CARDEA
Training, Organizational Development and Research

Chlamydia and Gonorrhea Prevalence Monitoring

Using Local Data to Guide Programmatic Decision-Making

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Cardea

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Cardea serves as the STD-related Reproductive Health Training & Technical Assistance Center (STDRHTTAC) for U.S. Public Health Service Regions VI, IX and X. Cardea has developed this toolkit as part of a resource portfolio to support public health programs in enhancing the prevention and treatment of STDs. Along with this toolkit, the portfolio includes:

- Webinars and other resource materials
- An online learning community to facilitate peer learning related to billing and reimbursement
- Customized training and technical assistance

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Information and resources are available at **www.cardeaservices.org/stdrhttac**

INTRODUCTION

Background

From 1988 to 2012, states and jurisdictions supported through federal Infertility Prevention Project (IPP) funds were required to submit data on chlamydia and gonorrhea (CT/GC) testing to the Centers for Disease Control and Prevention (CDC). These data were known as "prevalence monitoring data" and included basic clinic, demographic, and visit descriptors, as well as test type and test result. While prevalence monitoring data is no longer routinely submitted to the CDC, state and local STD and Title X Family Planning programs and individual clinics are encouraged to use local data to guide programmatic decision-making around CT/GC screening.

Benefits of Prevalence Monitoring

Public health systems and healthcare organizations are being asked to do more with less. Prevalence monitoring can help you identify and prioritize your organization's goals and activities to provide high quality, equitable, and efficient care to your patients. While national guidelines are helpful, analyzing CT/GC data from your own agency is the best method to evaluate the successes and challenges of your CT/GC screening activities and inform day-to-day clinic operations. **Figure 1** highlights a few domains where CT/GC prevalence monitoring can leverage existing resources to improve screening programs. Successful prevalence monitoring efforts utilize timely data and appropriate indicators (i.e., positivity and screening coverage) as described in this toolkit.

Figure 1. Uses of Prevalence Monitoring Data

Support Quality Improvement
- Routinely monitor screening trends
- Identify gaps in service provision
- Define or adjust screening criteria for sexually transmitted infections
- Identify staff training needs

Promote Health Equity
- Identify inequities in screening and infection rates (e.g., age, race/ethnicity)
- Monitor trends in screening and infection rates

Ensure Cost Effectiveness
- Evaluate screening initiatives or interventions
- Adjust screening criteria to prioritize resources
- Determine appropriate pool size to reduce lab processing costs[†]

[†] In populations with low positivity, pooling (i.e., running multiple specimens together) increases efficiency and lowers lab processing costs. Pool size and method can be determined based on positivity. For more information, see the References section, entries 5 and 6.

National Chlamydia and Gonorrhea Screening Recommendations

Any patient reporting symptoms, exposure, or exhibiting clinical signs should be tested for CT/GC. This is commonly referred to as "diagnostic testing." As most CT/GC infections are asymptomatic, CDC also recommends routine annual CT screening for all sexually active women age 25 and younger, and risk-based screening for women age 26 and older (e.g., women who have a new sex partner or multiple sex partners). Universal screening (i.e., routine screening for all patients) should be considered in clinical settings where CT prevalence is high (e.g., adolescent clinics, correctional facilities, and STD clinics). Detailed screening recommendations can be found in the *2010 CDC STD Treatment Guidelines*[1], including those that specifically address special populations such as pregnant women and men who have sex with men.

A CT positivity of 3% among sexually active women is an often-used threshold for cost-effective screening.[2-4] CDC has encouraged states and other jurisdictions to assist clinics with lower than 3% positivity in altering screening practices to detect more infection or divert funds to clinics with higher positivity.

Gonorrhea prevalence varies widely throughout the U.S., so there are no national screening recommendations. However, targeted screening of men and women at increased risk is recommended, and screening criteria should be grounded in local epidemiology.[1]

Purpose of this Toolkit

The purpose of this toolkit is to support state and local STD and Family Planning programs, as well as clinic administrators and managers of STD, Family Planning, Community Health Centers, primary care, and other clinic types in monitoring and evaluating CT/GC screening efforts. We introduce key indicators for assessing screening efforts, explain how each indicator is useful and how to calculate it, and provide examples of each indicator.

This toolkit is not intended to be a comprehensive guide to CT/GC epidemiology, research, or program and quality improvement. The definitions offered in this toolkit are intended for use in clinical settings and, therefore, may differ slightly from epidemiologic definitions **(Table 1)**. Most importantly, the numerators and denominators presented for key indicators are defined as patients or sub-groups of patients in clinical settings rather than the general population.

Table 1. Some Important Terminology

Positivity — Percentage of valid tests with a positive result.

Prevalence — Percentage of members of a defined population that are infected.

Prevalence Monitoring — Collecting and analyzing programmatic data to assess positivity within a given clinic or network of clinics.

Screening Coverage — Percentage of eligible patients that have been screened for a given infection.

All of these terms require you to define the population and time period of interest.

