QUIDEL | Sofia® Strep A+ FIA

FOR USE WITH SOFIA ONLY
CLIA Complexity: Waived

For *in vitro* use only; R_x Only

A Certificate of Waiver is required to perform this test in a CLIA waived setting. This test may be used by laboratories that perform moderate and high complexity testing. To obtain a Certificate of Waiver, please contact your state health department. Additional CLIA waiver information is available at the Centers for Medicare and Medicaid website at www.cms.hhs.gov/CLIA or from your state health department.

Failure to follow the instructions or modification to the test system instructions will result in the test no longer meeting the requirements for waived classification.

INTENDED USE

The Sofia Strep A+ FIA detects Group A Streptococcal antigens from throat swabs from patients with signs and symptoms of pharyngitis, such as sore throat. All negative test results should be confirmed by bacterial culture because negative results do not preclude Group A Strep infection and should not be used as the sole basis for treatment. The test is intended for professional and laboratory use as an aid in the diagnosis of Group A Streptococcal infection.

SUMMARY AND EXPLANATION

Group A Streptococcus is one of the most common causes of acute upper respiratory tract infection. Early diagnosis and treatment of Group A Streptococcal pharyngitis has been shown to reduce the severity of symptoms and serious complications such as rheumatic fever and glomerulonephritis.[1, 2] The primary means of identifying Group A Streptococcal species are by employing culture, immunological and/or molecular procedures. Conventional procedures for identification of Group A Streptococcus from throat swabs involve the culture, isolation, and subsequent identification of viable pathogen at 24 to 48 hours or longer for results.[3, 4] Rapid antigen detection tests, such as the Sofia Strep A+ FIA, are among the most commonly employed diagnostic aids for Group A Streptococcus, due to the rapid turn-around time and ease of use. Recently, a number of new *in vitro* diagnostics that employ molecular-based nucleic acid amplification technologies have become available. These provide identification of Group A Streptococcus with high accuracy in significantly less than 24 hours.

PRINCIPLE OF THE TEST

The Sofia Strep A+ FIA employs immunofluorescence technology that is used with the Sofia analyzer (Sofia) to detect Group A Streptococcal antigen.

The Sofia Strep A+ FIA involves the extraction of the antigenic components of the Group A Streptococcus (GAS) bacteria. The patient's swab sample is placed in the Reagent Tube containing the Reagent Solution, during which time the bacterial antigens are extracted, making them more accessible to the specific antibodies. An aliquot of the extracted sample is dispensed into the Cassette sample well. From the sample well, the sample migrates through a test strip containing various unique chemical environments. If Group A Streptococcal antigens are present, they will be bound by antibodies coupled to fluorescent microparticles that migrate through the test strip. The fluorescent microparticles containing bound antigen will be captured by antibodies at a defined location on the test strip where they are detected by Sofia. If antigens are not present, the fluorescent microparticles will not be trapped by the capture antibodies nor detected by Sofia.

Note: Once the sample is placed in the cassette, the cassette is placed directly inside Sofia for automatically timed development (WALK AWAY Mode).

Sofia scans, measures, and interprets the immunofluorescent signal using method-specific algorithms. Sofia will display the test results (Positive, Negative, or Invalid) on the screen. The results can also be automatically printed on an integrated printer if this option is selected, or transmitted via an LIS connection.

REAGENTS AND MATERIALS SUPPLIED

25-Test Kit:

- Individually Packaged Test Cassettes (25): Polyclonal rabbit anti-Group A Streptococcus antibodies
- Reagent Tubes (25)
- Reagent Solution Bottles (25): 4M Sodium Nitrite and 0.4N Hydrochloric Acid inside glass ampoule
- Sterile Rayon Throat Swabs (25)
- Fixed Volume Pipettes, 120 µL (25)
- Positive Control Swab (1): Swab is coated with heat-inactivated, non-infectious Group A Streptococcus
- Negative Control Swab (1): Swab is coated with heat-inactivated, non-infectious Group C Streptococcus
- Package Insert (1)
- Quick Reference Instructions (1)
- QC Card (located on kit box)
- Printer Paper (1)

MATERIALS NOT SUPPLIED IN KIT

- Sofia
- Calibration Cassette (supplied with the Sofia Installation Pack)
- Timer or Watch

WARNINGS AND PRECAUTIONS

- For *in vitro* diagnostic use.
- Do not use the kit contents beyond the expiration date printed on the outside of the box.

