

283.481 Quidell Dipstick Strep For Ancillary Testing

Copy of version 1.0 (approved and current)

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Next Periodic Review
Needed On or Before 11/2/2025

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Organization West Texas VAHCS

Comments for version 1.0

Same test in use in micro section. Exam attached, section added on how to report.

Approval and Periodic Review Signatures

Type	Description	Date	Version	Performed By	Notes
Approval	Lab Director	11/2/2023	1.0	<i>yahyaelshimali</i> JohnYahya Elshimali	

Version History

Version	Status	Type	Date Added	Date Effective	Date Retired
1.0	Approved and Current	Initial version	10/20/2023	11/2/2023	Indefinite

West Texas VA Health Care System
Ancillary Testing
QUICKVUE DIPSTICK STREP A TEST KIT

INTENDED USE

The QuickVue Dipstick Strep A is intended for the rapid, qualitative detection of Group A Streptococcal antigen from throat swabs or confirmation of presumptive Group A Streptococcal colonies recovered from culture. The test is to be used to aid in the diagnosis of Group A Streptococcal infection. For use by healthcare professionals.

SUMMARY AND EXPLANATION

Group A *Streptococcus* is one of the most important 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 Conventional identification procedures for Group A *Streptococcus* from throat swabs involve the isolation and subsequent identification of viable pathogen techniques that require 24 to 48 hours or longer for results.²

PRINCIPLE OF THE TEST

The QuickVue Dipstick Strep A is a lateral-flow immunoassay utilizing Quidel's patented antibody-labeled particles. The test detects either viable or nonviable organisms directly from throat swabs or culture colonies within 5 minutes.

To perform the test, a throat swab specimen is collected. Antigen is extracted from the swab specimen with Reagents A and B. The Dipstick is then added to the extracted sample.

If the sample contains Strep A antigen, a pink-to-purple Test Line along with a blue procedural Control Line will appear on the Dipstick, indicating a positive result. If Strep A antigen is not present, or present at very low levels, only a blue procedural Control Line will appear.

REAGENTS AND MATERIALS SUPPLIED

Each kit contains:

- Individually packaged Dipsticks (25 or 50): Dipsticks coated with rabbit polyclonal anti-Group A Streptococcus
- Extraction Reagent A (1): Contains 4 M sodium nitrite
- Extraction Reagent B (1): Contains 0.2 M acetic acid
- Sterile Throat Swabs (25 or 50)
- Tubes (25 or 50)
- Positive Control (1): Heat-inactivated Group A *Streptococcus* with 0.2% sodium azide
- Negative Control (1): Heat-inactivated Group C *Streptococcus* with 0.2% sodium azide
- Package Insert (1)
- Procedure Card (1)

WARNINGS AND PRECAUTIONS

For *in vitro* diagnostic use.

Do not use beyond the expiration date printed on the outside of the box.

Dispose of containers and used contents in accordance with Federal, State and Local requirements.

The Dipstick must remain sealed in the protective foil pouch until just prior to use.

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Reagent B contains an acidic solution. If the solution contacts the skin or eye, flush with large volumes of water.

Use of nitrile or latex gloves is recommended when handling the extraction reagents within this kit.^{3,4}

Do not interchange reagent bottle caps.

If Reagent B is green prior to mixing with Reagent A in the Tube, do not use and contact Technical Support.

To obtain accurate results, you must follow the package insert instructions.

KIT STORAGE AND STABILITY

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

SPECIMEN COLLECTION AND STORAGE

Collect throat swab specimens by standard clinical methods. Consult standard reference procedures such as the collection method described by Miller and Holmes.⁵ Depress the tongue with a tongue blade or spoon. When swabbing the throat, be careful not to touch the tongue, sides or top of the mouth with the swab. Rub the swab on the back of the throat, on the tonsils and in any other area where there is redness, inflammation, or pus.

Use rayon tipped swabs to collect throat specimens. Do not use calcium alginate, cotton tipped or wooden shaft swabs.

It is recommended that swab specimens be processed as soon as possible after collection. Swabs can be held in any clean, dry plastic tube or sleeve up to 72 hours at room temperature (15–30°C), or refrigerated (2–8°C) before processing. The use of charcoal or agar medium is not recommended.

If a culture is desired, lightly streak the swab on a 5% sheep blood agar plate before using the swab in the QuickVue Dipstick Strep A test. Do not perform the QuickVue Dipstick Strep A test before streaking the swab, as the Extraction Solution will destroy the bacteria on the swab, thereby rendering the organism incapable of successful culturing. Alternatively, throat swab specimens can be obtained by dual swabs or by two sequential swabs for the culture procedure.