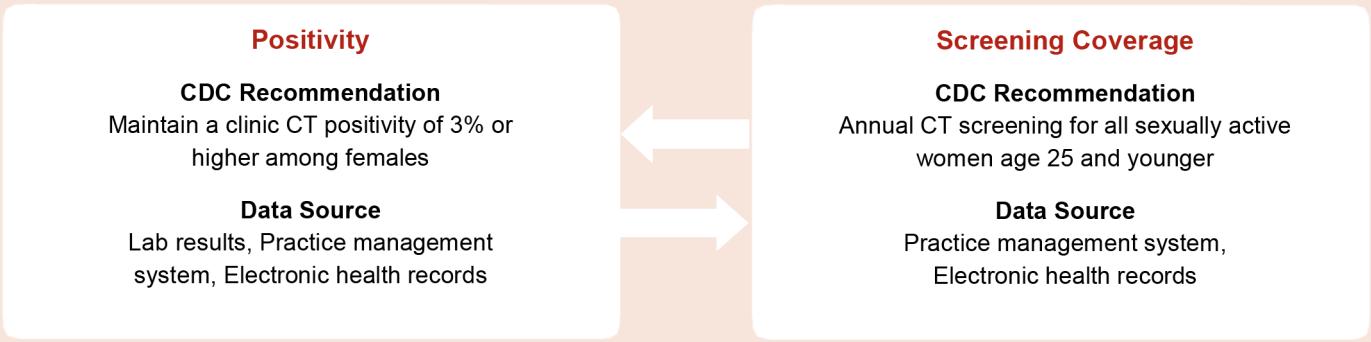
KEY INDICATORS FOR PREVALENCE MONITORING

Key Indicators

Positivity and screening coverage are two important indicators for monitoring and evaluating CT/GC screening programs. Analyses of positivity data help describe individuals who test positive for CT/GC. Screening coverage analyses help describe the extent to which individuals were screened according to recommendations and/or protocols.

By looking at both positivity and screening coverage, you get a comprehensive picture of the extent to which screening efforts are successful at reaching the target population. There is a reciprocal relationship between positivity and screening coverage. Changes in screening coverage, as well as other factors that result in different individuals being screened, affect positivity. Changes in positivity can reflect successful programmatic changes (e.g., expanded outreach that brings in high-risk patients) and need for improvement (e.g., provider/staff turnover resulting in reduced screening of young women). **Figure 2** describes the CDC recommendations and data sources associated with each indicator.

Figure 2. Key Indicators for Prevalence Monitoring



Positivity

As outlined earlier, a 3% CT positivity may be considered a threshold for cost-effective screening. Positivity data can also be useful for a variety of program and quality improvement initiatives.

Positivity is the preferred indicator for CT/GC prevalence monitoring because it accounts for all tests, even if some patients were tested multiple times.

Positivity is calculated as the total number of positive CT/GC test results divided by the total number of valid CT/GC test results, multiplied by 100%. **Figure 3** illustrates this calculation in more detail. It is important to note that the numerator and denominator for positivity refer to the number of tests and not the number of patients.

Figure 3. Calculating Positivity

$$\text{Positivity} = \frac{\text{Total \# of positive CT/GC test results from a clinic/group of clinics over a defined period of time}}{\text{Total \# of valid CT/GC test results from the same clinic/group of clinics over the same defined period of time}} \times 100\%$$

Sample Calculation

The state public health laboratory processed 100,200 CT tests in 2011.
8,000 tests were positive for CT; 92,000 tests were negative for CT; 200 tests were indeterminate.

$$\text{Positivity} = \frac{\text{8,000 positive tests}}{\text{8,000 positive tests + 92,000 negative tests}} \times 100\% = 8.0\%$$

Screening Coverage

Screening coverage is the key indicator for evaluating adherence to screening recommendations and protocols. As outlined earlier, CDC recommends routine annual CT screening for all sexually active women age 25 and younger, as well as risk-based screening for women age 26 and older.[4] Measuring screening coverage can also be useful for a variety of program and quality improvement initiatives.

Hint
For details on how to best extract data for calculating key indicators, refer to the **Ask the Epidemiologist** section of the toolkit. Also, see **Tool A** in the **Tools and Resources** section for an example of how to format CT/GC test data.

Since CT screening is recommended annually for young women, screening coverage is generally considered over a one-year interval. Screening coverage is calculated as the number of sexually active female patients screened for CT in a given year divided by the total number of sexually active female patients that visited the clinic within the same year, multiplied by 100%. **Figure 4** illustrates this calculation in more detail.

Note that the numerator and denominator for screening coverage refer to the number of unduplicated patients. In other words, regardless of the number of visits or CT tests a woman receives, she is only counted once. This is the case because CT screening is generally recommended only once per year, regardless of the number of times a woman visits the clinic. There are some exceptions to this. For information on evaluating CT "re-testing rate," refer to the **Ask the Epidemiologist** section of the toolkit.

Another important characteristic of screening coverage calculations is that only sexually active patients are included. For simplicity, Family Planning clinics often assume that all female patients are sexually active. In primary care settings, however, documenting whether patients are sexually active is important for accurate data analyses.

CT screening coverage is most often calculated for sexually active women between the ages of 15-25 to evaluate adherence to the national recommendation. In addition, screening coverage has been used to identify screening among populations for whom routine screening is ***not*** recommended (e.g., women age 26 and older without risk factors).

