

# N.C.S hCG

## One Step Pregnancy Test Device (Urine/Serum)

### Package Insert

NCS-1040 (40 Tests) NCS-1100 (100 Tests)

NCS-1025 (25 Tests) NCS-1050 (50 Tests)

FOR LABORATORY USE ONLY

*A rapid, one step test for the qualitative detection of human chorionic gonadotropin (hCG) in urine or serum.*

*For professional in vitro diagnostic use only.*

### INTENDED USE

The N.C.S hCG One Step Pregnancy Test Device (Urine/Serum) is a rapid chromatographic immunoassay for the qualitative detection of human chorionic gonadotropin (hCG) in urine or serum to aid in the early detection of pregnancy.

### SUMMARY

Human chorionic gonadotropin (hCG) is a glycoprotein hormone produced by the developing placenta shortly after fertilization. In normal pregnancy, hCG can be detected in both urine and serum as early as 7 to 10 days after conception (1-4). hCG levels continue to rise very rapidly, frequently exceeding 100 mIU/mL by the first missed menstrual period (2-4), and peaking in the 100,000-200,000 mIU/mL range about 10-12 weeks into pregnancy. The appearance of hCG in both urine and serum soon after conception, and its subsequent rapid rise in concentration during early gestational growth, make it an excellent marker for the early detection of pregnancy.

The N.C.S hCG One Step Pregnancy Test Device (Urine/Serum) is a rapid test that qualitatively detects the presence of hCG in urine or serum specimen at the sensitivity of 25 mIU/mL. The test utilizes a combination of monoclonal and polyclonal antibodies to selectively detect elevated levels of hCG in urine or serum. At the level of claimed sensitivity, the N.C.S hCG One Step Pregnancy Test Device (Urine/Serum) shows no cross-reactivity interference from the structurally related glycoprotein hormones hFSH, hLH and hTSH at high physiological levels.

### PRINCIPLE

The N.C.S hCG One Step Pregnancy Test Device (Urine/Serum) is a rapid chromatographic immunoassay for the qualitative detection of human chorionic gonadotropin (hCG) in urine or serum to aid

in the early detection of pregnancy. The test utilizes a combination of antibodies including a monoclonal hCG antibody to selectively detect elevated levels of hCG. The assay is conducted by adding urine or serum specimen to the specimen well of the test device and observing the formation of colored lines. The specimen migrates via capillary action along the membrane to react with the colored conjugate.

Positive specimens react with the specific antibody-hCG-colored conjugate to form a colored line at the test line region of the membrane. Absence of this colored line suggests a negative result. To serve as a procedural control, a colored line will always appear at the control line region if the test has been performed properly.

### REAGENTS

The test device contains anti-hCG particles and anti-hCG coated on the membrane.

### PRECAUTIONS

- For professional *in vitro* diagnostic use only. Do not use after the expiration date.
- The test device should remain in the sealed pouches until use.
- All specimens should be considered potentially hazardous and handled in the same manner as an infectious agent.
- The test device should be discarded in a proper biohazard container after testing.

### STORAGE AND STABILITY

Store as packaged in the sealed pouch at 4-30°C. The test device is stable through the expiration date printed on the sealed pouch. The test device must remain in the sealed pouch until use. **DO NOT FREEZE.** Do not use beyond the expiration date.

### SPECIMEN COLLECTION AND PREPARATION

#### Urine Assay

A urine specimen must be collected in a clean and dry container. A first morning urine specimen is preferred since it generally contains the highest concentration of hCG; however, urine specimens collected at any time of the day may be used. Urine specimens exhibiting visible precipitates should be centrifuged, filtered, or allowed to settle to obtain a clear specimen for testing.

#### Serum Assay

Blood should be collected aseptically into a clean tube without anticoagulants. Separate the serum from blood as soon as possible to avoid hemolysis. Use clear non-hemolyzed specimens when possible.

### Specimen Storage

Urine or serum specimen may be stored at 2-8°C for up to 48 hours prior to testing. For prolonged storage, specimens may be frozen and stored below -20°C. Frozen specimens should be thawed and mixed before testing.

### PROCEDURE

#### Materials Provided

- Test devices
- Disposable specimen droppers
- Package insert

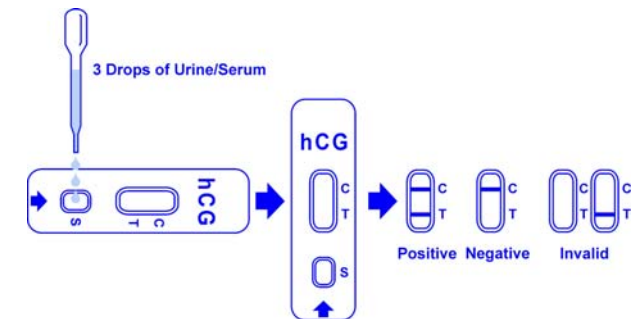
#### Materials Required But Not Provided

- Specimen collection container
- Timer

### DIRECTIONS FOR USE

**Allow the test device, urine or serum specimen and/or controls to equilibrate to room temperature (15-30°C) prior to testing.**

1. Bring the pouch to room temperature before opening it. Remove the test device from the sealed pouch and use it as soon as possible.
2. Place the test device on a clean and level surface. Hold the dropper vertically and transfer 3 full drops of urine or serum (approx. 100µl) to the specimen well (S) of the test device, and then start the timer. Avoid trapping air bubbles in the specimen well (S). See the illustration below.
3. Wait for the red line(s) to appear. **Read the result at 3**



**minutes when testing a urine specimen, or at 5 minutes when testing a serum specimen.** It is important that the background is clear before the result is read.

**Note: A low hCG concentration might result in a weak line appearing in the test region (T) after an extended period of time; therefore, do not interpret the result**

after 10 minutes.

## INTERPRETATION OF RESULT

(Please refer to the illustration above)

**POSITIVE: Two distinct red lines appear.** One line should be in the control region (C) and another line should be in the test region (T).

**NEGATIVE: One red line appears in the control region (C).** No apparent red or pink line appears in the test region (T).

**INVALID: Control line fails to appear.** Insufficient specimen volume or incorrect procedural techniques are the most likely reasons for control line failure. Review the procedure and repeat the test with a new test device. If the problem persists, discontinue using the test kit immediately and contact your local distributor.

**NOTE:** The intensity of the red color in the test line region (T) will vary depending on the concentration of hCG present in the specimen. However, neither the quantitative value nor the rate of increase in hCG can be determined by this qualitative test.

## QUALITY CONTROL

A procedural control is included in the test. A red line appearing in the control region (C) is the internal positive procedural control. It confirms sufficient specimen volume and correct procedural technique. A clear background is also required.

Good laboratory practice recommends the use of control materials to ensure proper kit performance. It is recommended to use external quality control materials with each new lot, new shipment and every 30 days. When testing the external positive and negative controls, use the same test procedure as with a urine/serum specimen. Quality control standards are available from commercial sources. Each laboratory should follow their country and local quality control requirements.

## LIMITATIONS

1. Very dilute urine specimens, as indicated by a low specific gravity, may not contain representative levels of hCG. If pregnancy is still suspected, a first morning urine specimen should be collected 48 hours later and tested.
2. False negative results may occur when the levels of hCG are below the sensitivity level of the test. When pregnancy is still suspected, a first morning urine or serum specimen should be collected 48 hours later and tested.
3. Very low levels of hCG (less than 50 mIU/mL) are present in urine and serum specimen shortly after implantation. However, because a significant number of first trimester pregnancies terminate for natural reasons (5), a test result that is

weakly positive should be confirmed by retesting with a first morning urine or serum specimen collected 48 hours later.

4. A number of conditions other than pregnancy, including trophoblastic disease and certain non-trophoblastic neoplasms including testicular tumors, prostate cancer, breast cancer, and lung cancer, cause elevated levels of hCG (6-7). Therefore, the presence of hCG in urine or serum specimen should not be used to diagnose pregnancy unless these conditions have been ruled out.
5. This test provides a presumptive diagnosis for pregnancy. A confirmed pregnancy diagnosis should only be made by a physician after all clinical and laboratory findings have been evaluated.

## EXPECTED VALUES

Negative results are expected in healthy non-pregnant women and healthy men. Healthy pregnant women have hCG present in their urine and serum specimens. The amount of hCG will vary greatly with gestational age and between individuals.

The *N.C.S* hCG One Step Pregnancy Test Device (Urine/Serum) has a sensitivity of 25 mIU/mL, and is capable of detecting pregnancy as early as 1 day after the first missed menses.

## PERFORMANCE CHARACTERISTICS

### Accuracy

A multi-center clinical evaluation was conducted comparing the results obtained using the *N.C.S* hCG One Step Pregnancy Test Device (Urine/Serum) and another commercially available serum/urine membrane hCG test. The urine study included 159 specimens and both assays identified 88 negative and 71 positive results. The serum study included 73 specimens and both assays identified 51 negative and 21 positive and 1 inconclusive results. The results demonstrated a 100% overall agreement (for an accuracy of > 99%) of the *N.C.S* hCG Pregnancy Test Device (Urine/Serum) when compared to the other urine/serum membrane hCG test.

### Sensitivity and Specificity

The *N.C.S* hCG One Step Pregnancy Test Device (Urine/Serum) detects hCG at concentrations of 25 mIU/mL or greater. The test has been standardized to the W.H.O. Third International Standard. The addition of LH (300 mIU/mL), FSH (1,000 mIU/mL), and TSH (1,000  $\mu$ IU/mL) to negative (0 mIU/mL hCG) and positive (25 mIU/mL hCG) specimens showed no cross-reactivity.

### Interfering Substances

The following potentially interfering substances were added to hCG negative and positive specimens.

Acetaminophen	20 mg/mL	Caffeine	20 mg/mL
Acetylsalicylic Acid	20 mg/mL	Gentisic Acid	20 mg/mL
Ascorbic Acid	20 mg/mL	Glucose	2 g/dL
Atropine	20 mg/mL	Hemoglobin	1 mg/dL
Bilirubin (serum)	40 mg/dL	Bilirubin (urine)	2 mg/dL
Thiglycerides (serum)	1200 mg/dL		

None of the substances at the concentration tested interfered in the assay.

## BIBLIOGRAPHY

1. Batzer FR. "Hormonal evaluation of early pregnancy", *Fertil. Steril.* 1980; 34(1): 1-13
2. Catt KJ, ML Dufau, JL Vaitukaitis "Appearance of hCG in pregnancy plasma following the initiation of implantation of the blastocyte", *J. Clin. Endocrinol. Metab.* 1975; 40(3): 537-540
3. Braunstein GD, J Rasor, H. Danzer, D Adler, ME Wade "Serum human chorionic gonadotropin levels throughout normal pregnancy", *Am. J. Obstet. Gynecol.* 1976; 126(6): 678-681
4. Lenton EA, LM Neal, R Sulaiman "Plasma concentration of human chorionic gonadotropin from the time of implantation until the second week of pregnancy", *Fertil. Steril.* 1982; 37(6): 773-778
5. Steier JA, P Bergsjö, OL Myking "Human chorionic gonadotropin in maternal plasma after induced abortion, spontaneous abortion and removed ectopic pregnancy", *Obstet. Gynecol.* 1984; 64(3): 391-394
6. Dawood MY, BB Saxena, R Landesman "Human chorionic gonadotropin and its subunits in hydatidiform mole and choriocarcinoma", *Obstet. Gynecol.* 1977; 50(2): 172-181
7. Braunstein GD, JL Vaitukaitis, PP Carbone, GT Ross "Ectopic production of human chorionic gonadotropin by neoplasms", *Ann. Intern Med.* 1973; 78(1): 39-45



Nova Century Scientific  
5022 South Service Road  
Burlington, Ontario L7L 5Y7  
Tel: 1-800-615-5072  
Fax: 1-800-639-9006  
[www.novacentury.com](http://www.novacentury.com)