The following culture swab transport media systems are recommended for use with the QuickVue Dipstick Strep A Test:

- **Remel BactiSwab II (Cat. # R12200) and Remel BactiSwab (Cat. # R12100)**
- **Remel Liquid Amies Dual Swab Pack (Cat. # R723095)**
- **BD BBL CultureSwab Liquid Stuart (Cat. # 220109/220099)**

When using the **Remel BactiSwab II or Remel BactiSwab**: It is recommended that the swabs are stored in the transport media systems for no more than 72 hours at 2°C to 8°C or 24 hours at 25°C.

When using the **Remel Liquid Amies Dual Swab Pack** or the **BD BBL CultureSwab Liquid Stuart**: It is recommended that the swabs are stored in the transport media systems for no more than 72 hours at either 25°C or 2°C to 8°C.

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CULTURE CONFIRMATION

The QuickVue test can be used to confirm the identification of Group A Streptococcus on blood agar plates. Lightly touch a colony using a sterile swab. Do not sweep the plate. Follow the instructions in the TEST PROCEDURE section to test the swabs.

QUALITY CONTROL

Built-in Control Features

The QuickVue Dipstick Strep A provides three levels of internal procedural controls with each test run. For daily quality control, Quidel recommends documenting that these internal controls were checked for the first sample tested each day.

The color of the Extraction Reagent changes from clear to green as the reagents are mixed together. The color change is an internal extraction reagent control and is an indication that the reagents were mixed and functioning properly.

The appearance of a blue Control Line is an internal control. The Dipstick must absorb the proper amount of sample and the Dipstick must be working properly for the blue Control Line to appear. Additionally, the appearance of the Control Line indicates that capillary flow occurred.

A clear background is an internal background negative control. If no interfering substances are in the sample and the Dipstick is working properly, the background in the Result area should be white to light pink within 5 minutes and not interfere with the reading of the test result.

External Quality Control Testing

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 - and as deemed additionally necessary by your internal quality control procedures, and in accordance with local, state, and federal regulations or accreditation requirements.

If the controls do not perform as expected, repeat the test or contact Quidel Technical Support before testing patient specimens.

ASSAY PROCEDURE

Do not remove Dipsticks from the foil pouch until ready to perform the assay.

To avoid cross contamination, do not allow the tip of the reagent bottles to come in contact with sample swabs.

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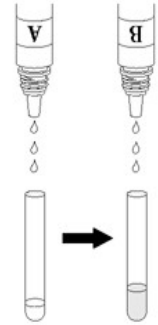
TEST PROCEDURE

Important:

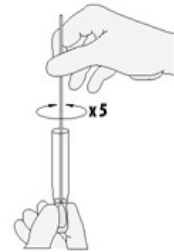
- *Gloves should be worn when handling samples.*
- *Do not use Reagent B if the solution is green prior to mixing with Reagent A in the Tube. If this occurs, contact Technical Support.*

1. Just before testing, add **three (3) DROPS** of Reagent A and **three (3) DROPS** of Reagent B into a clean tube. This solution should turn **green**.

When adding drops, hold bottle vertically so that a complete drop forms.



2. Immediately add the patient swab sample to the tube. **Squeeze** the bottom of the tube so the swab head is compressed. Rotate the swab a **minimum of five (5) times**.



Z

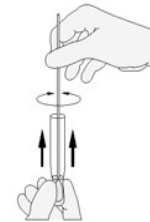
Keep swab in tube for one (1) minute.

YOU MUST USE THE CALIBRATED TIMER IN THE LAB.

DO NOT USE A WALL CLOCK OR YOUR PHONE.



3. Express **all** liquid from the swab against the inside of the tube. **Squeeze** the swab firmly as it is removed from the tube. Discard the swab.



4. Remove the Dipstick from the foil pouch. Place the Dipstick into the tube with the arrows of the Dipstick pointing down. Do not handle or move the Dipstick until the test is complete and ready for reading.



5. Read result at five (5) minutes. Some positive results may appear sooner.



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INTERPRETATION OF RESULTS

POSITIVE RESULT:

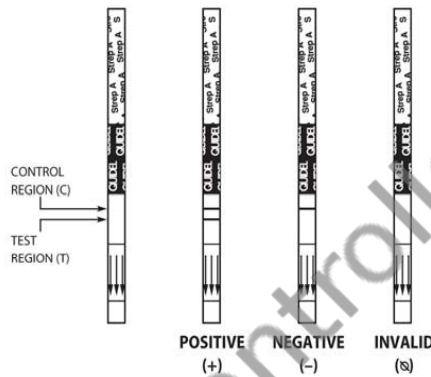
Any pink to purple Test Line along with any shade of a blue procedural Control Line is a positive result for the detection of Group A *Streptococcus* antigen.