GC screening coverage is not generally calculated because there are no national recommendations. However, if your agency sees a lot of patients with GC infections and has specific GC screening goals, calculating the screening coverage could be useful for evaluating your efforts.

Figure 4. Calculating Screening Coverage

$$\text{Screening Coverage} = \frac{\text{Total \# of unduplicated sexually active female patients tested for CT at least once within the past year}}{\text{Total \# of unduplicated sexually active females that visited the clinic at least once within the past year}} \times 100\%$$

Sample Calculation

In 2009, Clinic X had 500 unduplicated sexually active female patients aged 15-25 years. Of these, 245 patients received one or more CT tests.

$$\text{Screening Coverage} = \frac{\text{245 female patients screened}}{\text{500 sexually active female patients}} \times 100\% = 49\%$$

HOW TO USE KEY INDICATORS FOR PREVALENCE MONITORING

Trends and Stratification

Examining trends in positivity can reveal shifts in infection patterns/prevalence over time. Monitoring screening coverage over time can be used to assess provider adherence to screening protocols and evaluate the success of quality improvement initiatives to increase screening. Calculating positivity or screening coverage estimates for several different sub-groups of patients is known as stratification. Stratifying your data will enable you to understand and interpret it more accurately.

Hint
To generate time-trend charts for positivity and screening coverage, download **Tool C** from the **Tools and Resources** section of the toolkit.

Positivity is most meaningful when stratified by demographic or behavioral risk characteristics. Comparing positivity between two or more sub-groups of patients can indicate differences in infection risk. For example, research has consistently found young age to be the strongest predictor of CT infection. Specifically, adolescent girls ages 15-19 tend to have higher infection rates than young women ages 20-24. Older women have the lowest infection risk **(Figure 5)**.[7] Beyond age, other recommended demographic measures for stratifying positivity include sex and race/ethnicity. Recommended behavioral risk measures for stratifying positivity may include recent history of new or multiple sex partners or condom use, among others **(Table 2 on next page)**.[8]

Hint
If screening coverage differs greatly between 2 groups, use caution in comparing their positivities.

Stratifying screening coverage can help you to identify missed opportunities to screen and examine how provider screening patterns align with clinical protocols. Screening coverage can be stratified by age, sex, and race/ethnicity, as well as by insurance type, provider ID, and visit type **(Figure 6 on next page)**.

Hint
Age categories should be consistent with screening criteria. Standard age categories are 15-25 and 26+, or alternatively, 15-19, 20-25, 26-30, and 30+.

Figure 5. Stratifying Positivity — An Example

Question: Clinic X sees approximately 4,000 female patients each year, but has only 1,500 free CT/GC tests available. How might they decide who gets tested?

Solution: Stratify positivity by age

Age Group (in years)	Screening coverage	Total # positive tests/Total # tests	Positivity
15-19	28.5%	42/400	10.5%
20-25	38.9%	53/700	7.6%
26 and older	50%	14/400	3.5%
Total	100%	109/1,500	7.3%

Stratifying by age reveals that positivity is highest among adolescents (15-19 years old) followed by young adults (20-25 years old). Thus, these groups should be prioritized for testing. This is the rationale for CDC's recommendation that all sexually active women aged 25 and younger be screened annually for CT, whereas behavioral risk-based screening criteria may be implemented to decide which women, 26 and older, should be tested.

Keys to successful data stratification:

- Use meaningful and clearly defined categories.
- Group continuous measures into consecutive, non-overlapping categories. For example, age is grouped into categories of "15-19," "20-25," etc.
- Avoid creating too many categories. A good rule of thumb is to have no less than 25 tests/patients in the denominator of any calculation.

Table 2. Suggested Variables for Stratification

Demographics	Behavioral
Age	Multiple sex partners
Sex	New sex partners
Socioeconomic status	Condom use
Race/Ethnicity	Sex partner concurrency[†]
Visit type	Sex with men, women, or both
Provider ID	
Insurance/Payor	

Figure 6. Stratifying Screening Coverage — An Example

Question: Figure 5 reveals that younger patients visiting Clinic X are at highest risk for CT infection. How might their data be used to identify opportunities to increase screening of young women?

Solution: Clinic X should examine its screening coverage for each age group to determine where there is room for improvement.

Age (in years)	CDC recommendation	# of patients screened	# of patients	Screening coverage
15-19	Screen all	400	1400	28.5%
20-25	Screen all	700	1800	38.9%
26+	Selective screening	400	800	50%

The table above reveals that screening coverage at Clinic X does not meet CDC recommendations; only 28.5% of adolescents and 38.9% of young adults were screened. Additionally, the clinic is screening a large percentage of women aged 26 and older. Clinic X administrators and managers may want to meet with staff to discuss barriers to screening adolescents and young adults to ensure that selective screening criteria for women 26 and older are being implemented.

To identify missed opportunities for screening young women, Clinic X can further stratify its screening coverage data among only women aged 15-25 by the visit type.

