour shifts, and two health department employees work during each eight-hour shift. After a new inmate completes the intake process, the intake clerk escorts the inmate to the private office occupied by the health department staff. The inmate is offered syphilis screening, and the specimen is collected and stored for transport to the state laboratory the next morning. A list of inmates booked between 11:00 pm and 7:00 am is given to the first shift staff, and they have these individuals brought to their office to offer screening. Specimens are tested the same day received by the laboratory, and results are faxed to the jail that afternoon. The staff members search the health department database for the individual's history, and notify the jail medical staff of inmates who require treatment. If an inmate is released prior to treatment, the jail staff members pass the inmate's information on to Disease Intervention Specialist (DIS) colleagues.

b) Juvenile detention center – The protocol followed is as described above.

#### 3) Implementation plan

a) County jail – Staffing the jail requires that two employees spend eight hours per day for two shifts per day, for seven days per week, and 50 weeks per year.

- The input of labor each year:  
 $11,200 \text{ hours/year} \times \$20/\text{hour} = \mathbf{\$224,000/\text{year for labor costs}}$
- Specimen collection materials (venipuncture equipment, vacutainers, etc.):  
 $\$2.00/\text{test} \times 3750 \text{ tests/year} = \mathbf{\$7500/\text{year for testing supplies costs}}$

b) Juvenile detention center – The staffing requirements are as above:

- The input of labor each year:  
 $11,200 \text{ hours/year} \times \$20/\text{hour} = \mathbf{\$224,000/\text{year for labor costs}}$
- Specimen collection materials (venipuncture equipment, vacutainers, etc.):  
 $\$2.00/\text{test} \times 2000 \text{ tests/year} = \mathbf{\$4000/\text{year for testing supplies costs}}$

#### 4) Process evaluation and performance indicators

a) In the adult jail, on average over a 50 week period, the program screens about 75 people per week. The process measure is the number of inmates screened each year: **3750 inmates**

b) In the juvenile detention center, on average over a 50 week period, the program screens about 40 people per week. The process measure is the number of detainees screened each year: **2000 detainees**

## 5) Expected outcomes

- a) The program screens 3750 inmates in a year and finds 50 early syphilis cases. Surveillance data in the city for the subsequent year should demonstrate a decrease in the incidence of P&S syphilis.
- b) The program screens 2000 detainees over a year and finds two early syphilis cases. Ideally, the long term outcome would be a decreased incidence of P&S syphilis in the community.

## 6) Examine and evaluate the data and re-consider the intervention

- a) The program reviews the data collected in the previous year for its county jail screening intervention:
- The input of labor hours required per case of early syphilis diagnosed:  
 $11,200 \text{ hours/year} \div 50 \text{ cases/year} = \mathbf{224 \text{ hours/early syphilis case}}$
  - The cost per case of early syphilis diagnosed (assuming a staff salary of \$20/hour and testing supplies cost of \$7500):  
 $(224 \text{ hours/case} \times \$20/\text{hour}) + (\$7500 \div 50 \text{ cases}) = \mathbf{\$4630/\text{early syphilis case}}$

If some of the labor for jail screening is provided by the correctional system, then the effort becomes more efficient. For example, if half of the labor hours are provided by jail staff, then the net input of health department labor per case of syphilis diagnosed is reduced to 112 hours/case of syphilis.

- The input of labor hours required per case of early syphilis diagnosed:  
 $5600 \text{ hours/year} \div 50 \text{ cases/year} = \mathbf{112 \text{ hours/ early syphilis case}}$
- The cost per case of early syphilis diagnosed (assuming a staff salary of \$20/hour and testing supplies cost of \$7500):  
 $(112 \text{ hours/case} \times \$20/\text{hour}) + (\$7500 \div 50 \text{ cases}) = \mathbf{\$2390/\text{early syphilis case}}$

- b) The program reviews the data collected in the previous year for its juvenile detention center screening intervention:

- The input of labor hours required per case of early syphilis diagnosed:  
 $11,200 \text{ hours/year} \div 2 \text{ cases/year} = \mathbf{5600 \text{ hours/early syphilis case}}$
- The cost per case of early syphilis diagnosed (assuming a staff salary of \$20/hour and testing supplies cost of \$4000):  
 $(5600 \text{ hours/case} \times \$20/\text{hour}) + (\$4000 \div 2 \text{ cases}) = \mathbf{\$114,000/\text{early syphilis case}}$

The program finds screening inmates at the county jail is a good value because it identifies 50 cases of early syphilis with a reasonable input of staff effort, and decides to continue this intervention. But screening at the juvenile detention center requires too many staff hours to detect only two cases of early syphilis. The program chooses to discontinue screening at the juvenile detention center and re-direct the resources.