NEGATIVE RESULT:

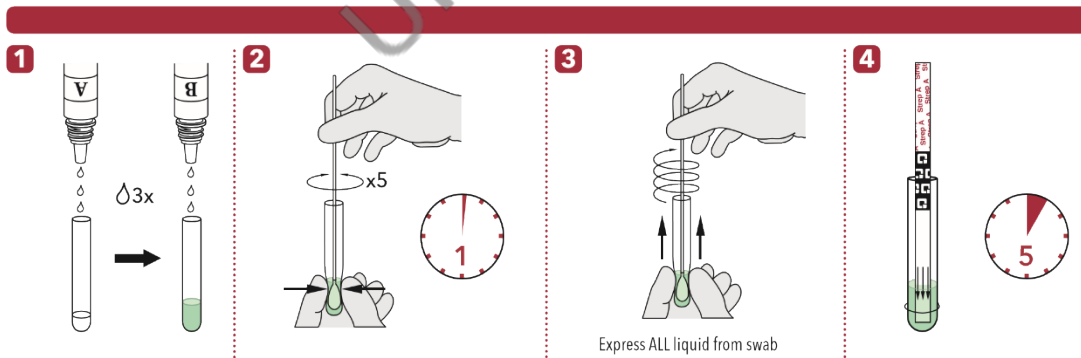
A blue procedural Control Line and no pink Test Line is a presumptive negative result.

INVALID RESULT:

The test result is invalid if a blue Control Line is not visible at 5 minutes. If this occurs, retest using a new sample and a new Dipstick or contact Technical Support.

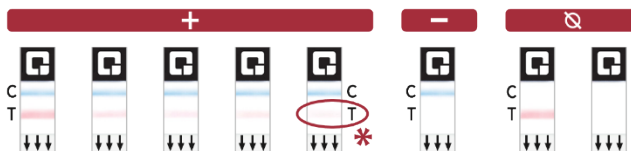


Procedure Card



*** Look closely! This is a positive result.** Even if you see a very faint, pink Test Line and a blue Control Line, you must report the results as **POSITIVE**. The positive test line is usually very prominent, but test line intensity can vary.

C= Control Line T= Test Line



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QC TESTING PROCEDURE

Follow the instruction procedures in the TEST PROCEDURE to dispense the Extraction Reagents into the tube (step 1).

Vigorously mix the Control Bottles. Add one (1) drop of the Negative or Positive Control into the tube.

Place a clean swab into the tube and follow the instructions for testing the patient swab.

Log Results from QC and patients on the Serology Log Sheet kept in the logbook in Microbiology.

LIMITATIONS

The contents of this kit are for use in the **qualitative** detection of Group A Streptococcal antigen from throat swab specimens and culture colonies only. Failure to follow the test procedure and interpretation of test results may adversely affect performance and/or produce invalid results.

The test detects both viable and nonviable Group A *Streptococci* 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 QuickVue Dipstick Strep A will not differentiate asymptomatic carriers of Group A *Streptococcus* from those exhibiting Streptococcal infection.⁶

Some commercial controls may contain interfering additives and are not recommended for use in the QuickVue test.

Test results must always be evaluated with other data available to the physician. A negative test result might occur if the level of extracted antigen in a sample is below the sensitivity of the test or if a poor quality specimen is obtained. Additional follow-up testing using the culture method is recommended if the QuickVue test result is negative.

Reporting the Results

Results must be entered into the lab package to display under lab results for the provider.

1. Log into the Accucheck Inform II with your ID provided when Accucheck training was first done.
2. To enter patient tests:
 - a. Choose Patient Test
 - b. Choose Other Test
 - c. Choose Strep
 - d. Enter the patient ID
 - e. Enter the results
3. Control tests are entered by picking Control Test instead of patient test.

Note: when entering control test you MUST run both positive and negative controls.

Results may also be entered using VISTA FAST BYPASS. That is a separate procedure and will be provided to each clinic. This requires that the person performing the test has access the lab package.

EXPECTED RESULTS

It is believed that approximately 19% of all upper respiratory tract infections are caused by Group A *Streptococci*.⁷ Infection is most prevalent in winter and early spring, with most cases arising in patients living in highly populated areas.

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PERFORMANCE CHARACTERISTICS

Field Study

In a multi-center field evaluation, a total of 329 throat swab specimens were collected from patients presenting with pharyngitis. Each swab was inoculated onto a sheep blood agar plate, then tested by the QuickVue Dipstick Strep A test. Plates were incubated for 24–48 hours at 37°C with a Bacitracin disk. Presumptive GAS colonies were confirmed with commercially available Strep A testing kits.

Of the 329 total specimens, 192 were negative and 137 were positive by culture. The QuickVue test identified 188 of the culture negative and 126 of the culture positive for a specificity of 98% and a sensitivity of 92%. The 95% confidence intervals were calculated to be 95%–99% for specificity and 86%–96% for sensitivity. Overall agreement between culture and the QuickVue Dipstick Strep A test was 95%. These study results demonstrate that no statistical differences were observed between the QuickVue test and standard culture techniques.

	Culture +	Culture -	
QuickVue +	126	4	Sensitivity: 126/137 = 92%
QuickVue -	11	188	Specificity: 188/192 = 98%
Total	137	192	Agreement: 314/329 = 95%

Culture Classification	QuickVue Results
Total Negative Specificity	188/192 (98%)
Rare	1/3 (33%)
1+(≤ 10 colonies)	16/20 (80%)
2+(11-50 colonies)	46/49 (94%)
3+(> 50 colonies)	28/30 (93%)
4+ (predominant growth)	35/35 (100%)
Total Positive Sensitivity	126/137 (92%)
Total Agreement	314/329 (95%)

In addition, the QuickVue test was used to confirm the identification of Group A *Streptococcus* on blood agar plates. As a culture confirmation, the test was 100% sensitive.

Cross-Reactivity

The following organisms tested at levels of approximately 1x10⁷ organisms/test and greater were all found to be negative when tested in the QuickVue test.

Streptococcus Group B
Streptococcus Group C

Enterococcus faecalis
E. coli

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Streptococcus Group F
Streptococcus Group G
Streptococcus pneumoniae
Streptococcus mutans
Streptococcus sanguis
Streptococcus ungrouped
Branhamella catarrhalis
Bordetella pertussis
Candida albicans
Corynebacterium diphtheria

Hemophilus influenza
Klebsiella pneumoniae
Neisseria gonorrhoea
Neisseria meningitidis
Neisseria sicca
Neisseria subflava
Pseudomonas aeruginosa
Staphylococcus aureus
Staphylococcus epidermidis
Serratia marcescens

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POL Studies

An evaluation of the QuickVue test was conducted at three Physicians' Offices using a panel of coded specimens. Testing was performed by physician office personnel with diverse educational backgrounds and work experiences at three different locations. The proficiency panel contained negative, low positive and moderate positive specimens. Each specimen level was tested at each site in replicates of at least five over a period of three days. No significant differences were observed within run, between runs or between sites.

ASSISTANCE

If you have any questions regarding the use of this product, please call Quidel's Technical Support Number, (800) 874-1517 (toll-free in the U.S.A.) or (858) 552-1100, Monday through Friday, between 7:00 a.m. and 5:00 p.m., Pacific Time, U.S.A. If outside the United States, contact your local distributor or technicalsupport@quidel.com.

REFERENCES

1. Youmans G.P., Paterson P.Y., and Sommer H.M., Upper Respiratory Tract Infection: General Considerations, in the Biological and Clinical Basis of Infectious Disease, W.B. Saunders Co., Philadelphia, 177–183, 1980.
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 6. Rammelkamp CH, Jr. *Principles of Internal Medicine*, 8th Edition, 1977, pp. 814-820.
 7. Lauer BA, Reller LB, and Mirrett S. J Clin Microb. 17:338-340, 1983.
 8. Quidel Technical bulletin 1443ID0109D—4 (11/13)
 9. Quidel Procedure card 1033905 (12/14)
-

Name _____

Date _____

Score _____

Graded By _____

Strep A exam

1. Do you need to use Standard Precautions?
 - a. No
 - b. Yes
 - c. It's Optional.
2. Is reagent B green before being added to reagent A?
 - a. No
 - b. Yes
3. How many drops of each reagent needs to be added to the tube?
 - a. 2
 - b. 4
 - c. 3
4. Where is the timer to use for the test?
 - a. In the lab. It is calibrated and accurate to NIST standards.
 - b. Just use any timer. It doesn't need to be that accurate.
5. When do you open the Dipstick?
 - a. Before you prepare the swab
 - b. While the swab is incubating for 1 minute.
 - c. After you have expressed all liquid from the swab.
6. What color is the control line? The test Line?

7. If the control line is not visible can you report the patient result?

8. What are the times for each part of the test?

9. Does culture swabs need to be collected for negative strep screens?
 - a. No
 - b. Yes
10. How do results get in the patient chart?
 - a. Entered in the Accucheck Inform II under other tests.
 - b. Entered directly into VISTA.
 - c. Both can be used.

Demonstration of Strep A test:

Name _____

Date _____

Observer _____

Controls Run

Kit Positive lot Number# _____

Kit negative: _____

External Controls Lot #(s) _____

Positive _____

Negative _____

Patient Sample (optional)

Initial and last 4 _____

Enter results in

Accuchek _____

Vista(optional) _____

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