Visit type	# of patients screened	# of patients	Screening coverage
Comprehensive visit	900	1200	75%
Other visit	200	2000	10%

The table above reveals that women aged 15-25 who went to Clinic X for non-comprehensive visits were much less likely to be screened for CT. Systems interventions such as the introduction of patient self-collected vaginal swabs or electronic health record reminders may be useful to improve clinic flow and adherence to guidelines.

[†] Sex partner concurrency is when the patient reports a sex partner who has had sex with someone else while still in a sexual relationship with the patient.

CONTEXT MATTERS — CHALLENGES TO DATA INTERPRETATION

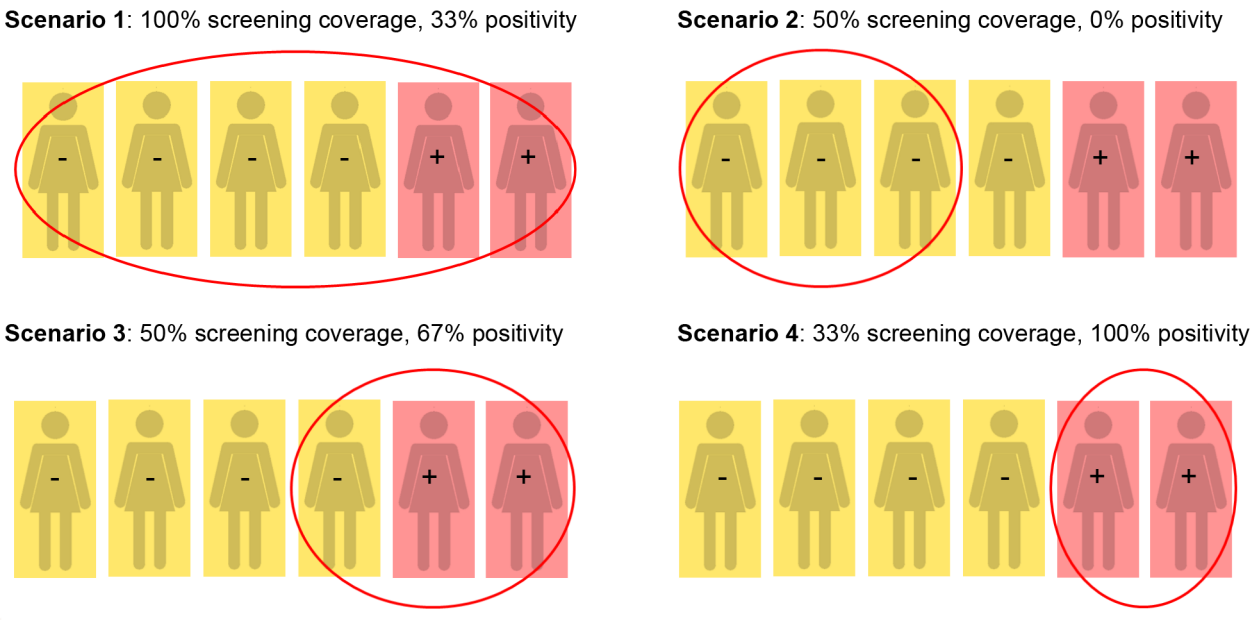
Positivity calculations only consider patients who are tested for CT/GC. Positivity calculations do not provide information about infection rates among patients who are not tested. Increases or decreases in positivity over time can suggest a change in the prevalence of infection; however, positivity is heavily impacted by who is screened (i.e., screening coverage) **(Figure 7)**. Thus, changes in positivity most often reflect changes in programmatic activities. Examples include:

- Changes to screening policies/protocols that affect which patients are tested for CT/GC.
- An influx of new patients or departure of former patients that results in a different "patient mix" (e.g., due to the closure of a nearby clinic or an increase in newly insured patients).
- Provider/staff turnover that may result in changes in practice, particularly if there are no policies or protocols in place for CT/GC screening.
- Scaling up of retesting or other targeted screening efforts.

It is common to see small fluctuations in positivity over time. When interpreting these trends, consider how changes in screening activities or patient demographics may have affected positivity. Keep track of new screening initiatives or external events that may impact screening rates. Compare trends in screening coverage and positivity over time to help identify potential explanations for changes in positivity.

Figure 7. CT Screening Coverage Can Affect Positivity Estimates

In each of the following scenarios, yellow figures represent women who are CT-negative and red figures represent women who are CT-positive. The circle represents the number of women who are screened for CT. When screening coverage is substantially lower than 100%, positivity estimates may be inaccurate.



Q&A: ASK THE EPIDEMIOLOGIST

Q Our clinic's CT positivity for female patients is under 3%. How can we increase it?

First, ask yourself, "What proportion of our tests is going to women under/over age 25?" and then examine your positivity and screening coverage stratified by age group. Teens generally have the highest positivity, followed by young women age 20-24. Women age 26 and older typically have the lowest positivity. Screening of sexually active women age 25 and younger should be prioritized. If you are testing a lot of women age 26 and older, you may want to adjust screening criteria, policies, and procedures to emphasize screening of younger women. Monitor data regularly and share findings with providers and staff to promote discussion about screening practices.