- Use appropriate precautions in the collection, handling, storage, and disposal of patient samples and used kit contents.[5]
- Use of Nitrile or Latex (or equivalent) gloves is recommended when handling patient samples.[5]
- Dispose of containers and used contents in accordance with Federal, State and Local requirements.
- Do not reuse any used Cassettes, Reagent Tubes, Fixed Volume Pipettes, solutions, or Control Swabs.
- The Calibration Cassette must be kept in the provided storage pouch between uses.
- To obtain accurate results, the Package Insert instructions must be followed.
- Inadequate or inappropriate sample collection, storage, and transport may yield false test results.
- Sample collection and handling procedures require specific training and guidance.
- Use the rayon-tipped swabs, provided with this assay, to collect throat samples. The performance claims in the Performance Characteristics section were obtained with the Swabs provided in the kit. Do not use calcium alginate, cotton-tipped or wooden shaft swabs.
- The user should never open the foil pouch of the Test Cassette exposing it to the ambient environment until the Cassette is ready for immediate use.
- Discard and do not use any damaged Cassette or material.
- The Reagent Solution contains an acidic solution. If the solution contacts the skin or eye, flush with copious amounts of water.
- For more information, consult the Safety Data Sheet available on quidel.com.
- The Reagent Solution Bottle contains glass; break cautiously, and only squeeze once to break the ampoule.
- If the Reagent Solution Bottle is missing the glass ampoule, if the solution is green prior to the breaking of the ampoule, or if the solution does not turn green after breaking the glass and shaking, discard and use another Reagent Solution Bottle.
- Do not pour samples from the Reagent Tube into the Test Cassette sample well. Use the provided **120 µL Fixed Volume Pipette** when adding the sample to the Test Cassette.
- The Sofia Strep A+ FIA will automatically be forced into the WALK AWAY Mode when inserted into Sofia. DO NOT allow the Test Cassette to develop on the bench or counter top prior to placing the Cassette into Sofia.
- Do not write on the barcode of the Cassette. This is used by Sofia to identify the type of test being run and the Cassette's expiration date.
- Do not attempt to scan a Cassette more than one time. The barcode on the Cassette contains a unique identifier that will prevent Sofia from performing a second read on a previously scanned Cassette. An error message will be displayed if a Cassette is scanned more than once on the same Sofia.
- As the detection reagent is a fluorescent compound, no visible results will form on the test strip. Sofia must be used for result interpretation.

KIT STORAGE AND STABILITY

Store the kit at room temperature, 59°F to 86°F (15°C to 30°C), out of direct sunlight. Kit contents are stable until the expiration date printed on the outer box. Do not freeze.

QUALITY CONTROL

There are three types of Quality Control for Sofia and Strep A+ FIA: Sofia Calibration Check Procedure, built-in procedural control features, and External Controls.

Sofia Calibration Check Procedure

NOTE: This is a "Calibration Check" procedure.

The Calibration Check Procedure should be performed every 30 days. Sofia can be easily set to remind the user to complete the Calibration Check Procedure.

The Calibration Check is a required function that checks Sofia optics and calculation systems using a specific Calibration Cassette. This Calibration Cassette is shipped with the Sofia Installation Pack. Refer to the Sofia User Manual for details regarding the Calibration Check Procedure.

Important: Ensure that the Calibration Cassette is stored in the provided storage pouch between uses to protect it from exposure to light.

1. To check the calibration of Sofia, select "Calibration" from the Main Menu.

2. Following the prompts, insert the Calibration Cassette into Sofia and close the drawer. Sofia performs the Calibration Check automatically with no user input required.

Sofia indicates when the Calibration Check is completed. Select **OK** to return to the Main Menu.

NOTE: If the Calibration Check does not pass, notify the on-site Supervisor and call Quidel Technical Support for assistance Monday through Friday from 7:00 a.m. to 5:00 p.m. Pacific Time at 800.874.1517 (in the U.S.); 858.552.1100 (outside the U.S.); Fax: 858.455.4960; custserv@quidel.com (Customer Service); technicalsupport@quidel.com (Technical Support); or contact your local distributor.

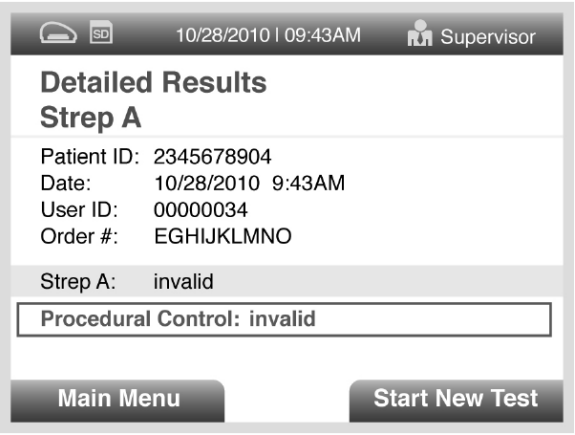
Built-in Procedural Controls

The Sofia Strep A+ FIA contains two built-in procedural control features. The manufacturer's recommendation for daily control is to document these built-in procedural controls for the first sample tested each day.

A control of the extraction procedure is provided by a color change from clear to green as the Reagent Solution is mixed. The color change is an indication of Reagent Solution integrity and is also an indication that the extraction procedure was performed correctly.

Each time a test is run in Sofia, procedural controls in the Test Cassette are interpreted by Sofia, and the result is displayed on the Sofia screen. This information is automatically logged in Sofia with each test result.

A valid result obtained with the procedural controls demonstrates that the extracted sample flowed correctly and the functional integrity of the Cassette was maintained. **This procedural control is interpreted by Sofia after the Cassette has developed for 5 minutes. If the sample has not flowed correctly, Sofia will indicate that the result is invalid.** Should this occur, review the procedure and repeat the test with a new patient sample and a new Test Cassette.



For example: This display shows an invalid result.

External Quality Control

External Controls may also be used to demonstrate that the reagents and assay procedure perform properly.

Quidel recommends that Positive and Negative Controls be run:

- once for each untrained operator
- once for each new shipment of kits—provided that each different lot received in the shipment is tested
- as deemed additionally necessary by your internal quality control procedures, and in accordance with Local, State and Federal regulations or accreditation requirements.

To test External Controls, the user must first select Run QC on the Main Menu of Sofia. Then, when prompted, scan the QC Card (located on the kit box). This card provides information specific to the kit lot, including lot number and expiration date.

