GLOSSARY OF TERMS[1]

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Accuracy – The extent to which a measurement is close to the true value.

Amplification Test – (See Nucleic Acid Amplified Test – NAAT)

Analytical Range – The range of accuracy of a test, e.g. the values (results) of a glucose blood test may range from 0 to 10,000 units, however test A used to detect glucose is only capable of detecting from 100 to 1,000 units, therefore the analytical range of this test is 100 to 1,000 units.

Antibiotics – A chemical substance capable of destroying microorganisms, specifically bacteria.

Antibody – A type of serum protein (immunoglobulin), that is produced by the body in response to foreign antigens, e.g. IgG, IgM, IgA, etc. Antibodies assist the body in removing or destroying foreign antigens.

Antigen – A foreign substance that stimulates the body to produce antibodies. Antigens may be used in immunoassays to detect specific antibodies in human sera.

Asymptomatic – A condition of health where a person is infected with an infectious agent such as Chlamydia, etc. but has no apparent clinical symptoms and does not appear sick.

APHL – The Association of Public Health Laboratories. The national and international organization of public health laboratories in cities, counties, states, providences, territories and countries.

Azithromycin – An antibiotic used to treat chlamydial infections that can be given in a single dose.

Bacteria – Any small one-celled (unicellular) microorganism. Bacteria vary in shape (morphologically), e.g. spherical (cocci), rod-shaped (bacillus), spiral (spirochete), and comma shaped (vibrio).

Bacterial Vaginosis (BV) – The most prevalent cause of vaginal symptoms among women of childbearing age. Previously called nonspecific vaginitis, is characterized by a strong fishy odor and gray watery discharge.

Batch – A set of specimens (e.g. endocervical swabs) processed and tested during a single run (diagnostic test).

BDNA (branched DNA) – A test developed by Chiron Corporation for detecting and quantitation of HIV. The test uses signal amplification, similar to Digene Hybrid Capture 2 and is not a "true" amplification.

Cervical Motion Tenderness (CMT) – Moderate to severe tenderness elicited when the cervix is palpated or manipulated.

Cervicitis – Infection and/or inflammation of the cervix. Can be a sign of chlamydial infection.

Cervix – The narrow neck of the uterus, which extends into the vagina.

Chancroid – A highly contagious sexually transmitted disease caused by *Hemophilis ducreyi*. It produces a soft chancre in the genital region 3-5 days after exposure.

Chlamydia trachomatis – *Chlamydia trachomatis* is the bacterial agent that causes chlamydial infections, the most common sexually transmitted bacterial infection in the United States. While chlamydiae are classified as bacteria, they share some properties of both bacteria and viruses.

CLIA – Clinical Laboratory Improvement Act of 1967 (and amendments of 1988) which sets the guidelines for any clinical laboratory that tests material obtained from human patients, i.e. blood, tissue, swabs, etc. CLIA is administered through the U.S. Health Care Financing Administration (HCFA).

Clinical Laboratory – A laboratory in which tests directly related to the care of patients are performed. Such laboratories use material obtained from patients for testing.

Clinical Laboratory Procedure – Analytical procedure (test) performed on any specimens (samples) taken from humans and used to diagnose disease or infection.

Collection Sites – Locations in the body from which a specimen may be taken. These sites may include: cervix, urethra, rectum, throat, and conjunctiva (eye).

Confirmatory Test – A test that is used to confirm positive screening results in order to eliminate false positive results thereby improving specificity. This test employs a different target molecule than the screening test, e.g. *C. trachomatis* enzyme immunoassays (EIA) typically detect specific lipopolysaccharide (LPS); while direct fluorescent antibody (DFA) test, used to confirm a positive EIA test, targets the major outer membrane (MOMP) of *C. trachomatis*. This method is preferred to using a supplemental test (see Supplemental Test).

Control – An artificial specimen with a known value (i.e. positive or negative) that is included in every test run in order to monitor the performance of the test. For example, if your positive control was negative it would invalidate the results of that particular test run and specimens would have to be re-tested.

CSTE – Council of State and Territorial Epidemiologists. This is the national organization of epidemiologists working in state health departments.

Culture –A laboratory test involving the cultivation of microorganisms or cells in a special growth medium.