Increasing your re-testing rate will also help. CDC recommends re-testing women and men of any age approximately 3 months after treatment for CT/GC. Repeat infections are common and increase the risk of pelvic inflammatory disease and other adverse sequelae. Average re-infection rates are estimated at 14% for CT and 11% for GC and can be higher depending on the population. Despite the national guidelines, re-testing rates remain low (30% or lower). Note that a test of cure (i.e., testing less than 4 weeks after treatment) is *not* recommended, except in pregnant women.

Recommended Resources:

- Download the Interactive CT/GC Test Allocation Worksheet (Tool B).
- *Evidence-based Interventions for Increasing Chlamydia and Gonorrhea Retesting Rates* (Webinar).[9]
- *Practical Strategies for Improving Chlamydia and Gonorrhea Retesting* (Article).[10]
- Clinical practice guidelines and resources for patients and providers (Website).[11]

Q Our clinic's CT positivity is above 3%, but testing resources are limited and we can't screen all women under age 25. How can we maximize resources?

Whether your clinic's CT positivity is above or below 3%, there is always room for improvement. Allocating resources to those with the highest positivity ensures maximum impact. See the previous question for specific suggestions to maximize positivity. Stratifying your data can help you see who is at highest risk.

Recommended Resources:

- *Chlamydia Screening in Family Planning: Maximizing Screening Yield Using Existing Testing Resources* (Presentation).[12]

Q Our providers are so busy. We just don't have enough time to screen all of our patients. How can we increase screening coverage?

Screening is most likely to occur when women visit the clinic for a pelvic exam or cytology screening.[13] However, the majority of patients visit for other reasons (e.g., birth control pick-up, pregnancy test) and do not get a physical exam. Patient self-collected vaginal swabs and urine specimens can improve screening efficiency. Resources such as patient flow analysis can also help you identify opportunities to improve clinic efficiency.

Recommended Resources:

- Download patient instruction placards and vaginal swab toolkit for clinicians.[14]
- *Vaginal Swabs — Performance, Patient Preference and Application* (Webinar).[15]
- *Successful interventions to increase use of self obtained vaginal swabs for chlamydia/gonorrhea testing in WA State* (Presentation).[16]
- *Preference among female Army recruits for use of self-administered vaginal swabs or urine to screen for* Chlamydia trachomatis *genital infections* (Article).[17]
- *Female Prisoners' Preferences of Collection Methods for Testing for* C. trachomatis *and* N. gonorrhoeae *Infection* (Article).[18]
- *Basic Tenets of Clinic Efficiency: Best Practices and Lessons Learned* (Webinar).[19]

Q Are there different ways to obtain the data I need to calculate positivity and screening coverage?

Screening coverage calculations require patient counts and services provided, which you should be able to extract if you have an administrative information system, whether or not you have an electronic health record.

The numerator and denominator for positivity are tests, not patients. Depending on the system you are using and how the test result data are entered and stored, positivity data can be challenging to extract from electronic health records. Another option is to request a report from each of the laboratories you use to process CT/GC tests. Data should be in the form of a "line-listed" Excel, or .csv, spreadsheet; see **"Tool A" in the Tools and Resources section for an example**. If you use only one lab to process CT/GC tests, you may be able to request an "aggregate report" of positivity, in which the calculations are already done for you. You will need to work with your individual lab to determine whether this is possible, and if so, specify how you would like the data to be stratified in the report.

Some electronic health record systems have the capacity to export patient data but not test-record data (i.e., the percentage of patients that had a positive test vs. the percentage of tests that were positive). Positivity is the best indicator for prevalence monitoring because it accounts for patients that were tested multiple times and what their test result was each time. However, if lab(s) cannot provide test data, and you cannot extract it from your EHR system, clinic prevalence (the percentage of patients with a positive CT result within a given period of time) is an acceptable back-up measure.

Be aware that re-testing affects positivity but not prevalence. If your agency does a lot of re-testing or is implementing quality improvement efforts focused on improving re-testing rates, it is important to use positivity rather than prevalence.

Q Do you really expect individual clinics to perform their own prevalence monitoring?

The procedures described in this toolkit can be applied by any agency or health department to whom detailed patient-level data are available. Data reporting procedures vary across different agencies. In some cases, individual clinics are the only entities with access to the data needed to compute both positivity and screening coverage. In other cases, a network of clinics report detailed patient-level data to an agency or health department where there is greater capacity to analyze the data. In these cases, we recommend stratifying the results by clinic so that individual clinics can view their outcomes and progress toward goals.

State and local health departments should prioritize and support prevalence monitoring. These programs may obtain positivity data from laboratories, but are limited by the lack of available data on screening coverage. Furthermore, positivity data are often available for only a subset of tests performed by a clinic (e.g. tests supplied by a certain funding stream or run through a certain lab).

Q My question wasn't answered! Where can I find more resources?