External Positive and Negative Control Swabs are supplied in the kit and should be tested using the Test Procedure provided in this Package Insert or in the Quick Reference Instructions. **The Positive Control test must be run prior to the Negative Control test.** When the QC run is complete, each result will be displayed as "Passed" or "Failed" for the Positive Control and the Negative Control.

Do not perform patient tests or report patient test results if either of the QC test results fail. Repeat the test or contact Quidel Technical Support before testing patient samples.

If both the Positive and Negative Controls fail, repeat testing with new Positive and Negative Controls a second time. If only a single Control fails, the user has the option of repeating both the Positive and Negative Controls OR to repeat only the Control that failed. The user may select "Skip" on the Sofia display in order to skip the Control test that previously passed. The QC Results will show a skipped Control test as "unknown."

Additional External Control Swabs may be obtained separately by contacting Quidel's Customer Support Services at 800.874.1517 (in the U.S.) or 858.552.1100 (outside the U.S.).

SAMPLE COLLECTION

Use the rayon-tipped Swabs provided in the kit to collect throat samples. Collect throat samples by standard clinical methods. Depress the tongue with a tongue blade or spoon. Rub the Swab on the tonsils and back of the throat. Consult standard reference procedures such as the collection method described by Facklam.[6]

SAMPLE TRANSPORT AND STORAGE

It is recommended that Swab samples be processed as soon as possible after collection. Swabs can be held in any clean, dry plastic tube or sleeve up to 24 hours at room temperature (23°C) or refrigerated (2°C to 8°C) up to 48 hours.

If culture is desired, collect two throat swab specimens – one swab for testing with Sofia Strep A+ FIA and the second swab for culture.

TEST PROCEDURE

Important:

- **All clinical samples and test materials must be at room temperature before beginning the test.**
- **Do not use the Reagent Solution if it is green prior to breaking the glass ampoule or if it does not turn green after breaking the glass ampoule.**
- **Do not allow the Cassette to develop on the bench or counter top prior to placing the Cassette into Sofia.**

  Note: *The Sofia Strep A+ FIA will automatically be run in the WALK AWAY Mode in Sofia once a prepared Test Cassette is inserted.*

- **Expiration date:** Check expiration on outer box before using. *Do not use any Test Cassette past the expiration date on the label.*

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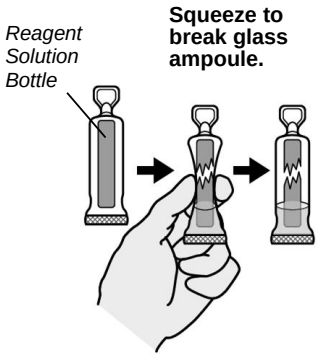
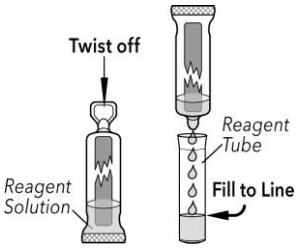
1. Squeeze **ONCE** to break the glass ampoule inside the Reagent Solution Bottle prior to running the assay.



2. **Vigorously** shake the Reagent Solution Bottle **5 times** to mix the solutions. Solution should turn green after the ampoule is broken.

3. Add Reagent:
   - **a)** Flick or shake the Reagent Solution Bottle so that all fluid is in the bottom.
   - **b)** Twist off the tab.
   - **c)** **Slowly** dispense the Reagent Solution into the Reagent Tube **up to the Fill Line.**



4. Add the patient Swab sample to the Reagent Tube. **Vigorously** mix the solutions by plunging the Swab **5 times** in an up and down motion in the Tube.

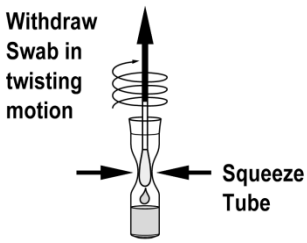
   NOTE: *Best results are obtained when the sample is vigorously extracted in the solution.*

5. Leave the Swab in the Reagent Tube for 1 minute.

6. **Vigorously** mix the solution again by plunging the Swab **5 times** in an up and down motion in the Tube.

7. **Express** as much liquid as possible from the Swab by **squeezing** the sides of the Tube as the Swab is withdrawn in a complete **twisting** motion.

   Discard the Swab in accordance with your biohazard waste disposal protocol.

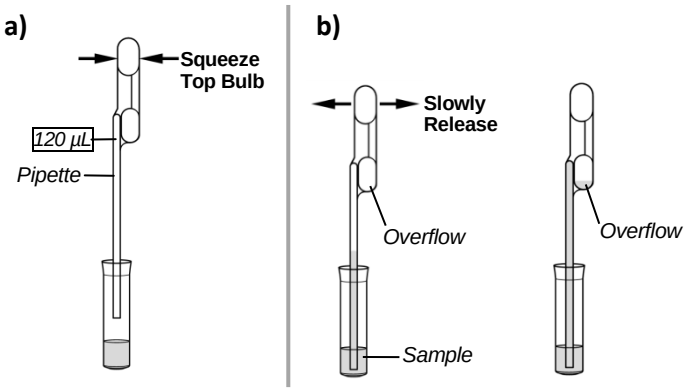


8. Fill the provided **clear 120 µL Fixed Volume Pipette** with the sample:

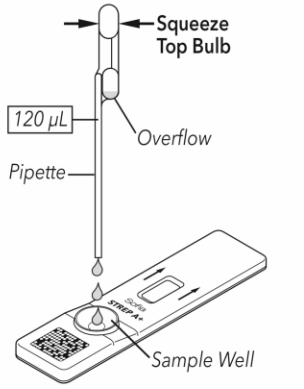
   To fill the Fixed Volume Pipette with the sample:

   a) FIRMLY squeeze the top bulb and place the Pipette tip into the sample.

   b) With the Pipette tip still in the sample, **slowly** release pressure on the top bulb to fill the Pipette.