Cutoff (CO) – A mathematically derived calculation in any given immunoassay that is used to determine which specimens are positive (reactive) or negative (unreactive), e.g. generally specimens with values above the CO are positive and those below are negative.

Detection Limit – The range (limits) of detection of any test methodology. e.g. a *C. trachomatis* amplification test needs only 1-10 organisms to be present in order to detect CT, whereas an enzyme immunoassay (EIA) needs 100,000 (10^5) organisms to be present in order to detect CT.

Diagnostic Test – A test designed to detect chlamydia in a patient presenting with symptoms or risk history, as distinguished from a screening test (see Screening Test).

Direct Fluorescent Antibody Test (DFA) – Is the direct detection of chlamydia (antigen) from a specimen (e.g. endocervical swab, etc.) that is placed on a microscope slide and stained using fluorescent-labeled chlamydia specific antibody and viewed under a fluorescence microscope. Chlamydia-positive specimens show apple-green elementary bodies in contrast to red background of counterstained cells.

DIS – Disease Intervention Specialist - A trained individual working with patients testing positive for STDs and their partners to provide access to testing, confirm treatment, and identify all other potentially infected individuals. Usually employed by a health department.

DNA Probe – See **Nucleic Acid Hybridization Test**.

Doxycycline – An antibiotic used to treat chlamydial infections. The standard dosage is 100 mg orally, twice a day, for 7 days.

Ectopic Pregnancy – A pregnancy occurring anywhere except in the uterus, usually in the fallopian tubes. A serious, potentially fatal consequence of chlamydial infection..

Ectopy – Visible columnar epithelial cells that extend onto the outer surface of the cervix. In younger women or women using hormonal contraceptives, ectopy is considered normal. Ectopy increases the risk of acquiring chlamydia by exposing the more vulnerable columnar epithelial cells.

Enzyme Immunoassay (EIA) – A laboratory test that detects specific antigens or antibodies utilizing enzyme tagged antigens or antibodies, and in the presence of a specific substrate produces a color change that indicates a positive reaction. This color change (positive reaction) can be detected in a spectrophotometer.

Epidemiology - The branch of medical science that studies the incidence, distribution and control of disease.

Erythromycin – An antibiotic used to treat chlamydial infection, especially for pregnant women. The standard dosage is 500 mg orally 4 times a day for 7 days.

Etiologic Agent – An agent that causes disease.

External Quality Control – An external control (see internal quality control) specimen that is generally shared between multiple laboratories and the results compared for quality control purposes.

False Negative (Result) – A test result that indicates the absence of a condition (negative result) when the condition is actually present (group "C" in Table 1).

False-Negative (Rate) – The percentage of people with the disease who where not detected by the test (see Table 1).

False Positive (Result) – A test result that indicates the presence of a condition (positive result) when the condition is not present (group "B" in Table 1).

False Positive (Rate) – The percentage of people without the disease who were incorrectly labeled by the test as having the disease (see Table 1).

Friability – Fragile, easily crumbled, especially prone to bleeding; for example, cervical tissue in some chlamydia infections.

Gonorrhea – A common sexually transmitted disease most often affecting the genitourinary tract and, occasionally, the pharynx, conjunctiva, or rectum. Infection results from contact with an infected person or by contact with secretions containing the causative organism *Neisseria gonorrhoeae*.

Granuloma Inguinale – A STD caused by *Calymmatobacterium granulomatis*. This infection causes ulcerated granulomatious lesions in the inguinal regions and the genitalia.

Gray Zone (GZ) – An artificially established range (zone) below a diagnostic test's cut-off (CO) value. The GZ generally ranges from 30-70% below the CO. Specimens in the established GZ are often re-tested by another methodology in order to increase sensitivity, i.e. to detect additional positive specimens.

Hybrid Capture II Assay – A nucleic acid probe-based chemiluminescent assay to detect chlamydia or gonorrhea DNA in a single specimen. The detection system uses a signal amplification method that enhances test sensitivity. Manufactured by Digene.

Human Papillomavirus (HPV) – HPV is the most common STD. HPV is a DNA virus that causes genital warts and is believed to be the cause of cervical cancer.

Immunoassay – An assay (test) that detects antigens or antibodies.