Contact your regional STDRHTTAC:

Region I	JSI Research & Training Institute http://stdtac.org
Region II	Cicatelli Associates, Inc. (CAI) http://www.caiglobal.org
Region III	Family Planning Council, Inc. http://www.familyplanning.org
Region IV	Health Care Education & Training, Inc. http://www.hcet.info
Region V	Cicatelli Associates, Inc. (CAI) http://www.caiglobal.com
Region VI	Cardea Services http://www.cardeaservices.org/stdrhttac
Region VII	JSI Research & Training Institute http://shrpttac.jsi.com
Region VIII	JSI Research & Training Institute http://shrpttac.jsi.com
Region IX	Cardea Services http://www.cardeaservices.org/stdrhttac
Region X	Cardea Services http://www.cardeaservices.org/stdrhttac

TOOLS AND RESOURCES

Tool A **Sample CT/GC line-listed dataset**

Tool B **Interactive CT/GC test allocation worksheet**

Tool C **Annotated CT/GC positivity and screening coverage graphs**

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Tool A: Sample CT/GC Line-Listed Dataset

Line-listed positivity data should be formatted with one row per test event. A codebook to define column names and codes should be provided along with the data (see next page).

Exported data for Agency X (2013, Quarter 1)

CLIENT	DTVST	SEX	AGE	REASON	TEST	SPECSITE	CTLAB	GCLAB
PM1685	01-05-2013	1	19	2	9	1	0	0
PM1941	01-21-2013	1	19	7	9	7	0	0
PM1949	01-21-2013	1	15	3	9	1	0	0
PM2372	02-06-2013	1	20	7	9	5	0	0
PM2485	02-07-2013	1	24	1	9	5	1	0
PM2678	02-19-2013	1	22	2	9	5	0	0
PM2691	02-19-2013	1	17	2	9	5	0	0
PM2914	02-22-2013	1	17	1	9	1	1	1
PM3254	03-01-2013	1	20	6	9	3	0	0
PM3329	03-04-2013	1	18	5	9	5	0	0

- Other possible variables to include in data export:

  - Date of birth
  - Race/Ethnicity
  - Number of sex partners in past 60 days
  - Number of new sex partners in past 60 days
  - Positive CT in past 12 months
  - Positive GC in past 12 months
  - Positive STD in past 12 months
  - Signs and clinical findings

- The data should be in either Microsoft Excel (.xls/.xlsx) or Comma Separated Values (.csv) format.

- Data can be analyzed using Microsoft Excel or can be imported and analyzed with statistical software packages such as SPSS, SAS, or STATA.

CODEBOOK

Variable Name	Description	Valid Values and Value Definitions	Notes
CLIENT	Client ID		
DTVST	Date of clinic visit and specimen collection		
SEX	Biological sex of patient	1=Female 2=Male 9=Unknown	
AGE	Age of patient at time of visit		Enter 98 if age missing and patient is <10 y/o Enter 99 if age missing and patient is >80 y/o
REASON	Reason for visit	1=Symptoms 2=Routine visit 3=Exposed to CT 4=Exposed to other STD 5=Rescreening 6=Any pregnancy-related visit 7=STD screening	
TEST	Type of laboratory test	1=Probe 2=EIA 3=DFA 4=Culture 6=LCR 7=PCR 8=SDA 9=TMA 10=SA 11=TC-TMA	
SPECSITE	Specimen source	1=Cervix 2=Urethra 3=Urine 4=Vaginal, patient collected 5=Vaginal, clinician collected 6=Rectal 7=Other	
CTLAB	Initial laboratory CT test result	0=Negative 1=Positive 8=Unsatisfactory 9=Equivocal	
GCLAB	Initial laboratory GC test result	0=Negative 1=Positive 8=Unsatisfactory 9=Equivocal	

Tool B: Interactive Test Allocation Worksheet Instructions and Example

This worksheet is an exercise to help you estimate how much you could improve your chlamydia case detection by adhering strictly to the national recommendations for chlamydia screening. The results displayed are only estimates, and their accuracy depends on the accuracy of the numbers you enter into the spreadsheet.

INSTRUCTIONS

1. Download Tool B: *Interactive test allocation worksheet.xlsx*
2. For steps 1-4, enter data into each of the grey boxes provided. Any number that is not in a grey box will be auto-calculated.
3. Based on the data you have entered, your recommended test allocation will be displayed in Step 5. The recommended test allocation is auto-calculated to align with national chlamydia screening recommendations. Tests are prioritized for women under age 25. In the event that you do not have enough tests to cover all women under age 25, adolescents are prioritized (because they tend to have higher positivity).
   - “Recommended test allocation (# of tests)” refers to the number of tests you should allocate to each age group.
   - "Predicted # positive for CT" refers to the number of cases you could expect to identify in each age group if you use the recommended test allocation.
4. Predicted outcomes are displayed in an orange box at the bottom. This describes the estimated increase in cases you could expect to identify if you use the recommended test allocation compared to your current practices. The higher these numbers, the more your agency stands to gain by improving adherence to national recommendations for chlamydia screening.