9. Empty the contents of the Pipette into the Sample Well by firmly squeezing the top bulb. Extra liquid left over in the overflow bulb should be left behind.



NOTE: *The Fixed Volume Pipette is designed to collect and dispense the correct amount of patient sample. Discard the Pipette in your biohazard waste.*

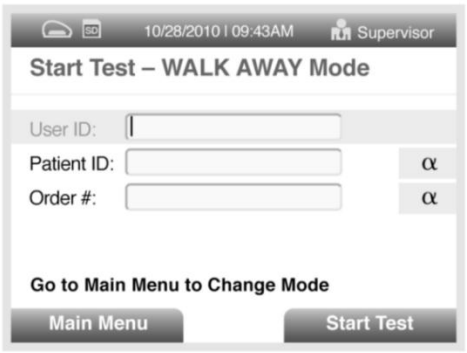
USING SOFIA

Refer to the Sofia User Manual for operating instructions.

10. Select "Run Test" from the Main Menu on Sofia.

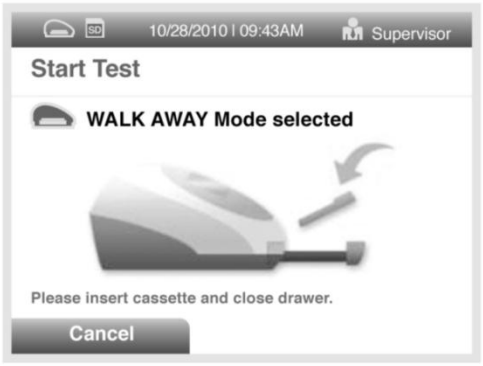
11. Input the User ID using the handheld barcode scanner or manually enter the data using the key pad.

NOTE: *If you mistakenly scan the wrong barcode, use the Arrow Buttons on Sofia to re-highlight the field, and simply rescan using the correct barcode. The previous one will be overwritten with the correct barcode.*



12. Input Patient ID or Order # using the handheld barcode scanner or manually enter the data using the key pad.

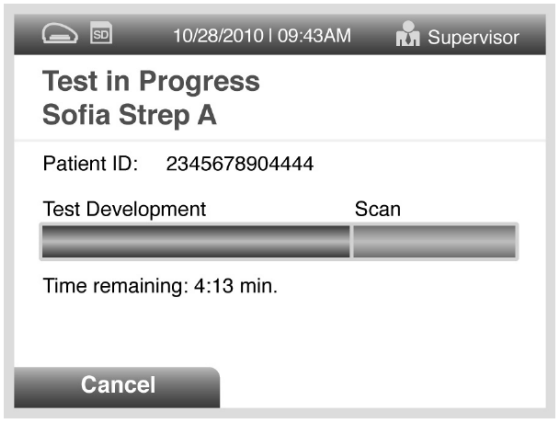
13. Press Start Test and the Sofia drawer will automatically open.



Note: Regardless of the current selected Mode, the Sofia Strep A+ FIA will automatically be forced into the WALK AWAY Mode once the Test Cassette is inserted and the drawer is closed.

14. Insert the prepared patient Test Cassette into the drawer and gently close the drawer.

15. Sofia will start automatically in WALK AWAY Mode and display the progress as shown in example below. The test results will be displayed on the screen in approximately 5 minutes. See "Interpretation of Results" section.



For example: This display shows that the test has 4 minutes, 13 seconds remaining.

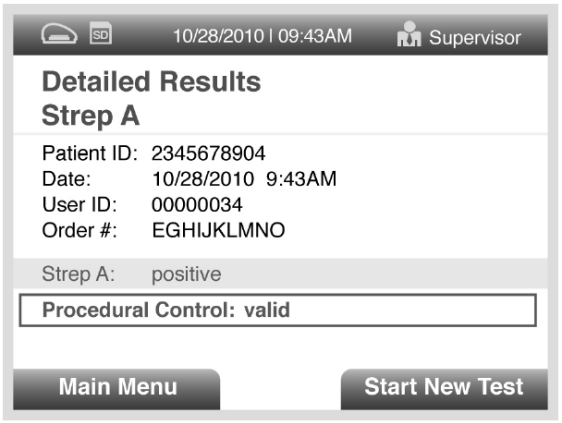
INTERPRETATION OF RESULTS

When the test is complete, the results will be displayed on the Sofia screen. The results can be automatically printed on the integrated printer, if this option is selected. Test Lines, which are fluorescent, will never be visible to the naked eye.

The Sofia screen will display results for the procedural control as being "valid" or "invalid," and will provide a positive or negative result for Strep A. If the procedural control is "invalid," retest with a new patient sample and a new Test Cassette.

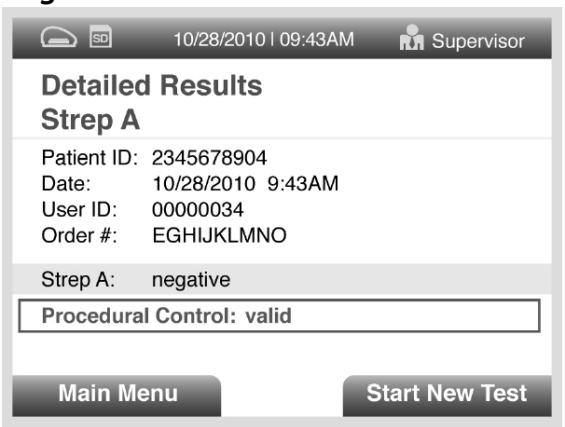
Reader Display	Interpretation
Strep A: Positive	Positive Test for Strep A (Strep A antigen present)
Strep A: Negative	Negative Test for Strep A (no antigen detected)
Strep A: Invalid Procedural Control: Invalid	Result Invalid (repeat the test)

Positive Results:



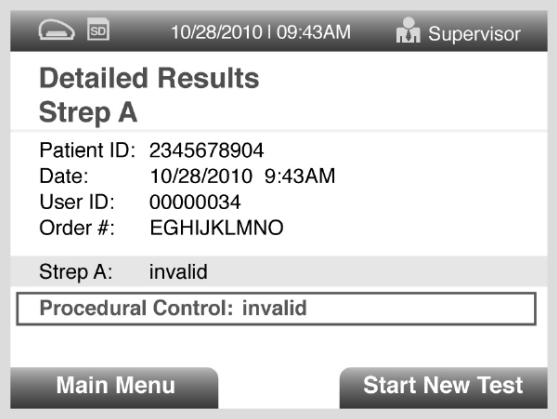
For example: This display shows a valid <u>positive result for Strep A</u>.

Negative Results:



For example: This display shows a valid <u>negative</u> result for Strep A.

Invalid Results:



For example: This result shows an invalid result.

Invalid Result: If the test is invalid, a new test should be performed with a new patient sample and a new Test Cassette.

LIMITATIONS

- The contents of this kit are to be used for the qualitative detection of Group A Streptococcal antigens from throat swab samples.
- The test detects both viable and nonviable Group A Streptococcus bacteria and may yield a positive result in the absence of living organisms.
- Respiratory infections, including pharyngitis, can be caused by Streptococcus from serogroups other than Group A, as well as other pathogens.
- The Sofia Strep A+ FIA will not differentiate asymptomatic carriers of Group A Streptococcus from those exhibiting Streptococcal infection.[7]
- A negative test result may occur if the level of antigen in a sample is below the detection limit of the test or if the sample was collected, transported, or stored improperly.
- Failure to follow the Test Procedure may adversely affect test performance and/or invalidate the test result.
- Patients with symptoms and an antigen negative test should have a follow-up culture.[1]
- Test results must be evaluated in conjunction with other clinical data available to the physician.
- Negative test results do not rule out possible other infections.
- Positive test results do not rule out co-infections with other pathogens.
- *Corynebacterium pseudodiphtheriticum, Enterococcus faecalis, Staphylococcus aureus, Streptococcus mutans, Streptococcus parasanginis,* Streptococcus Groups C, D and F, Adenovirus Types 1 and 3, Epstein Barr Virus, and Mumps (Enders) may interfere with this assay.
- Blood, mucin, and Nacho Flavor Doritos may interfere with the assay.

EXPECTED VALUES

Group A Streptococcus bacteria are responsible for about 19% of all upper respiratory tract infections.[8] Infection is most prevalent in winter and early spring, with most cases arising in patients living in highly populated areas. Consistent with these figures, in the multi-center clinical study conducted by Quidel during 2014, 21% (175/851) of the patients presenting with pharyngitis were found to be culture positive for Strep A. Nearly half of these subjects, 45%, were male. The subjects' ages ranged from 3 to 76 and 80% (685/851) were children (3 to 17 years of age).

PERFORMANCE CHARACTERISTICS

Sofia Strep A+ FIA Performance vs. Cell Culture and vs. Cell Culture Resolved by PCR

The performance of the Sofia Strep A+ FIA was compared to standard bacterial culture and identification and an FDA-cleared Group A Streptococcus RT-PCR assay in a multi-center clinical field study. This study was conducted by untrained health care personnel during 2014 at 7 distinct CLIA-waived sites in various geographical regions within the United States. In this multi-center, point-of-care (POC) field trial, two (2) throat swabs were collected from eight hundred fifty-one (851) patients with symptoms suggestive of bacterial pharyngitis.

One throat swab was tested fresh at the CLIA-waived site in the Sofia Strep A+ FIA. A second swab was placed into transport medium and transported on cold ice packs to a central Reference Laboratory. The swab was streaked on a sheep blood agar plate (SBA) and cultured for up to 48 hours. A portion of the transport medium was subsequently tested in the PCR assay. The performance of the Sofia Strep A+ FIA was determined by comparison of the rapid FIA test result to the corresponding culture result (Table 1) with PCR discordant resolution in the footnotes.

Table 1
Sofia Strep A+ FIA Performance Compared to Culture

	Culture	
	Pos	Neg
Sofia Pos	164	38*
Sofia Neg	11**	638
Total:	175	676

Sensitivity = 93.7% (164/175)
(95%CI=89.1%-96.5%)

Specificity = 94.4% (638/676)
(95% CI=92.4%-95.9%)

PPV = 81.2% (164/202)

NPV = 98.3% (638/649)

*Of the 38 discordant specimens, 24 of these specimens were positive for GAS when tested with an FDA-cleared molecular device, 14 were negative.
**Of the 11 discordant specimens, 3 were negative when tested with an FDA-cleared molecular device, 8 were positive.