Note– Ciesielski *et al.* and by Silberstein *et al.* describe jail screening programs.<sup>5 6</sup>

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## Example C – Partner notification

### 1) Target population

The P&S syphilis rate in the city C in 2005 among men was 19.0/100,000 and among women 0.6/100,000. Most of the cases in men were diagnosed among MSM. The intervention is targeted to MSM, because they have the highest P&S syphilis rate in the city.

### 2) Intervention

Four DIS staff members interview newly-diagnosed syphilis patients – index cases – to solicit a list of their sexual partner names' and contact information. Each DIS staff member works 20 hours each week attempting to contact the named partners. Contact and communication with the named partners is attempted by locating them at home, by telephone, or by electronic mail.

### 3) Implementation plan

Four DIS staff members work four hours per day, five (5) days per week, and 50 weeks per year on partner notification.

- The input of labor hours each year:  
 $4000 \text{ hours/year} \times \$20/\text{hour} = \mathbf{\$80,000/\text{year for labor costs}}$
- Cost to provide cars for DIS staff (includes lease payments, insurance, maintenance, fuel):  
 $\mathbf{\$20,000/\text{year for car costs}}$

### 4) Process evaluation and performance indicators

In a one-year period, 200 index syphilis cases in MSM are reported to the health department, and each of these index cases has an average of seven partners. Over twelve months, 18 partners with early syphilis are located, and referred for treatment. In addition, the DIS investigations identify 20 people who are epi treated.<sup>7</sup>

### 5) Expected outcomes

Surveillance data the following year will be monitored for a decrease in P&S syphilis, the ideal long-term outcome.

### 6) Examine and evaluate the data and re-consider the intervention

Data from the past year is reviewed:

- Individuals located and treated, and epi-treated individuals:  
 $18 \text{ people} + 20 \text{ people} = \mathbf{38 \text{ people treated}}$
- The input of labor hours per individuals treated:  
 $4000 \text{ hours/year} \div 38 \text{ people treated/year} = \mathbf{105 \text{ hours/ person treated}}$
- The cost per person treated (a staff salary of \$20/hour and annual car costs of \$20,000):  
 $(105 \text{ hours/person treated} \times \$20/\text{hour}) + (\$20,000 \div 38 \text{ persons treated}) = \mathbf{\$2626/\text{person treated}}$

Although only a small number of infected partners are located, the intervention resulted in the epi-treatment of several individuals. The program decides to continue this intervention for one more year and then to re-evaluate it.

Note – Hogben *et al.* describes partner notification in the MSM population.<sup>8</sup>

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## Example D – Syphilitic ulcer awareness campaign

### 1) Target population

The P&S syphilis rate in city D in 2005 among men was 23.0/100,000 and among women 0.7/100,000. Other studies have found that most of these cases in men occur among MSM. The intervention is targeted to MSM, because they have the highest P&S syphilis rate in the city.

### 2) Intervention

A syphilitic ulcer awareness campaign is implemented in a program area. Prior to designing the campaign, focus groups were conducted to assess barriers to ulcer recognition. Venues for billboard, poster, and pamphlet placement were selected by reviewing DIS interview records from the previous year. Weekly ads were placed in gay newspapers, and banners were run on gay websites.

### 3) Implementation plan

To implement the media campaign, two health department staff members each work four hours per day, five days per week, for six months on the campaign.

- The labor costs for the campaign (assuming a staff salary of \$20/hour):  
 $40 \text{ hours/week} \times \$20/\text{hour} \times 24 \text{ weeks} = \mathbf{\$19,200}$

- Focus group participant incentives: **\$800**
- Media costs (i.e. pamphlets, posters, billboards): **\$5000**
- Total cost: **\$25,000**

#### 4) Process evaluation and performance indicators

The at-risk community consists of 20,000 individuals. The program conducted a street survey of 200 members of the at-risk community prior to the initiation of the campaign to see if they recognized symptoms of syphilis; approximately 50 individuals responded correctly. One year later the same survey took place in the same community and 70 individuals correctly responded to questions on symptom recognition.

- The increase in the number of at-risk community members who recognized symptoms of syphilis:  
 $20 \text{ additional people} \div 200 \text{ surveyed people} = 0.10$ , or a **10% increase in community awareness**
- $20,000 \text{ at-risk individuals in the community} \times 0.10 \text{ increase} = \mathbf{2000 \text{ additional people}}$

#### 5) Expected outcomes

Surveillance data would reveal an increased fraction of primary syphilis cases diagnosed compared to other stages of syphilis within the first year of the campaign.

#### 6) Examine and evaluate the data and re-consider the intervention

- The cost per additional at-risk community member who recognized symptoms of syphilis:  
 $\$25,000 \div 2000 \text{ additional people} = \mathbf{\$12.50/\text{additional community member who could recognize symptoms of syphilis}}$

This intervention is found to be effective in increasing awareness of syphilitic ulcers, and was relatively inexpensive. The program decides to reprise the campaign in the following fiscal year, and to explore this type of intervention to convey other STD prevention messages.

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