Agency Name: SAMPLE CLINIC
Year: 2014

STEP 1: ***Use data from the most recent year available to fill in the grey boxes below***

Females	# of female clients	# tested for CT	# positive for CT	Calculated CT positivity
Age 10-19	100	50	4	8.0%
Age 20-25	200	150	8	5.3%
Age 26+	100	50	2	4.0%
Total	400	250	14	5.6%

STEP 2: ***Estimate total number of clients for the coming year and enter it in the grey boxes below***

NOTE: if no changes expected, estimate based on last year

	# of clients
Age 10-19	100
Age 20-25	200
Age 26+	100
Total	400

STEP 3: ***Estimate the total number of CT tests available for the coming year and enter it in the grey boxes below***

NOTE: if no changes expected, estimate based on last year

Total # CT tests: 250

STEP 4: ***Estimate the total number of tests you need to reserve for diagnostic testing and re-testing and enter it in the grey box below***

NOTE: It is important to provide a realistic estimate for this number. See the instruction page for guidance on estimating this number.

 # CT tests reserved: 25

CT tests remaining for screening: 225

STEP 5: ***Review your results below***

Females	# of clients expected	Recommended test allocation (# of tests)	Predicted CT positivity	Predicted # positive for CT
Age 10-19	100	100	8.0%	8
Age 20-25	200	125	5.3%	7
Age 26+	100	0	4.0%	0
Reserved	-	25	13.0%	3
Total	400	250	7.2%	18

Predicted outcomes of using the recommended test allocation above:

You will detect	**4**	more cases than you detected last year
This is an increase of	**28.0%**	more cases than you detected last year

Originally developed by Cardea for the Infertility Prevention Project with support from Centers for Disease Control and Prevention, 2012

Guidance for Reserving Tests and Utilizing Screening Resources Effectively

The United States Preventive Services Task Force recommends screening females at increased risk for chlamydial infection. Risk factors for chlamydial infection include a history of chlamydial or other sexually transmitted infection, new or multiple sexual partners, inconsistent condom use, and exchanging sex for money or drugs. These risk factors apply to both pregnant and non-pregnant women.

However, test resources may be insufficient to meet CDC and USPSTF recommendations. To date, there is little research available that describes the prevalence of risk factors for CT or their associations with CT positivity in older women. The following recommendations for reserving tests for older women are based upon a combination of literature from the field as well as unpublished analyses by the Region X IPP.

Diagnostic Testing

All patients reporting **CT exposure, current STD infection, symptoms, or clinical signs of chlamydial infection** should be tested for CT. CT positivity is generally very high in this group, and testing is generally referred to as 'diagnostic testing' rather than 'screening'. The percentage of patients that meet diagnostic test criteria varies across clinics and tends to be higher in STD clinics than Family Planning clinics (Region X IPP, unpublished data).

- **Estimate the number of women aged 26 and older that meet diagnostic screening criteria and add this to your reserve pool. This should be a very small number of tests.**

Re-testing

Because repeat chlamydial infection is common, CDC recommends re-testing patients diagnosed with chlamydia three months after treatment. In addition to the elevated risk of infection in this group, there is also a greater risk of adverse outcomes associated with chlamydial infection (e.g. ectopic pregnancy, PID, etc.)

- **Reserve one extra test for each positive test result you expect to find. Be sure to remind patients and providers to re-test the patient 3 months after their initial positive test result.**

A note about risk-based screening of women aged 26 and older

Very little data is available on the prevalence of risk factors among older women and the likelihood of CT infection. Preliminary, unpublished analyses in Health and Human Service Region X suggest that CT positivity among adolescents and young adults is higher than CT positivity among older women, even those with risk factors (2 or more sex partners, a new sex partner, a symptomatic sex partner, or no condom used during last sex).

- **We do not recommend reserving many tests to screen women aged 26 and older unless you have the capacity to screen all women aged 25 and younger or your agency's data shows a history of particularly high CT positivity in this age group.**

Utilizing screening resources effectively

- **Recommendations for increasing screening coverage of adolescents:**
  1) **Use patient self-collected vaginal swabs to enable screening during visits with no pelvic exam.**
  2) **Update screening protocols for adolescents to read 'screen at the first visit of the year' (rather than 'at initial or annual exam').**
- **Recommendations for allocating tests among women aged 20-25 years**
  When resources are only sufficient to screen a portion of females aged 20-25 years, prioritize women that meet diagnostic screening criteria, followed by behavioral risk factors. You might also consider looking at your agency's CT positivity within a smaller age range (e.g. age 20-24) to make allocation decisions.

Tool C: Annotated Positivity and Screening Coverage Graphs Instructions

This tool is designed to help you visualize your screening coverage and positivity data. Changes in screening coverage affect positivity, so viewing them side by side can help you interpret your data.