Reproducibility Studies

The reproducibility of the Sofia Strep A+ FIA was evaluated at 3 different laboratories. Two different operators at each site tested a series of coded, contrived samples, prepared in negative clinical matrix, ranging from negative (no bacteria) to moderate positive (3 x LOD) Group A Streptococcus. The inter-laboratory agreement (Table 2) for negative samples was 90-100% and 87-100% for positive samples. The intra-laboratory agreement (Table 3) for all samples ranged from 93-95%.

Table 2
Sofia Strep A+ FIA Reproducibility Study Inter-laboratory Agreement

Site	Negative* (C_0)	High Negative* (C_5)	Low Positive** (C_{95})	Mod Positive** (C_{100})
1	30/30	27/30	27/30	30/30
2	30/30	29/30	23/30	30/30
3	30/30	25/30	28/30	30/30
Total	90/90	81/90	78/90	90/90
% Overall Agreement (95% CI)	**100% (95.9%-100.0%)**	**90% (82.1%-94.7%)**	**87% (78.1%-92.2%)**	**100% (95.9%-100.0%)**

*Bacteria not detected/total
**Bacteria detected/total

Table 3
Sofia Strep A+ FIA Reproducibility Study Intra-laboratory Agreement

Site	Negative* (C_0)	High Negative* (C_5)	Low Positive** (C_{95})	Mod. Positive** (C_{100})	% Overall Agreement (95% CI)
1	30/30	27/30	27/30	30/30	**95%** (114/120) **(89.5%-97.7%)**
2	30/30	29/30	23/30	30/30	**93%** (112/120) **(87.4%-96.6%)**
3	30/30	25/30	28/30	30/30	**94%** (113/120) **(88.5%-97.2%)**

*Bacteria not detected/total
**Bacteria detected/total

Limit of Detection

The limit of detection (LOD) for the Sofia Strep A+ FIA was determined using 3 strains of Group A *Streptococcus pyogenes.* The LOD ranged from 2.76E+03 to 8.13E+03 colony forming units (cfu)/test (Table 4).

Table 4
Sofia Strep A+ FIA Limits of Detection

Strain	Minimum Detectable Level*
Bruno [CIP 104226]	4.00E+03 cfu/test
CDC-SS-1402	8.13E+03 cfu/test
CDC-SS-1460	2.76E+03 cfu/test

cfu/test = colony forming units/test

*The levels of bacteria were determined by limiting dilution, bacterial culture, and colony counting to give cfu/test.

Analytical Reactivity

Analytical reactivity for the Sofia Strep A+ FIA was demonstrated using 21 strains of Group A *Streptococcus pyogenes* tested at 1.74E+04 colony forming units (cfu)/test (Table 5).

Table 5
Analytical Reactivity

***Streptococcus pyogenes* Strain**
Strain #1 (ATCC-19615)
Strain #2 (ATCC-700942)
Strain #3 (ATCC-700952)
Strain #4 (Clinical Isolate-52123)
Strain #5 (Clinical Isolate-52120)
Strain #6 (Clinical Isolate-62055)
Strain #7 (Clinical Isolate-52152)
Strain #8 (Clinical Isolate-62092)
Strain #9 (Clinical Isolate-52151)
Strain #10 (ATCC-700482)
Strain #11 (ATCC-BAA-1315)
Strain #12 (ATCC-700459)
Strain #13 (ATCC-12203)
Strain #14 (ATCC-700944)
Strain #15 (Clinical Isolate-52154)
Strain #16 (Clinical Isolate-5036)
Strain #17 (Clinical Isolate-5095)
Strain #18 (Clinical Isolate-5017)
Strain #19 (Clinical Isolate-5060)
Strain #20 (Clinical Isolate-5112)
Strain #21 (Clinical Isolate-5008)

Analytical Specificity

Cross Reactivity

The cross reactivity of the Sofia Strep A+ FIA was evaluated with a total of 61 non-Group A Streptococcus bacterial and fungal microorganisms, and 26 viral isolates. None of the microorganisms or viruses listed below in Table 6 showed any sign of cross reactivity in the assay. The same microorganisms and viruses in Table 6 were pre-mixed with Group A Strep and tested in the Sofia Strep A+ FIA.

Table 6
Cross Reactivity

Organism/Virus	Test Concentration**
Arcanobacterium haemolyticum	3.00E+05 cfu/test
Bacteroides fragilis	3.00E+07 cfu/test
Bordetella pertussis	3.00E+07 cfu/test
Candida albicans	3.00E+04 cfu/test
Corynebacterium diphtheriae	3.00E+05 cfu/test
*Corynebacterium pseudodiphtheriticum**	3.00E+06 cfu/test
*Enterococcus faecalis**	1.40E+06 cfu/test
Enterococcus faecium	3.00E+06 cfu/test
Escherichia coli	1.50E+07 cfu/test
Fusobacterium necrophorum	3.00E+06 cfu/test
Haemophilus influenzae	3.00E+07 cfu/test
Haemophilus parahaemolyticus	3.00E+06 cfu/test
Klebsielle pneumoniae	3.00E+07 cfu/test
Moraxella catarrhalis	3.00E+06 cfu/test
Neisseria gonorrhoeae	3.00E+06 cfu/test
Neisseria lactamica	3.00E+06 cfu/test
Neisseria meningitidis	3.00E+06 cfu/test
Neisseria sicca	3.00E+07 cfu/test
Neisseria subflava	3.00E+07 cfu/test
Proteus vulgaris	3.00E+07 cfu/test
Pseudomonas aeruginosa	3.00E+06 cfu/test
Serratia marcescens	3.00E+07 cfu/test
*Staphylococcus aureus**	3.00E+06 cfu/test
Staphylococcus epidermidis	3.00E+06 cfu/test
Staphylococcus haemolyticus	3.00E+05 cfu/test
Staphylococcus intermedius	3.00E+05 cfu/test
Staphylococcus saprophyticus	3.00E+06 cfu/test
Streptococcus anginosus	3.00E+06 cfu/test
Streptococcus gordonii	3.00E+04 cfu/test
Streptococcus mitis	3.00E+04 cfu/test
*Streptococcus mutans**	3.00E+06 cfu/test
Streptococcus oralis	3.00E+06 cfu/test
*Streptococcus parasanginis**	3.00E+06 cfu/test
Streptococcus pneumoniae	3.00E+06 cfu/test
Streptococcus salivaris	3.00E+05 cfu/test
Streptococcus sanguinis	3.00E+06 cfu/test

Organism/Virus	Test Concentration**
Streptococcus Group B Strain #1: *Streptococcus agalactiae*	3.00E+06 cfu/test
Streptococcus Group B Strain #2	3.00E+06 cfu/test
Streptococcus Group B Strain #3	3.00E+06 cfu/test
Streptococcus Group B Strain #4	3.00E+06 cfu/test
Streptococcus Group B Strain #5	3.00E+06 cfu/test
Streptococcus Group C Strain #1	3.00E+06 cfu/test
Streptococcus Group C Strain #2	3.00E+06 cfu/test
Streptococcus Group C Strain #3	3.00E+06 cfu/test
Streptococcus Group C Strain #4: *Streptococcus dysgalactiae**	3.00E+06 cfu/test
Streptococcus Group C Strain #5	3.00E+05 cfu/test
Streptococcus Group D Strain #1: *Enterococcus casseliflavus*	3.00E+06 cfu/test
Streptococcus Group D Strain #2	3.00E+06 cfu/test
Streptococcus Group D Strain #3*	3.00E+06 cfu/test
Streptococcus Group D strain #4: *Enterococcus faecalis*	3.00E+06 cfu/test
Streptococcus Group D strain #5: *Enterococcus faecalis*	3.00E+06 cfu/test
Streptococcus Group F Strain #1	1.00E+05 cfu/test
Streptococcus Group F Strain #2	3.00E+06 cfu/test
Streptococcus Group F Strain #3	1.00E+06 cfu/test
Streptococcus Group F Strain #4*	3.00E+05 cfu/test
Streptococcus Group F Strain #5	3.00E+05 cfu/test
Streptococcus Group G strain #1: *Streptococcus dysgalactiae*	3.00E+07 cfu/test
Streptococcus Group G Strain #2	3.00E+06 cfu/test
Streptococcus Group G Strain #3	3.00E+06 cfu/test
Streptococcus Group G Strain #4	3.00E+06 cfu/test
Streptococcus Group G Strain #5	3.00E+06 cfu/test
Adenovirus Type 1*	3.00E+11 $TCID_{50}$/test
Adenovirus Type 3*	3.00E+05 $TCID_{50}$/test
Adenovirus Type 4	7.50E+03 $TCID_{50}$/test
Adenovirus Type 5	3.00E+05 $TCID_{50}$/test
Adenovirus Type 11	3.00E+04 $TCID_{50}$/test
Coronavirus 229E	3.00E+04 $TCID_{50}$/test
Coronavirus OC43	3.00E+04 $TCID_{50}$/test
Coxsackievirus B5 (Faulkner)	3.00E+06 $TCID_{50}$/test

Organism/Virus	Test Concentration**
Cytomegalovirus (Towne)	3.00E+03 $TCID_{50}$/test
Echovirus Type 3	1.50E+04 $TCID_{50}$/test
Epstein Barr Virus (EBV)*	3.00E+07 genome copies/test
Herpes Simplex Virus 1	3.00E+04 $TCID_{50}$/test
Herpes Simplex Virus 2	3.00E+04 $TCID_{50}$/test
Influenza A/New Jersey/8/76 (H1N1)	3.00E+04 $TCID_{50}$/test
Influenza A/Victoria/3/75 (H3N2)	3.00E+04 $TCID_{50}$/test
Influenza B/Hong Kong/5/72	3.00E+04 $TCID_{50}$/test
Influenza B/Panama/45/90	1.50E+04 $TCID_{50}$/test
Influenza C/Taylor/1233/47	1.50E+04 $TCID_{50}$/test
Measles (Edmonston)	3.00E+04 $TCID_{50}$/test
Mumps (Enders)*	3.00E+03 $TCID_{50}$/test
Parainfluenza virus 1	3.00E+04 $TCID_{50}$/test
Parainfluenza virus 2	1.10E+05 $TCID_{50}$/test
Parainfluenza virus 3	6.80E+05 $TCID_{50}$/test
Parainfluenza virus 4A	3.00E+04 $TCID_{50}$/test
Rhinovirus Type 2	3.00E+03 $TCID_{50}$/test
Rhinovirus Type 15	3.00E+04 $TCID_{50}$/test

cfu/test = colony forming units/test TCID50/test = 50% tissue culture infectious dose

*This organism/virus may interfere with this assay.

**The levels of bacteria were determined by limiting dilution, bacterial culture, and colony counting to give cfu/test. Virus concentrations were determined by standard virology methods, Reed-Muench.

Interfering Substances

Several over-the-counter (OTC) products, whole blood, mucin and blood agar were evaluated with the Sofia Strep A+ FIA at the levels tested (Table 7).

Table 7
Interference Testing

Substance	Concentration
Crest Pro-Health Deep Clean Mint Mouth wash (Cetylpyridnium chloride)	24% v/v
Listerine Original Antiseptic Mouth wash (Eucalyptol, Menthol, Methyl salicylate, and Thymol)	24% v/v
Listerine Cool Mint Antiseptic Mouth wash (Eucalyptol, Menthol, Methyl salicylate, and Thymol)	24% v/v
RiteAid Sore throat relief (Benzocaine and Menthol)	24% v/v
Chloraseptic Max Sore Throat (Phenol and Glycerin)	24% v/v
Dimetapp Children's Cold & Cough (Brompheniramine maleate, Dextromethorphan HBr, and Phenylephrine HCl)	24% v/v

Substance	Concentration
RiteAid Children's Cold & Allergy (Brompheniramine maleate and Phenylephrine HCl)	24% v/v
CVS Children's Cold & Cough DM (Brompheniramine maleate, Dextromethorphan HBr, and Phenylephrine HCl)	24% v/v
RiteAid tussin cough&cold mucus relief CF (Dextromethorphan HBr, Guaifenesin, and Phenylephrine HCl)	24% v/v
Robitussin Max Strength Multi-Symptom CF Max (Dextromethorphan HBr, Guaifenesin, and Phenylephrine HCl)	24% v/v
Robitussin Night Time Multi-Symptom Cold CF (Acetaminophen, Diphenhydramine HCl, and Phenylephrine HCl)	24% v/v
Cepacol Sore Throat Cherry (Benzocaine and Menthol)	24% w/v
Halls Triple Soothing Action Cherry (Menthol)	24% w/v
Halls Triple Soothing Action Menthol-lyptus (Menthol)	24% w/v
Ricola Natural Herb Cough Drops (Menthol)	24% w/v
Sucrets Complete Vapor Cherry (Dyclonine Hydrochloride and Menthol)	24% w/v
Chloraseptic Sore Throat Cherry (Phenol and Glycerin)	24% w/v
BreathSavers Spearmint (Cetylpyridnium chloride)	24% w/v
Tic Tac freshmints (Eucalyptol, Menthol, Methyl salicylate, and Thymol)	24% w/v
Cheetos, Flaming Hot	12% w/v
Doritos, Nacho Flavor	12% w/v*
Fresh Whole Blood	75 µL/swab**
Mucin	4.3% w/v***
Sheep Blood Agar (5% Sheep Blood)	24% w/v
Horse Blood Agar (5% Horse Blood)	24% w/v

*Nacho Flavor Doritos interfered at 25% w/v
** Fresh Whole Blood interfered at 100 µL/swab
*** Bovine submaxillary mucin interfered at 28.7 mg/mL

CLIA Waiver Studies

A study was conducted to demonstrate that untrained intended users could perform the test consistently and accurately using weakly reactive samples. The study consisted of 3 distinct CLIA-waived sites where the Sofia Strep A+ FIA was evaluated using coded, randomized panels of simulated samples, including one weak positive (C_{95} - a concentration at the assay cutoff) and one weak negative (C_5 - a concentration just below the assay cutoff). Two or more operators at each site (10 operators total) tested the panel on each of 10 days, spanning a period of approximately 2 weeks. The performance of the Sofia Strep A+ FIA with samples near the assay cutoff was acceptable when used by untrained intended users. The percent agreement with expected results for each sample is shown in Table 8.

Table 8
Sofia Strep A+ FIA Performance near the Cutoff (All Sites)

Sample Level	Untrained Intended Users	
	Percent Agreement with Expected Results	95% Confidence Interval
Weak Strep A Positive (C_{95})	90% (54/60)*	79.9%-95.3%
Weak Strep A Negative (C_5)	97% (58/60)**	88.6%-99.1%

*Bacteria detected/total
**Bacteria not detected/total

ASSISTANCE

If you have any questions regarding the use of this product or if you want to report a test system problem, please call Quidel's Technical Support Number 800.874.1517 (in the U.S) or 858.552.1100, Monday through Friday, from 7:00 a.m. to 5:00 p.m., Pacific Time. If outside the United States contact your local distributor or technicalsupport@quidel.com. Test system problems may also be reported to the FDA through the MedWatch medical products reporting program (phone: 1-800-FDA-1088; fax: 1-800-FDA-0178; http://www.fda.gov/
medwatch).

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IVD

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REF Catalogue number	CE CE mark of conformity
EC REP Authorized Representative in the European Community	LOT Batch code
 Use by	 Manufacturer
 Temperature limitation	 Intended use
 Consult instructions for use	IVD For *In Vitro* diagnostic use
 Contains sufficient for 25 determinations	CONT Contents/Contains
CONTROL + Positive control	CONTROL – Negative control