Incidence – The number of new cases in a particular period of time. Often expressed as a ratio, in which the number of cases is the numerator and the population at risk is the denominator.

Infertility – The inability to conceive or carry a fetus to term. Chlamydia related scarring in the fallopian tubes most often causes infertility.

Inhibitor – A substance that interferes with the test's ability to detect the presence or absence of disease. Blood and mucous are examples of potential inhibitors for chlamydia testing.

Internal Quality Control – An internal control specimen made up and used by a particular laboratory (see external quality control).

Kit – A package of test reagents, package insert, etc. which enable a laboratory to perform a particular test, i.e. a chlamydia kit would enable a laboratory to test for chlamydia.

Ligase Chain Reaction (LCR) – Nucleic acid amplification test (NAAT) for chlamydia and/or gonorrhea. A process whereby a strand of DNA can be cloned (replicated) millions of times within a few hours. Manufactured by Abbott Laboratories.

LPS – The lipopolysaccharide in the chlamydia organism, a part of the organism. The same LPS are present in all chlamydia species, e.g. *C. trachomatis*, *C. psittaci*, *C. pneumonia*, and etc. Any test which detects chlamydia LPS would cross-react with all chlamydia organisms.

Lot – Diagnostic kits are manufactured in large quantities (lots). As part of quality control, laboratories record all results from each kit and lot in order to monitor for any variations that may occur between lots.

Mean – The average of the numerical results obtained from a series of analyses.

Molluscum Contagiosum – Is caused by a Poxvirus and produces small dome-shaped papules on the face, upper trunk or extremities that can be mistaken for HSV.

MOMP – the Major Outer Membrane Protein on the chlamydia organism. The MOMP is species specific, i.e. *C. trachomatis* is different from *C. psittaci*, etc. Any test that detects MOMP will only react with each separate species, i.e. *C. trachomatis* MOMP will not react with *C. psittaci*.

Mucopus – Green or yellow discharge when viewed on a white cotton swab that has been inserted into the cervical os.

NonGonococcal Urethritis (NGU) – Urethral discharge, painful urination, or itching at the end of the urethra is generally a response of the urethra to inflammation not due to gonococcal infection.

Nucleic Acid Amplified Test (NAAT) – A test, which replicates the genetic material (DNA or RNA) of a microorganism such as chlamydia from a few copies to millions within a few hours. The amplified copies (amplicons) can then be detected, usually by photometry or fluorimetry.

Nucleic Acid Probe (NAP or DNA Probe) – The Pace 2 and Pace 2C assay. The Pace 2/2C are laboratory test that detect *C. trachomatis* and/or *N. gonorrhoeae* ribosomal RNA utilizing a DNA probe and standard enzyme/substrate detection systems. Manufactured by Gen-Probe, Inc.

Nucleic Acid Probe Signal Amplification (NAPSA) – The Hybrid Capture II CT/GC test is a combined test for the detection of *C. trachomatis* and *N. gonorrhoeae*. The Digene assay utilizes RNA probes specific for DNA sequences of *C. trachomatis* and *N. gonorrhoeae.* The RNA:DNA hybrid is then "coated" with multiple detection antibodies ultimately resulting in an enhanced signal. This enhancement should theoretically increase the sensitivity of this method over standard probe detection systems. At this time there is insufficient published data to support increased sensitivity. NAPSA is not a "true amplification" or NAAT (see above). Manufactured by Digene, Inc.

Off-Label Test – The use of a test that differs from the way the test was FDA cleared, e.g. NAAT used to test vaginal, ocular and rectal specimens.

OPA – Office of Population Affairs. This is the federal office that administers the Title X family planning program. The OPA is part of the Department of Health and Human Services.

Package Insert – The written pamphlet in every diagnostic test kit that includes instructions for proper use (kit directions) of the kit. In addition, the package insert contains some or all of the following: information on intended use; summary and explanation of the test; principles of the

procedure; reagents provided; special precautions; specimen collection, storage and transport; materials provided/not provided with kit; procedural limitations; performance characteristics; results; and quality control.

Partner Notification – The process of identifying sex partners of patients testing positive and informing them that they are at risk for infection and need to be tested.

Pelvic Inflammatory Disease (PID) – A clinical syndrome identified by a range of symptoms including lower abdominal pain and tenderness, bilateral adnexal tenderness, low-grade fever, and cervical motion tenderness. Serious sequelae (consequences) can include infertility, ectopic pregnancy, and chronic pelvic pain. PID can be one of the serious consequences of chlamydia infections.

Polymerase Chain Reaction (PCR) – Nucleic acid amplification test (NAAT) for chlamydia and/or gonorrhea. A process whereby a strand of DNA can be cloned (replicated) millions of times within a few hours. Manufactured by Roche Diagnostics.

Predictive Value Negative – The likelihood that a person with a negative test does not have the disease (See Table I).

Predictive Value Positive – The likelihood that an individual with a positive test has the disease (See Table I).

Presumptive Treatment – Also known as epidemiological treatment. The treatment of patients suspected of having a disease based on identified risk factors and/or clinical findings, without the confirmation of a test result.

Prevalence – The percentage of people in a given population that have a given disease. e.g. the prevalence of chlamydia in Clinic A is 5%, that is 5 out 100 individuals in Clinic A are infected with chlamydia (See Table I).

Proficiency Testing (PT) – A program (CAP, AAB, etc.) in which samples (artificial patient specimens) are sent to participating laboratories for analysis. The true value (results) of the samples are unknown by the testing laboratory. The results are reported to the specific program (CAP, AAB, etc.), tabulated, compared to all participating laboratories and reported to the enrolling laboratory. PT specimens are one indicator of laboratory performance.

Qualitative – A test that is qualitative determines the presence or absence of a substance (antibody/antigen), e.g. an EIA detects the presence or absence of chlamydia.

Quantitative – A test that is quantitative determines the amount of a substance per unit volume or unit weight, e.g. blood glucose normal range 70-115 mg/dl-milligrams per deciliter.

Quality Assurance Program (QAP) – A comprehensive set of polices, procedures, and practices used to monitor the services provided in a clinical or laboratory setting. These plans should include protocols for proper record keeping, calibration and maintenance of equipment, monitoring of quality controls and proficiency testing results, and training.

Quality Control (QC) – The set of laboratory or clinical procedures designed to ensure that a test is working properly, e.g. test controls, monitor lot-to-lot variation, monitor/run cut-off (CO) values, and etc.

Screening Criteria – A set of characteristics used to determine which patients in an asymptomatic population should receive a test for chlamydia, e.g. age, number of sexual partners, etc.

Screening Test – A test performed to detect chlamydia in a patient presenting for a routine exam, with no symptoms or risk history indicating chlamydia, as distinguished from a diagnostic test.

Selective Screening – Testing for chlamydia in a population using screening criteria, as opposed to universal screening of an entire patient population, or diagnostic testing of patients with symptoms.

Sensitivity – The ability of a test to detect patients who have the disease or condition for which they are being tested (See Table I).

Specificity – The ability of a test to identify patients who do not have the disease or condition for which they are being tested (See Table I).

Specimen – A small sample of something, intended to show the nature of the whole, such as a blood or urine specimen.

Specimen Adequacy – The quality of the specimen obtained from the patient judged by the number and type of cells sampled, e.g. in chlamydia testing, an endocervical specimen which contains ≥10 endocervical columnar/cuboidal epithelial cells or metaplastic cells or greater than 100 erythrocytes (RBC's) per field at 200X.

Strand Displacement Amplification (SDA) – Nucleic acid amplification test (NAAT) for chlamydia and/or gonorrhea. A process whereby a strand of DNA can be cloned (replicated) millions of times within a few hours. Manufactured by Becton Dickinson.

Supplemental Test – A test which is used to confirm positive screening results. This test employs the same target molecule as the original screening test, e.g. *C. trachomatis* enzyme immunoassays (EIA) typically detect specific lipopolysaccharide (LPS); the EIA blocking or neutralization assay also target this same molecule (LPS). As a general rule, results obtained from using one test should be confirmed using an alternate technology (see **Confirmatory Test**) in order to best decrease the incidence of false positive test results thereby increasing specificity.

Symptomatic – Condition where an individual presents with clinical signs of disease.

Title X – The Federal legislation which supports federally funded family planning clinics.

Transcription Mediated Amplification (TMA) – An amplification test for the detection of chlamydia. A process whereby a strand of RNA can be cloned (replicated) millions of times within a few hours. Manufactured by Gen-Probe, Incorporated.

Turnaround Time (TAT) – The amount of time it takes to produce a test result from the time a specimen is received in the laboratory until it is reported out.

Universal Screening – Testing for chlamydia in an entire patient population, regardless of symptoms, risk history, or other factors.

UPP (Urine Processing Pouch) -- Part of the transport system used with the Becton Dickinson Strand Displacement Amplification Test (SDA). A small "tea bag" added to urine specimens in order to reduce problems with inhibitory substances in urine.

Urethritis – Inflammation of the urethra.

Validation – The documentation that a test that has already been verified is repeatedly giving the expected results as the test is performed over a period of time. Validation is an integral part of the laboratories quality assurance program.

Verification – The process of examination or evaluation of a test system to determine whether the claims stipulated by the manufacturer in the package insert as they related to the product, the process, the results, or the interpretation can be achieved. Verification is a one-time process, completed before the test or system is used for patient testing.

Table 1. CALCULATING DISEASE DISTRIBUTION

	Disease Present	Disease Absent	TOTAL
Positive Test Result	**A (TP)**	**B (FP)**	**A+B**
Negative Test Result	**C (FN)**	**D (TN)**	**C+D**
	A+C	**B+D**	**A+B+C+D**

TP-True Positive FP-False Positive FN-False Negative TN-True Negative

Prevalence: **(A+C)/(A+B+C+D)**
Sensitivity (Sens.): **A/(A+C)**
Specificity (Spec.): **D/(B+D)**

Positive Predictive Value (PPV): **A/(A+B)**
Negative Predictive Value (NPV): **D/(C+D)**

If Prevalence is known:

PPV: **(Prev.)(Sens.) / (Prev.)(Sens.) + (1 – Prev.)(1- Spec.) x 100**
NPV: **(1 – Prev.)(Spec.) / (1 – Prev.)(Spec.) + (Prev.)(1 – Sens.) x 100**

False Negative Rate: **C/(A+C)**
False Positive Rate: **B/(B+D)**

QUICK REFERENCE to ACRONYMS and ABBREVIATIONS

ASR – Analyte Specific Reagent
APC - Accelerated Prevention Campaign
APHL - The Association of Public Health Laboratories
CAP - College of American Pathology
CDC – Centers for Disease Control and Prevention
CLIA - Clinical Laboratory Improvement Act 1967 (Amendments 1988)
CMT - Cervical Motion Tenderness
CO - Cutoff
CSTE - Coalition of State and Territorial Epidemiologists
CT - Chlamydia Trachomatis
DFA - Direct Fluorescent Antibody Test
DIS - Disease Intervention Specialist
DNA – Deoxyribonucleic Acid
EB – Elementary Body
EIA - Enzyme Immunoassay
FDA – The Food and Drug Administration
GZ - Gray Zone
HCFA - Health Care Financing Administration
HC – Hybrid Capture
HEDIS – Health Plan Employer Data and Information Set
HPV – Human Papillomavirus
KS – Kaposi's Sarcoma
LCR - Ligase Chain Reaction
LPS - Lipopolysaccharide
MOA - Memorandum of Agreement
MOMP - Major Outer Membrane Protein
NAP – Nucleic Acid Probe (Gen-Probe Pace 2 and 2C)
NAPSA – Nucleic Acid Probe Signal Amplification (Digene Hybrid Capture 2)
NGA - Notice of Grant Award
NGU - Non-gonococcal Urethritis
OPA - Office of Population Affairs
PCA - Probe Competition Assay
PID - Pelvic Inflammatory Disease
PCR - Polymerase Chain Reaction
PT - Proficiency Testing
QA - Quality Assurance
QC - Quality Control
RNA – Ribonucleic Acid
SDA - Strand Displacement Amplification
STD – Sexually Transmitted Disease
STI – Sexually Transmitted Infection
TMA - Transcription Mediated Amplification
TAT - Turnaround Time

[1]The original *Glossary of Terms* was prepared for the Infertility Prevention Project in Region III

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