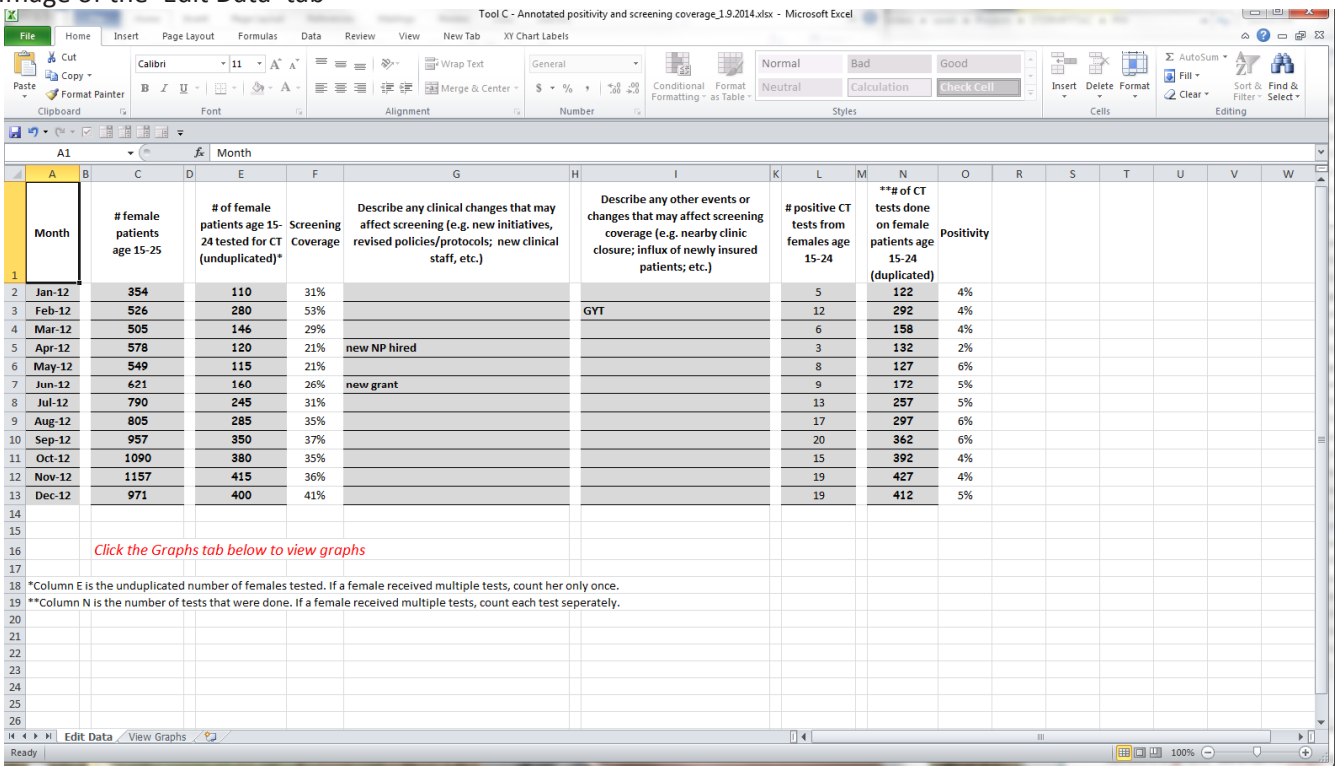
INSTRUCTIONS

1. Download Tool C: *Annotated positivity and screening coverage graphs.xlsx*
2. Use the tabs at the bottom of the screen to alternate between 'Edit Data' and 'View Graphs'. The graphs contain sample data and notes to help you understand and explore the tool. Notes entered on the 'Edit Data' tab are also displayed on the graph.
3. In the 'Edit Data' tab, replace the sample data with data from your own agency. Include notes about any changes or events that may have affected screening. We recommend keeping your notes to fewer than 20 characters so they will fit on the graphs.
4. Click on the 'View Graphs' tab to see your data and notes displayed graphically.
5. You can resize, move, or edit the graphs to better fit your data.

ENHANCED OPTIONS:

1. You can edit any of the column and graph labels as needed. For example, you may want to create a set of graphs for tracking GC screening and positivity if you are in a high prevalence area and have GC screening goals.
2. You may want to adjust the time periods (e.g. to examine quarterly or annual screening and positivity).

Image of the 'Edit Data' tab



Tool C - Annotated positivity and screening coverage_1.9.2014.xlsx - Microsoft Excel

A1: Month

Month	# female patients age 15-25	# of female patients age 15-24 tested for CT (unduplicated)*	Screening Coverage	Describe any clinical changes that may affect screening (e.g. new initiatives, revised policies/protocols; new clinical staff, etc.)	Describe any other events or changes that may affect screening coverage (e.g. nearby clinic closure; influx of newly insured patients; etc.)	# positive CT tests from females age 15-24	**# of CT tests done on female patients age 15-24 (duplicated)	Positivity
Jan-12	354	110	31%			5	122	4%
Feb-12	526	280	53%		GYT	12	292	4%
Mar-12	505	146	29%			6	158	4%
Apr-12	578	120	21%	new NP hired		3	132	2%
May-12	549	115	21%			8	127	6%
Jun-12	621	160	26%	new grant		9	172	5%
Jul-12	790	245	31%			13	257	5%
Aug-12	805	285	35%			17	297	6%
Sep-12	957	350	37%			20	362	6%
Oct-12	1090	380	35%			15	392	4%
Nov-12	1157	415	36%			19	427	4%
Dec-12	971	400	41%			19	412	5%

Click the Graphs tab below to view graphs

*Column E is the unduplicated number of females tested. If a female received multiple tests, count her only once.
**Column N is the number of tests that were done. If a female received multiple tests, count each test seperately.

Edit Data | View Graphs

Image of the 'View Graphs' tab: