Adventist HealthCare

*Laboratories at Adventist Healthcare White Oak Medical Center, Shady Grove Medical Center and Germantown Emergency Center*

# LABORATORY ALERT

*March 31, 2022*

*The Laboratory is informing you of the following new laboratory testing information:*

| | |
|---|---|
| **Test Code** | SYPHIL (Syphilis antibody) |
| | **** Change in reflex test code to Quest **** |
| **Current state:** | If SYPHIL is reactive or equivocal, XSACR is automatically ordered under the same accession number and label prints. |
| **Effective Now:** | If SYPHIL is reactive or equivocal, XRPRP and XTPPA are automatically ordered under the same accession number and label prints. |

Technical SOP

| | | | |
|---|---|---|---|
| **Title** | **Syphilis (Syph) by Atellica IM Analyzer** | | |
| **Prepared by** | Ashkan Chini | Date: | 11/2/2021 |
| **Owner** | Robert SanLuis | Date: | 11/2/2021 |

| **Laboratory Approval** | **Local Effective Date:** | |
|---|---|---|
| **Print Name and Title** | **Signature** | **Date** |
| *Refer to the electronic signature page for approval and approval dates.* | | |



## TABLE OF CONTENTS

## 1. TEST INFORMATION

| Assay | Method/Instrument | Test Code |
|---|---|---|
| Syphilis | Atellica IM Analyzer | SYPHIL |

| Synonyms/Abbreviations |
|---|
| Syphilis antibody with reflex |

| Department |
|---|
| Chemistry |

## 2. ANALYTICAL PRINCIPLE

The Atellica IM Syph assay is intended to be a fully automated antigen sandwich assay, using direct chemiluminescent technology. The ancillary pack reagent containing acridinium-esterlabeled *T. pallidum* recombinant antigens is added to the sample. These *T. pallidum* recombinant antigens form complexes with the antibodies in the sample. The Solid Phase Reagent, containing biotinylated *T. pallidum* recombinant antigens preformed to streptavidincoated magnetic latex particles, is then added to the sample. Antibody-antigen complexes will form if syphilis antibodies are present in the sample. The particles capture the *T. pallidum* recombinant antigen-antibody complexes. A direct relationship exists between the level of antibodies to *T. pallidum* present in the patient sample and the amount of relative light units detected by the system. A result of reactive, nonreactive, or equivocal is determined according to the Index Value established with the calibrators.

## 3. SPECIMEN REQUIREMENTS

### 3.1 Patient Preparation

| Component | Special Notations |
|---|---|
| **Fasting/Special Diets** | N/A |
| **Specimen Collection and/or Timing** | Normal procedures for collecting and storing serum and plasma may be used for samples to be analyzed by this method. |
| **Special Collection Procedures** | N/A |
| **Other** | N/A |

### 3.2 Specimen Type & Handling

| Criteria | |
|---|---|
| **Type -Preferred** | Serum (Red top) |
| **-Other Acceptable** | Serum (Serum separator tube SST) |
| **Collection Container** | Serum: Red top tube, Serum separator tube (SST) |

| Criteria | |
|---|---|
| **Volume - Optimum**<br>**- Minimum** | 1.0 mL<br>0.5 mL |
| **Transport Container and Temperature** | Collection container or plastic vial at room temperature |
| **Stability & Storage Requirements** | Room Temperature: 7 days |
| | Refrigerated: 7 days |
| | Frozen: Not specified |
| **Timing Considerations** | N/A |
| **Unacceptable Specimens & Actions to Take** | Specimens that are unlabeled, improperly labeled, or those that do not meet the stated criteria are unacceptable. Request a recollection and credit the test with the appropriate LIS English text code for "test not performed" message. Examples: Quantity not sufficient-QNS; Wrong collection-UNAC. Document the request for recollection in the LIS. |
| **Compromising Physical Characteristics** | Gross hemolysis. Reject sample and request a recollection. Credit the test with the appropriate LIS English text code explanation of HMT (Specimen markedly hemolyzed) |
| **Other Considerations** | Allow Red Top or SST to clot completely prior to centrifugation.<br>Before placing on system, ensure samples are free of:<br>• Bubbles or foam<br>• Fibrin or other particulate matter |

**NOTE: Labeling requirements for all reagents, calibrators and controls include: (1) Open date, (2) Substance name, (3) Lot number, (4) Date of preparation, (5) Expiration date, (6) Initials of tech, and (7) Any special storage instructions. Check all for visible signs of degradation. When placed on board the analyzer, the instrument captures the date / time loaded and calculates and tracks the opened expiration.**

## 4. REAGENTS

**The package insert for a new lot of kits must be reviewed for any changes before the kit is used. A current Package Insert is included as a Related Document.**

### 4.1 Reagent Summary

| Reagents | Supplier & Catalog Number |
|---|---|
| Syphilis (Syph) | Siemens, Atellica IM, Cat. No. 10995675 |
| Syphilis Ancillary | Siemens, Atellica IM, Cat. No. 10995675 |
| APW1 Ancillary | Siemens, Atellica IM, Cat. No. 10995458 |

### 4.2 Reagent Preparation and Storage

| **Reagent** | **Syphilis (Syph)** |
|---|---|
| **Storage** | • Store at 2-8°C<br>• Store in an upright position<br>• Protect from heat and light |
| **Stability** | Reagents are stable onboard the system for 60 days. |
| **Preparation** | Liquid and ready to use. |

| **Reagent** | **Syphilis Ancillary** |
|---|---|
| **Storage** | Store at 2-8°C in an upright position. |
| **Stability** | Stable onboard the system for 60 days. |
| **Preparation** | Liquid and ready to use. |

| **Reagent** | **APW1 Ancillary** |
|---|---|
| **Storage** | Store at 2-8°C in an upright position. |
| **Stability** | Stable onboard the system for 14 days. |
| **Preparation** | Liquid and ready to use. |

## 5. CALIBRATORS/STANDARDS

### 5.1 Calibrators/Standards Used

| **Calibrator** | **Supplier and Catalog Number** |
|---|---|
| Syphilis Calibrator (Syph CAL) | Siemens Atellica IM, Cat. No. 10995675 |

### 5.2 Calibrator Preparation and Storage

| **Calibrator** | Syphilis Calibrator (Syph CAL) |
|---|---|
| **Preparation** | Calibrators are liquid and ready to use. |
| **Storage/Stability** | • Store at 2-8°C in an upright position<br>• **Unopened-Opened:** stable until the expiration date on the product when stored at 2-8°C.<br>• **Opened at room temperature:** stable for 8 hours |

### 5.3 Calibration Parameter

| **Criteria** | **Special Notations** |
|---|---|
| **Reference Material** | Syphilis Calibrator (Syph CAL) |
| **Assay Range** | See Package Insert for specific assay ranges. |
| **Suggested Calibration Level** | See Reagent Package Insert for lot specific assigned values |

| | |
|---|---|
| **Frequency** | • When changing lot numbers of primary reagent packs.<br>• At the end of the lot calibration interval (37 days), for a specified lot of calibrated reagent on the system.<br>• At the end of pack calibration interval (21 days), for calibrated reagent packs on the system.<br>• When indicated by quality control results.<br>• After major maintenance or service.<br><br>At the end of the onboard stability interval, replace the reagent pack on the system with a new reagent pack. Recalibration is not required, unless the lot calibration interval is exceeded. |
| **Calibration Scheme** | See Package Insert for specific calibration scheme. |
| **Procedure** | To load a new lot of reagent on IM Module:<br>Note: Calibrate the new lot of reagent as soon as it is loaded on the instrument. If the reagent sits un-calibrated for a short period of time (24 hours) then it will not be eligible for a "Lot Calibration" and another new reagent will need to be loaded onboard.<br>1. From the home page of the IM Module Screen (small screen attached on the IM Module) make sure the analyzer status is in Standby.<br>2. On the IM Module Screen select Reagent Loader. Make sure the Reagent Drawer status is unlocked. Open the reagent drawer, load the reagent and then close it. Once the reagent is scanned, the IM Module Screen will populate message "Missing TDef for lot" next to the reagent. The Reagent Drawer status remains unlocked.<br>3. Both Reagent Master Curve and Calibrator Package Insert need to be scanned using the Atellica Solution's main monitor. To differentiate between the two:<br>• Reagent Master Curve has MC TDEF printed right below the assay name.<br>• Calibrator Package Insert has CAL printed right above the assay name.<br>4. To scan the Reagent Master Curve, go to Set up – Test Definition – IM Test Definition. Scan the barcode.<br>5. To scan the Calibrator Package Insert, go to Calibration – Calibrator Definition. Scan the barcode.<br>6. Re-open the Reagent Drawer and close it. This time its status should change to locked, meaning the reagent is going to be loaded onboard ready for calibration.<br><br>Refer to the Atellica Solution Operating, QC, Calibration and Maintenance procedure for specific instructions. |

### 5.5 Tolerance Limits

| IF…… | THEN…… |
|---|---|
| If result fall within assay-specific specification, and QC values are within acceptable limits, | proceed with analysis |
| If result falls outside assay-specific specification, or QC values are out of Acceptable limits, | troubleshoot the assay and/or instrument and repeat calibration |

## 6. QUALITY CONTROL

### 6.1 Controls Used

| Controls | Supplier and Catalog Number |
|---|---|
| Syphilis Quality Control (Syph QC) | Siemens, Atellica IM, Cat. No. 10995676 |

### 6.2 Control Preparation and Storage

| | |
|---|---|
| **Control** | Syphilis Quality Control (Syph QC) |
| **Preparation** | Quality Control materials are liquid and ready to use. Gently mix and invert the vial to ensure homogeneity of the material. |
| **Storage/Stability** | • Store at 2-8°C in an upright position<br>• **Unopened-Opened:** stable until the expiration date on the product when stored at 2-8°C.<br>• **Opened at room temperature:** stable for 8 hours |

### 6.3 Frequency

Analyze all levels of QC material after every calibration and each day of testing (notated on the QC frequency sheets posted on the instruments).

Refer to the Atellica Solution QC Schedule and the Siemens Atellica Quick Reference Guide.

### 6.4 Tolerance Limits and Criteria for Acceptable QC

| Step | Action |
|---|---|
| 1 | Acceptable ranges for QC are programmed into the instrument's Quality Control software system and Unity Real Time, and may be posted near the instrument for use during computer downtime. |
| 2 | **Run Rejection Criteria**<br>• Anytime the established parameters are exceeded, the run is considered out of control (failed) and patient results must not be reported.<br>• The technologist must follow the procedure in the Laboratory QC Program to resolve the problem. |

| Step | Action |
|---|---|
| 3 | **Corrective Action**:<br>• All rejected runs must be effectively addressed through corrective action. Steps taken in response to QC failures must be documented. Patient samples in failed analytical runs must be reanalyzed according to the Laboratory QC Program. Supervisors may override rejection of partial or complete runs only with detailed documentation and criteria for overrides that are approved by the Medical Director. Consult corrective action guidelines in Laboratory QC Program. Follow corrective action guidelines in the Laboratory QC Program.<br>• Corrective action documentation must follow the Laboratory Quality Control Program. |
| 4 | **Review of QC**<br>• QC must be reviewed weekly by the Group Lead or designee and monthly by the Supervisor/Manager or designee.<br>• If the SD and/or CV are greater than established ranges, investigate the cause for the imprecision and document implementation of corrective actions. |

### 6.5 Documentation

- QC tolerance limits are programmed into the instrument and Unity Real Time; it calculates cumulative mean, SD and CV and stores all information for easy retrieval.
- Quality control records are reviewed daily at the bench, weekly by the Group Lead or designee, and monthly by the Supervisor/Manager or designee.
- Refer to complete policies and procedures for QC documentation and for record retention requirements in the Laboratory QC Program.

### 6.6 Quality Assurance Program

- Each new lot number of reagent or new shipment of the same lot of reagent must be tested with external control materials and previously analyzed samples. Performance of the new lot must be equivalent to the previous lot.
- Training must be successfully completed and documented prior to performing this test. This procedure must be incorporated into the departmental competency assessment program.
- The laboratory participates in CAP proficiency testing. All proficiency testing materials must be treated in the same manner as patient samples.
- Monthly QC must be presented to the Medical Director or designee for review and signature.
- Consult the Laboratory QC Program for complete details.

## 7. EQUIPMENT and SUPPLIES

### 7.1 Assay Platform

Siemens Atellica IM Analyzer

### 7.2 Equipment

- Refrigerator capable of sustaining 2–8°C.
- Freezer capable of sustaining range not to exceed -20 to -50°C.
- Centrifuge

### 7.3 Supplies

- System Fluids
- Assorted calibrated pipettes (MLA or equivalent) and disposable tips

## 8. PROCEDURE

Atellica IM Syphilis (Syph) is required to perform this test.
Syphilis is performed on the Atellica IM Analyzer after the method is calibrated and Quality Controls are acceptable.

**NOTE: For all procedures involving specimens, buttoned lab coats, gloves, and face protection are required minimum personal protective equipment. Report all accidents to your supervisor.**

| 8.1 | Instrument Set-up Protocol |
|---|---|
| 1. | Perform any required instrument maintenance. |
| 2. | Ensure that the instrument has sufficient primary and ancillary reagents. |
| 3. | Check status of cuvettes and tips. Check waste levels. Fill or empty as appropriate. |
| 4. | Check calibration status and re-calibrate as needed. |

| 8.2 | Specimen Testing |
|---|---|
| 1. | Centrifuge the specimens. |
| 2. | Load the sample in the Atellica rack and place the rack into the Sample Handler to initiate testing. **NOTE: If not equipped with an in-line decapper unit, samples must be de-capped prior to loading on the Atellica system |
| 3. | Refer to the general operating procedure for detailed steps. |
| 4. | Follow protocol in section 10.6 “Repeat Criteria and Resulting” for samples with results above the analytical measurement range (AMR).<br>Investigate any flagged results and repeat as necessary. |
| 5. | Append the appropriate English text code qualifier messages to any samples requiring a comment regarding sample quality and/or any other pertinent factors. |

**NOTE: In the event that the test system becomes inoperable, notify supervision or designee for further direction. Patient specimens must be stored in a manner that maintains the integrity of the specimen.**

## 9. CALCULATIONS

N/A

## 10. REPORTING RESULTS AND REPEAT CRITERIA

### 10.1 Interpretation of Data

The system reports Syphilis results as nonreactive, equivocal, or reactive, based on index values established with the calibrators:

- Samples with an index value < 0.90 are considered nonreactive for Syphilis *T. pallidum* antibodies.
- Samples with an index value ≥ 1.10 are considered reactive for Syphilis *T. pallidum* antibodies.
- Samples with an index value ≥ 0.90 and < 1.10 are considered equivocal.

### 10.2 Rounding

N/A

### 10.3 Units of Measure

N/A

### 10.4 Clinically Reportable Range (CRR)

N/A

### 10.5 Review Patient Data

Each result is reviewed for error messages. Resolve any problems noted before issuing patient reports.

### 10.6 Repeat Criteria and Resulting

- Nonreactive results are not required to be repeated. Result as "Nonreactive".
- Reactive results are not required to be repeated but must be sent for confirmatory testing. Result as "Reactive" and follow steps in 10.7.
- Samples with equivocal values are automatically retested by the Atellica as long as specimen remains in the instrument. The Atellica uses the logic below to determine the result.

| **Equivocal Results** | |
|---|---|
| **IF …** | **THEN…** |
| 2 out of 3 results are < 0.90 | The sample is considered nonreactive |
| 2 out of 3 results are ≥ 1.10 | The sample is considered reactive * |
| 2 out of 3 sample results remain equivocal | Result as Equivocal * |

* Sent out for confirmatory testing

### 10.7 Confirmatory Testing

Samples that are reported as reactive or equivocal:

- **Two reflex test codes are automatically added to the same accession number.**
  - XRPRP (RPR with reflex to titer) -Quest code 799
    If reactive then titer is performed
  - XTPPA (T pallidum Antibody, Particle Agglutination-Quest code 653.
- Receipt label will automatically print near OL Monitor in Chemistry (left side) once results are released from DI and post into Sunquest.
- Place label on specimen and deliver specimen and label to accessioning.
- The comment "Confirmatory test has been added" is automatically added.

Samples that are reported as nonreactive:

- A comment "Confirmatory test not indicated" is automatically added.

## 11. EXPECTED VALUES

### 11.1 Reference Ranges

Nonreactive

### 11.2 Critical Values

None established

### 11.3 Standard Required Messages

Nonreactive result will have the following comment automatically added to the report by the LIS.

NRSYP: A nonreactive test result does not exclude the possibility of exposure to or infection with syphilis. T. pallidum antibodies may be undetectable in some stages of the infection and in some clinical conditions.

Reactive and Equivocal results will have no comment added to the report.

## 12. CLINICAL SIGNIFICANCE

Syphilis is primarily transmitted via sexual contact, but can also be transmitted from mother to fetus. Syphilis is caused by the spirochete *T. pallidum*, which has never been successfully cultured in artificial media. Syphilis infections are classified into early (infectious) and late (non-infectious) stages. Early syphilis may be further divided into primary, secondary, and early latent syphilis. The signs and symptoms of syphilis are numerous; before the advent of serological testing, precise diagnosis was very difficult. In fact, the disease was often confused with other diseases, particularly in its tertiary stage. If not treated, syphilis can cause serious effects such as damage to the heart, aorta, brain, eyes, and bones. In some

cases, these effects can be fatal. Therefore, the serological diagnosis of syphilis is very important.

## 13. PROCEDURE NOTES

- **FDA Status:** FDA Approved/cleared
- **Validated Test Modifications:** None

The instrument reporting system contains error messages to warn the operator of specific malfunctions. Any report slip containing such error messages should be held for follow-up.

## 14. LIMITATIONS OF METHOD

### 14.1 Analytical Measurement Range (AMR)

N/A

### 14.2 Precision

| Sample Type | Mean Index | Standard Deviation (%CV) | |
|---|---|---|---|
| | | Repeatability | Within-Lab |
| Plasma A | 0.46 | 0.01 | 0.01 |
| Plasma B | 0.95 | 0.01 | 0.02 |
| Plasma C | 8.53 | 0.10 | 0.26 |
| Plasma D | 20.68 | 0.25 | 0.73 |
| Plasma E | 32.22 | 0.34 | 1.0 |

### 14.3 Interfering Substances

| Specimens that contain … | Have an insignificant effect on the assay up to … |
|---|---|
| Hemoglobin | 500 mg/dL |
| Triglycerides (intralipids) | 1000 mg/dL |
| Cholesterol | 400 mg/dL |
| Bilirubin, conjugated | 40 mg/dL |
| Bilirubin, unconjugated | 40 mg/dL |
| Protein (serum albumin) | 11 g/dL |
| Hyper-IgG | 30 mg/mL |
| Biotin | 3500 ng/mL |

### 14.4 Clinical Sensitivity/Specificity/Predictive Values

- A nonreactive test result does not exclude the possibility of exposure to or infection with syphilis. *T. pallidum* antibodies may be undetectable in some stages of the infection and in some clinical conditions.
- Assay performance characteristics have not been established when the Atellica IM Syph assay is used in conjunction with other manufacturers' assays for specific syphilis serological markers.

- The performance of the Atellica IM Syph assay has not been established with neonatal specimens, cadaver specimens, heat-inactivated specimens, or body fluids other than serum or plasma, such as saliva, urine, amniotic, or pleural fluids.
- Assay interference due to possible circulating antibodies against pinta, yaws, and
- leptospirosis has not been evaluated.

## 15. SAFETY

Refer to your local and corporate safety manuals and Safety Data Sheet (SDS) for detailed information on safety practices and procedures and a complete description of hazards.

May be corrosive to metals. Causes serious eye irritation. Causes skin irritation. Wear protective gloves/protective clothing/eye protection/face protection. Wash hands thoroughly after handling. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Absorb spillage to prevent material damage. **Contains:** sodium hydroxide (in Atellica IM APW1)

## 16. RELATED DOCUMENTS

1. Atellica Solution Operating, QC, Calibration and Maintenance procedure
2. Laboratory Quality Control Program
3. Atellica Solution QC Schedule
4. Laboratory Safety Manual
5. Safety Data Sheets (SDS)
6. Atellica Solution Limits Chart
7. Atellica Solution System Error Messages Chart
8. Centrifuge Use, Maintenance and Function Checks (Lab policy)
9. Specimen Acceptability Requirements (Lab policy)
10. Repeat Testing Requirement (Lab policy)
11. Current Allowable Total Error Specifications at http://questnet.qwx.com/Business_Groups/Medical/qc/docs/qc_bpt_tea.xls
12. Current package insert of Syphilis Reagent

## 17. REFERENCES

1. Package Insert, Syphilis Reagent, Siemens Healthcare Diagnostics Inc., 08/2020
2. Package Insert, Syphilis Quality Control, Siemens Healthcare Diagnostics Inc., 09/2019

## 18. REVISION HISTORY

| Version | Date | Section | Reason | Reviser | Approval |
|---|---|---|---|---|---|
| 1 | 3/31/222 | 10.7 | Reflex XSACR (Syphilis antibody cascading reflex) replaced with XRPRP and XTPPA | MSabonis | Rob Sanluis |
| | | | | | |
| | | | | | |
| | | | | | |

## 19. ADDENDA

None